Global Maize Project: Mid-Term Report

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We also want to recognize the first Chair of WG04, Dr. Harold Reetz, now retired from IPNI, for his vision and initiation of this research project.

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Executive Summary

Ecological intensification (EI) is a termed that has been used to describe a maize production system that "…satisfies the anticipated increase in food demand while meeting acceptable standards for environmental quality." Such a theoretical definition requires research to identify the specific practices that are needed to reach that goal. The Global Maize project challenged scientists around the world to use the best science available to create new management systems that would outperform current farmer practice (FP). Improved crop nutrition was the focus, but many other management factors were included in an attempt to make the best use of the nutrients applied. To aid researchers in evaluating whether or not EI management was yielding close to its true potential, we used the Hybrid Maize crop growth simulation model. To evaluate the N rates that researchers are choosing, we are also planning to incorporate the Maize-N model; however the project has not yet generated enough data to do so. Currently, 20 research centers exist in 9 countries. The project was planned to run for 10 years at each center in order to provide enough time for management practices to affect noticeable changes in the overall cropping system. This report summarizes 41 site-years of data collected from 17 of those centers. The centers not reporting data were recently established.

This Global Maize Project (GMP) has 4 goals: 1) to develop a global network of scientists who are actively working to improve nutrient management of maize using the best science; 2) to use EI practices to improve yields over time at a faster rate than FP while minimizing adverse environmental effects; 3) to test the ability of the Hybrid Maize simulation model to predict yield potential at individual maize locations, and 4) to provide data needed to calibrate a nitrogen nutrition model, Maize-N. We focused on the first three objectives in this report.

Objective 1: Creating a Network of Scientists Actively Researching Improved Nutrient Management Practices for Maize

Cooperators in the GMP were surveyed and asked to provide feedback on benefits they were seeing by being part of the GMP. Three key findings were:

- Concepts of EI are serving as examples for researchers working with other crops, like rice, sunflower, cotton, sugarcane and wheat. For example, scientists at Darwad and Ranchi, India, initiated work on different agro-climatic conditions following the concepts used in the GMP at those locations.
- GMP is creating a database of information that leads to improvements in fertilizer recommendations. Three examples are: (1) revision of state recommendations in Darwad, India, (2) an increase from 2 to 3 in-season N applications because of the positive impacts seen in Darwad and Ranchi, India, and 3) in Africa, the Kenya Agricultural Research Institute is revising recommendations for maize.

- The project is serving to train students, crop consultants and farmers around the world. Field experiments in some regions are serving as teaching tools. Field days take place in most GMP experiment sites to transfer what is being learned to those who need the information to improve their farming practices. Students, both graduate and undergraduate, are involved in the project in many regions. Scientific work related to GMP will provide data for Master of Science theses and Ph.D. dissertations in different locations.

Objective 2: Using EI to Improve Yields while Minimizing Adverse Environmental Effects

Ecological intensification management systems around the world yielded, on average, 8021 kg of grain dry matter (DM) ha^{-1} and increased maize yield above FP by an average of 980 kg grain DM ha^{-1}. In 39% of the cases, these increases were statistically significant. In only 2% of the cases did EI significantly decrease yield.

There is currently no commonly accepted set of metrics for evaluating "acceptable standards for environmental quality" when configuring EI systems; however, higher nutrient use efficiency is often cited as a goal for increased sustainability of agricultural systems. We examined four different metrics of efficiency to see what information they provided about the nutrient management approaches used in the project.

We first examined the partial factor productivity (PFP) of nitrogen (N). Forty of the 41 site-years currently provided the necessary data. Partial factor productivity answers the question, "How productive is a maize cropping system in comparison to its nutrient input?" In 58% of the cases, EI management systems either maintained PFP or increased it; however, the overall average PFP of EI was lower than FP due primarily to large decreases at one research center. These decreases turned out to be an anomaly of the PFP calculation. The EI system at this research center used a modest increase in N rate; however, when it was compared to the very low N rate use in FP, the relative increase appeared large. In terms of absolute magnitude, the EI system at this site used N rates that were among the lowest in the entire GMP.

Agronomic efficiency (AE) of N answers the question, "How much is grain yield increased per unit of N applied?" This efficiency is also an indicator of the profitability of N. Data were analyzed from 33 of the 41 site-years. In 9% of the cases, EI systems had significantly higher AE than FP; however, all of these cases occurred at one site where FP was using too much N. The EI system at that location reduced N rates but maintained or increased grain yield. It is worth noting that this site was the only one where significant increases in AE were observed and it is also the only site where EI used lower N rates than FP. When looking at all data from the project, EI systems typically used the same or higher

rates of N but were able to maintain AE 85% of the time. In only 6% of the cases did the higher rates used in EI systems reduce AE. Profitable use of N occurred 94% of the time in EI systems and 88% of the time with FP.

Recovery efficiency (RE) of N answers the question, “How much is plant N uptake increased when N is applied?” It is an important component of many N recommendations. Higher RE values result in lower recommended N rates. Data from 19 of the 41 site-years were analyzed. In only one site-year did EI significantly increase RE. In this case, EI maintained yield by reducing N rate 17%. In the majority of the cases (84%), EI systems had the same RE as FP even though they tended to use higher rates of N. In 11% of the cases, EI significantly decreased FP, resulting from either yield decreases or disproportionately large increases in N rate in the EI systems. Averaged across all site-years, RE of both EI and FP systems were very close to global averages reported by others.

Partial nutrient balance (PNB) answers the question, “How much nutrient is being taken out of the system in relation to how much is applied?” It has implications for sustainability, particularly for phosphorus (P) and potassium (K). Taking out more nutrients than are applied reduces soil fertility while doing the opposite builds fertility. Data from 29 site-years for P and 24 site-years for K were examined for changes in PNB between EI and FP. In all cases, EI management used P and K rates that were high enough to build soil fertility. In 21% of the cases for P and 17% of the cases for K, this represented a statistically significant shift away from EI practices that were reducing P and K fertility.

Objective 3: Evaluating the Ability of the Hybrid Maize Model to Predict Yield Potential

Sufficient management practice and weather data existed in 32 site-years to simulate either maize grain and/or stover yields for EI using the Hybrid Maize model. For FP, 34 site-years of data existed. Observed yields were compared to simulated yields. When yields were within 80 to 110% of the yield potential predicted by Hybrid Maize, both model performance and management practices were considered acceptable. For grain yield, acceptable performances occurred 44% of the time in EI systems and 29% of the time in FP systems. For stover (leaves, stem, husk, cob, tassel) yield, acceptable performances occurred 28% of the time in both EI and FP systems. In cases where yields and simulations fell outside of this range, we are investigating the causes. Possible causes being examined are: management may have been sub-optimal; growing season conditions may have existed that Hybrid Maize could not account for in its algorithms; and key growth stages may have been inaccurately estimated by the researchers. We may identify other causes as work continues.

INTRODUCTION

A vision for the future expressed by the Food and Agriculture Organization of the United Nations (FAO) is that demand for agricultural products is expected to grow at 1.1% per year, which is significant, but down from 2.2% per year in the past 40 years (FAO, 2012). The lower percent growth still translates to a large absolute increase. By 2050, global consumption will, by these estimates, be 60% higher than they were in 2005/2007. As Cassman (2013) observed, the future growth of agricultural production may be more challenging than in the past. Yields have reached a plateau in some areas and there may be less room for yield growth in many other regions. Also unlike the past, we have a greater awareness of the environmental impact of agricultural production systems. Attaining greater production in the future will mean doing a better job of keeping nutrients from moving to unwanted places in the environment.

As we strive to meet the challenge of significant increased demand of agricultural products, an important question about crop yields is, “How much room for growth is there?” Cassman (2013) defined the term “yield gap” as “…the difference between the yield under optimum management and the average yield achieved by farmers.” Historical statistics provide information about the yields already achieved by farmers, but “yield under optimum management” is much less clear. Currently, scientists believe that crop growth models provide the best quantitative estimate of yield under optimum management (van Ittersum et al., 2013). These models consider many variables that affect crop growth, and they rely heavily on local, daily weather data and local management practices (Yang et al., 2006; Yang et al., 2004). Estimates from these models are used to quantify yield under optimum management. In irrigated conditions, such an estimate is termed “potential yield.” In rain-fed systems, such an estimate is termed “water-limited potential yield.” Subtracting the yields the farmers actually get from potential yield provides a quantitative estimate of the yield gap. Van Ittersum et al. (2013) point out that “…results from generic models need local validation to determine if estimates are accurate.” Thus, before yield gaps in any one area can be assessed, it is necessary to first evaluate and calibrate the crop growth simulation model or models that are being used to estimate potential yield.

Increasing yields in an environmentally responsible way is captured in the term “ecological intensification,” or EI as it is abbreviated in this report. This term was introduced by Cassman (1999) who defined it as, “…a production system that satisfies the anticipated increase in food demand while meeting acceptable standards for environmental quality.” Ecological intensification is a goal but not a well-defined set of management practices. It has to be researched locally to define it, and it will, over time, change as acceptable standards change.

The extent to which EI differs from farmer practice (FP) depends in large part upon how close FP is to potential yield (how large the yield gap is). In areas where the yield gap is small or non-existent, EI may not be that different in many

aspects than FP. In such cases, the differences in EI management systems will likely be less related to production level and more related to reducing nutrient losses and creating long-term sustainability. Consequently, evaluating EI and FP systems must be done knowing something about how large the yield gap is in a particular area.

Crop growth models can do more than estimate potential yield. They can also be used to estimate total nutrient uptake requirements. A model that takes this approach is Maize-N (Setiyono et al., 2011). It is based on concepts originally outlined by Stanford (1973). By estimating total nutrient uptake, the amount of nitrogen (N) provided by the soil, and the efficiency with which fertilizer N is used, Maize-N generates a fertilizer recommendation. This recently developed model still requires testing to determine the accuracy of its N rate recommendations.

The objectives of the Global Maize Project (GMP) are to: 1) develop a global network of scientists who are actively working to improve nutrient management of maize using the best science; 2) use EI practices to improve yields over time at a faster rate than FP while minimizing adverse environmental effects; 3) test the ability of the Hybrid Maize simulation model to predict yield potential at individual maize locations, and 4) provide data needed to calibrate Maize-N. Currently, not enough weather data exist at any site to accurately evaluate the Maize-N model. Consequently, this report will focus on the first three objectives only.

MATERIALS AND METHODS

To address the first objective, IPNI staff provided written feedback about the successes of the GMP in their respective areas. This feedback was summarized and is reported below.

To address the second objective, two basic types of experimental designs were deployed in various maize growing regions of the world (Appendix D).

The first design was a split-plot design with management system as the whole plot factor consisting of two levels (EI or FP) and N fertilization as the second sub-plot factor with two levels (N or N0). This led to a basic treatment structure with 4 treatments: 1) EI-N, 2) EI-N0, 3) FP-N, and 4) FP-N0. In all cases, levels of each factor were defined locally. Researchers at each site defined management systems they thought were representative of current FP and those that they thought would be improvements (EI). Additionally, the rates of N applied were also defined locally. The “N” denotes a rate of N considered adequate for maize production in each system. The rate of N applied was not necessarily the same in each system (Appendix B). Nitrogen was combined with many other management practice changes between the two systems, such as planting date, planted population, hybrid selection, application of other nutrients, etc. The “N0” denotes no N applied or, in some cases, a very low rate of N co-applied with compound fertilizers such as monoammonium phosphate or diammonium

phosphate. This design was analyzed with a two-way analysis of variance (ANOVA) using the R statistics package (R Core Team, 2013).

The second design is inherent in the first one described above and consisted of a randomized complete block design with management system as the factor with two levels (EI-N and FP-N). This design was used at all sites, and was present as either a subset of treatments in a more complex design, like the one above, or as the primary design. This design was analyzed with a one-way ANOVA.

Researchers were allowed to incorporate other factors of interest into their local experiments, as long as, at a minimum, the second design was employed (Appendix E). In such cases, we analyzed only the two core designs mentioned above. Researchers using supplemental treatments are responsible for analyzing those experiments on their own.

The Global Maize experiment currently exists at 20 locations. Two of these (Waseka, Minnesota, USA and Obregon, Mexico) have been newly established and their results were not incorporated into this report. The remaining 18 sites included in this report are: Itiquira and Ponta Grossa, Brazil; Gongzhuling and Shijiazhuang, China; Ranchi and Darwad, India; Balcarce and Oro Verde, Argentina; Ames, Iowa, West Lafayette, Indiana, and Virginia, USA; Celaya and Toluca, Mexico; Buga, Colombia (sites “a” and “b”); Novaya Tselina, Russia; and Muguga and Wote, Kenya (Figure 1). The experiment is intended to run for 10 years at each location. Considering the number of years of data reported from each site, a total of 41 site-years of data were collected into this report. To date, the maximum number of maize seasons reported from any one site is three.

Details of EI and FP management practices at each site have not been compiled in this report but will be in the future. Rates of all nutrients applied are provided in Appendix B. Yields of all plant material are reported as dry matter (DM), where DM is assumed to be at 0% moisture.

To date, the experiment has not been running long enough to determine if yields under EI are increasing faster than those under FP. This report focuses on the differences that management practices produced each maize season. The dependent variables presented in this report were limited to: 1) dry matter (DM) grain yield, 2) partial factor productivity (PFP) of N, 3) agronomic efficiency (AE) of N, 4) recovery efficiency (RE) of N, and partial nutrient balances (PNBs) of 5) N, 6) phosphorus (P), and 7) potassium (K). Statistical analyses were also conducted on many more dependent variables that are not reported here. Analyses of variance for the complete set of dependent variables are provided in Appendix D. For all dependent variables, EI was compared to FP by calculating the difference in averages (means) of each treatment: EI – FP. Thus, negative differences indicate that the mean of the EI system was lower than that of FP, and positive differences indicate the mean of the EI system was higher. Summaries of the mean differences between EI and FP management for all

dependent variables are provided in Appendix C. Average differences across all site-years were calculated but have not yet been evaluated for their statistical significance.

Nutrient use efficiencies examined in this study follow the definitions of Snyder and Bruulsema (2007). Their definition and formulas, as they apply specifically to maize grain production systems, are enumerated below. An important aspect of all these functions is that because fertilizer rate appears in the denominator, they become undefined when fertilizer application rates are reduced to zero. Consequently, sites where one or more nutrients were not applied were necessarily excluded from analyses.

Partial Factor Productivity (PFP)

Partial factor productivity answers the question, “How productive is a maize cropping system in comparison to its nutrient input?” It is calculated according to Eq. [1].

$$\text{PFP} = Y/F \qquad [1]$$

where Y = fertilized maize grain yield and F = amount of nutrient applied. In this report, we were concerned only the PFP of N. When comparing EI to FP, changes in PFP will be directly related to changes in grain yield and rates of applied N between the two management systems.

Agronomic Efficiency (AE)

Agronomic efficiency answers the question, “How much is grain yield increased per unit of nutrient applied?” It is calculated as follows:

$$\text{AE} = (Y\text{-}Y_0)/F \qquad [2]$$

where Y and F are the same as defined above for Eq. [1] and Y_0 is the grain yield where no nutrient has been applied, often referred to as the “check.” In the experiment, the AE of nitrogen (N) was the focus. The checks were provided by the EI-N0 and FP-N0 treatments for those locations using a split-plot design. Agronomic efficiency was then calculated by subtracting grain yield of either the EI-N0 or FP-N0 treatment from that of the treatment fertilized with N (EI-N or FP-N respectively). This was done within each replication. There were cases where obtaining a true zero N rate in the EI-N0 or FP-N0 treatments was not possible because of the use of a compound phosphorus (P) fertilizer such as monoammonium phosphate or diammonium phosphate. In those cases, AE was still calculated as described above. However, instead of just considering only F in the denominator in Eq. [2] (the N rate applied to EI-N or FP-N), the low rate of N applied in the compound fertilizer (F_0) was considered using the following modification of Eq. [2]:

$$AE_N = (Y-Y_0)/(F-F_0) \quad [3]$$

Where AE_N is the agronomic efficiency calculated when a small rate of N was applied in the check treatment, F_0 is the small rate of N applied, Y_0 is the grain yield associated with that small rate of N *and F* is the fertilizer rate used in the fertilized treatment (EI-N or FP-N), and. This equation assumes that yield response to N rate is linear, which is a reasonable model, since the calculations were performed within a replication (Dahnke, 1990).

Recovery Efficiency (RE)

Recovery efficiency answers the question, “How much is plant nutrient uptake increased when nutrients are applied?” The nutrient of interest for RE in this experiment was N. Recovery efficiency was calculated in a manner analogous to AE:

$$RE = (U-U_0)/F \quad [4]$$

where U is the total N uptake in the above-ground portion (leaves, stem, husk, grain, and cob) of fertilized maize (EI-N or FP-N treatments), and U_0 was total N uptake in the check treatments (EI-N0 or FP-N0). Just like AE_N, RE was modified to RE_N at experimental locations where small rates of N were applied to the check:

$$RE_N = (U-U_0)/(F-F_0) \quad [5]$$

Partial Nutrient Balance (PNB)

Partial nutrient balance answers the question, “How much nutrient is being taken out of the system in relation to how much is applied?” For maize grain production systems, it compares grain nutrient uptake (the quantity of nutrient that is harvested) to the amount of nutrient applied:

$$PNB = (U_H)/F \quad [5]$$

where U_H is the nutrient content of the harvested crop portion (grain) and F is as defined above in Eq. [1]. Partial nutrient balance was calculated for N, P, and K.

Hybrid Maize Simulations

To address the third objective, Hybrid Maize simulations were performed separately for EI and FP in each year for sites that had submitted sufficient data. Needed management information were collected. In many cases, key growth stages such as emergence date, silking date, and physiological maturity were estimated by researchers rather than measured. Additionally, some weather data sets were incomplete. In those cases, data from the U.S. National Aeronautics

and Space Administration's Atmospheric Science Data Center were used as estimates (NASA, 2014).

RESULTS AND DISCUSSION

Objective 1: Creating a Network of Scientists Actively Researching Improved Nutrient Management Practices for Maize

While the GMP is a long term project, clear positive impacts have already been noted in the different regions of the world where the research centers exist. This section is a collection of such impacts and how this broad experiment network is already making positive changes in maize management as well as in other agricultural systems.

The GMP desired to create teams of leading scientists and practitioners who were united in a common goal to create nutrient stewardship and improve other management practices in maize systems to meet future production needs. This was accomplished by forming councils of maize experts to discuss and decide the type of deliverables needed in each region and how to conduct the experiments. The sample photos attached to this report (Appendix F) provide graphic evidence of such integration. All this diversity of people and thoughts are already translating into impact in their respective regions.

Within the GMP, a survey was conducted in early 2014 that gathered feedback from collaborators around the world looking about important impacts they had already noticed. The following list is a compilation of that feedback:

- The project has increased awareness for the concepts of EI (more grain with less environmental impact)
- The GMP is serving as a means to increase maize yield in different regions of the world. Although different experiments target different objectives, increasing maize yield around the world is a critical goal for ecological intensification and for a project like GMP. As discussed below, the overall, average grain yield increase in EI systems over FP was nearly 1 Mg ha^{-1}. If such an increase were extrapolated to all maize growing areas of the world, an estimated 160 million tons of additional yield would be produced every year, representing about a 15% increase in world production.
- Results to date already indicate other important needs in terms of research. For example, in Novaya Tselina, Russia, the research group detected the need to study the effectiveness of a starter (seed-placed) application of K for certain soil conditions.
- Concepts of EI are serving as examples for researchers working with other crops, like rice, sunflower, cotton, sugarcane and wheat. For example, scientists at Darwad and Ranchi, India, initiated work on

different agro-climatic conditions following the concepts used in the GMP at those locations.

- GMP is creating a database of information that leads to improvements in fertilizer recommendations. Three examples are: (1) revision of state recommendations in Darwad, India, (2) an increase from 2 to 3 in-season N applications because of the positive impacts seen in Darwad and Ranchi, India, and 3) in Africa, the Kenya Agricultural Research Institute is revising recommendations for maize.
- The project is serving to train students, crop consultants and farmers around the world. Field experiments in some regions are serving as teaching tools. Field days take place in most GMP experiment sites to transfer what is being learned to those who need the information to improve their farming practices. Students, both graduate and undergraduate, are involved in the project in many regions. Scientific work related to GMP will provide data for Master of Science theses and Ph.D. dissertations in different locations.
- GMP is increasing diversity in crop rotations. For example, in Mato Grosso, Brazil, soil and climatic conditions do not favor accumulation of soil organic matter. The GMP center there is looking into different cropping systems and testing their abilities to accumulate higher levels of soil organic matter to make the cropping systems more sustainable. This is also important in the Colombian Altillanura, in the municipality of Puerto López (Buga, Colombia). In Ponta Grossa, Brazil, the project is helping to define adequate N rates in different cropping systems, and results to date are indicating that N rates can be reduced when legumes are incorporated into the rotation as winter crops.
- In certain regions, GMP is introducing tools for creating decision tools and models or is providing data needed to improve them. In Colombia, the experiment is calling attention to the importance of modeling at the local level. In the USA, the GMP experiment in Virginia has led to more detailed investigations by research scientists into using N decision support systems at the farm level. More generally, the masses of data being collected in the GMP will serve as a valuable database that can be used by scientists to improve decision support tools like the Hybrid Maize model and Maize-N. Scientists are already using the GMP database for this purpose, and this will continue. China and India are refining their Nutrient Expert tool based on region-specific data from GMP.
- GMP is facilitating expansion of maize production to some good potential areas. This was pointed out by IPNI directors in India and Colombia. In India, collaborators claim that the area where maize is cultivated has already increased by 20% and is being planted instead of other less profitable crops.
- GMP is providing data that is already being used to create recommendations that are better suited to regions with high risk of insufficient rain. In Muguga, Kenya, GMP results are showing that lower rates of nutrients (about 50% of rates for maximum yields under irrigation)

should be applied for higher efficiency under drought conditions, which are common in the region. Also in Kenya, results are raising awareness that more complete crop nutrition is needed, going beyond N and P to include K and micronutrients.

- The credibility of the GMP is increasing and is leading to associations with important key players at the political level. As an example, one of the IPNI directors in China pointed out that the research center in Shijiazhuang was recognized as a state agricultural environmental monitoring station.

It is evident from this survey that there are many benefits that have already emerged from this experiment that go beyond the specific results of the study itself.

Objective 2: Using EI to Improve Yields while Minimizing Adverse Environmental Effects

In the following discussion of the results, it is important to remember that differences that are statistically different are not necessarily always the largest differences. Statistical significance considers not only the magnitude of the difference between treatments but also how much variability exists in each experiment. For differences to be considered statistically significant, the variability produced by the treatments must be much greater than the inherent variability at the experimental site. Consequently, experiments that are either conducted at sites with lower inherent variability or are managed to minimize variability can detect significant treatment effects even when they are smaller.

Dry Matter Grain Yield

To date, dry matter (DM) grain yield has been reported for 41 site-years. Across all site-years, yields for the EI management systems averaged 8021 kg ha^{-1} and ranged from 3635 to 12993 kg ha^{-1} (Appendix A). The FP management systems averaged 7041 kg ha^{-1} and ranged from 2277 to 15184 kg ha^{-1}. The average difference between EI and FP was 980 kg ha^{-1} (Table 1). Mean differences ranged from -2638 to 5456 (Figure 2).

EI increased grain yield significantly at 16 site-years, or in 39% of the cases. Across these 16 cases, the EI and FP average yields were 8014 and 6088 kg ha^{-1}, respectively. Ecological intensification practices increased grain yields by an average of 1926 kg ha^{-1}, with a range from 509 to 5456 kg ha^{-1}. Sites with significantly higher EI yields were Itiquira, Brazil (2010); Gongzhuling, China (2009, 2011); Ranchi, India (2009-2011); Balcarce, Argentina (2009, 2010); Oro Verde, Argentina (2009, 2010); Toluca, Mexico (2009-2011); Novaya Tselina, Russia (2011, 2012); and Virginia, USA (2012).

EI produced the same yields as FP in 24 site-years, or in 59% of the cases. Across these site-years, average yields for FP and EI were 7837 and 7338 kg ha^{-1}, respectively.

There was only one case, representing 2% of the studies, in which EI significantly reduced yield, and it occurred at the Celaya, Mexico site in 2010. The reduction was the lowest of those observed in the study and was -2638 kg ha^{-1}. The yields for EI and FP in this site-year were 12547 and 15184 kg ha^{-1}, respectively.

Partial Factor Productivity (PFP) of N

Partial factor productivity can be increased in two primary ways: by 1) increasing corn grain yield or 2) decreasing the amount of N applied. For PFP to remain the same when higher fertilizer rates are applied in EI, maize yield must increase proportionately. For instance, if 20% more N is applied in EI compared to FP, then yield in EI must also be 20% higher. If yield falls below that percent increase, then PFP will be reduced with EI. If yield exceeds that increase, then PFP will increase. Another way for PFP to increase under EI management is for yields to be maintained while N rates are reduced. Partial factor productivity increases like this are possible where N applications in FP have been in excess of crop needs.

Data existed to calculate PFP for 40 of the 41 site-years that reported dry matter grain yield. Across all site-years, PFP in EI management systems averaged 58.8 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and ranged from 12.1 to 208.2 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$. In the FP systems, PFP averaged 69.4 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and ranged from 13.9 to 228.7 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ (Appendix A).

Across all site-years, the average difference in PFP between EI and FP was -10.7 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ (Table 1). Differences ranged from -141.4 to 26.5 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ (Figure 3). Partial factor productivity of EI was significantly higher than FP in 7 site-years, the same as FP in 16 site-years, and significantly lower than FP in 17 site-years (Table 1). To gain insight into these differences, we examined the way in which PFP varied by corn grain yield, shown in Table 2.

We first examine the 7 site-years where PFP was significantly higher for EI management systems. The average PFP of EI was 65.1 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and that of FP was 48.7 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$. Thus, EI increased PFP of N by an average of 16.4 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ at these sites and the increase ranged from 7.4 to 26.5 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$. In 3 of these 7 site-years, the grain yields of EI were also significantly higher (Table 3). The average yield of EI across these 3 sites was 9577 kg ha^{-1} compared to 7057 kg ha^{-1} for FP. Two of the site-years

originated from the 2009 and 2011 growing seasons at Gongzhuling, China. At this site, higher maize yields were attained with approximately 70 kg ha^{-1} less N in the EI management system. Yield increases were 883 kg grain DM ha^{-1} in 2009 and 1221 kg grain DM ha^{-1} in 2011. This site was in an area of China where FP was associated with over-applications of N, and the EI treatment demonstrated that higher yields could be attained with N rate reductions. The third case came from the Oro Verde site in Argentina in the 2009 growing season. At this site-year, EI produced a yield increase of 5456 kg grain DM ha^{-1}. This increase occurred with approximately 30 kg N ha^{-1} more N applied in the EI management system, for a final rate of 110 kg N ha^{-1}. There were also 4 site-years where PFP was significantly higher for EI but where grain yields of EI remained essentially unchanged from FP. Across these 4 cases, the average PFP for EI was 63.9 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and for FP was 50.8 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$. In all of these cases, higher PFP resulted from management practices that included lower rates of applied N with very low reductions in grain yield. Two of the cases came from China in 2010 at the Gongzhuling and Shijiazhuang sites. The other two cases both came from 2011 and 2012 at the USA location in Ames, Iowa.

We next look at the 16 site-years where EI did not increase PFP compared to that of FP. Across all sites, PFP in the EI management systems averaged 53.2 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and ranged from 12.1 to 144.4 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$. For the FP systems, PFP averaged 54.4 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and ranged from 13.9 to 141.4 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$. In 3 site-years, EI management systems significantly increased grain yield but were associated with proportional increases in N rate, keeping PFP unchanged (Table 4). These sites were located in Ranchi, India (2011), Oro Verde, Argentina (2010), and Toluca, Mexico (2011). Average yield of the EI management systems at these 3 site-years was 6180 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and was 3247 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ for the FP systems. In 13 site-years, EI approaches did not increase either grain yield or PFP beyond that of FP. The EI management systems tended to increase yields modestly and used the same or higher rates of N compared to FP management systems. These sites were the 2012 and 2013 seasons at Ponta Grossa, Brazil; the 2009-2011 seasons at Darwad, India; the 2011 seasons at both Balcarce and Oro Verde, Argentina; the 2009 and 2011 seasons at Celaya, Mexico; the 2010 and 2012 seasons at the “a” location and the 2011 season at the “b” location in Buga, Colombia; and the 2012 season at Wote, Kenya.

Finally, we examine the 17 site-years where EI management resulted in lower PFP than FP. The average PFP of EI was 61.5 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and ranged from 22.5 to 208.2 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$. The average PFP of FP was 92.1 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$ and ranged from 34.5 to 228.7 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$.

In 10 of these 17 site-years, EI management significantly increased grain yields; however, these higher yields were attained with management systems that used higher N rates (Table 5). The relative increase in the rates of N were greater than the relative increases in grain yield, resulting in significantly lower PFP for the EI management systems. In these site-years, EI grain yields averaged 8096 kg ha^{-1} and those of FP averaged 6649 kg ha^{-1}. The largest decreases in PFP among these 10 site-years was Novaya Tselina, Russia (2011, 2012). At this site, EI significantly increased yields by 555 and 494 kg DM ha^{-1} in 2011 and 2012, respectively, and used 55 kg N ha^{-1} more N. Although this N rate increase was small relative to other sites, it represented a 183% increase over the 30 kg N ha^{-1} rate used in FP (Appendix B). This resulted in the largest decreases in PFP observed in the study, even though total N use was among the lowest. This points out a problem with the PFP calculation. When FP rates are very low, even modest increases in N rate can result in large reductions in PFP, given the way it is calculated.

The PFP in the remaining 7 site-years were associated with either no yield increases with EI or yield reductions (Table 5). In 6 site-years, corn grain yields of the EI and FP treatments were the same, but higher N rates were used, again resulting in lower PFP. Finally, one site-year, the 2010 season at Celaya, Mexico, exhibited significantly lower grain yields for EI management even though the same rate of N was used as in FP management. The significant decrease in PFP resulted from the yield reduction.

Agronomic Efficiency (AE) of N

Agronomic efficiency measures the rate of change in maize yield per unit of N applied. It is higher when maize is more responsive to N fertilization, which typically occurs when soil supplies of N are lower and smaller N rates are applied. Because yield response follows the law of diminishing returns, higher N rates produce progressively less yield response and can therefore result in overall lower AE, even though final yield is higher. Agronomic efficiency is related to profitability of N fertilization. An AE greater than the N price:crop price ratio reflects a profitable use of N. The greater the AE is above this ratio, the greater the profitability of N use. Typically, in U.S. imperial units ($US per pound:US$ per bushel) this ratio stabilizes at 0.1 when long-term market conditions are considered. In equivalent S.I. units ($US per kg N:$US per kg grain DM) this ratio corresponds to 4.8. Therefore, when AE exceeds 4.8, the N application is generally considered profitable.

Data existed to calculate AE for 33 site-years. Across all site-years, the AE for EI averaged 19.0 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$ and ranged from 3.2 to 40.4 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$ (Appendix A). Profitable use of N was indicated for EI at 94% (31) of the site-years. For the FP management systems, AE averaged 19.7 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$ and ranged from 2.4 to 44.6 kg ha^{-1} grain DM increase (kg ha^{-1} N

applied)$^{-1}$. Profitable use of N in the FP systems existed in 88% (29) of the site-years.

Differences between treatment means of the EI and FP management systems are summarized in Figure 4. They ranged from -25.3 to 12.9 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$ and averaged -0.7 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$ (Table 1). Ecological intensification significantly improved AE in 3 site years, kept it the same as FP in 28 site-years, and significantly lowered it in 2 site-years.

We first examine the 3 site-years where EI improved AE of N (Table 2). Across these cases, the average AE for EI systems was 26.9 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$ and was 16.6 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$ for FP management practices, for an average improvement of 10.3 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$. The AE above 4.8 indicated N use was profitable. All of these cases occurred at the Gongzhuling site in China (2009-2011). At this site, the EI management system used 70 kg ha^{-1} less N than FP. Significant yield increases were also observed in 2009 and 2011 (883 and 1220 kg grain DM ha^{-1}, respectively). In 2010, EI did not significantly increase yield. The N rate reduction combined with similar or greater maize yields in the EI system are the factors responsible for increasing AE of N in these site-years.

Next, we look into the 28 site-years where EI did not alter the AE of N (Table 2). In 8 of these cases, EI significantly improved yield, specifically: Itiquira, Brazil (2010); Ranchi, India (2009-2011); Toluca, Mexico (2010 and 2011), and Novaya Tselina, Russia (2011 and 2012). Across these site-years, average yield of the EI systems was 6547 kg grain DM ha^{-1} compared to an average yield of 4682 kg grain DM ha^{-1} for FP systems. The EI systems in these 8 site-years successfully increased grain yield by an average of 1864 kg grain DM ha^{-1} without decreasing AE. In the remaining 20 cases, EI did not improve yield beyond that of FP. It is interesting to note that while the increase in AE were not statistically significant, in two site years (Novaya Tselina, 2012 and Site “a” in Buga, Colombia, 2011), the increases were large enough to make N applications profitable in EI where they were not under FP. One of these site-years, Novaya Tselina, 2012, also had one of the largest reductions in PFP in EI, although the associated N use transformed N applications from unprofitable to profitable.

Finally, EI reduced AE in 2 site-years. At these two locations, the AE of EI and FP averaged 18.8 and 27.5 kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$, respectively. At one site-year, Toluca, Mexico in 2009, EI significantly increased grain yield from 6246 to 6755 kg grain DM ha^{-1}. Conversely, EI significantly decreased grain yield from 15184 to 12546 kg grain DM ha^{-1} in the 2010 season at Celaya, Mexico. As discussed above, integrity of data are currently being investigated for this site.

Recovery Efficiency (RE) of N

Recovery efficiency increases when the total quantity of N taken up by the above-ground portion of the maize plant increases per unit of N applied. In recommendation algorithms, the rate of N to be applied is inversely related to RE. Therefore, RE values less than 1.00 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ indicate that more than 1 kg N ha^{-1} needs to be applied to increase maize uptake by 1 kg N ha^{-1}. Conversely, values greater than 1.00 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ indicate that less than 1 kg N ha^{-1} needs to be applied to increase total maize N uptake by 1 kg N ha^{-1}. This latter scenario can result from N applications leading to increases in the N supplying power of the soil. Such increases can result from the "priming effect," where N applications result in increased quantities of N mineralized from organic matter (Jenkinson et al., 1985). In his original theory for making N recommendations for maize, Stanford (1973) suggested a range of 0.5 to 0.7 be used for RE. An estimate of average RE for maize in the North Central U.S. is 0.37 ± 0.30 (±1 standard deviation; Cassman et al., 2002), and averaged across several regions globally is 0.65 ± 0.03 (± standard error; Ladha et al., 2005).

Data existed to calculate RE for 19 site-years. Across all of them, RE in the EI management systems averaged 0.62 and ranged from 0.18 to 1.26 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ (Appendix A). For the FP systems, RE averaged 0.69 and ranged from 0.14 to 1.32 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$. These averages are close to those reported by Ladha et al. (2005). The average difference in RE between the EI and FP treatments was -0.07 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ (Table 1). The range in differences was -0.54 to 0.26 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ (Figure 5). Of the 19 site-years considered, EI significantly increased RE in one, maintained RE in 16, and significantly decreased RE in two (Table 1).

In the single site year where EI increased RE (Table 2), the DM grain yield of the EI management system was the same as that of the FP system (the 2011 season at Ames, Iowa, USA). The RE of 0.96 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ at this site was a 0.26 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ over the FP management system. Maintenance of yield was achieved with 27 kg ha^{-1} less N in the EI system – a reduction of 17%.

Of the 16 site-years where EI and FP had similar RE, EI significantly increased yields at three and maintained yields at 13. At the three site-years where EI increased yields, increases in N in the EI management systems were as follows: 33% more N at Itiquira, Brazil (2010); 66% more N at Toluca, Mexico (2009); and 183% more N at Novaya Tselina, Russia (2012). Across these three sites, yield increases averaged 522 kg grain DM ha^{-1} and ranged from 494 to 564 kg grain DM ha^{-1}. In the remaining 13 site-years, N rates in the EI treatment decreased in 2 cases, stayed the same in 4, and increased in 7.

In two site-years, EI significantly reduced RE (Table 2). In one case (Novaya Tselina, Russia, 2011), EI significantly increased yield by 555 kg grain DM ha^{-1} (8.1%) using 85 kg N ha^{-1}, which was a 183% increase over the 30 kg N ha^{-1} used in FP. The small increase in yield compared to the relatively large increase in N reduced RE by 0.54 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$ and produced an average RE for the EI management system of 0.29 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$. In the second case (Celaya, Mexico, 2010), EI significantly reduced yield -2638 kg grain DM ha^{-1} and RE by -0.17 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$. The average RE of the EI system at this location in 2010 was 0.48 kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$. At Celaya, the N rates in EI and FP were the same but high (300 kg N ha^{-1}).

Partial Nutrient Balance (PNB)

Increases in PNB occur when the quantity of nutrients removed with grain harvest increases relative to the quantity of nutrients applied or when lower rates of nutrients are used with only minimal impact on grain nutrient uptake. When PNB equals one, the quantity removed equals the quantity applied. Partial nutrient balance values less than one indicate that grain harvest removes lower amounts of nutrients than were applied. For immobile nutrients like P and K, lower PNB values indicate increases in soil fertility, provided nutrient losses are not a significant factor, for example where good erosion control practices are in place. Partial nutrient balance values greater than one result when the quantities of nutrients removed with grain harvest are greater than nutrient application rates. Again for immobile nutrients, such PNB values indicate a reduction in soil fertility. Evaluating PNB for N is less clear. Science-based recommendations represent a wide range in PNB. The goal of N recommendations is not to have a PNB for N of one; instead, the goal is to recommend an economically optimum rate of N. The resulting PNB is only coincidental. Economically optimum rates represent a range in PNB that extends both below and above one, depending on the indigenous N supply, the degree of maize yield response, and the rate at which that response occurs. For instance, higher yielding sites that are very responsive to N additions can have N PNBs that are much less than one. Conversely, higher yielding sites with larger indigenous N supplies that are only slightly to moderately responsive to N may have PNBs that are much greater than one.

Partial Nutrient Balance of N. Data needed to calculate PNB of N were reported in 35 site-years. The PNB across all of these cases averaged 0.81 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$ and ranged from 0.25 to 2.63 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$ for EI. For FP, PNB averaged 1.03 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$ and ranged from 0.31 to 4.09 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$ (Appendix A). Across all site years, differences between EI and FP ranged from -2.41 to 0.21 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$ (Figure 6), with an average difference of -0.22 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$

(Table 1). Ecological intensification significantly increased PNB in 5 site-years, maintained PNB in 16 site-years, and significantly decreased PNB in 14 site-years. We examine each of these outcomes.

Across the 5 site-years where EI significantly increased PNB above FP, the average increase was 0.15 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$ and ranged from 0.06 to 0.21 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$. The causes of the PNB increase differed among the 5 site-years. In three of them (Gongzhuling, China 2009 and 2010; Shijiazhuang, China, 2010) grain uptake under EI management practices decreased, but nitrogen use decreased much more (Table 7). At one of these sites, Gongzhuling, China (2009), EI produced significantly more grain yield than FP. At one site-year (Ames, Iowa, 2011), EI management produced slightly greater grain N uptake but used nearly 17% less N. In the remaining site (Darwad, India, 2009) EI management used 56.5% more N but increased grain N uptake by nearly 1.5 times that amount (83.7%).

Among the 16 site-years where the PNB of N was similar for both EI and FP management approaches, there were 4 (Table 8) where EI produced significantly higher grain yields than FP (Gongzhuling, China, 2011; Ranchi, India, 2011; Balcarce, Argentina, 2009; and Oro Verde, Argentina, 2009). At all 4 of them, grain N uptake and N rate changed in the same direction under EI management. Such changes also occurred in 8 of the 12 remaining site-years where EI and FP grain yields were not statistically different (Table 8).

There were 14 cases where EI significantly reduced the PNB of N compared to FP (Table 9). The average decrease in PNB of N was -0.58 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$. In 8 of the 14 site-years, EI significantly increased grain yield an average of 1568 kg grain DM ha^{-1}. Across these 8 sites, EI reduced PNB of N by an average of -0.85 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$. For all cases, both grain N uptake and N application rates increased, but the change in N rate was greater than the change in N uptake, resulting in lower PNB of N. The sites where these changes occurred were: Itiquira, Brazil (2010); Ranchi, India (2009, 2010); Balcarce, Argentina (2010); Oro Verde, Argentina (2010); Toluca, Mexico (2009); and Novaya Tselina, Russia (2011, 2012). Ecological intensification resulted in a significant yield reduction (-2638 kg grain DM ha^{-1}) at one site (Celaya, Mexico, 2010). The accompanying reduction in grain N uptake was the sole cause of the significant reduction in PNB, since N rate did not change between EI and FP (Table 9). Finally, in the remaining five site-years, EI resulted in lower PNB of N but had no effect upon maize grain yield. In four of these cases, both grain N uptake and N rate increased with EI, but the increases in the amounts of N were greater. In one case (Itiquira, Brazil, 2012), grain N uptake decreased under EI even though more N was applied.

Partial Nutrient Balance of P. A total of 29 site-years of data were available for calculating PNB of P. One site (Oro Verde, Argentina) did not use P in the EI management system and was not included in this evaluation (Appendix B).

Phosphorus PNB in EI management systems averaged 0.68 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$ and ranged from 0.29 to 1.65 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1.}$ The average of the FP management systems was 1.11 and ranged from 0.24 to 5.23 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$ (Appendix A). The average difference between EI and FP was -0.43 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$ (Table 1) and ranged from -4.75 to 0.40 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$ (Figure 7). Ecological intensification increased PNB in 5 site-years, maintained it in 15, and significantly decreased it in 9.

In all 5 cases where EI significantly increased PNB of P, lower rates of P were applied (Table 10), and all cases came from the two sites in China (Gongzhuling and Shijiazaung). Differentiating sites where significant grain yield increases were observed did not provide any additional information. Increases in PNB resulted from reductions in P rates that were comparatively greater than changes in grain P uptake. Across the 5 site-years, the PNB in EI and FP management averaged 0.62 and 0.32 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$, respectively. Comparing these values to the metrics mentioned above, both EI and FP systems are building P soil fertility, assuming all of the P applied was intended for only the maize crop; however, EI is reducing the rate of this increase.

In the 15 site-years where EI maintained P PNB relative to FP, EI management used either the same (10 site-years) or higher (5 site-years) rates of P (Table 11). Where P rates remained unchanged, changes in PNB were attributable solely to changes that EI management made to grain P uptake. Where higher P rates were used in EI practices, grain P also increased, but relative increases were similar enough between P rate and grain P uptake that PNB did not change significantly. Average PNBs for the EI and FP systems were 0.75 and 0.84 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$, respectively, indicating that both systems are building P fertility and that EI is doing so slightly more rapidly.

In the 9 site-years where EI significantly reduced PNB of P, EI averaged 0.60 g P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$ and ranged from 0.40 to 0.99 g P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$. The PNB of FP averaged 2.0 g P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$ and ranged from 0.84 to 5.23 g P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$. Compared to FP, the average decrease in PNB with EI management was -1.4 g P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$ and ranged from -0.84 to -5.23 g P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$. In all cases, P rates in EI were higher, ranging from 0.75 to 17 times as much P as was applied in FP (Table 12). These rate changes were much higher relative to changes in grain P uptake, resulting in significantly lower PNB. In all cases where decreased PNB was accompanied by significant increases in grain yield (6 site-years), increases in P rate resulted in increases in grain P uptake. In the 3 cases where grain yield remained the same with EI, changes in grain P uptake were smaller, and in two of those site-years (Buga, Colombia, Site “a,” 2011 and Site

“b,” 2010), EI reduced grain P uptake. In 6 site-years (21% of the 29 total cases), the building of fertility in EI was a statistically significant reversal of the FP approach that was drawing down fertility.

Partial Nutrient Balance of K. Data necessary to calculate PNB of K were reported in 24 site-years. Sites not using K in EI and/or FP management systems were: Shijiazhuang, China (FP); Balcarce and Oro Verde, Argentina (EI and FP); Novaya Tselina, Russia(FP); and Wote, Africa (FP) (Appendix B). Consequently, comparisons between EI and FP could not be made for them. Across the site-years included, the range in PNB in the EI management systems was 0.15 to 1.23 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$ and averaged 0.46 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$. For FP, the range was 0.13 to 5.16 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$ and averaged 1.01 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$. Differences between EI and FP averaged -0.55 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$ (Table 1) and ranged from -4.85 to 0.11 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$ (Figure 8). Ecological intensification systems significantly increased PNB in 2 site-years, maintained it in 10, and significantly decreased it in 12.

Both site-years where EI significantly increased PNB of K came from the Gongzhuling site in China (Table 13) where less K was applied (-10.0%). The average reduction in PNB across these two years was -0.04 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$. The PNBs of EI and FP averaged 0.32 and 0.28 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$, respectively. Too few site-years existed to determine characteristics of sites where significant grain yield increases accompanied increases in PNB.

Examination of the 10 site-years where EI did not change PNB of K (Table 14) revealed that at 7 site-years, EI and FP approaches used the same rates of K. In those cases, changes in PNB mirrored changes in grain K uptake. At 2 sites (Buga, Colombia Site “a,” 2010 and Site “b,” 2011), EI increased grain K uptake but relatively more K was applied, maintaining PNB. Finally, at Gongzhuling, China in 2009, grain K uptake increased and less K was applied, but the increase in PNB was not statistically significant. Partitioning sites according to the statistical significance of changes in grain yield did not provide additional information. The PNBs of EI and FP averaged 0.61 and 0.63 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$, respectively.

There were 12 site-years where EI significantly reduced PNB of K (Table 15). The average reduction was -1.09 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$. EI averaged 0.36 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$ and FP averaged 1.46 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$. In 10 of these cases, EI management systems used much higher K rates than FP, ranging from 50 to 3233% more (Ranchi, India, 2009-2011; Darwad, India, 2009-2011; Toluca, Mexico, 2009; Buga, Colombia, Site “a”, 2011,2012; Buga, Colombia, Site “b”, 2010). In the remaining 2 cases (Itiquira, Brazil, 2012 and Ponta Grossa, Brazil,

2012), EI used the same rates of K as FP, so changes in PNB were solely due to reductions in grain K uptake under EI management. In 4 cases (17% of the total 24 site-years), the statistically significant reductions in PNB with EI represented a shift away from FP management practices that were reducing K soil fertility.

Objective 3: Evaluating the Ability of the Hybrid Maize Model to Predict Yield Potential

Sufficient management practice and weather data existed in 32 site-years to simulate either maize grain and/or stover yields for EI using the Hybrid Maize model. For FP, 34 site-years of data existed. Observed yields were compared to simulated yields using the ratio: observed/simulated. When this ratio was 0.8 to 1.1, observed and simulated yields were considered acceptably close and the Hybrid Maize model was determined to have accurately modeled potential yield. When the ratio was less than 0.8, several possible interpretations existed: management may have been sub-optimal; growing season conditions may have existed that Hybrid Maize could not account for in its algorithms; and key growth stages may have been inaccurately estimated by the researchers. The latter two conditions were also considered possibilities when the ratio exceeded 1.1. Ratios were calculated for 1) EI grain yield, 2) EI stover yield, 3) FP grain yield, and 4) FP stover yield. In each case, potential yield was calculated separately for EI and FP, based on the management practices used in each system.

Interpretation of Hybrid Maize results is just beginning, but a few observations can be made to date. Considering results for EI grain yield (Figure 9), 14 site-years had ratios < 0.8, 14 were within 0.8 to 1.1, and 4 were greater than 1.1. For FP (Figure 10), the distribution of site-years among the categories of ratios was: 20 below 0.8; 10 between 0.8 to 1.1; and 4 that were greater than 1.1.

Similar comparisons between EI and FP existed for maize stover yields. For EI, 13 site-years had ratios below 0.8, 9 were within 0.8 to 1.1, and 10 exceeded 1.1 (Figure 11). For FP, 15 site-years were below 0.8, 9 were between 0.8 and 1.1, and 8 exceeded 1.1 (Figure 12).

Of interest was whether or not categorization of observed/simulated ratios for grain and stover were the same at each site-year. To investigate this question, we looked at 9 combinations of categories that represented all possible combinations of the 3 ratio categories for grain and the 3 for stover (Table 16). These combinations were examined separately for EI and FP. In some cases, either grain or stover simulation data were missing, so the total number of site-years for this investigation is slightly lower for both EI and FP.

For EI, grain and stover simulation results were available for 30 site-years. There were 13 site-years where the observed/simulated ratio for grain was less than 0.8. In 7 of them, stover biomass yields were also less than 0.8 (Table 16). Four cases existed where stover ratios were between 0.8 and 1.1 and 2 cases had

ratios greater than 1.1. A total of 13 site-years had grain ratios within the 0.8 to 1.1 range, and of these, 4 also had stover ratios in that range; however 5 cases had stover ratios below 0.8 and 4 had ratios above 1.1. A total of 4 site-years had grain ratios greater than 1.1 and 3 of them also had stover ratios in that range. The remaining site had stover ratios between 0.8 and 1.1.

There were a total of 32 site-years available for a similar analysis of FP. Nineteen site-years had observed/simulated ratios for grain that were below 0.8. Of these, 10 had stover ratios that were also below 0.8, 5 had ratios between 0.8 and 1.1, and 4 had stover ratios above 1.1. Nine site-years had grain ratios between 0.8 and 1.1. Three of these also had stover ratios in that category. Five had stover ratios below 0.8 and there was one site-year with a stover ratio above 1.1. Finally, 4 site-years had observed/simulated ratios for grain above 1.1. Three of them also had stover ratios in that category, and one had a stover ratio in the 0.8 to 1.1 range.

The investigation above demonstrates that observed/simulated ratios for grain and stover do not always fall in the same categories. It is anticipated that an examination of these relationships in the future will provide insights into the ability of the Hybrid Maize model to predict maize development, both grain and vegetative fractions, across a wide variety of growing conditions.

Finally, we investigated the relationship between the grain yield differences (EI – FP) and observed/simulated grain yield ratios. A total of 32 site-years provided enough data to make these comparisons. In none of these cases did EI produce significantly lower yields than FP.

We first examine the 12 site-years where EI significantly increased grain DM yield (Table 17). In 3 of them, both EI and FP had observed/simulated grain ratios between 0.8 and 1.1. In 2 cases, ratios for both EI and FP were greater than 1.1 and in 3 site-years, ratios for EI and FP were both less than 0.8. In 4 of the 12 site-years, ratios for EI were between 0.8 and 1.1 but those for FP were below 0.8.

Next, we look at the 20 site-years where EI and FP had similar grain DM yields (Table 17). In the majority of these cases (11 site-years) both observed/simulated grain yields were below 0.8 for both EI and FP. One possible interpretation is that the EI and FP systems are not optimized at these sites and may require changes in management approaches. In 7 of the 20 site-years, the observed/simulated grain ratio for EI fell between 0.8 and 1.1. Of these 7, 5 were in the same category for FP, leaving 2 where the ratio for FP was below 0.8. Finally, there were 2 site-years where observed/simulated grain ratios for EI exceeded 1.1. In one case, the ratio for FP also exceeded 1.1, and in the other, the ratio for FP was in the 0.8 to 1.1 range.

Being able to differentiate cases where management was sub-optimal from cases where model algorithms were not sufficient to model yields will require future, careful examination of weather data, evaluation of normal from abnormal growing conditions, accuracy of phenology data, and many other factors. The findings to date indicate that model results themselves will require careful interpretation to inform proper evaluations of management.

CONCLUSIONS

To date, the following conclusions are being drawn, based on the data that have been collected so far.

Objective 1: Creating a Network of Scientists Actively Researching Improved Nutrient Management Practices for Maize

Cooperators in the GMP were surveyed and asked to provide feedback on benefits they were seeing by being part of the GMP. Three key findings were:

- Concepts of EI are serving as examples for researchers working with other crops, like rice, sunflower, cotton, sugarcane and wheat. For example, scientists at Darwad and Ranchi, India, initiated work on different agro-climatic conditions following the concepts used in the GMP at those locations.
- GMP is creating a database of information that leads to improvements in fertilizer recommendations. Three examples are: (1) revision of state recommendations in Darwad, India, (2) an increase from 2 to 3 in-season N applications because of the positive impacts seen in Darwad and Ranchi, India, and 3) in Africa, the Kenya Agricultural Research Institute is revising recommendations for maize.
- The project is serving to train students, crop consultants and farmers around the world. Field experiments in some regions are serving as teaching tools. Field days take place in most GMP experiment sites to transfer what is being learned to those who need the information to improve their farming practices. Students, both graduate and undergraduate, are involved in the project in many regions. Scientific work related to GMP will provide data for Master of Science theses and Ph.D. dissertations in different locations.

Objective 2: Using EI to Improve Yields while Minimizing Adverse Environmental Effects

Ecological intensification management systems around the world yielded, on average, 8021 kg of grain dry matter (DM) ha^{-1} and increased maize yield above FP by an average of 980 kg grain DM ha^{-1}. In 39% of the cases, these increases were statistically significant. In only 2% of the cases did EI significantly decrease yield.

There is currently no commonly accepted set of metrics for evaluating "acceptable standards for environmental quality" when configuring EI systems; however, higher nutrient use efficiency is often cited as a goal for increased sustainability of agricultural systems. We examined four different metrics of efficiency to see what information they provided about the nutrient management approaches used in the project.

Data for PFP came from 41 site-years. In 58% of the cases, EI management systems either maintained PFP or increased it; however, the overall average PFP of EI was lower than FP due primarily to large decreases at one research center. These decreases turned out to be an anomaly of the PFP calculation. The EI system at this research center used modest increases in N rate, but the current rates of N used by farmers were so low that even modest increases in N led to large reductions in PFP. In fact, the N rates used in EI at this site were among the lowest in the Global Maize project.

Agronomic efficiency data came from 33 site-years. In 9% of the cases, EI systems had significantly higher AE than FP; however, all of these cases occurred at one site where FP was using too much N. The EI system at that location reduced N rates but maintained or increased grain yield. It is worth noting that this site was the only one where significant increases in AE were observed and it is also the only site where EI used lower N rates than FP. When looking at all data from the project, EI systems typically used the same or higher rates of N but were able to maintain AE 85% of the time. In only 6% of the cases did the higher rates used in EI systems reduce AE. Profitable use of N occurred 94% of the time in EI systems and 88% of the time with FP.

Nineteen site-years were used to examine RE. In only one case did EI significantly increase RE compared to FP. This occurred because the EI system yielded the same as FP but used 17% less N. In the majority of the cases (84%), EI systems had the same RE as FP even though they tended to use higher rates of N. In 11% of the cases, EI significantly decreased FP, resulting from either yield decreases or disproportionately large increases in N rate in the EI systems. Averaged across all site-years, RE of both EI and FP systems were very close to global averages reported by others.

Partial nutrient balance was examined in 29 site-years for P and 24 site-years for K. In all cases, EI management used P and K rates that were high enough to build soil fertility. In 21% of the cases for P and 17% of the cases for K, this represented a significant shift away from EI practices that were reducing P and K fertility.

Objective 3: Evaluating the Ability of the Hybrid Maize Model to Predict Yield Potential

Sufficient management practice and weather data existed in 32 site-years to simulate either maize grain and/or stover yields for EI using the Hybrid Maize model. For FP, 34 site-years of data existed. Observed yields were compared to simulated yields. When yields were within 80 to 110% of the yield potential predicted by Hybrid Maize, both model performance and management practices were considered acceptable. For grain yield, acceptable performances occurred 44% of the time in EI systems and 29% of the time in FP systems. For stover yield, acceptable performances occurred 28% of the time in both EI and FP systems. We are currently investigating cases where yields and simulations fell outside of this range. Possible causes for these deviations are: management may have been sub-optimal; growing season conditions may have existed that Hybrid Maize could not account for in its algorithms; and key growth stages may have been inaccurately estimated by the researchers. We may identify other causes as work continues.

REFERENCES

Cassman. 2013. Yield gap analysis – Rationale, methods and applications – Introduction to the Special Issue. Field Crops. Res. 1-3.

Cassman, K.G. 1999. Ecological intensification of cereal production systems: Yield potential, soil quality, and precision agriculture. Proc. Natl. Acad. Sci. 96:5952-5959.

Cassman, K.G., A. Dobermann, and D.T. Walters. 2002. Agrosystems, nitrogen-use efficiency, and nitrogen management. Ambio 31:132-140.

Dahnke, W.C. and R.A. Olson. 1990. Soil test correlation, calibration, and recommendation. p. 45-71. In R.L. Westerman (ed.) Soil testing and plant analysis. 3rd Ed. SSSA, Madison, WI.

FAO. 2012. World agriculture towards 2030/2050: The 2012 revision. Available at http://www.fao.org/docrep/016/ap106e/ap106e.pdf (verified 15 Mar. 2014).

Jenkinson, D.S., R.H. Fox, and J.H. Rayner. 1985. Interactions between fertilizer nitrogen and soil nitrogen – the so-called ‘priming’ effect. Eur. J. Soil Sci. 36:425-444.

Ladha, J.K., H. Pathak, T.J. Krupnick, J. Six, and C. van Kessel. 2005. Efficiency of fertilizer nitrogen in cereal production: Retrospects and prospects. Adv. Agron. 87:85-156.

NASA (National Aeronautics and Space Administration). 2014. NASA surface meteorology and solar energy: Daily averaged data. Available online at https://eosweb.larc.nasa.gov/cgi-bin/sse/daily.cgi?email=skip@larc.nasa.gov (verified 13 Mar. 2014).

R Core Team. 2013. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. Available online at www.R-project.org (verified 10 Mar. 2014).

Setiyono, T.D., H. Yang, D.T. Walters, A. Dobermann, R.B. Ferguson, D.F. Roberts, D.J. Lyon, D.E. Clay, and K.G. Cassman. 2011. Maize-N: A decision tool for nitrogen management in maize. Agron. J. 103:1276-1283.

Stanford, G. 1973. Rational for optimum nitrogen fertilization in corn production. J. Environ. Qual. 2:159-166.

Snyder, C.S. and T.W. Bruulsema. 2007. Nutrient use efficiency and effectiveness in North America: Indices of agronomic and environmental benefit. Pub. Ref. 07076. Int'l. Plant Nutr. Inst., Norcross, GA. Available online at http://www.ipni.net/ipniweb/portal.nsf/0/D58A3C2DECA9D7378525731E006066D5 (verified 10 Mar. 2014).

van Ittersum, M.K., K.G. Cassman, P. Grassini, J. Wolf, P. Tittonell, and Z. Hochman. 2013. Yield gap analysis with local to global relevance – A review. Field Crops. Res. 143:4-17.

Yang, H., A. Dobermann, K.G. Cassman, and D.T. Walters. 2006. Features, applications, and limitations of the Hybrid-Maize simulation model. Agron. J. 98:737-748.

Yang, H.S., A. Dobermann, J.L. Lindquist, D.T. Walters, T.J. Arkebauer, and K.G. Cassman. 2004. Hybrid-maize – a maize simulation model that combines two crop modeling approaches. Field Crops. Res. 87:131-154.

Table 1. Summary of statistical comparisons of ecological intensification to farmer practice.

Dependent variable	Units	Average difference across all site-years	*Number of site-years where: EI was significantly *greater than* FP	EI and FP were the same	EI was significantly *less than* FP
		(units specified)	---------- (count) ----------		
Dry matter (DM) grain yield	kg grain DM ha^{-1}	980	16	24	1
Partial factor productivity of N	kg ha^{-1} grain DM per kg ha^{-1} N applied	-10.7	7	16	17
Agronomic efficiency of N	kg ha^{-1} grain DM increase per kg ha^{-1} N applied	-0.7	3	28	2
Recovery efficiency of N	kg ha^{-1} increase in total N uptake per kg ha^{-1} N applied	-0.07	1	16	2
Partial nutrient balance of N	kg N ha^{-1} removed per kg N ha^{-1} applied	-0.22	5	16	14
Partial nutrient balance of P_2O_5	kg P_2O_5 ha^{-1} removed per kg P_2O_5 ha^{-1} applied	-0.43	5	15	9
Partial nutrient balance of K_2O	kg K_2O ha^{-1} removed per kg K_2O ha^{-1} applied	-0.55	2	10	12

*The difference between EI and FP for a given site-year was categorized as follows: not significant (p-value > 0.05); statistically significant (p-value ≤ 0.05).

Table 2. Number of site-years falling into various categories of statistical significance of 1) grain yield differences between the ecological intensification (EI) and farmer practice (FP) management systems and 2) differences between EI and FP management systems for three indices of nitrogen (N) efficiency.

*Number of site-years where dry matter grain yield of the EI treatment was:	*The N efficiency of EI was also: significantly higher than FP	the same as FP	significantly lower than FP
	---------- (number of site-years) ----------		
	Partial Factor Productivity of N		
significantly higher than FP	3	3	10
the same as FP	4	13	6
significantly lower than FP	0	0	1
	Agronomic Efficiency of N		
significantly higher than FP	2	8	1
the same as FP	1	20	0
significantly lower than FP	0	0	1
	Recovery Efficiency of N		
significantly higher than FP	0	3	1
the same as FP	1	13	0
significantly lower than FP	0	0	1

*The difference between EI and FP for a given site-year was categorized as follows:
not significant (p-value > 0.05);
statistically significant (p-value ≤ 0.05).

Table 3. Relative changes in DM grain yield, N rate, and partial factor productivity (PFP) of N for 7 site-years where ecological intensification (EI) resulted in significantly higher PFP.

Site	Country	Nearest City	Year	Relative change (FP basis)		
				DM grain yield	N rate	PFP
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
20	China	Gongzhuling	2009	13.7	-28.3	58.6
			2011	13.8	-28.3	58.7
25	Argentina	Oro Verde	2009	92.0	42.9	34.4
				EI grain yield the same as FP		
20	China	Gongzhuling	2010	-2.4	-28.3	36.1
21	China	Shijiazhuang	2010	-2.1	-40.0	63.2
26	USA	Ames, Iowa	2011	1.7	-16.7	22.0
			2012	-4.8	-14.0	10.8

Average PFP for EI was 65.1 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$
Average PFP for FP was 48.7 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$

Table 4. Relative changes in DM grain yield, N rate, and partial factor productivity (PFP) of N for the 16 site-years where ecological intensification (EI) and farmer practice (FP) had the same PFP.

Site	Country	Nearest City	Year	Relative change (FP basis)		
				DM grain yield	N rate	PFP
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
22	India	Ranchi	2011	205.8	239.6	-9.9
25	Argentina	Oro Verde	2010	60.5	57.1	2.1
29	Mexico	Toluca	2011	44.5	65.7	-12.8
				EI grain yield the same as FP		
19	Brazil	Ponta Grossa	2012	1.1	0.0	1.1
			2013	0.4	0.0	0.4
23	India	Darwad	2009	34.6	56.5	-14.0
			2010	23.7	56.5	-21.0
			2011	37.3	56.5	-12.3
24	Argentina	Balcarce	2011	31.9	20.0	9.9
25	Argentina	Oro Verde	2011	23.9	57.1	-21.2
28	Mexico	Celaya	2009	4.2	0.0	4.2
			2011	2.9	0.0	3.0
38a	Colombia	Buga	2010	42.9	33.3	7.2
			2012	19.8	33.3	-10.2
38b	Colombia	Buga	2011	10.3	33.3	-17.2
49	Kenya	Wote	2012	34.2	0.0	34.2

Average PFP for EI was 53.2 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$
Average PFP for FP was 54.4 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$

Table 5. Relative changes in DM grain yield, N rate, and partial factor productivity (PFP) of N for the 17 site-years where ecological intensification (EI) significantly reduced PFP.

Site	Country	Nearest City	Year	Relative change (FP basis)		
				DM grain yield	N rate	PFP
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
18	Brazil	Itiquira	2010	8.9	33.3	-18.4
22	India	Ranchi	2009	40.7	239.6	-58.6
			2010	118.9	239.6	-35.5
24	Argentina	Balcarce	2009	18.2	26.2	-6.3
			2010	24.7	55.8	-20.0
29	Mexico	Toluca	2009	8.1	65.7	-34.8
			2010	32.6	65.7	-20.0
41	Russia	Novaya Tselina	2011	8.1	183.3	-61.9
			2012	8.4	183.3	-61.7
45	USA	Virginia	2012	10.4	31.4	-16.2
				EI grain yield the same as FP		
18	Brazil	Itiquira	2011	2.3	33.3	-23.3
			2012	-7.0	33.3	-30.2
21	China	Shijiazhuang	2009	6.4	71.4	-38.0
27	USA	West Lafayette	2012	-3.3	32.5	-27.0
38a	Colombia	Buga	2011	10.5	33.3	-17.1
38b	Colombia	Buga	2010	-3.6	33.3	-27.7
				EI grain yield significantly lower than FP		
28	Mexico	Celaya	2010	-17.4	0.0	-17.4

Average PFP for EI was 61.5 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$
Average PFP for FP was 92.1 kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$

Table 6. Number of site-years falling into various categories of statistical significance of 1) grain yield differences between the ecological intensification (EI) and farmer practice (FP) management systems and 2) differences in partial nutrient balance between EI and FP management systems for nitrogen (N), phosphorus (expressed as P_2O_5), and potassium (expressed as K_2O).

	*The partial nutrient balance of EI was also:		
*Number of site-years where dry matter grain yield of the EI treatment was:	significantly higher than FP	the same as FP	significantly lower than FP
	---------- (number of site-years) ----------		
		N	
significantly higher than FP	1	4	8
the same as FP	4	12	5
significantly lower than FP	0	0	1
		P_2O_5	
significantly higher than FP	2	1	6
the same as FP	3	13	3
significantly lower than FP	0	1	0
		K_2O	
significantly higher than FP	1	2	4
the same as FP	1	7	8
significantly lower than FP	0	1	0

*The difference between EI and FP for a given site-year was categorized as follows:
not significant (p-value > 0.05);
statistically significant (p-value ≤ 0.05).

Table 7. Relative changes in grain uptake of nitrogen (N), N rate, and partial nutrient balance (PNB) of N for 5 site-years where ecological intensification (EI) resulted in significantly higher N PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	N rate	PNB
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
20	China	Gongzhuling	2009	-0.8	-28.3	38.4
				EI grain yield the same as FP		
20	China	Gongzhuling	2010	-0.6	-28.3	38.6
21	China	Shijiazhuang	2010	-19.3	-40.0	34.5
23	India	Darwad	2009	83.7	56.5	17.4
26	USA	Ames, Iowa	2011	2.0	-16.7	22.4

Average PNB for EI was 0.66 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$
Average PNB for FP was 0.51 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$

Table 8. Relative changes in grain uptake of nitrogen (N), N rate, and partial nutrient balance (PNB) of N for 16 site-years where ecological intensification (EI) maintained N PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	N rate	PNB
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
20	China	Gongzhuling	2011	-13.6	-28.3	20.6
22	India	Ranchi	2011	120.0	239.6	-35.3
24	Argentina	Balcarce	2009	20.2	26.2	-4.8
25	Argentina	Oro Verde	2009	52.8	42.9	7.0
				EI grain yield the same as FP		
18	Brazil	Itiquira	2011	11.8	33.3	-16.1
19	Brazil	Ponta Grossa	2012	7.5	0.0	7.5
			2013	-7.9	0.0	7.9
23	India	Darwad	2010	31.4	56.5	-16.1
			2011	23.8	56.5	-20.9
24	Argentina	Balcarce	2011	26.4	20.0	5.3
26	USA	Ames, Iowa	2012	0.7	-14.0	17.1
28	Mexico	Celaya	2009	1.3	0.0	1.5
			2011	-0.9	0.0	-0.9
38a	Colombia	Buga	2010	41.0	33.3	5.6
			2012	19.1	33.3	-10.7
38b	Colombia	Buga	2010	-25.7	33.3	-44.3

Average PNB for EI was 0.78 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$
Average PNB for FP was 0.80 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$

Table 9. Relative changes in grain uptake of nitrogen (N), N rate, and partial nutrient balance (PNB) of N for 14 site-years where ecological intensification (EI) significantly reduced N PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	N rate	PNB
				---------- (%) ----------		
			EI grain yield significantly higher than FP			
18	Brazil	Itiquira	2010	14.2	33.3	-14.3
22	India	Ranchi	2009	68.0	239.6	-50.5
			2010	192.1	239.6	-14.1
24	Argentina	Balcarce	2010	23.6	55.8	-20.7
25	Argentina	Oro Verde	2010	5.4	57.1	-32.9
29	Mexico	Toluca	2009	6.8	65.7	-35.5
41	Russia	Novaya Tselina	2011	23.7	183.3	-56.3
			2012	11.2	183.3	-60.8
			EI grain yield the same as FP			
18	Brazil	Itiquira	2012	-8.2	33.3	-31.1
21	China	Shijiazhuang	2009	13.9	71.4	-33.6
27	USA	West Lafayette, Indiana	2012	0.4	32.5	-24.2
38a	Colombia	Buga	2011	11.9	33.3	-16.1
38b	Colombia	Buga	2011	12.9	33.3	-15.4
					33.3	
			EI grain yield significantly lower than FP			
28	Mexico	Celaya	2010	-23.3	0.0	-23.3

Average PNB for EI was 0.91 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$
Average PNB for FP was 1.49 kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$

Table 10. Relative changes in grain uptake of phosphorus (P), P rate, and partial nutrient balance (PNB) of P for 5 site-years where ecological intensification (EI) resulted in significantly higher P PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	P rate	PNB
				---------- (%) ----------		
			EI grain yield significantly higher than FP			
20	China	Gongzhuling	2009	-3.1	-48.3	87.5
			2011	-6.2	-48.3	81.6
			EI grain yield the same as FP			
20	China	Gongzhuling	2010	-11.6	-48.3	71.2
21	China	Shijiazhuang	2009	7.7	-56.5	147.6
			2010	-10.1	-56.5	102.5

Average PNB for EI was 0.62 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$
Average PNB for FP was 0.32 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$

Table 11. Relative changes in grain uptake of phosphorus (P), P rate, and partial nutrient balance (PNB) of P for 15 site-years where ecological intensification (EI) maintained P PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	P rate	PNB
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
18	Brazil	Itiquira	2010	9.3	0.0	9.3
				EI grain yield the same as FP		
18	Brazil	Itiquira	2011	-7.6	0.0	-7.6
			2012	10.5	0.0	10.5
19	Brazil	Ponta Grossa	2012	-12.3	0.0	-12.4
			2013	-8.0	0.0	-8.1
23	India	Darwad	2009	26.4	73.1	-27.0
			2010	22.7	73.1	-29.1
			2011	14.1	73.1	-34.0
26	USA	Ames, Iowa	2011	9.0	0.0	9.2
27	USA	West Lafayette, Indiana	2012	-12.5	0.0	-12.5
28	Mexico	Celaya	2009	10.0	0.0	10.0
			2011	13.9	0.0	13.9
38a	Colombia	Buga	2010	31.4	95.7	-32.9
			2012	39.4	95.7	-28.8
				EI grain yield significantly higher than FP		
28	Mexico	Celaya	2010	-24.8	0.0	-24.7

Average PNB for EI was 0.75 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$
Average PNB for FP was 0.84 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$

Table 12. Relative changes in grain uptake of phosphorus (P), P rate, and partial nutrient balance (PNB) of P for the 9 site-years where ecological intensification (EI) significantly reduced P PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	P rate	PNB
				---------- (%) ----------		
			EI grain yield significantly higher than FP			
22	India	Ranchi	2009	64.4	1700.0	-90.9
			2010	118.4	1700.0	-87.9
			2011	172.0	1700.0	-84.9
29	Mexico	Toluca	2009	17.8	100.0	-41.1
41	Russia	Novaya Tselina	2011	28.6	75.0	-26.5
			2012	33.1	75.0	-24.0
			EI grain yield the same as FP			
38a	Colombia	Buga	2011	-12.4	95.7	-55.2
38b	Colombia	Buga	2010	-7.4	95.7	-52.8
			2011	7.2	95.7	-45.2

Average PNB for EI was 0.60 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$
Average PNB for FP was 2.00 kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$

Table 13. Relative changes in grain uptake of potassium (K), K rate, and partial nutrient balance (PNB) of K for 2 site-years where ecological intensification (EI) resulted in significantly higher K PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	K rate	PNB
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
20	China	Gongzhuling	2011	7.2	-10.0	19.3
				EI grain yield the same as FP		
20	China	Gongzhuling	2010	-2.4	-10.0	8.1

Average PNB for EI was 0.32 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$
Average PNB for FP was 0.28 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$

Table 14. Relative changes in grain uptake of potassium (K), K rate, and partial nutrient balance (PNB) of K for 10 site-years where ecological intensification (EI) maintained K PNB compared to farmer practice (FP).

				Relative change (FP basis)		
Site	Country	Nearest City	Year	Grain uptake	K rate	PNB
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
18	Brazil	Itiquira	2010	-4.7	0.0	-4.8
20	China	Gongzhuling	2009	5.8	-10.0	17.6
				EI grain yield the same as FP		
18	Brazil	Itiquira	2011	2.3	0.0	2.3
19	Brazil	Ponta Grossa	2013	-7.2	0.0	-7.3
26	USA	Ames, Iowa	2011	13.5	0.0	13.5
28	Mexico	Celaya	2009	16.0	0.0	16.0
			2011	1.5	0.0	1.5
38a	Colombia	Buga	2010	23.1	50.0	-17.7
38b	Colombia	Buga	2011	12.9	50.0	-24.7
				EI grain yield significantly higher than FP		
28	Mexico	Celaya	2010	-8.2	0.0	-8.2

Average PNB for EI was 0.61 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$
Average PNB for FP was 0.63 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$

Table 15. Relative changes in grain uptake of potassium (K), K rate, and partial nutrient balance (PNB) of K for the 12 site-years where ecological intensification (EI) significantly reduced K PNB compared to farmer practice (FP).

Site	Country	Nearest City	Year	Relative change (FP basis)		
				Grain uptake	K rate	PNB
				---------- (%) ----------		
				EI grain yield significantly higher than FP		
22	India	Ranchi	2009	61.5	3233.0	-95.1
			2010	103.8	3233.0	-93.9
			2011	196.0	3233.0	-91.1
29	Mexico	Toluca	2009	16.3	100.0	-41.9
				EI grain yield the same as FP		
18	Brazil	Itiquira	2012	-17.7	0.0	-17.7
19	Brazil	Ponta Grossa	2012	-37.0	0.0	-37.1
23	India	Darwad	2009	48.1	122.2	-33.3
			2010	26.6	122.2	-42.9
			2011	21.2	122.2	-45.5
38a	Colombia	Buga	2011	-4.6	50.0	-36.4
			2012	5.8	50.0	-29.6
38b	Colombia	Buga	2010	-16.6	50.0	-44.3

Average PNB for EI was 0.36 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$
Average PNB for FP was 1.46 kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$

Table 16. Number of site-years falling into various categories of ratios of observed to simulated 1) grain yields and 2) stover yields for ecological intensification (EI) and farmer practice (FP) management systems.

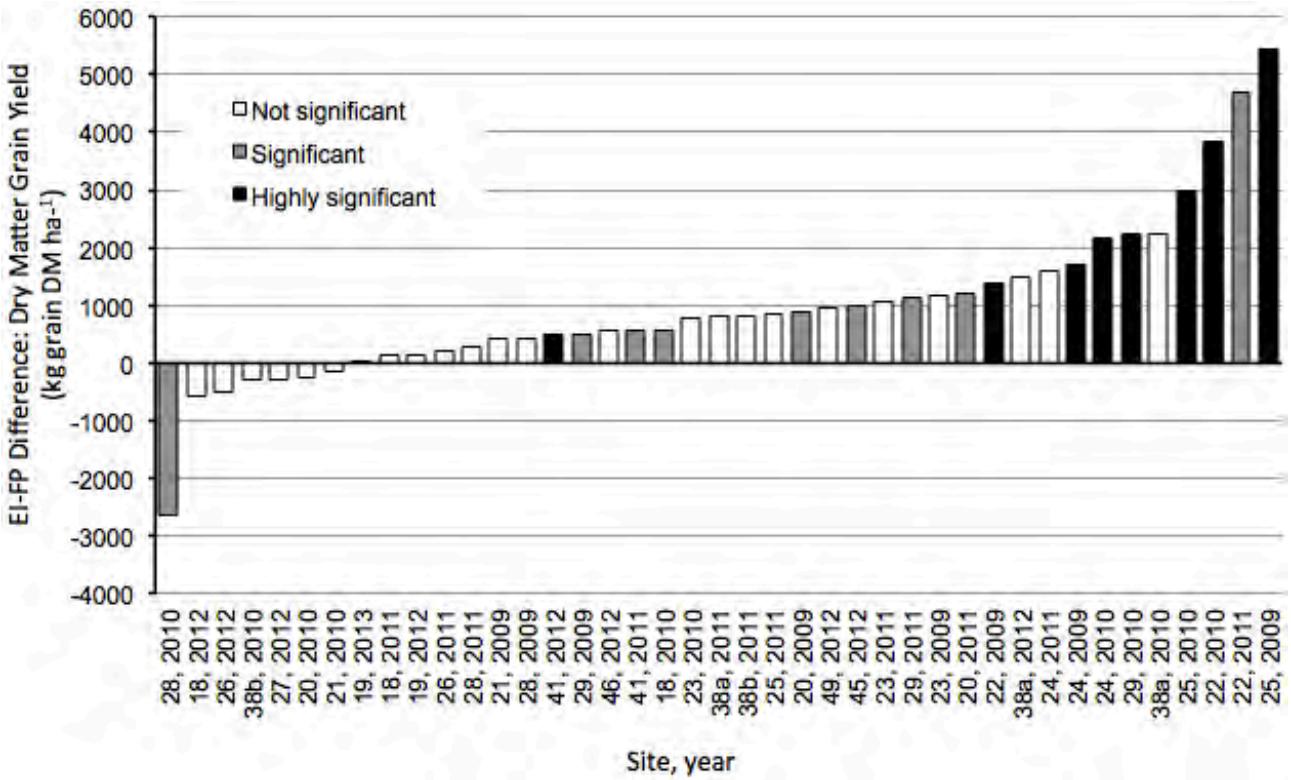
*The ratio of observed to simulated grain yield was:	*The ratio of observed to simulated stover yield was: less than 0.8	0.8 to 1.1	greater than 1.1
	---------- (number of site-years) ----------		
		FP	
less than 0.8	10	5	4
0.8 to 1.1	5	3	1
greater than 1.1	0	1	3
		EI	
less than 0.8	7	4	2
0.8 to 1.1	5	4	4
greater than 1.1	0	1	3

Table 17. Number of site-years falling into various categories of statistical significance of grain yield differences between the ecological intensification (EI) and farmer practice (FP) management systems, and categories of ratios of observed to simulated grain yields for EI and FP management systems.

*The ratio of observed to simulated grain yield for EI was:	*The ratio of observed to simulated grain yield for FP was: less than 0.8	0.8 to 1.1	greater than 1.1
	---------- (number of site-years) ----------		
	EI significantly higher than FP		
less than 0.8	3	0	0
0.8 to 1.1	4	3	0
greater than 1.1	0	0	2
	EI the same as FP		
less than 0.8	11	0	0
0.8 to 1.1	2	5	0
greater than 1.1	0	1	1

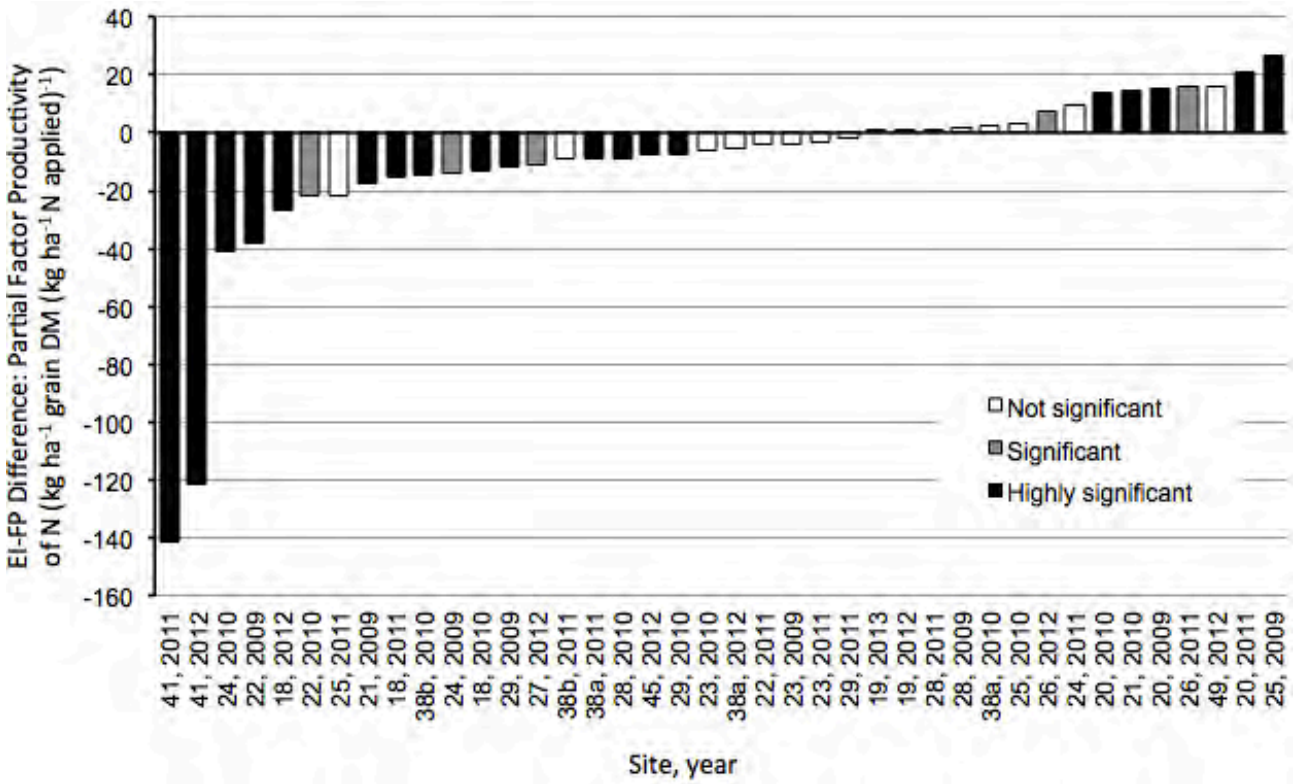
*The difference between EI and FP for a given site-year was categorized as follows:
not significant (p-value > 0.05);
statistically significant (p-value ≤ 0.05).

Figure 1. Locations of all 20 Global Maize sites (the 2 sites in Buga, Colombia appear as one dot).



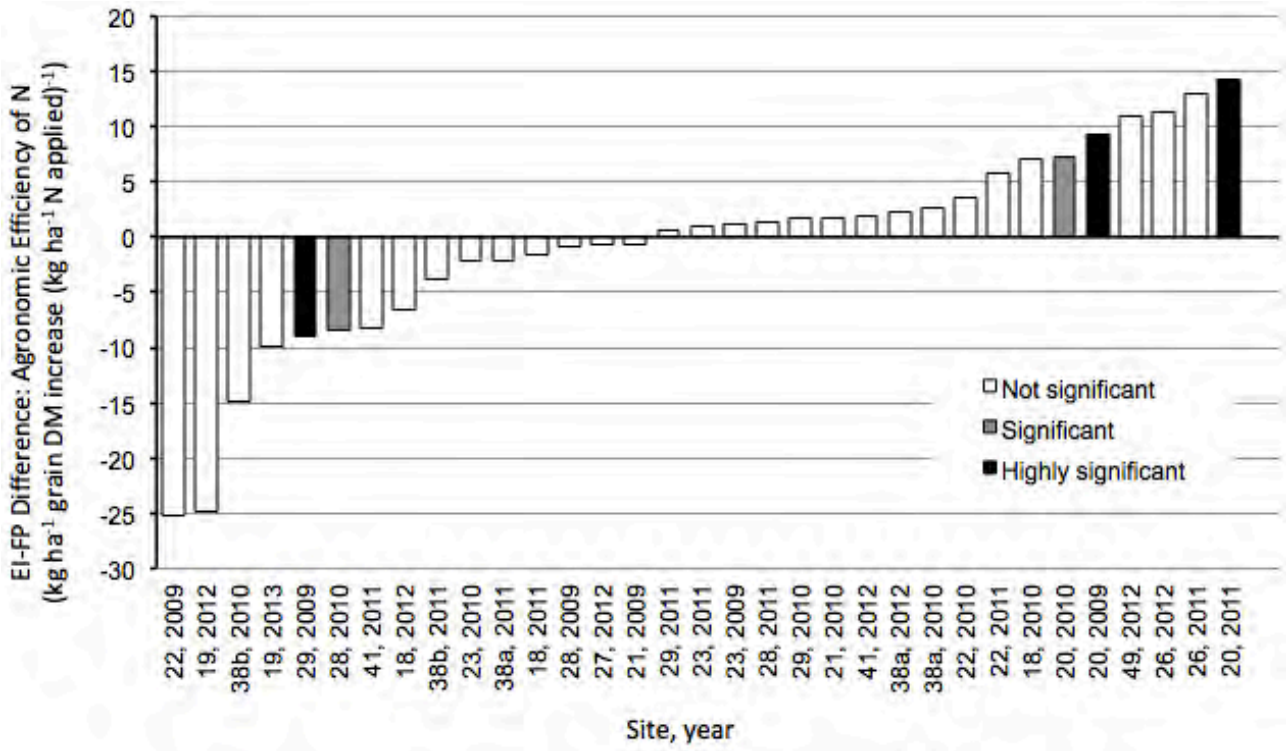
Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 2. Difference between ecological intensification (EI) and farmer practice (FP) for dry matter grain yield (kg grain DM ha^{-1}). Statistical significance was categorized as follows: not significant (p-value > 0.05); significant (0.01 < p-value ≤ 0.05); and highly significant (p-value ≤ 0.01).



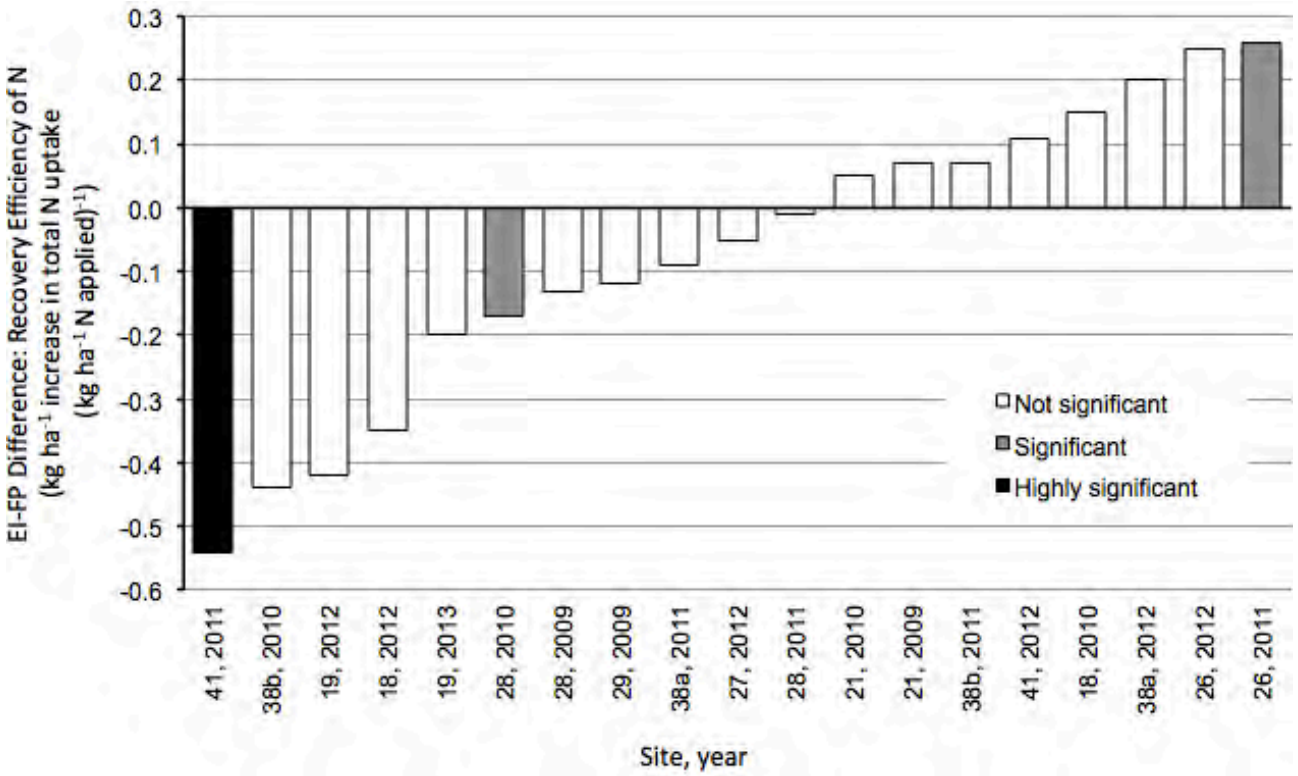
Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 3. Difference between ecological intensification (EI) and farmer practice (FP) for partial factor productivity of N (kg ha^{-1} grain DM (kg ha^{-1} N applied)$^{-1}$). Statistical significance was categorized as follows: not significant (p-value > 0.05); significant (0.01 < p-value ≤ 0.05); and highly significant (p-value ≤ 0.01).



Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 4. Difference between ecological intensification (EI) and farmer practice (FP) for agronomic efficiency of N (kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$). Statistical significance was categorized as follows: not significant (p-value > 0.05); significant (0.01 < p-value ≤ 0.05); and highly significant (p-value ≤ 0.01).



Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
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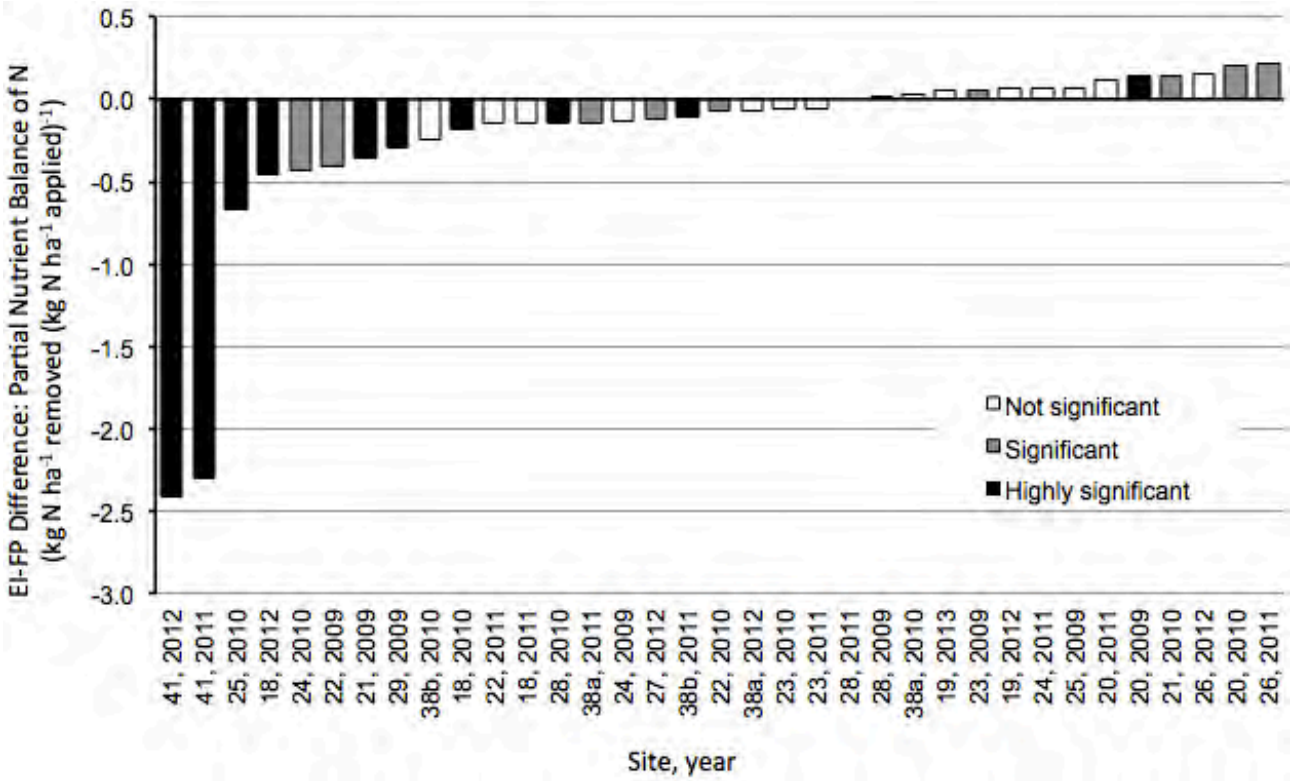
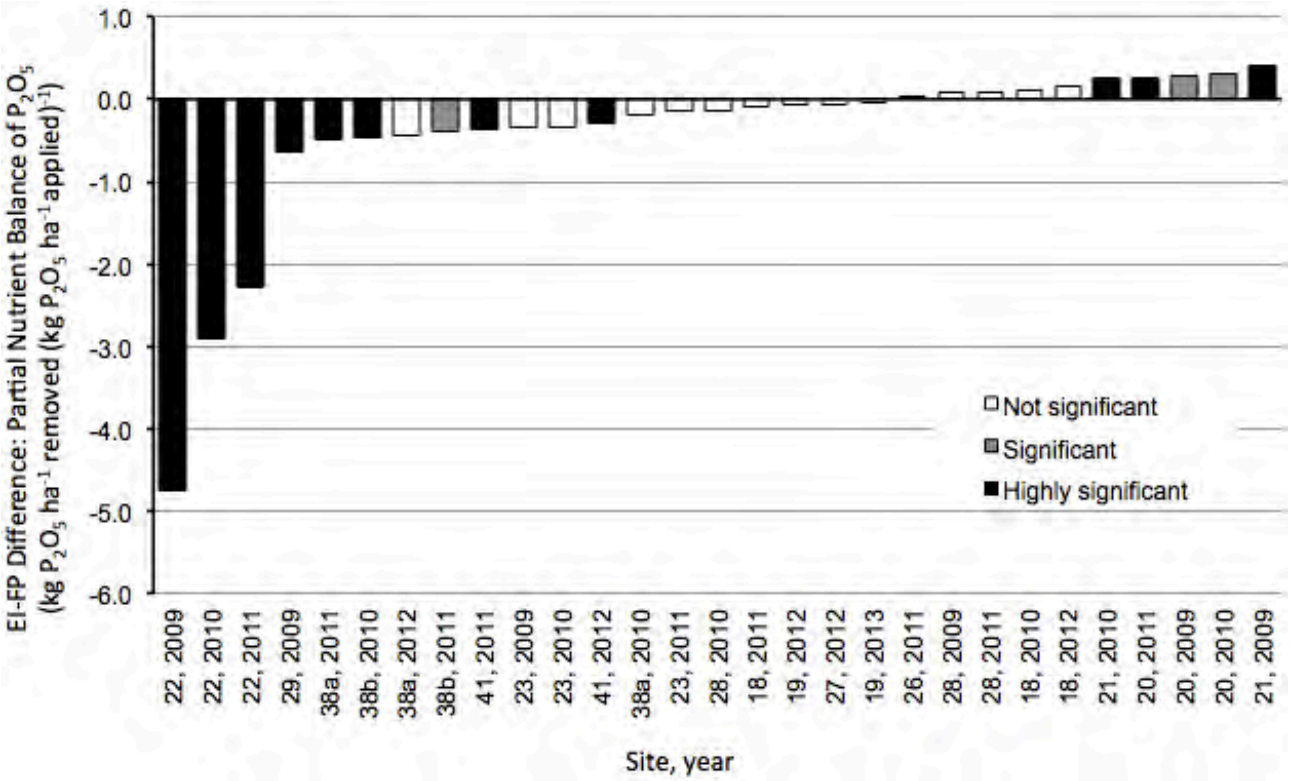
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 5. Difference between ecological intensification (EI) and farmer practice (FP) for recovery efficiency of N (kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$). Statistical significance was categorized as follows: not significant (p-value > 0.05); significant (0.01 < p-value ≤ 0.05); and highly significant (p-value ≤ 0.01).



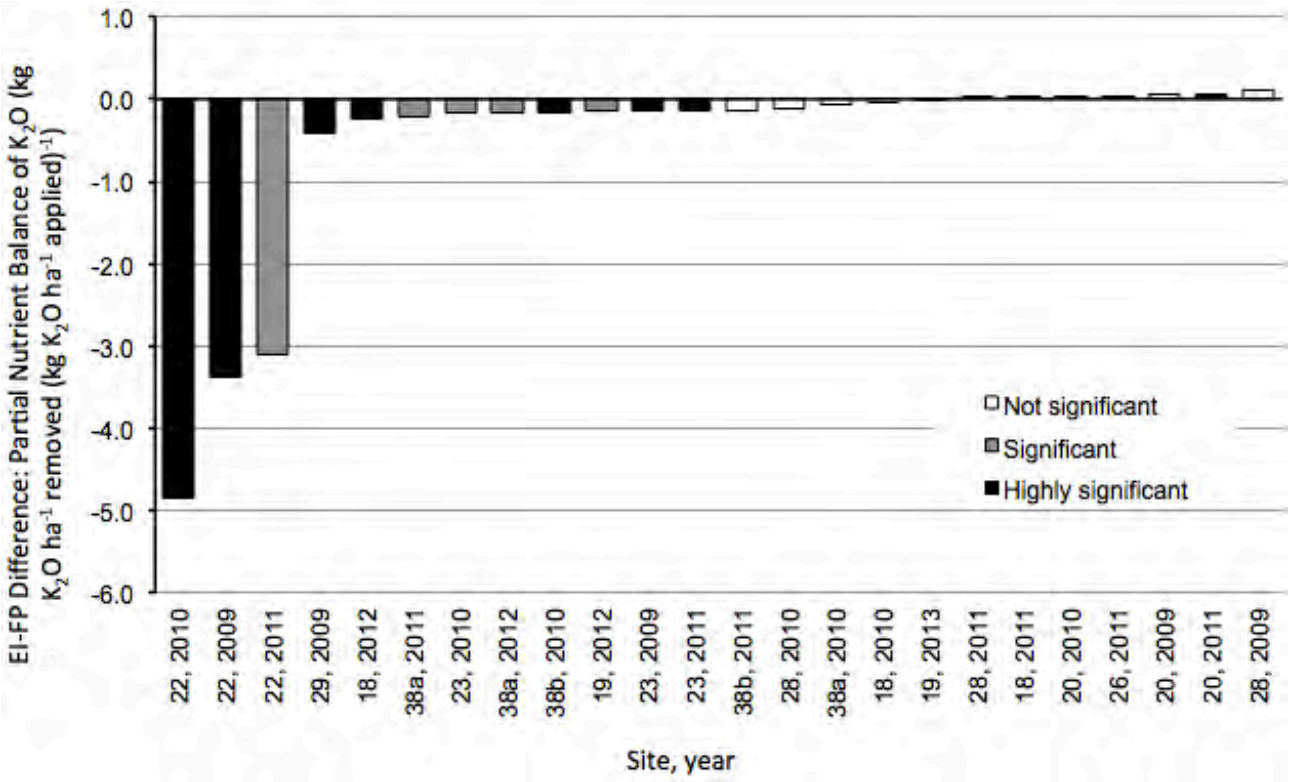
Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 6. Difference between ecological intensification (EI) and farmer practice (FP) for partial nutrient balance of N (kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$). Statistical significance was categorized as follows: not significant (p-value > 0.05); significant (0.01 < p-value ≤ 0.05); and highly significant (p-value ≤ 0.01).



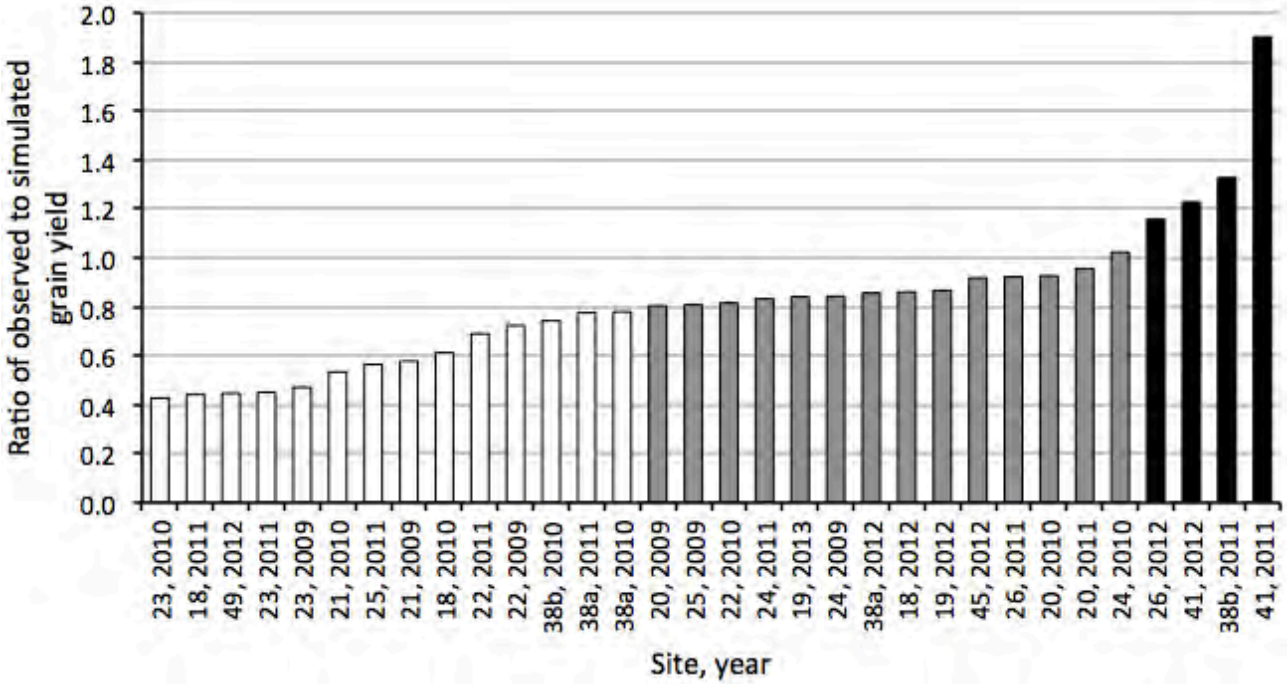
Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 7. Difference between ecological intensification (EI) and farmer practice (FP) for partial nutrient balance of P_2O_5 (kg P_2O_5 ha^{-1} removed (kg P_2O_5 ha^{-1} applied)$^{-1}$). Statistical significance was categorized as follows: not significant (p-value > 0.05); significant (0.01 < p-value ≤ 0.05); and highly significant (p-value ≤ 0.01).



Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 8. Difference between ecological intensification (EI) and farmer practice (FP) for partial nutrient balance of K_2O (kg K_2O ha^{-1} removed (kg K_2O ha^{-1} applied)$^{-1}$). Statistical significance was categorized as follows: not significant (p-value > 0.05); significant (0.01 < p-value ≤ 0.05); and highly significant (p-value ≤ 0.01).



Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
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25	Argentina	Oro Verde
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27	USA	West Lafayette
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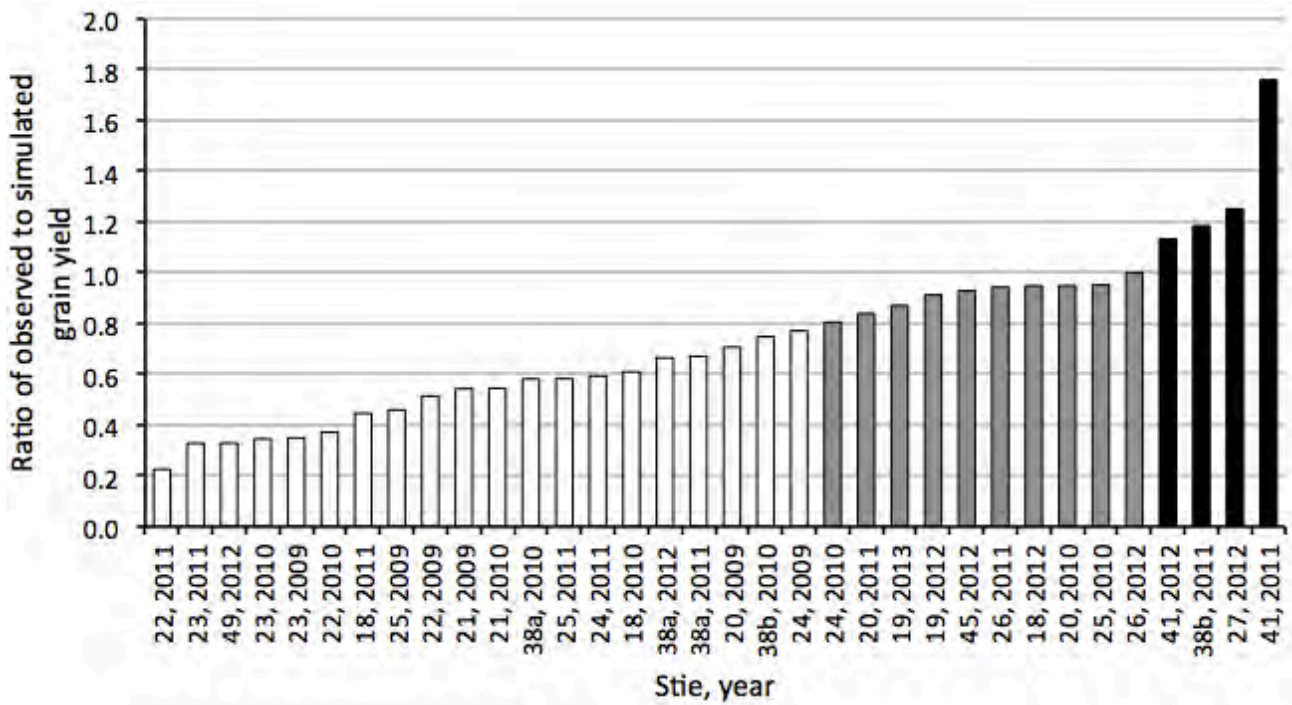
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 9. Ratio of observed to simulated grain yields (ratio) for the ecological intensification (EI) management systems. The colors of the bars denote the following categories of ratios:
white: ratio < 0.8 – sub-optimal management and/or poor growing conditions;
gray: 0.8 ≤ ratio ≤ 1.1 – optimal management and good growing conditions;
black: ratio > 1.1 – extreme conditions where simulations are not well calibrated, or unrepresentative weather data, or inexact crop development data.



Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
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41	Russia	Novaya Tselina
45	USA	Virginia
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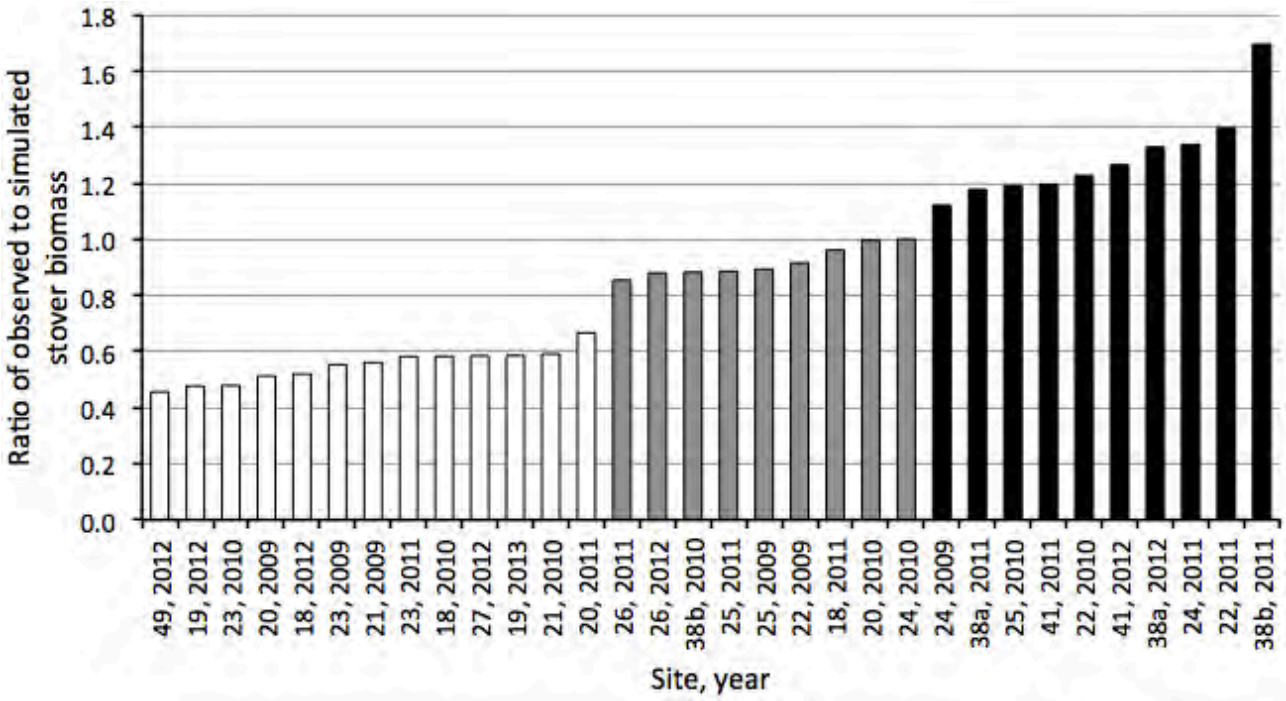
49	Kenya	Wote

Figure 10. Ratio of observed to simulated grain yields (ratio) for the farmer practice (FP) management systems. The colors of the bars denote the following categories of ratios:
white: ratio < 0.8 – sub-optimal management and/or poor growing conditions;
gray: 0.8 ≤ ratio ≤ 1.1 – optimal management and good growing conditions;
black: ratio > 1.1 – extreme conditions where simulations are not well calibrated, or unrepresentative weather data, or inexact crop development data.



Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
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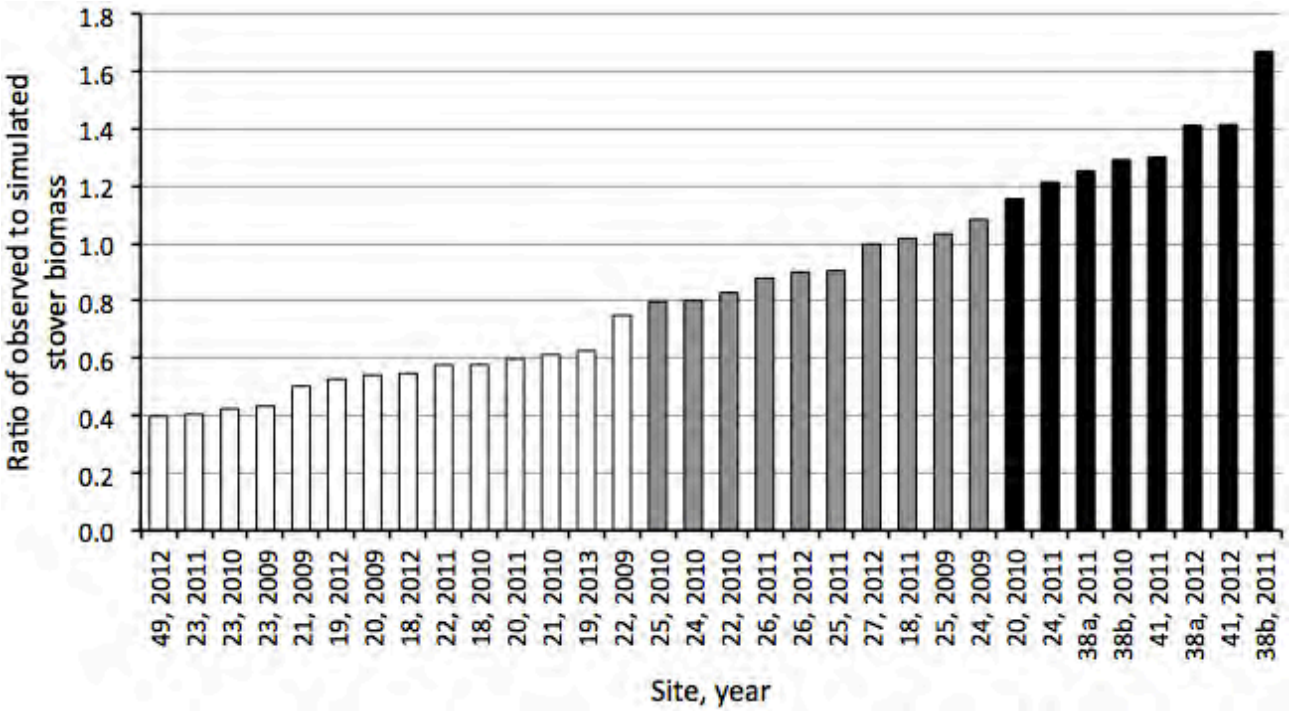
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 11. Ratio of observed to simulated stover biomass (ratio) for the ecological intensification (EI) management systems. The colors of the bars denote the following categories of ratios:
white: ratio < 0.8 – sub-optimal management and/or poor growing conditions;
gray: 0.8 ≤ ratio ≤ 1.1 – optimal management and good growing conditions;
black: ratio > 1.1 – extreme conditions where simulations are not well calibrated, or unrepresentative weather data, or inexact crop development data.



Site	Country	Nearest city or State
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames
27	USA	West Lafayette
28	Mexico	Celaya
29	Mexico	Toluca
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41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

Figure 12. Ratio of observed to simulated stover biomass (ratio) for the farmer practice (FP) management systems. The colors of the bars denote the following categories of ratios:
white: ratio < 0.8 – sub-optimal management and/or poor growing conditions;
gray: 0.8 ≤ ratio ≤ 1.1 – optimal management and good growing conditions;
black: ratio > 1.1 – extreme conditions where simulations are not well calibrated, or unrepresentative weather data, or inexact crop development data.

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APPENDIX A

TREATMENT MEANS, MEAN DIFFERENCES, AND STATISTICAL SIGNIFICANCE OF MEAN DIFFERENCES (P-VALUES) FOR SEVEN DEPENDENT VARIABLES

This section lists treatment means for the ecological intensification (EI) and farmer practice (FP) treatments. The following abbreviations are used in the pages that follow:

Abbreviation	Description	Units
Column labels		
Diff	Mean difference	
EI	Ecological intensification	
FP	Farmer practice	
p-value	Probability of erroneously declaring the mean difference statistically significant	
Dependent variables		
AE	agronomic efficiency of nitrogen	kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$
PFP.N	partial factor productivity of nitrogen	kg ha^{-1} grain N (kg ha^{-1} N applied)$^{-1}$
PNB.K	partial nutrient balance of potassium	kg K ha^{-1} removed (kg K ha^{-1} applied)$^{-1}$
PNB.N	partial nutrient balance of nitrogen	kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$
PNB.P	partial nutrient balance of phosphorus	kg P ha^{-1} removed (kg P ha^{-1} applied)$^{-1}$
RE	recovery efficiency of nitrogen	kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$
YG	dry matter grain yield	kg grain DM ha^{-1}

Site numbers correspond to the following countries and nearest cities

Site	Country	Nearest city
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames, Iowa
27	USA	West Lafayette, Indiana
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

	EI	FP	Diff	p-value
site 18 year 2010	6917.625	6354.050	563.575	0.0222
site 18 year 2011	6131.825	5997.475	134.350	0.3378
site 18 year 2012	7393.550	7951.000	-557.450	0.0588
site 19 year 2012	12992.733	12857.157	135.575	0.9090
site 19 year 2013	11772.733	11727.805	44.928	0.9159
site 20 year 2009	7313.750	6430.500	883.250	0.0240
site 20 year 2010	9538.750	9774.000	-235.250	0.3834
site 20 year 2011	10034.000	8813.500	1220.500	0.0315
site 21 year 2009	6874.250	6462.000	412.250	0.4215
site 21 year 2010	6885.500	7030.500	-145.000	0.9044
site 21 year 2011				
site 22 year 2009	4846.000	3444.000	1402.000	0.0066
site 22 year 2010	7093.333	3240.000	3853.333	0.0102
site 22 year 2011	6964.000	2277.000	4687.000	0.0145
site 23 year 2009	4516.667	3356.333	1160.333	0.0788
site 23 year 2010	4098.667	3314.667	784.000	0.0590
site 23 year 2011	3923.333	2857.333	1066.000	0.1380
site 24 year 2009	11034.000	9331.250	1702.750	0.0044
site 24 year 2010	10938.500	8774.250	2164.250	0.0029
site 24 year 2011	6573.250	4985.250	1588.000	0.0848
site 25 year 2009	11384.000	5928.250	5455.750	0.0046
site 25 year 2010	7940.000	4947.750	2992.250	0.0017
site 25 year 2011	4399.500	3552.000	847.500	0.2096
site 26 year 2011	11890.000	11692.500	197.500	0.9290
site 26 year 2012	10291.750	10806.000	-514.250	0.3100
site 27 year 2012	8112.167	8385.167	-273.000	0.9244
site 28 year 2009	10598.000	10173.500	424.500	0.7976
site 28 year 2010	12546.500	15184.000	-2637.500	0.0161
site 28 year 2011	10350.250	10053.750	296.500	0.4592
site 29 year 2009	6755.000	6246.000	509.000	0.0200
site 29 year 2010	9119.500	6880.000	2239.500	0.0076
site 29 year 2011	3634.750	2515.750	1119.000	0.0302
site 38a year 2010	7479.500	5235.000	2244.500	0.1231
site 38a year 2011	8603.250	7783.250	820.000	0.2259
site 38a year 2012	9074.750	7577.250	1497.500	0.3258
site 38b year 2010	7497.250	7780.000	-282.750	0.8805
site 38b year 2011	8753.750	7932.750	821.000	0.4239
site 41 year 2011	7415.000	6860.000	555.000	0.0261
site 41 year 2012	6382.250	5888.000	494.250	0.0002
site 45 year 2012	10458.000	9477.000	981.000	0.0123
site 46 year 2012	6594.000	6041.500	552.500	0.4146
site 49 year 2012	3750.500	2794.750	955.750	0.1072

Table 1: Estimated means for variable YG

	EI	FP	Diff	p-value
site 18 year 2010	57.647	70.601	-12.954	0.0029
site 18 year 2011	51.099	66.639	-15.540	0.0000
site 18 year 2012	61.613	88.344	-26.732	0.0003
site 19 year 2012	72.182	71.429	0.753	0.9093
site 19 year 2013	65.404	65.154	0.250	0.7196
site 20 year 2009	40.632	25.619	15.012	0.0004
site 20 year 2010	52.993	38.940	14.053	0.0004
site 20 year 2011	55.744	35.114	20.631	0.0000
site 21 year 2009	28.643	46.157	-17.514	0.0000
site 21 year 2010	38.253	23.435	14.818	0.0031
site 21 year 2011				
site 22 year 2009	26.922	64.981	-38.059	0.0078
site 22 year 2010	39.407	61.132	-21.725	0.0144
site 22 year 2011	38.689	42.962	-4.273	0.3774
site 23 year 2009	25.093	29.186	-4.093	0.0821
site 23 year 2010	22.770	28.823	-6.053	0.0546
site 23 year 2011	21.796	24.846	-3.050	0.1802
site 24 year 2009	208.189	222.173	-13.984	0.0142
site 24 year 2010	163.261	204.052	-40.791	0.0004
site 24 year 2011	109.554	99.705	9.849	0.3814
site 25 year 2009	103.491	76.990	26.501	0.0016
site 25 year 2010	144.364	141.364	2.999	0.6663
site 25 year 2011	79.991	101.486	-21.495	0.0767
site 26 year 2011	88.074	72.176	15.898	0.0292
site 26 year 2012	76.235	68.828	7.407	0.0453
site 27 year 2012	29.715	40.705	-10.990	0.0147
site 28 year 2009	35.327	33.912	1.415	0.5621
site 28 year 2010	41.822	50.613	-8.792	0.0084
site 28 year 2011	34.501	33.513	0.988	0.2743
site 29 year 2009	22.517	34.508	-11.992	0.0007
site 29 year 2010	30.398	38.011	-7.613	0.0008
site 29 year 2011	12.116	13.899	-1.783	0.1122
site 38a year 2010	37.398	34.900	2.498	0.5944
site 38a year 2011	43.016	51.888	-8.872	0.0034
site 38a year 2012	45.374	50.515	-5.141	0.2637
site 38b year 2010	37.486	51.867	-14.380	0.0050
site 38b year 2011	43.769	52.885	-9.116	0.0514
site 41 year 2011	87.235	228.667	-141.431	0.0000
site 41 year 2012	75.085	196.267	-121.181	0.0000
site 45 year 2012	41.012	48.850	-7.839	0.0005
site 46 year 2012				
site 49 year 2012	62.508	46.579	15.929	0.0569

Table 2: Estimated means for variable PFP.N

	EI	FP	Diff	p-value
site 18 year 2010	12.328	5.170	7.158	0.1671
site 18 year 2011	5.511	7.168	-1.657	0.4881
site 18 year 2012	15.686	22.253	-6.568	0.2248
site 19 year 2012	5.873	30.619	-24.746	0.1891
site 19 year 2013	8.373	18.322	-9.949	0.1228
site 20 year 2009	17.444	8.068	9.377	0.0051
site 20 year 2010	26.999	19.806	7.193	0.0337
site 20 year 2011	36.378	22.027	14.351	0.0059
site 21 year 2009	3.155	3.902	-0.747	0.9659
site 21 year 2010	7.167	5.418	1.748	0.8291
site 21 year 2011				
site 22 year 2009	19.281	44.567	-25.285	0.2818
site 22 year 2010	30.037	26.417	3.620	0.4480
site 22 year 2011	34.637	28.808	5.829	0.6293
site 23 year 2009	13.937	12.838	1.099	0.8793
site 23 year 2010	15.833	17.991	-2.158	0.6395
site 23 year 2011	15.187	14.171	1.016	0.8269
site 24 year 2009				
site 24 year 2010				
site 24 year 2011				
site 25 year 2009				
site 25 year 2010				
site 25 year 2011				
site 26 year 2011	37.274	24.375	12.899	0.0798
site 26 year 2012	35.094	23.836	11.258	0.0900
site 27 year 2012	16.856	17.617	-0.761	0.9857
site 28 year 2009	22.623	23.560	-0.937	0.9871
site 28 year 2010	30.099	38.597	-8.497	0.0167
site 28 year 2011	29.102	27.659	1.442	0.7579
site 29 year 2009	7.507	16.409	-8.902	0.0100
site 29 year 2010	16.751	15.094	1.657	0.5321
site 29 year 2011	3.336	2.662	0.674	0.7650
site 38a year 2010	5.458	2.865	2.593	0.7541
site 38a year 2011	26.637	28.760	-2.123	0.3823
site 38a year 2012	32.824	30.458	2.365	0.4561
site 38b year 2010	16.606	31.532	-14.925	0.0807
site 38b year 2011	30.136	33.900	-3.764	0.0931
site 41 year 2011	5.515	13.810	-8.295	0.0724
site 41 year 2012	4.426	2.440	1.986	0.4003
site 45 year 2012				
site 46 year 2012				
site 49 year 2012	40.429	29.396	11.033	0.7734

Table 3: Estimated means for variable AE

	EI	FP	Diff	p-value
site 18 year 2010	0.637	0.489	0.148	0.5313
site 18 year 2011				
site 18 year 2012	0.561	0.911	-0.349	0.4509
site 19 year 2012	0.198	0.621	-0.424	0.2137
site 19 year 2013	0.177	0.377	-0.200	0.1678
site 20 year 2009				
site 20 year 2010				
site 20 year 2011				
site 21 year 2009	0.208	0.142	0.066	0.7760
site 21 year 2010	0.390	0.344	0.046	0.7211
site 21 year 2011				
site 22 year 2009				
site 22 year 2010				
site 22 year 2011				
site 23 year 2009				
site 23 year 2010				
site 23 year 2011				
site 24 year 2009				
site 24 year 2010				
site 24 year 2011				
site 25 year 2009				
site 25 year 2010				
site 25 year 2011				
site 26 year 2011	0.960	0.702	0.258	0.0293
site 26 year 2012	0.871	0.617	0.254	0.1898
site 27 year 2012	0.364	0.416	-0.052	0.7289
site 28 year 2009	0.586	0.716	-0.129	0.5613
site 28 year 2010	0.476	0.642	-0.165	0.0266
site 28 year 2011	0.527	0.533	-0.006	0.9815
site 29 year 2009	0.555	0.679	-0.124	0.4749
site 29 year 2010				
site 29 year 2011				
site 38a year 2010				
site 38a year 2011	1.225	1.318	-0.093	0.5079
site 38a year 2012	1.257	1.060	0.197	0.1695
site 38b year 2010	0.285	0.730	-0.445	0.3125
site 38b year 2011	1.164	1.091	0.073	0.8814
site 41 year 2011	0.285	0.827	-0.542	0.0010
site 41 year 2012	1.091	0.983	0.108	0.9449
site 45 year 2012				
site 46 year 2012				
site 49 year 2012				

Table 4: Estimated means for variable RE

	EI	FP	Diff	p-value
site 18 year 2010	1.073	1.252	-0.180	0.0043
site 18 year 2011	0.733	0.874	-0.141	0.0711
site 18 year 2012	1.024	1.487	-0.464	0.0053
site 19 year 2012	0.979	0.911	0.068	0.5266
site 19 year 2013	0.856	0.793	0.062	0.1433
site 20 year 2009	0.497	0.359	0.138	0.0012
site 20 year 2010	0.715	0.516	0.199	0.0138
site 20 year 2011	0.679	0.563	0.116	0.0910
site 21 year 2009	0.703	1.058	-0.355	0.0008
site 21 year 2010	0.538	0.400	0.138	0.0267
site 21 year 2011				
site 22 year 2009	0.405	0.819	-0.414	0.0185
site 22 year 2010	0.439	0.511	-0.071	0.0440
site 22 year 2011	0.281	0.434	-0.153	0.0730
site 23 year 2009	0.399	0.340	0.059	0.0429
site 23 year 2010	0.308	0.367	-0.059	0.2737
site 23 year 2011	0.246	0.311	-0.065	0.2317
site 24 year 2009	2.625	2.756	-0.131	0.7365
site 24 year 2010	1.636	2.063	-0.427	0.0168
site 24 year 2011	1.320	1.253	0.067	0.6708
site 25 year 2009	1.089	1.018	0.071	0.4840
site 25 year 2010	1.375	2.050	-0.674	0.0007
site 25 year 2011				
site 26 year 2011	1.147	0.937	0.210	0.0463
site 26 year 2012	1.029	0.879	0.151	0.1070
site 27 year 2012	0.382	0.504	-0.122	0.0254
site 28 year 2009	0.489	0.482	0.006	0.8876
site 28 year 2010	0.462	0.602	-0.141	0.0092
site 28 year 2011	0.427	0.431	-0.004	0.8178
site 29 year 2009	0.537	0.833	-0.296	0.0001
site 29 year 2010				
site 29 year 2011				
site 38a year 2010	0.510	0.483	0.028	0.7048
site 38a year 2011	0.724	0.863	-0.139	0.0174
site 38a year 2012	0.573	0.642	-0.069	0.2011
site 38b year 2010	0.303	0.544	-0.241	0.0651
site 38b year 2011	0.612	0.723	-0.111	0.0055
site 41 year 2011	1.784	4.087	-2.303	0.0000
site 41 year 2012	1.558	3.970	-2.412	0.0000
site 45 year 2012				
site 46 year 2012				
site 49 year 2012				

Table 5: Estimated means for variable PNB.N

	EI	FP	Diff	p-value
site 18 year 2010	1.280	1.171	0.109	0.3971
site 18 year 2011	0.940	1.017	-0.077	0.1217
site 18 year 2012	1.647	1.491	0.156	0.2758
site 19 year 2012	0.474	0.541	-0.067	0.2706
site 19 year 2013	0.489	0.532	-0.042	0.0894
site 20 year 2009	0.617	0.329	0.288	0.0199
site 20 year 2010	0.726	0.424	0.301	0.0125
site 20 year 2011	0.612	0.337	0.275	0.0058
site 21 year 2009	0.676	0.273	0.403	0.0000
site 21 year 2010	0.492	0.243	0.249	0.0003
site 21 year 2011				
site 22 year 2009	0.478	5.229	-4.751	0.0031
site 22 year 2010	0.400	3.298	-2.898	0.0042
site 22 year 2011	0.404	2.671	-2.267	0.0105
site 23 year 2009	0.932	1.277	-0.345	0.0950
site 23 year 2010	0.830	1.171	-0.341	0.0589
site 23 year 2011	0.291	0.441	-0.150	0.1262
site 24 year 2009				
site 24 year 2010				
site 24 year 2011				
site 25 year 2009				
site 25 year 2010				
site 25 year 2011				
site 26 year 2011	0.405	0.371	0.034	0.2642
site 26 year 2012				
site 27 year 2012	0.406	0.464	-0.058	0.6300
site 28 year 2009	0.880	0.800	0.081	0.1995
site 28 year 2010	0.414	0.550	-0.137	0.4177
site 28 year 2011	0.770	0.676	0.094	0.2450
site 29 year 2009	0.937	1.590	-0.653	0.0002
site 29 year 2010				
site 29 year 2011				
site 38a year 2010	0.382	0.569	-0.187	0.0521
site 38a year 2011	0.403	0.900	-0.497	0.0002
site 38a year 2012	1.064	1.494	-0.429	0.2214
site 38b year 2010	0.419	0.886	-0.466	0.0013
site 38b year 2011	0.461	0.841	-0.380	0.0368
site 41 year 2011	0.989	1.345	-0.356	0.0001
site 41 year 2012	0.929	1.222	-0.292	0.0001
site 45 year 2012				
site 46 year 2012				
site 49 year 2012				

Table 6: Estimated means for variable PNB.P

	EI	FP	Diff	p-value
site 18 year 2010	1.091	1.146	-0.054	0.6324
site 18 year 2011	0.744	0.727	0.017	0.7872
site 18 year 2012	1.108	1.347	-0.239	0.0070
site 19 year 2012	0.248	0.394	-0.146	0.0208
site 19 year 2013	0.290	0.313	-0.023	0.2815
site 20 year 2009	0.320	0.272	0.048	0.1975
site 20 year 2010	0.255	0.236	0.020	0.0168
site 20 year 2011	0.383	0.321	0.061	0.0046
site 21 year 2009				
site 21 year 2010				
site 21 year 2011				
site 22 year 2009	0.172	3.543	-3.372	0.0023
site 22 year 2010	0.316	5.161	-4.845	0.0016
site 22 year 2011	0.302	3.397	-3.095	0.0180
site 23 year 2009	0.279	0.418	-0.140	0.0053
site 23 year 2010	0.222	0.389	-0.168	0.0137
site 23 year 2011	0.168	0.308	-0.140	0.0031
site 24 year 2009				
site 24 year 2010				
site 24 year 2011				
site 25 year 2009				
site 25 year 2010				
site 25 year 2011				
site 26 year 2011	0.151	0.133	0.018	0.1442
site 26 year 2012				
site 27 year 2012				
site 28 year 2009	0.762	0.657	0.105	0.3323
site 28 year 2010	1.225	1.335	-0.110	0.2693
site 28 year 2011	0.879	0.866	0.013	0.8893
site 29 year 2009	0.589	1.013	-0.424	0.0004
site 29 year 2010				
site 29 year 2011				
site 38a year 2010	0.288	0.350	-0.063	0.3014
site 38a year 2011	0.383	0.602	-0.219	0.0127
site 38a year 2012	0.393	0.558	-0.164	0.0130
site 38b year 2010	0.196	0.352	-0.156	0.0025
site 38b year 2011	0.391	0.519	-0.128	0.0937
site 41 year 2011				
site 41 year 2012				
site 45 year 2012				
site 46 year 2012				
site 49 year 2012				

Table 7: Estimated means for variable PNB.K

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APPENDIX B

RATES OF NITROGEN, PHOSPHORUS, AND POTASSIUM APPLIED IN ECOLOGICAL INTENSIFICATION AND FARMER PRACTICE MANAGEMENT SYSTEMS

This section lists the rates of nitrogen (N), phosphorus (expressed as P_2O_5) and potassium (expressed as K_2O) applied to the ecological intensification (EI) and farmer practice (FP) treatments.

Table 1. Rates of nitrogen (N) applied each year for the ecological intensification (EI) and farmer practice (FP) treatments in various years of the experimental sites.

			Rates of N applied									
			2009		2010		2011		2012		2013	
Site	Country	Nearest city	EI	FP	EI	FP	EI	FP	EI	FP	EI	FP
			(kg N ha^{-1})									
18	Brazil	Itiquira	--	--	120	90	120	90	120	90	--	--
19	Brazil	Ponta Grossa	--	--	--	--	--	--	180	180	180	180
20	China	Gongzhuling	180	251	180	251	180	251	--	--	--	--
21	China	Shijiazhuang	240	140	180	300	150	300	--	--	--	--
22	India	Ranchi	180	53	180	53	180	53	--	--	--	--
23	India	Darwad	180	115	180	115	180	115	--	--	--	--
24	Argentina	Balcarce	53	42	67	43	60	50	--	--	--	--
25	Argentina	Oro Verde	110	77	55	35	55	35	--	--	--	--
26	USA	Ames, Iowa	--	--	--	--	135	162	135	157	--	--
27	USA	West Lafayette, Indiana	--	--	--	--	--	--	273	206	--	--
28	Mexico	Celaya	300	300	300	300	300	300	--	--	--	--
29	Mexico	Toluca	300	181	300	181	300	181	--	--	--	--
38a	Colombia	Buga	--	--	200	150	200	150	200	150	--	--
38b	Colombia	Buga	--	--	200	150	200	150	--	--	--	--
41	Russia	Novaya Tselina	--	--	--	--	85	30	85	30	--	--
45	USA	Virginia	--	--	--	--	--	--	255	194	--	--
46	Kenya	Muguga	--	--	--	--	--	--	--	--	--	--
49	Kenya	Wote	--	--	--	--	--	--	60	60	--	--

Table 2. Rates of phosphorus (expressed as P_2O_5) applied each year for the ecological intensification (EI) and farmer practice (FP) treatments in various years of the experimental sites.

			Rates of P_2O_5 applied									
			2009		2010		2011		2012		2013	
Site	Country	Nearest city	EI	FP	EI	FP	EI	FP	EI	FP	EI	FP
			(kg P_2O_5 ha^{-1})									
18	Brazil	Itiquira	--	--	40	40	40	40	40	40	--	--
19	Brazil	Ponta Grossa	--	--	--	--	--	--	107	107	107	107
20	China	Gongzhuling	75	145	75	145	75	145	--	--	--	--
21	China	Shijiazhuang	60	138	60	135	40	135	--	--	--	--
22	India	Ranchi	90	5	90	5	90	5	--	--	--	--
23	India	Darwad	90	52	90	52	90	52	--	--	--	--
24	Argentina	Balcarce	44	32	44	32	37	34	--	--	--	--
25	Argentina	Oro Verde	0	55	0	55	0	55	--	--	--	--
26	USA	Ames, Iowa	--	--	--	--	168	168	--	--	--	--
27	USA	West Lafayette, Indiana	--	--	--	--	--	--	89	89	--	--
28	Mexico	Celaya	90	90	90	90	90	90	--	--	--	--
29	Mexico	Toluca	90	45	90	45	90	45	--	--	--	--
38a	Colombia	Buga	--	--	90	46	90	46	90	46	--	--
38b	Colombia	Buga	--	--	90	46	90	46	--	--	--	--
41	Russia	Novaya Tselina	--	--	--	--	70	40	70	40	--	--
45	USA	Virginia	--	--	--	--	--	--	110	60	--	--
46	Kenya	Muguga	--	--	--	--	--	--	--	--	--	--
49	Kenya	Wote	--	--	--	--	--	--	46	46	--	--

Table 3. Rates of potassium (expressed as K_2O) applied each year for the ecological intensification (EI) and farmer practice (FP) treatments in various years of the experimental sites.

			Rates of K_2O applied									
			2009		2010		2011		2012		2013	
Site	Country	Nearest city	EI	FP	EI	FP	EI	FP	EI	FP	EI	FP
			(kg K_2O ha^{-1})									
18	Brazil	Itiquira	--	--	40	40	40	40	40	40	--	--
19	Brazil	Ponta Grossa	--	--	--	--	--	--	90	90	90	90
20	China	Gongzhuling	90	100	90	100	90	100	--	--	--	--
21	China	Shijiazhuang	90	0	90	0	50	0	--	--	--	--
22	India	Ranchi	100	3	100	3	100	3	--	--	--	--
23	India	Darwad	100	45	100	45	100	45	--	--	--	--
24	Argentina	Balcarce	0	0	0	0	0	0	--	--	--	--
25	Argentina	Oro Verde	0	0	0	0	0	0	--	--	--	--
26	USA	Ames, Iowa	--	--	--	--	202	202	--	--	--	--
27	USA	West Lafayette, Indiana	--	--	--	--	--	--	--	--	--	--
28	Mexico	Celaya	50	50	50	50	50	50	--	--	--	--
29	Mexico	Toluca	90	45	90	45	90	45	--	--	--	--
38a	Colombia	Buga	--	--	90	60	90	60	90	60	--	--
38b	Colombia	Buga	--	--	90	60	90	60	--	--	--	--
41	Russia	Novaya Tselina	--	--	--	--	40	0	40	0	--	--
45	USA	Virginia	--	--	--	--	--	--	135	60	--	--
46	Kenya	Muguga	--	--	--	--	--	--	--	--	--	--
49	Kenya	Wote	--	--	--	--	--	--	18	0	--	--

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APPENDIX C

MEAN DIFFERENCES AND STATISTICAL SIGNIFICANCE OF MEAN DIFFERENCES (P-VALUES) FOR ALL DEPENDENT VARIABLES

This section lists the differences between the ecological intensification (EI) and farmer practice (FP) treatment means, along with the associated level of statistical significance. The following abbreviations are used in the pages that follow:

Abbreviation	Description	Units
Column labels		
Diff	Mean difference	
p-value	Probability of erroneously declaring the mean difference statistically significant	
Dependent variables		
AE	agronomic efficiency of nitrogen	kg ha^{-1} grain DM increase (kg ha^{-1} N applied)$^{-1}$
HI	grain harvest index	unitless ratio of grain DM to total DM
HI.B	harvest index of boron	unitless ratio of grain B uptake to total B uptake
HI.Ca	harvest index of calcium	unitless ratio of grain Ca uptake to total B uptake
HI.Cl	harvest index of chloride	unitless ratio of grain Cl uptake to total B uptake
HI.Cu	harvest index of copper	unitless ratio of grain Cu uptake to total B uptake
HI.Fe	harvest index of iron	unitless ratio of grain Fe uptake to total B uptake
HI.K	harvest index of potassium	unitless ratio of grain K uptake to total B uptake
HI.Mg	harvest index of magnesium	unitless ratio of grain Mg uptake to total B uptake
HI.Mn	harvest index of manganese	unitless ratio of grain Mn uptake to total B uptake
HI.Mo	harvest index of molybdenum	unitless ratio of grain Mo uptake to total B uptake
HI.N	harvest index of nitrogen	unitless ratio of grain N uptake to total B uptake
HI.P	harvest index of phosphorus	unitless ratio of grain P uptake to total B uptake
HI.S	harvest index of sulfur	unitless ratio of grain S uptake to total B uptake
HI.Zn	harvest index of zinc	unitless ratio of grain Zn uptake to total B uptake
PFP.B	partial factor productivity of boron	kg ha^{-1} grain B (kg ha^{-1} B applied)$^{-1}$
PFP.Ca	partial factor productivity of calcium	kg ha^{-1} grain Ca (kg ha^{-1} Ca applied)$^{-1}$
PFP.Cl	partial factor productivity of chloride	kg ha^{-1} grain Cl (kg ha^{-1} Cl applied)$^{-1}$

Abbreviation	Description	Units
PFP.Cu	partial factor productivity of copper	kg ha^{-1} grain Cu (kg ha^{-1} Cu applied)$^{-1}$
PFP.Fe	partial factor productivity of iron	kg ha^{-1} grain Fe (kg ha^{-1} Fe applied)$^{-1}$
PFP.K	partial factor productivity of potassium	kg ha^{-1} grain K (kg ha^{-1} K applied)$^{-1}$
PFP.K2O	partial factor productivity of potassium	kg ha^{-1} grain K_2O (kg ha^{-1} K_2O applied)$^{-1}$
PFP.Mg	partial factor productivity of magnesium	kg ha^{-1} grain Mg (kg ha^{-1} Mg applied)$^{-1}$
PFP.Mn	partial factor productivity of manganese	kg ha^{-1} grain Mn (kg ha^{-1} Mn applied)$^{-1}$
PFP.Mo	partial factor productivity of molybdenum	kg ha^{-1} grain Mo (kg ha^{-1} Mo applied)$^{-1}$
PFP.N	partial factor productivity of nitrogen	kg ha^{-1} grain N (kg ha^{-1} N applied)$^{-1}$
PFP.P	partial factor productivity of phosphorus	kg ha^{-1} grain P (kg ha^{-1} P applied)$^{-1}$
PFP.P2O5	partial factor productivity of phosphorus	kg ha^{-1} grain P_2O_5 (kg ha^{-1} P_2O_5 applied)$^{-1}$
PFP.S	partial factor productivity of sulfur	kg ha^{-1} grain S (kg ha^{-1} S applied)$^{-1}$
PFP.Zn	partial factor productivity of zinc	kg ha^{-1} grain Zn (kg ha^{-1} Zn applied)$^{-1}$
PNB.B	partial nutrient balance of boron	kg B ha^{-1} removed (kg B ha^{-1} applied)$^{-1}$
PNB.Ca	partial nutrient balance of calcium	kg Ca ha^{-1} removed (kg Ca ha^{-1} applied)$^{-1}$
PNB.Cl	partial nutrient balance of chloride	kg Cl ha^{-1} removed (kg Cl ha^{-1} applied)$^{-1}$
PNB.Cu	partial nutrient balance of copper	kg Cu ha^{-1} removed (kg Cu ha^{-1} applied)$^{-1}$
PNB.Fe	partial nutrient balance of iron	kg Fe ha^{-1} removed (kg Fe ha^{-1} applied)$^{-1}$
PNB.K	partial nutrient balance of potassium	kg K ha^{-1} removed (kg K ha^{-1} applied)$^{-1}$
PNB.Mg	partial nutrient balance of magnesium	kg Mg ha^{-1} removed (kg Mg ha^{-1} applied)$^{-1}$
PNB.Mn	partial nutrient balance of manganese	kg Mn ha^{-1} removed (kg Mn ha^{-1} applied)$^{-1}$
PNB.Mo	partial nutrient balance of molybdenum	kg Mo ha^{-1} removed (kg Mo ha^{-1} applied)$^{-1}$
PNB.N	partial nutrient balance of nitrogen	kg N ha^{-1} removed (kg N ha^{-1} applied)$^{-1}$
PNB.P	partial nutrient balance of phosphorus	kg P ha^{-1} removed (kg P ha^{-1} applied)$^{-1}$
PNB.S	partial nutrient balance of sulfur	kg S ha^{-1} removed (kg S ha^{-1} applied)$^{-1}$
PNB.Zn	partial nutrient balance of zinc	kg Zn ha^{-1} removed (kg Zn ha^{-1} applied)$^{-1}$

Abbreviation	Description	Units
RE	recovery efficiency of nitrogen	kg ha^{-1} increase in total N uptake (kg ha^{-1} N applied)$^{-1}$
UG.B	grain uptake of boron	kg B ha^{-1}
UG.Ca	grain uptake of calcium	kg Ca ha^{-1}
UG.Cl	grain uptake of chloride	kg Cl ha^{-1}
UG.Cu	grain uptake of copper	kg Cu ha^{-1}
UG.Fe	grain uptake of iron	kg Fe ha^{-1}
UG.K	grain uptake of potassium	kg K ha^{-1}
UG.K2O	grain uptake of potassium	kg K_2O ha^{-1}
UG.Mg	grain uptake of magnesium	kg Mg ha^{-1}
UG.Mn	grain uptake of manganese	kg Mn ha^{-1}
UG.Mo	grain uptake of molybdenum	kg Mo ha^{-1}
UG.N	grain uptake of nitrogen	kg N ha^{-1}
UG.P	grain uptake of phosphorus	kg P ha^{-1}
UG.P2O5	grain uptake of phosphorus	kg P_2O_5 ha^{-1}
UG.S	grain uptake of sulfur	kg S ha^{-1}
UG.Zn	grain uptake of zinc	kg Zn ha^{-1}
US.B	stover uptake of boron	kg B ha^{-1}
US.Ca	stover uptake of calcium	kg Ca ha^{-1}
US.Cl	stover uptake of chloride	kg Cl ha^{-1}
US.Cu	stover uptake of copper	kg Cu ha^{-1}
US.Fe	stover uptake of iron	kg Fe ha^{-1}
US.K	stover uptake of potassium	kg K ha^{-1}
US.K2O	stover uptake of potassium	kg K_2O ha^{-1}
US.Mg	stover uptake of magnesium	kg Mg ha^{-1}
US.Mn	stover uptake of manganese	kg Mn ha^{-1}
US.Mo	stover uptake of molybdenum	kg Mo ha^{-1}
US.N	stover uptake of nitrogen	kg N ha^{-1}
US.P	stover uptake of phosphorus	kg P ha^{-1}
US.P2O5	stover uptake of phosphorus	kg P_2O_5 ha^{-1}
US.S	stover uptake of sulfur	kg S ha^{-1}
US.Zn	stover uptake of zinc	kg Zn ha^{-1}
UT.B	total uptake of boron	kg B ha^{-1}
UT.Ca	total uptake of calcium	kg Ca ha^{-1}
UT.Cl	total uptake of chloride	kg Cl ha^{-1}

Abbreviation	Description	Units
UT.Cu	total uptake of copper	kg Cu ha^{-1}
UT.Fe	total uptake of iron	kg Fe ha^{-1}
UT.K	total uptake of potassium	kg K ha^{-1}
UT.K2O	total uptake of potassium	kg K_2O ha^{-1}
UT.Mg	total uptake of magnesium	kg Mg ha^{-1}
UT.Mn	total uptake of manganese	kg Mn ha^{-1}
UT.Mo	total uptake of molybdenum	kg Mo ha^{-1}
UT.N	total uptake of nitrogen	kg N ha^{-1}
UT.P	total uptake of phosphorus	kg P ha^{-1}
UT.P2O5	total uptake of phosphorus	kg P_2O_5 ha^{-1}
UT.S	total uptake of sulfur	kg S ha^{-1}
UT.Zn	total uptake of zinc	kg Zn ha^{-1}
YG	dry matter grain yield	kg grain DM ha^{-1}
YS	dry matter stover yield	kg stover DM ha^{-1}
YT	dry matter total yield	kg total DM ha^{-1}

Site numbers correspond to the following countries and nearest cities

Site	Country	Nearest city
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames, Iowa
27	USA	West Lafayette, Indiana
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

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	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	563.58	0.022	134.35	0.338	-557.45	0.059	NA	NA
site 19	NA	NA	NA	NA	NA	NA	135.57	0.909	44.93	0.916
site 20	883.25	0.024	-235.25	0.383	1220.5	0.032	NA	NA	NA	NA
site 21	412.25	0.421	-145	0.904	NA	NA	NA	NA	NA	NA
site 22	1402	0.007	3853.33	0.01	4687	0.015	NA	NA	NA	NA
site 23	1160.33	0.079	784	0.059	1066	0.138	NA	NA	NA	NA
site 24	1702.75	0.004	2164.25	0.003	1588	0.085	NA	NA	NA	NA
site 25	5455.75	0.005	2992.25	0.002	847.5	0.21	NA	NA	NA	NA
site 26	NA	NA	NA	NA	197.5	0.929	-514.25	0.31	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-273	0.924	NA	NA
site 28	424.5	0.798	-2637.5	0.016	296.5	0.459	NA	NA	NA	NA
site 29	509	0.02	2239.5	0.008	1119	0.03	NA	NA	NA	NA
site 38a	NA	NA	2244.5	0.123	820	0.226	1497.5	0.326	NA	NA
site 38b	NA	NA	-282.75	0.88	821	0.424	NA	NA	NA	NA
site 41	NA	NA	NA	NA	555	0.026	494.25	0	NA	NA
site 45	NA	NA	NA	NA	NA	NA	981	0.012	NA	NA
site 46	NA	NA	NA	NA	NA	NA	552.5	0.415	NA	NA
site 49	NA	NA	NA	NA	NA	NA	955.75	0.107	NA	NA

Table 1: Difference between EI and FP for variable YG

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-423.8	0.579	138.72	0.447	554.7	0.248	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-417.45	0.49	436.2	0.909
site 20	-262.25	0.558	-1335.25	0.001	949	0.03	NA	NA	NA	NA
site 21	703.75	0.54	-236.75	0.871	-180.5	0.64	NA	NA	NA	NA
site 22	2076	0.031	3309	0.117	5171.33	0.019	NA	NA	NA	NA
site 23	1537	0.011	804.67	0.384	2187.67	0.194	NA	NA	NA	NA
site 24	269.5	0.893	1933.25	0.083	2512.5	0.131	NA	NA	NA	NA
site 25	4162.25	0.226	2715.25	0.343	2140	0.384	NA	NA	NA	NA
site 26	NA	NA	NA	NA	453	0.866	37.5	0.996	NA	NA
site 27	NA	NA	NA	NA	NA	NA	131.33	0.962	NA	NA
site 28	-2505.25	0.553	-1913.25	0.188	-1106	0.309	NA	NA	NA	NA
site 29	1412	0.015	4603.5	0.004	3566.75	0.022	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	2206	0.598	4275.5	0.209	NA	NA
site 38b	NA	NA	-1981	0.437	3423.25	0.39	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-923.25	0.007	8843	0.022	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	534.5	0.463	NA	NA
site 49	NA	NA	NA	NA	NA	NA	692	0.522	NA	NA

Table 2: Difference between EI and FP for variable YS

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	139.78	0.864	273.07	0.302	-2.75	0.996	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-281.88	0.835	481.13	0.893
site 20	621	0.212	-1570.5	0.011	2169.5	0.031	NA	NA	NA	NA
site 21	1116	0.443	-381.75	0.833	NA	NA	NA	NA	NA	NA
site 22	3478	0.019	7162.33	0.033	9858.33	0.017	NA	NA	NA	NA
site 23	2697.33	0.004	1588.67	0.076	3253.67	0.174	NA	NA	NA	NA
site 24	1972.25	0.096	4097.5	0.022	4100.5	0.112	NA	NA	NA	NA
site 25	9618	0.055	5707.5	0.059	2987.5	0.163	NA	NA	NA	NA
site 26	NA	NA	NA	NA	650.5	0.874	-476.75	0.79	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-141.67	0.988	NA	NA
site 28	-2080.75	0.547	-4550.75	0.062	-809.5	0.522	NA	NA	NA	NA
site 29	1921	0.008	6843	0.002	4685.75	0.022	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	3026	0.513	5773	0.238	NA	NA
site 38b	NA	NA	-2263.75	0.55	4244.25	0.387	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-368.25	0.254	9337.25	0.02	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	1087	0.431	NA	NA
site 49	NA	NA	NA	NA	NA	NA	1647.75	0.247	NA	NA

Table 3: Difference between EI and FP for variable YT

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.03	0.206	0	0.886	-0.03	0.039	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.02	0.475	-0.01	0.909
site 20	0.04	0.078	0.03	0.005	0.01	0.056	NA	NA	NA	NA
site 21	-0.01	0.815	0	0.979	NA	NA	NA	NA	NA	NA
site 22	0.03	0	0.09	0.09	0.06	0.055	NA	NA	NA	NA
site 23	0.01	0.774	0.02	0.742	-0.01	0.65	NA	NA	NA	NA
site 24	0.04	0.139	0.01	0.692	0.02	0.059	NA	NA	NA	NA
site 25	0.09	0.012	0.06	0.138	0.01	0.884	NA	NA	NA	NA
site 26	NA	NA	NA	NA	-0.01	0.898	-0.01	0.234	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.01	0.798	NA	NA
site 28	0.05	0.609	0	0.993	0.03	0.241	NA	NA	NA	NA
site 29	-0.02	0.073	-0.05	0.056	-0.02	0.247	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	0	0.998	0	0.914	NA	NA
site 38b	NA	NA	0.01	0.197	-0.01	0.593	NA	NA	NA	NA
site 41	NA	NA	NA	NA	0.04	0.001	-0.1	0.028	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	-0.02	0.575	NA	NA
site 49	NA	NA	NA	NA	NA	NA	0.04	0.127	NA	NA

Table 4: Difference between EI and FP for variable HI.G

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	15.98	0.008	9.29	0.134	-11	0.188	NA	NA
site 19	NA	NA	NA	NA	NA	NA	12.26	0.527	11.24	0.257
site 20	-0.62	0.995	-0.81	0.995	-19.16	0.222	NA	NA	NA	NA
site 21	20.6	0.061	-23.11	0.127	NA	NA	NA	NA	NA	NA
site 22	29.54	0.014	52.02	0.01	27.58	0.084	NA	NA	NA	NA
site 23	32.7	0.002	13.23	0.284	8.49	0.467	NA	NA	NA	NA
site 24	23.39	0.596	20.91	0.047	16.56	0.178	NA	NA	NA	NA
site 25	41.38	0.028	3.9	0.116	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	3.09	0.969	1	0.994	NA	NA
site 27	NA	NA	NA	NA	NA	NA	0.37	0.999	NA	NA
site 28	1.83	0.986	-42.16	0.018	-1.21	0.98	NA	NA	NA	NA
site 29	10.27	0.103	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	29.71	0.169	15.43	0.071	18.36	0.29	NA	NA
site 38b	NA	NA	-20.95	0.475	14.01	0.194	NA	NA	NA	NA
site 41	NA	NA	NA	NA	29.05	0.004	13.34	0	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 5: Difference between EI and FP for variable UG.N

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	1.91	0.397	-1.34	0.122	2.73	0.276	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-3.12	0.27	-1.98	0.164
site 20	-0.64	0.954	-3.11	0.782	-1.32	0.7	NA	NA	NA	NA
site 21	1.27	0.307	-1.45	0.167	NA	NA	NA	NA	NA	NA
site 22	7.35	0.035	8.53	0.063	10.03	0.048	NA	NA	NA	NA
site 23	7.64	0.485	6.02	0.114	1.42	0.77	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	2.45	0.552	-1.86	0.495	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-2.26	0.886	NA	NA
site 28	3.17	0.347	-5.37	0.707	3.69	0.417	NA	NA	NA	NA
site 29	5.57	0.104	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	3.59	0.129	-2.24	0.652	11.81	0.315	NA	NA
site 38b	NA	NA	-1.31	0.824	1.22	0.904	NA	NA	NA	NA
site 41	NA	NA	NA	NA	6.73	0.008	7.07	0.012	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 6: Difference between EI and FP for variable UG.P

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	4.38	0.397	-3.07	0.122	6.25	0.276	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-7.14	0.27	-4.53	0.164
site 20	-1.47	0.954	-7.11	0.781	-3.02	0.699	NA	NA	NA	NA
site 21	2.91	0.307	-3.31	0.167	NA	NA	NA	NA	NA	NA
site 22	16.84	0.035	19.53	0.063	22.96	0.048	NA	NA	NA	NA
site 23	17.49	0.484	13.79	0.114	3.24	0.77	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	5.62	0.551	-4.26	0.495	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-5.17	0.886	NA	NA
site 28	7.26	0.347	-12.29	0.707	8.44	0.417	NA	NA	NA	NA
site 29	12.75	0.103	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	8.22	0.129	-5.14	0.652	27.05	0.315	NA	NA
site 38b	NA	NA	-3	0.824	2.8	0.904	NA	NA	NA	NA
site 41	NA	NA	NA	NA	15.4	0.007	16.18	0.012	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 7: Difference between EI and FP for variable UG.P2O5

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-1.8	0.632	0.57	0.787	-7.93	0.007	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-10.89	0.021	-1.69	0.47
site 20	1.3	0.831	-0.47	0.383	1.92	0.325	NA	NA	NA	NA
site 21	0.9	0.567	-2.49	0.218	NA	NA	NA	NA	NA	NA
site 22	5.43	0.024	13.34	0.077	16.57	0.021	NA	NA	NA	NA
site 23	7.52	0.069	3.87	0.428	2.43	0.077	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	3.01	0.257	-2.26	0.279	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-5.03	0.706	NA	NA
site 28	4.36	0.54	-4.57	0.452	0.56	0.988	NA	NA	NA	NA
site 29	6.18	0.157	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	4.04	0.339	-1.39	0.863	1.6	0.828	NA	NA
site 38b	NA	NA	-2.91	0.506	3.34	0.633	NA	NA	NA	NA
site 41	NA	NA	NA	NA	6.7	0.027	8.6	0.004	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 8: Difference between EI and FP for variable UG.K

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-2.17	0.632	0.68	0.787	-9.55	0.007	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-13.13	0.021	-2.04	0.469
site 20	1.57	0.831	-0.57	0.384	2.31	0.325	NA	NA	NA	NA
site 21	1.08	0.568	-3	0.218	NA	NA	NA	NA	NA	NA
site 22	6.54	0.024	16.07	0.077	19.97	0.022	NA	NA	NA	NA
site 23	9.06	0.069	4.66	0.428	2.93	0.077	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	3.63	0.257	-2.73	0.278	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-6.06	0.706	NA	NA
site 28	5.25	0.539	-5.51	0.452	0.67	0.988	NA	NA	NA	NA
site 29	7.45	0.158	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	4.87	0.338	-1.68	0.863	1.93	0.828	NA	NA
site 38b	NA	NA	-3.51	0.506	4.03	0.633	NA	NA	NA	NA
site 41	NA	NA	NA	NA	8.07	0.026	10.36	0.004	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 9: Difference between EI and FP for variable UG.K2O

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-0.15	0.042	0.08	0.025	-0.06	0.059	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.34	0.38	0.28	0.616
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.03	0.924	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 10: Difference between EI and FP for variable UG.Ca

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-0.08	0.894	1.04	0.054	-2.76	0.111	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-0.43	0.463	1.46	0.365
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.99	0.872	NA	NA
site 28	2.11	0.391	-0.63	0.992	1	0.622	NA	NA	NA	NA
site 29	2	0.278	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	1.2	0.415	-0.35	0.889	0.49	0.749	NA	NA
site 38b	NA	NA	-0.16	0.919	0.66	0.683	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 11: Difference between EI and FP for variable UG.Mg

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	1.07	0.138	-1.26	0.004	0.17	0.815	NA	NA
site 19	NA	NA	NA	NA	NA	NA	2.94	0.044	0.34	0.893
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	0.93	0.009	2.22	0.053	6.92	0.173	NA	NA	NA	NA
site 23	4.59	0.077	4.54	0.259	4	0.226	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	0.24	0.976	NA	NA
site 28	-1.01	0.524	-2.52	0.448	0.46	0.486	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	2.09	0.052	3.31	0.915	10.39	0.446	NA	NA
site 38b	NA	NA	-0.01	1	22.97	0.012	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 12: Difference between EI and FP for variable UG.S

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-18.01	0.583	NA	NA
site 28	NA	NA	NA	NA	93.72	0.157	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 13: Difference between EI and FP for variable UG.B

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 14: Difference between EI and FP for variable UG.Cl

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-13.94	0.765	NA	NA
site 28	NA	NA	NA	NA	-1.66	0.999	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 15: Difference between EI and FP for variable UG.Cu

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-162.91	0.784	NA	NA
site 28	NA	NA	NA	NA	-1691.64	0.924	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 16: Difference between EI and FP for variable UG.Fe

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-62.33	0.81	NA	NA
site 28	NA	NA	NA	NA	-5.61	0.995	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 17: Difference between EI and FP for variable UG.Mn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 18: Difference between EI and FP for variable UG.Mo

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-247.58	0.779	NA	NA
site 28	NA	NA	NA	NA	144.23	0.755	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 19: Difference between EI and FP for variable UG.Zn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	1.55	0.845	NA	NA	7.38	0.022	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-1.53	0.646	10.58	0.532
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	14.69	0.147	-3.12	0.96	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	-10.43	0.719	-5.14	0.387	NA	NA
site 27	NA	NA	NA	NA	NA	NA	6.02	0.496	NA	NA
site 28	-31.22	0.535	-5.58	0.827	-1.9	0.917	NA	NA	NA	NA
site 29	46.16	0	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	18.73	0.449	60.86	0.042	NA	NA
site 38b	NA	NA	12.23	0.339	48.41	0.417	NA	NA	NA	NA
site 41	NA	NA	NA	NA	1.22	0.23	56.48	0.026	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 20: Difference between EI and FP for variable US.N

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-1.34	0.267	NA	NA	0.88	0.112	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.54	0.462	0.33	0.859
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	0.7	0.54	-1	0.715	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.95	0.731	-0.96	0.027	NA	NA
site 27	NA	NA	NA	NA	NA	NA	1.52	0.607	NA	NA
site 28	-4.86	0.579	-2.1	0.204	-0.61	0.616	NA	NA	NA	NA
site 29	1.85	0.014	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	-54.08	0.594	-9.57	0.721	NA	NA
site 38b	NA	NA	-42.51	0.511	-5.17	0.516	NA	NA	NA	NA
site 41	NA	NA	NA	NA	8.81	0	45	0.014	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 21: Difference between EI and FP for variable US.P

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-1.92	0.289	NA	NA	0.99	0.076	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.46	0.66	0.54	0.756
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	0.73	0.581	-1.08	0.697	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.99	0.726	-0.9	0.041	NA	NA
site 27	NA	NA	NA	NA	NA	NA	2.87	0.564	NA	NA
site 28	-5.06	0.567	-3.19	0.077	-0.58	0.735	NA	NA	NA	NA
site 29	2.08	0.021	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	-54.41	0.592	-8.87	0.766	NA	NA
site 38b	NA	NA	-42.59	0.51	-5.15	0.525	NA	NA	NA	NA
site 41	NA	NA	NA	NA	9.29	0.001	46.74	0.011	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 22: Difference between EI and FP for variable US.P2O5

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-20.41	0.429	NA	NA	-1.73	0.779	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-35.42	0.141	-0.38	1
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	-4.06	0.933	49	0.301	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	-0.02	1	-16.54	0.111	NA	NA
site 27	NA	NA	NA	NA	NA	NA	2.22	0.837	NA	NA
site 28	-7.27	0.972	-63.24	0.018	-14.42	0.569	NA	NA	NA	NA
site 29	70.27	0.014	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	-22.7	0.552	NA	NA
site 38b	NA	NA	-18.28	0.842	2.06	0.997	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-2.24	0.688	176.2	0.017	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 23: Difference between EI and FP for variable US.K

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-20.39	0.436	NA	NA	-1.72	0.773	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-35.44	0.141	-0.32	1
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	-3.99	0.936	48.81	0.303	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.01	1	-16.58	0.114	NA	NA
site 27	NA	NA	NA	NA	NA	NA	1.96	0.865	NA	NA
site 28	-7.43	0.971	-63.66	0.018	-13.82	0.593	NA	NA	NA	NA
site 29	70.84	0.015	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	-22.3	0.566	NA	NA
site 38b	NA	NA	-18.3	0.842	2.19	0.996	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-1.39	0.845	177.73	0.017	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 24: Difference between EI and FP for variable US.K2O

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-3.39	0.216	NA	NA	-0.25	0.81	NA	NA
site 19	NA	NA	NA	NA	NA	NA	1.78	0.276	1.43	0.852
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.08	1	NA	NA
site 28	NA	NA	NA	NA	-5.23	0.927	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 25: Difference between EI and FP for variable US.Ca

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-3.64	0.098	NA	NA	-0.89	0.586	NA	NA
site 19	NA	NA	NA	NA	NA	NA	1.5	0.465	-0.24	0.98
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.54	0.965	NA	NA
site 28	-7.3	0.576	-5.59	0.219	-5	0.358	NA	NA	NA	NA
site 29	4.74	0.039	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	10.32	0.081	NA	NA
site 38b	NA	NA	-5.36	0.847	5.04	0.769	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 26: Difference between EI and FP for variable US.Mg

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-1.04	0.358	NA	NA	0.56	0.109	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.74	0.436	0.41	0.56
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	64.59	0.596	NA	NA
site 28	-7.9	0.509	-1.34	0.916	-0.19	0.878	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	3.66	0.909	NA	NA
site 38b	NA	NA	-2.98	0.716	-2.63	0.999	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 27: Difference between EI and FP for variable US.S

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	82.09	0.108	NA	NA
site 28	NA	NA	NA	NA	-45.51	0.911	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 28: Difference between EI and FP for variable US.B

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 29: Difference between EI and FP for variable US.Cl

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.98	1	NA	NA
site 28	NA	NA	NA	NA	36.83	0.962	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 30: Difference between EI and FP for variable US.Cu

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	923.6	0.87	NA	NA
site 28	NA	NA	NA	NA	-2350.39	0.902	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 31: Difference between EI and FP for variable US.Fe

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-923.12	0.1	NA	NA
site 28	NA	NA	NA	NA	-1870.56	0.497	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 32: Difference between EI and FP for variable US.Mn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 33: Difference between EI and FP for variable US.Mo

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	103.64	0.919	NA	NA
site 28	NA	NA	NA	NA	1062.39	0.383	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 34: Difference between EI and FP for variable US.Zn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	17.52	0.132	NA	NA	-3.62	0.592	NA	NA
site 19	NA	NA	NA	NA	NA	NA	10.73	0.877	21.83	0.177
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	35.29	0.066	-26.23	0.45	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	-7.34	0.868	-4.13	0.939	NA	NA
site 27	NA	NA	NA	NA	NA	NA	6.39	0.898	NA	NA
site 28	-29.39	0.553	-47.74	0.055	-3.12	0.956	NA	NA	NA	NA
site 29	56.44	0.003	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	34.16	0.274	79.22	0.082	NA	NA
site 38b	NA	NA	-8.73	0.737	62.42	0.362	NA	NA	NA	NA
site 41	NA	NA	NA	NA	30.27	0.002	69.83	0.015	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 35: Difference between EI and FP for variable UT.N

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.57	0.718	NA	NA	3.61	0.117	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-2.58	0.594	-1.65	0.289
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	1.98	0.214	-2.44	0.456	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	3.41	0.611	-2.81	0.281	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.74	0.99	NA	NA
site 28	-1.69	0.921	-7.46	0.578	3.07	0.398	NA	NA	NA	NA
site 29	7.42	0.034	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	-56.33	0.584	2.24	0.989	NA	NA
site 38b	NA	NA	-43.82	0.501	-3.95	0.846	NA	NA	NA	NA
site 41	NA	NA	NA	NA	15.54	0	52.07	0.006	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 36: Difference between EI and FP for variable UT.P

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-0.01	0.998	NA	NA	3.72	0.103	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-2.66	0.538	-1.44	0.327
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	2	0.246	-2.52	0.451	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	3.44	0.609	-2.76	0.333	NA	NA
site 27	NA	NA	NA	NA	NA	NA	0.62	0.995	NA	NA
site 28	-1.89	0.898	-8.56	0.492	3.11	0.376	NA	NA	NA	NA
site 29	7.65	0.029	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	-56.65	0.583	2.95	0.982	NA	NA
site 38b	NA	NA	-43.9	0.5	-3.93	0.85	NA	NA	NA	NA
site 41	NA	NA	NA	NA	16.02	0.001	53.8	0.005	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 37: Difference between EI and FP for variable UT.P2O5

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-22.22	0.354	NA	NA	-9.66	0.177	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-46.32	0.096	-2.07	0.988
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	-3.16	0.958	46.51	0.334	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	2.99	0.988	-18.8	0.048	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-2.81	0.922	NA	NA
site 28	-2.91	0.995	-67.81	0.007	-13.86	0.613	NA	NA	NA	NA
site 29	76.45	0.007	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	-21.1	0.637	NA	NA
site 38b	NA	NA	-21.2	0.787	5.4	0.982	NA	NA	NA	NA
site 41	NA	NA	NA	NA	4.46	0.544	184.8	0.015	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 38: Difference between EI and FP for variable UT.K

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-22.19	0.361	NA	NA	-9.65	0.167	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-46.33	0.096	-2.02	0.989
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	-3.09	0.961	46.32	0.337	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	3.02	0.988	-18.84	0.05	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-3.07	0.904	NA	NA
site 28	-3.07	0.994	-68.23	0.008	-13.26	0.635	NA	NA	NA	NA
site 29	77.02	0.007	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	-20.7	0.65	NA	NA
site 38b	NA	NA	-21.22	0.787	5.53	0.981	NA	NA	NA	NA
site 41	NA	NA	NA	NA	5.31	0.433	186.33	0.014	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 39: Difference between EI and FP for variable UT.K2O

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-3.54	0.197	NA	NA	-0.3	0.768	NA	NA
site 19	NA	NA	NA	NA	NA	NA	2.12	0.264	1.71	0.811
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.11	0.999	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 40: Difference between EI and FP for variable UT.Ca

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-3.73	0.085	NA	NA	-3.65	0.089	NA	NA
site 19	NA	NA	NA	NA	NA	NA	1.07	0.733	1.22	0.832
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-1.52	0.911	NA	NA
site 28	-5.19	0.772	-6.23	0.548	-4.17	0.446	NA	NA	NA	NA
site 29	6.74	0.015	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	10.8	0.099	NA	NA
site 38b	NA	NA	-5.51	0.828	5.7	0.749	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 41: Difference between EI and FP for variable UT.Mg

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.03	0.959	NA	NA	0.73	0.482	NA	NA
site 19	NA	NA	NA	NA	NA	NA	3.68	0.027	0.75	0.508
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	64.83	0.596	NA	NA
site 28	-8.92	0.437	-3.86	0.732	0.26	0.882	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	14.05	0.638	NA	NA
site 38b	NA	NA	-2.99	0.679	20.34	0.933	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 42: Difference between EI and FP for variable UT.S

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	64.08	0.176	NA	NA
site 28	NA	NA	NA	NA	-19.55	0.976	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 43: Difference between EI and FP for variable UT.B

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 44: Difference between EI and FP for variable UT.Cl

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-14.91	0.969	NA	NA
site 28	NA	NA	NA	NA	15.73	0.983	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 45: Difference between EI and FP for variable UT.Cu

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	760.69	0.729	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 46: Difference between EI and FP for variable UT.Fe

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-985.45	0.069	NA	NA
site 28	NA	NA	NA	NA	-1876.17	0.172	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 47: Difference between EI and FP for variable UT.Mn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 48: Difference between EI and FP for variable UT.Mo

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-143.94	0.767	NA	NA
site 28	NA	NA	NA	NA	1206.62	0.167	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 49: Difference between EI and FP for variable UT.Zn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.13	0.801	NA	NA	-0.62	0.024	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.29	0.513	-0.3	0.508
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	-0.53	0.178	-0.29	0.082	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.16	0.661	0.22	0.127	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.09	0.459	NA	NA
site 28	0.37	0.347	-0.19	0.747	0.04	0.648	NA	NA	NA	NA
site 29	-0.16	0.012	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	0	0.899	-0.1	0.036	NA	NA
site 38b	NA	NA	-0.23	0.142	-0.09	0.328	NA	NA	NA	NA
site 41	NA	NA	NA	NA	0.46	0	-0.74	0.016	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 50: Difference between EI and FP for variable HI.N

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	1.74	0.258	NA	NA	-2	0.412	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-1.28	0.086	-0.84	0.247
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	-0.11	0.636	0.05	0.923	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	-0.04	0.76	0.35	0.283	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.7	0.32	NA	NA
site 28	0.3	0.248	-0.02	0.981	1.27	0.17	NA	NA	NA	NA
site 29	-0.39	0.448	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	0.52	0.346	0.57	0.145	NA	NA
site 38b	NA	NA	0.94	0.069	1.72	0.048	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-0.09	0.073	-0.39	0.015	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 51: Difference between EI and FP for variable HI.P

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.02	0.786	NA	NA	-0.08	0.238	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-0.03	0.274	-0.02	0.572
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	0.01	0.626	-0.13	0.022	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0	0.958	0.03	0.416	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.07	0.316	NA	NA
site 28	0.05	0.358	0.75	0.034	0.06	0.306	NA	NA	NA	NA
site 29	-0.09	0.03	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	0.06	0.074	NA	NA
site 38b	NA	NA	0.15	0.815	0.01	0.358	NA	NA	NA	NA
site 41	NA	NA	NA	NA	0.06	0.001	-0.09	0.022	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 52: Difference between EI and FP for variable HI.K

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-0.01	0.255	NA	NA	0	0.896	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	0.01	0.576
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	0	0.59	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 53: Difference between EI and FP for variable HI.Ca

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.15	0.116	NA	NA	-0.01	0.984	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-0.11	0.1	0.08	0.081
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.03	0.646	NA	NA
site 28	0.22	0.122	0.28	0.302	0.13	0.334	NA	NA	NA	NA
site 29	-0.13	0.218	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	-0.05	0.046	NA	NA
site 38b	NA	NA	0.27	0.496	-0.01	0.89	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 54: Difference between EI and FP for variable HI.Mg

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.65	0.224	NA	NA	-0.21	0.249	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-0.09	0.87	-0.02	0.93
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.15	0.492	NA	NA
site 28	0.14	0.423	0.05	0.818	0.11	0.506	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	0.08	0.677	NA	NA
site 38b	NA	NA	0.07	0.639	0.78	0.246	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 55: Difference between EI and FP for variable HI.S

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.07	0.232	NA	NA
site 28	NA	NA	NA	NA	0.15	0.028	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 56: Difference between EI and FP for variable HI.B

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 57: Difference between EI and FP for variable HI.Cl

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.03	0.327	NA	NA
site 28	NA	NA	NA	NA	-0.01	0.938	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 58: Difference between EI and FP for variable HI.Cu

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.01	0.374	NA	NA
site 28	NA	NA	NA	NA	-0.06	0.735	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 59: Difference between EI and FP for variable HI.Fe

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	0.02	0.693	NA	NA
site 28	NA	NA	NA	NA	0.01	0.146	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 60: Difference between EI and FP for variable HI.Mn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 61: Difference between EI and FP for variable HI.Mo

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.21	0.298	NA	NA
site 28	NA	NA	NA	NA	-0.1	0.355	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 62: Difference between EI and FP for variable HI.Zn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-12.95	0.003	-15.54	0	-26.73	0	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.75	0.909	0.25	0.72
site 20	15.01	0	14.05	0	20.63	0	NA	NA	NA	NA
site 21	-17.51	0	14.82	0.003	NA	NA	NA	NA	NA	NA
site 22	-38.06	0.008	-21.72	0.014	-4.27	0.377	NA	NA	NA	NA
site 23	-4.09	0.082	-6.05	0.055	-3.05	0.18	NA	NA	NA	NA
site 24	-13.98	0.014	-40.79	0	9.85	0.381	NA	NA	NA	NA
site 25	26.5	0.002	3	0.666	-21.49	0.077	NA	NA	NA	NA
site 26	NA	NA	NA	NA	15.9	0.029	7.41	0.045	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-10.99	0.015	NA	NA
site 28	1.42	0.562	-8.79	0.008	0.99	0.274	NA	NA	NA	NA
site 29	-11.99	0.001	-7.61	0.001	-1.78	0.112	NA	NA	NA	NA
site 38a	NA	NA	2.5	0.594	-8.87	0.003	-5.14	0.264	NA	NA
site 38b	NA	NA	-14.38	0.005	-9.12	0.051	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-141.43	0	-121.18	0	NA	NA
site 45	NA	NA	NA	NA	NA	NA	-7.84	0	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	15.93	0.057	NA	NA

Table 63: Difference between EI and FP for variable PFP.N

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	32.27	0.022	7.69	0.338	-31.92	0.059	NA	NA
site 19	NA	NA	NA	NA	NA	NA	2.9	0.909	0.96	0.72
site 20	121.78	0	136.91	0	167.21	0	NA	NA	NA	NA
site 21	155.16	0	143.57	0.001	NA	NA	NA	NA	NA	NA
site 22	-1454.32	0.004	-1303.68	0.002	-865.83	0.009	NA	NA	NA	NA
site 23	-32.89	0.02	-41.69	0.032	-26.01	0.046	NA	NA	NA	NA
site 24	-93.52	0.001	-58.62	0.005	71.07	0.115	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	2.69	0.742	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-7.03	0.726	NA	NA
site 28	10.8	0.562	-67.12	0.008	7.55	0.274	NA	NA	NA	NA
site 29	-146	0	-118.1	0	-35.55	0.006	NA	NA	NA	NA
site 38a	NA	NA	-70.31	0.07	-168.6	0	-146.34	0.002	NA	NA
site 38b	NA	NA	-196.58	0	-172.21	0.001	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-150.19	0	-128.32	0	NA	NA
site 45	NA	NA	NA	NA	NA	NA	-144.02	0	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	47.59	0.057	NA	NA

Table 64: Difference between EI and FP for variable PFP.P

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	14.09	0.022	3.36	0.338	-13.94	0.059	NA	NA
site 19	NA	NA	NA	NA	NA	NA	1.27	0.909	0.42	0.72
site 20	53.17	0	59.78	0	73	0	NA	NA	NA	NA
site 21	67.74	0	62.68	0.001	NA	NA	NA	NA	NA	NA
site 22	-634.96	0.004	-569.19	0.002	-378.02	0.009	NA	NA	NA	NA
site 23	-14.36	0.02	-18.2	0.032	-11.36	0.046	NA	NA	NA	NA
site 24	-40.83	0.001	-25.59	0.005	31.03	0.115	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	1.18	0.742	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-3.07	0.726	NA	NA
site 28	4.72	0.562	-29.31	0.008	3.29	0.274	NA	NA	NA	NA
site 29	-63.74	0	-51.56	0	-15.52	0.006	NA	NA	NA	NA
site 38a	NA	NA	-30.7	0.07	-73.61	0	-63.89	0.002	NA	NA
site 38b	NA	NA	-85.83	0	-75.19	0.001	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-65.57	0	-56.02	0	NA	NA
site 45	NA	NA	NA	NA	NA	NA	-62.88	0	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	20.78	0.057	NA	NA

Table 65: Difference between EI and FP for variable PFP.P2O5

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	16.98	0.022	4.05	0.338	-16.79	0.059	NA	NA
site 19	NA	NA	NA	NA	NA	NA	1.82	0.909	0.6	0.72
site 20	20.44	0.002	9.94	0.016	28.14	0	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	-1325.07	0.004	-1216.04	0.002	-830.75	0.008	NA	NA	NA	NA
site 23	-35.45	0.002	-39.37	0.015	-29.24	0.004	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	1.18	0.742	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	10.23	0.562	-63.57	0.008	7.15	0.274	NA	NA	NA	NA
site 29	-76.82	0	-62.14	0	-18.7	0.006	NA	NA	NA	NA
site 38a	NA	NA	-4.99	0.699	-41.13	0	-30.68	0.041	NA	NA
site 38b	NA	NA	-55.87	0.001	-42.12	0.012	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	-96.99	0	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 66: Difference between EI and FP for variable PFP.K

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	14.09	0.022	3.36	0.338	-13.94	0.059	NA	NA
site 19	NA	NA	NA	NA	NA	NA	1.51	0.909	0.5	0.72
site 20	16.96	0.002	8.25	0.016	23.35	0	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	-1099.54	0.004	-1009.07	0.002	-689.36	0.008	NA	NA	NA	NA
site 23	-29.42	0.002	-32.67	0.015	-24.26	0.004	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.98	0.742	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	8.49	0.562	-52.75	0.008	5.93	0.274	NA	NA	NA	NA
site 29	-63.74	0	-51.56	0	-15.52	0.006	NA	NA	NA	NA
site 38a	NA	NA	-4.14	0.699	-34.13	0	-25.46	0.041	NA	NA
site 38b	NA	NA	-46.36	0.001	-34.95	0.012	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	-80.48	0	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 67: Difference between EI and FP for variable PFP.K2O

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 68: Difference between EI and FP for variable PFP.Ca

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	28.3	0.562	-175.83	0.008	19.77	0.274	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 69: Difference between EI and FP for variable PFP.Mg

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	6.46	0.909	2.14	0.72
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	-1029.08	0	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 70: Difference between EI and FP for variable PFP.S

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 71: Difference between EI and FP for variable PFP.B

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	2.71	0.909	0.9	0.72
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 72: Difference between EI and FP for variable PFP.Cl

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 73: Difference between EI and FP for variable PFP.Cu

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 74: Difference between EI and FP for variable PFP.Fe

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 75: Difference between EI and FP for variable PFP.Mn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 76: Difference between EI and FP for variable PFP.Mo

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	375.72	0.022	89.57	0.338	-371.63	0.058	NA	NA
site 19	NA	NA	NA	NA	NA	NA	41.08	0.909	13.61	0.72
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	42.45	0.562	-263.75	0.008	29.65	0.274	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 77: Difference between EI and FP for variable PFP.Zn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-0.18	0.004	-0.14	0.071	-0.46	0.005	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.07	0.527	0.06	0.143
site 20	0.14	0.001	0.2	0.014	0.12	0.091	NA	NA	NA	NA
site 21	-0.35	0.001	0.14	0.027	NA	NA	NA	NA	NA	NA
site 22	-0.41	0.018	-0.07	0.044	-0.15	0.073	NA	NA	NA	NA
site 23	0.06	0.043	-0.06	0.274	-0.06	0.232	NA	NA	NA	NA
site 24	-0.13	0.736	-0.43	0.017	0.07	0.671	NA	NA	NA	NA
site 25	0.07	0.484	-0.67	0.001	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.21	0.046	0.15	0.107	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.12	0.025	NA	NA
site 28	0.01	0.888	-0.14	0.009	0	0.818	NA	NA	NA	NA
site 29	-0.3	0	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	0.03	0.705	-0.14	0.017	-0.07	0.201	NA	NA
site 38b	NA	NA	-0.24	0.065	-0.11	0.006	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-2.3	0	-2.41	0	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 78: Difference between EI and FP for variable PNB.N

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.11	0.397	-0.08	0.122	0.16	0.276	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-0.07	0.271	-0.04	0.089
site 20	0.29	0.02	0.3	0.012	0.27	0.006	NA	NA	NA	NA
site 21	0.4	0	0.25	0	NA	NA	NA	NA	NA	NA
site 22	-4.75	0.003	-2.9	0.004	-2.27	0.01	NA	NA	NA	NA
site 23	-0.34	0.095	-0.34	0.059	-0.15	0.126	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.03	0.264	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.06	0.63	NA	NA
site 28	0.08	0.2	-0.14	0.418	0.09	0.245	NA	NA	NA	NA
site 29	-0.65	0	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	-0.19	0.052	-0.5	0	-0.43	0.221	NA	NA
site 38b	NA	NA	-0.47	0.001	-0.38	0.037	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-0.36	0	-0.29	0	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 79: Difference between EI and FP for variable PNB.P

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	-0.05	0.632	0.02	0.787	-0.24	0.007	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-0.15	0.021	-0.02	0.282
site 20	0.05	0.198	0.02	0.017	0.06	0.005	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	-3.37	0.002	-4.85	0.002	-3.1	0.018	NA	NA	NA	NA
site 23	-0.14	0.005	-0.17	0.014	-0.14	0.003	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.02	0.144	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	0.1	0.332	-0.11	0.269	0.01	0.889	NA	NA	NA	NA
site 29	-0.42	0	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	-0.06	0.301	-0.22	0.013	-0.16	0.013	NA	NA
site 38b	NA	NA	-0.16	0.002	-0.13	0.094	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 80: Difference between EI and FP for variable PNB.K

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 81: Difference between EI and FP for variable PNB.Ca

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	0.14	0.228	-0.04	0.913	0.07	0.397	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 82: Difference between EI and FP for variable PNB.Mg

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	0.14	0.024	0.02	0.683
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 83: Difference between EI and FP for variable PNB.S

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 84: Difference between EI and FP for variable PNB.B

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 85: Difference between EI and FP for variable PNB.Cl

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 86: Difference between EI and FP for variable PNB.Cu

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 87: Difference between EI and FP for variable PNB.Fe

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 88: Difference between EI and FP for variable PNB.Mn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 89: Difference between EI and FP for variable PNB.Mo

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 28	NA	NA	NA	NA	14.42	0.517	NA	NA	NA	NA
site 29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 38b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 90: Difference between EI and FP for variable PNB.Zn

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	7.16	0.167	-1.66	0.488	-6.57	0.225	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-24.75	0.189	-9.95	0.123
site 20	9.38	0.005	7.19	0.034	14.35	0.006	NA	NA	NA	NA
site 21	-0.75	0.966	1.75	0.829	NA	NA	NA	NA	NA	NA
site 22	-25.29	0.282	3.62	0.448	5.83	0.629	NA	NA	NA	NA
site 23	1.1	0.879	-2.16	0.64	1.02	0.827	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	12.9	0.08	11.26	0.09	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.76	0.986	NA	NA
site 28	-0.94	0.987	-8.5	0.017	1.44	0.758	NA	NA	NA	NA
site 29	-8.9	0.01	1.66	0.532	0.67	0.765	NA	NA	NA	NA
site 38a	NA	NA	2.59	0.754	-2.12	0.382	2.37	0.456	NA	NA
site 38b	NA	NA	-14.93	0.081	-3.76	0.093	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-8.29	0.072	1.99	0.4	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	11.03	0.773	NA	NA

Table 91: Difference between EI and FP for variable AE

	2009		2010		2011		2012		2013	
	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value	Diff	p-value
site 18	NA	NA	0.15	0.531	NA	NA	-0.35	0.451	NA	NA
site 19	NA	NA	NA	NA	NA	NA	-0.42	0.214	-0.2	0.168
site 20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 21	0.07	0.776	0.05	0.721	NA	NA	NA	NA	NA	NA
site 22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 26	NA	NA	NA	NA	0.26	0.029	0.25	0.19	NA	NA
site 27	NA	NA	NA	NA	NA	NA	-0.05	0.729	NA	NA
site 28	-0.13	0.561	-0.17	0.027	-0.01	0.981	NA	NA	NA	NA
site 29	-0.12	0.475	NA	NA	NA	NA	NA	NA	NA	NA
site 38a	NA	NA	NA	NA	-0.09	0.508	0.2	0.17	NA	NA
site 38b	NA	NA	-0.44	0.312	0.07	0.881	NA	NA	NA	NA
site 41	NA	NA	NA	NA	-0.54	0.001	0.11	0.945	NA	NA
site 45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
site 49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 92: Difference between EI and FP for variable RE

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APPENDIX D

ANALYSIS OF VARIANCE FOR ALL DEPENDENT VARIABLES

This section provides results of analysis of variance (ANOVA) of two basic designs. One design is a split plot experiment with management system as the whole plot (factor A) and nitrogen (N) fertilization as the subplot (factor B). Management system had two levels: ecological intensification (EI) and farmer practice (FP). Nitrogen fertilization occurred at two levels: 1) adequate (N) and 2) none or at least at a very low rate (N0) as a co-application with a compound N-phosphorus fertilizer, like mono-ammonium phosphate. This design is summarized by the following four treatments:

Treatment	Management system	Nitrogen level
1	EI	N
2	EI	N0
3	FP	N
4	FP	N0

This design was analyzed with a two-way ANOVA. The other design was a randomized complete block design with management system as the sole factor, with EI and FP as the two levels. The EI and FP treatments in this design were fertilized with adequate rates of N:

Management system	Nitrogen level
EI	N
FP	N

This design was analyzed with a one-way ANOVA.

At locations implementing the first design (split plot), both the one-way ANOVA, using treatments 1 and 3 only, and the two-way ANOVA, utilizing all four treatments, were conducted.

The output that follows are arranged in the following manner

For all sites:

- table listing the individual observations used in the analyses
- one-way ANOVA
- bar chart graphing treatment means (bars) and standard deviations (error bars) of the EI-N and FP-N treatments.

For sites with the split-plot design, the following additional output is included:

- two-way ANOVA
- table of estimates of treatment means for various combinations of EI, FP, N, and N0
- bar chart graphing treatment means (bars) and standard deviations (error bars) for EI-N, FP-N, EI-N0, FP-N0
- table of contrasts looking at the differences between EI, FP, N and N0 combinations

Site numbers correspond to the following countries and nearest cities

Site	Country	Nearest city
18	Brazil	Itiquira
19	Brazil	Ponta Grossa
20	China	Gongzhuling
21	China	Shijiazhuang
22	India	Ranchi
23	India	Darwad
24	Argentina	Balcarce
25	Argentina	Oro Verde
26	USA	Ames, Iowa
27	USA	West Lafayette, Indiana
28	Mexico	Celaya
29	Mexico	Toluca
38a	Colombia	Buga
38b	Colombia	Buga
41	Russia	Novaya Tselina
45	USA	Virginia
46	Kenya	Muguga
49	Kenya	Wote

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10.1.23 Response Variable PFP.N . . . 1014
10.1.24 Response Variable PFP.P . . . 1015
10.1.25 Response Variable PFP.P2O5 . . . 1016
10.1.26 Response Variable PFP.K . . . 1017
10.1.27 Response Variable PFP.K2O . . . 1018
10.1.28 Response Variable PFP.S . . . 1019
10.1.29 Response Variable PNB.N . . . 1020
10.1.30 Response Variable PNB.P . . . 1021
10.1.31 Response Variable PNB.K . . . 1022
10.1.32 Response Variable AE . . . 1023
10.1.33 Response Variable RE . . . 1024
10.2 Year 2012 . . . 1025
10.2.1 Response Variable YG . . . 1026
10.2.2 Response Variable YS . . . 1028
10.2.3 Response Variable YT . . . 1031
10.2.4 Response Variable HI.G . . . 1033
10.2.5 Response Variable UG.N . . . 1036
10.2.6 Response Variable UG.P . . . 1038
10.2.7 Response Variable UG.P2O5 . . . 1041
10.2.8 Response Variable UG.K . . . 1043
10.2.9 Response Variable UG.K2O . . . 1046
10.2.10 Response Variable US.N . . . 1048
10.2.11 Response Variable US.P . . . 1051
10.2.12 Response Variable US.P2O5 . . . 1053
10.2.13 Response Variable US.K . . . 1056
10.2.14 Response Variable US.K2O . . . 1058
10.2.15 Response Variable UT.N . . . 1061
10.2.16 Response Variable UT.P . . . 1063
10.2.17 Response Variable UT.P2O5 . . . 1066
10.2.18 Response Variable UT.K . . . 1068
10.2.19 Response Variable UT.K2O . . . 1071
10.2.20 Response Variable HI.N . . . 1073
10.2.21 Response Variable HI.P . . . 1076
10.2.22 Response Variable HI.K . . . 1078
10.2.23 Response Variable PFP.N . . . 1081
10.2.24 Response Variable PFP.S . . . 1082
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10.2.26 Response Variable AE . . . 1084
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11.1.1 Response Variable YG . . . 1089
11.1.2 Response Variable YS . . . 1092
11.1.3 Response Variable YT . . . 1095
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11.1.5 Response Variable UG.N . . . 1101
11.1.6 Response Variable UG.P . . . 1104
11.1.7 Response Variable UG.P2O5 . . . 1107
11.1.8 Response Variable UG.K . . . 1110
11.1.9 Response Variable UG.K2O . . . 1113
11.1.10 Response Variable UG.Ca . . . 1116
11.1.11 Response Variable UG.Mg . . . 1119
11.1.12 Response Variable UG.S . . . 1122
11.1.13 Response Variable UG.B . . . 1125
11.1.14 Response Variable UG.Cu . . . 1128
11.1.15 Response Variable UG.Fe . . . 1131
11.1.16 Response Variable UG.Mn . . . 1134
11.1.17 Response Variable UG.Zn . . . 1137
11.1.18 Response Variable US.N . . . 1140
11.1.19 Response Variable US.P . . . 1143
11.1.20 Response Variable US.P2O5 . . . 1146
11.1.21 Response Variable US.K . . . 1149
11.1.22 Response Variable US.K2O . . . 1152
11.1.23 Response Variable US.Ca . . . 1155
11.1.24 Response Variable US.Mg . . . 1158
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11.1.26 Response Variable US.B . . . 1164
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11.1.28 Response Variable US.Fe . . . 1170
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11.1.31 Response Variable UT.N . . . 1179
11.1.32 Response Variable UT.P . . . 1182
11.1.33 Response Variable UT.P2O5 . . . 1185
11.1.34 Response Variable UT.K . . . 1188
11.1.35 Response Variable UT.K2O . . . 1191
11.1.36 Response Variable UT.Ca . . . 1194
11.1.37 Response Variable UT.Mg . . . 1197
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11.1.39 Response Variable UT.B . . . 1203
11.1.40 Response Variable UT.Cu . . . 1206
11.1.41 Response Variable UT.Fe . . . 1209
11.1.42 Response Variable UT.Mn . . . 1212
11.1.43 Response Variable UT.Zn . . . 1215
11.1.44 Response Variable HI.N . . . 1218
11.1.45 Response Variable HI.P . . . 1221
11.1.46 Response Variable HI.K . . . 1224

11.1.47 Response Variable HI.Ca . . . 1227
11.1.48 Response Variable HI.Mg . . . 1230
11.1.49 Response Variable HI.S . . . 1233
11.1.50 Response Variable HI.B . . . 1236
11.1.51 Response Variable HI.Cu . . . 1239
11.1.52 Response Variable HI.Fe . . . 1242
11.1.53 Response Variable HI.Mn . . . 1245
11.1.54 Response Variable HI.Zn . . . 1248
11.1.55 Response Variable PFP.N . . . 1251
11.1.56 Response Variable PFP.P . . . 1252
11.1.57 Response Variable PFP.P2O5 . . . 1253
11.1.58 Response Variable PNB.N . . . 1254
11.1.59 Response Variable PNB.P . . . 1255
11.1.60 Response Variable AE . . . 1256
11.1.61 Response Variable RE . . . 1257

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12.1 Year 2009 . . . 1260
12.1.1 Response Variable YG . . . 1261
12.1.2 Response Variable YS . . . 1263
12.1.3 Response Variable YT . . . 1266
12.1.4 Response Variable HI.G . . . 1268
12.1.5 Response Variable UG.N . . . 1271
12.1.6 Response Variable UG.P . . . 1273
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12.1.8 Response Variable UG.K . . . 1278
12.1.9 Response Variable UG.K2O . . . 1281
12.1.10 Response Variable UG.Mg . . . 1283
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12.1.12 Response Variable US.N . . . 1288
12.1.13 Response Variable US.P . . . 1291
12.1.14 Response Variable US.P2O5 . . . 1293
12.1.15 Response Variable US.K . . . 1296
12.1.16 Response Variable US.K2O . . . 1298
12.1.17 Response Variable US.Mg . . . 1301
12.1.18 Response Variable US.S . . . 1303
12.1.19 Response Variable UT.N . . . 1306
12.1.20 Response Variable UT.P . . . 1308
12.1.21 Response Variable UT.P2O5 . . . 1311
12.1.22 Response Variable UT.K . . . 1313
12.1.23 Response Variable UT.K2O . . . 1316
12.1.24 Response Variable UT.Mg . . . 1318
12.1.25 Response Variable UT.S . . . 1321
12.1.26 Response Variable HI.N . . . 1323
12.1.27 Response Variable HI.P . . . 1326
12.1.28 Response Variable HI.K . . . 1328
12.1.29 Response Variable HI.Mg . . . 1331
12.1.30 Response Variable HI.S . . . 1333
12.1.31 Response Variable PFP.N . . . 1336
12.1.32 Response Variable PFP.P . . . 1337
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12.1.34 Response Variable PFP.K . . . 1339
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12.1.36 Response Variable PFP.Mg . . . 1341
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12.1.38 Response Variable PNB.N . . . 1343
12.1.39 Response Variable PNB.P . . . 1344
12.1.40 Response Variable PNB.K . . . 1345
12.1.41 Response Variable PNB.Mg . . . 1346
12.1.42 Response Variable AE . . . 1347
12.1.43 Response Variable RE . . . 1348
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12.2.1 Response Variable YG . . . 1350
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12.2.3 Response Variable YT . . . 1355
12.2.4 Response Variable HI.G . . . 1357
12.2.5 Response Variable UG.N . . . 1360
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12.2.8 Response Variable UG.K . . . 1367
12.2.9 Response Variable UG.K2O . . . 1370
12.2.10 Response Variable UG.Mg . . . 1372
12.2.11 Response Variable UG.S . . . 1375
12.2.12 Response Variable US.N . . . 1377
12.2.13 Response Variable US.P . . . 1380
12.2.14 Response Variable US.P2O5 . . . 1382
12.2.15 Response Variable US.K . . . 1385
12.2.16 Response Variable US.K2O . . . 1387
12.2.17 Response Variable US.Mg . . . 1390
12.2.18 Response Variable US.S . . . 1392
12.2.19 Response Variable UT.N . . . 1395
12.2.20 Response Variable UT.P . . . 1397
12.2.21 Response Variable UT.P2O5 . . . 1400
12.2.22 Response Variable UT.K . . . 1402
12.2.23 Response Variable UT.K2O . . . 1405
12.2.24 Response Variable UT.Mg . . . 1407
12.2.25 Response Variable UT.S . . . 1410
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12.2.38 Response Variable PNB.N . . . 1432
12.2.39 Response Variable PNB.P . . . 1433
12.2.40 Response Variable PNB.K . . . 1434

12.2.41 Response Variable PNB.Mg . . . 1435
12.2.42 Response Variable AE . . . 1436
12.2.43 Response Variable RE . . . 1437
12.3 Year 2011 . . . 1438
12.3.1 Response Variable YG . . . 1439
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12.3.3 Response Variable YT . . . 1444
12.3.4 Response Variable HI.G . . . 1446
12.3.5 Response Variable UG.N . . . 1449
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12.3.7 Response Variable UG.P2O5 . . . 1454
12.3.8 Response Variable UG.K . . . 1456
12.3.9 Response Variable UG.K2O . . . 1459
12.3.10 Response Variable UG.Ca . . . 1461
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12.3.14 Response Variable UG.Cu . . . 1469
12.3.15 Response Variable UG.Fe . . . 1472
12.3.16 Response Variable UG.Mn . . . 1474
12.3.17 Response Variable UG.Zn . . . 1477
12.3.18 Response Variable US.N . . . 1479
12.3.19 Response Variable US.P . . . 1482
12.3.20 Response Variable US.P2O5 . . . 1484
12.3.21 Response Variable US.K . . . 1487
12.3.22 Response Variable US.K2O . . . 1489
12.3.23 Response Variable US.Ca . . . 1492
12.3.24 Response Variable US.Mg . . . 1494
12.3.25 Response Variable US.S . . . 1497
12.3.26 Response Variable US.B . . . 1499
12.3.27 Response Variable US.Cu . . . 1502
12.3.28 Response Variable US.Fe . . . 1504
12.3.29 Response Variable US.Mn . . . 1507
12.3.30 Response Variable US.Zn . . . 1509
12.3.31 Response Variable UT.N . . . 1512
12.3.32 Response Variable UT.P . . . 1514
12.3.33 Response Variable UT.P2O5 . . . 1517
12.3.34 Response Variable UT.K . . . 1519
12.3.35 Response Variable UT.K2O . . . 1522
12.3.36 Response Variable UT.Ca . . . 1524
12.3.37 Response Variable UT.Mg . . . 1525
12.3.38 Response Variable UT.S . . . 1527
12.3.39 Response Variable UT.B . . . 1530
12.3.40 Response Variable UT.Cu . . . 1532
12.3.41 Response Variable UT.Fe . . . 1535
12.3.42 Response Variable UT.Mn . . . 1536
12.3.43 Response Variable UT.Zn . . . 1538
12.3.44 Response Variable HI.N . . . 1541
12.3.45 Response Variable HI.P . . . 1543
12.3.46 Response Variable HI.K . . . 1546
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12.3.48 Response Variable HI.Mg . . . 1549
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12.3.51 Response Variable HI.Cu . . . 1556
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12.3.58 Response Variable PFP.K . . . 1570
12.3.59 Response Variable PFP.K2O . . . 1571
12.3.60 Response Variable PFP.Mg . . . 1572
12.3.61 Response Variable PFP.Zn . . . 1573
12.3.62 Response Variable PNB.N . . . 1574
12.3.63 Response Variable PNB.P . . . 1575
12.3.64 Response Variable PNB.K . . . 1576
12.3.65 Response Variable PNB.Mg . . . 1577
12.3.66 Response Variable PNB.Zn . . . 1578
12.3.67 Response Variable AE . . . 1579
12.3.68 Response Variable RE . . . 1580

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13.1 Year 2009 . . . 1582
13.1.1 Response Variable YG . . . 1583
13.1.2 Response Variable YS . . . 1585
13.1.3 Response Variable YT . . . 1588
13.1.4 Response Variable HI.G . . . 1590
13.1.5 Response Variable UG.N . . . 1593
13.1.6 Response Variable UG.P . . . 1595
13.1.7 Response Variable UG.P2O5 . . . 1598
13.1.8 Response Variable UG.K . . . 1600
13.1.9 Response Variable UG.K2O . . . 1603
13.1.10 Response Variable UG.Mg . . . 1605
13.1.11 Response Variable US.N . . . 1608
13.1.12 Response Variable US.P . . . 1610
13.1.13 Response Variable US.P2O5 . . . 1613
13.1.14 Response Variable US.K . . . 1615
13.1.15 Response Variable US.K2O . . . 1618
13.1.16 Response Variable US.Mg . . . 1620
13.1.17 Response Variable UT.N . . . 1623
13.1.18 Response Variable UT.P . . . 1625
13.1.19 Response Variable UT.P2O5 . . . 1628
13.1.20 Response Variable UT.K . . . 1630
13.1.21 Response Variable UT.K2O . . . 1633
13.1.22 Response Variable UT.Mg . . . 1635
13.1.23 Response Variable HI.N . . . 1638
13.1.24 Response Variable HI.P . . . 1640
13.1.25 Response Variable HI.K . . . 1643
13.1.26 Response Variable HI.Mg . . . 1645
13.1.27 Response Variable PFP.N . . . 1648

13.1.28 Response Variable PFP.P . . . 1649
13.1.29 Response Variable PFP.P2O5 . . . 1650
13.1.30 Response Variable PFP.K . . . 1651
13.1.31 Response Variable PFP.K2O . . . 1652
13.1.32 Response Variable PFP.Mg . . . 1653
13.1.33 Response Variable PFP.S . . . 1654
13.1.34 Response Variable PFP.Zn . . . 1655
13.1.35 Response Variable PNB.N . . . 1656
13.1.36 Response Variable PNB.P . . . 1657
13.1.37 Response Variable PNB.K . . . 1658
13.1.38 Response Variable PNB.Mg . . . 1659
13.1.39 Response Variable AE . . . 1660
13.1.40 Response Variable RE . . . 1661
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13.2.2 Response Variable YS . . . 1665
13.2.3 Response Variable YT . . . 1668
13.2.4 Response Variable HI.G . . . 1670
13.2.5 Response Variable PFP.N . . . 1673
13.2.6 Response Variable PFP.P . . . 1674
13.2.7 Response Variable PFP.P2O5 . . . 1675
13.2.8 Response Variable PFP.K . . . 1676
13.2.9 Response Variable PFP.K2O . . . 1677
13.2.10 Response Variable PFP.Mg . . . 1678
13.2.11 Response Variable PFP.S . . . 1679
13.2.12 Response Variable PFP.Zn . . . 1680
13.2.13 Response Variable AE . . . 1681
13.3 Year 2011 . . . 1682
13.3.1 Response Variable YG . . . 1683
13.3.2 Response Variable YS . . . 1685
13.3.3 Response Variable YT . . . 1688
13.3.4 Response Variable HI.G . . . 1690
13.3.5 Response Variable PFP.N . . . 1693
13.3.6 Response Variable PFP.P . . . 1694
13.3.7 Response Variable PFP.P2O5 . . . 1695
13.3.8 Response Variable PFP.K . . . 1696
13.3.9 Response Variable PFP.K2O . . . 1697
13.3.10 Response Variable PFP.Mg . . . 1698
13.3.11 Response Variable PFP.S . . . 1699
13.3.12 Response Variable PFP.Zn . . . 1700
13.3.13 Response Variable AE . . . 1701

14 Analysis of Variance for Site 38 1703
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14.1.1 Response Variable YG . . . 1705
14.1.2 Response Variable UG.N . . . 1707
14.1.3 Response Variable UG.P . . . 1710
14.1.4 Response Variable UG.P2O5 . . . 1712
14.1.5 Response Variable UG.K . . . 1715
14.1.6 Response Variable UG.K2O . . . 1717
14.1.7 Response Variable UG.Mg . . . 1720

14.1.8 Response Variable UG.S . . . 1722
14.1.9 Response Variable PFP.N . . . 1725
14.1.10 Response Variable PFP.P . . . 1726
14.1.11 Response Variable PFP.P2O5 . . . 1727
14.1.12 Response Variable PFP.K . . . 1728
14.1.13 Response Variable PFP.K2O . . . 1729
14.1.14 Response Variable PFP.Mg . . . 1730
14.1.15 Response Variable PFP.S . . . 1731
14.1.16 Response Variable PFP.Zn . . . 1732
14.1.17 Response Variable PNB.N . . . 1733
14.1.18 Response Variable PNB.P . . . 1734
14.1.19 Response Variable PNB.K . . . 1735
14.1.20 Response Variable PNB.Mg . . . 1736
14.1.21 Response Variable PNB.S . . . 1737
14.1.22 Response Variable AE . . . 1738
14.2 Year 2010b . . . 1739
14.2.1 Response Variable YG . . . 1740
14.2.2 Response Variable YS . . . 1742
14.2.3 Response Variable YT . . . 1745
14.2.4 Response Variable HI.G . . . 1747
14.2.5 Response Variable UG.N . . . 1750
14.2.6 Response Variable UG.P . . . 1752
14.2.7 Response Variable UG.P2O5 . . . 1755
14.2.8 Response Variable UG.K . . . 1757
14.2.9 Response Variable UG.K2O . . . 1760
14.2.10 Response Variable UG.Mg . . . 1762
14.2.11 Response Variable UG.S . . . 1765
14.2.12 Response Variable US.N . . . 1767
14.2.13 Response Variable US.P . . . 1770
14.2.14 Response Variable US.P2O5 . . . 1772
14.2.15 Response Variable US.K . . . 1775
14.2.16 Response Variable US.K2O . . . 1777
14.2.17 Response Variable US.Mg . . . 1780
14.2.18 Response Variable US.S . . . 1782
14.2.19 Response Variable UT.N . . . 1785
14.2.20 Response Variable UT.P . . . 1787
14.2.21 Response Variable UT.P2O5 . . . 1790
14.2.22 Response Variable UT.K . . . 1792
14.2.23 Response Variable UT.K2O . . . 1795
14.2.24 Response Variable UT.Mg . . . 1797
14.2.25 Response Variable UT.S . . . 1800
14.2.26 Response Variable HI.N . . . 1802
14.2.27 Response Variable HI.P . . . 1805
14.2.28 Response Variable HI.K . . . 1807
14.2.29 Response Variable HI.Mg . . . 1810
14.2.30 Response Variable HI.S . . . 1812
14.2.31 Response Variable PFP.N . . . 1815
14.2.32 Response Variable PFP.P . . . 1816
14.2.33 Response Variable PFP.P2O5 . . . 1817
14.2.34 Response Variable PFP.K . . . 1818
14.2.35 Response Variable PFP.K2O . . . 1819

14.2.36 Response Variable PFP.Mg . . . 1820
14.2.37 Response Variable PFP.S . . . 1821
14.2.38 Response Variable PFP.Zn . . . 1822
14.2.39 Response Variable PNB.N . . . 1823
14.2.40 Response Variable PNB.P . . . 1824
14.2.41 Response Variable PNB.K . . . 1825
14.2.42 Response Variable PNB.Mg . . . 1826
14.2.43 Response Variable PNB.S . . . 1827
14.2.44 Response Variable AE . . . 1828
14.2.45 Response Variable RE . . . 1829
14.3 Year 2011a . . . 1830
14.3.1 Response Variable YG . . . 1831
14.3.2 Response Variable YS . . . 1833
14.3.3 Response Variable YT . . . 1836
14.3.4 Response Variable HI.G . . . 1838
14.3.5 Response Variable UG.N . . . 1841
14.3.6 Response Variable UG.P . . . 1843
14.3.7 Response Variable UG.P2O5 . . . 1846
14.3.8 Response Variable UG.K . . . 1848
14.3.9 Response Variable UG.K2O . . . 1851
14.3.10 Response Variable UG.Mg . . . 1853
14.3.11 Response Variable UG.S . . . 1856
14.3.12 Response Variable US.N . . . 1858
14.3.13 Response Variable US.P . . . 1861
14.3.14 Response Variable US.P2O5 . . . 1863
14.3.15 Response Variable UT.N . . . 1866
14.3.16 Response Variable UT.P . . . 1868
14.3.17 Response Variable UT.P2O5 . . . 1871
14.3.18 Response Variable HI.N . . . 1873
14.3.19 Response Variable HI.P . . . 1876
14.3.20 Response Variable PFP.N . . . 1878
14.3.21 Response Variable PFP.P . . . 1880
14.3.22 Response Variable PFP.P2O5 . . . 1881
14.3.23 Response Variable PFP.K . . . 1882
14.3.24 Response Variable PFP.K2O . . . 1883
14.3.25 Response Variable PFP.Mg . . . 1884
14.3.26 Response Variable PFP.S . . . 1885
14.3.27 Response Variable PFP.Zn . . . 1886
14.3.28 Response Variable PNB.N . . . 1887
14.3.29 Response Variable PNB.P . . . 1888
14.3.30 Response Variable PNB.K . . . 1889
14.3.31 Response Variable PNB.Mg . . . 1890
14.3.32 Response Variable PNB.S . . . 1891
14.3.33 Response Variable AE . . . 1892
14.3.34 Response Variable RE . . . 1893
14.4 Year 2011b . . . 1894
14.4.1 Response Variable YG . . . 1895
14.4.2 Response Variable YS . . . 1897
14.4.3 Response Variable YT . . . 1900
14.4.4 Response Variable HI.G . . . 1902
14.4.5 Response Variable UG.N . . . 1905

14.4.6 Response Variable UG.P . . . 1907
14.4.7 Response Variable UG.P2O5 . . . 1910
14.4.8 Response Variable UG.K . . . 1912
14.4.9 Response Variable UG.K2O . . . 1915
14.4.10 Response Variable UG.Mg . . . 1917
14.4.11 Response Variable UG.S . . . 1920
14.4.12 Response Variable US.N . . . 1922
14.4.13 Response Variable US.P . . . 1925
14.4.14 Response Variable US.P2O5 . . . 1927
14.4.15 Response Variable US.K . . . 1930
14.4.16 Response Variable US.K2O . . . 1932
14.4.17 Response Variable US.Mg . . . 1935
14.4.18 Response Variable US.S . . . 1937
14.4.19 Response Variable UT.N . . . 1940
14.4.20 Response Variable UT.P . . . 1942
14.4.21 Response Variable UT.P2O5 . . . 1945
14.4.22 Response Variable UT.K . . . 1947
14.4.23 Response Variable UT.K2O . . . 1950
14.4.24 Response Variable UT.Mg . . . 1952
14.4.25 Response Variable UT.S . . . 1955
14.4.26 Response Variable HI.N . . . 1957
14.4.27 Response Variable HI.P . . . 1960
14.4.28 Response Variable HI.K . . . 1962
14.4.29 Response Variable HI.Mg . . . 1965
14.4.30 Response Variable HI.S . . . 1967
14.4.31 Response Variable PFP.N . . . 1970
14.4.32 Response Variable PFP.P . . . 1971
14.4.33 Response Variable PFP.P2O5 . . . 1972
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14.4.38 Response Variable PFP.Zn . . . 1977
14.4.39 Response Variable PNB.N . . . 1978
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14.4.42 Response Variable PNB.Mg . . . 1981
14.4.43 Response Variable PNB.S . . . 1982
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14.5.5 Response Variable UG.N . . . 1996
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14.5.27 Response Variable HI.P . . . 2051
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14.5.29 Response Variable HI.Mg . . . 2056
14.5.30 Response Variable HI.S . . . 2058
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14.5.32 Response Variable PFP.P . . . 2062
14.5.33 Response Variable PFP.P2O5 . . . 2063
14.5.34 Response Variable PFP.K . . . 2064
14.5.35 Response Variable PFP.K2O . . . 2065
14.5.36 Response Variable PFP.Mg . . . 2066
14.5.37 Response Variable PFP.S . . . 2067
14.5.38 Response Variable PFP.Zn . . . 2068
14.5.39 Response Variable PNB.N . . . 2069
14.5.40 Response Variable PNB.P . . . 2070
14.5.41 Response Variable PNB.K . . . 2071
14.5.42 Response Variable PNB.Mg . . . 2072
14.5.43 Response Variable PNB.S . . . 2073
14.5.44 Response Variable AE . . . 2074
14.5.45 Response Variable RE . . . 2075

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15.1.4 Response Variable HI.G . . . 2086
15.1.5 Response Variable UG.N . . . 2089
15.1.6 Response Variable UG.P . . . 2091
15.1.7 Response Variable UG.P2O5 . . . 2094
15.1.8 Response Variable UG.K . . . 2096
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15.2.9 Response Variable UG.K2O . . . 2165
15.2.10 Response Variable US.N . . . 2167
15.2.11 Response Variable US.P . . . 2170
15.2.12 Response Variable US.P2O5 . . . 2172
15.2.13 Response Variable US.K . . . 2175
15.2.14 Response Variable US.K2O . . . 2177
15.2.15 Response Variable UT.N . . . 2180
15.2.16 Response Variable UT.P . . . 2182
15.2.17 Response Variable UT.P2O5 . . . 2185
15.2.18 Response Variable UT.K . . . 2187
15.2.19 Response Variable UT.K2O . . . 2190
15.2.20 Response Variable HI.N . . . 2192
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15.2.30 Response Variable PNB.K . . . 2207
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16.1 Year 2012 2212
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16.1.2 Response Variable PFP.N 2214
16.1.3 Response Variable PFP.P 2215
16.1.4 Response Variable PFP.P2O5 2216
16.1.5 Response Variable PFP.K 2217
16.1.6 Response Variable PFP.K2O 2218
16.1.7 Response Variable PFP.S 2219
16.1.8 Response Variable PFP.Zn 2220

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17.1.1 Response Variable YG 2223
17.1.2 Response Variable YS 2225
17.1.3 Response Variable YT 2228
17.1.4 Response Variable HI.G 2230

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18.1.1 Response Variable YG 2235
18.1.2 Response Variable YS 2237
18.1.3 Response Variable YT 2240
18.1.4 Response Variable HI.G 2242
18.1.5 Response Variable PFP.N 2245
18.1.6 Response Variable PFP.P 2246
18.1.7 Response Variable PFP.P2O5 2247
18.1.8 Response Variable PFP.K 2248
18.1.9 Response Variable PFP.K2O 2249
18.1.10 Response Variable PFP.Ca 2250
18.1.11 Response Variable PFP.Mg 2251
18.1.12 Response Variable PFP.S 2252
18.1.13 Response Variable PFP.Zn 2253
18.1.14 Response Variable AE 2254

Chapter 1

Introduction

The following is a list of dependent variables and their descriptions.

```
1 YG Grain dry matter yield (kg DM ha-1)
2 YS Stover dry matter yield (kg DM ha-1)
3 YT Total dry matter yield (kg DM ha-1)
4 HI.G Harvest index (unitless)
5 UG.N Grain N uptake (kg N ha-1)
6 UG.P Grain P uptake (kg P ha-1)
7 UG.P2O5 Grain P2O5 uptake (kg P2O5 ha-1)
8 UG.K Grain K uptake (kg K ha-1)
9 UG.K2O Grain K2O uptake (kg K2O ha-1)
10 UG.Ca Grain Ca uptake (kg Ca ha-1)
11 UG.Mg Grain Mg uptake (kg Mg ha-1)
12 UG.S Grain S uptake (kg S ha-1)
13 UG.B Grain B uptake (kg B ha-1)
14 UG.Cl Grain Cl uptake (kg Cl ha-1)
15 UG.Cu Grain Cu uptake (kg Cu ha-1)
16 UG.Fe Grain Fe uptake (kg Fe ha-1)
17 UG.Mn Grain Mn uptake (kg Mn ha-1)
18 UG.Mo Grain Mo uptake (kg Mo ha-1)
19 UG.Zn Grain Zn uptake (kg Zn ha-1)
20 US.N Stover N uptake (kg N ha-1)
21 US.P Stover P uptake (kg P ha-1)
22 US.P2O5 Stover P2O5 uptake (kg P2O5 ha-1)
23 US.K Stover K uptake (kg K ha-1)
24 US.K2O Stover K2O uptake (kg K2O ha-1)
25 US.Ca Stover Ca uptake (kg Ca ha-1)
26 US.Mg Stover Mg uptake (kg Mg ha-1)
27 US.S Stover S uptake (kg S ha-1)
28 US.B Stover B uptake (kg B ha-1)
29 US.Cl Stover Cl uptake (kg Cl ha-1)
30 US.Cu Stover Cu uptake (kg Cu ha-1)
31 US.Fe Stover Fe uptake (kg Fe ha-1)
32 US.Mn Stover Mn uptake (kg Mn ha-1)
33 US.Mo Stover Mo uptake (kg Mo ha-1)
34 US.Zn Stover Zn uptake (kg Zn ha-1)
35 UT.N Total N uptake (kg N ha-1)
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36 UT.P Total P uptake (kg P ha-1)
37 UT.P2O5 Total P2O5 uptake (kg P2O5 ha-1)
38 UT.K Total K uptake (kg K ha-1)
39 UT.K2O Total K2O uptake (kg K2O ha-1)
40 UT.Ca Total Ca uptake (kg Ca ha-1)
41 UT.Mg Total Mg uptake (kg Mg ha-1)
42 UT.S Total S uptake (kg S ha-1)
43 UT.B Total B uptake (kg B ha-1)
44 UT.Cl Total Cl uptake (kg Cl ha-1)
45 UT.Cu Total Cu uptake (kg Cu ha-1)
46 UT.Fe Total Fe uptake (kg Fe ha-1)
47 UT.Mn Total Mn uptake (kg Mn ha-1)
48 UT.Mo Total Mo uptake (kg Mo ha-1)
49 UT.Zn Total Zn uptake (kg Zn ha-1)
50 HI.N N harvest index (unitless)
51 HI.P P harvest index (unitless)
52 HI.K K harvest index (unitless)
53 HI.Ca Ca harvest index (unitless)
54 HI.Mg Mg harvest index (unitless)
55 HI.S S harvest index (unitless)
56 HI.B B harvest index (unitless)
57 HI.Cl Cl harvest index (unitless)
58 HI.Cu Cu harvest index (unitless)
59 HI.Fe Fe harvest index (unitless)
60 HI.Mn Mn harvest index (unitless)
61 HI.Mo Mo harvest index (unitless)
62 HI.Zn Zn harvest index (unitless)
63 PFP.N N partial factor productivity (kg grain DM (kg N)-1)
64 PFP.P P partial factor productivity (kg grain DM (kg P)-1)
65 PFP.P2O5 P2O5 partial factor productivity (kg grain DM (kg P2O5)-1)
66 PFP.K K partial factor productivity (kg grain DM (kg K)-1)
67 PFP.K2O K2O partial factor productivity (kg grain DM (kg K2O)-1)
68 PFP.Ca Ca partial factor productivity (kg grain DM (kg Ca)-1)
69 PFP.Mg Mg partial factor productivity (kg grain DM (kg Mg)-1)
70 PFP.S S partial factor productivity (kg grain DM (kg S)-1)
71 PFP.B B partial factor productivity (kg grain DM (kg B)-1)
72 PFP.Cl Cl partial factor productivity (kg grain DM (kg Cl)-1)
73 PFP.Cu Cu partial factor productivity (kg grain DM (kg Cu)-1)
74 PFP.Fe Fe partial factor productivity (kg grain DM (kg Fe)-1)
75 PFP.Mn Mn partial factor productivity (kg grain DM (kg Mn)-1)
76 PFP.Mo Mo partial factor productivity (kg grain DM (kg Mo)-1)
77 PFP.Zn Zn partial factor productivity (kg grain DM (kg Zn)-1)
78 PNB.N N partial nutrient balance (unitless)
79 PNB.P P partial nutrient balance (unitless)
80 PNB.K K partial nutrient balance (unitless)
81 PNB.Ca Ca partial nutrient balance (unitless)
82 PNB.Mg Mg partial nutrient balance (unitless)
83 PNB.S S partial nutrient balance (unitless)
84 PNB.B B partial nutrient balance (unitless)
85 PNB.Cl Cl partial nutrient balance (unitless)
86 PNB.Cu Cu partial nutrient balance (unitless)
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```
87 PNB.Fe Fe partial nutrient balance (unitless)
88 PNB.Mn Mn partial nutrient balance (unitless)
89 PNB.Mo Mo partial nutrient balance (unitless)
90 PNB.Zn Zn partial nutrient balance (unitless)
91 AE.N N agronomic efficiency (kg grain DM increase (kg N)-1)
92 RE.N N recovery efficiency (kg total N uptake increase (kg N)-1)
```

Chapter 2

Analysis of Variance for Site 18

2.1 Year 2010

There are 47 variables not observed: UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

2.1.1 Response Variable YG

	rep	A	B	y
1	1	FP	N0	6241.000
2	2	FP	N0	6057.800
3	3	FP	N0	6075.900
4	4	FP	N0	5800.600
5	1	FP	N	6743.700
6	2	FP	N	6147.800
7	3	FP	N	6423.500
8	4	FP	N	6101.200
9	1	EI	N0	5004.400
10	2	EI	N0	6258.400
11	3	EI	N0	6270.300
12	4	EI	N0	5699.200
13	1	EI	N	7061.000
14	2	EI	N	7028.300
15	3	EI	N	6815.700
16	4	EI	N	6765.500

Table 2.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	6917.625	117.164	5.200	59.040	6620.004	7215.246	0.000
A FP	6354.050	117.164	5.200	54.230	6056.429	6651.671	0.000
A EI-FP	563.575	129.296	3.000	4.360	152.910	974.240	0.022

Table 2.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 18 in year 2010 .

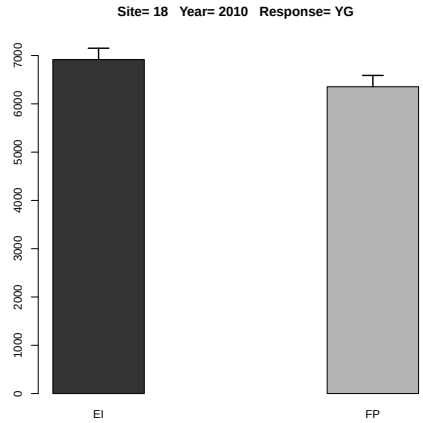

Figure 2.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	96158.635	96158.635	0.813	5.998	0.402
B	1.000	2015761.051	2015761.051	17.041	5.934	0.006
A:B	1.000	638920.456	638920.456	5.401	5.934	0.060

Table 2.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6362.850	128.549	6.000	49.500	6048.271	6677.429	0.000
2	FP		6198.938	128.549	6.000	48.220	5884.358	6513.517	0.000
3		N	6635.837	125.121	12.000	53.040	6363.170	6908.505	0.000
4		N0	5925.950	125.121	12.000	47.360	5653.282	6198.618	0.000
5	EI	N	6917.625	176.948	12.000	39.090	6532.015	7303.235	0.000
6	FP	N	6354.050	176.948	12.000	35.910	5968.440	6739.660	0.000
7	EI	N0	5808.075	176.948	12.000	32.820	5422.465	6193.685	0.000
8	FP	N0	6043.825	176.948	12.000	34.160	5658.215	6429.435	0.000

Table 2.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 18 in year 2010
.

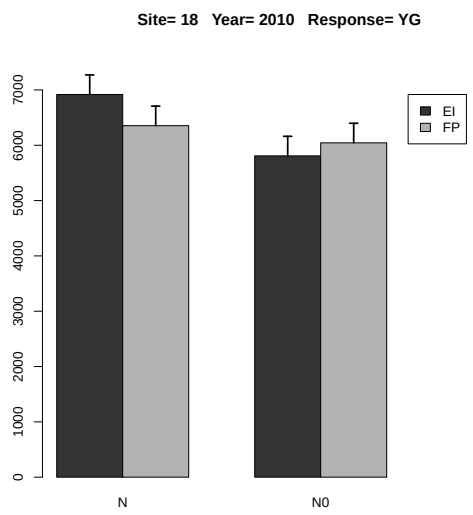

Figure 2.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	163.912	181.796	6.000	0.900	-280.970	608.795	0.402
B N-N0	709.888	171.964	6.000	4.130	289.426	1130.349	0.006
A:B EI N- FP N	563.575	250.243	12.000	2.250	18.239	1108.911	0.044
A:B EI N- EI N0	1109.550	243.193	6.000	4.560	514.927	1704.173	0.004
A:B EI N- FP N0	873.800	250.243	12.000	3.490	328.464	1419.136	0.004
A:B FP N- EI N0	545.975	250.243	12.000	2.180	0.639	1091.311	0.050
A:B FP N- FP N0	310.225	243.193	6.000	1.280	-284.398	904.848	0.249
A:B EI N0- FP N0	-235.750	250.243	12.000	-0.940	-781.086	309.586	0.365

Table 2.5: Estimate of contrast in two-way ANOVA for variable YG at site 18 in year 2010 .

2.1.2 Response Variable YS

	rep	A	B	y
1	1	FP	N0	7134.700
2	2	FP	N0	7088.500
3	3	FP	N0	6686.900
4	4	FP	N0	6936.400
5	1	FP	N	8504.500
6	2	FP	N	6400.300
7	3	FP	N	6310.100
8	4	FP	N	8699.200
9	1	EI	N0	6044.900
10	2	EI	N0	8029.600
11	3	EI	N0	6290.000
12	4	EI	N0	5029.000
13	1	EI	N	7048.300
14	2	EI	N	7599.200
15	3	EI	N	7412.500
16	4	EI	N	6158.900

Table 2.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	7054.725	512.244	6.300	13.770	5817.381	8292.069	0.000
A FP	7478.525	512.244	6.300	14.600	6241.181	8715.869	0.000
A EI-FP	-423.800	724.423	6.300	-0.590	-2173.669	1326.069	0.579

Table 2.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 18 in year 2010 .

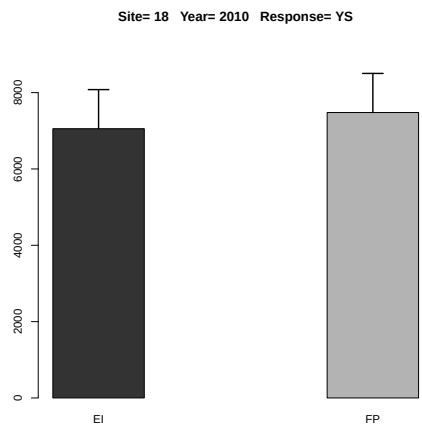

Figure 2.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	423646.183	423646.183	0.812	5.999	0.402
B	1.000	1496340.562	1496340.562	2.867	5.867	0.142
A:B	1.000	35891.302	35891.302	0.069	5.867	0.802

Table 2.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6701.550	406.984	6.000	16.470	5705.668	7697.432	0.000
2	FP		7220.075	406.984	6.000	17.740	6224.193	8215.957	0.000
3		N	7266.625	339.767	10.100	21.390	6510.203	8023.047	0.000
4		N0	6655.000	339.767	10.100	19.590	5898.578	7411.422	0.000
5	EI	N	7054.725	480.503	10.100	14.680	5984.983	8124.467	0.000
6	FP	N	7478.525	480.503	10.100	15.560	6408.783	8548.267	0.000
7	EI	N0	6348.375	480.503	10.100	13.210	5278.633	7418.117	0.000
8	FP	N0	6961.625	480.503	10.100	14.490	5891.883	8031.367	0.000

Table 2.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-518.525	575.563	6.000	-0.900	-1926.915	889.865	0.402
B N-N0	611.625	361.239	5.900	1.690	-277.156	1500.406	0.142
A:B EI N- FP N	-423.800	679.534	10.100	-0.620	-1936.644	1089.044	0.547
A:B EI N- EI N0	706.350	510.869	5.900	1.380	-550.577	1963.277	0.217
A:B EI N- FP N0	93.100	679.534	10.100	0.140	-1419.744	1605.944	0.894
A:B FP N- EI N0	1130.150	679.534	10.100	1.660	-382.694	2642.994	0.127
A:B FP N- FP N0	516.900	510.869	5.900	1.010	-740.027	1773.827	0.351
A:B EI N0- FP N0	-613.250	679.534	10.100	-0.900	-2126.094	899.594	0.388

Table 2.10: Estimate of contrast in two-way ANOVA for variable YS at site 18 in year 2010 .

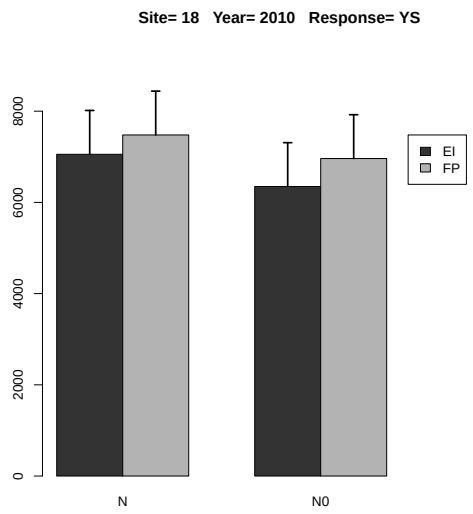

Figure 2.4: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.3 Response Variable YT

	rep	A	B	y
1	1	FP	N0	13375.700
2	2	FP	N0	13146.300
3	3	FP	N0	12762.800
4	4	FP	N0	12737.000
5	1	FP	N	15248.200
6	2	FP	N	12548.100
7	3	FP	N	12733.600
8	4	FP	N	14800.400
9	1	EI	N0	11049.300
10	2	EI	N0	14288.000
11	3	EI	N0	12560.300
12	4	EI	N0	10728.200
13	1	EI	N	14109.300
14	2	EI	N	14627.500
15	3	EI	N	14228.200
16	4	EI	N	12924.400

Table 2.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	13972.350	555.650	6.100	25.150	12620.336	15324.363	0.000
A FP	13832.575	555.650	6.100	24.890	12480.561	15184.588	0.000
A EI-FP	139.775	785.808	6.100	0.180	-1772.261	2051.811	0.865

Table 2.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 18 in year 2010 .

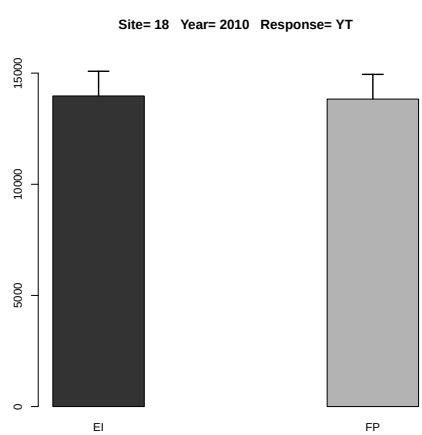

Figure 2.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	211599.684	211599.684	0.274	5.999	0.620
B	1.000	6985581.151	6985581.151	9.033	6.638	0.021
A:B	1.000	977676.001	977676.001	1.264	6.638	0.300

Table 2.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13064.400	479.366	6.000	27.250	11891.399	14237.401	0.000
2	FP		13419.013	479.366	6.000	27.990	12246.011	14592.014	0.000
3		N	13902.462	404.017	10.200	34.410	13004.192	14800.733	0.000
4		N0	12580.950	404.017	10.200	31.140	11682.680	13479.220	0.000
5	EI	N	13972.350	571.367	10.200	24.450	12702.004	15242.696	0.000
6	FP	N	13832.575	571.367	10.200	24.210	12562.229	15102.921	0.000
7	EI	N0	12156.450	571.367	10.200	21.280	10886.104	13426.796	0.000
8	FP	N0	13005.450	571.367	10.200	22.760	11735.104	14275.796	0.000

Table 2.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 18 in year 2010 .

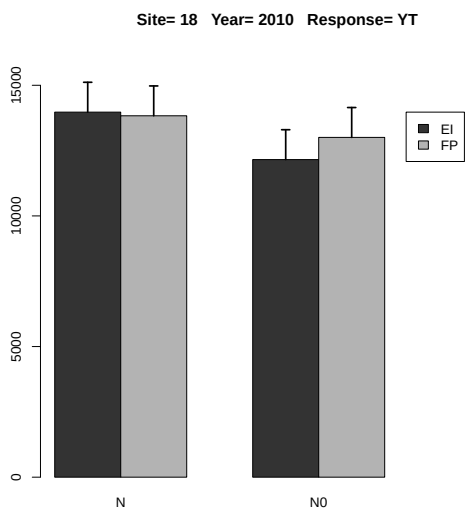

Figure 2.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-354.613	677.926	6.000	-0.520	-2013.487	1304.262	0.620
B N-N0	1321.513	439.700	5.500	3.010	223.528	2419.497	0.026
A:B EI N- FP N	139.775	808.035	10.200	0.170	-1656.766	1936.316	0.866
A:B EI N- EI N0	1815.900	621.829	5.500	2.920	263.116	3368.684	0.029
A:B EI N- FP N0	966.900	808.035	10.200	1.200	-829.641	2763.441	0.259
A:B FP N- EI N0	1676.125	808.035	10.200	2.070	-120.416	3472.666	0.064
A:B FP N- FP N0	827.125	621.829	5.500	1.330	-725.659	2379.909	0.236
A:B EI N0- FP N0	-849.000	808.035	10.200	-1.050	-2645.541	947.541	0.318

Table 2.15: Estimate of contrast in two-way ANOVA for variable YT at site 18 in year 2010 .

2.1.4 Response Variable HI.G

	rep	A	B	y
1	1	FP	N0	0.467
2	2	FP	N0	0.461
3	3	FP	N0	0.476
4	4	FP	N0	0.455
5	1	FP	N	0.442
6	2	FP	N	0.490
7	3	FP	N	0.504
8	4	FP	N	0.412
9	1	EI	N0	0.453
10	2	EI	N0	0.438
11	3	EI	N0	0.499
12	4	EI	N0	0.531
13	1	EI	N	0.500
14	2	EI	N	0.480
15	3	EI	N	0.479
16	4	EI	N	0.523

Table 2.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.496	0.017	6.000	29.560	0.455	0.537	0.000
A FP	0.462	0.017	6.000	27.560	0.421	0.503	0.000
A EI-FP	0.034	0.024	6.000	1.420	-0.024	0.092	0.206

Table 2.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 18 in year 2010 .

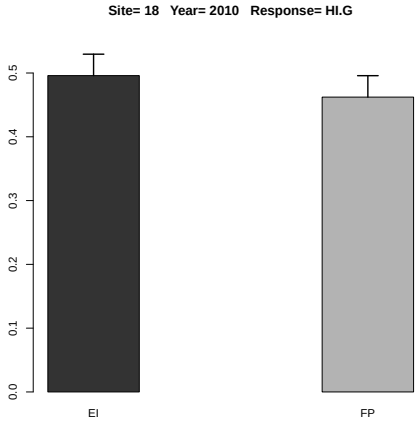

Figure 2.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	1.684	5.999	0.242
B	1.000	0.000	0.000	0.266	5.976	0.625
A:B	1.000	0.000	0.000	0.508	5.976	0.503

Table 2.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.488	0.013	6.000	36.360	0.455	0.521	0.000
2	FP		0.464	0.013	6.000	34.530	0.431	0.496	0.000
3		N	0.479	0.011	10.400	42.020	0.454	0.504	0.000
4		N0	0.472	0.011	10.400	41.450	0.447	0.498	0.000
5	EI	N	0.496	0.016	10.400	30.760	0.460	0.532	0.000
6	FP	N	0.462	0.016	10.400	28.670	0.426	0.498	0.000
7	EI	N0	0.480	0.016	10.400	29.790	0.445	0.516	0.000
8	FP	N0	0.465	0.016	10.400	28.830	0.429	0.500	0.000

Table 2.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.025	0.019	6.000	1.300	-0.022	0.071	0.242
B N-N0	0.006	0.013	6.000	0.520	-0.024	0.037	0.625
A:B EI N- FP N	0.034	0.023	10.400	1.480	-0.017	0.084	0.170
A:B EI N- EI N0	0.015	0.018	6.000	0.870	-0.028	0.059	0.419
A:B EI N- FP N0	0.031	0.023	10.400	1.370	-0.019	0.082	0.201
A:B FP N- EI N0	-0.018	0.023	10.400	-0.790	-0.069	0.032	0.444
A:B FP N- FP N0	-0.002	0.018	6.000	-0.140	-0.046	0.041	0.893
A:B EI N0- FP N0	0.016	0.023	10.400	0.690	-0.035	0.066	0.508

Table 2.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 18 in year 2010 .

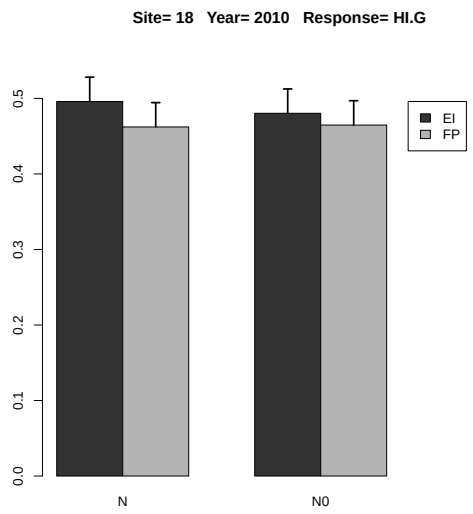

Figure 2.8: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.5 Response Variable UG.N

	rep	A	B	y
1	1	FP	N0	82.132
2	2	FP	N0	89.898
3	3	FP	N0	93.569
4	4	FP	N0	94.202
5	1	FP	N	113.294
6	2	FP	N	115.333
7	3	FP	N	106.116
8	4	FP	N	116.167
9	1	EI	N0	70.062
10	2	EI	N0	87.618
11	3	EI	N0	96.563
12	4	EI	N0	87.768
13	1	EI	N	126.533
14	2	EI	N	125.947
15	3	EI	N	124.046
16	4	EI	N	138.287

Table 2.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	128.703	2.802	4.500	45.930	121.230	136.177	0.000
A FP	112.728	2.802	4.500	40.220	105.254	120.201	0.000
A EI-FP	15.976	2.546	3.000	6.270	7.872	24.079	0.008

Table 2.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 18 in year 2010 .

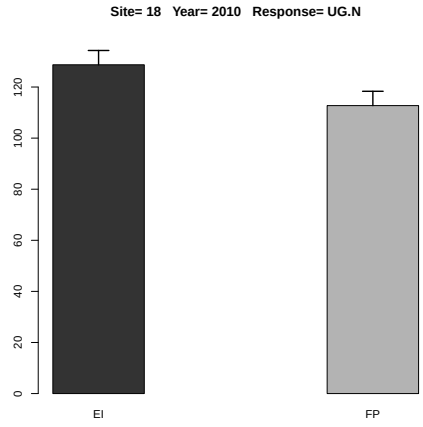

Figure 2.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	132.897	132.897	3.010	9.000	0.117
B	1.000	4353.141	4353.141	98.603	9.000	0.000
A:B	1.000	417.112	417.112	9.448	9.000	0.013

Table 2.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		107.103	2.837	6.400	37.760	100.258	113.948	0.000
2	FP		101.339	2.837	6.400	35.720	94.494	108.184	0.000
3		N	120.715	2.837	6.400	42.550	113.870	127.560	0.000
4		N0	87.726	2.837	6.400	30.930	80.881	94.571	0.000
5	EI	N	128.703	3.683	10.900	34.940	120.585	136.822	0.000
6	FP	N	112.728	3.683	10.900	30.610	104.609	120.846	0.000
7	EI	N0	85.502	3.683	10.900	23.210	77.384	93.621	0.000
8	FP	N0	89.950	3.683	10.900	24.420	81.831	98.069	0.000

Table 2.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 18 in year 2010 .

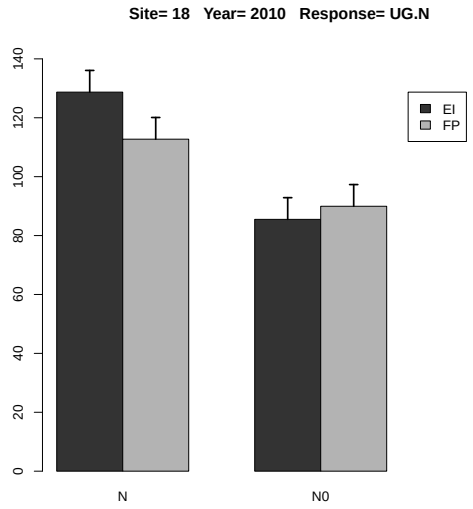

Figure 2.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.764	3.322	9.000	1.740	-1.751	13.279	0.117
B N-N0	32.989	3.322	9.000	9.930	25.474	40.505	0.000
A:B EI N- FP N	15.976	4.698	9.000	3.400	5.347	26.604	0.008
A:B EI N- EI N0	43.201	4.698	9.000	9.190	32.572	53.829	0.000
A:B EI N- FP N0	38.753	4.698	9.000	8.250	28.125	49.382	0.000
A:B FP N- EI N0	27.225	4.698	9.000	5.790	16.597	37.853	0.000
A:B FP N- FP N0	22.777	4.698	9.000	4.850	12.149	33.406	0.001
A:B EI N0- FP N0	-4.448	4.698	9.000	-0.950	-15.076	6.181	0.368

Table 2.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 18 in year 2010 .

2.1.6 Response Variable UG.P

	rep	A	B	y
1	1	FP	N0	14.916
2	2	FP	N0	10.541
3	3	FP	N0	19.625
4	4	FP	N0	10.093
5	1	FP	N	25.019
6	2	FP	N	26.190
7	3	FP	N	13.232
8	4	FP	N	17.327
9	1	EI	N0	11.860
10	2	EI	N0	14.645
11	3	EI	N0	14.108
12	4	EI	N0	17.269
13	1	EI	N	29.727
14	2	EI	N	22.772
15	3	EI	N	14.722
16	4	EI	N	22.191

Table 2.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	22.353	3.085	3.600	7.240	13.452	31.254	0.003
A FP	20.442	3.085	3.600	6.630	11.541	29.343	0.004
A EI-FP	1.911	1.939	3.000	0.990	-4.260	8.081	0.397

Table 2.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 18 in year 2010 .

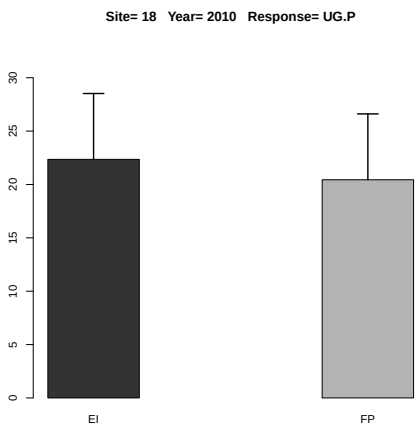

Figure 2.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6.695	6.695	0.265	12.000	0.616
B	1.000	211.144	211.144	8.367	12.000	0.014
A:B	1.000	1.523	1.523	0.060	12.000	0.810

Table 2.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.412	1.776	12.000	10.370	14.542	22.281	0.000
2	FP		17.118	1.776	12.000	9.640	13.248	20.988	0.000
3		N	21.398	1.776	12.000	12.050	17.528	25.267	0.000
4		N0	14.132	1.776	12.000	7.960	10.262	18.002	0.000
5	EI	N	22.353	2.512	12.000	8.900	16.880	27.825	0.000
6	FP	N	20.442	2.512	12.000	8.140	14.970	25.915	0.000
7	EI	N0	14.470	2.512	12.000	5.760	8.998	19.943	0.000
8	FP	N0	13.794	2.512	12.000	5.490	8.321	19.266	0.000

Table 2.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.294	2.512	12.000	0.520	-4.179	6.766	0.616
B N-N0	7.265	2.512	12.000	2.890	1.793	12.738	0.013
A:B EI N- FP N	1.911	3.552	12.000	0.540	-5.829	9.650	0.601
A:B EI N- EI N0	7.882	3.552	12.000	2.220	0.143	15.622	0.046
A:B EI N- FP N0	8.559	3.552	12.000	2.410	0.820	16.299	0.033
A:B FP N- EI N0	5.972	3.552	12.000	1.680	-1.768	13.711	0.119
A:B FP N- FP N0	6.649	3.552	12.000	1.870	-1.091	14.388	0.086
A:B EI N0- FP N0	0.677	3.552	12.000	0.190	-7.063	8.416	0.852

Table 2.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 18 in year 2010 .

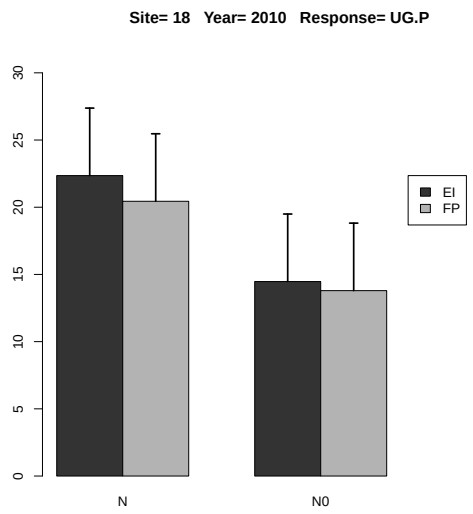

Figure 2.12: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	FP	N0	34.158
2	2	FP	N0	24.138
3	3	FP	N0	44.942
4	4	FP	N0	23.113
5	1	FP	N	57.294
6	2	FP	N	59.974
7	3	FP	N	30.302
8	4	FP	N	39.680
9	1	EI	N0	27.160
10	2	EI	N0	33.536
11	3	EI	N0	32.308
12	4	EI	N0	39.545
13	1	EI	N	68.074
14	2	EI	N	52.147
15	3	EI	N	33.713
16	4	EI	N	50.817

Table 2.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	51.188	7.066	3.600	7.240	30.805	71.571	0.003
A FP	46.812	7.066	3.600	6.630	26.429	67.196	0.004
A EI-FP	4.375	4.440	3.000	0.990	-9.755	18.506	0.397

Table 2.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 18 in year 2010 .

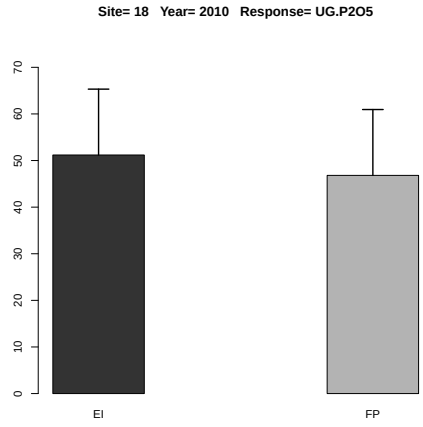

Figure 2.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	35.108	35.108	0.265	12.000	0.616
B	1.000	1107.262	1107.262	8.367	12.000	0.014
A:B	1.000	7.984	7.984	0.060	12.000	0.810

Table 2.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		42.163	4.067	12.000	10.370	33.301	51.024	0.000
2	FP		39.200	4.067	12.000	9.640	30.338	48.062	0.000
3		N	49.000	4.067	12.000	12.050	40.139	57.862	0.000
4		N0	32.362	4.067	12.000	7.960	23.501	41.224	0.000
5	EI	N	51.188	5.752	12.000	8.900	38.656	63.720	0.000
6	FP	N	46.812	5.752	12.000	8.140	34.280	59.345	0.000
7	EI	N0	33.137	5.752	12.000	5.760	20.605	45.669	0.000
8	FP	N0	31.588	5.752	12.000	5.490	19.055	44.120	0.000

Table 2.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 18 in year 2010 .

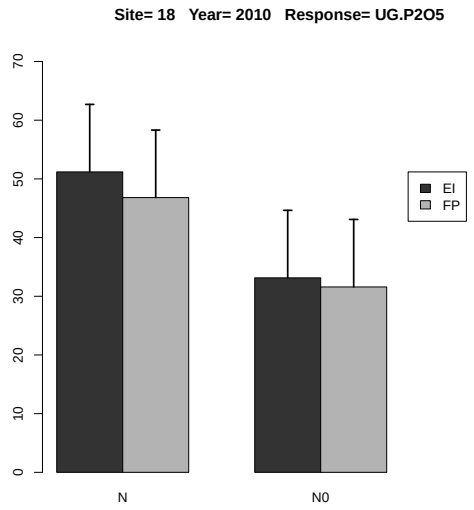

Figure 2.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.963	5.752	12.000	0.520	-9.570	15.495	0.616
B N-N0	16.638	5.752	12.000	2.890	4.106	29.170	0.013
A:B EI N- FP N	4.375	8.134	12.000	0.540	-13.348	22.099	0.601
A:B EI N- EI N0	18.051	8.134	12.000	2.220	0.327	35.774	0.046
A:B EI N- FP N0	19.600	8.134	12.000	2.410	1.877	37.324	0.033
A:B FP N- EI N0	13.675	8.134	12.000	1.680	-4.048	31.398	0.119
A:B FP N- FP N0	15.225	8.134	12.000	1.870	-2.498	32.948	0.086
A:B EI N0- FP N0	1.550	8.134	12.000	0.190	-16.173	19.273	0.852

Table 2.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 18 in year 2010 .

2.1.8 Response Variable UG.K

	rep	A	B	y
1	1	FP	N0	27.960
2	2	FP	N0	18.113
3	3	FP	N0	33.235
4	4	FP	N0	17.344
5	1	FP	N	50.308
6	2	FP	N	42.850
7	3	FP	N	25.566
8	4	FP	N	33.374
9	1	EI	N0	19.918
10	2	EI	N0	21.779
11	3	EI	N0	24.956
12	4	EI	N0	28.382
13	1	EI	N	52.675
14	2	EI	N	31.487
15	3	EI	N	23.719
16	4	EI	N	37.007

Table 2.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	36.222	5.777	3.600	6.270	19.372	53.072	0.005
A FP	38.024	5.777	3.600	6.580	21.174	54.874	0.004
A EI-FP	-1.802	3.396	3.000	-0.530	-12.608	9.004	0.632

Table 2.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 18 in year 2010 .

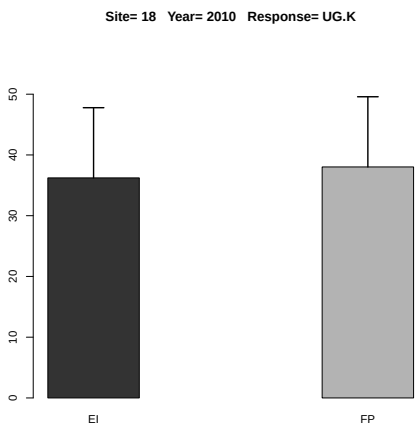

Figure 2.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4.869	4.869	0.059	9.000	0.813
B	1.000	692.993	692.993	8.455	9.000	0.017
A:B	1.000	1.955	1.955	0.024	9.000	0.881

Table 2.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.990	3.325	8.300	9.020	22.378	37.603	0.000
2	FP		31.094	3.325	8.300	9.350	23.481	38.706	0.000
3		N	37.123	3.325	8.300	11.170	29.510	44.736	0.000
4		N0	23.961	3.325	8.300	7.210	16.348	31.573	0.000
5	EI	N	36.222	4.615	11.900	7.850	26.161	46.282	0.000
6	FP	N	38.024	4.615	11.900	8.240	27.964	48.085	0.000
7	EI	N0	23.759	4.615	11.900	5.150	13.698	33.819	0.000
8	FP	N0	24.163	4.615	11.900	5.240	14.102	34.223	0.000

Table 2.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.103	4.527	9.000	-0.240	-11.344	9.137	0.813
B N-N0	13.162	4.527	9.000	2.910	2.922	23.403	0.017
A:B EI N- FP N	-1.802	6.402	9.000	-0.280	-16.284	12.680	0.785
A:B EI N- EI N0	12.463	6.402	9.000	1.950	-2.018	26.945	0.083
A:B EI N- FP N0	12.059	6.402	9.000	1.880	-2.423	26.541	0.092
A:B FP N- EI N0	14.266	6.402	9.000	2.230	-0.216	28.747	0.053
A:B FP N- FP N0	13.861	6.402	9.000	2.170	-0.620	28.343	0.059
A:B EI N0- FP N0	-0.404	6.402	9.000	-0.060	-14.886	14.078	0.951

Table 2.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 18 in year 2010 .

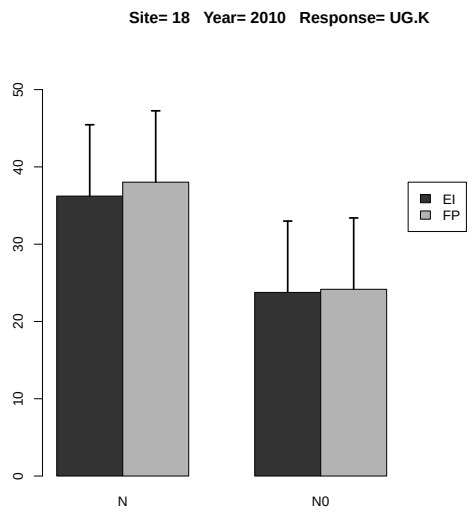

Figure 2.16: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	FP	N0	33.691
2	2	FP	N0	21.826
3	3	FP	N0	40.048
4	4	FP	N0	20.899
5	1	FP	N	60.621
6	2	FP	N	51.634
7	3	FP	N	30.806
8	4	FP	N	40.215
9	1	EI	N0	24.001
10	2	EI	N0	26.244
11	3	EI	N0	30.072
12	4	EI	N0	34.200
13	1	EI	N	63.473
14	2	EI	N	37.942
15	3	EI	N	28.581
16	4	EI	N	44.594

Table 2.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	43.647	6.962	3.600	6.270	23.343	63.951	0.005
A FP	45.819	6.962	3.600	6.580	25.515	66.123	0.004
A EI-FP	-2.172	4.091	3.000	-0.530	-15.193	10.849	0.632

Table 2.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 18 in year 2010 .

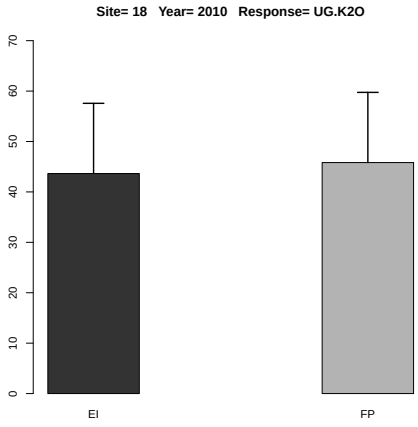

Figure 2.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	7.070	7.070	0.059	9.000	0.813
B	1.000	1006.242	1006.242	8.455	9.000	0.017
A:B	1.000	2.838	2.838	0.024	9.000	0.881

Table 2.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		36.138	4.006	8.300	9.020	26.965	45.312	0.000
2	FP		37.468	4.006	8.300	9.350	28.294	46.641	0.000
3		N	44.733	4.006	8.300	11.170	35.560	53.907	0.000
4		N0	28.873	4.006	8.300	7.210	19.699	38.046	0.000
5	EI	N	43.647	5.561	11.900	7.850	31.524	55.770	0.000
6	FP	N	45.819	5.561	11.900	8.240	33.696	57.942	0.000
7	EI	N0	28.629	5.561	11.900	5.150	16.506	40.752	0.000
8	FP	N0	29.116	5.561	11.900	5.240	16.993	41.239	0.000

Table 2.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 18 in year 2010 .

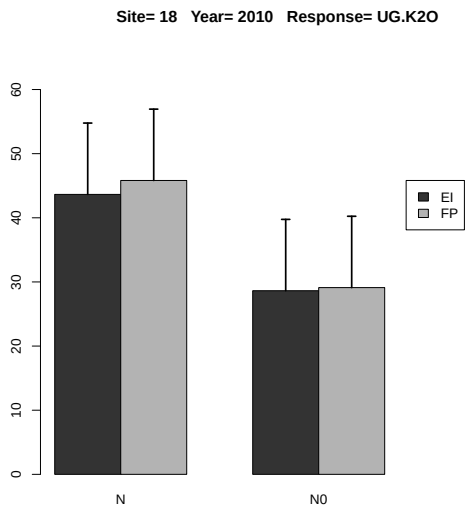

Figure 2.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.329	5.455	9.000	-0.240	-13.669	11.010	0.813
B N-N0	15.861	5.455	9.000	2.910	3.521	28.200	0.017
A:B EI N- FP N	-2.172	7.714	9.000	-0.280	-19.622	15.279	0.785
A:B EI N- EI N0	15.018	7.714	9.000	1.950	-2.432	32.469	0.083
A:B EI N- FP N0	14.531	7.714	9.000	1.880	-2.919	31.982	0.092
A:B FP N- EI N0	17.190	7.714	9.000	2.230	-0.261	34.641	0.053
A:B FP N- FP N0	16.703	7.714	9.000	2.170	-0.748	34.154	0.059
A:B EI N0- FP N0	-0.487	7.714	9.000	-0.060	-17.938	16.963	0.951

Table 2.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 18 in year 2010 .

2.1.10 Response Variable UG.Ca

	rep	A	B	y
1	1	FP	N0	0.374
2	2	FP	N0	0.000
3	3	FP	N0	0.243
4	4	FP	N0	0.174
5	1	FP	N	0.337
6	2	FP	N	0.369
7	3	FP	N	0.257
8	4	FP	N	0.183
9	1	EI	N0	0.100
10	2	EI	N0	0.438
11	3	EI	N0	0.314
12	4	EI	N0	0.171
13	1	EI	N	0.071
14	2	EI	N	0.211
15	3	EI	N	0.068
16	4	EI	N	0.203

Table 2.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.138	0.041	6.000	3.390	0.038	0.238	0.015
A FP	0.286	0.041	6.000	7.030	0.187	0.386	0.000
A EI-FP	-0.148	0.058	6.000	-2.570	-0.289	-0.007	0.042

Table 2.47: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Ca at site 18 in year 2010 .

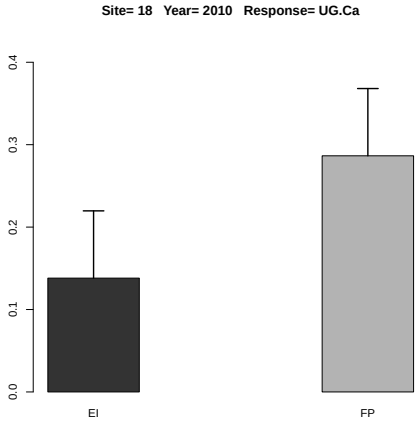

Figure 2.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.007	0.007	0.500	5.998	0.506
B	1.000	0.001	0.001	0.061	5.995	0.813
A:B	1.000	0.042	0.042	3.095	5.995	0.129

Table 2.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.197	0.045	6.000	4.350	0.086	0.308	0.005
2	FP		0.242	0.045	6.000	5.350	0.131	0.353	0.002
3		N	0.212	0.043	11.900	4.890	0.118	0.307	0.000
4		N0	0.227	0.043	11.900	5.230	0.132	0.321	0.000
5	EI	N	0.138	0.061	11.900	2.250	0.004	0.272	0.044
6	FP	N	0.286	0.061	11.900	4.670	0.153	0.420	0.001
7	EI	N0	0.256	0.061	11.900	4.170	0.122	0.390	0.001
8	FP	N0	0.198	0.061	11.900	3.220	0.064	0.332	0.007

Table 2.49: Estimate of treatment means in tow-way ANOVA for variable UG.Ca at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.045	0.064	6.000	-0.710	-0.202	0.111	0.506
B N-N0	-0.014	0.059	6.000	-0.250	-0.158	0.129	0.814
A:B EI N- FP N	-0.148	0.087	11.900	-1.710	-0.338	0.041	0.113
A:B EI N- EI N0	-0.117	0.083	6.000	-1.420	-0.320	0.085	0.206
A:B EI N- FP N0	-0.060	0.087	11.900	-0.690	-0.249	0.130	0.504
A:B FP N- EI N0	0.031	0.087	11.900	0.360	-0.158	0.220	0.729
A:B FP N- FP N0	0.089	0.083	6.000	1.070	-0.114	0.291	0.326
A:B EI N0- FP N0	0.058	0.087	11.900	0.670	-0.132	0.247	0.518

Table 2.50: Estimate of contrast in two-way ANOVA for variable UG.Ca at site 18 in year 2010 .

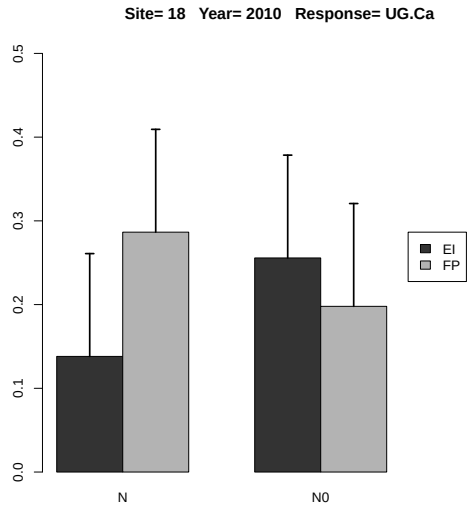

Figure 2.20: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.11 Response Variable UG.Mg

	rep	A	B	y
1	1	FP	N0	6.366
2	2	FP	N0	3.453
3	3	FP	N0	6.623
4	4	FP	N0	4.060
5	1	FP	N	10.520
6	2	FP	N	10.082
7	3	FP	N	5.203
8	4	FP	N	7.443
9	1	EI	N0	3.553
10	2	EI	N0	4.944
11	3	EI	N0	5.142
12	4	EI	N0	6.782
13	1	EI	N	9.674
14	2	EI	N	9.067
15	3	EI	N	5.248
16	4	EI	N	8.930

Table 2.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	8.230	1.129	3.400	7.290	4.869	11.590	0.003
A FP	8.312	1.129	3.400	7.360	4.952	11.673	0.003
A EI-FP	-0.083	0.573	3.000	-0.140	-1.905	1.740	0.894

Table 2.52: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 18 in year 2010 .

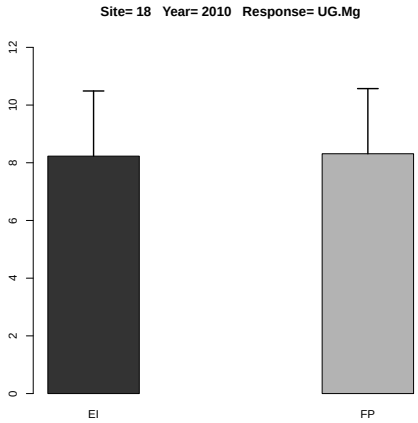

Figure 2.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.011	0.011	0.003	11.999	0.958
B	1.000	39.831	39.831	10.974	11.999	0.006
A:B	1.000	0.004	0.004	0.001	11.999	0.974

Table 2.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.667	0.674	12.000	9.900	5.200	8.135	0.000
2	FP		6.719	0.674	12.000	9.970	5.251	8.187	0.000
3		N	8.271	0.674	12.000	12.280	6.803	9.739	0.000
4		N0	5.115	0.674	12.000	7.590	3.648	6.583	0.000
5	EI	N	8.230	0.953	12.000	8.640	6.154	10.305	0.000
6	FP	N	8.312	0.953	12.000	8.730	6.237	10.388	0.000
7	EI	N0	5.105	0.953	12.000	5.360	3.030	7.181	0.000
8	FP	N0	5.125	0.953	12.000	5.380	3.050	7.201	0.000

Table 2.54: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 18 in year 2010 .

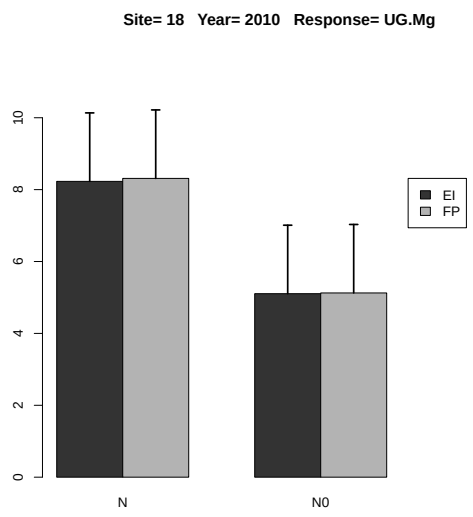

Figure 2.22: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.051	0.953	12.000	-0.050	-2.127	2.024	0.958
B N-N0	3.156	0.953	12.000	3.310	1.080	5.231	0.006
A:B EI N- FP N	-0.083	1.347	12.000	-0.060	-3.018	2.853	0.952
A:B EI N- EI N0	3.124	1.347	12.000	2.320	0.189	6.060	0.039
A:B EI N- FP N0	3.104	1.347	12.000	2.300	0.169	6.039	0.040
A:B FP N- EI N0	3.207	1.347	12.000	2.380	0.272	6.142	0.035
A:B FP N- FP N0	3.187	1.347	12.000	2.370	0.252	6.122	0.036
A:B EI N0- FP N0	-0.020	1.347	12.000	-0.020	-2.955	2.915	0.988

Table 2.55: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 18 in year 2010 .

2.1.12 Response Variable UG.S

	rep	A	B	y
1	1	FP	N0	4.244
2	2	FP	N0	4.180
3	3	FP	N0	3.524
4	4	FP	N0	2.494
5	1	FP	N	3.574
6	2	FP	N	4.918
7	3	FP	N	4.432
8	4	FP	N	2.807
9	1	EI	N0	3.253
10	2	EI	N0	4.506
11	3	EI	N0	3.323
12	4	EI	N0	4.331
13	1	EI	N	5.931
14	2	EI	N	4.568
15	3	EI	N	4.089
16	4	EI	N	5.412

Table 2.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	5.000	0.441	6.000	11.340	3.921	6.080	0.000
A FP	3.933	0.441	6.000	8.920	2.853	5.012	0.000
A EI-FP	1.068	0.624	6.000	1.710	-0.459	2.594	0.138

Table 2.57: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 18 in year 2010 .

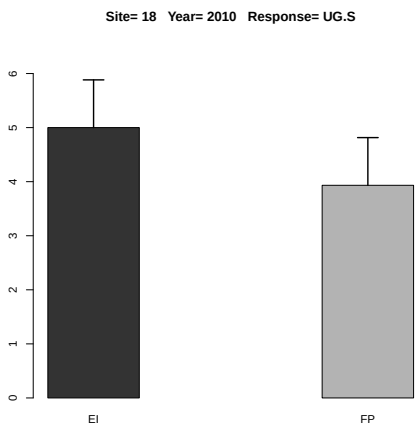

Figure 2.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.829	0.829	1.923	5.999	0.215
B	1.000	2.159	2.159	5.009	5.999	0.067
A:B	1.000	0.680	0.680	1.578	5.999	0.256

Table 2.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.427	0.334	6.000	13.250	3.609	5.245	0.000
2	FP		3.772	0.334	6.000	11.290	2.954	4.589	0.000
3		N	4.467	0.288	10.700	15.530	3.831	5.102	0.000
4		N0	3.732	0.288	10.700	12.970	3.096	4.367	0.000
5	EI	N	5.000	0.407	10.700	12.290	4.102	5.899	0.000
6	FP	N	3.933	0.407	10.700	9.670	3.034	4.831	0.000
7	EI	N0	3.853	0.407	10.700	9.470	2.955	4.752	0.000
8	FP	N0	3.611	0.407	10.700	8.870	2.712	4.509	0.000

Table 2.59: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.655	0.473	6.000	1.390	-0.501	1.812	0.215
B N-N0	0.735	0.328	6.000	2.240	-0.069	1.538	0.066
A:B EI N- FP N	1.068	0.575	10.700	1.860	-0.203	2.338	0.091
A:B EI N- EI N0	1.147	0.464	6.000	2.470	0.011	2.283	0.048
A:B EI N- FP N0	1.390	0.575	10.700	2.420	0.119	2.661	0.035
A:B FP N- EI N0	0.079	0.575	10.700	0.140	-1.191	1.350	0.893
A:B FP N- FP N0	0.322	0.464	6.000	0.690	-0.814	1.458	0.513
A:B EI N0- FP N0	0.243	0.575	10.700	0.420	-1.028	1.514	0.681

Table 2.60: Estimate of contrast in two-way ANOVA for variable UG.S at site 18 in year 2010 .

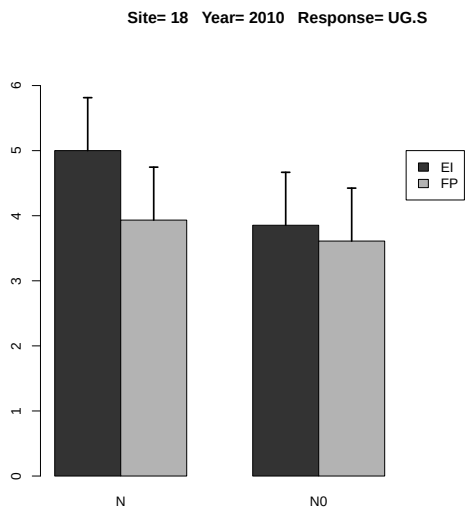

Figure 2.24: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.13 Response Variable US.N

	rep	A	B	y
1	1	FP	N0	39.335
2	2	FP	N0	29.810
3	3	FP	N0	35.913
4	4	FP	N0	35.080
5	1	FP	N	42.500
6	2	FP	N	33.445
7	3	FP	N	29.383
8	4	FP	N	61.130
9	1	EI	N0	21.115
10	2	EI	N0	40.526
11	3	EI	N0	29.979
12	4	EI	N0	24.368
13	1	EI	N	42.186
14	2	EI	N	43.498
15	3	EI	N	50.215
16	4	EI	N	36.743

Table 2.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	43.161	5.362	6.000	8.050	30.041	56.281	0.000
A FP	41.615	5.362	6.000	7.760	28.494	54.735	0.000
A EI-FP	1.546	7.583	6.000	0.200	-17.009	20.101	0.845

Table 2.62: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 18 in year 2010 .

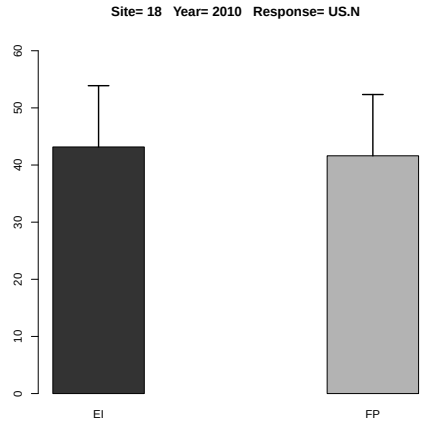

Figure 2.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	14.080	14.080	0.215	5.999	0.659
B	1.000	430.300	430.300	6.583	6.000	0.043
A:B	1.000	57.509	57.509	0.880	6.000	0.384

Table 2.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		36.079	3.421	6.000	10.550	27.707	44.451	0.000
2	FP		38.325	3.421	6.000	11.200	29.953	46.696	0.000
3		N	42.388	3.152	11.600	13.450	35.495	49.280	0.000
4		N0	32.016	3.152	11.600	10.160	25.123	38.908	0.000
5	EI	N	43.161	4.458	11.600	9.680	33.413	52.908	0.000
6	FP	N	41.615	4.458	11.600	9.330	31.867	51.362	0.000
7	EI	N0	28.997	4.458	11.600	6.500	19.250	38.745	0.000
8	FP	N0	35.035	4.458	11.600	7.860	25.287	44.782	0.000

Table 2.64: Estimate of treatment means in tow-way ANOVA for variable US.N at site 18 in year 2010 .

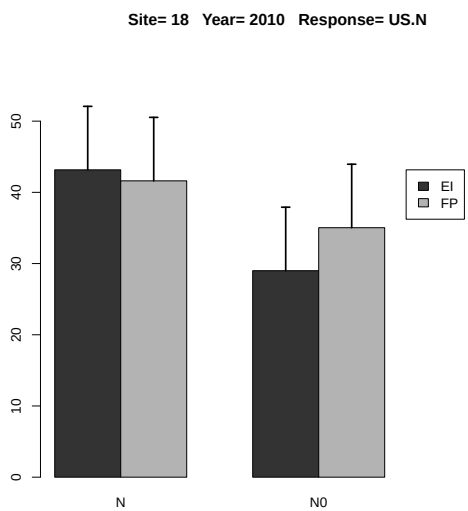

Figure 2.26: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.245	4.838	6.000	-0.460	-14.085	9.594	0.659
B N-N0	10.372	4.042	6.000	2.570	0.480	20.263	0.043
A:B EI N- FP N	1.546	6.305	11.600	0.250	-12.239	15.332	0.810
A:B EI N- EI N0	14.164	5.717	6.000	2.480	0.175	28.152	0.048
A:B EI N- FP N0	8.126	6.305	11.600	1.290	-5.659	21.912	0.222
A:B FP N- EI N0	12.617	6.305	11.600	2.000	-1.168	26.403	0.069
A:B FP N- FP N0	6.580	5.717	6.000	1.150	-7.408	20.569	0.293
A:B EI N0- FP N0	-6.037	6.305	11.600	-0.960	-19.823	7.748	0.358

Table 2.65: Estimate of contrast in two-way ANOVA for variable US.N at site 18 in year 2010 .

2.1.14 Response Variable US.P

	rep	A	B	y
1	1	FP	N0	2.478
2	2	FP	N0	3.206
3	3	FP	N0	3.364
4	4	FP	N0	3.780
5	1	FP	N	4.136
6	2	FP	N	3.688
7	3	FP	N	3.298
8	4	FP	N	7.896
9	1	EI	N0	2.703
10	2	EI	N0	5.425
11	3	EI	N0	1.717
12	4	EI	N0	2.179
13	1	EI	N	3.429
14	2	EI	N	4.190
15	3	EI	N	3.015
16	4	EI	N	3.019

Table 2.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.413	0.775	6.000	4.400	1.516	5.311	0.005
A FP	4.754	0.775	6.000	6.130	2.857	6.651	0.001
A EI-FP	-1.341	1.097	6.000	-1.220	-4.024	1.342	0.267

Table 2.67: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 18 in year 2010 .

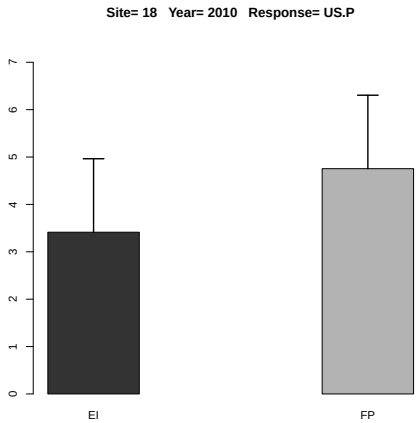

Figure 2.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.015	1.015	0.862	5.999	0.389
B	1.000	3.820	3.820	3.244	5.999	0.122
A:B	1.000	1.300	1.300	1.104	5.999	0.334

Table 2.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.210	0.587	6.000	5.470	1.774	4.646	0.002
2	FP		3.981	0.587	6.000	6.780	2.544	5.417	0.000
3		N	4.084	0.496	10.300	8.240	2.984	5.184	0.000
4		N0	3.107	0.496	10.300	6.270	2.007	4.206	0.000
5	EI	N	3.413	0.701	10.300	4.870	1.858	4.969	0.001
6	FP	N	4.754	0.701	10.300	6.780	3.199	6.310	0.000
7	EI	N0	3.006	0.701	10.300	4.290	1.451	4.562	0.002
8	FP	N0	3.207	0.701	10.300	4.570	1.651	4.762	0.001

Table 2.69: Estimate of treatment means in tow-way ANOVA for variable US.P at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.771	0.830	6.000	-0.930	-2.802	1.260	0.389
B N-N0	0.977	0.543	6.000	1.800	-0.350	2.305	0.122
A:B EI N- FP N	-1.341	0.992	10.300	-1.350	-3.541	0.859	0.205
A:B EI N- EI N0	0.407	0.767	6.000	0.530	-1.470	2.285	0.615
A:B EI N- FP N0	0.206	0.992	10.300	0.210	-1.993	2.406	0.839
A:B FP N- EI N0	1.748	0.992	10.300	1.760	-0.452	3.948	0.107
A:B FP N- FP N0	1.547	0.767	6.000	2.020	-0.330	3.425	0.090
A:B EI N0- FP N0	-0.201	0.992	10.300	-0.200	-2.401	1.999	0.844

Table 2.70: Estimate of contrast in two-way ANOVA for variable US.P at site 18 in year 2010 .

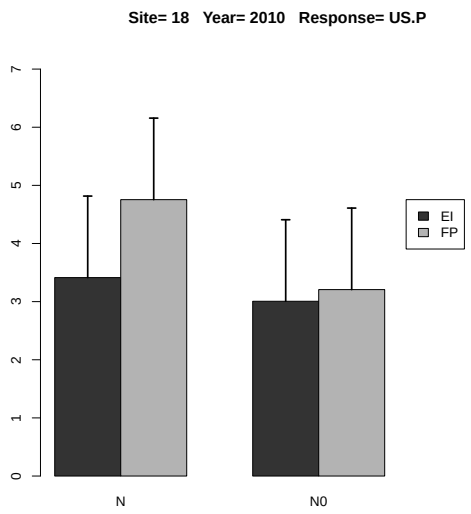

Figure 2.28: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.15 Response Variable US.P2O5

	rep	A	B	y
1	1	FP	N0	3.841
2	2	FP	N0	4.578
3	3	FP	N0	4.646
4	4	FP	N0	5.095
5	1	FP	N	5.538
6	2	FP	N	5.229
7	3	FP	N	4.540
8	4	FP	N	11.452
9	1	EI	N0	3.763
10	2	EI	N0	6.560
11	3	EI	N0	3.155
12	4	EI	N0	3.693
13	1	EI	N	5.217
14	2	EI	N	5.660
15	3	EI	N	4.172
16	4	EI	N	4.046

Table 2.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4.774	1.166	6.000	4.090	1.920	7.627	0.006
A FP	6.690	1.166	6.000	5.740	3.836	9.543	0.001
A EI-FP	-1.916	1.649	6.000	-1.160	-5.951	2.119	0.289

Table 2.72: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 18 in year 2010 .

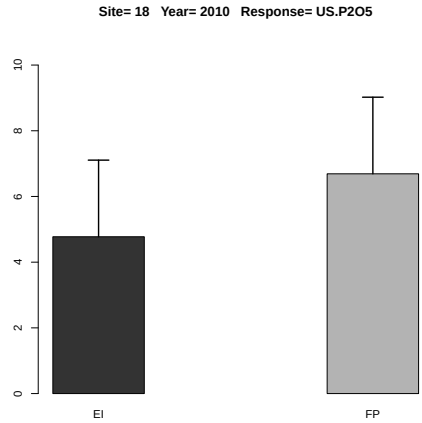

Figure 2.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.524	2.524	1.067	5.999	0.341
B	1.000	6.920	6.920	2.924	6.000	0.138
A:B	1.000	2.785	2.785	1.177	6.000	0.320

Table 2.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.533	0.740	6.000	6.120	2.721	6.345	0.001
2	FP		5.615	0.740	6.000	7.580	3.803	7.427	0.000
3		N	5.732	0.650	11.000	8.820	4.302	7.161	0.000
4		N0	4.416	0.650	11.000	6.800	2.987	5.846	0.000
5	EI	N	4.774	0.919	11.000	5.200	2.752	6.795	0.000
6	FP	N	6.690	0.919	11.000	7.280	4.668	8.711	0.000
7	EI	N0	4.293	0.919	11.000	4.670	2.271	6.315	0.001
8	FP	N0	4.540	0.919	11.000	4.940	2.518	6.562	0.000

Table 2.74: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 18 in year 2010 .

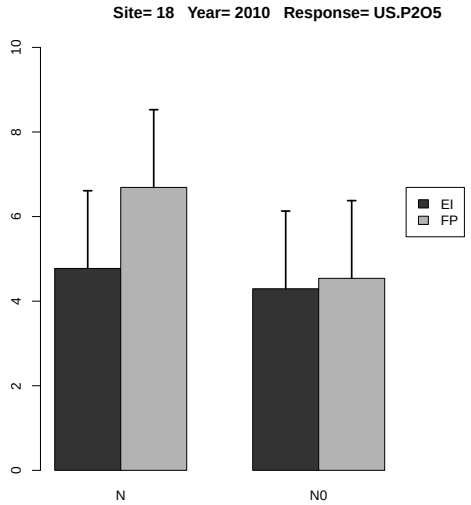

Figure 2.30: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.082	1.047	6.000	-1.030	-3.644	1.481	0.342
B N-N0	1.315	0.769	6.000	1.710	-0.567	3.197	0.138
A:B EI N- FP N	-1.916	1.299	11.000	-1.470	-4.775	0.943	0.168
A:B EI N- EI N0	0.481	1.088	6.000	0.440	-2.181	3.142	0.674
A:B EI N- FP N0	0.234	1.299	11.000	0.180	-2.626	3.093	0.861
A:B FP N- EI N0	2.397	1.299	11.000	1.840	-0.462	5.256	0.092
A:B FP N- FP N0	2.150	1.088	6.000	1.980	-0.512	4.811	0.096
A:B EI N0- FP N0	-0.247	1.299	11.000	-0.190	-3.106	2.612	0.853

Table 2.75: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 18 in year 2010 .

2.1.16 Response Variable US.K

	rep	A	B	y
1	1	FP	N0	122.830
2	2	FP	N0	116.379
3	3	FP	N0	136.370
4	4	FP	N0	117.672
5	1	FP	N	158.935
6	2	FP	N	99.017
7	3	FP	N	138.593
8	4	FP	N	198.864
9	1	EI	N0	107.496
10	2	EI	N0	162.132
11	3	EI	N0	54.399
12	4	EI	N0	80.171
13	1	EI	N	109.830
14	2	EI	N	120.362
15	3	EI	N	164.148
16	4	EI	N	119.410

Table 2.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	128.438	17.029	6.000	7.540	86.769	170.106	0.000
A FP	148.852	17.029	6.000	8.740	107.183	190.521	0.000
A EI-FP	-20.414	24.083	6.000	-0.850	-79.343	38.514	0.429

Table 2.77: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 18 in year 2010 .

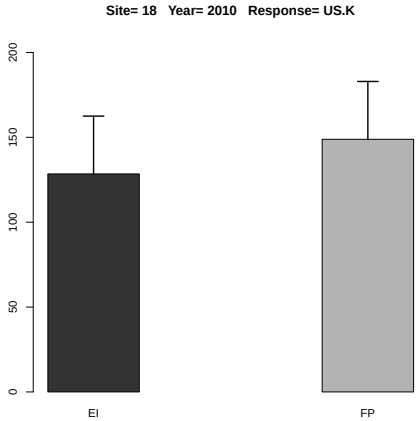

Figure 2.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1821.380	1821.380	1.608	12.000	0.229
B	1.000	2801.255	2801.255	2.473	12.000	0.142
A:B	1.000	3.418	3.418	0.003	12.000	0.957

Table 2.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		114.744	11.900	12.000	9.640	88.815	140.672	0.000
2	FP		136.082	11.900	12.000	11.440	110.154	162.011	0.000
3		N	138.645	11.900	12.000	11.650	112.716	164.573	0.000
4		N0	112.181	11.900	12.000	9.430	86.253	138.110	0.000
5	EI	N	128.438	16.830	12.000	7.630	91.769	165.106	0.000
6	FP	N	148.852	16.830	12.000	8.840	112.183	185.521	0.000
7	EI	N0	101.050	16.830	12.000	6.000	64.381	137.718	0.000
8	FP	N0	123.313	16.830	12.000	7.330	86.644	159.982	0.000

Table 2.79: Estimate of treatment means in tow-way ANOVA for variable US.K at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-21.339	16.830	12.000	-1.270	-58.008	15.330	0.229
B N-N0	26.463	16.830	12.000	1.570	-10.205	63.132	0.142
A:B EI N- FP N	-20.414	23.801	12.000	-0.860	-72.272	31.443	0.408
A:B EI N- EI N0	27.388	23.801	12.000	1.150	-24.470	79.245	0.272
A:B EI N- FP N0	5.125	23.801	12.000	0.220	-46.733	56.982	0.833
A:B FP N- EI N0	47.802	23.801	12.000	2.010	-4.055	99.660	0.068
A:B FP N- FP N0	25.539	23.801	12.000	1.070	-26.318	77.396	0.304
A:B EI N0- FP N0	-22.263	23.801	12.000	-0.940	-74.121	29.594	0.368

Table 2.80: Estimate of contrast in two-way ANOVA for variable US.K at site 18 in year 2010 .

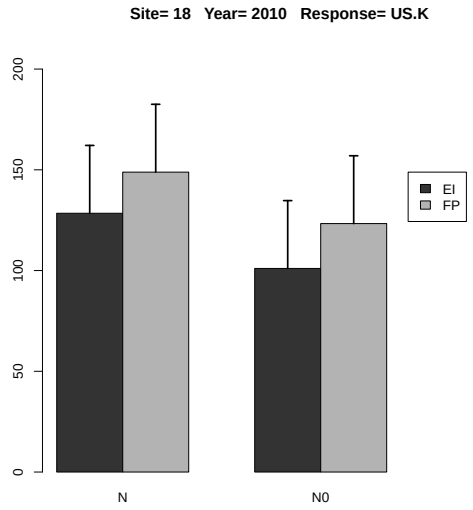

Figure 2.32: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.17 Response Variable US.K2O

	rep	A	B	y
1	1	FP	N0	125.061
2	2	FP	N0	117.761
3	3	FP	N0	138.541
4	4	FP	N0	120.090
5	1	FP	N	161.828
6	2	FP	N	100.867
7	3	FP	N	140.607
8	4	FP	N	202.188
9	1	EI	N0	108.838
10	2	EI	N0	164.462
11	3	EI	N0	55.819
12	4	EI	N0	82.165
13	1	EI	N	112.044
14	2	EI	N	123.268
15	3	EI	N	166.918
16	4	EI	N	121.712

Table 2.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	130.985	17.265	6.000	7.590	88.741	173.230	0.000
A FP	151.373	17.265	6.000	8.770	109.128	193.618	0.000
A EI-FP	-20.387	24.416	6.000	-0.840	-80.130	39.356	0.436

Table 2.82: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 18 in year 2010 .

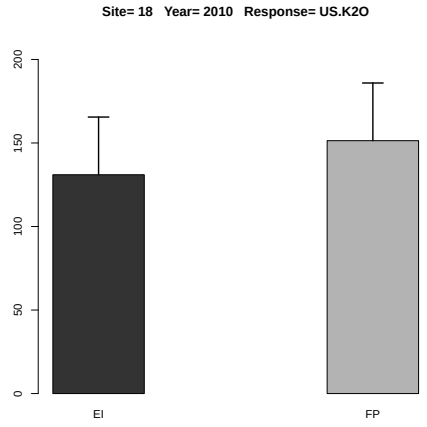

Figure 2.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1842.946	1842.946	1.593	12.000	0.231
B	1.000	2934.801	2934.801	2.536	12.000	0.137
A:B	1.000	4.644	4.644	0.004	12.000	0.951

Table 2.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		116.903	12.026	12.000	9.720	90.700	143.106	0.000
2	FP		138.368	12.026	12.000	11.510	112.165	164.571	0.000
3		N	141.179	12.026	12.000	11.740	114.976	167.382	0.000
4		N0	114.092	12.026	12.000	9.490	87.889	140.295	0.000
5	EI	N	130.985	17.008	12.000	7.700	93.929	168.042	0.000
6	FP	N	151.373	17.008	12.000	8.900	114.316	188.429	0.000
7	EI	N0	102.821	17.008	12.000	6.050	65.764	139.878	0.000
8	FP	N0	125.363	17.008	12.000	7.370	88.306	162.420	0.000

Table 2.84: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 18 in year 2010 .

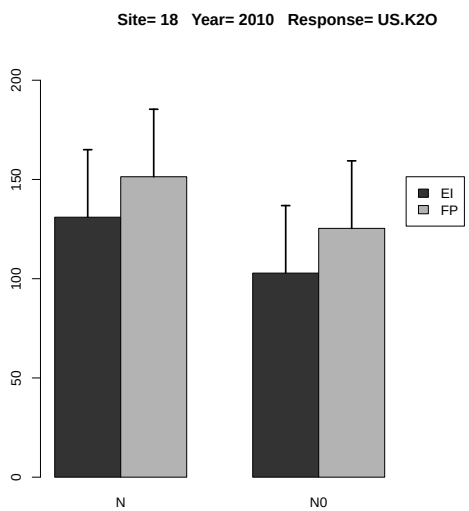

Figure 2.34: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-21.465	17.008	12.000	-1.260	-58.522	15.592	0.231
B N-N0	27.087	17.008	12.000	1.590	-9.970	64.144	0.137
A:B EI N- FP N	-20.387	24.053	12.000	-0.850	-72.793	32.019	0.413
A:B EI N- EI N0	28.164	24.053	12.000	1.170	-24.242	80.570	0.264
A:B EI N- FP N0	5.622	24.053	12.000	0.230	-46.784	58.028	0.819
A:B FP N- EI N0	48.552	24.053	12.000	2.020	-3.854	100.958	0.066
A:B FP N- FP N0	26.009	24.053	12.000	1.080	-26.397	78.416	0.301
A:B EI N0- FP N0	-22.542	24.053	12.000	-0.940	-74.948	29.864	0.367

Table 2.85: Estimate of contrast in two-way ANOVA for variable US.K2O at site 18 in year 2010 .

2.1.18 Response Variable US.Ca

	rep	A	B	y
1	1	FP	N0	16.450
2	2	FP	N0	20.282
3	3	FP	N0	12.127
4	4	FP	N0	19.815
5	1	FP	N	22.907
6	2	FP	N	14.244
7	3	FP	N	14.652
8	4	FP	N	21.053
9	1	EI	N0	12.338
10	2	EI	N0	20.283
11	3	EI	N0	7.725
12	4	EI	N0	9.559
13	1	EI	N	17.473
14	2	EI	N	13.399
15	3	EI	N	15.797
16	4	EI	N	12.612

Table 2.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	14.820	1.749	5.700	8.470	10.486	19.154	0.000
A FP	18.214	1.749	5.700	10.410	13.880	22.548	0.000
A EI-FP	-3.394	2.175	3.000	-1.560	-10.314	3.527	0.216

Table 2.87: Estimate of treatment means and contrast in one-way ANOVA for variable US.Ca at site 18 in year 2010 .

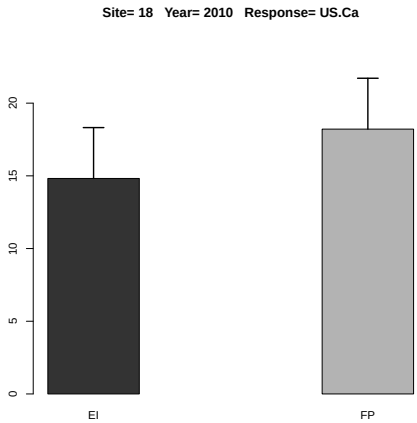

Figure 2.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	65.378	65.378	3.881	9.000	0.080
B	1.000	11.488	11.488	0.682	9.000	0.430
A:B	1.000	1.686	1.686	0.100	9.000	0.759

Table 2.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13.648	1.493	8.500	9.140	10.239	17.057	0.000
2	FP		17.691	1.493	8.500	11.850	14.282	21.100	0.000
3		N	16.517	1.493	8.500	11.060	13.108	19.926	0.000
4		N0	14.822	1.493	8.500	9.930	11.413	18.231	0.000
5	EI	N	14.820	2.082	12.000	7.120	10.282	19.358	0.000
6	FP	N	18.214	2.082	12.000	8.750	13.676	22.752	0.000
7	EI	N0	12.476	2.082	12.000	5.990	7.938	17.015	0.000
8	FP	N0	17.169	2.082	12.000	8.250	12.630	21.707	0.000

Table 2.89: Estimate of treatment means in tow-way ANOVA for variable US.Ca at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-4.043	2.052	9.000	-1.970	-8.685	0.600	0.080
B N-N0	1.695	2.052	9.000	0.830	-2.948	6.337	0.430
A:B EI N- FP N	-3.394	2.902	9.000	-1.170	-9.959	3.172	0.272
A:B EI N- EI N0	2.344	2.902	9.000	0.810	-4.221	8.909	0.440
A:B EI N- FP N0	-2.348	2.902	9.000	-0.810	-8.913	4.217	0.439
A:B FP N- EI N0	5.737	2.902	9.000	1.980	-0.828	12.303	0.079
A:B FP N- FP N0	1.046	2.902	9.000	0.360	-5.520	7.611	0.727
A:B EI N0- FP N0	-4.692	2.902	9.000	-1.620	-11.257	1.873	0.140

Table 2.90: Estimate of contrast in two-way ANOVA for variable US.Ca at site 18 in year 2010 .

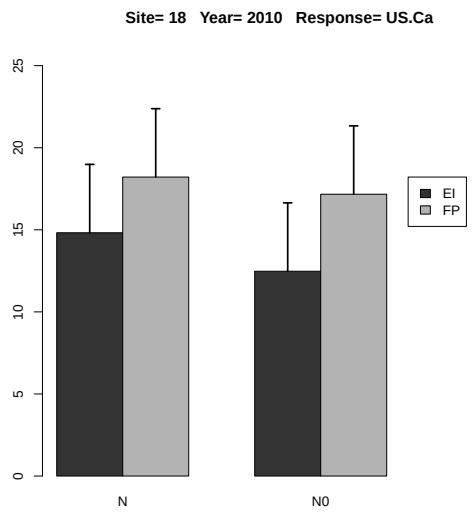

Figure 2.36: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.19 Response Variable US.Mg

	rep	A	B	y
1	1	FP	N0	11.646
2	2	FP	N0	14.950
3	3	FP	N0	8.736
4	4	FP	N0	16.907
5	1	FP	N	19.506
6	2	FP	N	12.797
7	3	FP	N	12.010
8	4	FP	N	18.826
9	1	EI	N0	10.930
10	2	EI	N0	15.622
11	3	EI	N0	6.922
12	4	EI	N0	7.054
13	1	EI	N	14.218
14	2	EI	N	9.586
15	3	EI	N	12.489
16	4	EI	N	12.275

Table 2.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	12.142	1.544	4.800	7.860	8.116	16.168	0.001
A FP	15.785	1.544	4.800	10.220	11.759	19.810	0.000
A EI-FP	-3.643	1.537	3.000	-2.370	-8.534	1.248	0.098

Table 2.92: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 18 in year 2010 .

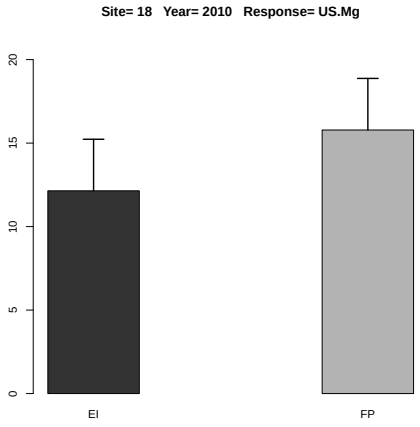

Figure 2.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	43.094	43.094	3.682	2.990	0.151
B	1.000	22.418	22.418	1.915	6.000	0.216
A:B	1.000	0.511	0.511	0.044	6.000	0.841

Table 2.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.137	1.264	5.900	8.810	8.037	14.236	0.000
2	FP		14.422	1.264	5.900	11.410	11.323	17.522	0.000
3		N	13.963	1.263	7.500	11.050	11.019	16.908	0.000
4		N0	11.596	1.263	7.500	9.180	8.651	14.540	0.000
5	EI	N	12.142	1.749	11.900	6.940	8.328	15.956	0.000
6	FP	N	15.785	1.749	11.900	9.020	11.971	19.598	0.000
7	EI	N0	10.132	1.749	11.900	5.790	6.318	13.946	0.000
8	FP	N0	13.060	1.749	11.900	7.470	9.246	16.873	0.000

Table 2.94: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 18 in year 2010 .

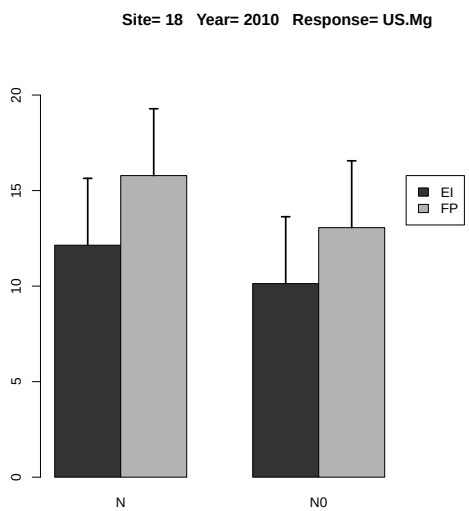

Figure 2.38: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.285	1.712	3.000	-1.920	-8.744	2.174	0.151
B N-N0	2.367	1.711	6.000	1.380	-1.818	6.553	0.216
A:B EI N- FP N	-3.643	2.420	8.000	-1.510	-9.226	1.940	0.171
A:B EI N- EI N0	2.010	2.419	6.000	0.830	-3.910	7.929	0.438
A:B EI N- FP N0	-0.918	2.420	8.000	-0.380	-6.500	4.665	0.714
A:B FP N- EI N0	5.653	2.420	8.000	2.340	0.070	11.235	0.048
A:B FP N- FP N0	2.725	2.419	6.000	1.130	-3.195	8.645	0.303
A:B EI N0- FP N0	-2.928	2.420	8.000	-1.210	-8.510	2.655	0.261

Table 2.95: Estimate of contrast in two-way ANOVA for variable US.Mg at site 18 in year 2010 .

2.1.20 Response Variable US.S

	rep	A	B	y
1	1	FP	N0	2.576
2	2	FP	N0	3.290
3	3	FP	N0	2.871
4	4	FP	N0	5.227
5	1	FP	N	3.698
6	2	FP	N	2.777
7	3	FP	N	3.472
8	4	FP	N	6.881
9	1	EI	N0	2.683
10	2	EI	N0	3.935
11	3	EI	N0	2.965
12	4	EI	N0	2.127
13	1	EI	N	2.302
14	2	EI	N	3.466
15	3	EI	N	4.459
16	4	EI	N	2.450

Table 2.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.169	0.737	6.000	4.300	1.367	4.971	0.005
A FP	4.207	0.737	6.000	5.710	2.405	6.009	0.001
A EI-FP	-1.038	1.042	6.000	-1.000	-3.586	1.511	0.357

Table 2.97: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 18 in year 2010 .

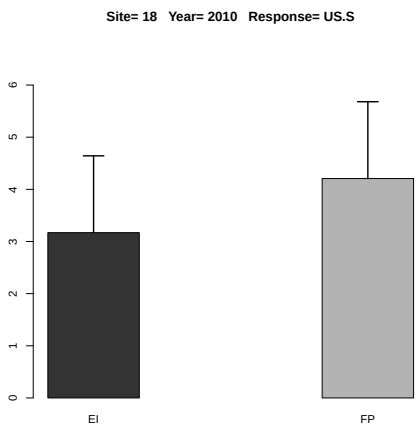

Figure 2.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.392	0.392	0.933	6.000	0.371
B	1.000	0.917	0.917	2.186	5.999	0.190
A:B	1.000	0.225	0.225	0.535	5.999	0.492

Table 2.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.048	0.586	6.000	5.200	1.614	4.482	0.002
2	FP		3.849	0.586	6.000	6.570	2.415	5.283	0.001
3		N	3.688	0.445	7.800	8.290	2.657	4.719	0.000
4		N0	3.209	0.445	7.800	7.210	2.178	4.240	0.000
5	EI	N	3.169	0.629	7.800	5.040	1.711	4.627	0.001
6	FP	N	4.207	0.629	7.800	6.680	2.749	5.665	0.000
7	EI	N0	2.927	0.629	7.800	4.650	1.469	4.385	0.002
8	FP	N0	3.491	0.629	7.800	5.550	2.033	4.949	0.001

Table 2.99: Estimate of treatment means in tow-way ANOVA for variable US.S at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.801	0.829	6.000	-0.970	-2.829	1.228	0.371
B N-N0	0.479	0.324	6.000	1.480	-0.314	1.272	0.190
A:B EI N- FP N	-1.038	0.890	7.800	-1.170	-3.100	1.024	0.278
A:B EI N- EI N0	0.242	0.458	6.000	0.530	-0.879	1.363	0.616
A:B EI N- FP N0	-0.322	0.890	7.800	-0.360	-2.384	1.740	0.727
A:B FP N- EI N0	1.280	0.890	7.800	1.440	-0.782	3.342	0.189
A:B FP N- FP N0	0.716	0.458	6.000	1.560	-0.405	1.837	0.169
A:B EI N0- FP N0	-0.564	0.890	7.800	-0.630	-2.626	1.498	0.545

Table 2.100: Estimate of contrast in two-way ANOVA for variable US.S at site 18 in year 2010 .

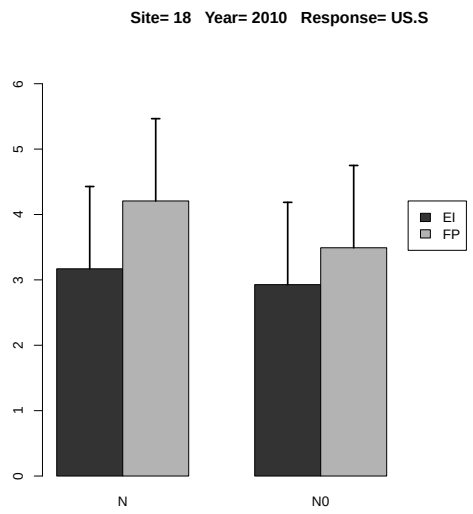

Figure 2.40: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.21 Response Variable UT.N

	rep	A	B	y
1	1	FP	N0	121.466
2	2	FP	N0	119.708
3	3	FP	N0	129.482
4	4	FP	N0	129.281
5	1	FP	N	155.795
6	2	FP	N	148.777
7	3	FP	N	135.499
8	4	FP	N	177.297
9	1	EI	N0	91.177
10	2	EI	N0	128.144
11	3	EI	N0	126.542
12	4	EI	N0	112.136
13	1	EI	N	168.719
14	2	EI	N	169.445
15	3	EI	N	174.261
16	4	EI	N	175.030

Table 2.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	171.864	6.280	6.000	27.370	156.475	187.253	0.000
A FP	154.342	6.280	6.000	24.580	138.953	169.731	0.000
A EI-FP	17.522	8.533	3.000	2.050	-9.634	44.678	0.132

Table 2.102: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 18 in year 2010 .

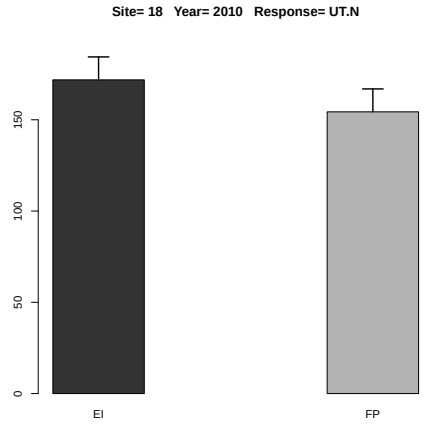

Figure 2.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	40.128	40.128	0.282	5.998	0.614
B	1.000	7520.706	7520.706	52.886	6.000	0.000
A:B	1.000	784.378	784.378	5.516	6.000	0.057

Table 2.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		143.182	4.684	6.000	30.570	131.721	154.643	0.000
2	FP		139.663	4.684	6.000	29.820	128.202	151.125	0.000
3		N	163.103	4.456	11.900	36.600	153.382	172.824	0.000
4		N0	119.742	4.456	11.900	26.870	110.021	129.463	0.000
5	EI	N	171.864	6.302	11.900	27.270	158.117	185.611	0.000
6	FP	N	154.342	6.302	11.900	24.490	140.595	168.089	0.000
7	EI	N0	114.500	6.302	11.900	18.170	100.752	128.247	0.000
8	FP	N0	124.984	6.302	11.900	19.830	111.237	138.732	0.000

Table 2.104: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 18 in year 2010 .

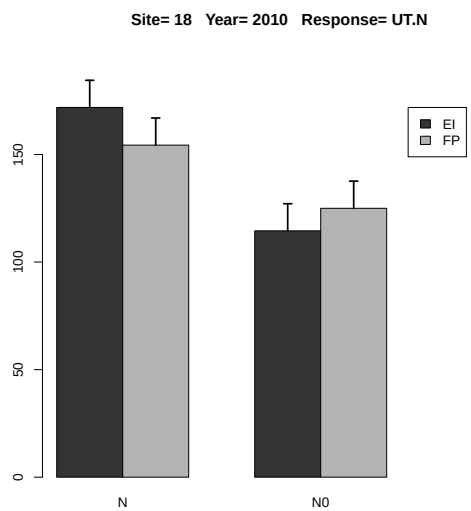

Figure 2.42: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3.518	6.624	6.000	0.530	-12.690	19.727	0.614
B N-N0	43.361	5.963	6.000	7.270	28.771	57.951	0.000
A:B EI N- FP N	17.522	8.912	11.900	1.970	-1.919	36.963	0.073
A:B EI N- EI N0	57.364	8.432	6.000	6.800	36.731	77.998	0.000
A:B EI N- FP N0	46.880	8.912	11.900	5.260	27.438	66.321	0.000
A:B FP N- EI N0	39.843	8.912	11.900	4.470	20.401	59.284	0.001
A:B FP N- FP N0	29.358	8.432	6.000	3.480	8.725	49.991	0.013
A:B EI N0- FP N0	-10.485	8.912	11.900	-1.180	-29.926	8.957	0.263

Table 2.105: Estimate of contrast in two-way ANOVA for variable UT.N at site 18 in year 2010 .

2.1.22 Response Variable UT.P

	rep	A	B	y
1	1	FP	N0	17.394
2	2	FP	N0	13.747
3	3	FP	N0	22.989
4	4	FP	N0	13.873
5	1	FP	N	29.155
6	2	FP	N	29.877
7	3	FP	N	16.530
8	4	FP	N	25.223
9	1	EI	N0	14.563
10	2	EI	N0	20.070
11	3	EI	N0	15.826
12	4	EI	N0	19.448
13	1	EI	N	33.156
14	2	EI	N	26.961
15	3	EI	N	17.737
16	4	EI	N	25.210

Table 2.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	25.766	3.119	3.300	8.260	16.378	35.154	0.002
A FP	25.196	3.119	3.300	8.080	15.809	34.584	0.003
A EI-FP	0.570	1.434	3.000	0.400	-3.994	5.133	0.718

Table 2.107: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 18 in year 2010 .

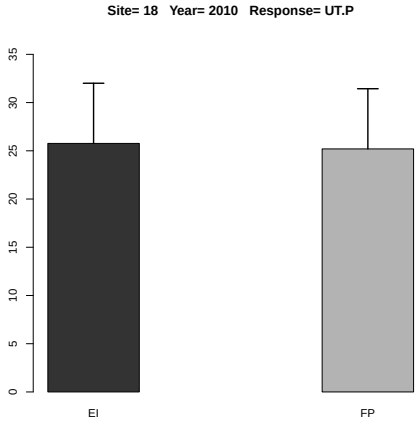

Figure 2.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.094	1.094	0.042	12.000	0.841
B	1.000	271.765	271.765	10.462	12.000	0.007
A:B	1.000	0.009	0.009	0.000	12.000	0.986

Table 2.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.621	1.802	12.000	12.000	17.695	25.547	0.000
2	FP		21.098	1.802	12.000	11.710	17.172	25.025	0.000
3		N	25.481	1.802	12.000	14.140	21.555	29.407	0.000
4		N0	17.239	1.802	12.000	9.570	13.312	21.165	0.000
5	EI	N	25.766	2.548	12.000	10.110	20.214	31.319	0.000
6	FP	N	25.196	2.548	12.000	9.890	19.644	30.749	0.000
7	EI	N0	17.477	2.548	12.000	6.860	11.924	23.029	0.000
8	FP	N0	17.001	2.548	12.000	6.670	11.448	22.553	0.000

Table 2.109: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.523	2.548	12.000	0.210	-5.029	6.075	0.841
B N-N0	8.243	2.548	12.000	3.230	2.690	13.795	0.007
A:B EI N- FP N	0.570	3.604	12.000	0.160	-7.282	8.422	0.877
A:B EI N- EI N0	8.290	3.604	12.000	2.300	0.437	16.142	0.040
A:B EI N- FP N0	8.766	3.604	12.000	2.430	0.913	16.618	0.032
A:B FP N- EI N0	7.720	3.604	12.000	2.140	-0.133	15.572	0.053
A:B FP N- FP N0	8.196	3.604	12.000	2.270	0.344	16.048	0.042
A:B EI N0- FP N0	0.476	3.604	12.000	0.130	-7.376	8.328	0.897

Table 2.110: Estimate of contrast in two-way ANOVA for variable UT.P at site 18 in year 2010 .

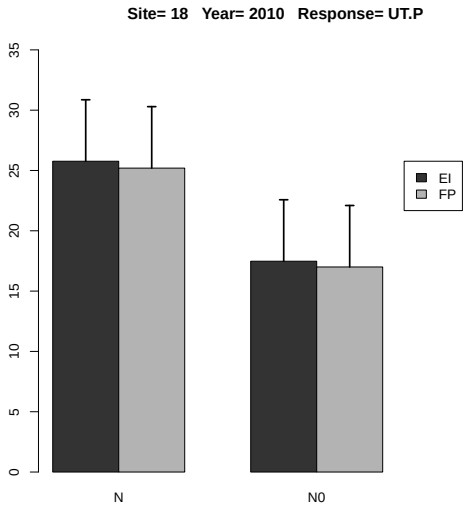

Figure 2.44: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.23 Response Variable UT.P2O5

	rep	A	B	y
1	1	FP	N0	18.757
2	2	FP	N0	15.118
3	3	FP	N0	24.271
4	4	FP	N0	15.188
5	1	FP	N	30.557
6	2	FP	N	31.418
7	3	FP	N	17.772
8	4	FP	N	28.779
9	1	EI	N0	15.624
10	2	EI	N0	21.204
11	3	EI	N0	17.264
12	4	EI	N0	20.961
13	1	EI	N	34.943
14	2	EI	N	28.432
15	3	EI	N	18.893
16	4	EI	N	26.237

Table 2.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	27.126	3.239	3.500	8.370	17.548	36.705	0.002
A FP	27.132	3.239	3.500	8.380	17.554	36.710	0.002
A EI-FP	-0.005	1.729	3.000	-0.000	-5.508	5.498	0.998

Table 2.112: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 18 in year 2010 .

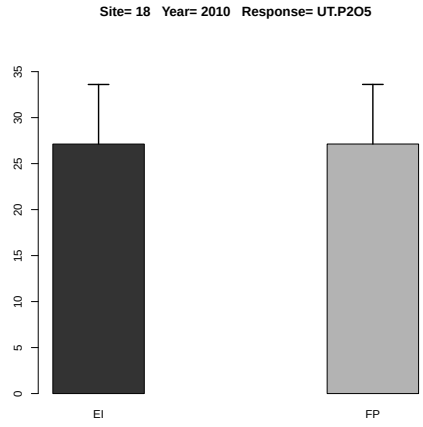

Figure 2.45: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.180	0.180	0.007	11.982	0.937
B	1.000	294.513	294.513	10.699	11.988	0.007
A:B	1.000	0.189	0.189	0.007	11.988	0.935

Table 2.113: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.945	1.855	12.000	12.370	18.901	26.988	0.000
2	FP		22.733	1.855	12.000	12.250	18.689	26.776	0.000
3		N	27.129	1.855	12.000	14.620	23.086	31.172	0.000
4		N0	18.548	1.855	12.000	10.000	14.505	22.592	0.000
5	EI	N	27.126	2.623	12.000	10.340	21.410	32.843	0.000
6	FP	N	27.132	2.623	12.000	10.340	21.416	32.848	0.000
7	EI	N0	18.763	2.623	12.000	7.150	13.047	24.480	0.000
8	FP	N0	18.334	2.623	12.000	6.990	12.617	24.050	0.000

Table 2.114: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 18 in year 2010 .

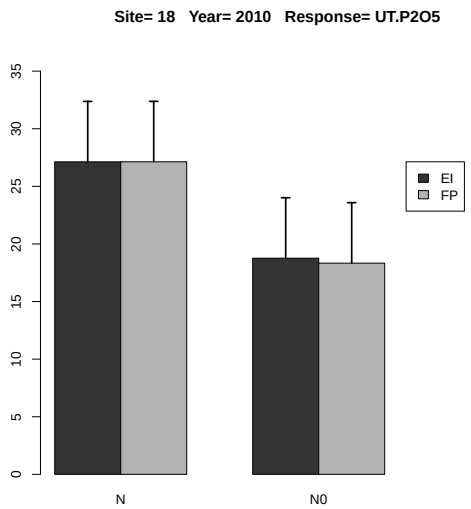

Figure 2.46: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.212	2.623	12.000	0.080	-5.505	5.929	0.937
B N-N0	8.581	2.623	12.000	3.270	2.864	14.297	0.007
A:B EI N- FP N	-0.005	3.710	12.000	-0.000	-8.090	8.079	0.999
A:B EI N- EI N0	8.363	3.710	12.000	2.250	0.279	16.447	0.044
A:B EI N- FP N0	8.793	3.710	12.000	2.370	0.709	16.877	0.035
A:B FP N- EI N0	8.368	3.710	12.000	2.260	0.284	16.453	0.044
A:B FP N- FP N0	8.798	3.710	12.000	2.370	0.714	16.882	0.035
A:B EI N0- FP N0	0.430	3.710	12.000	0.120	-7.655	8.514	0.910

Table 2.115: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 18 in year 2010 .

2.1.24 Response Variable UT.K

	rep	A	B	y
1	1	FP	N0	150.790
2	2	FP	N0	134.492
3	3	FP	N0	169.605
4	4	FP	N0	135.016
5	1	FP	N	209.243
6	2	FP	N	141.867
7	3	FP	N	164.158
8	4	FP	N	232.237
9	1	EI	N0	127.414
10	2	EI	N0	183.912
11	3	EI	N0	79.355
12	4	EI	N0	108.553
13	1	EI	N	162.505
14	2	EI	N	151.849
15	3	EI	N	187.867
16	4	EI	N	156.417

Table 2.116: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	164.660	15.646	6.000	10.520	126.375	202.944	0.000
A FP	186.876	15.646	6.000	11.940	148.592	225.161	0.000
A EI-FP	-22.217	22.127	6.000	-1.000	-76.359	31.926	0.354

Table 2.117: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 18 in year 2010 .

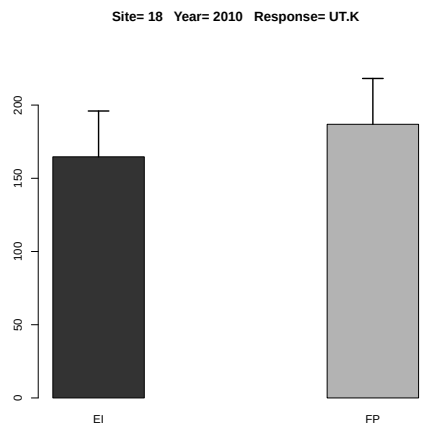

Figure 2.47: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2014.594	2014.594	1.929	12.001	0.190
B	1.000	6280.822	6280.822	6.015	12.001	0.030
A:B	1.000	0.203	0.203	0.000	12.001	0.989

Table 2.118: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		144.734	11.425	12.000	12.670	119.842	169.625	0.000
2	FP		167.176	11.425	12.000	14.630	142.284	192.068	0.000
3		N	175.768	11.425	12.000	15.390	150.876	200.660	0.000
4		N0	136.142	11.425	12.000	11.920	111.251	161.034	0.000
5	EI	N	164.660	16.157	12.000	10.190	129.458	199.862	0.000
6	FP	N	186.876	16.157	12.000	11.570	151.674	222.078	0.000
7	EI	N0	124.808	16.157	12.000	7.720	89.606	160.010	0.000
8	FP	N0	147.476	16.157	12.000	9.130	112.274	182.678	0.000

Table 2.119: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-22.442	16.157	12.000	-1.390	-57.644	12.760	0.190
B N-N0	39.626	16.157	12.000	2.450	4.424	74.828	0.030
A:B EI N- FP N	-22.217	22.849	12.000	-0.970	-72.000	27.566	0.350
A:B EI N- EI N0	39.851	22.849	12.000	1.740	-9.932	89.634	0.107
A:B EI N- FP N0	17.184	22.849	12.000	0.750	-32.599	66.967	0.467
A:B FP N- EI N0	62.068	22.849	12.000	2.720	12.285	111.851	0.019
A:B FP N- FP N0	39.401	22.849	12.000	1.720	-10.383	89.184	0.110
A:B EI N0- FP N0	-22.667	22.849	12.000	-0.990	-72.451	27.116	0.341

Table 2.120: Estimate of contrast in two-way ANOVA for variable UT.K at site 18 in year 2010 .

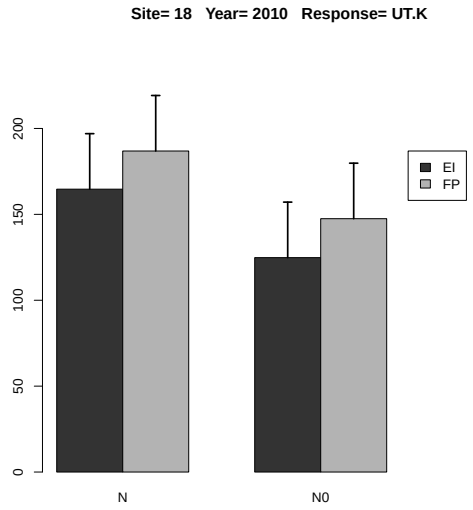

Figure 2.48: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.25 Response Variable UT.K2O

	rep	A	B	y
1	1	FP	N0	153.021
2	2	FP	N0	135.873
3	3	FP	N0	171.777
4	4	FP	N0	137.434
5	1	FP	N	212.136
6	2	FP	N	143.718
7	3	FP	N	166.173
8	4	FP	N	235.561
9	1	EI	N0	128.756
10	2	EI	N0	186.241
11	3	EI	N0	80.775
12	4	EI	N0	110.547
13	1	EI	N	164.719
14	2	EI	N	154.755
15	3	EI	N	190.637
16	4	EI	N	158.719

Table 2.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	167.207	15.886	6.000	10.530	128.337	206.078	0.000
A FP	189.397	15.886	6.000	11.920	150.526	228.268	0.000
A EI-FP	-22.190	22.466	6.000	-0.990	-77.161	32.782	0.361

Table 2.122: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 18 in year 2010 .

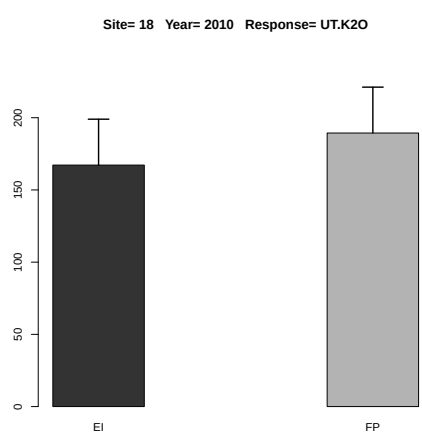

Figure 2.49: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2037.272	2037.272	1.908	11.999	0.192
B	1.000	6480.018	6480.018	6.068	11.999	0.030
A:B	1.000	0.573	0.573	0.001	11.999	0.982

Table 2.123: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		146.893	11.554	12.000	12.710	121.719	172.068	0.000
2	FP		169.462	11.554	12.000	14.670	144.287	194.636	0.000
3		N	178.302	11.554	12.000	15.430	153.128	203.476	0.000
4		N0	138.053	11.554	12.000	11.950	112.879	163.227	0.000
5	EI	N	167.207	16.340	12.000	10.230	131.606	202.809	0.000
6	FP	N	189.397	16.340	12.000	11.590	153.795	224.999	0.000
7	EI	N0	126.580	16.340	12.000	7.750	90.978	162.181	0.000
8	FP	N0	149.526	16.340	12.000	9.150	113.924	185.128	0.000

Table 2.124: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 18 in year 2010 .

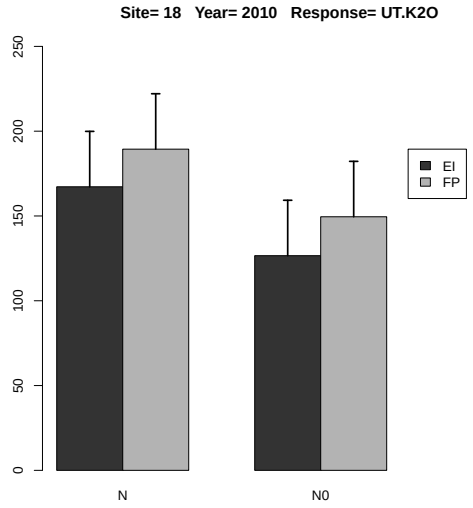

Figure 2.50: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-22.568	16.340	12.000	-1.380	-58.170	13.034	0.192
B N-N0	40.249	16.340	12.000	2.460	4.647	75.851	0.030
A:B EI N- FP N	-22.190	23.108	12.000	-0.960	-72.538	28.159	0.356
A:B EI N- EI N0	40.628	23.108	12.000	1.760	-9.721	90.976	0.104
A:B EI N- FP N0	17.681	23.108	12.000	0.770	-32.667	68.030	0.459
A:B FP N- EI N0	62.817	23.108	12.000	2.720	12.469	113.166	0.019
A:B FP N- FP N0	39.871	23.108	12.000	1.730	-10.478	90.219	0.110
A:B EI N0- FP N0	-22.947	23.108	12.000	-0.990	-73.295	27.402	0.340

Table 2.125: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 18 in year 2010 .

2.1.26 Response Variable UT.Ca

	rep	A	B	y
1	1	FP	N0	16.824
2	2	FP	N0	20.282
3	3	FP	N0	12.370
4	4	FP	N0	19.989
5	1	FP	N	23.245
6	2	FP	N	14.613
7	3	FP	N	14.909
8	4	FP	N	21.236
9	1	EI	N0	12.438
10	2	EI	N0	20.722
11	3	EI	N0	8.038
12	4	EI	N0	9.730
13	1	EI	N	17.544
14	2	EI	N	13.610
15	3	EI	N	15.865
16	4	EI	N	12.815

Table 2.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	14.959	1.731	5.700	8.640	10.666	19.251	0.000
A FP	18.500	1.731	5.700	10.690	14.208	22.793	0.000
A EI-FP	-3.542	2.144	3.000	-1.650	-10.365	3.281	0.197

Table 2.127: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Ca at site 18 in year 2010 .

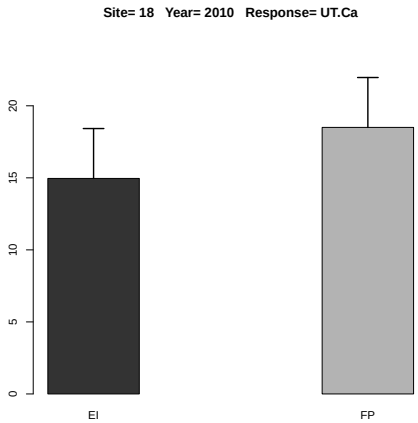

Figure 2.51: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	66.851	66.851	3.994	9.000	0.077
B	1.000	11.293	11.293	0.675	9.000	0.433
A:B	1.000	1.193	1.193	0.071	9.000	0.795

Table 2.128: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13.845	1.494	8.400	9.270	10.432	17.259	0.000
2	FP		17.933	1.494	8.400	12.010	14.520	21.347	0.000
3		N	16.729	1.494	8.400	11.200	13.316	20.143	0.000
4		N0	15.049	1.494	8.400	10.080	11.636	18.463	0.000
5	EI	N	14.959	2.079	12.000	7.190	10.427	19.490	0.000
6	FP	N	18.500	2.079	12.000	8.900	13.969	23.032	0.000
7	EI	N0	12.732	2.079	12.000	6.120	8.200	17.264	0.000
8	FP	N0	17.366	2.079	12.000	8.350	12.834	21.898	0.000

Table 2.129: Estimate of treatment means in tow-way ANOVA for variable UT.Ca at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-4.088	2.046	9.000	-2.000	-8.716	0.539	0.077
B N-N0	1.680	2.046	9.000	0.820	-2.947	6.308	0.433
A:B EI N- FP N	-3.542	2.893	9.000	-1.220	-10.086	3.002	0.252
A:B EI N- EI N0	2.226	2.893	9.000	0.770	-4.318	8.771	0.461
A:B EI N- FP N0	-2.408	2.893	9.000	-0.830	-8.952	4.137	0.427
A:B FP N- EI N0	5.768	2.893	9.000	1.990	-0.776	12.313	0.077
A:B FP N- FP N0	1.134	2.893	9.000	0.390	-5.410	7.679	0.704
A:B EI N0- FP N0	-4.634	2.893	9.000	-1.600	-11.179	1.910	0.144

Table 2.130: Estimate of contrast in two-way ANOVA for variable UT.Ca at site 18 in year 2010 .

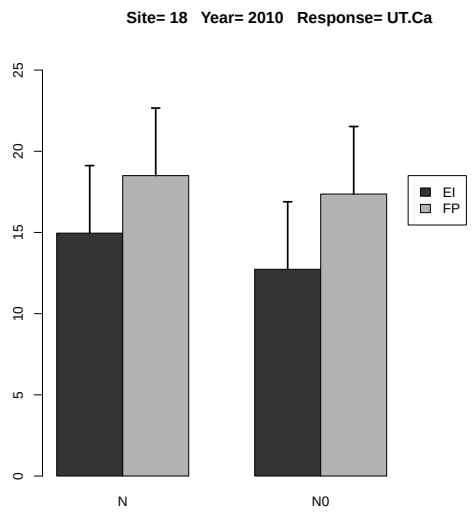

Figure 2.52: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.27 Response Variable UT.Mg

	rep	A	B	y
1	1	FP	N0	18.011
2	2	FP	N0	18.403
3	3	FP	N0	15.358
4	4	FP	N0	20.968
5	1	FP	N	30.026
6	2	FP	N	22.879
7	3	FP	N	17.213
8	4	FP	N	26.269
9	1	EI	N0	14.483
10	2	EI	N0	20.566
11	3	EI	N0	12.064
12	4	EI	N0	13.836
13	1	EI	N	23.891
14	2	EI	N	18.652
15	3	EI	N	17.737
16	4	EI	N	21.205

Table 2.131: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	20.372	2.158	3.800	9.440	14.237	26.506	0.001
A FP	24.097	2.158	3.800	11.170	17.962	30.232	0.000
A EI-FP	-3.725	1.469	3.000	-2.540	-8.402	0.951	0.085

Table 2.132: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 18 in year 2010 .

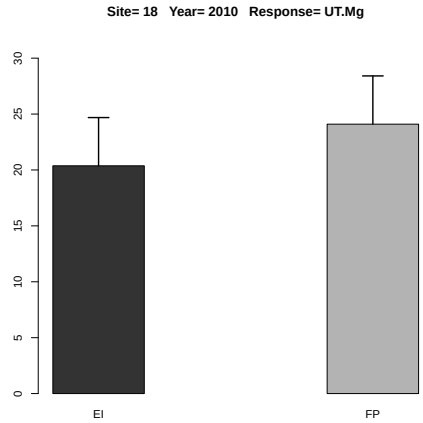

Figure 2.53: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	44.532	44.532	4.791	9.000	0.056
B	1.000	122.014	122.014	13.126	9.000	0.006
A:B	1.000	0.605	0.605	0.065	9.000	0.804

Table 2.133: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17.804	1.533	5.100	11.620	13.890	21.719	0.000
2	FP		21.141	1.533	5.100	13.790	17.227	25.055	0.000
3		N	22.234	1.533	5.100	14.510	18.320	26.149	0.000
4		N0	16.711	1.533	5.100	10.900	12.797	20.626	0.000
5	EI	N	20.372	1.874	8.900	10.870	16.128	24.615	0.000
6	FP	N	24.097	1.874	8.900	12.860	19.853	28.340	0.000
7	EI	N0	15.237	1.874	8.900	8.130	10.994	19.481	0.000
8	FP	N0	18.185	1.874	8.900	9.700	13.941	22.429	0.000

Table 2.134: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 18 in year 2010 .

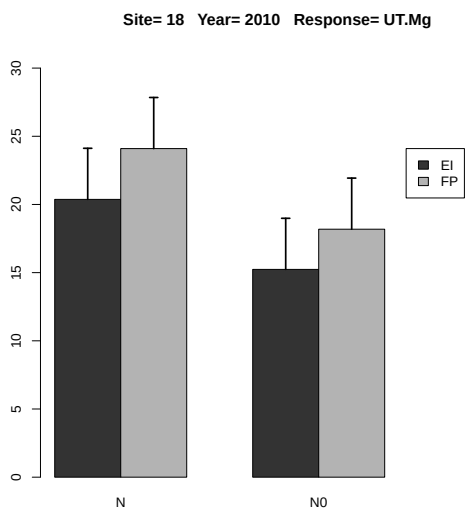

Figure 2.54: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.337	1.524	9.000	-2.190	-6.785	0.112	0.056
B N-N0	5.523	1.524	9.000	3.620	2.074	8.972	0.005
A:B EI N- FP N	-3.725	2.156	9.000	-1.730	-8.602	1.152	0.118
A:B EI N- EI N0	5.134	2.156	9.000	2.380	0.257	10.011	0.041
A:B EI N- FP N0	2.186	2.156	9.000	1.010	-2.691	7.063	0.337
A:B FP N- EI N0	8.860	2.156	9.000	4.110	3.983	13.737	0.003
A:B FP N- FP N0	5.912	2.156	9.000	2.740	1.035	10.789	0.023
A:B EI N0- FP N0	-2.948	2.156	9.000	-1.370	-7.825	1.929	0.205

Table 2.135: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 18 in year 2010 .

2.1.28 Response Variable UT.S

	rep	A	B	y
1	1	FP	N0	6.820
2	2	FP	N0	7.470
3	3	FP	N0	6.395
4	4	FP	N0	7.722
5	1	FP	N	7.272
6	2	FP	N	7.695
7	3	FP	N	7.904
8	4	FP	N	9.688
9	1	EI	N0	5.936
10	2	EI	N0	8.441
11	3	EI	N0	6.288
12	4	EI	N0	6.458
13	1	EI	N	8.233
14	2	EI	N	8.034
15	3	EI	N	8.548
16	4	EI	N	7.863

Table 2.136: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	8.169	0.391	6.000	20.910	7.214	9.126	0.000
A FP	8.140	0.391	6.000	20.840	7.184	9.096	0.000
A EI-FP	0.030	0.552	6.000	0.050	-1.322	1.382	0.959

Table 2.137: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 18 in year 2010 .

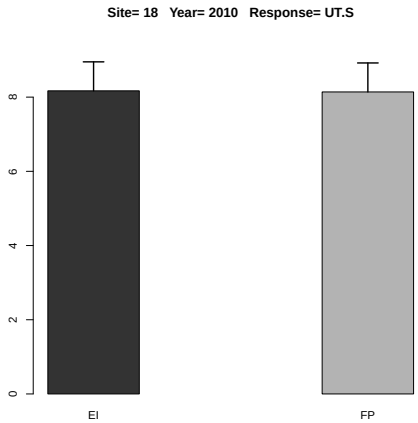

Figure 2.55: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.057	0.057	0.099	5.999	0.764
B	1.000	5.890	5.890	10.251	5.999	0.019
A:B	1.000	0.123	0.123	0.214	5.999	0.660

Table 2.138: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.475	0.327	6.000	22.870	6.675	8.275	0.000
2	FP		7.621	0.327	6.000	23.310	6.821	8.421	0.000
3		N	8.155	0.299	11.600	27.280	7.501	8.809	0.000
4		N0	6.941	0.299	11.600	23.220	6.287	7.595	0.000
5	EI	N	8.169	0.423	11.600	19.330	7.245	9.095	0.000
6	FP	N	8.140	0.423	11.600	19.260	7.215	9.065	0.000
7	EI	N0	6.781	0.423	11.600	16.040	5.856	7.706	0.000
8	FP	N0	7.102	0.423	11.600	16.800	6.177	8.027	0.000

Table 2.139: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.146	0.462	6.000	-0.310	-1.277	0.986	0.763
B N-N0	1.214	0.379	6.000	3.200	0.286	2.141	0.019
A:B EI N- FP N	0.030	0.598	11.600	0.050	-1.278	1.338	0.961
A:B EI N- EI N0	1.389	0.536	6.000	2.590	0.077	2.700	0.041
A:B EI N- FP N0	1.068	0.598	11.600	1.790	-0.240	2.376	0.100
A:B FP N- EI N0	1.359	0.598	11.600	2.270	0.051	2.667	0.043
A:B FP N- FP N0	1.038	0.536	6.000	1.940	-0.274	2.350	0.101
A:B EI N0- FP N0	-0.321	0.598	11.600	-0.540	-1.629	0.987	0.602

Table 2.140: Estimate of contrast in two-way ANOVA for variable UT.S at site 18 in year 2010 .

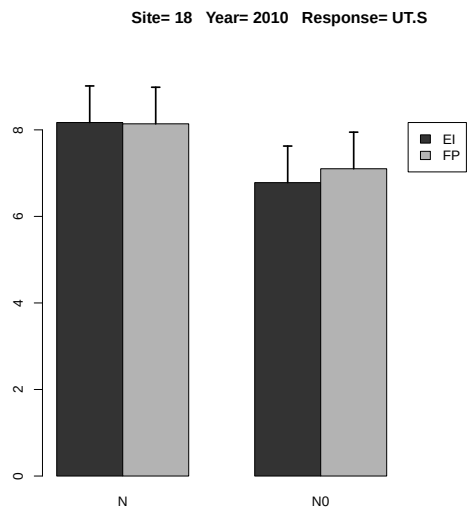

Figure 2.56: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.29 Response Variable HI.N

	rep	A	B	y
1	1	FP	N0	2.088
2	2	FP	N0	3.016
3	3	FP	N0	2.605
4	4	FP	N0	2.685
5	1	FP	N	2.666
6	2	FP	N	3.448
7	3	FP	N	3.611
8	4	FP	N	1.900
9	1	EI	N0	3.318
10	2	EI	N0	2.162
11	3	EI	N0	3.221
12	4	EI	N0	3.602
13	1	EI	N	2.999
14	2	EI	N	2.895
15	3	EI	N	2.470
16	4	EI	N	3.764

Table 2.141: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.032	0.337	6.000	8.990	2.207	3.858	0.000
A FP	2.906	0.337	6.000	8.620	2.081	3.732	0.000
A EI-FP	0.126	0.477	6.000	0.260	-1.042	1.293	0.801

Table 2.142: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 18 in year 2010 .

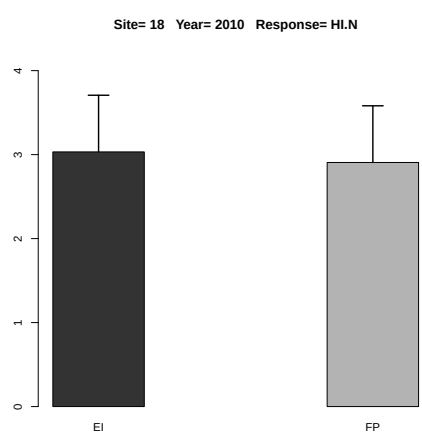

Figure 2.57: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.189	0.189	0.760	5.999	0.417
B	1.000	0.070	0.070	0.280	5.999	0.616
A:B	1.000	0.123	0.123	0.495	5.999	0.508

Table 2.143: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.054	0.244	6.000	12.490	2.456	3.652	0.000
2	FP		2.753	0.244	6.000	11.260	2.154	3.351	0.000
3		N	2.969	0.213	10.900	13.930	2.500	3.439	0.000
4		N0	2.837	0.213	10.900	13.310	2.367	3.307	0.000
5	EI	N	3.032	0.302	10.900	10.050	2.368	3.696	0.000
6	FP	N	2.906	0.302	10.900	9.640	2.242	3.571	0.000
7	EI	N0	3.076	0.302	10.900	10.200	2.411	3.740	0.000
8	FP	N0	2.599	0.302	10.900	8.620	1.934	3.263	0.000

Table 2.144: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 18 in year 2010 .

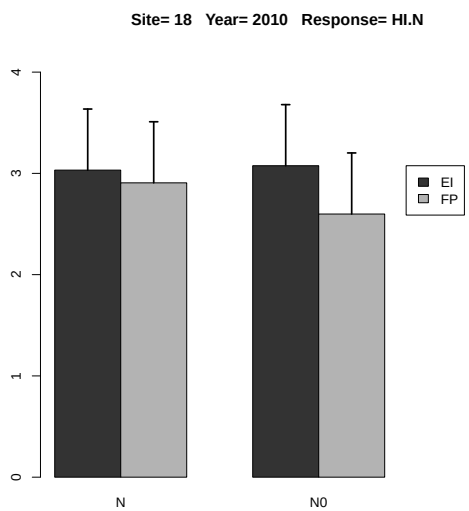

Figure 2.58: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.301	0.346	6.000	0.870	-0.545	1.147	0.417
B N-N0	0.132	0.250	6.000	0.530	-0.479	0.743	0.616
A:B EI N- FP N	0.126	0.426	10.900	0.290	-0.814	1.065	0.774
A:B EI N- EI N0	-0.043	0.353	6.000	-0.120	-0.907	0.821	0.906
A:B EI N- FP N0	0.434	0.426	10.900	1.020	-0.506	1.373	0.331
A:B FP N- EI N0	-0.169	0.426	10.900	-0.400	-1.109	0.770	0.699
A:B FP N- FP N0	0.308	0.353	6.000	0.870	-0.556	1.172	0.417
A:B EI N0- FP N0	0.477	0.426	10.900	1.120	-0.462	1.417	0.287

Table 2.145: Estimate of contrast in two-way ANOVA for variable HI.N at site 18 in year 2010 .

2.1.30 Response Variable HI.P

	rep	A	B	y
1	1	FP	N0	6.020
2	2	FP	N0	3.288
3	3	FP	N0	5.834
4	4	FP	N0	2.670
5	1	FP	N	6.049
6	2	FP	N	7.102
7	3	FP	N	4.013
8	4	FP	N	2.195
9	1	EI	N0	4.388
10	2	EI	N0	2.699
11	3	EI	N0	8.214
12	4	EI	N0	7.924
13	1	EI	N	8.668
14	2	EI	N	5.435
15	3	EI	N	4.882
16	4	EI	N	7.351

Table 2.146: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	6.584	0.988	6.000	6.670	4.168	9.001	0.001
A FP	4.840	0.988	6.000	4.900	2.423	7.256	0.003
A EI-FP	1.744	1.397	6.000	1.250	-1.673	5.162	0.258

Table 2.147: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 18 in year 2010 .

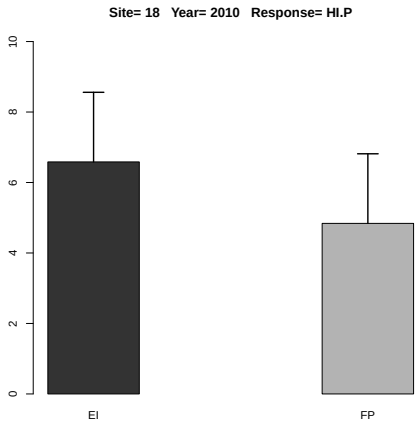

Figure 2.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.933	8.933	2.049	5.997	0.202
B	1.000	1.355	1.355	0.311	6.000	0.597
A:B	1.000	0.153	0.153	0.035	6.000	0.858

Table 2.148: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.195	0.765	6.000	8.100	4.323	8.068	0.000
2	FP		4.646	0.765	6.000	6.070	2.774	6.519	0.001
3		N	5.712	0.752	12.000	7.600	4.074	7.350	0.000
4		N0	5.130	0.752	12.000	6.820	3.492	6.768	0.000
5	EI	N	6.584	1.063	12.000	6.190	4.267	8.901	0.000
6	FP	N	4.840	1.063	12.000	4.550	2.523	7.157	0.001
7	EI	N0	5.807	1.063	12.000	5.460	3.490	8.123	0.000
8	FP	N0	4.453	1.063	12.000	4.190	2.136	6.770	0.001

Table 2.149: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.549	1.082	6.000	1.430	-1.099	4.197	0.202
B N-N0	0.582	1.044	6.000	0.560	-1.972	3.136	0.597
A:B EI N- FP N	1.744	1.504	12.000	1.160	-1.532	5.021	0.269
A:B EI N- EI N0	0.777	1.476	6.000	0.530	-2.835	4.390	0.617
A:B EI N- FP N0	2.131	1.504	12.000	1.420	-1.145	5.408	0.182
A:B FP N- EI N0	-0.967	1.504	12.000	-0.640	-4.243	2.309	0.532
A:B FP N- FP N0	0.387	1.476	6.000	0.260	-3.226	3.999	0.802
A:B EI N0- FP N0	1.354	1.504	12.000	0.900	-1.923	4.630	0.386

Table 2.150: Estimate of contrast in two-way ANOVA for variable HI.P at site 18 in year 2010 .

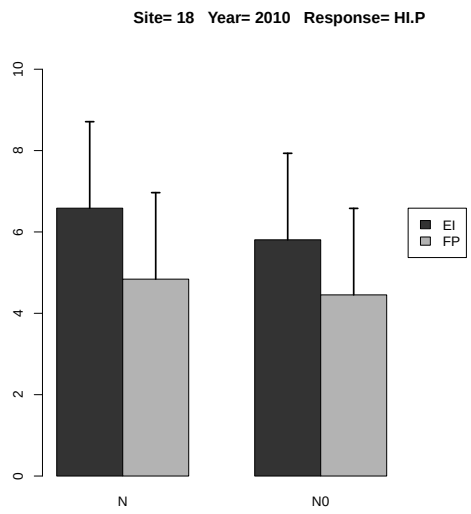

Figure 2.60: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.31 Response Variable HI.K

	rep	A	B	y
1	1	FP	N0	0.228
2	2	FP	N0	0.156
3	3	FP	N0	0.244
4	4	FP	N0	0.147
5	1	FP	N	0.317
6	2	FP	N	0.433
7	3	FP	N	0.184
8	4	FP	N	0.168
9	1	EI	N0	0.185
10	2	EI	N0	0.134
11	3	EI	N0	0.459
12	4	EI	N0	0.354
13	1	EI	N	0.480
14	2	EI	N	0.262
15	3	EI	N	0.144
16	4	EI	N	0.310

Table 2.151: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.299	0.066	5.600	4.530	0.135	0.463	0.005
A FP	0.275	0.066	5.600	4.180	0.111	0.440	0.007
A EI-FP	0.024	0.079	3.000	0.300	-0.229	0.276	0.786

Table 2.152: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 18 in year 2010 .

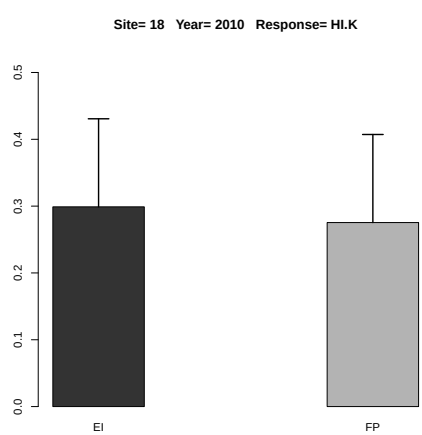

Figure 2.61: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.013	0.013	0.856	11.990	0.373
B	1.000	0.010	0.010	0.638	11.990	0.440
A:B	1.000	0.004	0.004	0.292	11.990	0.599

Table 2.153: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.291	0.043	12.000	6.740	0.197	0.385	0.000
2	FP		0.234	0.043	12.000	5.430	0.140	0.329	0.000
3		N	0.287	0.043	12.000	6.650	0.193	0.381	0.000
4		N0	0.238	0.043	12.000	5.520	0.144	0.333	0.000
5	EI	N	0.299	0.061	12.000	4.890	0.166	0.432	0.000
6	FP	N	0.275	0.061	12.000	4.510	0.142	0.408	0.001
7	EI	N0	0.283	0.061	12.000	4.630	0.150	0.416	0.001
8	FP	N0	0.194	0.061	12.000	3.170	0.060	0.327	0.008

Table 2.154: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 18 in year 2010 .

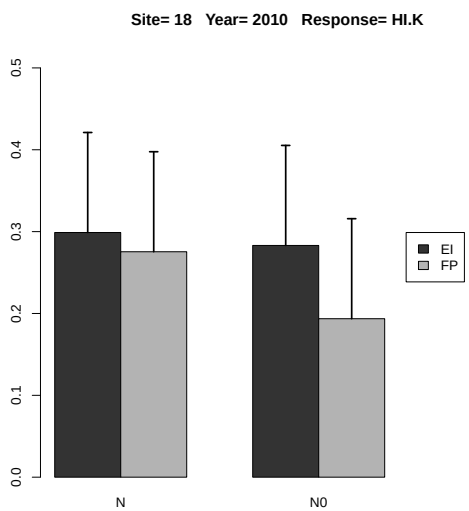

Figure 2.62: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.056	0.061	12.000	0.920	-0.077	0.190	0.373
B N-N0	0.049	0.061	12.000	0.800	-0.084	0.182	0.440
A:B EI N- FP N	0.024	0.086	12.000	0.270	-0.165	0.212	0.790
A:B EI N- EI N0	0.016	0.086	12.000	0.180	-0.172	0.204	0.858
A:B EI N- FP N0	0.105	0.086	12.000	1.220	-0.083	0.294	0.246
A:B FP N- EI N0	-0.008	0.086	12.000	-0.090	-0.196	0.180	0.930
A:B FP N- FP N0	0.082	0.086	12.000	0.950	-0.106	0.270	0.362
A:B EI N0- FP N0	0.089	0.086	12.000	1.040	-0.099	0.278	0.321

Table 2.155: Estimate of contrast in two-way ANOVA for variable HI.K at site 18 in year 2010 .

2.1.32 Response Variable HI.Ca

	rep	A	B	y
1	1	FP	N0	0.023
2	2	FP	N0	0.000
3	3	FP	N0	0.020
4	4	FP	N0	0.009
5	1	FP	N	0.015
6	2	FP	N	0.026
7	3	FP	N	0.018
8	4	FP	N	0.009
9	1	EI	N0	0.008
10	2	EI	N0	0.022
11	3	EI	N0	0.041
12	4	EI	N0	0.018
13	1	EI	N	0.004
14	2	EI	N	0.016
15	3	EI	N	0.004
16	4	EI	N	0.016

Table 2.156: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.010	0.004	5.900	2.880	0.002	0.019	0.028
A FP	0.017	0.004	5.900	4.800	0.008	0.025	0.003
A EI-FP	-0.007	0.005	3.000	-1.410	-0.022	0.008	0.255

Table 2.157: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Ca at site 18 in year 2010 .

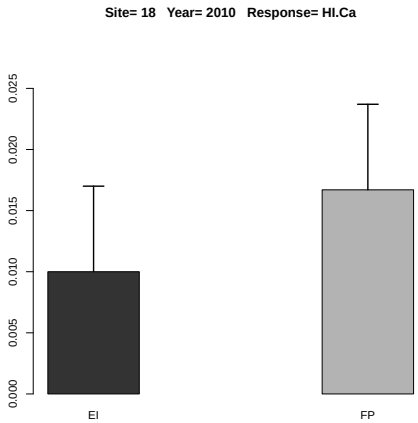

Figure 2.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.063	11.883	0.806
B	1.000	0.000	0.000	0.682	11.883	0.425
A:B	1.000	0.000	0.000	2.547	11.883	0.137

Table 2.158: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.016	0.004	11.900	4.580	0.008	0.024	0.001
2	FP		0.015	0.004	11.900	4.230	0.007	0.022	0.001
3		N	0.013	0.004	11.900	3.820	0.006	0.021	0.002
4		N0	0.018	0.004	11.900	4.990	0.010	0.025	0.000
5	EI	N	0.010	0.005	11.900	2.030	-0.001	0.021	0.066
6	FP	N	0.017	0.005	11.900	3.370	0.006	0.028	0.006
7	EI	N0	0.022	0.005	11.900	4.450	0.011	0.033	0.001
8	FP	N0	0.013	0.005	11.900	2.600	0.002	0.024	0.023

Table 2.159: Estimate of treatment means in tow-way ANOVA for variable HI.Ca at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.001	0.005	11.900	0.250	-0.010	0.012	0.806
B N-N0	-0.004	0.005	11.900	-0.830	-0.015	0.007	0.425
A:B EI N- FP N	-0.007	0.007	11.900	-0.950	-0.022	0.009	0.360
A:B EI N- EI N0	-0.012	0.007	11.900	-1.710	-0.027	0.003	0.113
A:B EI N- FP N0	-0.003	0.007	11.900	-0.410	-0.018	0.012	0.691
A:B FP N- EI N0	-0.005	0.007	11.900	-0.760	-0.021	0.010	0.461
A:B FP N- FP N0	0.004	0.007	11.900	0.540	-0.011	0.019	0.596
A:B EI N0- FP N0	0.009	0.007	11.900	1.310	-0.006	0.024	0.216

Table 2.160: Estimate of contrast in two-way ANOVA for variable HI.Ca at site 18 in year 2010 .

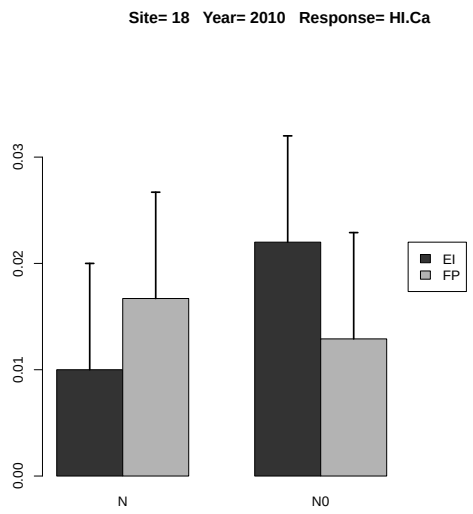

Figure 2.64: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.33 Response Variable HI.Mg

	rep	A	B	y
1	1	FP	N0	0.547
2	2	FP	N0	0.231
3	3	FP	N0	0.758
4	4	FP	N0	0.240
5	1	FP	N	0.539
6	2	FP	N	0.788
7	3	FP	N	0.433
8	4	FP	N	0.395
9	1	EI	N0	0.325
10	2	EI	N0	0.316
11	3	EI	N0	0.743
12	4	EI	N0	0.961
13	1	EI	N	0.680
14	2	EI	N	0.946
15	3	EI	N	0.420
16	4	EI	N	0.728

Table 2.161: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.694	0.099	3.900	7.030	0.416	0.971	0.002
A FP	0.539	0.099	3.900	5.460	0.261	0.817	0.006
A EI-FP	0.154	0.071	3.000	2.190	-0.070	0.379	0.117

Table 2.162: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 18 in year 2010 .

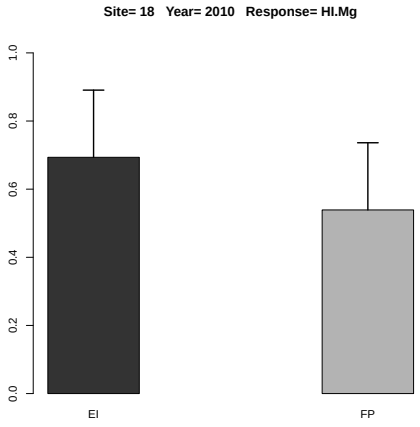

Figure 2.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.088	0.088	1.439	11.995	0.254
B	1.000	0.041	0.041	0.666	11.995	0.431
A:B	1.000	0.000	0.000	0.002	11.995	0.962

Table 2.163: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.640	0.088	12.000	7.310	0.449	0.831	0.000
2	FP		0.491	0.088	12.000	5.610	0.301	0.682	0.000
3		N	0.616	0.088	12.000	7.040	0.425	0.807	0.000
4		N0	0.515	0.088	12.000	5.880	0.324	0.706	0.000
5	EI	N	0.694	0.124	12.000	5.600	0.424	0.963	0.000
6	FP	N	0.539	0.124	12.000	4.350	0.269	0.809	0.001
7	EI	N0	0.587	0.124	12.000	4.740	0.317	0.856	0.000
8	FP	N0	0.444	0.124	12.000	3.590	0.174	0.714	0.004

Table 2.164: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 18 in year 2010 .

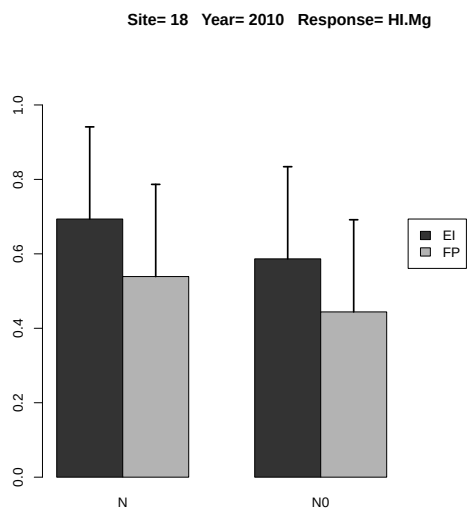

Figure 2.66: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.148	0.124	12.000	1.200	-0.121	0.418	0.254
B N-N0	0.101	0.124	12.000	0.820	-0.169	0.371	0.430
A:B EI N- FP N	0.154	0.175	12.000	0.880	-0.227	0.536	0.395
A:B EI N- EI N0	0.107	0.175	12.000	0.610	-0.275	0.489	0.552
A:B EI N- FP N0	0.249	0.175	12.000	1.430	-0.132	0.631	0.180
A:B FP N- EI N0	-0.048	0.175	12.000	-0.270	-0.429	0.334	0.791
A:B FP N- FP N0	0.095	0.175	12.000	0.540	-0.286	0.476	0.597
A:B EI N0- FP N0	0.142	0.175	12.000	0.810	-0.239	0.524	0.432

Table 2.165: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 18 in year 2010 .

2.1.34 Response Variable HI.S

	rep	A	B	y
1	1	FP	N0	1.647
2	2	FP	N0	1.271
3	3	FP	N0	1.227
4	4	FP	N0	0.477
5	1	FP	N	0.967
6	2	FP	N	1.771
7	3	FP	N	1.277
8	4	FP	N	0.408
9	1	EI	N0	1.212
10	2	EI	N0	1.145
11	3	EI	N0	1.121
12	4	EI	N0	2.036
13	1	EI	N	2.577
14	2	EI	N	1.318
15	3	EI	N	0.917
16	4	EI	N	2.209

Table 2.166: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.755	0.339	6.000	5.180	0.926	2.584	0.002
A FP	1.106	0.339	6.000	3.260	0.277	1.934	0.017
A EI-FP	0.650	0.479	6.000	1.360	-0.522	1.822	0.224

Table 2.167: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 18 in year 2010 .

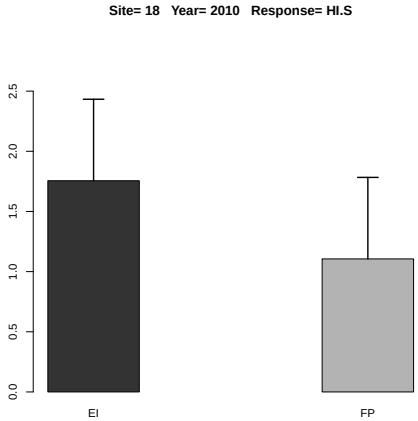

Figure 2.67: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.267	0.267	1.523	5.999	0.263
B	1.000	0.107	0.107	0.607	5.999	0.466
A:B	1.000	0.182	0.182	1.036	5.999	0.348

Table 2.168: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.567	0.250	6.000	6.270	0.955	2.179	0.001
2	FP		1.131	0.250	6.000	4.520	0.519	1.742	0.004
3		N	1.430	0.205	9.700	6.960	0.971	1.890	0.000
4		N0	1.267	0.205	9.700	6.170	0.808	1.727	0.000
5	EI	N	1.755	0.291	9.700	6.040	1.105	2.405	0.000
6	FP	N	1.106	0.291	9.700	3.800	0.456	1.755	0.004
7	EI	N0	1.379	0.291	9.700	4.740	0.729	2.029	0.001
8	FP	N0	1.156	0.291	9.700	3.980	0.506	1.805	0.003

Table 2.169: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 18 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.436	0.354	6.000	1.230	-0.429	1.302	0.263
B N-N0	0.163	0.209	6.000	0.780	-0.349	0.676	0.466
A:B EI N- FP N	0.650	0.411	9.700	1.580	-0.269	1.569	0.146
A:B EI N- EI N0	0.376	0.296	6.000	1.270	-0.349	1.101	0.251
A:B EI N- FP N0	0.600	0.411	9.700	1.460	-0.319	1.519	0.176
A:B FP N- EI N0	-0.273	0.411	9.700	-0.660	-1.192	0.646	0.522
A:B FP N- FP N0	-0.050	0.296	6.000	-0.170	-0.775	0.675	0.871
A:B EI N0- FP N0	0.223	0.411	9.700	0.540	-0.696	1.142	0.599

Table 2.170: Estimate of contrast in two-way ANOVA for variable HI.S at site 18 in year 2010 .

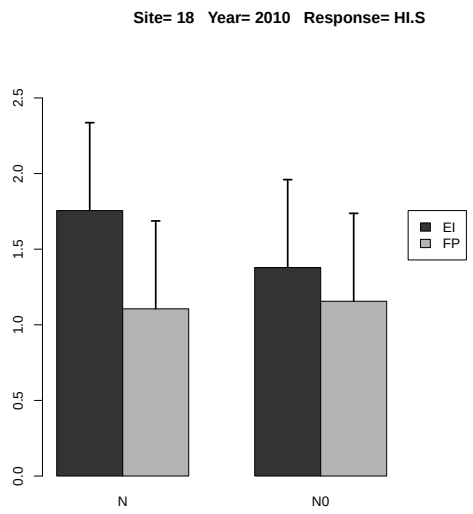

Figure 2.68: Estimated treatment means and standard error in the 2-way ANOVA.

2.1.35 Response Variable PFP.N

	rep	A	B	y
1	1	FP	N	74.930
2	2	FP	N	68.309
3	3	FP	N	71.372
4	4	FP	N	67.791
5	1	EI	N	58.842
6	2	EI	N	58.569
7	3	EI	N	56.797
8	4	EI	N	56.379

Table 2.171: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	57.647	1.243	5.400	46.370	54.527	60.767	0.000
A FP	70.601	1.243	5.400	56.790	67.481	73.721	0.000
A EI-FP	-12.954	1.448	3.000	-8.950	-17.562	-8.345	0.003

Table 2.172: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 18 in year 2010 .

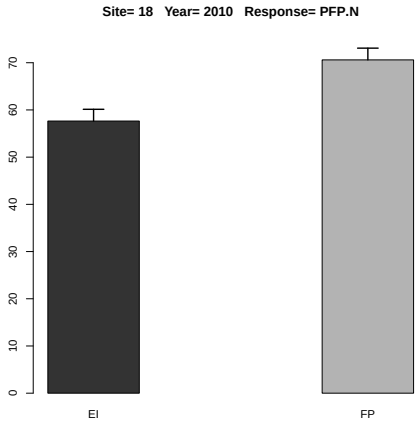

Figure 2.69: Estimated treatment means and standard error in the one-way ANOVA.

2.1.36 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	386.149
2	2	FP	N	352.027
3	3	FP	N	367.814
4	4	FP	N	349.359
5	1	EI	N	404.317
6	2	EI	N	402.445
7	3	EI	N	390.271
8	4	EI	N	387.397

Table 2.173: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	396.108	6.709	5.200	59.040	379.063	413.152	0.000
A FP	363.837	6.709	5.200	54.230	346.792	380.882	0.000
A EI-FP	32.271	7.404	3.000	4.360	8.709	55.832	0.022

Table 2.174: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 18 in year 2010 .

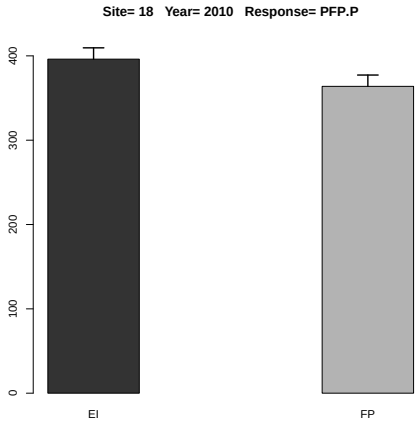

Figure 2.70: Estimated treatment means and standard error in the one-way ANOVA.

2.1.37 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	168.593
2	2	FP	N	153.695
3	3	FP	N	160.588
4	4	FP	N	152.530
5	1	EI	N	176.525
6	2	EI	N	175.708
7	3	EI	N	170.392
8	4	EI	N	169.137

Table 2.175: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	172.941	2.929	5.200	59.040	165.499	180.382	0.000
A FP	158.851	2.929	5.200	54.230	151.410	166.293	0.000
A EI-FP	14.089	3.232	3.000	4.360	3.802	24.376	0.022

Table 2.176: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 18 in year 2010 .

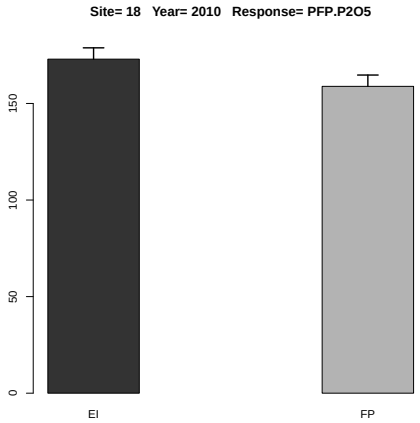

Figure 2.71: Estimated treatment means and standard error in the one-way ANOVA.

2.1.38 Response Variable PFP.K

	rep	A	B	y
1	1	FP	N	203.172
2	2	FP	N	185.219
3	3	FP	N	193.526
4	4	FP	N	183.815
5	1	EI	N	212.732
6	2	EI	N	211.747
7	3	EI	N	205.342
8	4	EI	N	203.829

Table 2.177: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	208.412	3.530	5.200	59.040	199.444	217.381	0.000
A FP	191.433	3.530	5.200	54.230	182.465	200.401	0.000
A EI-FP	16.979	3.895	3.000	4.360	4.582	29.376	0.022

Table 2.178: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 18 in year 2010 .

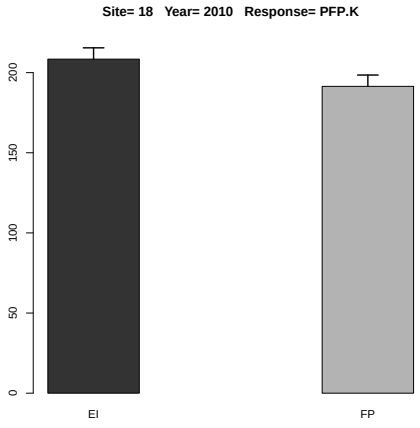

Figure 2.72: Estimated treatment means and standard error in the one-way ANOVA.

2.1.39 Response Variable PFP.K2O

	rep	A	B	y
1	1	FP	N	168.593
2	2	FP	N	153.695
3	3	FP	N	160.588
4	4	FP	N	152.530
5	1	EI	N	176.525
6	2	EI	N	175.708
7	3	EI	N	170.392
8	4	EI	N	169.137

Table 2.179: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	172.941	2.929	5.200	59.040	165.499	180.382	0.000
A FP	158.851	2.929	5.200	54.230	151.410	166.293	0.000
A EI-FP	14.089	3.232	3.000	4.360	3.802	24.376	0.022

Table 2.180: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 18 in year 2010 .

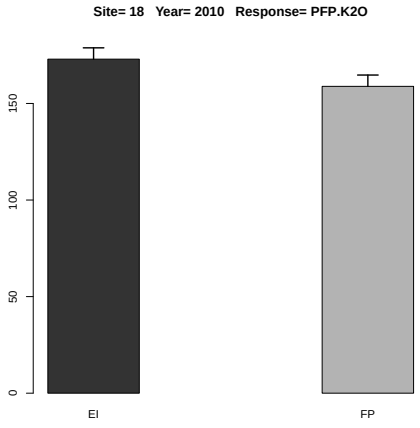

Figure 2.73: Estimated treatment means and standard error in the one-way ANOVA.

2.1.40 Response Variable PFP.Zn

	rep	A	B	y
1	1	FP	N	4495.800
2	2	FP	N	4098.533
3	3	FP	N	4282.333
4	4	FP	N	4067.467
5	1	EI	N	4707.333
6	2	EI	N	4685.533
7	3	EI	N	4543.800
8	4	EI	N	4510.333

Table 2.181: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4611.750	78.109	5.200	59.040	4413.312	4810.188	0.000
A FP	4236.033	78.109	5.200	54.230	4037.595	4434.471	0.000
A EI-FP	375.717	86.197	3.000	4.360	101.532	649.901	0.022

Table 2.182: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 18 in year 2010 .

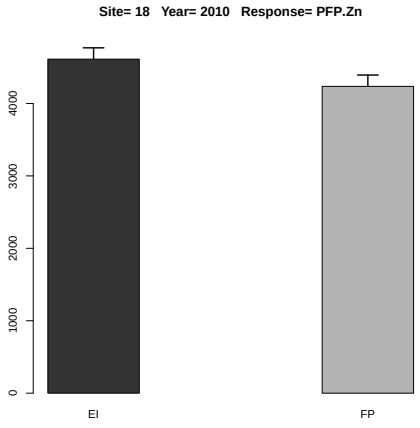

Figure 2.74: Estimated treatment means and standard error in the one-way ANOVA.

2.1.41 Response Variable PNB.N

	rep	A	B	y
1	1	FP	N	1.259
2	2	FP	N	1.281
3	3	FP	N	1.179
4	4	FP	N	1.291
5	1	EI	N	1.054
6	2	EI	N	1.050
7	3	EI	N	1.034
8	4	EI	N	1.152

Table 2.183: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.073	0.026	4.300	40.940	1.002	1.143	0.000
A FP	1.252	0.026	4.300	47.810	1.182	1.323	0.000
A EI-FP	-0.180	0.023	3.000	-7.900	-0.253	-0.107	0.004

Table 2.184: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 18 in year 2010 .

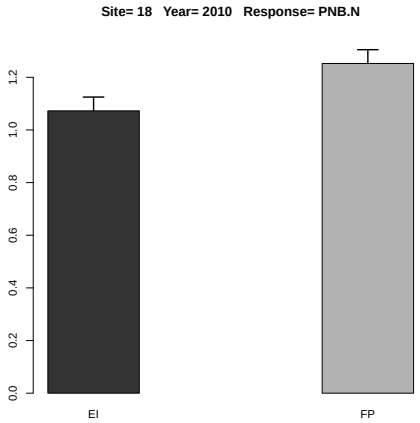

Figure 2.75: Estimated treatment means and standard error in the one-way ANOVA.

2.1.42 Response Variable PNB.P

	rep	A	B	y
1	1	FP	N	1.433
2	2	FP	N	1.500
3	3	FP	N	0.758
4	4	FP	N	0.992
5	1	EI	N	1.702
6	2	EI	N	1.304
7	3	EI	N	0.843
8	4	EI	N	1.271

Table 2.185: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.280	0.177	3.600	7.240	0.770	1.790	0.003
A FP	1.171	0.177	3.600	6.630	0.661	1.680	0.004
A EI-FP	0.109	0.111	3.000	0.990	-0.244	0.463	0.397

Table 2.186: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 18 in year 2010 .

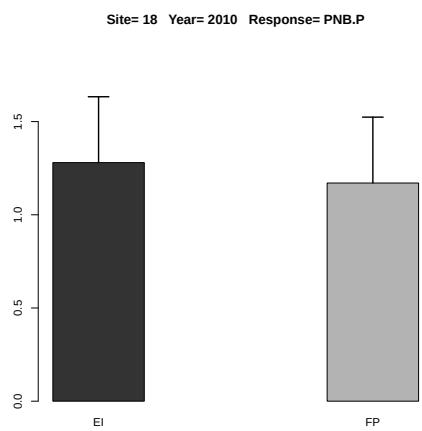

Figure 2.76: Estimated treatment means and standard error in the one-way ANOVA.

2.1.43 Response Variable PNB.K

	rep	A	B	y
1	1	FP	N	1.516
2	2	FP	N	1.291
3	3	FP	N	0.770
4	4	FP	N	1.005
5	1	EI	N	1.587
6	2	EI	N	0.949
7	3	EI	N	0.715
8	4	EI	N	1.115

Table 2.187: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.091	0.174	3.600	6.270	0.584	1.599	0.005
A FP	1.146	0.174	3.600	6.580	0.638	1.653	0.004
A EI-FP	-0.054	0.102	3.000	-0.530	-0.380	0.271	0.632

Table 2.188: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 18 in year 2010 .

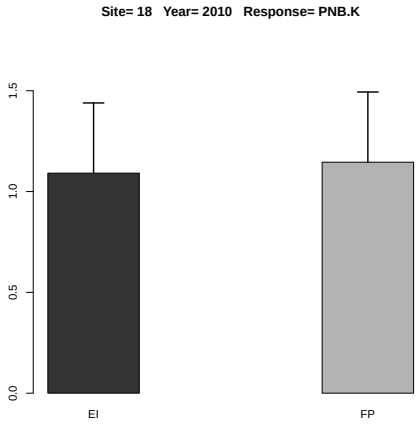

Figure 2.77: Estimated treatment means and standard error in the one-way ANOVA.

2.1.44 Response Variable AE

	rep	A	B	y
1	1	FP	N	8.378
2	2	FP	N	1.500
3	3	FP	N	5.793
4	4	FP	N	5.010
5	1	EI	N	22.851
6	2	EI	N	8.554
7	3	EI	N	6.060
8	4	EI	N	11.848

Table 2.189: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	12.328	2.053	6.006	0.018
A FP	5.170	2.053	2.519	0.160
A EI-FP	7.158	2.903	2.466	0.167

Table 2.190: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 18 in year 2010 .

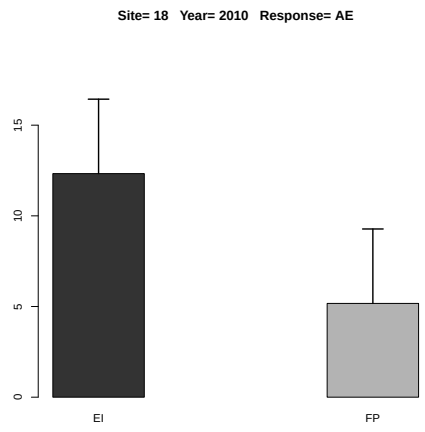

Figure 2.78: Estimated treatment means and standard error in the one-way ANOVA.

2.1.45 Response Variable RE

	rep	A	B	y
1	1	FP	N	0.572
2	2	FP	N	0.484
3	3	FP	N	0.100
4	4	FP	N	0.800
5	1	EI	N	0.862
6	2	EI	N	0.459
7	3	EI	N	0.530
8	4	EI	N	0.699

Table 2.191: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.637	0.089	7.129	0.011
A FP	0.489	0.089	5.473	0.023
A EI-FP	0.148	0.126	1.171	0.531

Table 2.192: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 18 in year 2010 .

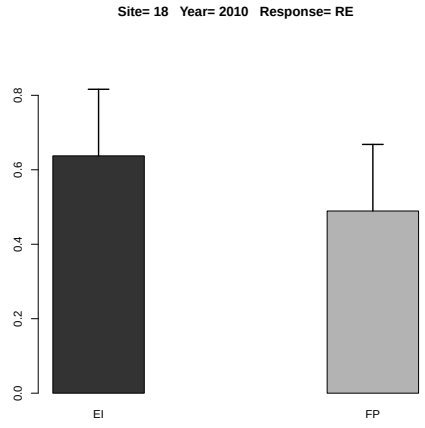

Figure 2.79: Estimated treatment means and standard error in the one-way ANOVA.

2.2 Year 2011

There are 70 variables not observed: UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

2.2.1 Response Variable YG

	rep	A	B	y
1	1	FP	N0	5567.400
2	2	FP	N0	5562.800
3	3	FP	N0	5643.400
4	4	FP	N0	5496.000
5	1	FP	N	6189.400
6	2	FP	N	6003.700
7	3	FP	N	6077.200
8	4	FP	N	5719.600
9	1	EI	N0	5551.700
10	2	EI	N0	5697.900
11	3	EI	N0	5560.100
12	4	EI	N0	5733.500
13	1	EI	N	5997.000
14	2	EI	N	6368.200
15	3	EI	N	6080.500
16	4	EI	N	6081.600

Table 2.193: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	6131.825	91.208	6.000	67.230	5908.590	6355.060	0.000
A FP	5997.475	91.208	6.000	65.760	5774.240	6220.710	0.000
A EI-FP	134.350	128.987	6.000	1.040	-181.351	450.051	0.338

Table 2.194: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 18 in year 2011 .

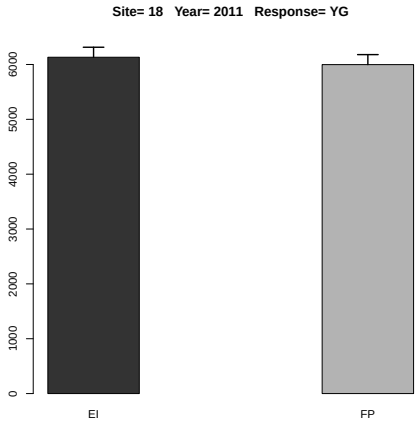

Figure 2.80: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	16397.214	16397.214	1.457	5.999	0.273
B	1.000	857661.210	857661.210	76.226	6.000	0.000
A:B	1.000	4349.403	4349.403	0.387	6.000	0.557

Table 2.195: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5883.812	59.379	6.000	99.090	5738.512	6029.113	0.000
2	FP		5782.438	59.379	6.000	97.380	5637.137	5927.738	0.000
3		N	6064.650	49.661	10.100	122.120	5954.190	6175.110	0.000
4		N0	5601.600	49.661	10.100	112.800	5491.140	5712.060	0.000
5	EI	N	6131.825	70.231	10.100	87.310	5975.611	6288.039	0.000
6	FP	N	5997.475	70.231	10.100	85.400	5841.261	6153.689	0.000
7	EI	N0	5635.800	70.231	10.100	80.250	5479.586	5792.014	0.000
8	FP	N0	5567.400	70.231	10.100	79.270	5411.186	5723.614	0.000

Table 2.196: Estimate of treatment means in tow-way ANOVA for variable YG at site 18 in year 2011 .

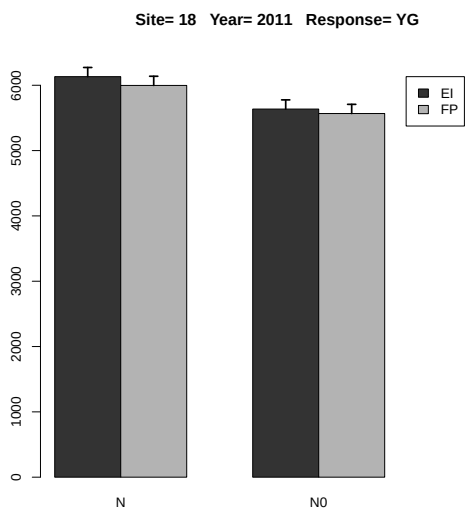

Figure 2.81: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	101.375	83.975	6.000	1.210	-104.111	306.861	0.273
B N-N0	463.050	53.037	6.000	8.730	333.274	592.826	0.000
A:B EI N- FP N	134.350	99.321	10.100	1.350	-86.570	355.270	0.206
A:B EI N- EI N0	496.025	75.005	6.000	6.610	312.494	679.556	0.001
A:B EI N- FP N0	564.425	99.321	10.100	5.680	343.505	785.345	0.000
A:B FP N- EI N0	361.675	99.321	10.100	3.640	140.755	582.595	0.004
A:B FP N- FP N0	430.075	75.005	6.000	5.730	246.544	613.606	0.001
A:B EI N0- FP N0	68.400	99.321	10.100	0.690	-152.520	289.320	0.506

Table 2.197: Estimate of contrast in two-way ANOVA for variable YG at site 18 in year 2011 .

2.2.2 Response Variable YS

	rep	A	B	y
1	1	FP	N0	6409.300
2	2	FP	N0	7941.100
3	3	FP	N0	7259.600
4	4	FP	N0	7297.300
5	1	FP	N	7830.600
6	2	FP	N	8535.100
7	3	FP	N	7744.300
8	4	FP	N	7655.700
9	1	EI	N0	7746.100
10	2	EI	N0	8009.000
11	3	EI	N0	7323.300
12	4	EI	N0	7062.900
13	1	EI	N	7840.000
14	2	EI	N	8305.700
15	3	EI	N	8013.900
16	4	EI	N	8161.000

Table 2.198: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	8080.150	158.732	4.800	50.900	7667.212	8493.088	0.000
A FP	7941.425	158.732	4.800	50.030	7528.487	8354.363	0.000
A EI-FP	138.725	159.098	3.000	0.870	-366.929	644.379	0.447

Table 2.199: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 18 in year 2011 .

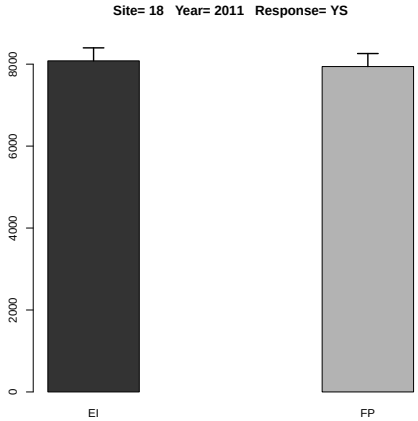

Figure 2.82: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	200010.201	200010.201	1.897	8.983	0.202
B	1.000	1586151.331	1586151.331	15.048	8.983	0.004
A:B	1.000	28823.551	28823.551	0.273	8.983	0.614

Table 2.200: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7807.738	187.848	4.500	41.560	7306.600	8308.876	0.000
2	FP		7584.125	187.848	4.500	40.370	7082.987	8085.263	0.000
3		N	8010.788	187.848	4.500	42.650	7509.650	8511.925	0.000
4		N0	7381.075	187.848	4.500	39.290	6879.937	7882.213	0.000
5	EI	N	8080.150	220.143	7.400	36.700	7565.042	8595.258	0.000
6	FP	N	7941.425	220.143	7.400	36.070	7426.317	8456.533	0.000
7	EI	N0	7535.325	220.143	7.400	34.230	7020.217	8050.433	0.000
8	FP	N0	7226.825	220.143	7.400	32.830	6711.717	7741.933	0.000

Table 2.201: Estimate of treatment means in tow-way ANOVA for variable YS at site 18 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	223.613	162.333	9.000	1.380	-143.714	590.939	0.202
B N-N0	629.712	162.333	9.000	3.880	262.386	997.039	0.004
A:B EI N- FP N	138.725	229.574	9.000	0.600	-380.753	658.203	0.561
A:B EI N- EI N0	544.825	229.574	9.000	2.370	25.347	1064.303	0.042
A:B EI N- FP N0	853.325	229.574	9.000	3.720	333.847	1372.803	0.005
A:B FP N- EI N0	406.100	229.574	9.000	1.770	-113.378	925.578	0.111
A:B FP N- FP N0	714.600	229.574	9.000	3.110	195.122	1234.078	0.012
A:B EI N0- FP N0	308.500	229.574	9.000	1.340	-210.978	827.978	0.212

Table 2.202: Estimate of contrast in two-way ANOVA for variable YS at site 18 in year 2011 .

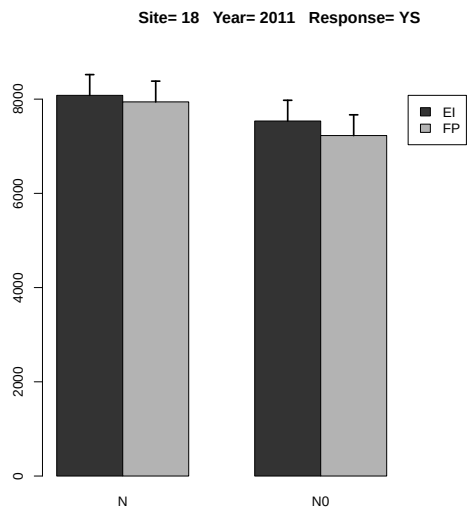

Figure 2.83: Estimated treatment means and standard error in the 2-way ANOVA.

2.2.3 Response Variable YT

	rep	A	B	y
1	1	FP	N0	11976.700
2	2	FP	N0	13503.900
3	3	FP	N0	12903.000
4	4	FP	N0	12793.300
5	1	FP	N	14020.000
6	2	FP	N	14538.800
7	3	FP	N	13821.500
8	4	FP	N	13375.300
9	1	EI	N0	13297.800
10	2	EI	N0	13706.900
11	3	EI	N0	12883.400
12	4	EI	N0	12796.400
13	1	EI	N	13837.000
14	2	EI	N	14673.900
15	3	EI	N	14094.400
16	4	EI	N	14242.600

Table 2.203: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	14211.975	210.815	5.000	67.410	13669.033	14754.917	0.000
A FP	13938.900	210.815	5.000	66.120	13395.958	14481.842	0.000
A EI-FP	273.075	219.875	3.000	1.240	-425.163	971.313	0.302

Table 2.204: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 18 in year 2011 .

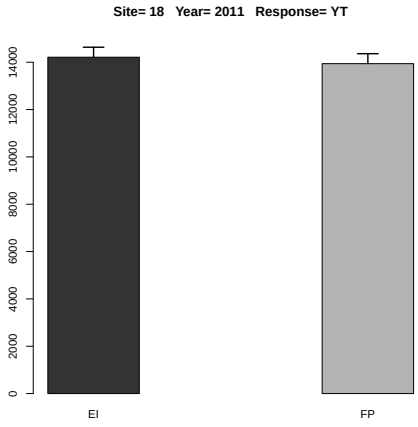

Figure 2.84: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	422467.501	422467.501	3.985	8.978	0.077
B	1.000	4776519.526	4776519.526	45.051	8.978	0.000
A:B	1.000	10779.631	10779.631	0.102	8.978	0.757

Table 2.205: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13691.550	211.177	4.100	64.830	13110.635	14272.465	0.000
2	FP		13366.562	211.177	4.100	63.300	12785.647	13947.478	0.000
3		N	14075.438	211.177	4.100	66.650	13494.522	14656.353	0.000
4		N0	12982.675	211.177	4.100	61.480	12401.760	13563.590	0.000
5	EI	N	14211.975	240.518	6.400	59.090	13631.822	14792.128	0.000
6	FP	N	13938.900	240.518	6.400	57.950	13358.747	14519.053	0.000
7	EI	N0	13171.125	240.518	6.400	54.760	12590.972	13751.278	0.000
8	FP	N0	12794.225	240.518	6.400	53.190	12214.072	13374.378	0.000

Table 2.206: Estimate of treatment means in tow-way ANOVA for variable YT at site 18 in year 2011 .

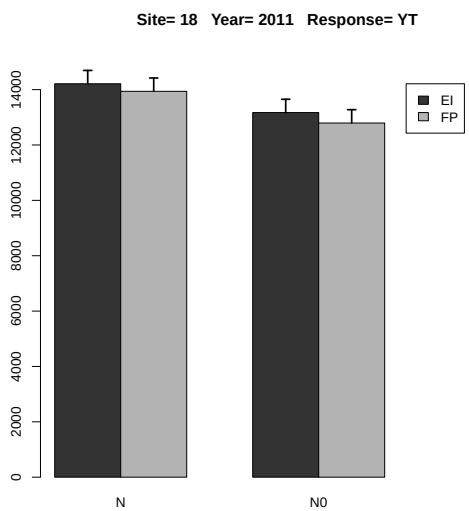

Figure 2.85: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	324.988	162.807	9.000	2.000	-43.443	693.418	0.077
B N-N0	1092.763	162.807	9.000	6.710	724.332	1461.193	0.000
A:B EI N- FP N	273.075	230.244	9.000	1.190	-247.964	794.114	0.266
A:B EI N- EI N0	1040.850	230.244	9.000	4.520	519.811	1561.889	0.002
A:B EI N- FP N0	1417.750	230.244	9.000	6.160	896.711	1938.789	0.000
A:B FP N- EI N0	767.775	230.244	9.000	3.330	246.736	1288.814	0.009
A:B FP N- FP N0	1144.675	230.244	9.000	4.970	623.636	1665.714	0.001
A:B EI N0- FP N0	376.900	230.244	9.000	1.640	-144.139	897.939	0.136

Table 2.207: Estimate of contrast in two-way ANOVA for variable YT at site 18 in year 2011 .

2.2.4 Response Variable HI.G

	rep	A	B	y
1	1	FP	N0	0.465
2	2	FP	N0	0.412
3	3	FP	N0	0.437
4	4	FP	N0	0.430
5	1	FP	N	0.441
6	2	FP	N	0.413
7	3	FP	N	0.440
8	4	FP	N	0.428
9	1	EI	N0	0.417
10	2	EI	N0	0.416
11	3	EI	N0	0.432
12	4	EI	N0	0.448
13	1	EI	N	0.433
14	2	EI	N	0.434
15	3	EI	N	0.431
16	4	EI	N	0.427

Table 2.208: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.431	0.005	5.900	90.020	0.420	0.443	0.000
A FP	0.430	0.005	5.900	89.810	0.419	0.442	0.000
A EI-FP	0.001	0.007	5.900	0.150	-0.016	0.018	0.886

Table 2.209: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 18 in year 2011 .

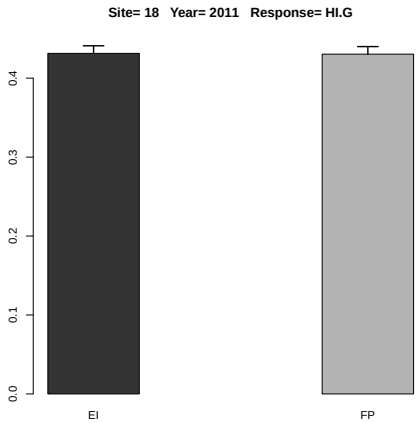

Figure 2.86: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.138	5.999	0.723
B	1.000	0.000	0.000	0.043	5.946	0.842
A:B	1.000	0.000	0.000	0.646	5.946	0.453

Table 2.210: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.430	0.006	6.000	67.090	0.414	0.446	0.000
2	FP		0.433	0.006	6.000	67.620	0.417	0.449	0.000
3		N	0.431	0.005	9.800	81.530	0.419	0.443	0.000
4		N0	0.432	0.005	9.800	81.740	0.420	0.444	0.000
5	EI	N	0.431	0.007	9.800	57.720	0.415	0.448	0.000
6	FP	N	0.430	0.007	9.800	57.580	0.414	0.447	0.000
7	EI	N0	0.428	0.007	9.800	57.280	0.411	0.445	0.000
8	FP	N0	0.436	0.007	9.800	58.320	0.419	0.453	0.000

Table 2.211: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 18 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.003	0.009	6.000	-0.370	-0.025	0.019	0.724
B N-N0	-0.001	0.005	5.900	-0.210	-0.014	0.012	0.842
A:B EI N- FP N	0.001	0.011	9.800	0.100	-0.023	0.025	0.925
A:B EI N- EI N0	0.003	0.008	5.900	0.420	-0.016	0.022	0.688
A:B EI N- FP N0	-0.004	0.011	9.800	-0.420	-0.028	0.019	0.680
A:B FP N- EI N0	0.002	0.011	9.800	0.210	-0.021	0.026	0.837
A:B FP N- FP N0	-0.005	0.008	5.900	-0.720	-0.024	0.013	0.502
A:B EI N0- FP N0	-0.008	0.011	9.800	-0.730	-0.031	0.016	0.481

Table 2.212: Estimate of contrast in two-way ANOVA for variable HI.G at site 18 in year 2011 .

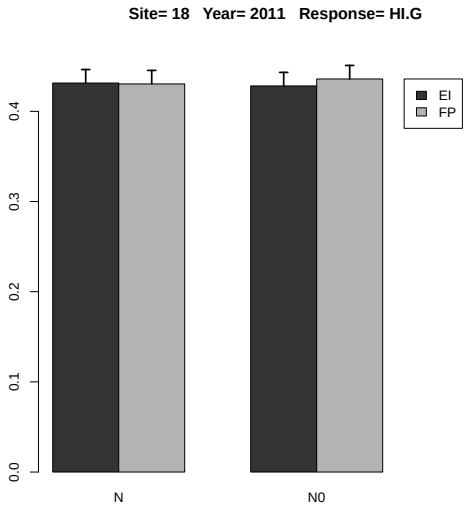

Figure 2.87: Estimated treatment means and standard error in the 2-way ANOVA.

2.2.5 Response Variable UG.N

	rep	A	B	y
1	1	FP	N0	71.819
2	2	FP	N0	62.415
3	3	FP	N0	72.800
4	4	FP	N0	67.986
5	1	FP	N	84.980
6	2	FP	N	73.245
7	3	FP	N	89.153
8	4	FP	N	67.205
9	1	EI	N0	74.115
10	2	EI	N0	95.098
11	3	EI	N0	82.234
12	4	EI	N0	92.309
13	1	EI	N	86.657
14	2	EI	N	83.806
15	3	EI	N	92.424
16	4	EI	N	88.852

Table 2.213: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	87.934	3.820	5.500	23.020	78.392	97.477	0.000
A FP	78.646	3.820	5.500	20.590	69.103	88.188	0.000
A EI-FP	9.289	4.551	3.000	2.040	-5.194	23.771	0.134

Table 2.214: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 18 in year 2011 .

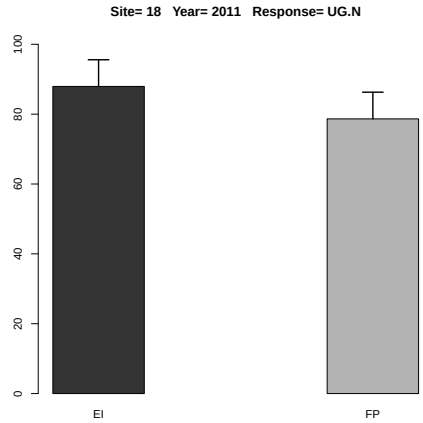

Figure 2.88: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	461.679	461.679	10.039	5.999	0.019
B	1.000	141.286	141.286	3.072	6.000	0.130
A:B	1.000	62.341	62.341	1.356	6.000	0.289

Table 2.215: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		86.937	2.954	6.000	29.430	79.708	94.165	0.000
2	FP		73.700	2.954	6.000	24.950	66.472	80.929	0.000
3		N	83.290	2.690	11.500	30.960	77.401	89.179	0.000
4		N0	77.347	2.690	11.500	28.750	71.458	83.236	0.000
5	EI	N	87.934	3.805	11.500	23.110	79.606	96.263	0.000
6	FP	N	78.646	3.805	11.500	20.670	70.317	86.974	0.000
7	EI	N0	85.939	3.805	11.500	22.590	77.611	94.268	0.000
8	FP	N0	68.755	3.805	11.500	18.070	60.426	77.083	0.000

Table 2.216: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 18 in year 2011 .

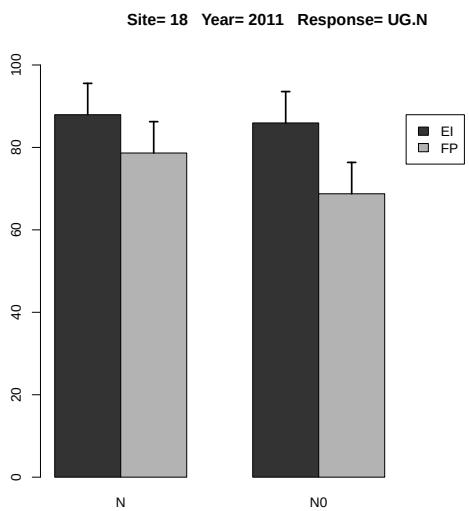

Figure 2.89: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	13.236	4.178	6.000	3.170	3.014	23.459	0.019
B N-N0	5.943	3.391	6.000	1.750	-2.354	14.240	0.130
A:B EI N- FP N	9.289	5.380	11.500	1.730	-2.490	21.067	0.111
A:B EI N- EI N0	1.995	4.795	6.000	0.420	-9.738	13.729	0.692
A:B EI N- FP N0	19.180	5.380	11.500	3.560	7.401	30.958	0.004
A:B FP N- EI N0	-7.293	5.380	11.500	-1.360	-19.072	4.485	0.201
A:B FP N- FP N0	9.891	4.795	6.000	2.060	-1.843	21.625	0.085
A:B EI N0- FP N0	17.184	5.380	11.500	3.190	5.406	28.963	0.008

Table 2.217: Estimate of contrast in two-way ANOVA for variable UG.N at site 18 in year 2011 .

2.2.6 Response Variable UG.P

	rep	A	B	y
1	1	FP	N0	14.976
2	2	FP	N0	14.519
3	3	FP	N0	14.786
4	4	FP	N0	13.905
5	1	FP	N	20.301
6	2	FP	N	17.171
7	3	FP	N	16.955
8	4	FP	N	16.644
9	1	EI	N0	12.658
10	2	EI	N0	12.592
11	3	EI	N0	15.568
12	4	EI	N0	17.086
13	1	EI	N	17.511
14	2	EI	N	16.812
15	3	EI	N	16.721
16	4	EI	N	14.657

Table 2.218: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	16.425	0.743	4.200	22.110	14.408	18.443	0.000
A FP	17.768	0.743	4.200	23.920	15.751	19.785	0.000
A EI-FP	-1.343	0.626	3.000	-2.140	-3.336	0.651	0.121

Table 2.219: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 18 in year 2011 .

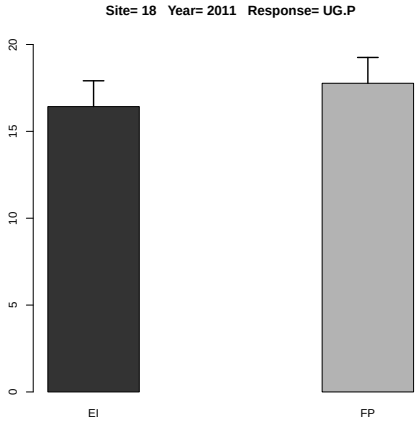

Figure 2.90: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.996	1.996	0.833	11.999	0.379
B	1.000	26.735	26.735	11.157	11.999	0.006
A:B	1.000	1.618	1.618	0.675	11.999	0.427

Table 2.220: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.451	0.547	12.000	28.230	14.258	16.643	0.000
2	FP		16.157	0.547	12.000	29.520	14.965	17.350	0.000
3		N	17.097	0.547	12.000	31.240	15.904	18.289	0.000
4		N0	14.511	0.547	12.000	26.510	13.319	15.704	0.000
5	EI	N	16.425	0.774	12.000	21.220	14.739	18.112	0.000
6	FP	N	17.768	0.774	12.000	22.960	16.081	19.454	0.000
7	EI	N0	14.476	0.774	12.000	18.700	12.790	16.163	0.000
8	FP	N0	14.546	0.774	12.000	18.790	12.860	16.233	0.000

Table 2.221: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 18 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.706	0.774	12.000	-0.910	-2.393	0.980	0.379
B N-N0	2.585	0.774	12.000	3.340	0.899	4.272	0.006
A:B EI N- FP N	-1.343	1.095	12.000	-1.230	-3.727	1.042	0.243
A:B EI N- EI N0	1.949	1.095	12.000	1.780	-0.436	4.334	0.100
A:B EI N- FP N0	1.879	1.095	12.000	1.720	-0.506	4.264	0.112
A:B FP N- EI N0	3.292	1.095	12.000	3.010	0.907	5.677	0.011
A:B FP N- FP N0	3.221	1.095	12.000	2.940	0.836	5.606	0.012
A:B EI N0- FP N0	-0.070	1.095	12.000	-0.060	-2.455	2.314	0.950

Table 2.222: Estimate of contrast in two-way ANOVA for variable UG.P at site 18 in year 2011 .

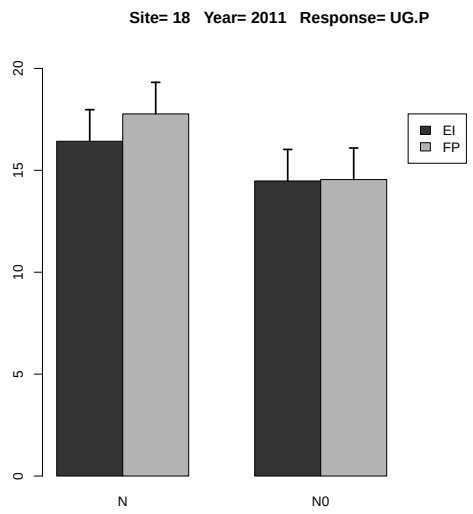

Figure 2.91: Estimated treatment means and standard error in the 2-way ANOVA.

2.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	FP	N0	34.296
2	2	FP	N0	33.248
3	3	FP	N0	33.859
4	4	FP	N0	31.842
5	1	FP	N	46.490
6	2	FP	N	39.321
7	3	FP	N	38.828
8	4	FP	N	38.115
9	1	EI	N0	28.987
10	2	EI	N0	28.837
11	3	EI	N0	35.651
12	4	EI	N0	39.127
13	1	EI	N	40.101
14	2	EI	N	38.500
15	3	EI	N	38.292
16	4	EI	N	33.564

Table 2.223: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	37.614	1.701	4.200	22.110	32.994	42.234	0.000
A FP	40.688	1.701	4.200	23.920	36.069	45.308	0.000
A EI-FP	-3.074	1.434	3.000	-2.140	-7.639	1.491	0.121

Table 2.224: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 18 in year 2011 .

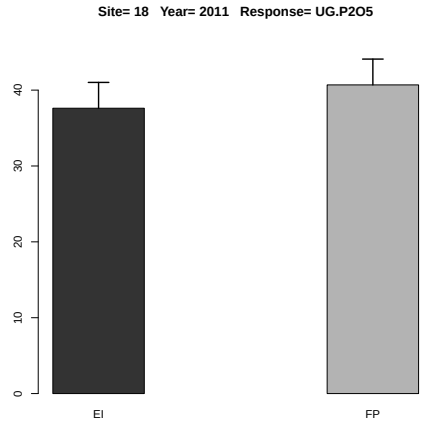

Figure 2.92: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10.468	10.468	0.833	12.000	0.379
B	1.000	140.202	140.202	11.157	12.000	0.006
A:B	1.000	8.486	8.486	0.675	12.000	0.427

Table 2.225: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		35.382	1.253	12.000	28.230	32.651	38.113	0.000
2	FP		37.000	1.253	12.000	29.520	34.269	39.730	0.000
3		N	39.151	1.253	12.000	31.240	36.420	41.882	0.000
4		N0	33.231	1.253	12.000	26.510	30.500	35.962	0.000
5	EI	N	37.614	1.772	12.000	21.220	33.752	41.476	0.000
6	FP	N	40.688	1.772	12.000	22.960	36.827	44.550	0.000
7	EI	N0	33.150	1.772	12.000	18.700	29.288	37.012	0.000
8	FP	N0	33.311	1.772	12.000	18.790	29.450	37.173	0.000

Table 2.226: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 18 in year 2011 .

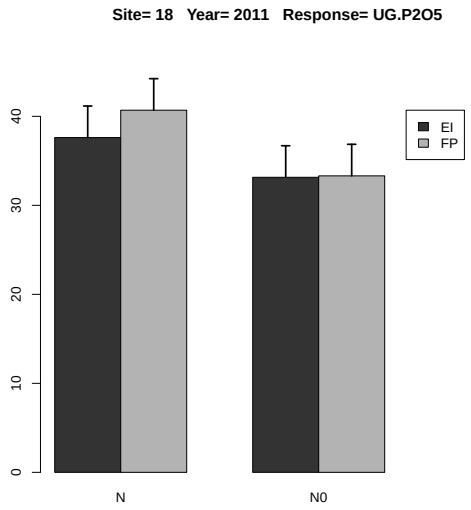

Figure 2.93: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.618	1.772	12.000	-0.910	-5.479	2.244	0.379
B N-N0	5.920	1.772	12.000	3.340	2.058	9.782	0.006
A:B EI N- FP N	-3.074	2.507	12.000	-1.230	-8.536	2.387	0.243
A:B EI N- EI N0	4.464	2.507	12.000	1.780	-0.998	9.925	0.100
A:B EI N- FP N0	4.303	2.507	12.000	1.720	-1.159	9.764	0.112
A:B FP N- EI N0	7.538	2.507	12.000	3.010	2.077	12.999	0.011
A:B FP N- FP N0	7.377	2.507	12.000	2.940	1.915	12.838	0.012
A:B EI N0- FP N0	-0.161	2.507	12.000	-0.060	-5.623	5.300	0.950

Table 2.227: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 18 in year 2011 .

2.2.8 Response Variable UG.K

	rep	A	B	y
1	1	FP	N0	27.447
2	2	FP	N0	24.643
3	3	FP	N0	27.822
4	4	FP	N0	25.062
5	1	FP	N	26.676
6	2	FP	N	20.713
7	3	FP	N	20.966
8	4	FP	N	28.198
9	1	EI	N0	24.594
10	2	EI	N0	25.982
11	3	EI	N0	27.411
12	4	EI	N0	28.266
13	1	EI	N	23.628
14	2	EI	N	25.091
15	3	EI	N	26.146
16	4	EI	N	23.962

Table 2.228: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	24.707	1.424	6.000	17.350	21.223	28.191	0.000
A FP	24.138	1.424	6.000	16.950	20.654	27.622	0.000
A EI-FP	0.568	2.014	6.000	0.280	-4.359	5.495	0.787

Table 2.229: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 18 in year 2011 .

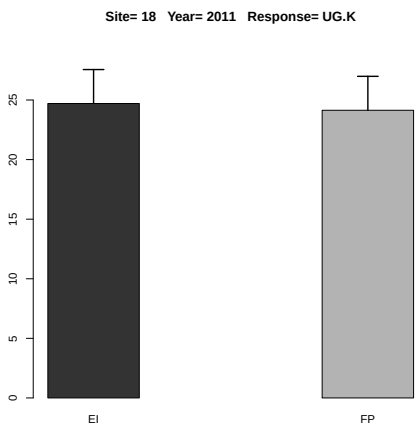

Figure 2.94: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.761	0.761	0.144	5.996	0.717
B	1.000	15.698	15.698	2.980	6.000	0.135
A:B	1.000	0.062	0.062	0.012	6.000	0.917

Table 2.230: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.635	0.826	6.000	31.020	23.613	27.657	0.000
2	FP		25.191	0.826	6.000	30.480	23.169	27.213	0.000
3		N	24.422	0.819	12.000	29.820	22.638	26.207	0.000
4		N0	26.404	0.819	12.000	32.240	24.619	28.188	0.000
5	EI	N	24.707	1.158	12.000	21.330	22.183	27.230	0.000
6	FP	N	24.138	1.158	12.000	20.840	21.615	26.662	0.000
7	EI	N0	26.564	1.158	12.000	22.940	24.040	29.087	0.000
8	FP	N0	26.244	1.158	12.000	22.660	23.720	28.767	0.000

Table 2.231: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 18 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.444	1.169	6.000	0.380	-2.416	3.304	0.717
B N-N0	-1.981	1.148	6.000	-1.730	-4.789	0.827	0.135
A:B EI N- FP N	0.568	1.638	12.000	0.350	-3.001	4.137	0.735
A:B EI N- EI N0	-1.857	1.623	6.000	-1.140	-5.828	2.114	0.296
A:B EI N- FP N0	-1.537	1.638	12.000	-0.940	-5.106	2.032	0.367
A:B FP N- EI N0	-2.425	1.638	12.000	-1.480	-5.994	1.144	0.165
A:B FP N- FP N0	-2.105	1.623	6.000	-1.300	-6.077	1.866	0.242
A:B EI N0- FP N0	0.320	1.638	12.000	0.200	-3.249	3.889	0.848

Table 2.232: Estimate of contrast in two-way ANOVA for variable UG.K at site 18 in year 2011 .

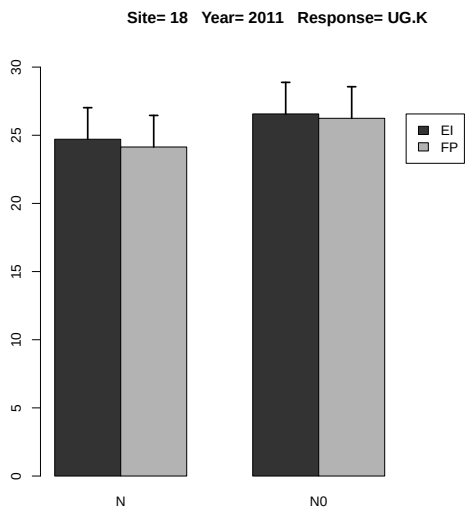

Figure 2.95: Estimated treatment means and standard error in the 2-way ANOVA.

2.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	FP	N0	33.074
2	2	FP	N0	29.695
3	3	FP	N0	33.525
4	4	FP	N0	30.199
5	1	FP	N	32.145
6	2	FP	N	24.959
7	3	FP	N	25.264
8	4	FP	N	33.978
9	1	EI	N0	29.636
10	2	EI	N0	31.309
11	3	EI	N0	33.031
12	4	EI	N0	34.061
13	1	EI	N	28.472
14	2	EI	N	30.234
15	3	EI	N	31.506
16	4	EI	N	28.874

Table 2.233: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	29.771	1.716	6.000	17.350	25.573	33.970	0.000
A FP	29.087	1.716	6.000	16.950	24.888	33.285	0.000
A EI-FP	0.685	2.426	6.000	0.280	-5.252	6.622	0.787

Table 2.234: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 18 in year 2011 .

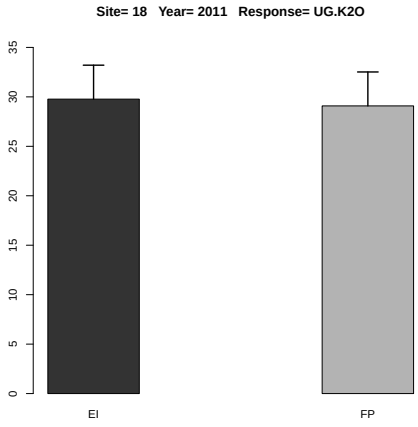

Figure 2.96: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.105	1.105	0.144	5.996	0.717
B	1.000	22.795	22.795	2.980	6.000	0.135
A:B	1.000	0.090	0.090	0.012	6.000	0.917

Table 2.235: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		30.890	0.996	6.000	31.020	28.453	33.327	0.000
2	FP		30.355	0.996	6.000	30.480	27.918	32.792	0.000
3		N	29.429	0.987	12.000	29.820	27.279	31.579	0.000
4		N0	31.816	0.987	12.000	32.240	29.666	33.967	0.000
5	EI	N	29.771	1.396	12.000	21.330	26.731	32.812	0.000
6	FP	N	29.087	1.396	12.000	20.840	26.046	32.127	0.000
7	EI	N0	32.009	1.396	12.000	22.940	28.968	35.050	0.000
8	FP	N0	31.623	1.396	12.000	22.660	28.583	34.664	0.000

Table 2.236: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 18 in year 2011 .

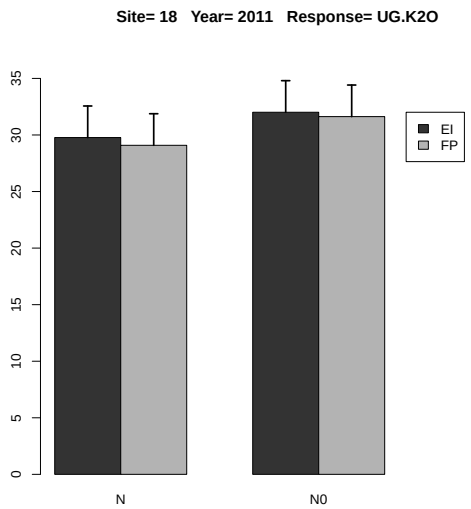

Figure 2.97: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.535	1.408	6.000	0.380	-2.911	3.982	0.717
B N-N0	-2.387	1.383	6.000	-1.730	-5.771	0.997	0.135
A:B EI N- FP N	0.685	1.974	12.000	0.350	-3.616	4.985	0.735
A:B EI N- EI N0	-2.237	1.956	6.000	-1.140	-7.023	2.548	0.296
A:B EI N- FP N0	-1.852	1.974	12.000	-0.940	-6.152	2.449	0.367
A:B FP N- EI N0	-2.922	1.974	12.000	-1.480	-7.223	1.378	0.165
A:B FP N- FP N0	-2.537	1.956	6.000	-1.300	-7.322	2.248	0.242
A:B EI N0- FP N0	0.386	1.974	12.000	0.200	-3.915	4.686	0.848

Table 2.237: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 18 in year 2011 .

2.2.10 Response Variable UG.Ca

	rep	A	B	y
1	1	FP	N0	0.334
2	2	FP	N0	0.278
3	3	FP	N0	0.282
4	4	FP	N0	0.275
5	1	FP	N	0.309
6	2	FP	N	0.240
7	3	FP	N	0.243
8	4	FP	N	0.229
9	1	EI	N0	0.278
10	2	EI	N0	0.285
11	3	EI	N0	0.278
12	4	EI	N0	0.344
13	1	EI	N	0.300
14	2	EI	N	0.382
15	3	EI	N	0.365
16	4	EI	N	0.304

Table 2.238: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.338	0.020	6.000	17.170	0.290	0.386	0.000
A FP	0.255	0.020	6.000	12.980	0.207	0.303	0.000
A EI-FP	0.082	0.028	6.000	2.960	0.014	0.150	0.025

Table 2.239: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Ca at site 18 in year 2011 .

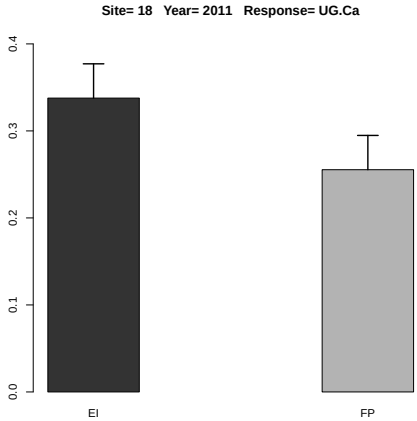

Figure 2.98: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	5.224	5.999	0.062
B	1.000	0.000	0.000	0.021	5.981	0.889
A:B	1.000	0.006	0.006	5.965	5.981	0.050

Table 2.240: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.317	0.013	6.000	23.770	0.284	0.349	0.000
2	FP		0.274	0.013	6.000	20.540	0.241	0.306	0.000
3		N	0.296	0.012	11.700	23.940	0.270	0.324	0.000
4		N0	0.294	0.012	11.700	23.750	0.267	0.321	0.000
5	EI	N	0.338	0.018	11.700	19.280	0.299	0.376	0.000
6	FP	N	0.255	0.018	11.700	14.580	0.217	0.294	0.000
7	EI	N0	0.296	0.018	11.700	16.900	0.258	0.334	0.000
8	FP	N0	0.292	0.018	11.700	16.690	0.254	0.331	0.000

Table 2.241: Estimate of treatment means in tow-way ANOVA for variable UG.Ca at site 18 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.043	0.019	6.000	2.290	-0.003	0.089	0.062
B N-N0	0.002	0.016	6.000	0.150	-0.037	0.042	0.889
A:B EI N- FP N	0.082	0.025	11.700	3.320	0.028	0.137	0.006
A:B EI N- EI N0	0.042	0.023	6.000	1.830	-0.014	0.097	0.117
A:B EI N- FP N0	0.045	0.025	11.700	1.830	-0.009	0.100	0.092
A:B FP N- EI N0	-0.041	0.025	11.700	-1.640	-0.095	0.013	0.127
A:B FP N- FP N0	-0.037	0.023	6.000	-1.620	-0.093	0.019	0.156
A:B EI N0- FP N0	0.004	0.025	11.700	0.150	-0.050	0.058	0.880

Table 2.242: Estimate of contrast in two-way ANOVA for variable UG.Ca at site 18 in year 2011 .

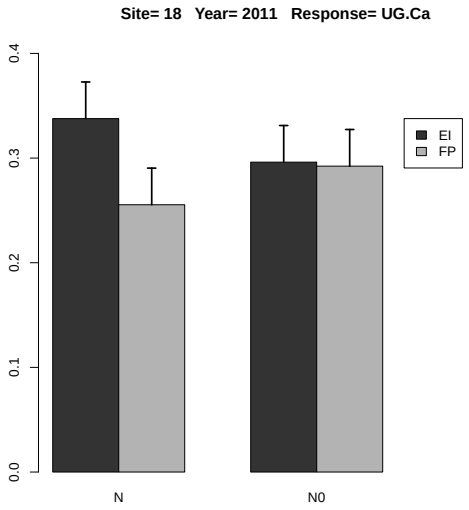

Figure 2.99: Estimated treatment means and standard error in the 2-way ANOVA.

2.2.11 Response Variable UG.Mg

	rep	A	B	y
1	1	FP	N0	6.013
2	2	FP	N0	5.730
3	3	FP	N0	6.772
4	4	FP	N0	5.771
5	1	FP	N	4.271
6	2	FP	N	4.683
7	3	FP	N	5.652
8	4	FP	N	4.919
9	1	EI	N0	5.552
10	2	EI	N0	5.413
11	3	EI	N0	5.783
12	4	EI	N0	6.708
13	1	EI	N	5.937
14	2	EI	N	6.241
15	3	EI	N	6.202
16	4	EI	N	5.291

Table 2.243: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	5.918	0.257	5.900	23.020	5.285	6.550	0.000
A FP	4.881	0.257	5.900	18.990	4.249	5.513	0.000
A EI-FP	1.037	0.335	3.000	3.090	-0.029	2.103	0.053

Table 2.244: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 18 in year 2011 .

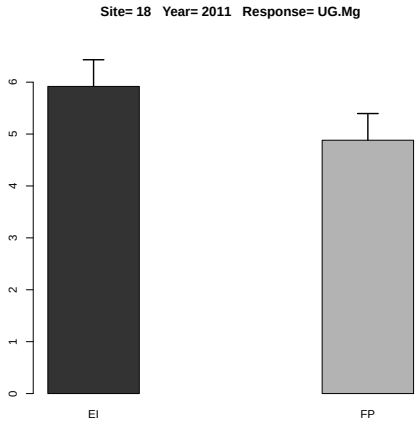

Figure 2.100: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.688	0.688	2.734	8.998	0.133
B	1.000	1.291	1.291	5.135	8.998	0.050
A:B	1.000	1.548	1.548	6.155	8.998	0.035

Table 2.245: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5.891	0.194	7.600	30.430	5.440	6.341	0.000
2	FP		5.476	0.194	7.600	28.290	5.026	5.927	0.000
3		N	5.399	0.194	7.600	27.890	4.949	5.850	0.000
4		N0	5.968	0.194	7.600	30.830	5.517	6.418	0.000
5	EI	N	5.918	0.263	11.700	22.540	5.344	6.491	0.000
6	FP	N	4.881	0.263	11.700	18.590	4.308	5.455	0.000
7	EI	N0	5.864	0.263	11.700	22.340	5.290	6.437	0.000
8	FP	N0	6.071	0.263	11.700	23.130	5.498	6.645	0.000

Table 2.246: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 18 in year 2011 .

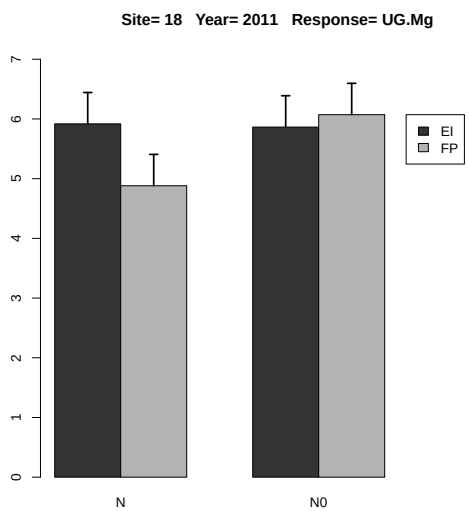

Figure 2.101: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.415	0.251	9.000	1.650	-0.153	0.982	0.133
B N-N0	-0.568	0.251	9.000	-2.270	-1.135	-0.001	0.050
A:B EI N- FP N	1.037	0.355	9.000	2.920	0.234	1.839	0.017
A:B EI N- EI N0	0.054	0.355	9.000	0.150	-0.748	0.856	0.883
A:B EI N- FP N0	-0.154	0.355	9.000	-0.430	-0.956	0.649	0.675
A:B FP N- EI N0	-0.983	0.355	9.000	-2.770	-1.785	-0.181	0.022
A:B FP N- FP N0	-1.190	0.355	9.000	-3.360	-1.992	-0.388	0.008
A:B EI N0- FP N0	-0.207	0.355	9.000	-0.590	-1.010	0.595	0.573

Table 2.247: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 18 in year 2011 .

2.2.12 Response Variable UG.S

	rep	A	B	y
1	1	FP	N0	4.287
2	2	FP	N0	4.450
3	3	FP	N0	5.474
4	4	FP	N0	4.287
5	1	FP	N	5.137
6	2	FP	N	4.503
7	3	FP	N	6.077
8	4	FP	N	5.605
9	1	EI	N0	2.887
10	2	EI	N0	3.761
11	3	EI	N0	3.558
12	4	EI	N0	3.211
13	1	EI	N	4.078
14	2	EI	N	3.566
15	3	EI	N	4.560
16	4	EI	N	4.075

Table 2.248: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4.070	0.278	3.500	14.660	3.253	4.887	0.000
A FP	5.331	0.278	3.500	19.200	4.514	6.147	0.000
A EI-FP	-1.261	0.154	3.000	-8.190	-1.751	-0.771	0.004

Table 2.249: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 18 in year 2011 .

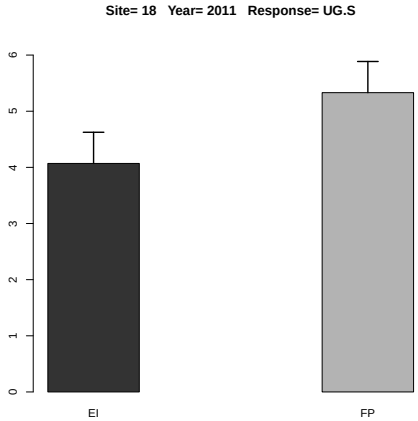

Figure 2.102: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6.407	6.407	41.001	8.998	0.000
B	1.000	2.021	2.021	12.935	8.998	0.006
A:B	1.000	0.000	0.000	0.001	8.998	0.981

Table 2.250: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.712	0.221	4.600	16.820	3.129	4.295	0.000
2	FP		4.978	0.221	4.600	22.550	4.395	5.560	0.000
3		N	4.700	0.221	4.600	21.300	4.117	5.283	0.000
4		N0	3.989	0.221	4.600	18.070	3.407	4.572	0.000
5	EI	N	4.070	0.261	7.700	15.580	3.464	4.676	0.000
6	FP	N	5.331	0.261	7.700	20.400	4.725	5.936	0.000
7	EI	N0	3.354	0.261	7.700	12.840	2.748	3.960	0.000
8	FP	N0	4.625	0.261	7.700	17.700	4.019	5.230	0.000

Table 2.251: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 18 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.266	0.198	9.000	-6.400	-1.713	-0.818	0.000
B N-N0	0.711	0.198	9.000	3.600	0.264	1.158	0.006
A:B EI N- FP N	-1.261	0.280	9.000	-4.510	-1.893	-0.628	0.002
A:B EI N- EI N0	0.716	0.280	9.000	2.560	0.083	1.348	0.031
A:B EI N- FP N0	-0.555	0.280	9.000	-1.980	-1.187	0.078	0.078
A:B FP N- EI N0	1.976	0.280	9.000	7.070	1.344	2.609	0.000
A:B FP N- FP N0	0.706	0.280	9.000	2.530	0.074	1.338	0.032
A:B EI N0- FP N0	-1.270	0.280	9.000	-4.540	-1.903	-0.638	0.001

Table 2.252: Estimate of contrast in two-way ANOVA for variable UG.S at site 18 in year 2011 .

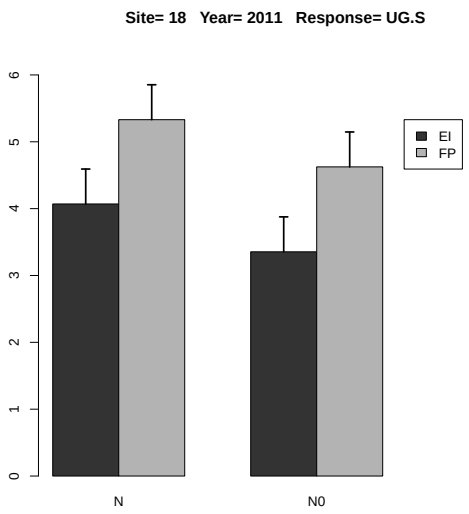

Figure 2.103: Estimated treatment means and standard error in the 2-way ANOVA.

2.2.13 Response Variable PFP.N

	rep	A	B	y
1	1	FP	N	68.771
2	2	FP	N	66.708
3	3	FP	N	67.524
4	4	FP	N	63.551
5	1	EI	N	49.975
6	2	EI	N	53.068
7	3	EI	N	50.671
8	4	EI	N	50.680

Table 2.253: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	51.099	0.921	6.000	55.460	48.844	53.353	0.000
A FP	66.639	0.921	6.000	72.330	64.384	68.893	0.000
A EI-FP	-15.540	1.303	6.000	-11.930	-18.728	-12.352	0.000

Table 2.254: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 18 in year 2011 .

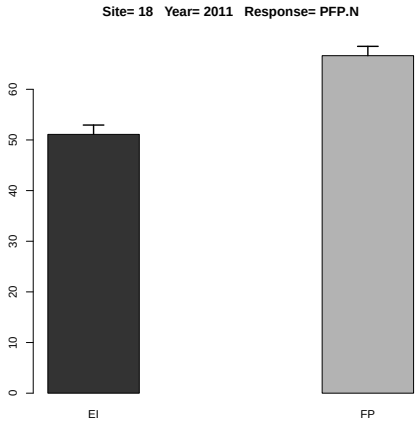

Figure 2.104: Estimated treatment means and standard error in the one-way ANOVA.

2.2.14 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	354.409
2	2	FP	N	343.776
3	3	FP	N	347.984
4	4	FP	N	327.508
5	1	EI	N	343.392
6	2	EI	N	364.647
7	3	EI	N	348.173
8	4	EI	N	348.236

Table 2.255: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	351.112	5.223	6.000	67.230	338.333	363.892	0.000
A FP	343.419	5.223	6.000	65.760	330.640	356.199	0.000
A EI-FP	7.693	7.386	6.000	1.040	-10.380	25.766	0.338

Table 2.256: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 18 in year 2011 .

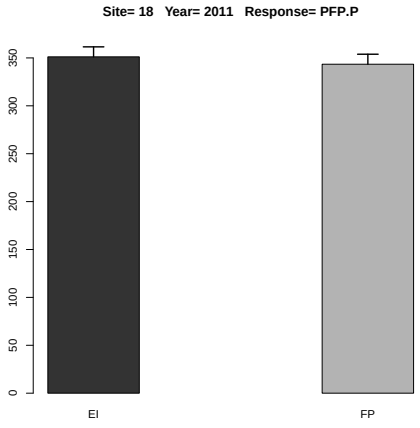

Figure 2.105: Estimated treatment means and standard error in the one-way ANOVA.

2.2.15 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	154.735
2	2	FP	N	150.093
3	3	FP	N	151.930
4	4	FP	N	142.990
5	1	EI	N	149.925
6	2	EI	N	159.205
7	3	EI	N	152.012
8	4	EI	N	152.040

Table 2.257: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	153.296	2.280	6.000	67.230	147.716	158.875	0.000
A FP	149.937	2.280	6.000	65.760	144.357	155.516	0.000
A EI-FP	3.359	3.225	6.000	1.040	-4.532	11.249	0.338

Table 2.258: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 18 in year 2011 .

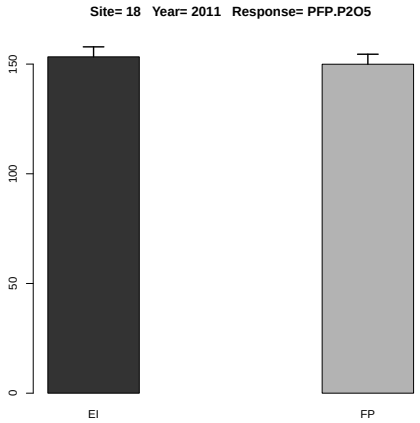

Figure 2.106: Estimated treatment means and standard error in the one-way ANOVA.

2.2.16 Response Variable PFP.K

	rep	A	B	y
1	1	FP	N	186.473
2	2	FP	N	180.878
3	3	FP	N	183.092
4	4	FP	N	172.319
5	1	EI	N	180.676
6	2	EI	N	191.859
7	3	EI	N	183.192
8	4	EI	N	183.225

Table 2.259: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	184.738	2.748	6.000	67.230	178.014	191.462	0.000
A FP	180.690	2.748	6.000	65.760	173.966	187.414	0.000
A EI-FP	4.048	3.886	6.000	1.040	-5.461	13.557	0.338

Table 2.260: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 18 in year 2011 .

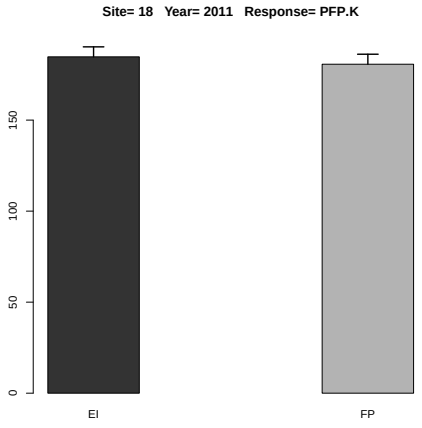

Figure 2.107: Estimated treatment means and standard error in the one-way ANOVA.

2.2.17 Response Variable PFP.K2O

	rep	A	B	y
1	1	FP	N	154.735
2	2	FP	N	150.093
3	3	FP	N	151.930
4	4	FP	N	142.990
5	1	EI	N	149.925
6	2	EI	N	159.205
7	3	EI	N	152.012
8	4	EI	N	152.040

Table 2.261: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	153.296	2.280	6.000	67.230	147.716	158.875	0.000
A FP	149.937	2.280	6.000	65.760	144.357	155.516	0.000
A EI-FP	3.359	3.225	6.000	1.040	-4.532	11.249	0.338

Table 2.262: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 18 in year 2011 .

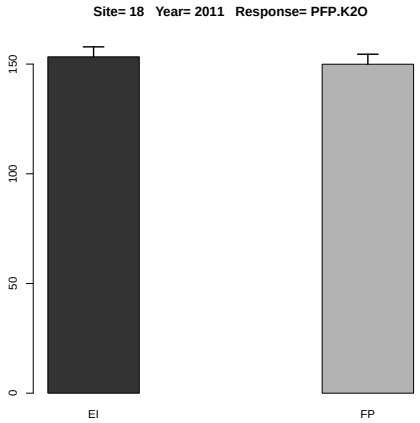

Figure 2.108: Estimated treatment means and standard error in the one-way ANOVA.

2.2.18 Response Variable PFP.Zn

	rep	A	B	y
1	1	FP	N	4126.267
2	2	FP	N	4002.467
3	3	FP	N	4051.467
4	4	FP	N	3813.067
5	1	EI	N	3998.000
6	2	EI	N	4245.467
7	3	EI	N	4053.667
8	4	EI	N	4054.400

Table 2.263: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4087.883	60.805	6.000	67.230	3939.068	4236.699	0.000
A FP	3998.317	60.805	6.000	65.760	3849.501	4147.132	0.000
A EI-FP	89.567	85.991	6.000	1.040	-120.890	300.023	0.338

Table 2.264: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 18 in year 2011 .

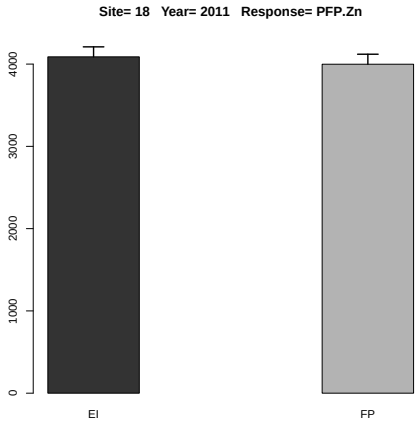

Figure 2.109: Estimated treatment means and standard error in the one-way ANOVA.

2.2.19 Response Variable PNB.N

	rep	A	B	y
1	1	FP	N	0.944
2	2	FP	N	0.814
3	3	FP	N	0.991
4	4	FP	N	0.747
5	1	EI	N	0.722
6	2	EI	N	0.698
7	3	EI	N	0.770
8	4	EI	N	0.740

Table 2.265: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.733	0.041	5.700	17.710	0.630	0.835	0.000
A FP	0.874	0.041	5.700	21.120	0.771	0.976	0.000
A EI-FP	-0.141	0.051	3.000	-2.750	-0.305	0.023	0.071

Table 2.266: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 18 in year 2011 .

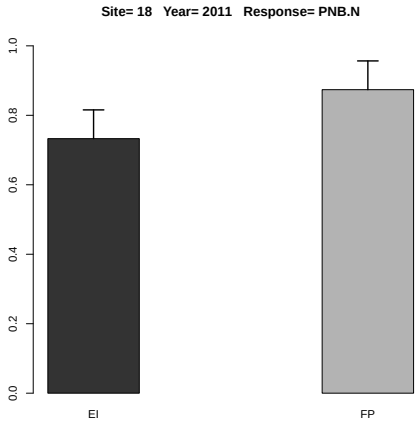

Figure 2.110: Estimated treatment means and standard error in the one-way ANOVA.

2.2.20 Response Variable PNB.P

	rep	A	B	y
1	1	FP	N	1.162
2	2	FP	N	0.983
3	3	FP	N	0.971
4	4	FP	N	0.953
5	1	EI	N	1.003
6	2	EI	N	0.963
7	3	EI	N	0.957
8	4	EI	N	0.839

Table 2.267: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.940	0.042	4.200	22.110	0.825	1.056	0.000
A FP	1.017	0.042	4.200	23.920	0.902	1.133	0.000
A EI-FP	-0.077	0.036	3.000	-2.140	-0.191	0.037	0.122

Table 2.268: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 18 in year 2011 .

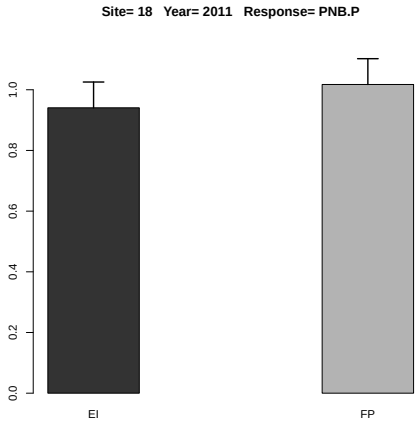

Figure 2.111: Estimated treatment means and standard error in the one-way ANOVA.

2.2.21 Response Variable PNB.K

	rep	A	B	y
1	1	FP	N	0.804
2	2	FP	N	0.624
3	3	FP	N	0.632
4	4	FP	N	0.850
5	1	EI	N	0.712
6	2	EI	N	0.756
7	3	EI	N	0.788
8	4	EI	N	0.722

Table 2.269: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.744	0.043	6.000	17.350	0.639	0.849	0.000
A FP	0.727	0.043	6.000	16.950	0.622	0.832	0.000
A EI-FP	0.017	0.061	6.000	0.280	-0.131	0.166	0.787

Table 2.270: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 18 in year 2011 .

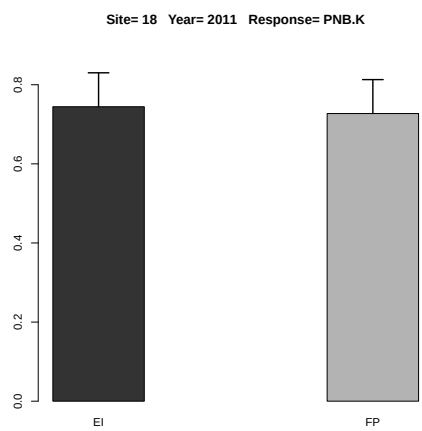

Figure 2.112: Estimated treatment means and standard error in the one-way ANOVA.

2.2.22 Response Variable AE

	rep	A	B	y
1	1	FP	N	10.367
2	2	FP	N	7.348
3	3	FP	N	7.230
4	4	FP	N	3.727
5	1	EI	N	4.948
6	2	EI	N	7.448
7	3	EI	N	5.782
8	4	EI	N	3.868

Table 2.271: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	5.511	0.925	5.961	0.019
A FP	7.168	0.925	7.753	0.008
A EI-FP	-1.657	1.307	-1.267	0.488

Table 2.272: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 18 in year 2011 .

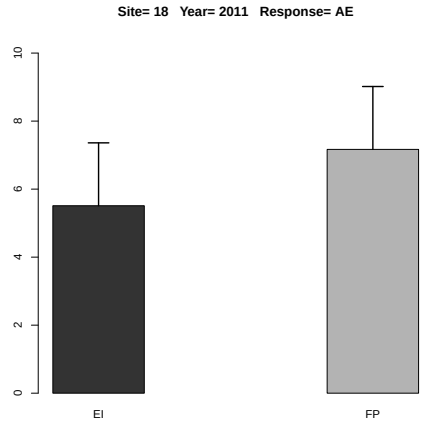

Figure 2.113: Estimated treatment means and standard error in the one-way ANOVA.

2.3 Year 2012

There are 47 variables not observed: UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

2.3.1 Response Variable YG

	rep	A	B	y
1	1	FP	N0	6314.000
2	2	FP	N0	6520.400
3	3	FP	N0	6615.800
4	4	FP	N0	7013.000
5	1	FP	N	8100.300
6	2	FP	N	7788.900
7	3	FP	N	7951.000
8	4	FP	N	7963.800
9	1	EI	N0	6381.500
10	2	EI	N0	5272.200
11	3	EI	N0	5503.400
12	4	EI	N0	6770.300
13	1	EI	N	8066.900
14	2	EI	N	7100.100
15	3	EI	N	7356.400
16	4	EI	N	7050.800

Table 2.273: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	7393.550	171.647	5.100	43.070	6956.057	7831.043	0.000
A FP	7951.000	171.647	5.100	46.320	7513.507	8388.493	0.000
A EI-FP	-557.450	187.011	3.000	-2.980	-1153.860	38.959	0.059

Table 2.274: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 18 in year 2012 .

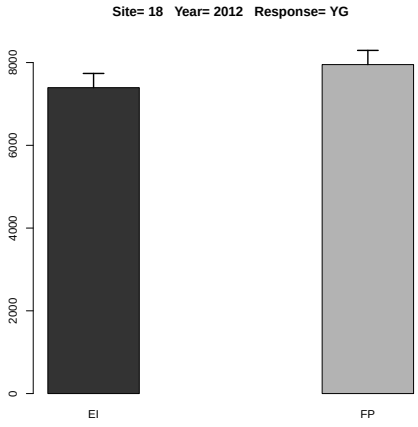

Figure 2.114: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1268828.801	1268828.801	7.326	2.999	0.073
B	1.000	7545459.610	7545459.610	43.569	5.813	0.001
A:B	1.000	5852.250	5852.250	0.034	5.813	0.860

Table 2.275: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6687.700	173.196	5.800	38.610	6260.024	7115.376	0.000
2	FP		7283.400	173.196	5.800	42.050	6855.724	7711.076	0.000
3		N	7672.275	169.446	6.500	45.280	7265.841	8078.709	0.000
4		N0	6298.825	169.446	6.500	37.170	5892.391	6705.259	0.000
5	EI	N	7393.550	227.255	11.500	32.530	6895.767	7891.333	0.000
6	FP	N	7951.000	227.255	11.500	34.990	7453.217	8448.783	0.000
7	EI	N0	5981.850	227.255	11.500	26.320	5484.067	6479.633	0.000
8	FP	N0	6615.800	227.255	11.500	29.110	6118.017	7113.583	0.000

Table 2.276: Estimate of treatment means in tow-way ANOVA for variable YG at site 18 in year 2012 .

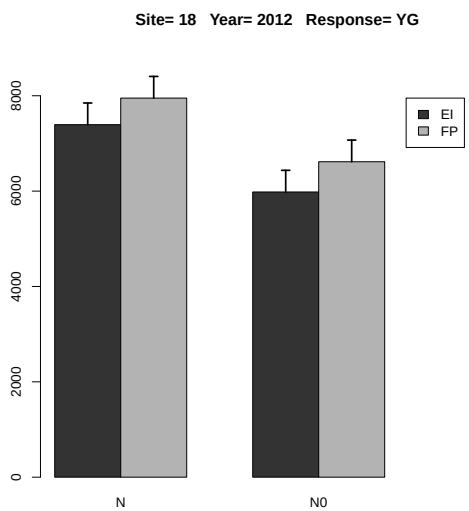

Figure 2.115: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-595.700	220.079	3.000	-2.710	-1296.264	104.864	0.073
B N-N0	1373.450	208.077	6.100	6.600	865.500	1881.400	0.001
A:B EI N- FP N	-557.450	302.871	7.700	-1.840	-1260.486	145.585	0.104
A:B EI N- EI N0	1411.700	294.265	6.100	4.800	693.350	2130.050	0.003
A:B EI N- FP N0	777.750	302.871	7.700	2.570	74.715	1480.785	0.034
A:B FP N- EI N0	1969.150	302.871	7.700	6.500	1266.114	2672.186	0.000
A:B FP N- FP N0	1335.200	294.265	6.100	4.540	616.850	2053.550	0.004
A:B EI N0- FP N0	-633.950	302.871	7.700	-2.090	-1336.986	69.085	0.071

Table 2.277: Estimate of contrast in two-way ANOVA for variable YG at site 18 in year 2012 .

2.3.2 Response Variable YS

	rep	A	B	y
1	1	FP	N0	7688.200
2	2	FP	N0	8313.000
3	3	FP	N0	7172.100
4	4	FP	N0	7290.700
5	1	FP	N	9506.300
6	2	FP	N	7658.300
7	3	FP	N	8297.300
8	4	FP	N	9152.500
9	1	EI	N0	7467.100
10	2	EI	N0	7369.500
11	3	EI	N0	6817.700
12	4	EI	N0	7443.200
13	1	EI	N	10937.800
14	2	EI	N	8197.600
15	3	EI	N	7863.500
16	4	EI	N	9834.300

Table 2.278: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	9208.300	588.310	3.700	15.650	7521.135	10895.465	0.000
A FP	8653.600	588.310	3.700	14.710	6966.435	10340.765	0.000
A EI-FP	554.700	383.222	2.800	1.450	-703.732	1813.132	0.248

Table 2.279: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 18 in year 2012 .

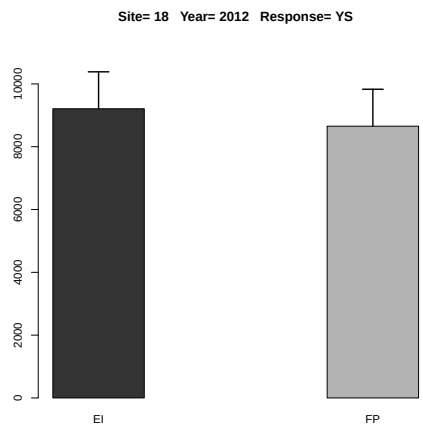

Figure 2.116: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	45400.956	45400.956	0.081	8.590	0.783
B	1.000	8829960.826	8829960.826	15.699	8.590	0.004
A:B	1.000	803398.506	803398.506	1.428	8.590	0.264

Table 2.280: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8241.337	353.816	5.500	23.290	7356.409	9126.266	0.000
2	FP		8134.800	353.816	5.500	22.990	7249.871	9019.729	0.000
3		N	8930.950	353.816	5.500	25.240	8046.021	9815.879	0.000
4		N0	7445.188	353.816	5.500	21.040	6560.259	8330.116	0.000
5	EI	N	9208.300	442.148	9.600	20.830	8216.979	10199.621	0.000
6	FP	N	8653.600	442.148	9.600	19.570	7662.279	9644.921	0.000
7	EI	N0	7274.375	442.148	9.600	16.450	6283.054	8265.696	0.000
8	FP	N0	7616.000	442.148	9.600	17.230	6624.679	8607.321	0.000

Table 2.281: Estimate of treatment means in tow-way ANOVA for variable YS at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	106.537	374.990	8.600	0.280	-747.956	961.031	0.783
B N-N0	1485.763	374.990	8.600	3.960	631.269	2340.256	0.004
A:B EI N- FP N	554.700	530.316	8.600	1.050	-653.736	1763.136	0.324
A:B EI N- EI N0	1933.925	530.316	8.600	3.650	725.489	3142.361	0.006
A:B EI N- FP N0	1592.300	530.316	8.600	3.000	383.864	2800.736	0.016
A:B FP N- EI N0	1379.225	530.316	8.600	2.600	170.789	2587.661	0.030
A:B FP N- FP N0	1037.600	530.316	8.600	1.960	-170.836	2246.036	0.084
A:B EI N0- FP N0	-341.625	530.316	8.600	-0.640	-1550.061	866.811	0.536

Table 2.282: Estimate of contrast in two-way ANOVA for variable YS at site 18 in year 2012 .

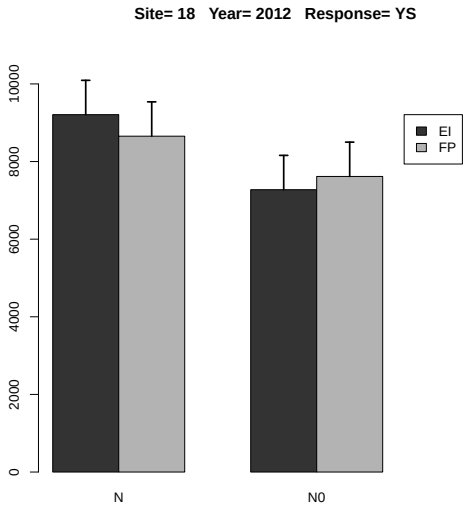

Figure 2.117: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.3 Response Variable YT

	rep	A	B	y
1	1	FP	N0	14002.200
2	2	FP	N0	14833.400
3	3	FP	N0	13787.900
4	4	FP	N0	14303.700
5	1	FP	N	17606.600
6	2	FP	N	15447.200
7	3	FP	N	16248.300
8	4	FP	N	17116.300
9	1	EI	N0	13848.600
10	2	EI	N0	12641.700
11	3	EI	N0	12321.100
12	4	EI	N0	14213.500
13	1	EI	N	19004.700
14	2	EI	N	15297.700
15	3	EI	N	15219.900
16	4	EI	N	16885.100

Table 2.283: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	16601.850	712.885	3.800	23.290	14591.228	18612.472	0.000
A FP	16604.600	712.885	3.800	23.290	14593.978	18615.222	0.000
A EI-FP	-2.750	507.285	2.900	-0.010	-1665.963	1660.463	0.996

Table 2.284: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 18 in year 2012 .

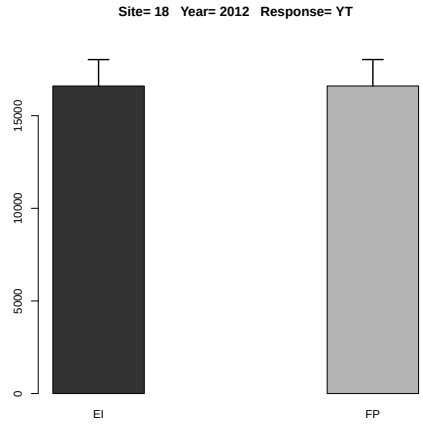

Figure 2.118: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	925845.390	925845.390	1.205	2.998	0.353
B	1.000	32700384.481	32700384.481	42.563	8.738	0.000
A:B	1.000	946388.481	946388.481	1.232	8.738	0.297

Table 2.285: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14929.038	472.657	4.600	31.590	13680.081	16177.994	0.000
2	FP		15418.200	472.657	4.600	32.620	14169.244	16667.156	0.000
3		N	16603.225	470.938	4.800	35.260	15374.196	17832.254	0.000
4		N0	13744.013	470.938	4.800	29.180	12514.984	14973.041	0.000
5	EI	N	16601.850	565.190	8.500	29.370	15312.826	17890.874	0.000
6	FP	N	16604.600	565.190	8.500	29.380	15315.576	17893.624	0.000
7	EI	N0	13256.225	565.190	8.500	23.450	11967.201	14545.249	0.000
8	FP	N0	14231.800	565.190	8.500	25.180	12942.776	15520.824	0.000

Table 2.286: Estimate of treatment means in tow-way ANOVA for variable YT at site 18 in year 2012 .

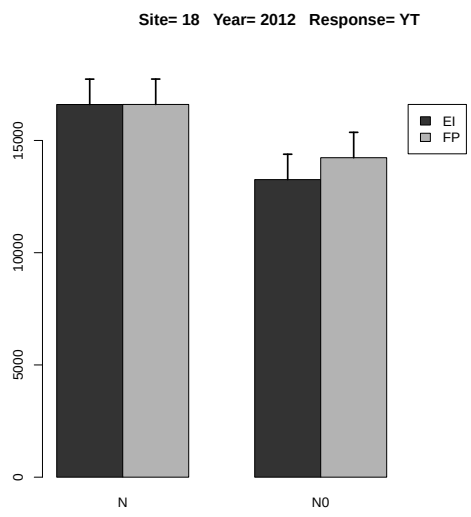

Figure 2.119: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-489.163	445.599	3.000	-1.100	-1907.883	929.558	0.353
B N-N0	2859.213	438.259	8.700	6.520	1863.264	3855.161	0.000
A:B EI N- FP N	-2.750	625.004	8.800	-0.000	-1421.891	1416.391	0.997
A:B EI N- EI N0	3345.625	619.791	8.700	5.400	1937.142	4754.108	0.000
A:B EI N- FP N0	2370.050	625.004	8.800	3.790	950.909	3789.191	0.004
A:B FP N- EI N0	3348.375	625.004	8.800	5.360	1929.234	4767.516	0.000
A:B FP N- FP N0	2372.800	619.791	8.700	3.830	964.317	3781.283	0.004
A:B EI N0- FP N0	-975.575	625.004	8.800	-1.560	-2394.716	443.566	0.154

Table 2.287: Estimate of contrast in two-way ANOVA for variable YT at site 18 in year 2012 .

2.3.4 Response Variable HI.G

	rep	A	B	y
1	1	FP	N0	0.451
2	2	FP	N0	0.440
3	3	FP	N0	0.480
4	4	FP	N0	0.490
5	1	FP	N	0.460
6	2	FP	N	0.504
7	3	FP	N	0.489
8	4	FP	N	0.465
9	1	EI	N0	0.461
10	2	EI	N0	0.417
11	3	EI	N0	0.447
12	4	EI	N0	0.476
13	1	EI	N	0.424
14	2	EI	N	0.464
15	3	EI	N	0.483
16	4	EI	N	0.418

Table 2.288: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.447	0.013	3.800	33.520	0.409	0.485	0.000
A FP	0.480	0.013	3.800	35.950	0.442	0.518	0.000
A EI-FP	-0.032	0.009	3.000	-3.540	-0.061	-0.003	0.039

Table 2.289: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 18 in year 2012 .

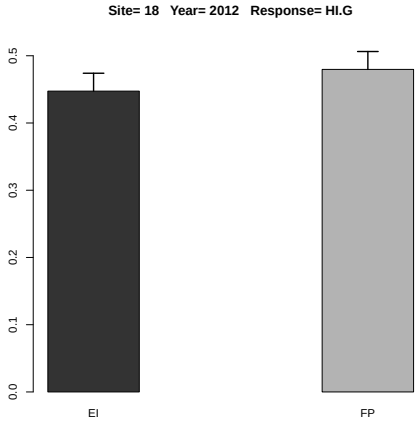

Figure 2.120: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.002	0.002	3.404	11.942	0.090
B	1.000	0.000	0.000	0.210	11.949	0.655
A:B	1.000	0.000	0.000	0.461	11.949	0.510

Table 2.290: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.449	0.009	11.900	49.510	0.429	0.469	0.000
2	FP		0.472	0.009	11.900	52.120	0.453	0.492	0.000
3		N	0.464	0.009	11.900	51.140	0.444	0.483	0.000
4		N0	0.458	0.009	11.900	50.500	0.438	0.477	0.000
5	EI	N	0.447	0.013	12.000	34.900	0.419	0.475	0.000
6	FP	N	0.480	0.013	12.000	37.430	0.452	0.508	0.000
7	EI	N0	0.450	0.013	12.000	35.120	0.422	0.478	0.000
8	FP	N0	0.465	0.013	12.000	36.290	0.437	0.493	0.000

Table 2.291: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.024	0.013	11.900	-1.840	-0.052	0.004	0.090
B N-N0	0.006	0.013	11.900	0.460	-0.022	0.034	0.655
A:B EI N- FP N	-0.032	0.018	11.900	-1.780	-0.072	0.007	0.100
A:B EI N- EI N0	-0.003	0.018	11.900	-0.160	-0.042	0.037	0.878
A:B EI N- FP N0	-0.018	0.018	11.900	-0.980	-0.057	0.022	0.346
A:B FP N- EI N0	0.029	0.018	11.900	1.630	-0.010	0.069	0.130
A:B FP N- FP N0	0.015	0.018	11.900	0.800	-0.025	0.054	0.437
A:B EI N0- FP N0	-0.015	0.018	11.900	-0.820	-0.054	0.025	0.426

Table 2.292: Estimate of contrast in two-way ANOVA for variable HI.G at site 18 in year 2012 .

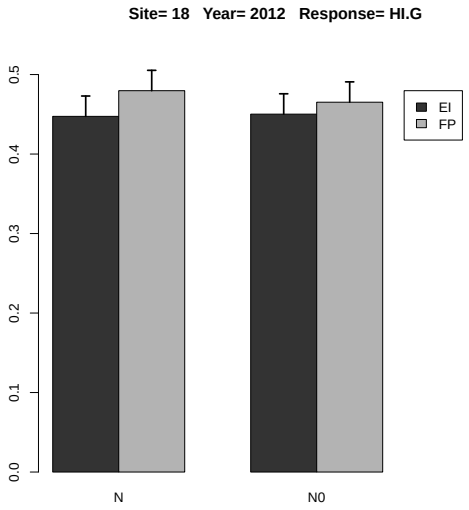

Figure 2.121: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.5 Response Variable UG.N

	rep	A	B	y
1	1	FP	N0	77.031
2	2	FP	N0	88.677
3	3	FP	N0	86.005
4	4	FP	N0	103.792
5	1	FP	N	144.185
6	2	FP	N	122.286
7	3	FP	N	128.011
8	4	FP	N	140.959
9	1	EI	N0	101.466
10	2	EI	N0	68.539
11	3	EI	N0	75.947
12	4	EI	N0	102.232
13	1	EI	N	137.137
14	2	EI	N	119.282
15	3	EI	N	124.323
16	4	EI	N	110.698

Table 2.293: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	122.860	5.369	5.600	22.880	109.483	136.237	0.000
A FP	133.860	5.369	5.600	24.930	120.484	147.237	0.000
A EI-FP	-11.000	6.481	3.000	-1.700	-31.626	9.625	0.188

Table 2.294: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 18 in year 2012 .

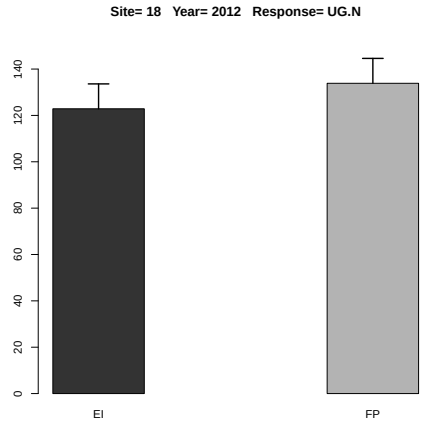

Figure 2.122: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	164.640	164.640	1.181	9.000	0.305
B	1.000	6528.324	6528.324	46.816	9.000	0.000
A:B	1.000	84.082	84.082	0.603	9.000	0.457

Table 2.295: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		104.953	4.853	6.800	21.630	93.400	116.505	0.000
2	FP		111.368	4.853	6.800	22.950	99.816	122.921	0.000
3		N	128.360	4.853	6.800	26.450	116.808	139.912	0.000
4		N0	87.961	4.853	6.800	18.120	76.409	99.513	0.000
5	EI	N	122.860	6.402	11.200	19.190	108.807	136.913	0.000
6	FP	N	133.860	6.402	11.200	20.910	119.808	147.913	0.000
7	EI	N0	87.046	6.402	11.200	13.600	72.993	101.099	0.000
8	FP	N0	88.876	6.402	11.200	13.880	74.824	102.929	0.000

Table 2.296: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 18 in year 2012 .

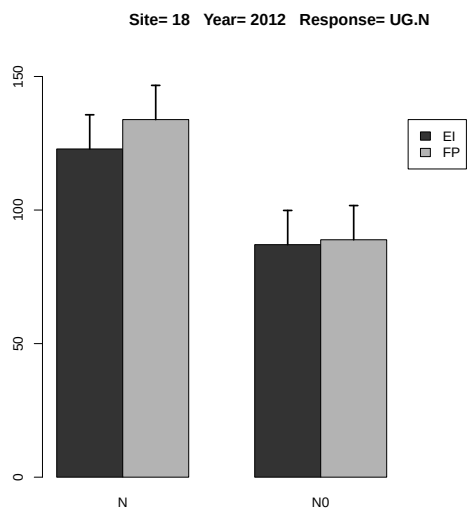

Figure 2.123: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.416	5.904	9.000	-1.090	-19.772	6.941	0.305
B N-N0	40.399	5.904	9.000	6.840	27.042	53.756	0.000
A:B EI N- FP N	-11.000	8.350	9.000	-1.320	-29.890	7.889	0.220
A:B EI N- EI N0	35.814	8.350	9.000	4.290	16.925	54.703	0.002
A:B EI N- FP N0	33.983	8.350	9.000	4.070	15.094	52.873	0.003
A:B FP N- EI N0	46.815	8.350	9.000	5.610	27.925	65.704	0.000
A:B FP N- FP N0	44.984	8.350	9.000	5.390	26.095	63.873	0.000
A:B EI N0- FP N0	-1.831	8.350	9.000	-0.220	-20.720	17.058	0.831

Table 2.297: Estimate of contrast in two-way ANOVA for variable UG.N at site 18 in year 2012 .

2.3.6 Response Variable UG.P

	rep	A	B	y
1	1	FP	N0	29.676
2	2	FP	N0	28.038
3	3	FP	N0	31.756
4	4	FP	N0	30.857
5	1	FP	N	25.921
6	2	FP	N	26.482
7	3	FP	N	27.033
8	4	FP	N	24.688
9	1	EI	N0	24.250
10	2	EI	N0	27.415
11	3	EI	N0	30.819
12	4	EI	N0	27.081
13	1	EI	N	22.587
14	2	EI	N	31.240
15	3	EI	N	30.897
16	4	EI	N	30.318

Table 2.298: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	28.761	1.504	6.000	19.130	25.077	32.445	0.000
A FP	26.031	1.504	6.000	17.310	22.347	29.715	0.000
A EI-FP	2.730	2.053	3.000	1.330	-3.804	9.264	0.276

Table 2.299: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 18 in year 2012 .

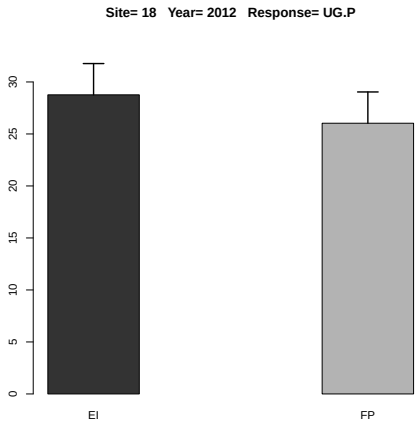

Figure 2.124: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.000	3.000	0.990
B	1.000	7.188	7.188	2.727	6.000	0.150
A:B	1.000	29.376	29.376	11.144	6.000	0.016

Table 2.300: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		28.076	1.190	5.700	23.600	25.131	31.022	0.000
2	FP		28.056	1.190	5.700	23.590	25.111	31.002	0.000
3		N	27.396	1.014	4.200	27.010	24.627	30.165	0.000
4		N0	28.736	1.014	4.200	28.340	25.967	31.506	0.000
5	EI	N	28.761	1.321	8.300	21.780	25.732	31.790	0.000
6	FP	N	26.031	1.321	8.300	19.710	23.002	29.060	0.000
7	EI	N0	27.391	1.321	8.300	20.740	24.363	30.420	0.000
8	FP	N0	30.082	1.321	8.300	22.780	27.053	33.110	0.000

Table 2.301: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.020	1.485	3.000	0.010	-4.706	4.746	0.990
B N-N0	-1.341	0.812	6.000	-1.650	-3.327	0.646	0.150
A:B EI N- FP N	2.730	1.692	4.800	1.610	-1.663	7.122	0.170
A:B EI N- EI N0	1.369	1.148	6.000	1.190	-1.440	4.179	0.278
A:B EI N- FP N0	-1.321	1.692	4.800	-0.780	-5.713	3.072	0.471
A:B FP N- EI N0	-1.360	1.692	4.800	-0.800	-5.753	3.032	0.459
A:B FP N- FP N0	-4.051	1.148	6.000	-3.530	-6.860	-1.241	0.012
A:B EI N0- FP N0	-2.690	1.692	4.800	-1.590	-7.083	1.702	0.175

Table 2.302: Estimate of contrast in two-way ANOVA for variable UG.P at site 18 in year 2012 .

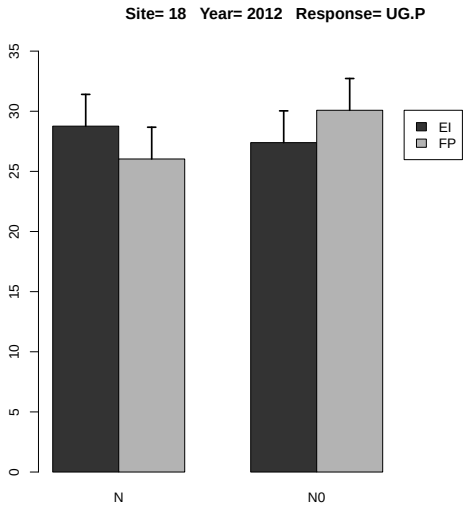

Figure 2.125: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	FP	N0	67.958
2	2	FP	N0	64.206
3	3	FP	N0	72.721
4	4	FP	N0	70.663
5	1	FP	N	59.359
6	2	FP	N	60.644
7	3	FP	N	61.906
8	4	FP	N	56.535
9	1	EI	N0	55.532
10	2	EI	N0	62.781
11	3	EI	N0	70.576
12	4	EI	N0	62.016
13	1	EI	N	51.725
14	2	EI	N	71.541
15	3	EI	N	70.754
16	4	EI	N	69.429

Table 2.303: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	65.862	3.444	6.000	19.130	57.426	74.298	0.000
A FP	59.611	3.444	6.000	17.310	51.175	68.047	0.000
A EI-FP	6.251	4.702	3.000	1.330	-8.711	21.213	0.276

Table 2.304: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 18 in year 2012 .

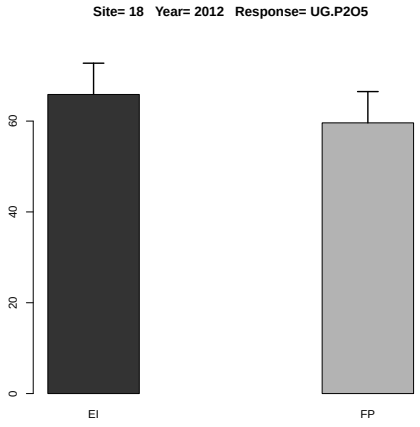

Figure 2.126: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.002	0.002	0.000	3.000	0.990
B	1.000	37.697	37.697	2.727	6.000	0.150
A:B	1.000	154.051	154.051	11.144	6.000	0.016

Table 2.305: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		64.294	2.724	5.700	23.600	57.549	71.040	0.000
2	FP		64.249	2.724	5.700	23.590	57.504	70.994	0.000
3		N	62.737	2.322	4.200	27.010	56.395	69.079	0.000
4		N0	65.807	2.322	4.200	28.340	59.465	72.148	0.000
5	EI	N	65.862	3.025	8.300	21.780	58.926	72.798	0.000
6	FP	N	59.611	3.025	8.300	19.710	52.675	66.547	0.000
7	EI	N0	62.726	3.025	8.300	20.740	55.790	69.662	0.000
8	FP	N0	68.887	3.025	8.300	22.780	61.951	75.823	0.000

Table 2.306: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 18 in year 2012 .

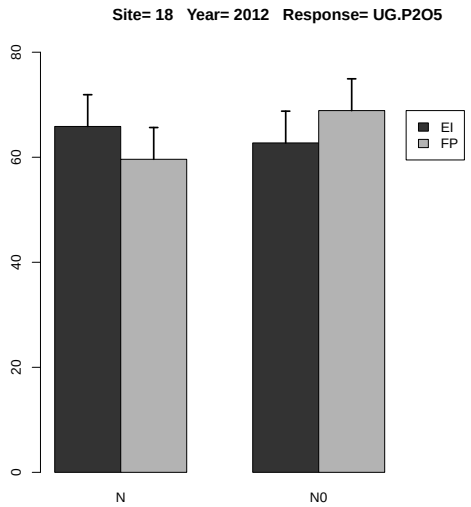

Figure 2.127: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.045	3.400	3.000	0.010	-10.777	10.867	0.990
B N-N0	-3.070	1.859	6.000	-1.650	-7.619	1.479	0.150
A:B EI N- FP N	6.251	3.875	4.800	1.610	-3.808	16.310	0.170
A:B EI N- EI N0	3.136	2.629	6.000	1.190	-3.297	9.569	0.278
A:B EI N- FP N0	-3.025	3.875	4.800	-0.780	-13.084	7.034	0.471
A:B FP N- EI N0	-3.115	3.875	4.800	-0.800	-13.174	6.944	0.459
A:B FP N- FP N0	-9.276	2.629	6.000	-3.530	-15.709	-2.843	0.012
A:B EI N0- FP N0	-6.161	3.875	4.800	-1.590	-16.220	3.898	0.175

Table 2.307: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 18 in year 2012 .

2.3.8 Response Variable UG.K

	rep	A	B	y
1	1	FP	N0	39.147
2	2	FP	N0	39.774
3	3	FP	N0	42.341
4	4	FP	N0	43.481
5	1	FP	N	45.362
6	2	FP	N	48.291
7	3	FP	N	44.526
8	4	FP	N	40.615
9	1	EI	N0	35.736
10	2	EI	N0	35.324
11	3	EI	N0	36.873
12	4	EI	N0	34.529
13	1	EI	N	33.881
14	2	EI	N	36.211
15	3	EI	N	37.518
16	4	EI	N	39.484

Table 2.308: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	36.773	1.394	6.000	26.380	33.362	40.184	0.000
A FP	44.699	1.394	6.000	32.070	41.288	48.109	0.000
A EI-FP	-7.925	1.971	6.000	-4.020	-12.749	-3.101	0.007

Table 2.309: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 18 in year 2012 .

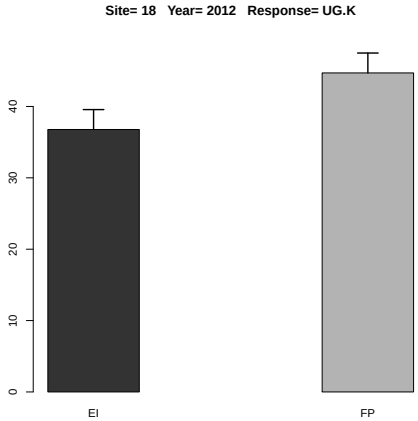

Figure 2.128: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	182.127	182.127	35.110	11.999	0.000
B	1.000	21.816	21.816	4.206	11.999	0.063
A:B	1.000	5.545	5.545	1.069	11.999	0.322

Table 2.310: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		36.194	0.805	12.000	44.950	34.440	37.949	0.000
2	FP		42.942	0.805	12.000	53.330	41.188	44.697	0.000
3		N	40.736	0.805	12.000	50.590	38.981	42.490	0.000
4		N0	38.401	0.805	12.000	47.690	36.646	40.155	0.000
5	EI	N	36.773	1.139	12.000	32.290	34.292	39.255	0.000
6	FP	N	44.699	1.139	12.000	39.250	42.217	47.180	0.000
7	EI	N0	35.615	1.139	12.000	31.270	33.134	38.097	0.000
8	FP	N0	41.186	1.139	12.000	36.170	38.705	43.667	0.000

Table 2.311: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.748	1.139	12.000	-5.930	-9.229	-4.266	0.000
B N-N0	2.335	1.139	12.000	2.050	-0.146	4.817	0.063
A:B EI N- FP N	-7.925	1.611	12.000	-4.920	-11.434	-4.416	0.000
A:B EI N- EI N0	1.158	1.611	12.000	0.720	-2.351	4.667	0.486
A:B EI N- FP N0	-4.412	1.611	12.000	-2.740	-7.921	-0.903	0.018
A:B FP N- EI N0	9.083	1.611	12.000	5.640	5.574	12.592	0.000
A:B FP N- FP N0	3.513	1.611	12.000	2.180	0.004	7.022	0.050
A:B EI N0- FP N0	-5.570	1.611	12.000	-3.460	-9.079	-2.061	0.005

Table 2.312: Estimate of contrast in two-way ANOVA for variable UG.K at site 18 in year 2012 .

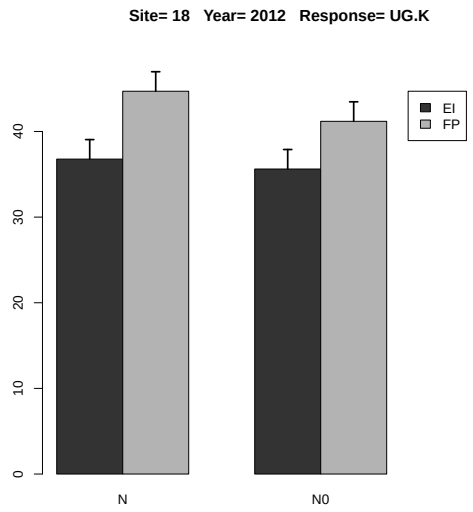

Figure 2.129: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.9 Response Variable UG.K2O

	rep	A	B	y
1	1	FP	N0	47.172
2	2	FP	N0	47.928
3	3	FP	N0	51.021
4	4	FP	N0	52.394
5	1	FP	N	54.661
6	2	FP	N	58.191
7	3	FP	N	53.653
8	4	FP	N	48.942
9	1	EI	N0	43.062
10	2	EI	N0	42.565
11	3	EI	N0	44.432
12	4	EI	N0	41.607
13	1	EI	N	40.827
14	2	EI	N	43.634
15	3	EI	N	45.209
16	4	EI	N	47.579

Table 2.313: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	44.312	1.680	6.000	26.380	40.202	48.422	0.000
A FP	53.862	1.680	6.000	32.070	49.752	57.972	0.000
A EI-FP	-9.550	2.376	6.000	-4.020	-15.362	-3.737	0.007

Table 2.314: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 18 in year 2012 .

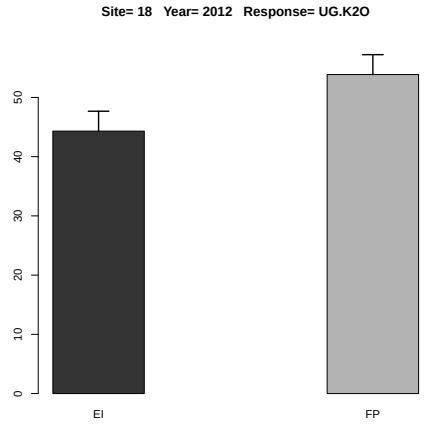

Figure 2.130: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	264.453	264.453	35.110	12.000	0.000
B	1.000	31.677	31.677	4.206	12.000	0.063
A:B	1.000	8.051	8.051	1.069	12.000	0.322

Table 2.315: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		43.614	0.970	12.000	44.950	41.500	45.728	0.000
2	FP		51.745	0.970	12.000	53.330	49.631	53.859	0.000
3		N	49.087	0.970	12.000	50.590	46.973	51.201	0.000
4		N0	46.273	0.970	12.000	47.690	44.158	48.387	0.000
5	EI	N	44.312	1.372	12.000	32.290	41.322	47.302	0.000
6	FP	N	53.862	1.372	12.000	39.250	50.872	56.852	0.000
7	EI	N0	42.916	1.372	12.000	31.270	39.927	45.906	0.000
8	FP	N0	49.629	1.372	12.000	36.170	46.639	52.619	0.000

Table 2.316: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 18 in year 2012 .

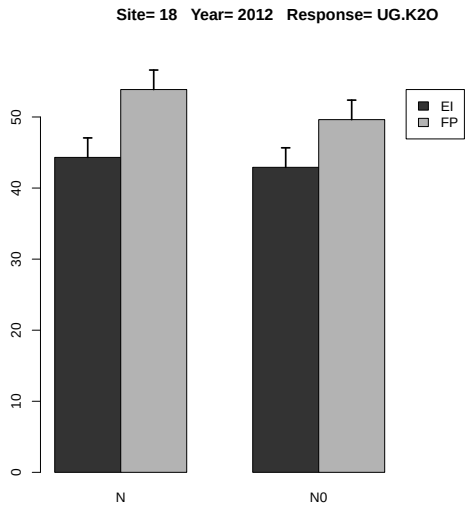

Figure 2.131: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-8.131	1.372	12.000	-5.930	-11.121	-5.141	0.000
B N-N0	2.814	1.372	12.000	2.050	-0.176	5.804	0.063
A:B EI N- FP N	-9.550	1.941	12.000	-4.920	-13.778	-5.321	0.000
A:B EI N- EI N0	1.395	1.941	12.000	0.720	-2.833	5.624	0.486
A:B EI N- FP N0	-5.317	1.941	12.000	-2.740	-9.545	-1.089	0.018
A:B FP N- EI N0	10.945	1.941	12.000	5.640	6.717	15.173	0.000
A:B FP N- FP N0	4.233	1.941	12.000	2.180	0.004	8.461	0.050
A:B EI N0- FP N0	-6.712	1.941	12.000	-3.460	-10.941	-2.484	0.005

Table 2.317: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 18 in year 2012 .

2.3.10 Response Variable UG.Ca

	rep	A	B	y
1	1	FP	N0	0.631
2	2	FP	N0	0.652
3	3	FP	N0	0.662
4	4	FP	N0	0.701
5	1	FP	N	0.810
6	2	FP	N	0.779
7	3	FP	N	0.795
8	4	FP	N	0.796
9	1	EI	N0	0.638
10	2	EI	N0	0.527
11	3	EI	N0	0.550
12	4	EI	N0	0.677
13	1	EI	N	0.807
14	2	EI	N	0.710
15	3	EI	N	0.736
16	4	EI	N	0.705

Table 2.318: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.739	0.017	5.100	43.070	0.696	0.783	0.000
A FP	0.795	0.017	5.100	46.320	0.751	0.839	0.000
A EI-FP	-0.056	0.019	3.000	-2.980	-0.115	0.004	0.059

Table 2.319: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Ca at site 18 in year 2012 .

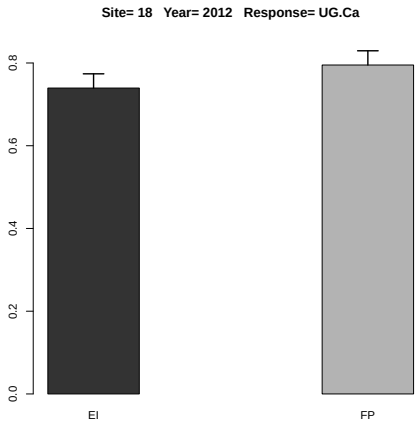

Figure 2.132: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.013	0.013	7.326	2.999	0.073
B	1.000	0.075	0.075	43.569	5.986	0.001
A:B	1.000	0.000	0.000	0.034	5.986	0.860

Table 2.320: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.669	0.017	5.800	38.610	0.626	0.712	0.000
2	FP		0.728	0.017	5.800	42.050	0.686	0.771	0.000
3		N	0.767	0.017	6.500	45.280	0.727	0.808	0.000
4		N0	0.630	0.017	6.500	37.170	0.589	0.670	0.000
5	EI	N	0.739	0.023	11.400	32.530	0.690	0.789	0.000
6	FP	N	0.795	0.023	11.400	34.990	0.745	0.845	0.000
7	EI	N0	0.598	0.023	11.400	26.320	0.548	0.648	0.000
8	FP	N0	0.662	0.023	11.400	29.110	0.612	0.711	0.000

Table 2.321: Estimate of treatment means in tow-way ANOVA for variable UG.Ca at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.060	0.022	3.000	-2.710	-0.130	0.010	0.073
B N-N0	0.137	0.021	6.000	6.600	0.086	0.188	0.001
A:B EI N- FP N	-0.056	0.030	7.700	-1.840	-0.126	0.015	0.104
A:B EI N- EI N0	0.141	0.029	6.000	4.800	0.069	0.213	0.003
A:B EI N- FP N0	0.078	0.030	7.700	2.570	0.007	0.148	0.034
A:B FP N- EI N0	0.197	0.030	7.700	6.500	0.127	0.267	0.000
A:B FP N- FP N0	0.134	0.029	6.000	4.540	0.061	0.206	0.004
A:B EI N0- FP N0	-0.063	0.030	7.700	-2.090	-0.134	0.007	0.071

Table 2.322: Estimate of contrast in two-way ANOVA for variable UG.Ca at site 18 in year 2012 .

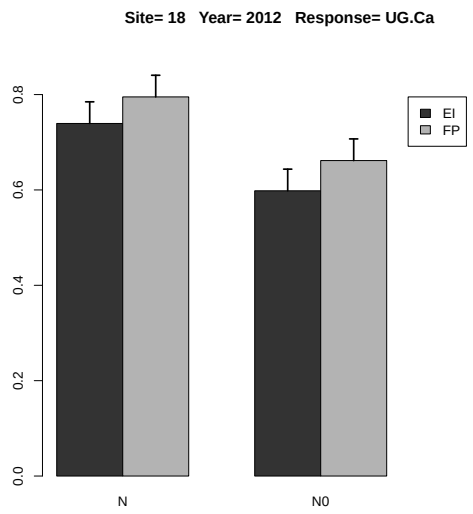

Figure 2.133: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.11 Response Variable UG.Mg

	rep	A	B	y
1	1	FP	N0	5.683
2	2	FP	N0	6.520
3	3	FP	N0	5.954
4	4	FP	N0	7.013
5	1	FP	N	12.150
6	2	FP	N	13.241
7	3	FP	N	12.722
8	4	FP	N	14.335
9	1	EI	N0	10.210
10	2	EI	N0	6.854
11	3	EI	N0	6.604
12	4	EI	N0	10.832
13	1	EI	N	10.487
14	2	EI	N	12.070
15	3	EI	N	12.506
16	4	EI	N	6.346

Table 2.323: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	10.352	1.046	6.000	9.900	7.793	12.911	0.000
A FP	13.112	1.046	6.000	12.540	10.553	15.671	0.000
A EI-FP	-2.760	1.479	6.000	-1.870	-6.379	0.859	0.111

Table 2.324: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 18 in year 2012 .

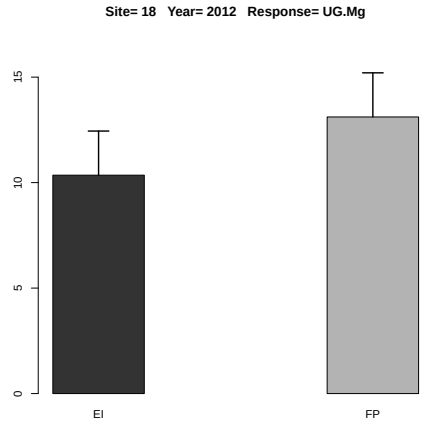

Figure 2.134: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.182	0.182	0.052	11.999	0.823
B	1.000	73.041	73.041	20.912	11.999	0.001
A:B	1.000	25.933	25.933	7.425	11.999	0.018

Table 2.325: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.489	0.661	12.000	14.360	8.049	10.928	0.000
2	FP		9.702	0.661	12.000	14.680	8.263	11.142	0.000
3		N	11.732	0.661	12.000	17.760	10.292	13.172	0.000
4		N0	7.459	0.661	12.000	11.290	6.019	8.899	0.000
5	EI	N	10.352	0.934	12.000	11.080	8.316	12.388	0.000
6	FP	N	13.112	0.934	12.000	14.030	11.076	15.148	0.000
7	EI	N0	8.625	0.934	12.000	9.230	6.589	10.661	0.000
8	FP	N0	6.293	0.934	12.000	6.730	4.256	8.329	0.000

Table 2.326: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 18 in year 2012 .

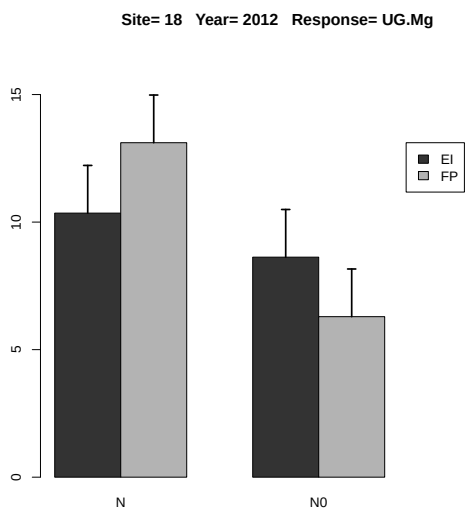

Figure 2.135: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.214	0.934	12.000	-0.230	-2.250	1.822	0.823
B N-N0	4.273	0.934	12.000	4.570	2.237	6.309	0.001
A:B EI N- FP N	-2.760	1.321	12.000	-2.090	-5.639	0.119	0.059
A:B EI N- EI N0	1.727	1.321	12.000	1.310	-1.152	4.606	0.216
A:B EI N- FP N0	4.060	1.321	12.000	3.070	1.180	6.939	0.010
A:B FP N- EI N0	4.487	1.321	12.000	3.400	1.607	7.366	0.005
A:B FP N- FP N0	6.819	1.321	12.000	5.160	3.940	9.699	0.000
A:B EI N0- FP N0	2.333	1.321	12.000	1.770	-0.547	5.212	0.103

Table 2.327: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 18 in year 2012 .

2.3.12 Response Variable UG.S

	rep	A	B	y
1	1	FP	N0	5.051
2	2	FP	N0	5.868
3	3	FP	N0	5.293
4	4	FP	N0	4.909
5	1	FP	N	5.670
6	2	FP	N	5.452
7	3	FP	N	6.361
8	4	FP	N	6.371
9	1	EI	N0	5.105
10	2	EI	N0	3.163
11	3	EI	N0	3.302
12	4	EI	N0	5.416
13	1	EI	N	8.067
14	2	EI	N	5.680
15	3	EI	N	5.149
16	4	EI	N	5.641

Table 2.328: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	6.134	0.493	6.000	12.450	4.929	7.340	0.000
A FP	5.964	0.493	6.000	12.100	4.758	7.169	0.000
A EI-FP	0.171	0.697	6.000	0.240	-1.534	1.876	0.815

Table 2.329: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 18 in year 2012 .

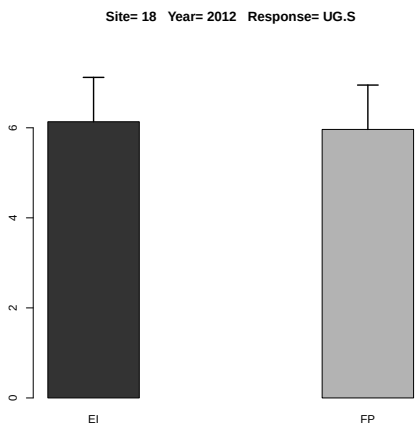

Figure 2.136: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.317	0.317	0.604	5.999	0.466
B	1.000	6.609	6.609	12.619	5.999	0.012
A:B	1.000	1.450	1.450	2.769	5.999	0.147

Table 2.330: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5.191	0.392	6.000	13.230	4.230	6.151	0.000
2	FP		5.622	0.392	6.000	14.330	4.662	6.582	0.000
3		N	6.049	0.331	10.300	18.260	5.314	6.784	0.000
4		N0	4.763	0.331	10.300	14.380	4.029	5.498	0.000
5	EI	N	6.134	0.468	10.300	13.090	5.095	7.174	0.000
6	FP	N	5.964	0.468	10.300	12.730	4.924	7.003	0.000
7	EI	N0	4.247	0.468	10.300	9.070	3.207	5.286	0.000
8	FP	N0	5.280	0.468	10.300	11.270	4.241	6.320	0.000

Table 2.331: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.431	0.555	6.000	-0.780	-1.789	0.926	0.466
B N-N0	1.285	0.362	6.000	3.550	0.400	2.171	0.012
A:B EI N- FP N	0.171	0.662	10.300	0.260	-1.299	1.641	0.802
A:B EI N- EI N0	1.888	0.512	6.000	3.690	0.635	3.140	0.010
A:B EI N- FP N0	0.854	0.662	10.300	1.290	-0.616	2.324	0.226
A:B FP N- EI N0	1.717	0.662	10.300	2.590	0.247	3.187	0.026
A:B FP N- FP N0	0.683	0.512	6.000	1.340	-0.569	1.935	0.230
A:B EI N0- FP N0	-1.034	0.662	10.300	-1.560	-2.504	0.436	0.149

Table 2.332: Estimate of contrast in two-way ANOVA for variable UG.S at site 18 in year 2012 .

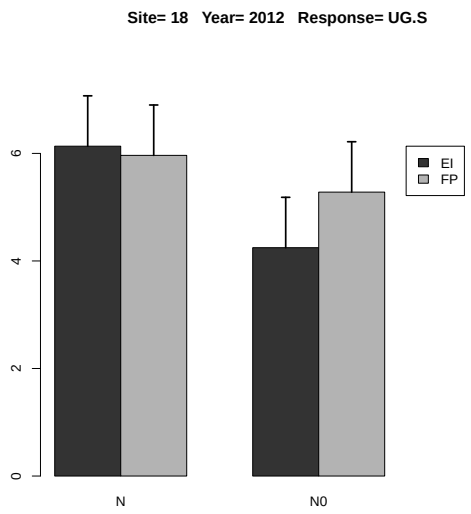

Figure 2.137: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.13 Response Variable US.N

	rep	A	B	y
1	1	FP	N0	32.744
2	2	FP	N0	41.350
3	3	FP	N0	33.649
4	4	FP	N0	33.987
5	1	FP	N	49.855
6	2	FP	N	39.163
7	3	FP	N	41.532
8	4	FP	N	49.798
9	1	EI	N0	44.459
10	2	EI	N0	32.070
11	3	EI	N0	29.998
12	4	EI	N0	44.534
13	1	EI	N	52.851
14	2	EI	N	49.358
15	3	EI	N	47.984
16	4	EI	N	59.683

Table 2.333: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	52.469	2.698	3.600	19.450	44.683	60.255	0.000
A FP	45.087	2.698	3.600	16.710	37.300	52.873	0.000
A EI-FP	7.382	1.690	3.000	4.370	2.003	12.761	0.022

Table 2.334: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 18 in year 2012 .

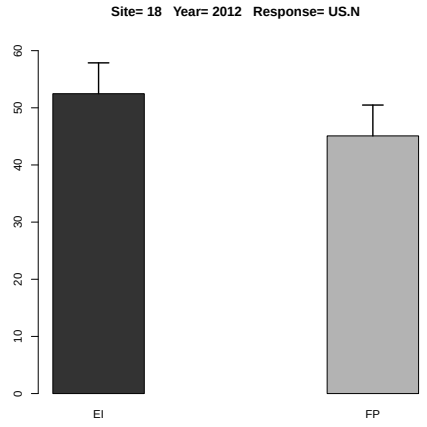

Figure 2.138: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	94.386	94.386	3.980	9.000	0.077
B	1.000	593.324	593.324	25.018	9.000	0.001
A:B	1.000	25.498	25.498	1.075	9.000	0.327

Table 2.335: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		45.117	2.342	5.400	19.260	39.225	51.010	0.000
2	FP		40.260	2.342	5.400	17.190	34.367	46.152	0.000
3		N	48.778	2.342	5.400	20.830	42.886	54.670	0.000
4		N0	36.599	2.342	5.400	15.630	30.706	42.491	0.000
5	EI	N	52.469	2.907	9.500	18.050	45.943	58.995	0.000
6	FP	N	45.087	2.907	9.500	15.510	38.561	51.613	0.000
7	EI	N0	37.765	2.907	9.500	12.990	31.239	44.291	0.000
8	FP	N0	35.432	2.907	9.500	12.190	28.907	41.958	0.000

Table 2.336: Estimate of treatment means in tow-way ANOVA for variable US.N at site 18 in year 2012 .

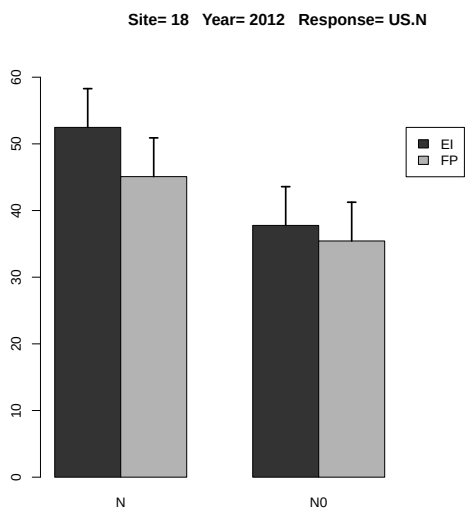

Figure 2.139: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.858	2.435	9.000	1.990	-0.651	10.366	0.077
B N-N0	12.179	2.435	9.000	5.000	6.671	17.687	0.001
A:B EI N- FP N	7.382	3.443	9.000	2.140	-0.407	15.172	0.061
A:B EI N- EI N0	14.704	3.443	9.000	4.270	6.914	22.494	0.002
A:B EI N- FP N0	17.037	3.443	9.000	4.950	9.247	24.826	0.001
A:B FP N- EI N0	7.322	3.443	9.000	2.130	-0.468	15.111	0.062
A:B FP N- FP N0	9.654	3.443	9.000	2.800	1.865	17.444	0.021
A:B EI N0- FP N0	2.333	3.443	9.000	0.680	-5.457	10.123	0.515

Table 2.337: Estimate of contrast in two-way ANOVA for variable US.N at site 18 in year 2012 .

2.3.14 Response Variable US.P

	rep	A	B	y
1	1	FP	N0	2.306
2	2	FP	N0	2.494
3	3	FP	N0	2.152
4	4	FP	N0	2.916
5	1	FP	N	1.714
6	2	FP	N	2.139
7	3	FP	N	2.196
8	4	FP	N	2.422
9	1	EI	N0	2.104
10	2	EI	N0	2.211
11	3	EI	N0	2.045
12	4	EI	N0	2.086
13	1	EI	N	4.014
14	2	EI	N	2.287
15	3	EI	N	2.203
16	4	EI	N	3.479

Table 2.338: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.996	0.333	6.000	8.990	2.181	3.811	0.000
A FP	2.118	0.333	6.000	6.360	1.303	2.933	0.001
A EI-FP	0.878	0.471	6.000	1.860	-0.275	2.031	0.112

Table 2.339: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 18 in year 2012 .

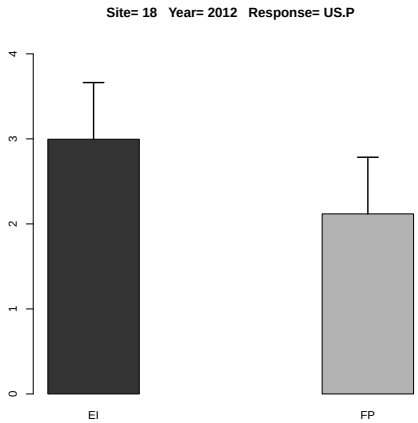

Figure 2.140: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.227	0.227	0.997	5.998	0.357
B	1.000	0.286	0.286	1.260	5.999	0.305
A:B	1.000	1.522	1.522	6.696	5.999	0.041

Table 2.340: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.554	0.185	6.000	13.800	2.101	3.006	0.000
2	FP		2.292	0.185	6.000	12.390	1.840	2.745	0.000
3		N	2.557	0.177	11.900	14.450	2.171	2.943	0.000
4		N0	2.289	0.177	11.900	12.940	1.903	2.675	0.000
5	EI	N	2.996	0.250	11.900	11.970	2.450	3.542	0.000
6	FP	N	2.118	0.250	11.900	8.460	1.572	2.664	0.000
7	EI	N0	2.111	0.250	11.900	8.440	1.566	2.657	0.000
8	FP	N0	2.467	0.250	11.900	9.860	1.921	3.013	0.000

Table 2.341: Estimate of treatment means in tow-way ANOVA for variable US.P at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.261	0.262	6.000	1.000	-0.379	0.901	0.357
B N-N0	0.268	0.238	6.000	1.120	-0.316	0.851	0.304
A:B EI N- FP N	0.878	0.354	11.900	2.480	0.106	1.650	0.029
A:B EI N- EI N0	0.884	0.337	6.000	2.620	0.059	1.710	0.039
A:B EI N- FP N0	0.529	0.354	11.900	1.490	-0.243	1.301	0.161
A:B FP N- EI N0	0.006	0.354	11.900	0.020	-0.765	0.778	0.986
A:B FP N- FP N0	-0.349	0.337	6.000	-1.040	-1.174	0.476	0.340
A:B EI N0- FP N0	-0.356	0.354	11.900	-1.000	-1.128	0.416	0.335

Table 2.342: Estimate of contrast in two-way ANOVA for variable US.P at site 18 in year 2012 .

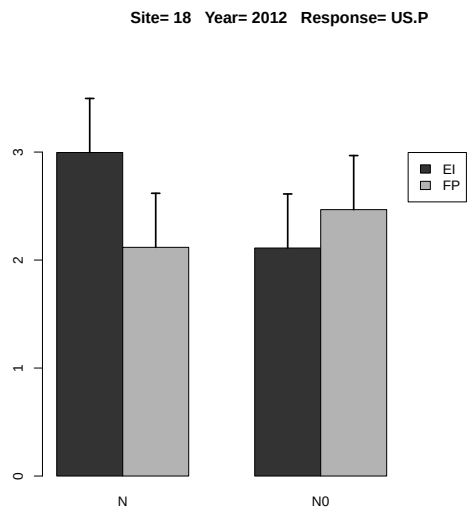

Figure 2.141: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.15 Response Variable US.P2O5

	rep	A	B	y
1	1	FP	N0	2.917
2	2	FP	N0	3.073
3	3	FP	N0	2.753
4	4	FP	N0	3.636
5	1	FP	N	1.955
6	2	FP	N	2.548
7	3	FP	N	2.385
8	4	FP	N	2.631
9	1	EI	N0	2.455
10	2	EI	N0	2.692
11	3	EI	N0	2.568
12	4	EI	N0	2.466
13	1	EI	N	4.480
14	2	EI	N	2.732
15	3	EI	N	2.605
16	4	EI	N	3.675

Table 2.343: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.373	0.328	6.000	10.270	2.569	4.176	0.000
A FP	2.380	0.328	6.000	7.250	1.576	3.183	0.000
A EI-FP	0.993	0.464	6.000	2.140	-0.143	2.129	0.076

Table 2.344: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 18 in year 2012 .

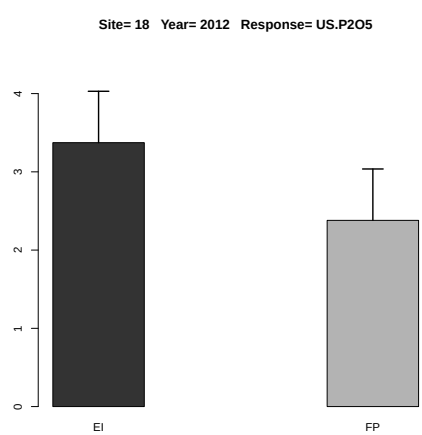

Figure 2.142: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.197	0.197	0.769	11.998	0.398
B	1.000	0.013	0.013	0.050	11.998	0.827
A:B	1.000	2.380	2.380	9.312	11.998	0.010

Table 2.345: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.959	0.179	12.000	16.560	2.570	3.348	0.000
2	FP		2.737	0.179	12.000	15.320	2.348	3.127	0.000
3		N	2.876	0.179	12.000	16.090	2.487	3.266	0.000
4		N0	2.820	0.179	12.000	15.780	2.430	3.209	0.000
5	EI	N	3.373	0.253	12.000	13.340	2.822	3.924	0.000
6	FP	N	2.380	0.253	12.000	9.420	1.829	2.930	0.000
7	EI	N0	2.545	0.253	12.000	10.070	1.994	3.096	0.000
8	FP	N0	3.095	0.253	12.000	12.240	2.544	3.645	0.000

Table 2.346: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 18 in year 2012 .

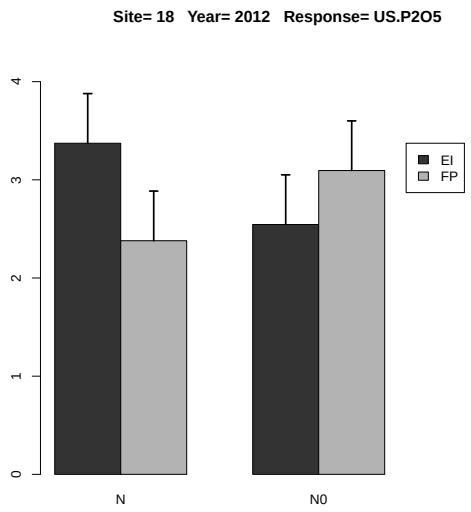

Figure 2.143: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.222	0.253	12.000	0.880	-0.329	0.772	0.398
B N-N0	0.056	0.253	12.000	0.220	-0.494	0.607	0.827
A:B EI N- FP N	0.993	0.357	12.000	2.780	0.214	1.772	0.017
A:B EI N- EI N0	0.828	0.357	12.000	2.320	0.049	1.607	0.039
A:B EI N- FP N0	0.278	0.357	12.000	0.780	-0.501	1.057	0.452
A:B FP N- EI N0	-0.165	0.357	12.000	-0.460	-0.944	0.614	0.652
A:B FP N- FP N0	-0.715	0.357	12.000	-2.000	-1.494	0.064	0.069
A:B EI N0- FP N0	-0.550	0.357	12.000	-1.540	-1.328	0.229	0.150

Table 2.347: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 18 in year 2012 .

2.3.16 Response Variable US.K

	rep	A	B	y
1	1	FP	N0	58.152
2	2	FP	N0	64.494
3	3	FP	N0	54.771
4	4	FP	N0	58.172
5	1	FP	N	83.783
6	2	FP	N	64.118
7	3	FP	N	72.367
8	4	FP	N	81.339
9	1	EI	N0	50.902
10	2	EI	N0	59.643
11	3	EI	N0	51.586
12	4	EI	N0	53.481
13	1	EI	N	96.895
14	2	EI	N	59.454
15	3	EI	N	58.215
16	4	EI	N	80.104

Table 2.348: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	73.667	7.256	4.000	10.150	53.597	93.737	0.000
A FP	75.402	7.256	4.000	10.390	55.332	95.472	0.000
A EI-FP	-1.735	5.653	3.000	-0.310	-19.724	16.255	0.779

Table 2.349: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 18 in year 2012 .

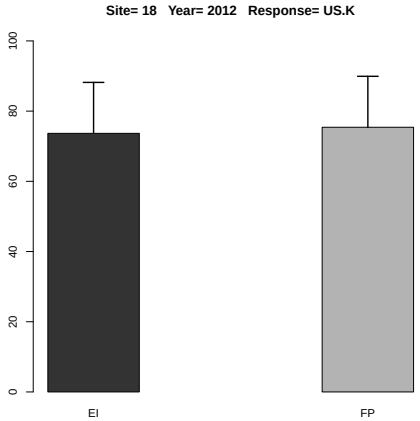

Figure 2.144: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	45.287	45.287	0.438	9.000	0.524
B	1.000	1315.381	1315.381	12.735	9.000	0.006
A:B	1.000	10.628	10.628	0.103	9.000	0.756

Table 2.350: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		63.785	3.929	7.600	16.230	54.632	72.938	0.000
2	FP		67.150	3.929	7.600	17.090	57.997	76.303	0.000
3		N	74.534	3.929	7.600	18.970	65.381	83.687	0.000
4		N0	56.400	3.929	7.600	14.360	47.247	65.553	0.000
5	EI	N	73.667	5.324	11.700	13.840	62.036	85.298	0.000
6	FP	N	75.402	5.324	11.700	14.160	63.770	87.033	0.000
7	EI	N0	53.903	5.324	11.700	10.120	42.272	65.534	0.000
8	FP	N0	58.898	5.324	11.700	11.060	47.266	70.529	0.000

Table 2.351: Estimate of treatment means in tow-way ANOVA for variable US.K at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.365	5.082	9.000	-0.660	-14.860	8.131	0.524
B N-N0	18.134	5.082	9.000	3.570	6.639	29.630	0.006
A:B EI N- FP N	-1.735	7.186	9.000	-0.240	-17.992	14.522	0.815
A:B EI N- EI N0	19.764	7.186	9.000	2.750	3.507	36.021	0.022
A:B EI N- FP N0	14.769	7.186	9.000	2.060	-1.488	31.026	0.070
A:B FP N- EI N0	21.499	7.186	9.000	2.990	5.242	37.756	0.015
A:B FP N- FP N0	16.504	7.186	9.000	2.300	0.247	32.761	0.047
A:B EI N0- FP N0	-4.995	7.186	9.000	-0.700	-21.252	11.262	0.505

Table 2.352: Estimate of contrast in two-way ANOVA for variable US.K at site 18 in year 2012 .

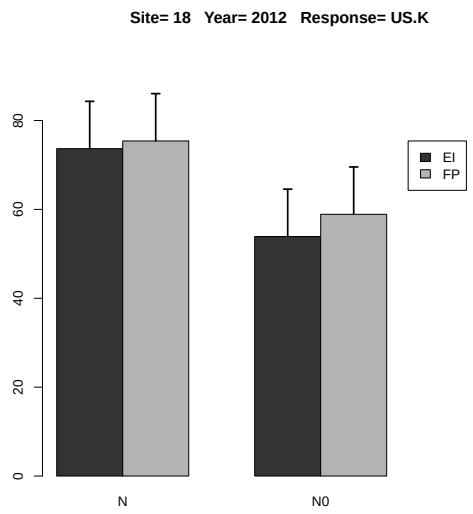

Figure 2.145: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.17 Response Variable US.K2O

	rep	A	B	y
1	1	FP	N0	59.802
2	2	FP	N0	66.395
3	3	FP	N0	56.555
4	4	FP	N0	59.946
5	1	FP	N	85.929
6	2	FP	N	65.807
7	3	FP	N	73.902
8	4	FP	N	83.030
9	1	EI	N0	52.326
10	2	EI	N0	60.941
11	3	EI	N0	52.970
12	4	EI	N0	55.022
13	1	EI	N	98.596
14	2	EI	N	61.294
15	3	EI	N	60.193
16	4	EI	N	81.688

Table 2.353: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	75.443	7.242	4.000	10.420	55.276	95.610	0.000
A FP	77.167	7.242	4.000	10.660	57.000	97.334	0.000
A EI-FP	-1.724	5.467	3.000	-0.320	-19.123	15.675	0.773

Table 2.354: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 18 in year 2012 .

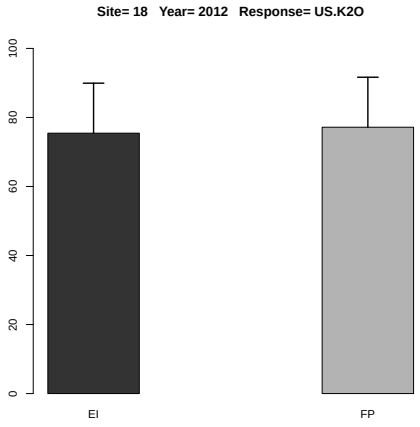

Figure 2.146: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	50.180	50.180	0.490	9.000	0.502
B	1.000	1341.060	1341.060	13.087	9.000	0.006
A:B	1.000	13.217	13.217	0.129	9.000	0.728

Table 2.355: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		65.379	3.929	7.500	16.640	56.212	74.545	0.000
2	FP		68.921	3.929	7.500	17.540	59.754	78.087	0.000
3		N	76.305	3.929	7.500	19.420	67.138	85.471	0.000
4		N0	57.995	3.929	7.500	14.760	48.828	67.161	0.000
5	EI	N	75.443	5.315	11.700	14.190	63.829	87.056	0.000
6	FP	N	77.167	5.315	11.700	14.520	65.553	88.780	0.000
7	EI	N0	55.315	5.315	11.700	10.410	43.701	66.928	0.000
8	FP	N0	60.674	5.315	11.700	11.420	49.061	72.288	0.000

Table 2.356: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 18 in year 2012 .

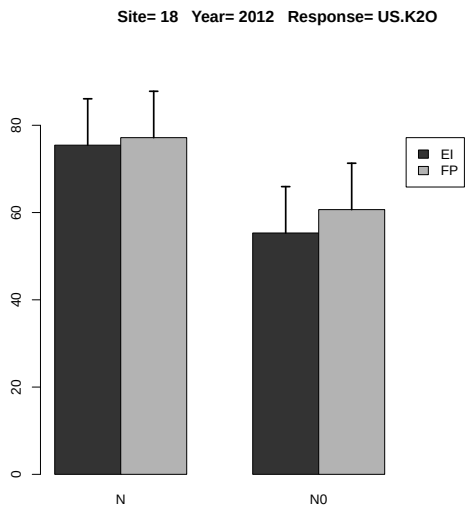

Figure 2.147: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.542	5.061	9.000	-0.700	-14.992	7.908	0.502
B N-N0	18.310	5.061	9.000	3.620	6.861	29.760	0.006
A:B EI N- FP N	-1.724	7.158	9.000	-0.240	-17.916	14.468	0.815
A:B EI N- EI N0	20.128	7.158	9.000	2.810	3.936	36.320	0.020
A:B EI N- FP N0	14.768	7.158	9.000	2.060	-1.424	30.961	0.069
A:B FP N- EI N0	21.852	7.158	9.000	3.050	5.660	38.044	0.014
A:B FP N- FP N0	16.492	7.158	9.000	2.300	0.300	32.685	0.047
A:B EI N0- FP N0	-5.360	7.158	9.000	-0.750	-21.552	10.833	0.473

Table 2.357: Estimate of contrast in two-way ANOVA for variable US.K2O at site 18 in year 2012 .

2.3.18 Response Variable US.Ca

	rep	A	B	y
1	1	FP	N0	11.157
2	2	FP	N0	10.376
3	3	FP	N0	8.583
4	4	FP	N0	9.572
5	1	FP	N	11.642
6	2	FP	N	8.054
7	3	FP	N	9.025
8	4	FP	N	10.711
9	1	EI	N0	6.241
10	2	EI	N0	8.702
11	3	EI	N0	7.243
12	4	EI	N0	7.311
13	1	EI	N	12.054
14	2	EI	N	7.292
15	3	EI	N	6.463
16	4	EI	N	12.630

Table 2.358: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	9.610	1.262	4.000	7.610	6.090	13.129	0.002
A FP	9.858	1.262	4.000	7.810	6.339	13.378	0.002
A EI-FP	-0.248	0.947	3.000	-0.260	-3.261	2.764	0.810

Table 2.359: Estimate of treatment means and contrast in one-way ANOVA for variable US.Ca at site 18 in year 2012 .

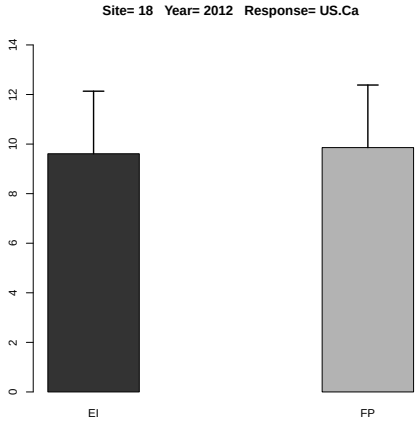

Figure 2.148: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	7.819	7.819	2.471	8.999	0.150
B	1.000	4.716	4.716	1.490	8.999	0.253
A:B	1.000	5.286	5.286	1.671	8.999	0.228

Table 2.360: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.492	0.736	6.700	11.550	6.737	10.246	0.000
2	FP		9.890	0.736	6.700	13.450	8.136	11.645	0.000
3		N	9.734	0.736	6.700	13.230	7.979	11.489	0.000
4		N0	8.648	0.736	6.700	11.760	6.894	10.403	0.000
5	EI	N	9.610	0.968	11.200	9.930	7.484	11.735	0.000
6	FP	N	9.858	0.968	11.200	10.190	7.733	11.984	0.000
7	EI	N0	7.374	0.968	11.200	7.620	5.249	9.500	0.000
8	FP	N0	9.922	0.968	11.200	10.250	7.796	12.047	0.000

Table 2.361: Estimate of treatment means in tow-way ANOVA for variable US.Ca at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.398	0.889	9.000	-1.570	-3.410	0.614	0.150
B N-N0	1.086	0.889	9.000	1.220	-0.926	3.098	0.253
A:B EI N- FP N	-0.248	1.258	9.000	-0.200	-3.094	2.597	0.848
A:B EI N- EI N0	2.235	1.258	9.000	1.780	-0.610	5.081	0.109
A:B EI N- FP N0	-0.312	1.258	9.000	-0.250	-3.158	2.533	0.809
A:B FP N- EI N0	2.484	1.258	9.000	1.970	-0.361	5.329	0.080
A:B FP N- FP N0	-0.064	1.258	9.000	-0.050	-2.909	2.781	0.961
A:B EI N0- FP N0	-2.548	1.258	9.000	-2.030	-5.393	0.298	0.073

Table 2.362: Estimate of contrast in two-way ANOVA for variable US.Ca at site 18 in year 2012 .

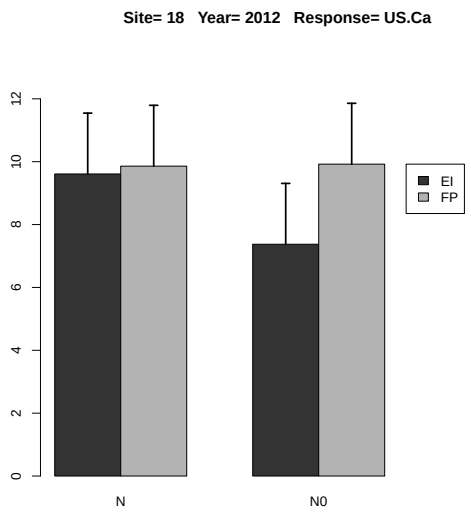

Figure 2.149: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.19 Response Variable US.Mg

	rep	A	B	y
1	1	FP	N0	9.481
2	2	FP	N0	11.208
3	3	FP	N0	9.862
4	4	FP	N0	9.122
5	1	FP	N	11.829
6	2	FP	N	10.035
7	3	FP	N	10.538
8	4	FP	N	13.133
9	1	EI	N0	7.462
10	2	EI	N0	8.090
11	3	EI	N0	6.697
12	4	EI	N0	6.861
13	1	EI	N	14.794
14	2	EI	N	7.939
15	3	EI	N	6.619
16	4	EI	N	12.630

Table 2.363: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	10.495	1.449	4.800	7.240	6.731	14.259	0.001
A FP	11.384	1.449	4.800	7.860	7.620	15.148	0.001
A EI-FP	-0.888	1.462	3.000	-0.610	-5.540	3.764	0.586

Table 2.364: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 18 in year 2012 .

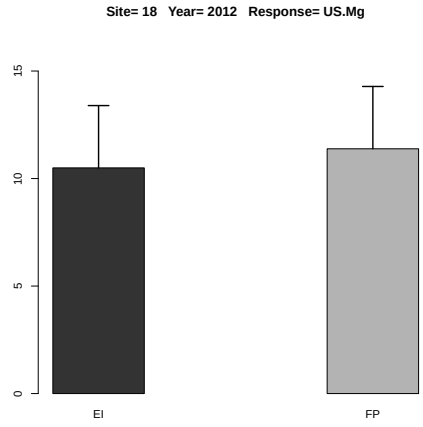

Figure 2.150: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	12.456	12.456	2.855	9.000	0.125
B	1.000	21.937	21.937	5.028	9.000	0.052
A:B	1.000	3.072	3.072	0.704	9.000	0.423

Table 2.365: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.886	0.763	8.400	11.650	7.144	10.629	0.000
2	FP		10.651	0.763	8.400	13.970	8.908	12.394	0.000
3		N	10.940	0.763	8.400	14.350	9.197	12.682	0.000
4		N0	8.598	0.763	8.400	11.270	6.855	10.340	0.000
5	EI	N	10.495	1.062	12.000	9.890	8.182	12.809	0.000
6	FP	N	11.384	1.062	12.000	10.720	9.070	13.697	0.000
7	EI	N0	7.277	1.062	12.000	6.860	4.964	9.591	0.000
8	FP	N0	9.918	1.062	12.000	9.340	7.604	12.232	0.000

Table 2.366: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 18 in year 2012 .

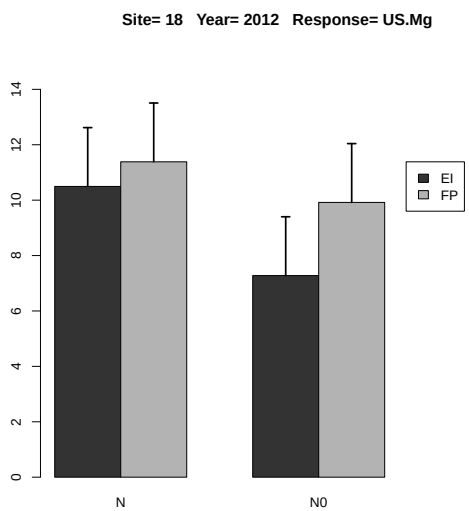

Figure 2.151: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.765	1.044	9.000	-1.690	-4.127	0.598	0.125
B N-N0	2.342	1.044	9.000	2.240	-0.021	4.704	0.052
A:B EI N- FP N	-0.888	1.477	9.000	-0.600	-4.230	2.453	0.562
A:B EI N- EI N0	3.218	1.477	9.000	2.180	-0.123	6.559	0.057
A:B EI N- FP N0	0.577	1.477	9.000	0.390	-2.764	3.918	0.705
A:B FP N- EI N0	4.106	1.477	9.000	2.780	0.765	7.448	0.021
A:B FP N- FP N0	1.466	1.477	9.000	0.990	-1.876	4.807	0.347
A:B EI N0- FP N0	-2.641	1.477	9.000	-1.790	-5.982	0.700	0.107

Table 2.367: Estimate of contrast in two-way ANOVA for variable US.Mg at site 18 in year 2012 .

2.3.20 Response Variable US.S

	rep	A	B	y
1	1	FP	N0	2.306
2	2	FP	N0	3.026
3	3	FP	N0	2.713
4	4	FP	N0	2.187
5	1	FP	N	3.616
6	2	FP	N	2.905
7	3	FP	N	3.172
8	4	FP	N	3.499
9	1	EI	N0	3.597
10	2	EI	N0	2.211
11	3	EI	N0	2.045
12	4	EI	N0	2.977
13	1	EI	N	4.375
14	2	EI	N	3.279
15	3	EI	N	3.145
16	4	EI	N	4.614

Table 2.368: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.853	0.288	4.300	13.370	3.073	4.634	0.000
A FP	3.298	0.288	4.300	11.440	2.518	4.079	0.000
A EI-FP	0.555	0.246	3.000	2.260	-0.228	1.339	0.109

Table 2.369: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 18 in year 2012 .

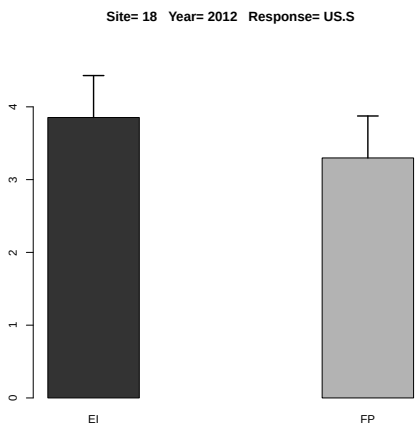

Figure 2.152: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.151	0.151	0.974	5.999	0.362
B	1.000	3.555	3.555	22.973	5.998	0.003
A:B	1.000	0.165	0.165	1.066	5.998	0.342

Table 2.370: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.281	0.252	6.000	12.990	2.663	3.898	0.000
2	FP		2.928	0.252	6.000	11.600	2.310	3.546	0.000
3		N	3.576	0.204	9.300	17.540	3.117	4.034	0.000
4		N0	2.633	0.204	9.300	12.920	2.175	3.092	0.000
5	EI	N	3.853	0.288	9.300	13.370	3.205	4.502	0.000
6	FP	N	3.298	0.288	9.300	11.440	2.650	3.946	0.000
7	EI	N0	2.708	0.288	9.300	9.390	2.059	3.356	0.000
8	FP	N0	2.558	0.288	9.300	8.880	1.910	3.207	0.000

Table 2.371: Estimate of treatment means in tow-way ANOVA for variable US.S at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.352	0.357	6.000	0.990	-0.521	1.226	0.362
B N-N0	0.943	0.197	6.000	4.790	0.461	1.424	0.003
A:B EI N- FP N	0.555	0.408	9.300	1.360	-0.362	1.473	0.205
A:B EI N- EI N0	1.146	0.278	6.000	4.120	0.465	1.826	0.006
A:B EI N- FP N0	1.295	0.408	9.300	3.180	0.378	2.212	0.011
A:B FP N- EI N0	0.590	0.408	9.300	1.450	-0.327	1.507	0.180
A:B FP N- FP N0	0.740	0.278	6.000	2.660	0.059	1.420	0.038
A:B EI N0- FP N0	0.149	0.408	9.300	0.370	-0.768	1.066	0.722

Table 2.372: Estimate of contrast in two-way ANOVA for variable US.S at site 18 in year 2012 .

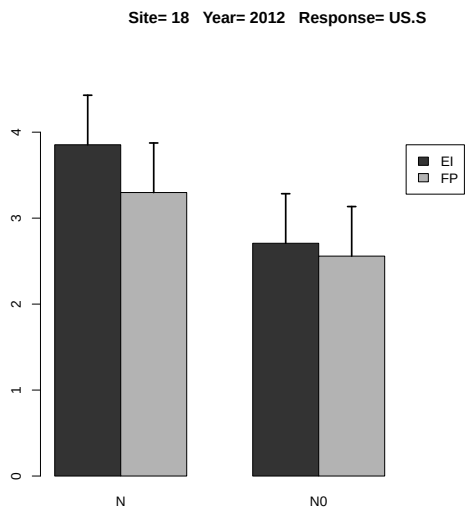

Figure 2.153: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.21 Response Variable UT.N

	rep	A	B	y
1	1	FP	N0	109.775
2	2	FP	N0	130.027
3	3	FP	N0	119.655
4	4	FP	N0	137.780
5	1	FP	N	194.040
6	2	FP	N	161.448
7	3	FP	N	169.543
8	4	FP	N	190.758
9	1	EI	N0	145.925
10	2	EI	N0	100.608
11	3	EI	N0	105.945
12	4	EI	N0	146.766
13	1	EI	N	189.988
14	2	EI	N	168.640
15	3	EI	N	172.307
16	4	EI	N	170.381

Table 2.373: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	175.329	6.631	4.500	26.440	157.662	192.996	0.000
A FP	178.947	6.631	4.500	26.990	161.280	196.614	0.000
A EI-FP	-3.618	6.046	3.000	-0.600	-22.859	15.623	0.592

Table 2.374: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 18 in year 2012 .

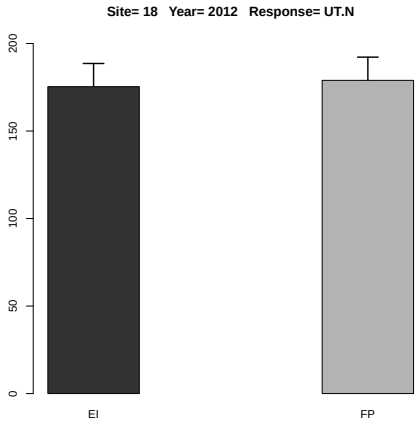

Figure 2.154: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9.709	9.709	0.048	9.000	0.831
B	1.000	11057.847	11057.847	54.789	9.000	0.000
A:B	1.000	16.975	16.975	0.084	9.000	0.778

Table 2.375: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		150.070	6.710	5.500	22.370	133.293	166.847	0.000
2	FP		151.628	6.710	5.500	22.600	134.851	168.405	0.000
3		N	177.138	6.710	5.500	26.400	160.361	193.915	0.000
4		N0	124.560	6.710	5.500	18.560	107.783	141.337	0.000
5	EI	N	175.329	8.381	9.700	20.920	156.574	194.084	0.000
6	FP	N	178.947	8.381	9.700	21.350	160.192	197.703	0.000
7	EI	N0	124.811	8.381	9.700	14.890	106.056	143.566	0.000
8	FP	N0	124.309	8.381	9.700	14.830	105.554	143.064	0.000

Table 2.376: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 18 in year 2012 .

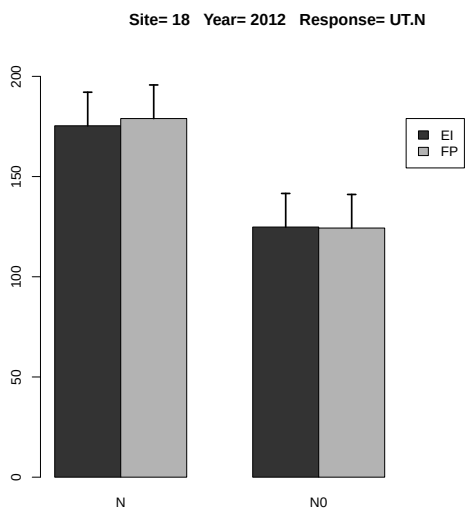

Figure 2.155: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.558	7.103	9.000	-0.220	-17.627	14.511	0.831
B N-N0	52.578	7.103	9.000	7.400	36.510	68.647	0.000
A:B EI N- FP N	-3.618	10.046	9.000	-0.360	-26.343	19.107	0.727
A:B EI N- EI N0	50.518	10.046	9.000	5.030	27.794	73.243	0.001
A:B EI N- FP N0	51.020	10.046	9.000	5.080	28.296	73.745	0.001
A:B FP N- EI N0	54.136	10.046	9.000	5.390	31.412	76.861	0.000
A:B FP N- FP N0	54.638	10.046	9.000	5.440	31.914	77.363	0.000
A:B EI N0- FP N0	0.502	10.046	9.000	0.050	-22.223	23.227	0.961

Table 2.377: Estimate of contrast in two-way ANOVA for variable UT.N at site 18 in year 2012 .

2.3.22 Response Variable UT.P

	rep	A	B	y
1	1	FP	N0	31.982
2	2	FP	N0	30.532
3	3	FP	N0	33.907
4	4	FP	N0	33.773
5	1	FP	N	27.635
6	2	FP	N	28.621
7	3	FP	N	29.229
8	4	FP	N	27.110
9	1	EI	N0	26.354
10	2	EI	N0	29.626
11	3	EI	N0	32.864
12	4	EI	N0	29.167
13	1	EI	N	26.602
14	2	EI	N	33.527
15	3	EI	N	33.100
16	4	EI	N	33.798

Table 2.378: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	31.757	1.265	5.900	25.100	28.645	34.869	0.000
A FP	28.149	1.265	5.900	22.250	25.037	31.261	0.000
A EI-FP	3.608	1.653	3.000	2.180	-1.653	8.868	0.117

Table 2.379: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 18 in year 2012 .

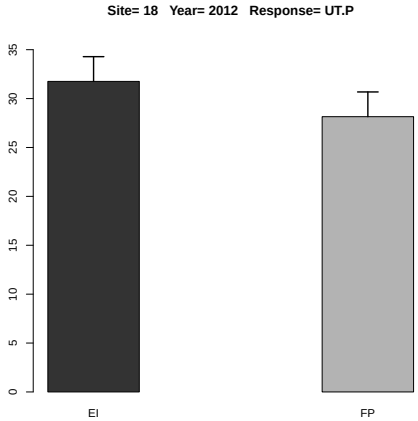

Figure 2.156: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.123	0.123	0.053	3.000	0.833
B	1.000	4.605	4.605	1.983	6.000	0.209
A:B	1.000	44.272	44.272	19.069	6.000	0.005

Table 2.380: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		30.630	1.056	5.400	28.990	27.974	33.286	0.000
2	FP		30.349	1.056	5.400	28.730	27.693	33.005	0.000
3		N	29.953	0.943	4.200	31.770	27.384	32.521	0.000
4		N0	31.026	0.943	4.200	32.910	28.457	33.594	0.000
5	EI	N	31.757	1.186	8.100	26.780	29.027	34.486	0.000
6	FP	N	28.149	1.186	8.100	23.740	25.419	30.879	0.000
7	EI	N0	29.503	1.186	8.100	24.880	26.773	32.232	0.000
8	FP	N0	32.549	1.186	8.100	27.450	29.819	35.278	0.000

Table 2.381: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.281	1.220	3.000	0.230	-3.602	4.164	0.833
B N-N0	-1.073	0.762	6.000	-1.410	-2.937	0.791	0.209
A:B EI N- FP N	3.608	1.438	5.400	2.510	-0.012	7.227	0.050
A:B EI N- EI N0	2.254	1.077	6.000	2.090	-0.383	4.890	0.081
A:B EI N- FP N0	-0.792	1.438	5.400	-0.550	-4.412	2.827	0.604
A:B FP N- EI N0	-1.354	1.438	5.400	-0.940	-4.973	2.266	0.387
A:B FP N- FP N0	-4.400	1.077	6.000	-4.080	-7.036	-1.763	0.006
A:B EI N0- FP N0	-3.046	1.438	5.400	-2.120	-6.665	0.574	0.084

Table 2.382: Estimate of contrast in two-way ANOVA for variable UT.P at site 18 in year 2012 .

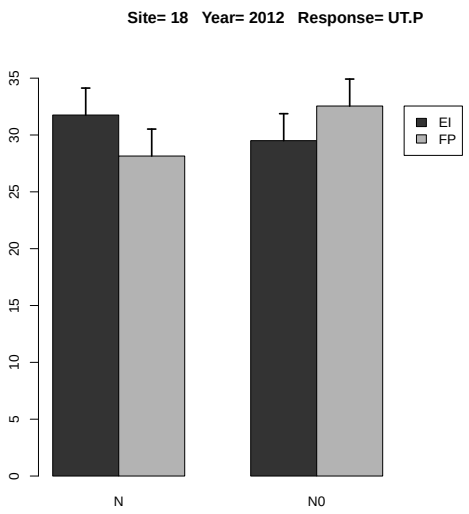

Figure 2.157: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.23 Response Variable UT.P2O5

	rep	A	B	y
1	1	FP	N0	32.593
2	2	FP	N0	31.110
3	3	FP	N0	34.509
4	4	FP	N0	34.493
5	1	FP	N	27.876
6	2	FP	N	29.030
7	3	FP	N	29.418
8	4	FP	N	27.319
9	1	EI	N0	26.705
10	2	EI	N0	30.107
11	3	EI	N0	33.387
12	4	EI	N0	29.547
13	1	EI	N	27.067
14	2	EI	N	33.972
15	3	EI	N	33.502
16	4	EI	N	33.993

Table 2.383: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	32.134	1.246	5.800	25.790	29.063	35.204	0.000
A FP	28.411	1.246	5.800	22.800	25.340	31.482	0.000
A EI-FP	3.723	1.604	3.000	2.320	-1.382	8.827	0.103

Table 2.384: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 18 in year 2012 .

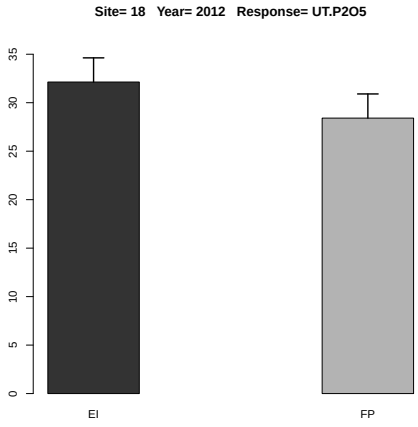

Figure 2.158: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.094	0.094	0.039	3.000	0.856
B	1.000	6.596	6.596	2.761	6.000	0.148
A:B	1.000	48.477	48.477	20.293	6.000	0.004

Table 2.385: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		31.035	1.056	5.400	29.380	28.378	33.692	0.000
2	FP		30.794	1.056	5.400	29.150	28.136	33.451	0.000
3		N	30.272	0.946	4.200	32.010	27.703	32.841	0.000
4		N0	31.556	0.946	4.200	33.360	28.987	34.126	0.000
5	EI	N	32.134	1.189	8.100	27.020	29.399	34.868	0.000
6	FP	N	28.411	1.189	8.100	23.890	25.676	31.145	0.000
7	EI	N0	29.936	1.189	8.100	25.170	27.202	32.671	0.000
8	FP	N0	33.176	1.189	8.100	27.890	30.442	35.911	0.000

Table 2.386: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 18 in year 2012 .

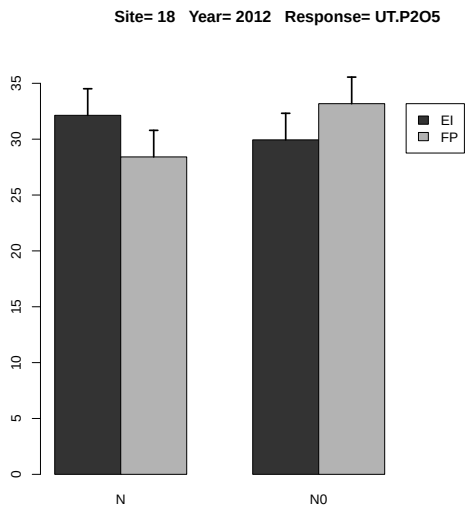

Figure 2.159: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.241	1.218	3.000	0.200	-3.635	4.117	0.856
B N-N0	-1.284	0.773	6.000	-1.660	-3.175	0.607	0.148
A:B EI N- FP N	3.723	1.442	5.500	2.580	0.107	7.338	0.045
A:B EI N- EI N0	2.197	1.093	6.000	2.010	-0.477	4.871	0.091
A:B EI N- FP N0	-1.043	1.442	5.500	-0.720	-4.659	2.573	0.499
A:B FP N- EI N0	-1.526	1.442	5.500	-1.060	-5.141	2.090	0.335
A:B FP N- FP N0	-4.765	1.093	6.000	-4.360	-7.440	-2.091	0.005
A:B EI N0- FP N0	-3.240	1.442	5.500	-2.250	-6.856	0.376	0.070

Table 2.387: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 18 in year 2012 .

2.3.24 Response Variable UT.K

	rep	A	B	y
1	1	FP	N0	97.299
2	2	FP	N0	104.269
3	3	FP	N0	97.112
4	4	FP	N0	101.653
5	1	FP	N	129.145
6	2	FP	N	112.409
7	3	FP	N	116.893
8	4	FP	N	121.954
9	1	EI	N0	86.638
10	2	EI	N0	94.966
11	3	EI	N0	88.459
12	4	EI	N0	88.010
13	1	EI	N	130.776
14	2	EI	N	95.665
15	3	EI	N	95.732
16	4	EI	N	119.589

Table 2.388: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	110.440	6.729	4.200	16.410	92.034	128.847	0.000
A FP	120.100	6.729	4.200	17.850	101.694	138.507	0.000
A EI-FP	-9.660	5.501	3.000	-1.760	-27.167	7.847	0.177

Table 2.389: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 18 in year 2012 .

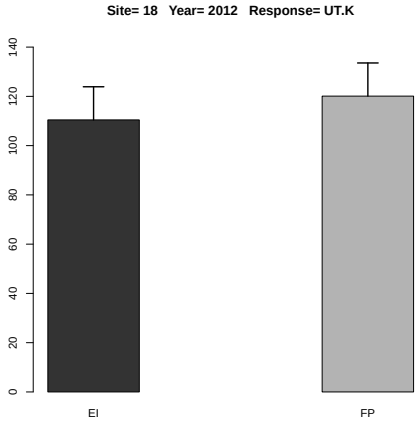

Figure 2.160: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	409.049	409.049	4.426	9.000	0.065
B	1.000	1675.997	1675.997	18.136	9.000	0.002
A:B	1.000	0.820	0.820	0.009	9.000	0.927

Table 2.390: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		99.979	3.565	8.200	28.050	91.791	108.168	0.000
2	FP		110.092	3.565	8.200	30.880	101.903	118.280	0.000
3		N	115.270	3.565	8.200	32.330	107.082	123.459	0.000
4		N0	94.801	3.565	8.200	26.590	86.612	102.989	0.000
5	EI	N	110.440	4.925	11.900	22.420	99.701	121.180	0.000
6	FP	N	120.100	4.925	11.900	24.380	109.360	130.840	0.000
7	EI	N0	89.518	4.925	11.900	18.170	78.778	100.258	0.000
8	FP	N0	100.083	4.925	11.900	20.320	89.344	110.823	0.000

Table 2.391: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-10.113	4.806	9.000	-2.100	-20.986	0.761	0.065
B N-N0	20.470	4.806	9.000	4.260	9.596	31.343	0.002
A:B EI N- FP N	-9.660	6.798	9.000	-1.420	-25.037	5.717	0.189
A:B EI N- EI N0	20.922	6.798	9.000	3.080	5.545	36.299	0.013
A:B EI N- FP N0	10.357	6.798	9.000	1.520	-5.020	25.734	0.162
A:B FP N- EI N0	30.582	6.798	9.000	4.500	15.205	45.959	0.002
A:B FP N- FP N0	20.017	6.798	9.000	2.940	4.640	35.394	0.016
A:B EI N0- FP N0	-10.565	6.798	9.000	-1.550	-25.942	4.812	0.154

Table 2.392: Estimate of contrast in two-way ANOVA for variable UT.K at site 18 in year 2012 .

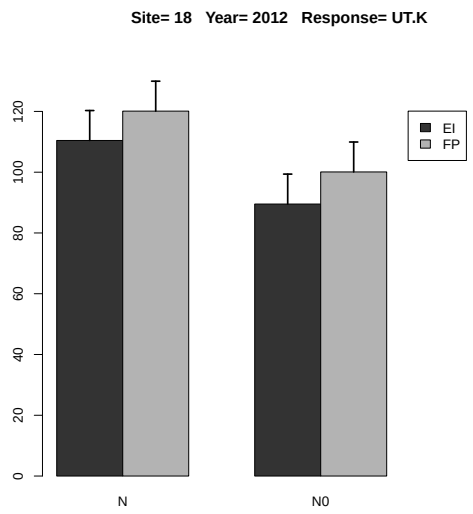

Figure 2.161: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.25 Response Variable UT.K2O

	rep	A	B	y
1	1	FP	N0	98.949
2	2	FP	N0	106.169
3	3	FP	N0	98.896
4	4	FP	N0	103.426
5	1	FP	N	131.291
6	2	FP	N	114.098
7	3	FP	N	118.427
8	4	FP	N	123.645
9	1	EI	N0	88.063
10	2	EI	N0	96.265
11	3	EI	N0	89.842
12	4	EI	N0	89.550
13	1	EI	N	132.477
14	2	EI	N	97.505
15	3	EI	N	97.710
16	4	EI	N	121.173

Table 2.393: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	112.216	6.714	4.100	16.710	93.719	130.714	0.000
A FP	121.865	6.714	4.100	18.150	103.368	140.363	0.000
A EI-FP	-9.649	5.320	3.000	-1.810	-26.580	7.282	0.167

Table 2.394: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 18 in year 2012 .

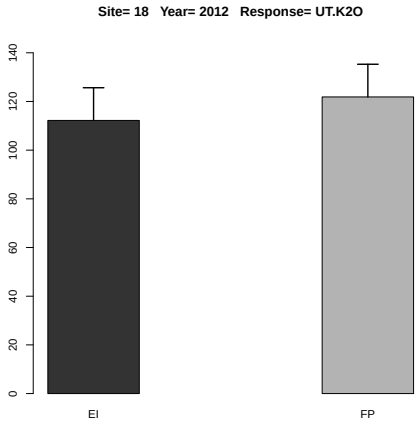

Figure 2.162: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	423.504	423.504	4.620	9.000	0.060
B	1.000	1704.967	1704.967	18.601	9.000	0.002
A:B	1.000	1.640	1.640	0.018	9.000	0.897

Table 2.395: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		101.573	3.564	8.100	28.500	93.375	109.771	0.000
2	FP		111.863	3.564	8.100	31.380	103.665	120.061	0.000
3		N	117.041	3.564	8.100	32.840	108.843	125.239	0.000
4		N0	96.395	3.564	8.100	27.040	88.197	104.593	0.000
5	EI	N	112.216	4.915	11.900	22.830	101.497	122.936	0.000
6	FP	N	121.865	4.915	11.900	24.790	111.146	132.585	0.000
7	EI	N0	90.930	4.915	11.900	18.500	80.211	101.650	0.000
8	FP	N0	101.860	4.915	11.900	20.720	91.141	112.580	0.000

Table 2.396: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 18 in year 2012 .

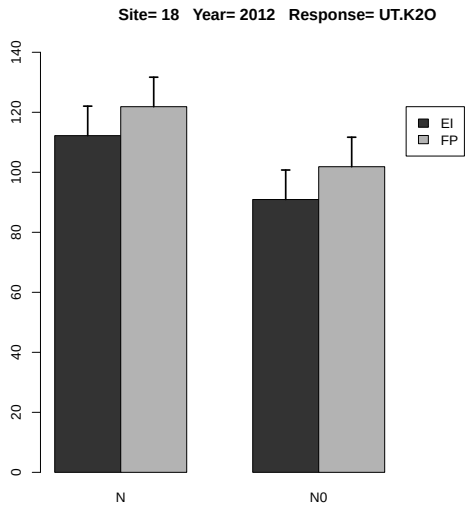

Figure 2.163: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-10.290	4.787	9.000	-2.150	-21.119	0.539	0.060
B N-N0	20.646	4.787	9.000	4.310	9.817	31.474	0.002
A:B EI N- FP N	-9.649	6.770	9.000	-1.430	-24.964	5.665	0.188
A:B EI N- EI N0	21.286	6.770	9.000	3.140	5.972	36.600	0.012
A:B EI N- FP N0	10.356	6.770	9.000	1.530	-4.958	25.670	0.160
A:B FP N- EI N0	30.935	6.770	9.000	4.570	15.621	46.250	0.001
A:B FP N- FP N0	20.005	6.770	9.000	2.960	4.691	35.320	0.016
A:B EI N0- FP N0	-10.930	6.770	9.000	-1.610	-26.244	4.384	0.141

Table 2.397: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 18 in year 2012 .

2.3.26 Response Variable UT.Ca

	rep	A	B	y
1	1	FP	N0	11.788
2	2	FP	N0	11.028
3	3	FP	N0	9.244
4	4	FP	N0	10.274
5	1	FP	N	12.452
6	2	FP	N	8.833
7	3	FP	N	9.821
8	4	FP	N	11.507
9	1	EI	N0	6.879
10	2	EI	N0	9.230
11	3	EI	N0	7.794
12	4	EI	N0	7.988
13	1	EI	N	12.861
14	2	EI	N	8.002
15	3	EI	N	7.199
16	4	EI	N	13.335

Table 2.398: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	10.349	1.269	3.900	8.160	6.805	13.893	0.001
A FP	10.653	1.269	3.900	8.400	7.109	14.197	0.001
A EI-FP	-0.304	0.945	3.000	-0.320	-3.310	2.702	0.768

Table 2.399: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Ca at site 18 in year 2012 .

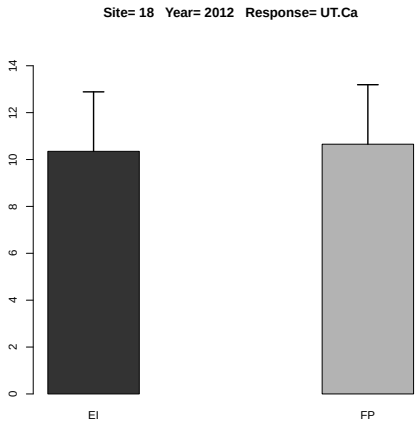

Figure 2.164: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.499	8.499	2.745	9.000	0.132
B	1.000	5.984	5.984	1.933	9.000	0.198
A:B	1.000	5.321	5.321	1.719	9.000	0.222

Table 2.400: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.161	0.742	6.500	12.350	7.379	10.942	0.000
2	FP		10.618	0.742	6.500	14.320	8.837	12.400	0.000
3		N	10.501	0.742	6.500	14.160	8.720	12.283	0.000
4		N0	9.278	0.742	6.500	12.510	7.497	11.060	0.000
5	EI	N	10.349	0.968	11.000	10.690	8.218	12.480	0.000
6	FP	N	10.653	0.968	11.000	11.000	8.523	12.784	0.000
7	EI	N0	7.973	0.968	11.000	8.240	5.842	10.103	0.000
8	FP	N0	10.584	0.968	11.000	10.930	8.453	12.714	0.000

Table 2.401: Estimate of treatment means in tow-way ANOVA for variable UT.Ca at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.458	0.880	9.000	-1.660	-3.448	0.533	0.132
B N-N0	1.223	0.880	9.000	1.390	-0.767	3.213	0.198
A:B EI N- FP N	-0.304	1.244	9.000	-0.240	-3.119	2.510	0.812
A:B EI N- EI N0	2.377	1.244	9.000	1.910	-0.438	5.191	0.088
A:B EI N- FP N0	-0.234	1.244	9.000	-0.190	-3.049	2.580	0.855
A:B FP N- EI N0	2.681	1.244	9.000	2.150	-0.134	5.495	0.060
A:B FP N- FP N0	0.070	1.244	9.000	0.060	-2.745	2.884	0.957
A:B EI N0- FP N0	-2.611	1.244	9.000	-2.100	-5.426	0.204	0.065

Table 2.402: Estimate of contrast in two-way ANOVA for variable UT.Ca at site 18 in year 2012 .

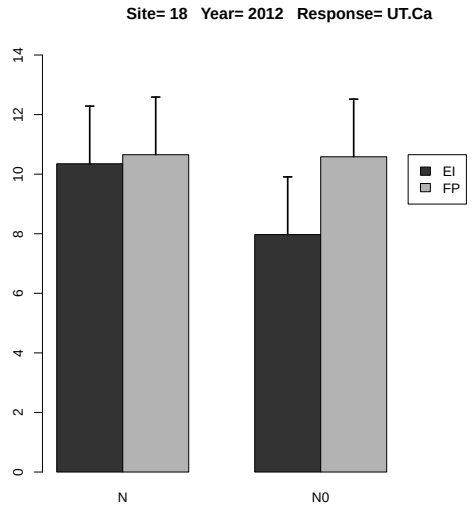

Figure 2.165: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.27 Response Variable UT.Mg

	rep	A	B	y
1	1	FP	N0	15.164
2	2	FP	N0	17.728
3	3	FP	N0	15.816
4	4	FP	N0	16.135
5	1	FP	N	23.980
6	2	FP	N	23.276
7	3	FP	N	23.260
8	4	FP	N	27.468
9	1	EI	N0	17.672
10	2	EI	N0	14.944
11	3	EI	N0	13.301
12	4	EI	N0	17.694
13	1	EI	N	25.281
14	2	EI	N	20.009
15	3	EI	N	19.124
16	4	EI	N	18.976

Table 2.403: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	20.848	1.274	6.000	16.370	17.730	23.965	0.000
A FP	24.496	1.274	6.000	19.230	21.379	27.613	0.000
A EI-FP	-3.648	1.802	6.000	-2.030	-8.056	0.760	0.089

Table 2.404: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 18 in year 2012 .

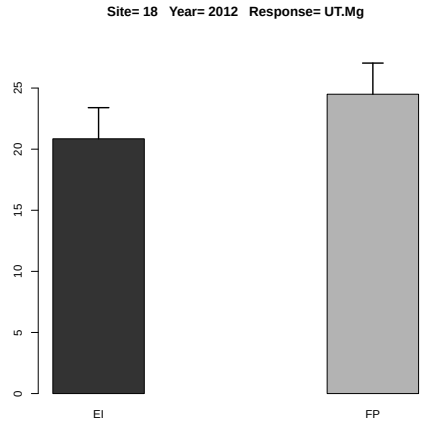

Figure 2.166: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.264	8.264	2.538	5.999	0.162
B	1.000	175.037	175.037	53.765	6.000	0.000
A:B	1.000	11.155	11.155	3.426	6.000	0.114

Table 2.405: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.375	0.878	6.000	20.930	16.227	20.523	0.000
2	FP		20.353	0.878	6.000	23.180	18.205	22.502	0.000
3		N	22.672	0.767	11.000	29.540	20.982	24.362	0.000
4		N0	16.057	0.767	11.000	20.920	14.367	17.747	0.000
5	EI	N	20.848	1.085	11.000	19.210	18.458	23.238	0.000
6	FP	N	24.496	1.085	11.000	22.570	22.106	26.886	0.000
7	EI	N0	15.902	1.085	11.000	14.650	13.513	18.292	0.000
8	FP	N0	16.211	1.085	11.000	14.940	13.821	18.601	0.000

Table 2.406: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 18 in year 2012 .

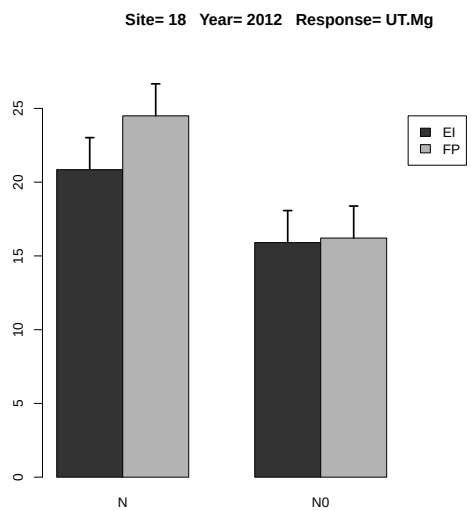

Figure 2.167: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.978	1.242	6.000	-1.590	-5.016	1.060	0.162
B N-N0	6.615	0.902	6.000	7.330	4.407	8.823	0.000
A:B EI N- FP N	-3.648	1.535	11.000	-2.380	-7.028	-0.268	0.037
A:B EI N- EI N0	4.945	1.276	6.000	3.880	1.823	8.067	0.008
A:B EI N- FP N0	4.637	1.535	11.000	3.020	1.257	8.017	0.012
A:B FP N- EI N0	8.593	1.535	11.000	5.600	5.213	11.973	0.000
A:B FP N- FP N0	8.285	1.276	6.000	6.490	5.163	11.407	0.001
A:B EI N0- FP N0	-0.308	1.535	11.000	-0.200	-3.688	3.071	0.845

Table 2.407: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 18 in year 2012 .

2.3.28 Response Variable UT.S

	rep	A	B	y
1	1	FP	N0	7.358
2	2	FP	N0	8.895
3	3	FP	N0	8.006
4	4	FP	N0	7.096
5	1	FP	N	9.286
6	2	FP	N	8.357
7	3	FP	N	9.533
8	4	FP	N	9.870
9	1	EI	N0	8.702
10	2	EI	N0	5.374
11	3	EI	N0	5.347
12	4	EI	N0	8.394
13	1	EI	N	12.442
14	2	EI	N	8.959
15	3	EI	N	8.295
16	4	EI	N	10.255

Table 2.408: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	9.988	0.686	5.900	14.570	8.304	11.671	0.000
A FP	9.261	0.686	5.900	13.510	7.578	10.945	0.000
A EI-FP	0.726	0.908	3.000	0.800	-2.164	3.616	0.482

Table 2.409: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 18 in year 2012 .

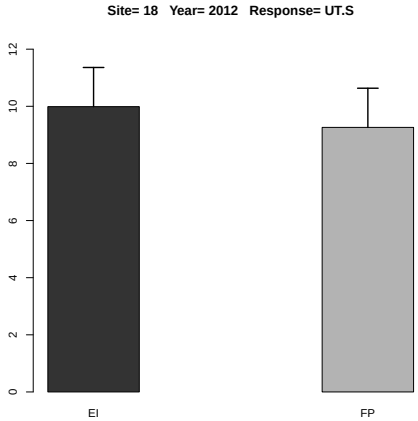

Figure 2.168: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	0.008	6.000	0.933
B	1.000	19.858	19.858	29.352	5.999	0.002
A:B	1.000	2.593	2.593	3.833	5.999	0.098

Table 2.410: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.471	0.635	6.000	13.340	6.917	10.025	0.000
2	FP		8.550	0.635	6.000	13.460	6.996	10.104	0.000
3		N	9.625	0.494	8.400	19.490	8.495	10.754	0.000
4		N0	7.396	0.494	8.400	14.980	6.267	8.526	0.000
5	EI	N	9.988	0.698	8.400	14.300	8.391	11.585	0.000
6	FP	N	9.261	0.698	8.400	13.260	7.665	10.858	0.000
7	EI	N0	6.954	0.698	8.400	9.960	5.357	8.551	0.000
8	FP	N0	7.839	0.698	8.400	11.220	6.242	9.436	0.000

Table 2.411: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.079	0.898	6.000	-0.090	-2.276	2.118	0.933
B N-N0	2.228	0.411	6.000	5.420	1.222	3.235	0.002
A:B EI N- FP N	0.726	0.988	8.400	0.740	-1.532	2.985	0.482
A:B EI N- EI N0	3.033	0.582	6.000	5.220	1.610	4.457	0.002
A:B EI N- FP N0	2.149	0.988	8.400	2.180	-0.109	4.407	0.060
A:B FP N- EI N0	2.307	0.988	8.400	2.340	0.049	4.566	0.046
A:B FP N- FP N0	1.423	0.582	6.000	2.450	-0.000	2.846	0.050
A:B EI N0- FP N0	-0.884	0.988	8.400	-0.900	-3.143	1.374	0.396

Table 2.412: Estimate of contrast in two-way ANOVA for variable UT.S at site 18 in year 2012 .

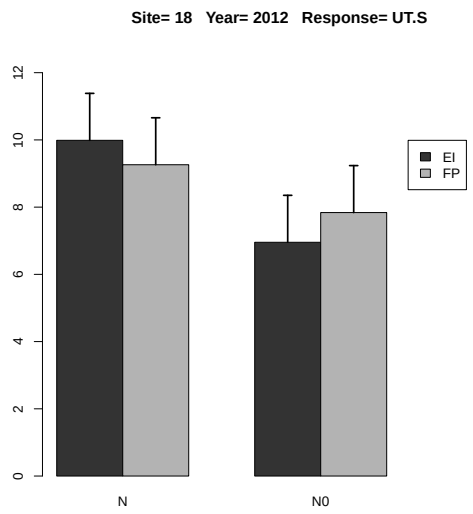

Figure 2.169: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.29 Response Variable HI.N

	rep	A	B	y
1	1	FP	N0	2.353
2	2	FP	N0	2.145
3	3	FP	N0	2.556
4	4	FP	N0	3.054
5	1	FP	N	2.892
6	2	FP	N	3.123
7	3	FP	N	3.082
8	4	FP	N	2.831
9	1	EI	N0	2.282
10	2	EI	N0	2.137
11	3	EI	N0	2.532
12	4	EI	N0	2.296
13	1	EI	N	2.595
14	2	EI	N	2.417
15	3	EI	N	2.591
16	4	EI	N	1.855

Table 2.413: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.364	0.134	5.200	17.710	2.024	2.704	0.000
A FP	2.982	0.134	5.200	22.340	2.642	3.322	0.000
A EI-FP	-0.618	0.146	3.000	-4.240	-1.081	-0.154	0.024

Table 2.414: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 18 in year 2012 .

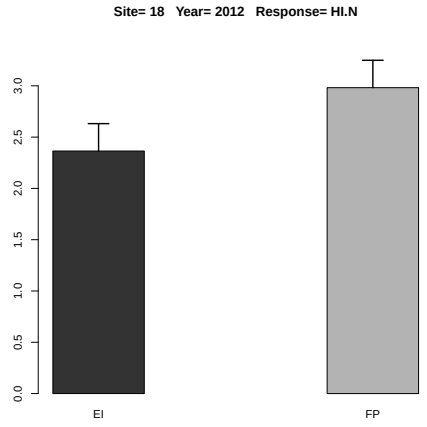

Figure 2.170: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.693	0.693	8.641	11.996	0.012
B	1.000	0.258	0.258	3.213	11.996	0.098
A:B	1.000	0.162	0.162	2.020	11.996	0.181

Table 2.415: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.338	0.100	12.000	23.350	2.120	2.556	0.000
2	FP		2.754	0.100	12.000	27.500	2.536	2.973	0.000
3		N	2.673	0.100	12.000	26.690	2.455	2.891	0.000
4		N0	2.419	0.100	12.000	24.160	2.201	2.637	0.000
5	EI	N	2.364	0.142	12.000	16.690	2.056	2.673	0.000
6	FP	N	2.982	0.142	12.000	21.050	2.673	3.291	0.000
7	EI	N0	2.312	0.142	12.000	16.320	2.003	2.620	0.000
8	FP	N0	2.527	0.142	12.000	17.840	2.218	2.835	0.000

Table 2.416: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 18 in year 2012 .

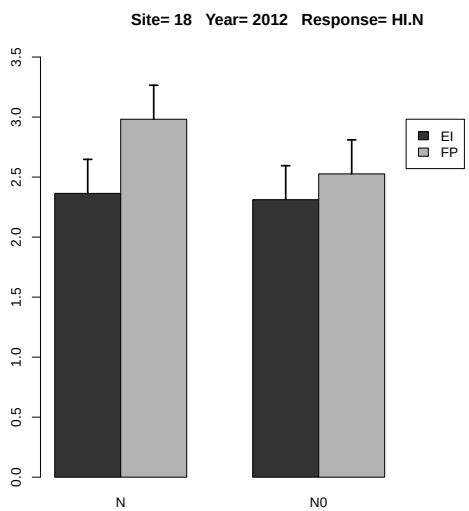

Figure 2.171: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.416	0.142	12.000	-2.940	-0.725	-0.108	0.012
B N-N0	0.254	0.142	12.000	1.790	-0.055	0.562	0.098
A:B EI N- FP N	-0.618	0.200	12.000	-3.080	-1.054	-0.181	0.009
A:B EI N- EI N0	0.053	0.200	12.000	0.260	-0.384	0.489	0.797
A:B EI N- FP N0	-0.163	0.200	12.000	-0.810	-0.599	0.274	0.433
A:B FP N- EI N0	0.670	0.200	12.000	3.350	0.234	1.107	0.006
A:B FP N- FP N0	0.455	0.200	12.000	2.270	0.019	0.892	0.042
A:B EI N0- FP N0	-0.215	0.200	12.000	-1.070	-0.651	0.221	0.304

Table 2.417: Estimate of contrast in two-way ANOVA for variable HI.N at site 18 in year 2012 .

2.3.30 Response Variable HI.P

	rep	A	B	y
1	1	FP	N0	12.866
2	2	FP	N0	11.243
3	3	FP	N0	14.759
4	4	FP	N0	10.581
5	1	FP	N	15.120
6	2	FP	N	12.381
7	3	FP	N	12.312
8	4	FP	N	10.192
9	1	EI	N0	11.526
10	2	EI	N0	12.400
11	3	EI	N0	15.068
12	4	EI	N0	12.985
13	1	EI	N	5.627
14	2	EI	N	13.662
15	3	EI	N	14.022
16	4	EI	N	8.714

Table 2.418: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	10.506	1.602	6.000	6.560	6.587	14.426	0.001
A FP	12.501	1.602	6.000	7.800	8.582	16.421	0.000
A EI-FP	-1.995	2.265	6.000	-0.880	-7.538	3.548	0.412

Table 2.419: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 18 in year 2012 .

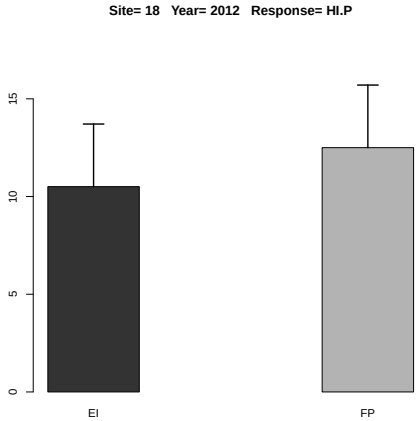

Figure 2.172: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.705	0.705	0.195	5.999	0.674
B	1.000	5.521	5.521	1.527	6.000	0.263
A:B	1.000	6.905	6.905	1.910	6.000	0.216

Table 2.420: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.751	1.091	6.000	10.770	9.081	14.420	0.000
2	FP		12.432	1.091	6.000	11.400	9.762	15.101	0.000
3		N	11.504	0.906	10.000	12.700	9.484	13.523	0.000
4		N0	12.679	0.906	10.000	13.990	10.659	14.698	0.000
5	EI	N	10.506	1.281	10.000	8.200	7.650	13.362	0.000
6	FP	N	12.501	1.281	10.000	9.760	9.645	15.357	0.000
7	EI	N0	12.995	1.281	10.000	10.140	10.139	15.851	0.000
8	FP	N0	12.362	1.281	10.000	9.650	9.506	15.218	0.000

Table 2.421: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.681	1.543	6.000	-0.440	-4.456	3.094	0.674
B N-N0	-1.175	0.951	6.000	-1.240	-3.501	1.152	0.263
A:B EI N- FP N	-1.995	1.812	10.000	-1.100	-6.034	2.044	0.297
A:B EI N- EI N0	-2.489	1.345	6.000	-1.850	-5.779	0.801	0.114
A:B EI N- FP N0	-1.856	1.812	10.000	-1.020	-5.895	2.183	0.330
A:B FP N- EI N0	-0.494	1.812	10.000	-0.270	-4.532	3.545	0.791
A:B FP N- FP N0	0.139	1.345	6.000	0.100	-3.151	3.429	0.921
A:B EI N0- FP N0	0.633	1.812	10.000	0.350	-3.406	4.671	0.734

Table 2.422: Estimate of contrast in two-way ANOVA for variable HI.P at site 18 in year 2012 .

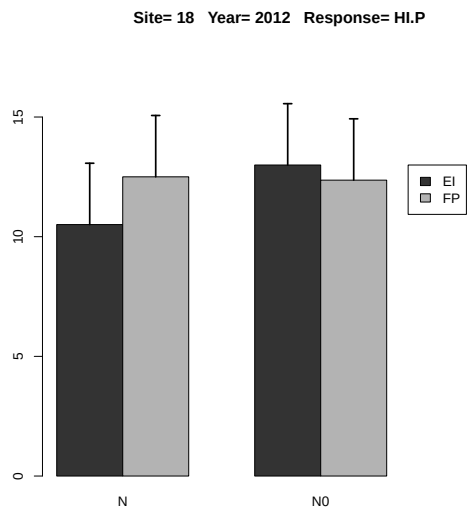

Figure 2.173: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.31 Response Variable HI.K

	rep	A	B	y
1	1	FP	N0	0.673
2	2	FP	N0	0.617
3	3	FP	N0	0.773
4	4	FP	N0	0.747
5	1	FP	N	0.541
6	2	FP	N	0.753
7	3	FP	N	0.615
8	4	FP	N	0.499
9	1	EI	N0	0.702
10	2	EI	N0	0.592
11	3	EI	N0	0.715
12	4	EI	N0	0.646
13	1	EI	N	0.350
14	2	EI	N	0.609
15	3	EI	N	0.644
16	4	EI	N	0.493

Table 2.423: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.524	0.061	4.300	8.540	0.358	0.690	0.001
A FP	0.602	0.061	4.300	9.820	0.437	0.768	0.000
A EI-FP	-0.078	0.053	3.000	-1.470	-0.248	0.091	0.237

Table 2.424: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 18 in year 2012 .

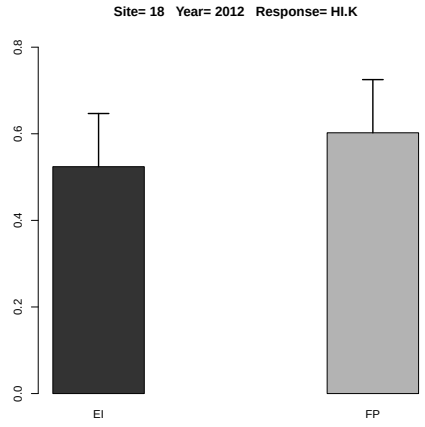

Figure 2.174: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.014	0.014	1.515	8.991	0.250
B	1.000	0.058	0.058	6.351	8.991	0.033
A:B	1.000	0.002	0.002	0.171	8.991	0.689

Table 2.425: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.594	0.036	8.100	16.700	0.512	0.676	0.000
2	FP		0.652	0.036	8.100	18.350	0.571	0.734	0.000
3		N	0.563	0.036	8.100	15.840	0.481	0.645	0.000
4		N0	0.683	0.036	8.100	19.210	0.601	0.765	0.000
5	EI	N	0.524	0.049	11.900	10.700	0.417	0.631	0.000
6	FP	N	0.602	0.049	11.900	12.300	0.495	0.709	0.000
7	EI	N0	0.664	0.049	11.900	13.550	0.557	0.770	0.000
8	FP	N0	0.703	0.049	11.900	14.350	0.596	0.809	0.000

Table 2.426: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 18 in year 2012 .

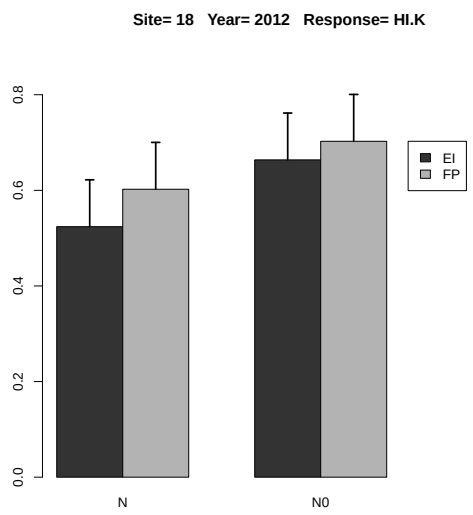

Figure 2.175: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.059	0.048	9.000	-1.230	-0.166	0.049	0.250
B N-N0	-0.120	0.048	9.000	-2.520	-0.228	-0.012	0.033
A:B EI N- FP N	-0.078	0.067	9.000	-1.160	-0.231	0.074	0.275
A:B EI N- EI N0	-0.140	0.067	9.000	-2.070	-0.292	0.013	0.068
A:B EI N- FP N0	-0.179	0.067	9.000	-2.650	-0.331	-0.026	0.026
A:B FP N- EI N0	-0.061	0.067	9.000	-0.910	-0.214	0.091	0.386
A:B FP N- FP N0	-0.100	0.067	9.000	-1.490	-0.253	0.052	0.171
A:B EI N0- FP N0	-0.039	0.067	9.000	-0.580	-0.191	0.113	0.578

Table 2.427: Estimate of contrast in two-way ANOVA for variable HI.K at site 18 in year 2012 .

2.3.32 Response Variable HI.Ca

	rep	A	B	y
1	1	FP	N0	0.057
2	2	FP	N0	0.063
3	3	FP	N0	0.077
4	4	FP	N0	0.073
5	1	FP	N	0.070
6	2	FP	N	0.097
7	3	FP	N	0.088
8	4	FP	N	0.074
9	1	EI	N0	0.102
10	2	EI	N0	0.061
11	3	EI	N0	0.076
12	4	EI	N0	0.093
13	1	EI	N	0.067
14	2	EI	N	0.097
15	3	EI	N	0.114
16	4	EI	N	0.056

Table 2.428: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.084	0.010	4.300	7.990	0.055	0.112	0.001
A FP	0.082	0.010	4.300	7.870	0.054	0.110	0.001
A EI-FP	0.001	0.009	3.000	0.140	-0.028	0.031	0.896

Table 2.429: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Ca at site 18 in year 2012 .

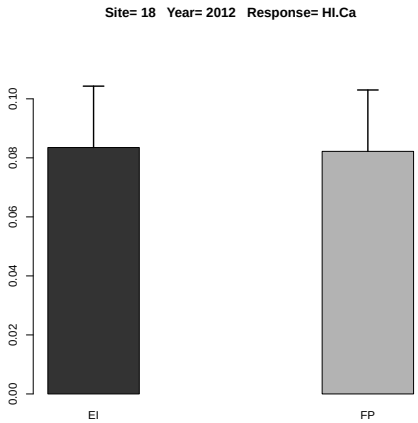

Figure 2.176: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.860	11.935	0.372
B	1.000	0.000	0.000	0.727	11.935	0.411
A:B	1.000	0.000	0.000	0.612	11.935	0.449

Table 2.430: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.083	0.006	11.900	13.050	0.069	0.097	0.000
2	FP		0.075	0.006	11.900	11.740	0.061	0.089	0.000
3		N	0.083	0.006	11.900	13.000	0.069	0.097	0.000
4		N0	0.075	0.006	11.900	11.790	0.061	0.089	0.000
5	EI	N	0.084	0.009	11.900	9.260	0.064	0.103	0.000
6	FP	N	0.082	0.009	11.900	9.120	0.062	0.102	0.000
7	EI	N0	0.083	0.009	11.900	9.190	0.063	0.102	0.000
8	FP	N0	0.067	0.009	11.900	7.480	0.048	0.087	0.000

Table 2.431: Estimate of treatment means in tow-way ANOVA for variable HI.Ca at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.008	0.009	11.900	0.930	-0.011	0.028	0.372
B N-N0	0.008	0.009	11.900	0.850	-0.012	0.027	0.411
A:B EI N- FP N	0.001	0.013	11.900	0.100	-0.026	0.029	0.920
A:B EI N- EI N0	0.001	0.013	11.900	0.050	-0.027	0.028	0.961
A:B EI N- FP N0	0.016	0.013	11.900	1.260	-0.012	0.044	0.232
A:B FP N- EI N0	-0.001	0.013	11.900	-0.050	-0.028	0.027	0.959
A:B FP N- FP N0	0.015	0.013	11.900	1.160	-0.013	0.042	0.270
A:B EI N0- FP N0	0.015	0.013	11.900	1.210	-0.012	0.043	0.250

Table 2.432: Estimate of contrast in two-way ANOVA for variable HI.Ca at site 18 in year 2012 .

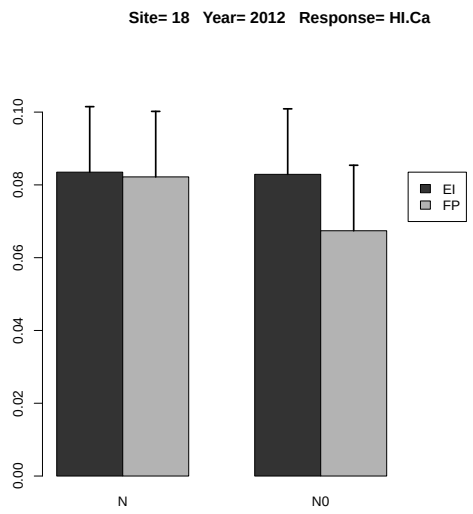

Figure 2.177: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.33 Response Variable HI.Mg

	rep	A	B	y
1	1	FP	N0	0.599
2	2	FP	N0	0.582
3	3	FP	N0	0.604
4	4	FP	N0	0.769
5	1	FP	N	1.027
6	2	FP	N	1.320
7	3	FP	N	1.207
8	4	FP	N	1.092
9	1	EI	N0	1.368
10	2	EI	N0	0.847
11	3	EI	N0	0.986
12	4	EI	N0	1.579
13	1	EI	N	0.709
14	2	EI	N	1.520
15	3	EI	N	1.890
16	4	EI	N	0.502

Table 2.433: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.155	0.237	5.500	4.870	0.563	1.747	0.004
A FP	1.161	0.237	5.500	4.900	0.569	1.754	0.003
A EI-FP	-0.006	0.282	3.000	-0.020	-0.903	0.891	0.984

Table 2.434: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 18 in year 2012 .

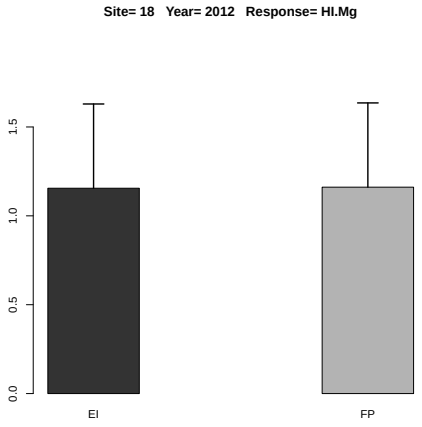

Figure 2.178: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.303	0.303	2.125	11.997	0.171
B	1.000	0.233	0.233	1.635	11.997	0.225
A:B	1.000	0.317	0.317	2.219	11.997	0.162

Table 2.435: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.175	0.134	12.000	8.800	0.884	1.466	0.000
2	FP		0.900	0.134	12.000	6.740	0.609	1.191	0.000
3		N	1.158	0.134	12.000	8.670	0.867	1.449	0.000
4		N0	0.917	0.134	12.000	6.860	0.626	1.208	0.000
5	EI	N	1.155	0.189	12.000	6.120	0.744	1.567	0.000
6	FP	N	1.161	0.189	12.000	6.150	0.750	1.573	0.000
7	EI	N0	1.195	0.189	12.000	6.330	0.784	1.607	0.000
8	FP	N0	0.638	0.189	12.000	3.380	0.227	1.050	0.005

Table 2.436: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 18 in year 2012 .

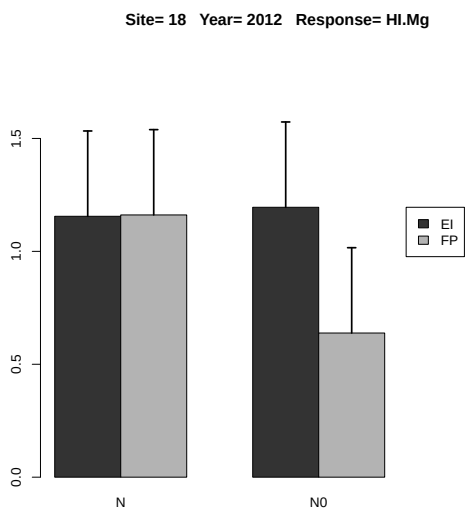

Figure 2.179: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.275	0.189	12.000	1.460	-0.136	0.687	0.171
B N-N0	0.241	0.189	12.000	1.280	-0.170	0.653	0.225
A:B EI N- FP N	-0.006	0.267	12.000	-0.020	-0.588	0.576	0.982
A:B EI N- EI N0	-0.040	0.267	12.000	-0.150	-0.622	0.542	0.884
A:B EI N- FP N0	0.517	0.267	12.000	1.930	-0.065	1.099	0.077
A:B FP N- EI N0	-0.034	0.267	12.000	-0.130	-0.616	0.548	0.901
A:B FP N- FP N0	0.523	0.267	12.000	1.960	-0.059	1.105	0.074
A:B EI N0- FP N0	0.557	0.267	12.000	2.080	-0.025	1.139	0.059

Table 2.437: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 18 in year 2012 .

2.3.34 Response Variable HI.S

	rep	A	B	y
1	1	FP	N0	2.190
2	2	FP	N0	1.939
3	3	FP	N0	1.951
4	4	FP	N0	2.244
5	1	FP	N	1.568
6	2	FP	N	1.877
7	3	FP	N	2.005
8	4	FP	N	1.821
9	1	EI	N0	1.419
10	2	EI	N0	1.431
11	3	EI	N0	1.614
12	4	EI	N0	1.819
13	1	EI	N	1.844
14	2	EI	N	1.732
15	3	EI	N	1.637
16	4	EI	N	1.222

Table 2.438: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.609	0.116	6.000	13.900	1.326	1.892	0.000
A FP	1.818	0.116	6.000	15.710	1.535	2.101	0.000
A EI-FP	-0.209	0.164	6.000	-1.280	-0.609	0.192	0.249

Table 2.439: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 18 in year 2012 .

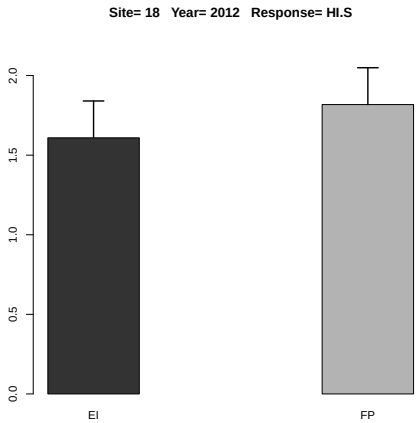

Figure 2.180: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.517	0.517	12.325	11.994	0.004
B	1.000	0.051	0.051	1.210	11.994	0.293
A:B	1.000	0.091	0.091	2.164	11.994	0.167

Table 2.440: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.590	0.072	12.000	21.960	1.432	1.748	0.000
2	FP		1.949	0.072	12.000	26.920	1.792	2.107	0.000
3		N	1.713	0.072	12.000	23.660	1.556	1.871	0.000
4		N0	1.826	0.072	12.000	25.220	1.668	1.984	0.000
5	EI	N	1.609	0.102	12.000	15.710	1.386	1.832	0.000
6	FP	N	1.818	0.102	12.000	17.750	1.595	2.041	0.000
7	EI	N0	1.571	0.102	12.000	15.340	1.348	1.794	0.000
8	FP	N0	2.081	0.102	12.000	20.320	1.858	2.304	0.000

Table 2.441: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 18 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.359	0.102	12.000	-3.510	-0.583	-0.136	0.004
B N-N0	-0.113	0.102	12.000	-1.100	-0.336	0.110	0.293
A:B EI N- FP N	-0.209	0.145	12.000	-1.440	-0.524	0.107	0.175
A:B EI N- EI N0	0.038	0.145	12.000	0.260	-0.278	0.354	0.797
A:B EI N- FP N0	-0.472	0.145	12.000	-3.260	-0.788	-0.157	0.007
A:B FP N- EI N0	0.247	0.145	12.000	1.700	-0.069	0.562	0.114
A:B FP N- FP N0	-0.263	0.145	12.000	-1.820	-0.579	0.052	0.094
A:B EI N0- FP N0	-0.510	0.145	12.000	-3.520	-0.826	-0.195	0.004

Table 2.442: Estimate of contrast in two-way ANOVA for variable HI.S at site 18 in year 2012 .

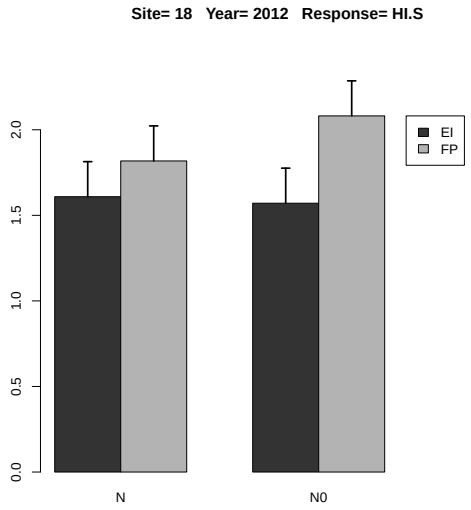

Figure 2.181: Estimated treatment means and standard error in the 2-way ANOVA.

2.3.35 Response Variable PFP.N

	rep	A	B	y
1	1	FP	N	90.003
2	2	FP	N	86.543
3	3	FP	N	88.344
4	4	FP	N	88.487
5	1	EI	N	67.224
6	2	EI	N	59.168
7	3	EI	N	61.303
8	4	EI	N	58.757

Table 2.443: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	61.613	1.468	4.700	41.960	57.777	65.449	0.000
A FP	88.344	1.468	4.700	60.170	84.508	92.181	0.000
A EI-FP	-26.732	1.447	3.000	-18.470	-31.336	-22.127	0.000

Table 2.444: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 18 in year 2012 .

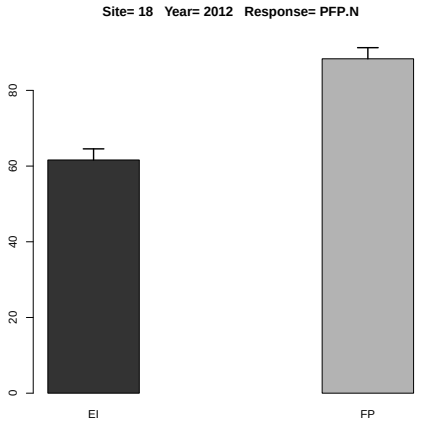

Figure 2.182: Estimated treatment means and standard error in the one-way ANOVA.

2.3.36 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	463.828
2	2	FP	N	445.997
3	3	FP	N	455.279
4	4	FP	N	456.012
5	1	EI	N	461.916
6	2	EI	N	406.556
7	3	EI	N	421.232
8	4	EI	N	403.733

Table 2.445: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	423.360	9.829	5.100	43.070	398.312	448.406	0.000
A FP	455.279	9.829	5.100	46.320	430.232	480.327	0.000
A EI-FP	-31.920	10.708	3.000	-2.980	-65.999	2.159	0.059

Table 2.446: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 18 in year 2012 .

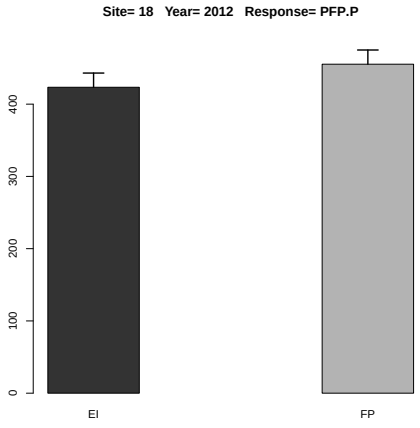

Figure 2.183: Estimated treatment means and standard error in the one-way ANOVA.

2.3.37 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	202.507
2	2	FP	N	194.722
3	3	FP	N	198.775
4	4	FP	N	199.095
5	1	EI	N	201.672
6	2	EI	N	177.502
7	3	EI	N	183.910
8	4	EI	N	176.270

Table 2.447: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	184.839	4.291	5.100	43.070	173.903	195.774	0.000
A FP	198.775	4.291	5.100	46.320	187.839	209.711	0.000
A EI-FP	-13.936	4.675	3.000	-2.980	-28.815	0.943	0.059

Table 2.448: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 18 in year 2012 .

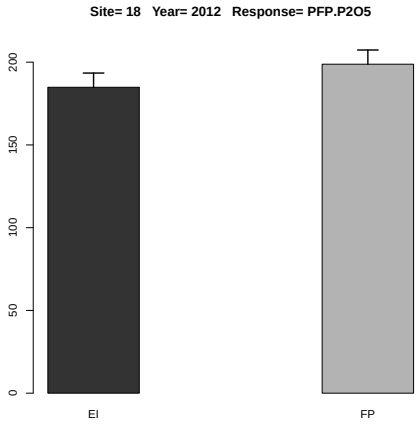

Figure 2.184: Estimated treatment means and standard error in the one-way ANOVA.

2.3.38 Response Variable PFP.K

	rep	A	B	y
1	1	FP	N	244.044
2	2	FP	N	234.662
3	3	FP	N	239.546
4	4	FP	N	239.931
5	1	EI	N	243.037
6	2	EI	N	213.910
7	3	EI	N	221.632
8	4	EI	N	212.425

Table 2.449: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	222.751	5.171	5.100	43.070	209.572	235.929	0.000
A FP	239.546	5.171	5.100	46.320	226.367	252.724	0.000
A EI-FP	-16.795	5.634	3.000	-2.980	-34.725	1.136	0.059

Table 2.450: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 18 in year 2012 .

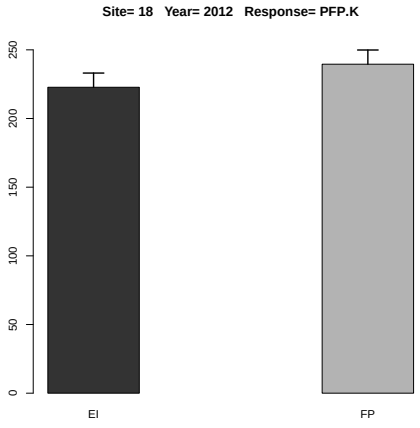

Figure 2.185: Estimated treatment means and standard error in the one-way ANOVA.

2.3.39 Response Variable PFP.K2O

	rep	A	B	y
1	1	FP	N	202.507
2	2	FP	N	194.722
3	3	FP	N	198.775
4	4	FP	N	199.095
5	1	EI	N	201.672
6	2	EI	N	177.502
7	3	EI	N	183.910
8	4	EI	N	176.270

Table 2.451: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	184.839	4.291	5.100	43.070	173.903	195.774	0.000
A FP	198.775	4.291	5.100	46.320	187.839	209.711	0.000
A EI-FP	-13.936	4.675	3.000	-2.980	-28.815	0.943	0.059

Table 2.452: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 18 in year 2012 .

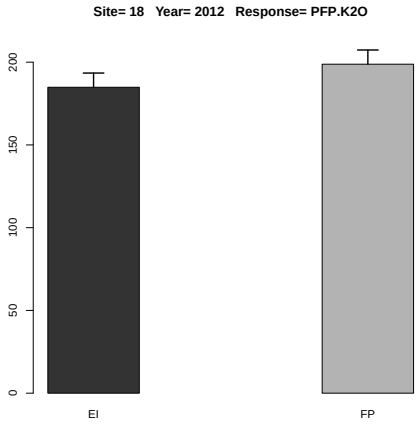

Figure 2.186: Estimated treatment means and standard error in the one-way ANOVA.

2.3.40 Response Variable PFP.Zn

	rep	A	B	y
1	1	FP	N	5400.200
2	2	FP	N	5192.600
3	3	FP	N	5300.667
4	4	FP	N	5309.200
5	1	EI	N	5377.933
6	2	EI	N	4733.400
7	3	EI	N	4904.267
8	4	EI	N	4700.533

Table 2.453: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4929.033	114.431	5.200	43.070	4637.501	5220.566	0.000
A FP	5300.667	114.431	5.200	46.320	5009.134	5592.199	0.000
A EI-FP	-371.633	124.674	3.000	-2.980	-766.981	23.714	0.058

Table 2.454: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 18 in year 2012 .

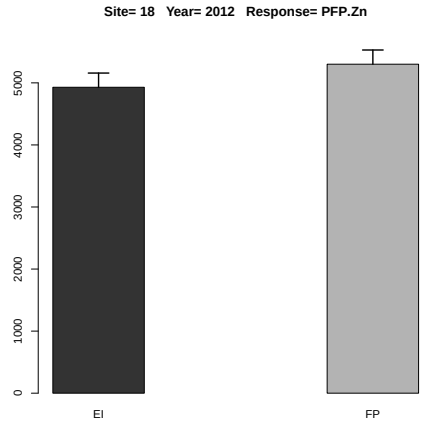

Figure 2.187: Estimated treatment means and standard error in the one-way ANOVA.

2.3.41 Response Variable PNB.N

	rep	A	B	y
1	1	FP	N	1.602
2	2	FP	N	1.359
3	3	FP	N	1.422
4	4	FP	N	1.566
5	1	EI	N	1.143
6	2	EI	N	0.994
7	3	EI	N	1.036
8	4	EI	N	0.922

Table 2.455: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.024	0.052	5.600	19.580	0.894	1.154	0.000
A FP	1.487	0.052	5.600	28.450	1.357	1.617	0.000
A EI-FP	-0.464	0.063	3.000	-7.310	-0.665	-0.262	0.005

Table 2.456: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 18 in year 2012 .

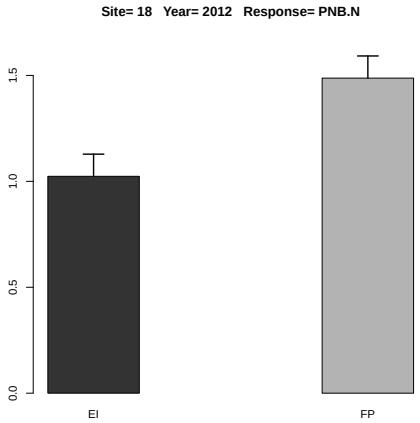

Figure 2.188: Estimated treatment means and standard error in the one-way ANOVA.

2.3.42 Response Variable PNB.P

	rep	A	B	y
1	1	FP	N	1.484
2	2	FP	N	1.516
3	3	FP	N	1.548
4	4	FP	N	1.414
5	1	EI	N	1.293
6	2	EI	N	1.789
7	3	EI	N	1.769
8	4	EI	N	1.736

Table 2.457: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.647	0.086	6.000	19.130	1.436	1.858	0.000
A FP	1.491	0.086	6.000	17.310	1.280	1.702	0.000
A EI-FP	0.156	0.118	3.000	1.330	-0.218	0.531	0.276

Table 2.458: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 18 in year 2012 .

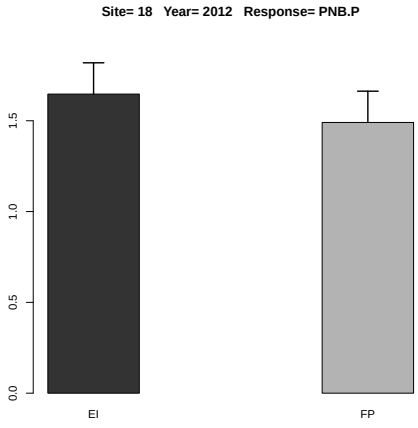

Figure 2.189: Estimated treatment means and standard error in the one-way ANOVA.

2.3.43 Response Variable PNB.K

	rep	A	B	y
1	1	FP	N	1.367
2	2	FP	N	1.455
3	3	FP	N	1.341
4	4	FP	N	1.224
5	1	EI	N	1.021
6	2	EI	N	1.091
7	3	EI	N	1.130
8	4	EI	N	1.190

Table 2.459: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.108	0.042	6.000	26.380	1.005	1.211	0.000
A FP	1.347	0.042	6.000	32.070	1.244	1.450	0.000
A EI-FP	-0.239	0.059	6.000	-4.020	-0.384	-0.093	0.007

Table 2.460: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 18 in year 2012 .

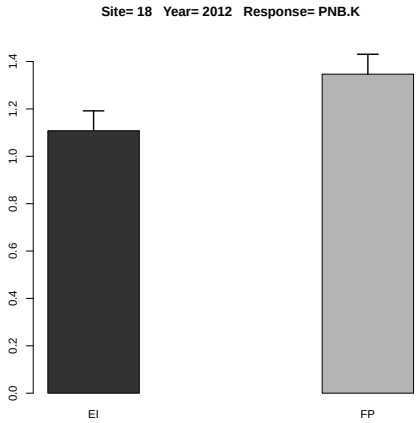

Figure 2.190: Estimated treatment means and standard error in the one-way ANOVA.

2.3.44 Response Variable AE

	rep	A	B	y
1	1	FP	N	29.772
2	2	FP	N	21.142
3	3	FP	N	22.253
4	4	FP	N	15.847
5	1	EI	N	18.727
6	2	EI	N	20.310
7	3	EI	N	20.589
8	4	EI	N	3.117

Table 2.461: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	15.686	2.189	7.167	0.011
A FP	22.253	2.189	10.168	0.004
A EI-FP	-6.568	3.095	-2.122	0.225

Table 2.462: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 18 in year 2012 .

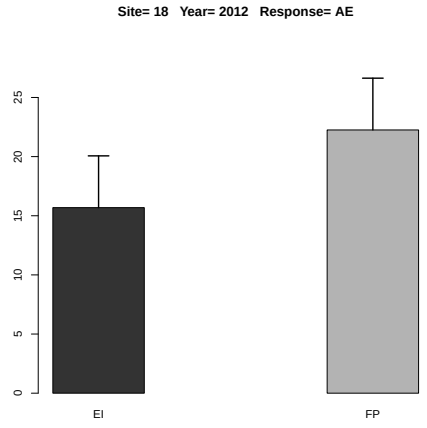

Figure 2.191: Estimated treatment means and standard error in the one-way ANOVA.

2.3.45 Response Variable RE

	rep	A	B	y
1	1	FP	N	1.404
2	2	FP	N	0.524
3	3	FP	N	0.831
4	4	FP	N	0.883
5	1	EI	N	0.490
6	2	EI	N	0.756
7	3	EI	N	0.737
8	4	EI	N	0.262

Table 2.463: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.561	0.182	3.081	0.101
A FP	0.911	0.182	4.998	0.030
A EI-FP	-0.349	0.258	-1.356	0.451

Table 2.464: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 18 in year 2012 .

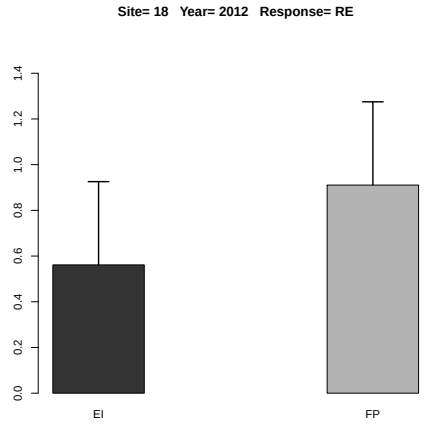

Figure 2.192: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 3

Analysis of Variance for Site 19

3.1 Year 2012

There are 44 variables not observed: UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.B PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

3.1.1 Response Variable YG

	rep	A	B	y
1	1	FP	N0	8043.790
2	2	FP	N0	8859.570
3	3	FP	N0	8348.970
4	4	FP	N0	9029.480
5	1	FP	N	15506.320
6	2	FP	N	13364.910
7	3	FP	N	11397.940
8	4	FP	N	11159.460
9	1	EI	N0	12649.410
10	2	EI	N0	12698.090
11	3	EI	N0	12065.220
12	4	EI	N0	11269.270
13	1	EI	N	12346.090
14	2	EI	N	14001.270
15	3	EI	N	13768.200
16	4	EI	N	11855.370

Table 3.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	12992.733	806.681	6.500	16.110	11053.314	14932.151	0.000
A FP	12857.157	806.681	6.500	15.940	10917.739	14796.576	0.000
A EI-FP	135.575	1140.819	6.500	0.120	-2607.177	2878.327	0.909

Table 3.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 19 in year 2012 .

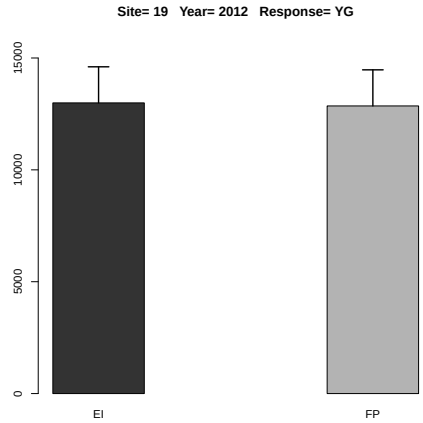

Figure 3.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13954856.784	13954856.784	10.200	8.667	0.011
B	1.000	26101267.924	26101267.924	19.078	8.667	0.002
A:B	1.000	12002552.381	12002552.381	8.773	8.667	0.017

Table 3.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12581.615	441.606	7.900	28.490	11559.966	13603.264	0.000
2	FP		10713.805	441.606	7.900	24.260	9692.156	11735.454	0.000
3		N	12924.945	441.606	7.900	29.270	11903.296	13946.594	0.000
4		N0	10370.475	441.606	7.900	23.480	9348.826	11392.124	0.000
5	EI	N	12992.733	605.003	11.600	21.480	11668.934	14316.531	0.000
6	FP	N	12857.157	605.003	11.600	21.250	11533.359	14180.956	0.000
7	EI	N0	12170.497	605.003	11.600	20.120	10846.699	13494.296	0.000
8	FP	N0	8570.452	605.003	11.600	14.170	7246.654	9894.251	0.000

Table 3.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 19 in year 2012
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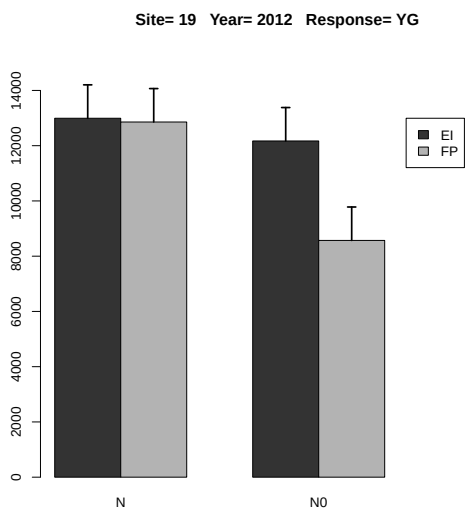

Figure 3.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1867.810	584.829	8.700	3.190	536.995	3198.625	0.011
B N-N0	2554.470	584.829	8.700	4.370	1223.655	3885.285	0.002
A:B EI N- FP N	135.575	827.073	8.700	0.160	-1746.481	2017.631	0.874
A:B EI N- EI N0	822.235	827.073	8.700	0.990	-1059.821	2704.291	0.347
A:B EI N- FP N0	4422.280	827.073	8.700	5.350	2540.224	6304.336	0.000
A:B FP N- EI N0	686.660	827.073	8.700	0.830	-1195.396	2568.716	0.429
A:B FP N- FP N0	4286.705	827.073	8.700	5.180	2404.649	6168.761	0.001
A:B EI N0- FP N0	3600.045	827.073	8.700	4.350	1717.989	5482.101	0.002

Table 3.5: Estimate of contrast in two-way ANOVA for variable YG at site 19 in year 2012 .

3.1.2 Response Variable YS

	rep	A	B	y
1	1	FP	N0	8800.700
2	2	FP	N0	8527.100
3	3	FP	N0	9691.900
4	4	FP	N0	8746.800
5	1	FP	N	9527.100
6	2	FP	N	10667.800
7	3	FP	N	9814.500
8	4	FP	N	9335.200
9	1	EI	N0	9777.700
10	2	EI	N0	9870.500
11	3	EI	N0	8217.200
12	4	EI	N0	7653.600
13	1	EI	N	9433.500
14	2	EI	N	10870.100
15	3	EI	N	10006.200
16	4	EI	N	7365.000

Table 3.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	9418.700	566.723	4.500	16.620	7907.463	10929.937	0.000
A FP	9836.150	566.723	4.500	17.360	8324.913	11347.387	0.000
A EI-FP	-417.450	522.101	2.600	-0.800	-2225.351	1390.450	0.490

Table 3.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 19 in year 2012 .

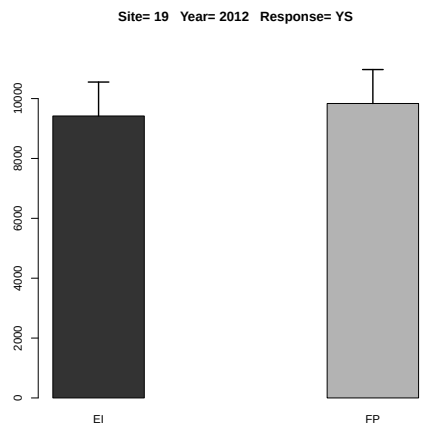

Figure 3.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	95326.215	95326.215	0.208	3.000	0.680
B	1.000	2054850.576	2054850.576	4.475	5.420	0.084
A:B	1.000	126433.581	126433.581	0.275	5.420	0.621

Table 3.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9149.225	444.312	5.500	20.590	8037.960	10260.490	0.000
2	FP		9388.888	444.312	5.500	21.130	8277.622	10500.153	0.000
3		N	9627.425	396.158	4.400	24.300	8565.364	10689.486	0.000
4		N0	8910.688	396.158	4.400	22.490	7848.626	9972.749	0.000
5	EI	N	9418.700	504.791	8.600	18.660	8268.203	10569.197	0.000
6	FP	N	9836.150	504.791	8.600	19.490	8685.653	10986.647	0.000
7	EI	N0	8879.750	504.791	8.600	17.590	7729.253	10030.247	0.000
8	FP	N0	8941.625	504.791	8.600	17.710	7791.128	10092.122	0.000

Table 3.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-239.662	526.013	3.000	-0.460	-1913.783	1434.458	0.680
B N-N0	716.737	338.822	6.700	2.120	-91.100	1524.575	0.074
A:B EI N- FP N	-417.450	625.691	5.600	-0.670	-1977.068	1142.168	0.531
A:B EI N- EI N0	538.950	479.167	6.700	1.120	-603.505	1681.405	0.299
A:B EI N- FP N0	477.075	625.691	5.600	0.760	-1082.543	2036.693	0.477
A:B FP N- EI N0	956.400	625.691	5.600	1.530	-603.217	2516.017	0.181
A:B FP N- FP N0	894.525	479.167	6.700	1.870	-247.930	2036.980	0.106
A:B EI N0- FP N0	-61.875	625.691	5.600	-0.100	-1621.493	1497.743	0.925

Table 3.10: Estimate of contrast in two-way ANOVA for variable YS at site 19 in year 2012 .

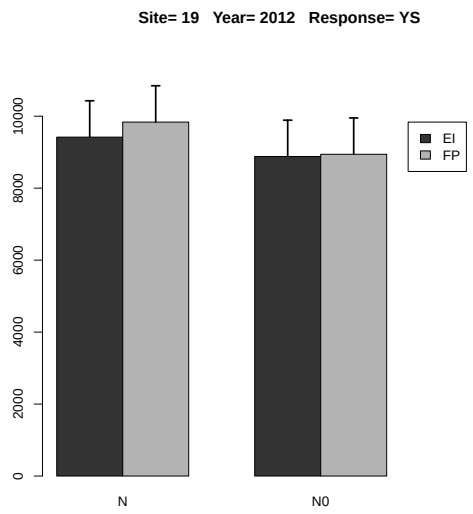

Figure 3.4: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.3 Response Variable YT

	rep	A	B	y
1	1	FP	N0	16844.490
2	2	FP	N0	17386.670
3	3	FP	N0	18040.870
4	4	FP	N0	17776.280
5	1	FP	N	25033.420
6	2	FP	N	24032.710
7	3	FP	N	21212.440
8	4	FP	N	20494.660
9	1	EI	N0	22427.110
10	2	EI	N0	22568.590
11	3	EI	N0	20282.420
12	4	EI	N0	18922.870
13	1	EI	N	21779.590
14	2	EI	N	24871.370
15	3	EI	N	23774.400
16	4	EI	N	19220.370

Table 3.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	22411.432	1168.834	5.300	19.170	19453.944	25368.922	0.000
A FP	22693.307	1168.834	5.300	19.420	19735.819	25650.797	0.000
A EI-FP	-281.875	1263.609	3.800	-0.220	-3861.327	3297.577	0.835

Table 3.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 19 in year 2012 .

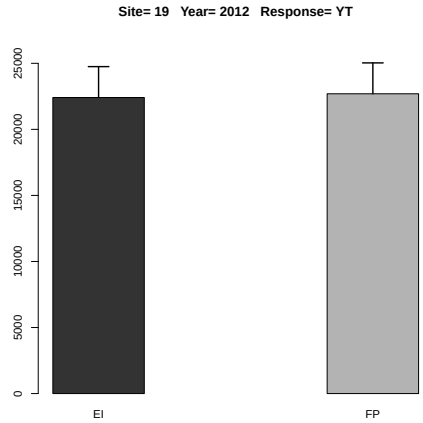

Figure 3.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10603457.127	10603457.127	4.432	5.500	0.084
B	1.000	42803194.032	42803194.032	17.891	5.500	0.007
A:B	1.000	14592743.802	14592743.802	6.100	5.500	0.052

Table 3.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21730.840	771.377	5.000	28.170	19752.822	23708.858	0.000
2	FP		20102.693	771.377	5.000	26.060	18124.675	22080.710	0.000
3		N	22552.370	771.377	5.000	29.240	20574.352	24530.388	0.000
4		N0	19281.162	771.377	5.000	25.000	17303.145	21259.180	0.000
5	EI	N	22411.432	945.553	7.800	23.700	20220.180	24602.685	0.000
6	FP	N	22693.307	945.553	7.800	24.000	20502.055	24884.560	0.000
7	EI	N0	21050.248	945.553	7.800	22.260	18858.995	23241.500	0.000
8	FP	N0	17512.077	945.553	7.800	18.520	15320.825	19703.330	0.000

Table 3.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 19 in year 2012 .

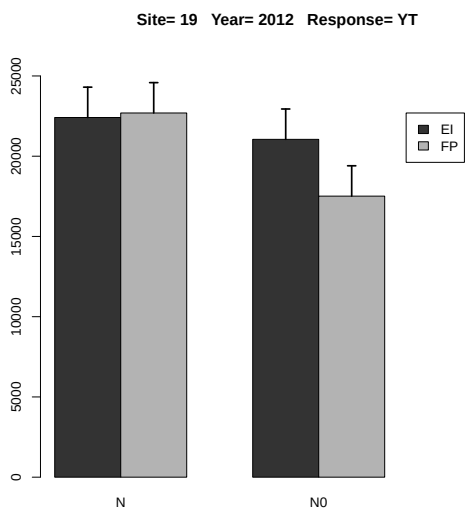

Figure 3.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1628.148	773.367	5.500	2.110	-306.704	3562.999	0.084
B N-N0	3271.207	773.367	5.500	4.230	1336.357	5206.059	0.007
A:B EI N- FP N	-281.875	1093.706	5.500	-0.260	-3018.168	2454.418	0.806
A:B EI N- EI N0	1361.185	1093.706	5.500	1.240	-1375.108	4097.477	0.264
A:B EI N- FP N0	4899.355	1093.706	5.500	4.480	2163.062	7635.648	0.005
A:B FP N- EI N0	1643.060	1093.706	5.500	1.500	-1093.233	4379.352	0.188
A:B FP N- FP N0	5181.230	1093.706	5.500	4.740	2444.938	7917.523	0.004
A:B EI N0- FP N0	3538.170	1093.706	5.500	3.240	801.878	6274.462	0.020

Table 3.15: Estimate of contrast in two-way ANOVA for variable YT at site 19 in year 2012 .

3.1.4 Response Variable HI.G

	rep	A	B	y
1	1	FP	N0	0.478
2	2	FP	N0	0.510
3	3	FP	N0	0.463
4	4	FP	N0	0.508
5	1	FP	N	0.619
6	2	FP	N	0.556
7	3	FP	N	0.537
8	4	FP	N	0.545
9	1	EI	N0	0.564
10	2	EI	N0	0.563
11	3	EI	N0	0.595
12	4	EI	N0	0.596
13	1	EI	N	0.567
14	2	EI	N	0.563
15	3	EI	N	0.579
16	4	EI	N	0.617

Table 3.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.581	0.016	6.000	36.660	0.543	0.620	0.000
A FP	0.564	0.016	6.000	35.580	0.525	0.603	0.000
A EI-FP	0.017	0.022	6.000	0.760	-0.038	0.072	0.475

Table 3.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 19 in year 2012 .

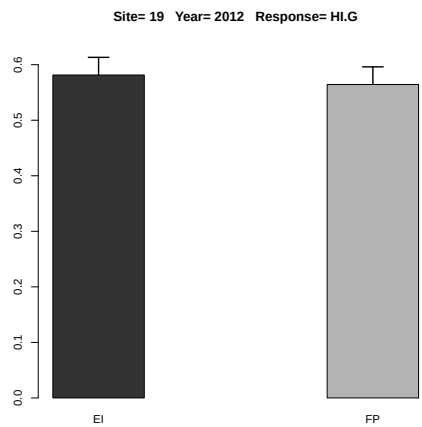

Figure 3.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.009	0.009	13.917	5.998	0.010
B	1.000	0.006	0.006	9.561	5.976	0.021
A:B	1.000	0.005	0.005	8.515	5.976	0.027

Table 3.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.580	0.010	6.000	57.280	0.556	0.605	0.000
2	FP		0.527	0.010	6.000	52.010	0.502	0.552	0.000
3		N	0.573	0.009	11.700	60.340	0.552	0.594	0.000
4		N0	0.534	0.009	11.700	56.280	0.514	0.555	0.000
5	EI	N	0.581	0.013	11.700	43.310	0.552	0.611	0.000
6	FP	N	0.564	0.013	11.700	42.030	0.535	0.594	0.000
7	EI	N0	0.579	0.013	11.700	43.140	0.550	0.609	0.000
8	FP	N0	0.489	0.013	11.700	36.450	0.460	0.519	0.000

Table 3.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.053	0.014	6.000	3.730	0.018	0.088	0.010
B N-N0	0.038	0.012	6.000	3.090	0.008	0.069	0.021
A:B EI N- FP N	0.017	0.019	11.700	0.900	-0.024	0.059	0.386
A:B EI N- EI N0	0.002	0.018	6.000	0.120	-0.041	0.045	0.906
A:B EI N- FP N0	0.092	0.019	11.700	4.840	0.050	0.134	0.000
A:B FP N- EI N0	-0.015	0.019	11.700	-0.790	-0.056	0.027	0.447
A:B FP N- FP N0	0.075	0.018	6.000	4.250	0.032	0.118	0.005
A:B EI N0- FP N0	0.090	0.019	11.700	4.730	0.048	0.131	0.000

Table 3.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 19 in year 2012 .

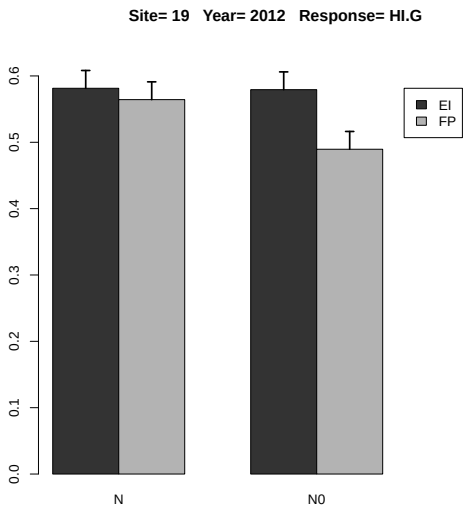

Figure 3.8: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.5 Response Variable UG.N

	rep	A	B	y
1	1	FP	N0	82.047
2	2	FP	N0	85.052
3	3	FP	N0	82.655
4	4	FP	N0	89.392
5	1	FP	N	203.133
6	2	FP	N	169.734
7	3	FP	N	145.894
8	4	FP	N	137.261
9	1	EI	N0	160.648
10	2	EI	N0	163.805
11	3	EI	N0	154.435
12	4	EI	N0	128.470
13	1	EI	N	150.622
14	2	EI	N	200.218
15	3	EI	N	185.871
16	4	EI	N	168.346

Table 3.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	176.264	12.899	6.000	13.660	144.701	207.828	0.000
A FP	164.006	12.899	6.000	12.710	132.442	195.569	0.000
A EI-FP	12.259	18.242	6.000	0.670	-32.378	56.896	0.527

Table 3.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 19 in year 2012 .

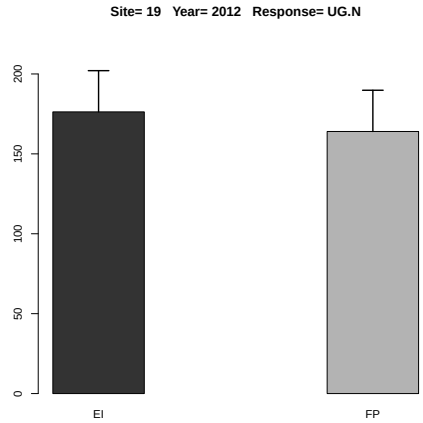

Figure 3.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5999.212	5999.212	15.518	2.998	0.029
B	1.000	10742.131	10742.131	27.786	6.000	0.002
A:B	1.000	3002.407	3002.407	7.766	6.000	0.032

Table 3.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		164.052	7.189	6.000	22.820	146.457	181.647	0.000
2	FP		124.396	7.189	6.000	17.300	106.801	141.991	0.000
3		N	170.135	7.107	7.800	23.940	153.657	186.613	0.000
4		N0	118.313	7.107	7.800	16.650	101.835	134.791	0.000
5	EI	N	176.264	10.000	12.000	17.630	154.472	198.056	0.000
6	FP	N	164.006	10.000	12.000	16.400	142.213	185.798	0.000
7	EI	N0	151.839	10.000	12.000	15.180	130.047	173.631	0.000
8	FP	N0	84.786	10.000	12.000	8.480	62.994	106.578	0.000

Table 3.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 19 in year 2012 .

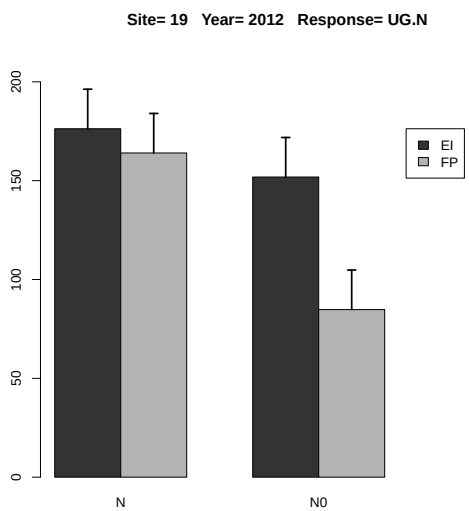

Figure 3.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	39.656	10.067	3.000	3.940	7.607	71.704	0.029
B N-N0	51.822	9.831	6.000	5.270	27.766	75.878	0.002
A:B EI N- FP N	12.259	14.071	7.900	0.870	-20.283	44.801	0.409
A:B EI N- EI N0	24.425	13.903	6.000	1.760	-9.595	58.446	0.130
A:B EI N- FP N0	91.478	14.071	7.900	6.500	58.936	124.020	0.000
A:B FP N- EI N0	12.166	14.071	7.900	0.860	-20.376	44.708	0.413
A:B FP N- FP N0	79.219	13.903	6.000	5.700	45.199	113.240	0.001
A:B EI N0- FP N0	67.053	14.071	7.900	4.770	34.511	99.595	0.002

Table 3.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 19 in year 2012 .

3.1.6 Response Variable UG.P

	rep	A	B	y
1	1	FP	N0	12.066
2	2	FP	N0	16.833
3	3	FP	N0	13.358
4	4	FP	N0	13.544
5	1	FP	N	29.462
6	2	FP	N	25.393
7	3	FP	N	22.796
8	4	FP	N	23.435
9	1	EI	N0	18.974
10	2	EI	N0	15.238
11	3	EI	N0	15.685
12	4	EI	N0	15.777
13	1	EI	N	20.988
14	2	EI	N	28.003
15	3	EI	N	20.652
16	4	EI	N	18.969

Table 3.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	22.153	1.768	5.900	12.530	17.804	26.502	0.000
A FP	25.271	1.768	5.900	14.290	20.923	29.620	0.000
A EI-FP	-3.119	2.314	3.000	-1.350	-10.483	4.245	0.271

Table 3.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 19 in year 2012 .

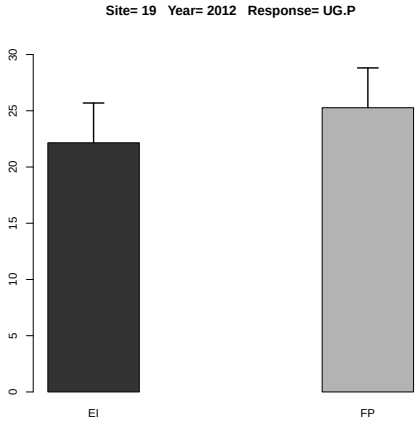

Figure 3.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.423	0.423	0.062	9.000	0.810
B	1.000	290.897	290.897	42.278	9.000	0.000
A:B	1.000	31.210	31.210	4.536	9.000	0.062

Table 3.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.286	1.071	6.900	18.010	16.744	21.828	0.000
2	FP		19.611	1.071	6.900	18.320	17.069	22.153	0.000
3		N	23.712	1.071	6.900	22.150	21.170	26.254	0.000
4		N0	15.184	1.071	6.900	14.180	12.642	17.727	0.000
5	EI	N	22.153	1.416	11.300	15.640	19.046	25.260	0.000
6	FP	N	25.271	1.416	11.300	17.840	22.164	28.379	0.000
7	EI	N0	16.418	1.416	11.300	11.590	13.311	19.526	0.000
8	FP	N0	13.950	1.416	11.300	9.850	10.843	17.058	0.000

Table 3.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.325	1.312	9.000	-0.250	-3.292	2.642	0.810
B N-N0	8.528	1.312	9.000	6.500	5.561	11.495	0.000
A:B EI N- FP N	-3.119	1.855	9.000	-1.680	-7.314	1.077	0.127
A:B EI N- EI N0	5.734	1.855	9.000	3.090	1.539	9.930	0.013
A:B EI N- FP N0	8.203	1.855	9.000	4.420	4.007	12.398	0.002
A:B FP N- EI N0	8.853	1.855	9.000	4.770	4.657	13.049	0.001
A:B FP N- FP N0	11.321	1.855	9.000	6.100	7.125	15.517	0.000
A:B EI N0- FP N0	2.468	1.855	9.000	1.330	-1.728	6.664	0.216

Table 3.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 19 in year 2012 .

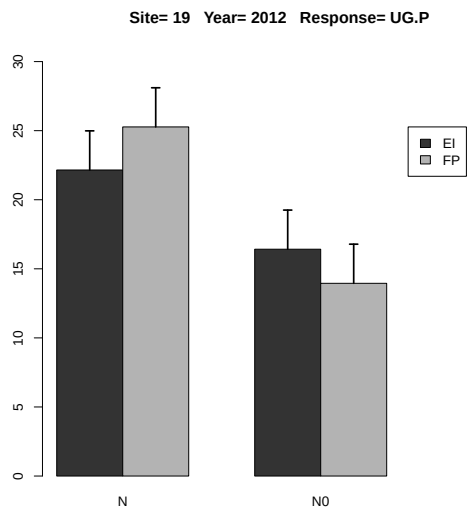

Figure 3.12: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	FP	N0	27.630
2	2	FP	N0	38.548
3	3	FP	N0	30.591
4	4	FP	N0	31.016
5	1	FP	N	67.468
6	2	FP	N	58.151
7	3	FP	N	52.203
8	4	FP	N	53.666
9	1	EI	N0	43.451
10	2	EI	N0	34.894
11	3	EI	N0	35.918
12	4	EI	N0	36.129
13	1	EI	N	48.063
14	2	EI	N	64.126
15	3	EI	N	47.294
16	4	EI	N	43.438

Table 3.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	50.730	4.049	5.900	12.530	40.772	60.689	0.000
A FP	57.872	4.049	5.900	14.290	47.913	67.830	0.000
A EI-FP	-7.141	5.299	3.000	-1.350	-24.005	9.722	0.271

Table 3.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 19 in year 2012 .

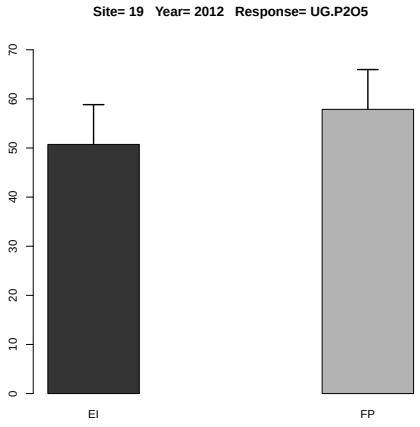

Figure 3.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.219	2.219	0.062	9.000	0.810
B	1.000	1525.494	1525.494	42.278	9.000	0.000
A:B	1.000	163.670	163.670	4.536	9.000	0.062

Table 3.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		44.164	2.452	6.900	18.010	38.343	49.986	0.000
2	FP		44.909	2.452	6.900	18.320	39.088	50.730	0.000
3		N	54.301	2.452	6.900	22.150	48.480	60.122	0.000
4		N0	34.772	2.452	6.900	14.180	28.951	40.594	0.000
5	EI	N	50.730	3.244	11.300	15.640	43.615	57.846	0.000
6	FP	N	57.872	3.244	11.300	17.840	50.757	64.987	0.000
7	EI	N0	37.598	3.244	11.300	11.590	30.483	44.713	0.000
8	FP	N0	31.946	3.244	11.300	9.850	24.831	39.062	0.000

Table 3.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 19 in year 2012 .

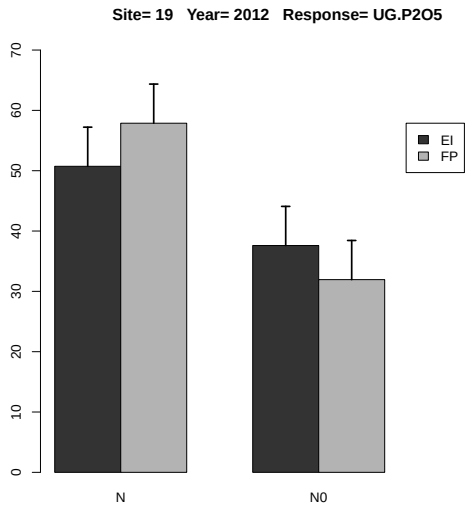

Figure 3.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.745	3.003	9.000	-0.250	-7.539	6.049	0.810
B N-N0	19.529	3.003	9.000	6.500	12.735	26.323	0.000
A:B EI N- FP N	-7.141	4.247	9.000	-1.680	-16.750	2.467	0.127
A:B EI N- EI N0	13.132	4.247	9.000	3.090	3.524	22.741	0.013
A:B EI N- FP N0	18.784	4.247	9.000	4.420	9.175	28.392	0.002
A:B FP N- EI N0	20.274	4.247	9.000	4.770	10.665	29.882	0.001
A:B FP N- FP N0	25.925	4.247	9.000	6.100	16.317	35.534	0.000
A:B EI N0- FP N0	5.652	4.247	9.000	1.330	-3.957	15.260	0.216

Table 3.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 19 in year 2012 .

3.1.8 Response Variable UG.K

	rep	A	B	y
1	1	FP	N0	19.305
2	2	FP	N0	21.263
3	3	FP	N0	17.533
4	4	FP	N0	17.156
5	1	FP	N	37.215
6	2	FP	N	32.076
7	3	FP	N	21.656
8	4	FP	N	26.783
9	1	EI	N0	15.179
10	2	EI	N0	17.777
11	3	EI	N0	15.685
12	4	EI	N0	13.523
13	1	EI	N	17.285
14	2	EI	N	21.002
15	3	EI	N	19.275
16	4	EI	N	16.598

Table 3.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	18.540	2.475	6.000	7.490	12.484	24.596	0.000
A FP	29.432	2.475	6.000	11.890	23.377	35.488	0.000
A EI-FP	-10.893	3.500	6.000	-3.110	-19.457	-2.328	0.021

Table 3.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 19 in year 2012 .

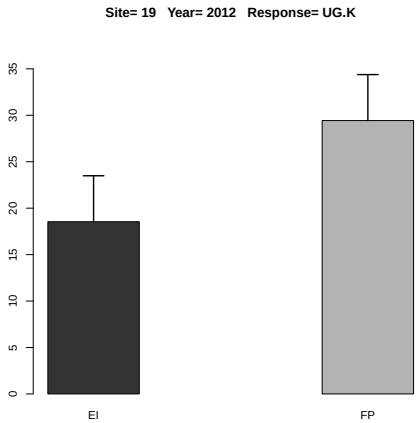

Figure 3.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	99.476	99.476	12.233	3.000	0.040
B	1.000	185.421	185.421	22.802	6.000	0.003
A:B	1.000	58.057	58.057	7.139	6.000	0.037

Table 3.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17.041	1.568	5.800	10.870	13.177	20.904	0.000
2	FP		24.123	1.568	5.800	15.380	20.260	27.987	0.000
3		N	23.986	1.394	5.200	17.210	20.440	27.533	0.000
4		N0	17.178	1.394	5.200	12.320	13.631	20.724	0.000
5	EI	N	18.540	1.864	10.000	9.940	14.386	22.694	0.000
6	FP	N	29.432	1.864	10.000	15.790	25.278	33.587	0.000
7	EI	N0	15.541	1.864	10.000	8.340	11.387	19.695	0.000
8	FP	N0	18.814	1.864	10.000	10.090	14.660	22.969	0.000

Table 3.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-7.083	2.025	3.000	-3.500	-13.528	-0.638	0.040
B N-N0	6.809	1.426	6.000	4.780	3.320	10.297	0.003
A:B EI N- FP N	-10.893	2.477	6.000	-4.400	-16.959	-4.827	0.005
A:B EI N- EI N0	2.999	2.016	6.000	1.490	-1.935	7.933	0.188
A:B EI N- FP N0	-0.274	2.477	6.000	-0.110	-6.340	5.792	0.915
A:B FP N- EI N0	13.891	2.477	6.000	5.610	7.825	19.957	0.001
A:B FP N- FP N0	10.618	2.016	6.000	5.270	5.684	15.552	0.002
A:B EI N0- FP N0	-3.273	2.477	6.000	-1.320	-9.339	2.793	0.235

Table 3.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 19 in year 2012 .

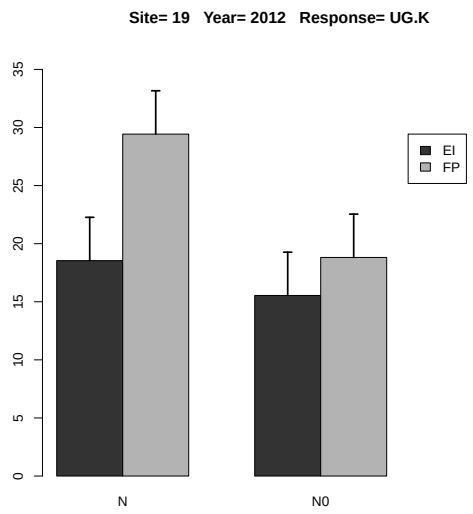

Figure 3.16: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	FP	N0	23.263
2	2	FP	N0	25.622
3	3	FP	N0	21.127
4	4	FP	N0	20.673
5	1	FP	N	44.844
6	2	FP	N	38.651
7	3	FP	N	26.096
8	4	FP	N	32.273
9	1	EI	N0	18.291
10	2	EI	N0	21.422
11	3	EI	N0	18.900
12	4	EI	N0	16.295
13	1	EI	N	20.828
14	2	EI	N	25.307
15	3	EI	N	23.227
16	4	EI	N	20.000

Table 3.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	22.340	2.982	6.000	7.490	15.043	29.638	0.000
A FP	35.466	2.982	6.000	11.890	28.169	42.763	0.000
A EI-FP	-13.126	4.218	6.000	-3.110	-23.445	-2.806	0.021

Table 3.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 19 in year 2012 .

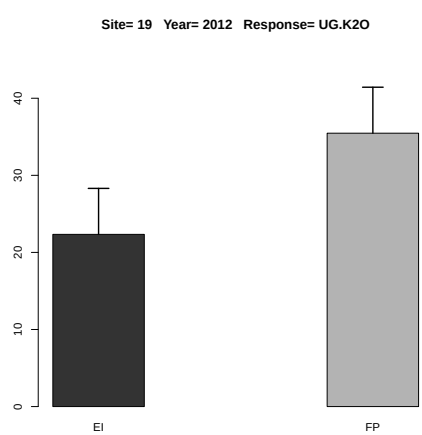

Figure 3.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	144.441	144.441	12.233	3.000	0.040
B	1.000	269.236	269.236	22.802	6.000	0.003
A:B	1.000	84.299	84.299	7.139	6.000	0.037

Table 3.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		20.534	1.890	5.800	10.870	15.878	25.189	0.000
2	FP		29.069	1.890	5.800	15.380	24.413	33.724	0.000
3		N	28.903	1.679	5.200	17.210	24.630	33.177	0.000
4		N0	20.699	1.679	5.200	12.320	16.426	24.973	0.000
5	EI	N	22.340	2.247	10.000	9.940	17.335	27.346	0.000
6	FP	N	35.466	2.247	10.000	15.790	30.460	40.472	0.000
7	EI	N0	18.727	2.247	10.000	8.340	13.721	23.733	0.000
8	FP	N0	22.671	2.247	10.000	10.090	17.665	27.677	0.000

Table 3.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 19 in year 2012 .

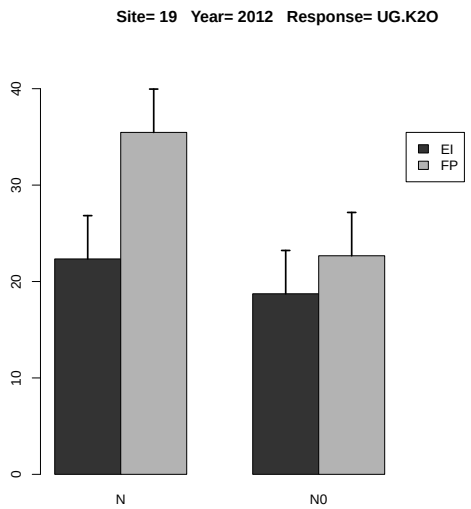

Figure 3.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-8.535	2.440	3.000	-3.500	-16.301	-0.768	0.040
B N-N0	8.204	1.718	6.000	4.780	4.000	12.408	0.003
A:B EI N- FP N	-13.126	2.984	6.000	-4.400	-20.435	-5.816	0.005
A:B EI N- EI N0	3.614	2.430	6.000	1.490	-2.332	9.559	0.188
A:B EI N- FP N0	-0.331	2.984	6.000	-0.110	-7.640	6.979	0.915
A:B FP N- EI N0	16.739	2.984	6.000	5.610	9.430	24.049	0.001
A:B FP N- FP N0	12.795	2.430	6.000	5.270	6.849	18.741	0.002
A:B EI N0- FP N0	-3.944	2.984	6.000	-1.320	-11.254	3.365	0.235

Table 3.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 19 in year 2012 .

3.1.10 Response Variable UG.Ca

	rep	A	B	y
1	1	FP	N0	0.000
2	2	FP	N0	0.000
3	3	FP	N0	0.000
4	4	FP	N0	0.000
5	1	FP	N	0.000
6	2	FP	N	0.000
7	3	FP	N	0.000
8	4	FP	N	0.000
9	1	EI	N0	0.000
10	2	EI	N0	0.000
11	3	EI	N0	0.000
12	4	EI	N0	1.127
13	1	EI	N	0.000
14	2	EI	N	0.000
15	3	EI	N	1.377
16	4	EI	N	0.000

Table 3.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.344	0.243	6.000	1.410	-0.251	0.940	0.207
A FP	0.000	0.243	6.000	0.000	-0.596	0.596	1.000
A EI-FP	0.344	0.344	3.600	1.000	-0.655	1.343	0.380

Table 3.47: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Ca at site 19 in year 2012 .

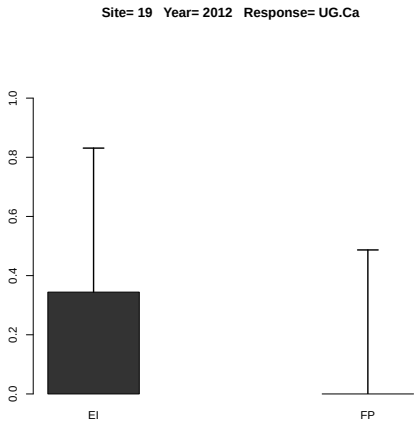

Figure 3.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value
A	1	0.392	0.392	1.980
B	1	0.004	0.004	0.020
A:B	1	0.004	0.004	0.020

Table 3.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.313	0.157	12.000	1.990	-0.030	0.656	0.070
2	FP		0.000	0.157	12.000	0.000	-0.343	0.343	1.000
3		N	0.172	0.157	12.000	1.090	-0.171	0.515	0.295
4		N0	0.141	0.157	12.000	0.900	-0.202	0.483	0.388
5	EI	N	0.344	0.222	12.000	1.550	-0.140	0.829	0.148
6	FP	N	0.000	0.222	12.000	0.000	-0.485	0.485	1.000
7	EI	N0	0.282	0.222	12.000	1.270	-0.203	0.766	0.229
8	FP	N0	0.000	0.222	12.000	0.000	-0.485	0.485	1.000

Table 3.49: Estimate of treatment means in tow-way ANOVA for variable UG.Ca at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.313	0.222	12.000	1.410	-0.172	0.798	0.185
B N-N0	0.031	0.222	12.000	0.140	-0.453	0.516	0.891
A:B EI N- FP N	0.344	0.314	12.000	1.090	-0.341	1.030	0.295
A:B EI N- EI N0	0.062	0.314	12.000	0.200	-0.623	0.748	0.846
A:B EI N- FP N0	0.344	0.314	12.000	1.090	-0.341	1.030	0.295
A:B FP N- EI N0	-0.282	0.314	12.000	-0.900	-0.967	0.404	0.388
A:B FP N- FP N0	0.000	0.314	12.000	0.000	-0.685	0.685	1.000
A:B EI N0- FP N0	0.282	0.314	12.000	0.900	-0.404	0.967	0.388

Table 3.50: Estimate of contrast in two-way ANOVA for variable UG.Ca at site 19 in year 2012 .

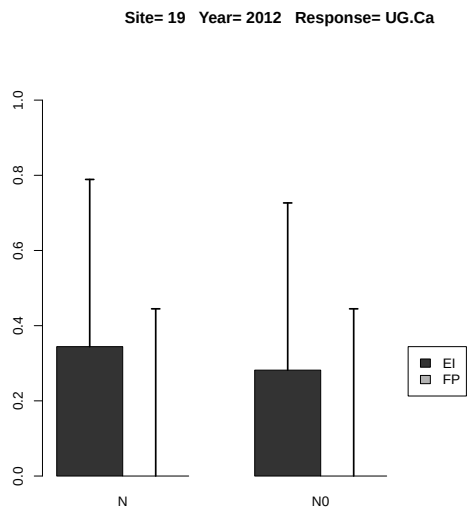

Figure 3.20: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.11 Response Variable UG.Mg

	rep	A	B	y
1	1	FP	N0	6.435
2	2	FP	N0	5.316
3	3	FP	N0	5.844
4	4	FP	N0	6.321
5	1	FP	N	10.854
6	2	FP	N	10.692
7	3	FP	N	10.258
8	4	FP	N	8.928
9	1	EI	N0	10.120
10	2	EI	N0	8.889
11	3	EI	N0	9.652
12	4	EI	N0	10.142
13	1	EI	N	9.877
14	2	EI	N	11.201
15	3	EI	N	9.638
16	4	EI	N	8.299

Table 3.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	9.754	0.229	42.611	0.000
A FP	10.183	0.229	44.487	0.000
A EI-FP	-0.429	0.324	-1.327	0.463

Table 3.52: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 19 in year 2012 .

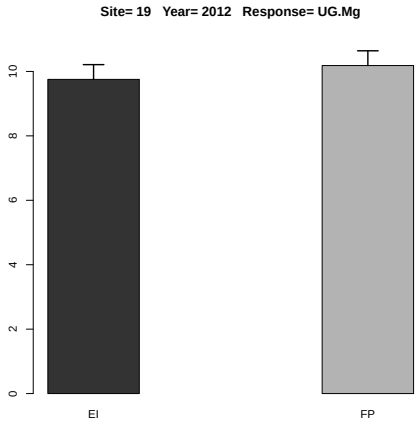

Figure 3.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10.839	10.839	15.584	11.999	0.002
B	1.000	18.122	18.122	26.054	11.999	0.000
A:B	1.000	17.232	17.232	24.775	11.999	0.000

Table 3.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.727	0.295	12.000	32.990	9.085	10.370	0.000
2	FP		8.081	0.295	12.000	27.410	7.439	8.723	0.000
3		N	9.968	0.295	12.000	33.810	9.326	10.611	0.000
4		N0	7.840	0.295	12.000	26.590	7.197	8.482	0.000
5	EI	N	9.754	0.417	12.000	23.390	8.845	10.662	0.000
6	FP	N	10.183	0.417	12.000	24.420	9.274	11.092	0.000
7	EI	N0	9.701	0.417	12.000	23.260	8.792	10.609	0.000
8	FP	N0	5.979	0.417	12.000	14.340	5.070	6.888	0.000

Table 3.54: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 19 in year 2012 .

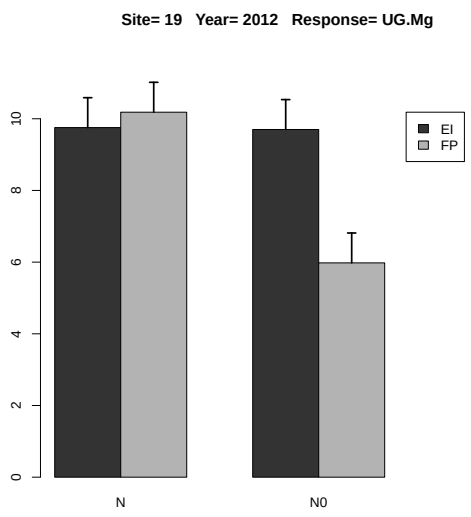

Figure 3.22: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.646	0.417	12.000	3.950	0.738	2.555	0.002
B N-N0	2.128	0.417	12.000	5.100	1.220	3.037	0.000
A:B EI N- FP N	-0.429	0.590	12.000	-0.730	-1.714	0.856	0.480
A:B EI N- EI N0	0.053	0.590	12.000	0.090	-1.232	1.338	0.930
A:B EI N- FP N0	3.775	0.590	12.000	6.400	2.490	5.060	0.000
A:B FP N- EI N0	0.482	0.590	12.000	0.820	-0.803	1.767	0.429
A:B FP N- FP N0	4.204	0.590	12.000	7.130	2.919	5.489	0.000
A:B EI N0- FP N0	3.722	0.590	12.000	6.310	2.437	5.007	0.000

Table 3.55: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 19 in year 2012 .

3.1.12 Response Variable UG.S

	rep	A	B	y
1	1	FP	N0	4.826
2	2	FP	N0	4.430
3	3	FP	N0	4.174
4	4	FP	N0	3.612
5	1	FP	N	6.203
6	2	FP	N	5.346
7	3	FP	N	3.419
8	4	FP	N	4.464
9	1	EI	N0	7.590
10	2	EI	N0	6.349
11	3	EI	N0	7.239
12	4	EI	N0	5.635
13	1	EI	N	7.408
14	2	EI	N	9.801
15	3	EI	N	6.884
16	4	EI	N	7.113

Table 3.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	7.801	0.486	16.058	0.001
A FP	4.858	0.486	9.999	0.004
A EI-FP	2.944	0.687	4.284	0.044

Table 3.57: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 19 in year 2012 .

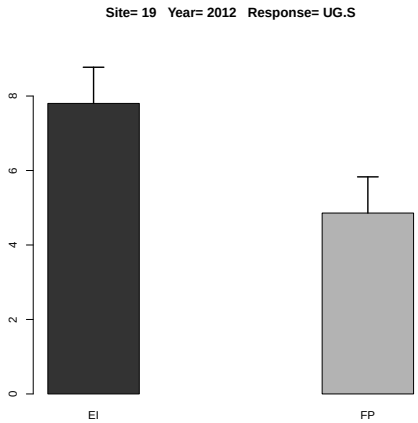

Figure 3.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	29.010	29.010	36.165	8.999	0.000
B	1.000	2.875	2.875	3.585	8.999	0.091
A:B	1.000	0.251	0.251	0.313	8.999	0.590

Table 3.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.252	0.409	5.800	17.720	6.240	8.264	0.000
2	FP		4.559	0.409	5.800	11.140	3.547	5.571	0.000
3		N	6.330	0.409	5.800	15.460	5.318	7.342	0.000
4		N0	5.482	0.409	5.800	13.390	4.470	6.494	0.000
5	EI	N	7.801	0.517	10.100	15.070	6.650	8.953	0.000
6	FP	N	4.858	0.517	10.100	9.390	3.706	6.010	0.000
7	EI	N0	6.703	0.517	10.100	12.950	5.551	7.855	0.000
8	FP	N0	4.261	0.517	10.100	8.230	3.109	5.412	0.000

Table 3.59: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.693	0.448	9.000	6.010	1.680	3.706	0.000
B N-N0	0.848	0.448	9.000	1.890	-0.165	1.861	0.091
A:B EI N- FP N	2.944	0.633	9.000	4.650	1.511	4.376	0.001
A:B EI N- EI N0	1.098	0.633	9.000	1.730	-0.334	2.531	0.117
A:B EI N- FP N0	3.541	0.633	9.000	5.590	2.108	4.973	0.000
A:B FP N- EI N0	-1.845	0.633	9.000	-2.910	-3.278	-0.412	0.017
A:B FP N- FP N0	0.597	0.633	9.000	0.940	-0.835	2.030	0.370
A:B EI N0- FP N0	2.442	0.633	9.000	3.860	1.010	3.875	0.004

Table 3.60: Estimate of contrast in two-way ANOVA for variable UG.S at site 19 in year 2012 .

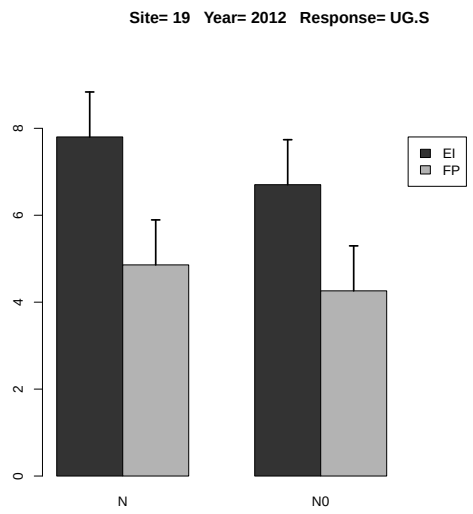

Figure 3.24: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.13 Response Variable US.N

	rep	A	B	y
1	1	FP	N0	49.911
2	2	FP	N0	38.611
3	3	FP	N0	44.536
4	4	FP	N0	39.283
5	1	FP	N	46.034
6	2	FP	N	56.345
7	3	FP	N	58.843
8	4	FP	N	42.176
9	1	EI	N0	49.533
10	2	EI	N0	51.327
11	3	EI	N0	44.075
12	4	EI	N0	39.419
13	1	EI	N	43.286
14	2	EI	N	55.872
15	3	EI	N	53.579
16	4	EI	N	44.549

Table 3.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	49.322	1.151	42.862	0.000
A FP	50.850	1.151	44.190	0.000
A EI-FP	-1.528	1.627	-0.939	0.646

Table 3.62: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 19 in year 2012 .

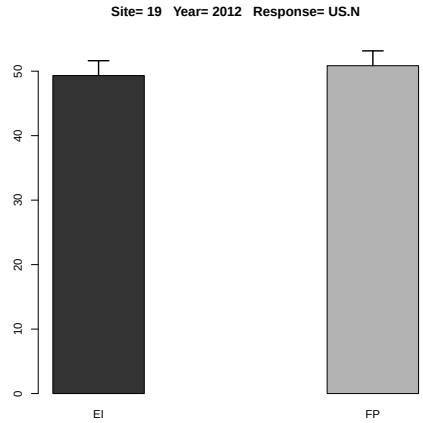

Figure 3.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.176	2.176	0.074	9.000	0.792
B	1.000	120.946	120.946	4.100	9.000	0.074
A:B	1.000	20.532	20.532	0.696	9.000	0.426

Table 3.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		47.705	2.528	5.600	18.870	41.416	53.995	0.000
2	FP		46.967	2.528	5.600	18.580	40.678	53.257	0.000
3		N	50.086	2.528	5.600	19.810	43.796	56.375	0.000
4		N0	44.587	2.528	5.600	17.640	38.297	50.876	0.000
5	EI	N	49.322	3.175	9.900	15.540	42.235	56.408	0.000
6	FP	N	50.850	3.175	9.900	16.020	43.763	57.936	0.000
7	EI	N0	46.089	3.175	9.900	14.520	39.002	53.175	0.000
8	FP	N0	43.085	3.175	9.900	13.570	35.999	50.172	0.000

Table 3.64: Estimate of treatment means in tow-way ANOVA for variable US.N at site 19 in year 2012 .

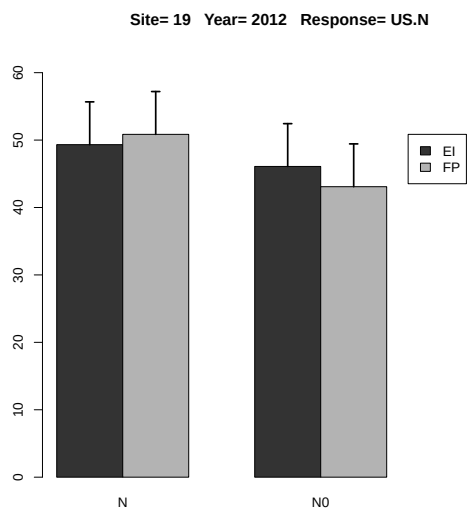

Figure 3.26: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.738	2.716	9.000	0.270	-5.405	6.881	0.792
B N-N0	5.499	2.716	9.000	2.020	-0.644	11.642	0.073
A:B EI N- FP N	-1.528	3.840	9.000	-0.400	-10.216	7.160	0.700
A:B EI N- EI N0	3.233	3.840	9.000	0.840	-5.455	11.921	0.422
A:B EI N- FP N0	6.236	3.840	9.000	1.620	-2.451	14.924	0.139
A:B FP N- EI N0	4.761	3.840	9.000	1.240	-3.926	13.449	0.246
A:B FP N- FP N0	7.764	3.840	9.000	2.020	-0.923	16.452	0.074
A:B EI N0- FP N0	3.003	3.840	9.000	0.780	-5.684	11.691	0.454

Table 3.65: Estimate of contrast in two-way ANOVA for variable US.N at site 19 in year 2012 .

3.1.14 Response Variable US.P

	rep	A	B	y
1	1	FP	N0	10.492
2	2	FP	N0	9.292
3	3	FP	N0	9.530
4	4	FP	N0	8.537
5	1	FP	N	3.922
6	2	FP	N	3.911
7	3	FP	N	4.482
8	4	FP	N	4.477
9	1	EI	N0	6.056
10	2	EI	N0	5.222
11	3	EI	N0	4.853
12	4	EI	N0	5.115
13	1	EI	N	4.191
14	2	EI	N	4.478
15	3	EI	N	6.096
16	4	EI	N	4.168

Table 3.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	4.733	0.285	16.614	0.001
A FP	4.198	0.285	14.735	0.002
A EI-FP	0.535	0.403	1.329	0.462

Table 3.67: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 19 in year 2012 .

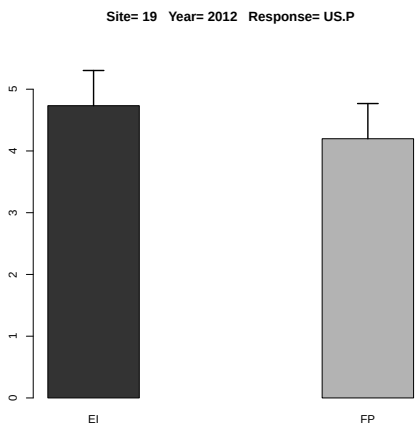

Figure 3.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13.074	13.074	27.929	11.998	0.000
B	1.000	34.136	34.136	72.922	11.998	0.000
A:B	1.000	21.962	21.962	46.916	11.998	0.000

Table 3.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5.022	0.242	12.000	20.760	4.495	5.549	0.000
2	FP		6.830	0.242	12.000	28.240	6.303	7.357	0.000
3		N	4.466	0.242	12.000	18.460	3.939	4.993	0.000
4		N0	7.387	0.242	12.000	30.540	6.860	7.914	0.000
5	EI	N	4.733	0.342	12.000	13.840	3.988	5.479	0.000
6	FP	N	4.198	0.342	12.000	12.270	3.453	4.943	0.000
7	EI	N0	5.311	0.342	12.000	15.530	4.566	6.057	0.000
8	FP	N0	9.463	0.342	12.000	27.660	8.717	10.208	0.000

Table 3.69: Estimate of treatment means in tow-way ANOVA for variable US.P at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.808	0.342	12.000	-5.280	-2.553	-1.062	0.000
B N-N0	-2.921	0.342	12.000	-8.540	-3.667	-2.176	0.000
A:B EI N- FP N	0.535	0.484	12.000	1.110	-0.519	1.589	0.290
A:B EI N- EI N0	-0.578	0.484	12.000	-1.190	-1.632	0.476	0.255
A:B EI N- FP N0	-4.729	0.484	12.000	-9.780	-5.783	-3.675	0.000
A:B FP N- EI N0	-1.113	0.484	12.000	-2.300	-2.167	-0.059	0.040
A:B FP N- FP N0	-5.264	0.484	12.000	-10.880	-6.319	-4.210	0.000
A:B EI N0- FP N0	-4.151	0.484	12.000	-8.580	-5.205	-3.097	0.000

Table 3.70: Estimate of contrast in two-way ANOVA for variable US.P at site 19 in year 2012 .

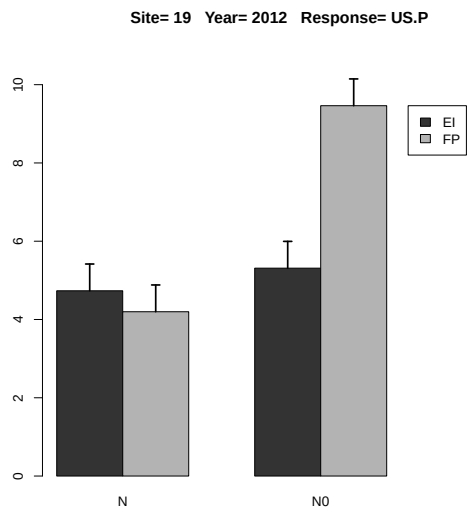

Figure 3.28: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.15 Response Variable US.P2O5

	rep	A	B	y
1	1	FP	N0	13.183
2	2	FP	N0	11.686
3	3	FP	N0	11.910
4	4	FP	N0	10.937
5	1	FP	N	5.668
6	2	FP	N	6.621
7	3	FP	N	7.128
8	4	FP	N	7.287
9	1	EI	N0	8.639
10	2	EI	N0	7.686
11	3	EI	N0	6.772
12	4	EI	N0	7.699
13	1	EI	N	6.605
14	2	EI	N	6.722
15	3	EI	N	8.682
16	4	EI	N	6.531

Table 3.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	7.135	0.355	20.078	0.001
A FP	6.676	0.355	18.787	0.000
A EI-FP	0.459	0.503	0.913	0.660

Table 3.72: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 19 in year 2012 .

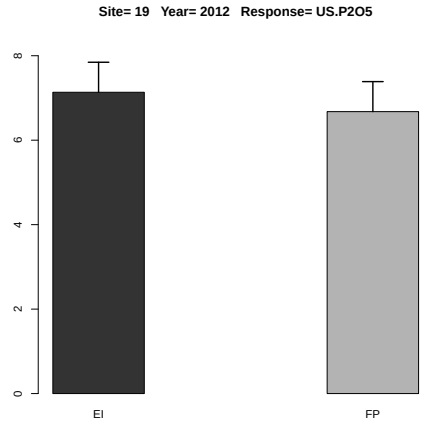

Figure 3.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	14.223	14.223	18.624	11.999	0.001
B	1.000	33.837	33.837	44.308	11.999	0.000
A:B	1.000	21.984	21.984	28.786	11.999	0.000

Table 3.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.417	0.309	12.000	24.010	6.744	8.090	0.000
2	FP		9.303	0.309	12.000	30.110	8.629	9.976	0.000
3		N	6.905	0.309	12.000	22.350	6.232	7.579	0.000
4		N0	9.814	0.309	12.000	31.760	9.141	10.487	0.000
5	EI	N	7.135	0.437	12.000	16.330	6.183	8.087	0.000
6	FP	N	6.676	0.437	12.000	15.280	5.724	7.628	0.000
7	EI	N0	7.699	0.437	12.000	17.620	6.747	8.651	0.000
8	FP	N0	11.929	0.437	12.000	27.300	10.977	12.881	0.000

Table 3.74: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 19 in year 2012 .

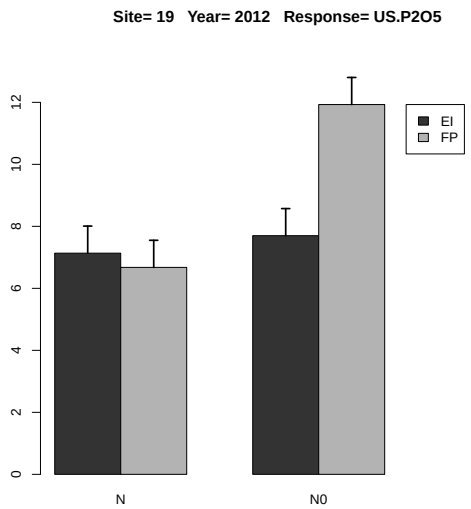

Figure 3.30: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.886	0.437	12.000	-4.320	-2.838	-0.934	0.001
B N-N0	-2.909	0.437	12.000	-6.660	-3.861	-1.956	0.000
A:B EI N- FP N	0.459	0.618	12.000	0.740	-0.888	1.805	0.472
A:B EI N- EI N0	-0.564	0.618	12.000	-0.910	-1.911	0.782	0.379
A:B EI N- FP N0	-4.794	0.618	12.000	-7.760	-6.141	-3.448	0.000
A:B FP N- EI N0	-1.023	0.618	12.000	-1.660	-2.369	0.324	0.124
A:B FP N- FP N0	-5.253	0.618	12.000	-8.500	-6.599	-3.906	0.000
A:B EI N0- FP N0	-4.230	0.618	12.000	-6.850	-5.576	-2.884	0.000

Table 3.75: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 19 in year 2012 .

3.1.16 Response Variable US.K

	rep	A	B	y
1	1	FP	N0	98.488
2	2	FP	N0	111.173
3	3	FP	N0	153.560
4	4	FP	N0	107.116
5	1	FP	N	166.191
6	2	FP	N	160.669
7	3	FP	N	132.891
8	4	FP	N	146.411
9	1	EI	N0	96.408
10	2	EI	N0	102.399
11	3	EI	N0	100.330
12	4	EI	N0	71.790
13	1	EI	N	122.235
14	2	EI	N	154.011
15	3	EI	N	109.764
16	4	EI	N	78.463

Table 3.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	116.118	9.375	12.386	0.002
A FP	151.541	9.375	16.165	0.001
A EI-FP	-35.422	13.258	-2.672	0.141

Table 3.77: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 19 in year 2012 .

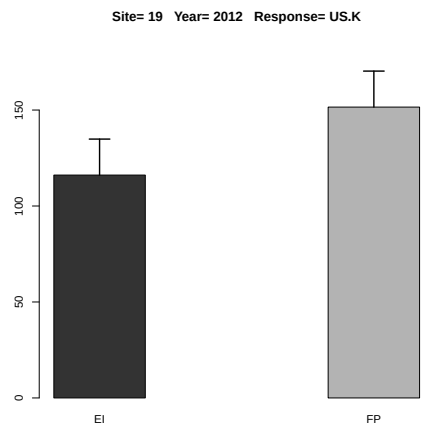

Figure 3.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3633.106	3633.106	8.352	9.000	0.018
B	1.000	3288.251	3288.251	7.559	9.000	0.022
A:B	1.000	111.719	111.719	0.257	9.000	0.624

Table 3.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		104.425	8.424	7.000	12.400	84.495	124.355	0.000
2	FP		134.562	8.424	7.000	15.970	114.633	154.492	0.000
3		N	133.829	8.424	7.000	15.890	113.900	153.759	0.000
4		N0	105.158	8.424	7.000	12.480	85.228	125.088	0.000
5	EI	N	116.118	11.196	11.400	10.370	91.582	140.655	0.000
6	FP	N	151.541	11.196	11.400	13.540	127.004	176.077	0.000
7	EI	N0	92.731	11.196	11.400	8.280	68.195	117.268	0.000
8	FP	N0	117.584	11.196	11.400	10.500	93.048	142.121	0.000

Table 3.79: Estimate of treatment means in tow-way ANOVA for variable US.K at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-30.138	10.428	9.000	-2.890	-53.728	-6.547	0.018
B N-N0	28.672	10.428	9.000	2.750	5.081	52.262	0.022
A:B EI N- FP N	-35.422	14.748	9.000	-2.400	-68.785	-2.060	0.040
A:B EI N- EI N0	23.387	14.748	9.000	1.590	-9.975	56.749	0.147
A:B EI N- FP N0	-1.466	14.748	9.000	-0.100	-34.828	31.896	0.923
A:B FP N- EI N0	58.809	14.748	9.000	3.990	25.447	92.171	0.003
A:B FP N- FP N0	33.956	14.748	9.000	2.300	0.594	67.319	0.047
A:B EI N0- FP N0	-24.853	14.748	9.000	-1.690	-58.215	8.509	0.126

Table 3.80: Estimate of contrast in two-way ANOVA for variable US.K at site 19 in year 2012 .

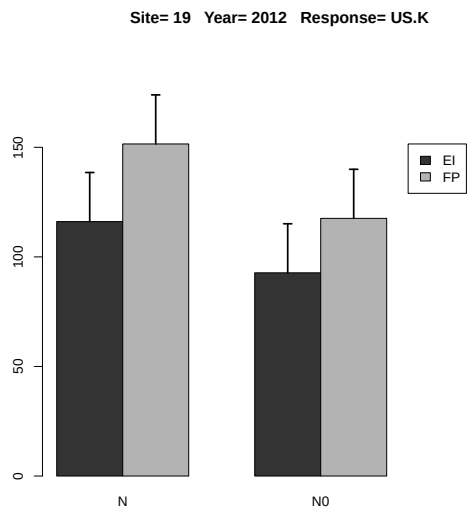

Figure 3.32: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.17 Response Variable US.K2O

	rep	A	B	y
1	1	FP	N0	98.939
2	2	FP	N0	111.711
3	3	FP	N0	154.056
4	4	FP	N0	107.634
5	1	FP	N	166.568
6	2	FP	N	161.133
7	3	FP	N	133.382
8	4	FP	N	147.064
9	1	EI	N0	96.886
10	2	EI	N0	102.856
11	3	EI	N0	100.757
12	4	EI	N0	72.347
13	1	EI	N	122.723
14	2	EI	N	154.510
15	3	EI	N	110.287
16	4	EI	N	78.870

Table 3.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	116.597	9.413	12.387	0.002
A FP	152.037	9.413	16.152	0.001
A EI-FP	-35.439	13.311	-2.662	0.141

Table 3.82: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 19 in year 2012 .

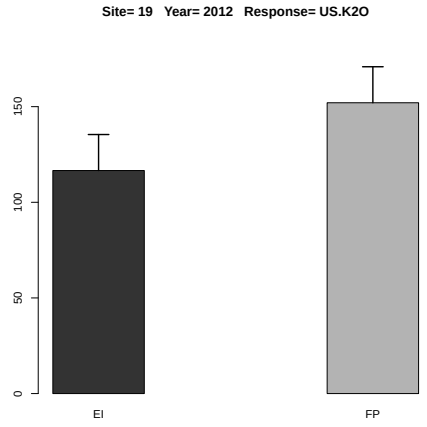

Figure 3.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3637.605	3637.605	8.353	9.000	0.018
B	1.000	3287.623	3287.623	7.549	9.000	0.023
A:B	1.000	111.634	111.634	0.256	9.000	0.625

Table 3.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		104.904	8.417	7.000	12.460	85.001	124.808	0.000
2	FP		135.061	8.417	7.000	16.050	115.158	154.964	0.000
3		N	134.317	8.417	7.000	15.960	114.414	154.220	0.000
4		N0	105.648	8.417	7.000	12.550	85.745	125.551	0.000
5	EI	N	116.597	11.193	11.400	10.420	92.069	141.125	0.000
6	FP	N	152.037	11.193	11.400	13.580	127.508	176.565	0.000
7	EI	N0	93.211	11.193	11.400	8.330	68.683	117.740	0.000
8	FP	N0	118.085	11.193	11.400	10.550	93.557	142.613	0.000

Table 3.84: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 19 in year 2012 .

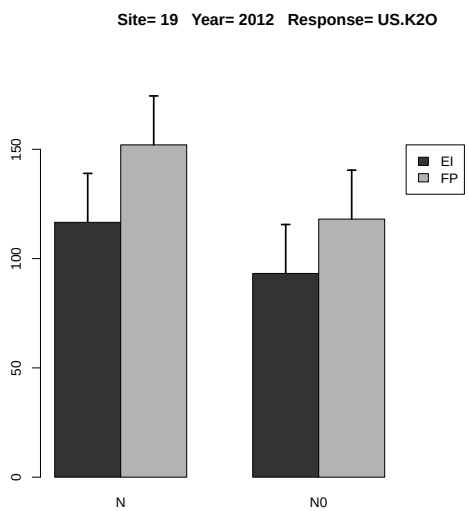

Figure 3.34: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-30.156	10.434	9.000	-2.890	-53.761	-6.552	0.018
B N-N0	28.669	10.434	9.000	2.750	5.065	52.273	0.023
A:B EI N- FP N	-35.439	14.756	9.000	-2.400	-68.820	-2.058	0.040
A:B EI N- EI N0	23.386	14.756	9.000	1.580	-9.995	56.767	0.147
A:B EI N- FP N0	-1.487	14.756	9.000	-0.100	-34.869	31.894	0.922
A:B FP N- EI N0	58.825	14.756	9.000	3.990	25.444	92.207	0.003
A:B FP N- FP N0	33.952	14.756	9.000	2.300	0.570	67.333	0.047
A:B EI N0- FP N0	-24.873	14.756	9.000	-1.690	-58.255	8.508	0.126

Table 3.85: Estimate of contrast in two-way ANOVA for variable US.K2O at site 19 in year 2012 .

3.1.18 Response Variable US.Ca

	rep	A	B	y
1	1	FP	N0	14.635
2	2	FP	N0	12.749
3	3	FP	N0	14.631
4	4	FP	N0	13.485
5	1	FP	N	18.073
6	2	FP	N	18.104
7	3	FP	N	15.571
8	4	FP	N	15.486
9	1	EI	N0	18.819
10	2	EI	N0	16.716
11	3	EI	N0	15.626
12	4	EI	N0	11.966
13	1	EI	N	18.728
14	2	EI	N	22.089
15	3	EI	N	18.187
16	4	EI	N	15.332

Table 3.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Ca

	Estimate	S.E.	t-value	p-value
A EI	18.584	0.664	28.005	0.000
A FP	16.808	0.664	25.330	0.000
A EI-FP	1.775	0.938	1.892	0.276

Table 3.87: Estimate of treatment means and contrast in one-way ANOVA for variable US.Ca at site 19 in year 2012 .

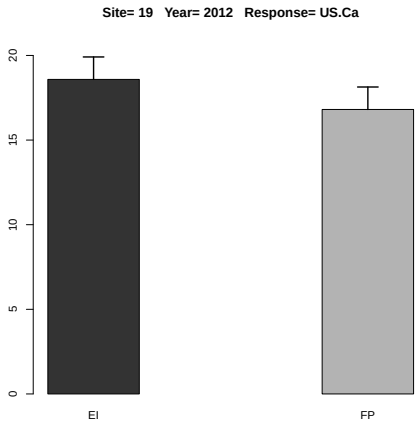

Figure 3.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	7.392	7.392	3.371	3.000	0.164
B	1.000	32.895	32.895	15.002	6.000	0.008
A:B	1.000	0.017	0.017	0.008	6.000	0.932

Table 3.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17.183	0.954	5.000	18.010	14.730	19.636	0.000
2	FP		15.342	0.954	5.000	16.080	12.889	17.795	0.000
3		N	17.696	0.892	4.300	19.840	15.283	20.110	0.000
4		N0	14.829	0.892	4.300	16.620	12.415	17.242	0.000
5	EI	N	18.584	1.088	7.900	17.080	16.067	21.101	0.000
6	FP	N	16.808	1.088	7.900	15.450	14.291	19.326	0.000
7	EI	N0	15.782	1.088	7.900	14.500	13.265	18.299	0.000
8	FP	N0	13.875	1.088	7.900	12.750	11.358	16.392	0.000

Table 3.89: Estimate of treatment means in tow-way ANOVA for variable US.Ca at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.841	1.003	3.000	1.840	-1.350	5.032	0.164
B N-N0	2.868	0.740	6.000	3.870	1.056	4.679	0.008
A:B EI N- FP N	1.775	1.246	6.200	1.420	-1.247	4.798	0.202
A:B EI N- EI N0	2.802	1.047	6.000	2.680	0.240	5.364	0.037
A:B EI N- FP N0	4.709	1.246	6.200	3.780	1.687	7.731	0.009
A:B FP N- EI N0	1.027	1.246	6.200	0.820	-1.996	4.049	0.440
A:B FP N- FP N0	2.933	1.047	6.000	2.800	0.371	5.495	0.031
A:B EI N0- FP N0	1.907	1.246	6.200	1.530	-1.115	4.929	0.175

Table 3.90: Estimate of contrast in two-way ANOVA for variable US.Ca at site 19 in year 2012 .

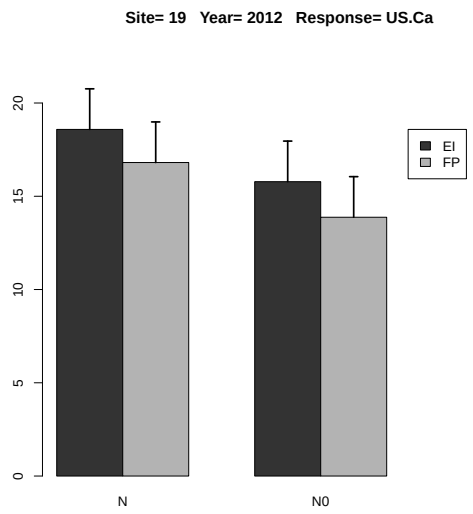

Figure 3.36: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.19 Response Variable US.Mg

	rep	A	B	y
1	1	FP	N0	17.391
2	2	FP	N0	14.563
3	3	FP	N0	16.685
4	4	FP	N0	16.851
5	1	FP	N	13.986
6	2	FP	N	12.252
7	3	FP	N	13.652
8	4	FP	N	12.758
9	1	EI	N0	18.342
10	2	EI	N0	17.035
11	3	EI	N0	14.727
12	4	EI	N0	13.640
13	1	EI	N	14.599
14	2	EI	N	16.218
15	3	EI	N	16.279
16	4	EI	N	11.550

Table 3.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	14.662	0.803	18.263	0.000
A FP	13.162	0.803	16.395	0.001
A EI-FP	1.500	1.135	1.321	0.465

Table 3.92: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 19 in year 2012 .

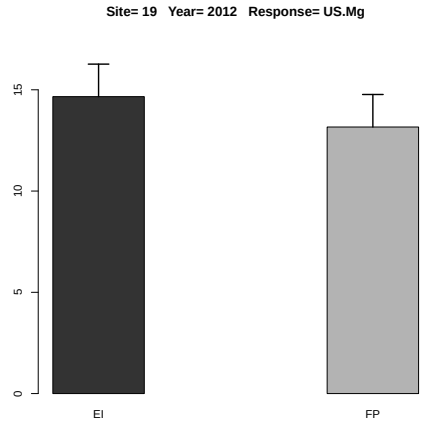

Figure 3.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.351	0.351	0.254	5.999	0.632
B	1.000	20.112	20.112	14.526	5.999	0.009
A:B	1.000	3.750	3.750	2.708	5.999	0.151

Table 3.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.299	0.746	6.000	20.510	13.474	17.123	0.000
2	FP		14.767	0.746	6.000	19.800	12.943	16.592	0.000
3		N	13.912	0.604	9.400	23.040	12.555	15.269	0.000
4		N0	16.154	0.604	9.400	26.750	14.797	17.511	0.000
5	EI	N	14.662	0.854	9.400	17.170	12.742	16.581	0.000
6	FP	N	13.162	0.854	9.400	15.410	11.243	15.081	0.000
7	EI	N0	15.936	0.854	9.400	18.660	14.017	17.855	0.000
8	FP	N0	16.373	0.854	9.400	19.170	14.454	18.292	0.000

Table 3.94: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 19 in year 2012 .

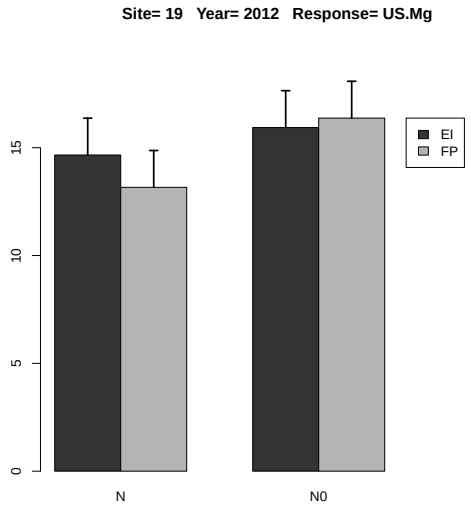

Figure 3.38: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.531	1.055	6.000	0.500	-2.049	3.112	0.632
B N-N0	-2.242	0.588	6.000	-3.810	-3.682	-0.803	0.009
A:B EI N- FP N	1.500	1.208	9.400	1.240	-1.214	4.214	0.244
A:B EI N- EI N0	-1.274	0.832	6.000	-1.530	-3.310	0.762	0.177
A:B EI N- FP N0	-1.711	1.208	9.400	-1.420	-4.425	1.003	0.189
A:B FP N- EI N0	-2.774	1.208	9.400	-2.300	-5.488	-0.059	0.046
A:B FP N- FP N0	-3.211	0.832	6.000	-3.860	-5.247	-1.175	0.008
A:B EI N0- FP N0	-0.437	1.208	9.400	-0.360	-3.151	2.277	0.726

Table 3.95: Estimate of contrast in two-way ANOVA for variable US.Mg at site 19 in year 2012 .

3.1.20 Response Variable US.S

	rep	A	B	y
1	1	FP	N0	4.400
2	2	FP	N0	4.898
3	3	FP	N0	3.992
4	4	FP	N0	1.273
5	1	FP	N	3.811
6	2	FP	N	3.200
7	3	FP	N	5.547
8	4	FP	N	0.670
9	1	EI	N0	3.911
10	2	EI	N0	3.948
11	3	EI	N0	4.633
12	4	EI	N0	1.195
13	1	EI	N	5.490
14	2	EI	N	4.522
15	3	EI	N	4.821
16	4	EI	N	1.347

Table 3.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	4.045	0.375	10.789	0.004
A FP	3.307	0.375	8.821	0.006
A EI-FP	0.738	0.530	1.392	0.436

Table 3.97: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 19 in year 2012 .

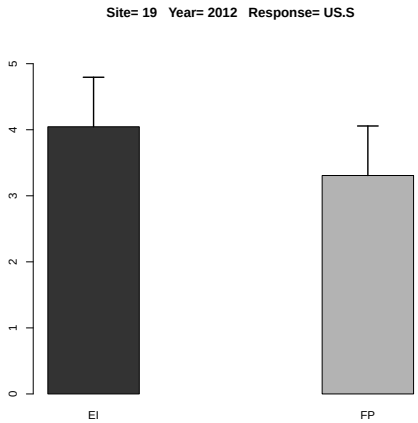

Figure 3.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.269	0.269	0.662	8.999	0.437
B	1.000	0.084	0.084	0.206	8.999	0.660
A:B	1.000	0.916	0.916	2.255	8.999	0.167

Table 3.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.733	0.852	3.200	4.380	1.125	6.342	0.019
2	FP		3.474	0.852	3.200	4.080	0.865	6.083	0.023
3		N	3.676	0.852	3.200	4.320	1.067	6.285	0.020
4		N0	3.531	0.852	3.200	4.150	0.923	6.140	0.022
5	EI	N	4.045	0.881	3.700	4.590	1.511	6.579	0.012
6	FP	N	3.307	0.881	3.700	3.750	0.773	5.841	0.023
7	EI	N0	3.422	0.881	3.700	3.880	0.887	5.956	0.021
8	FP	N0	3.641	0.881	3.700	4.130	1.107	6.175	0.017

Table 3.99: Estimate of treatment means in tow-way ANOVA for variable US.S at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.259	0.319	9.000	0.810	-0.462	0.980	0.437
B N-N0	0.145	0.319	9.000	0.450	-0.576	0.866	0.660
A:B EI N- FP N	0.738	0.451	9.000	1.640	-0.282	1.758	0.136
A:B EI N- EI N0	0.623	0.451	9.000	1.380	-0.396	1.643	0.200
A:B EI N- FP N0	0.404	0.451	9.000	0.900	-0.616	1.424	0.393
A:B FP N- EI N0	-0.114	0.451	9.000	-0.250	-1.134	0.905	0.805
A:B FP N- FP N0	-0.334	0.451	9.000	-0.740	-1.353	0.686	0.478
A:B EI N0- FP N0	-0.219	0.451	9.000	-0.490	-1.239	0.800	0.638

Table 3.100: Estimate of contrast in two-way ANOVA for variable US.S at site 19 in year 2012 .

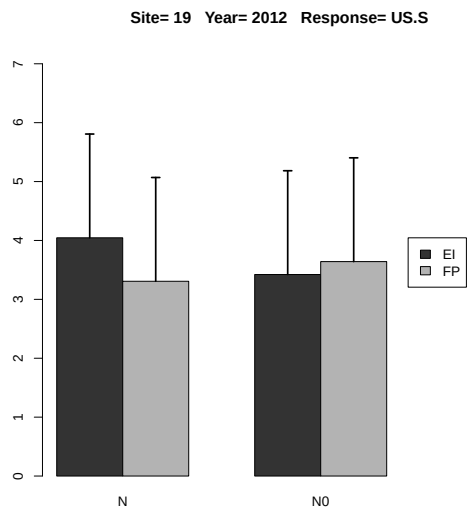

Figure 3.40: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.21 Response Variable UT.N

	rep	A	B	y
1	1	FP	N0	131.957
2	2	FP	N0	123.663
3	3	FP	N0	127.191
4	4	FP	N0	128.675
5	1	FP	N	249.167
6	2	FP	N	226.079
7	3	FP	N	204.737
8	4	FP	N	179.437
9	1	EI	N0	210.180
10	2	EI	N0	215.132
11	3	EI	N0	198.510
12	4	EI	N0	167.889
13	1	EI	N	193.908
14	2	EI	N	256.090
15	3	EI	N	239.450
16	4	EI	N	212.896

Table 3.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	225.586	15.570	14.489	0.001
A FP	214.855	15.570	13.799	0.002
A EI-FP	10.731	22.019	0.487	0.877

Table 3.102: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 19 in year 2012 .

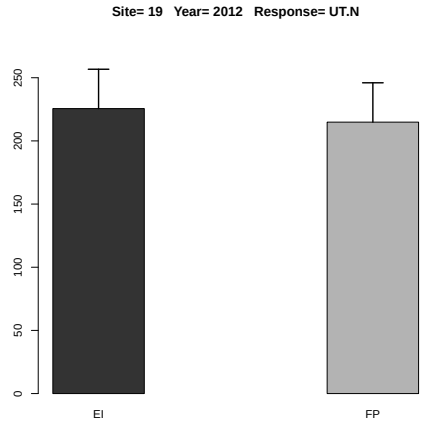

Figure 3.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5879.243	5879.243	13.734	2.999	0.034
B	1.000	13142.737	13142.737	30.701	6.000	0.001
A:B	1.000	3519.505	3519.505	8.222	6.000	0.029

Table 3.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		211.757	8.854	5.700	23.920	189.777	233.737	0.000
2	FP		171.363	8.854	5.700	19.350	149.384	193.343	0.000
3		N	220.221	8.686	6.300	25.350	199.175	241.266	0.000
4		N0	162.900	8.686	6.300	18.750	141.855	183.945	0.000
5	EI	N	225.586	11.485	11.100	19.640	200.346	250.826	0.000
6	FP	N	214.855	11.485	11.100	18.710	189.615	240.095	0.000
7	EI	N0	197.928	11.485	11.100	17.230	172.688	223.168	0.000
8	FP	N0	127.872	11.485	11.100	11.130	102.632	153.111	0.000

Table 3.104: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 19 in year 2012 .

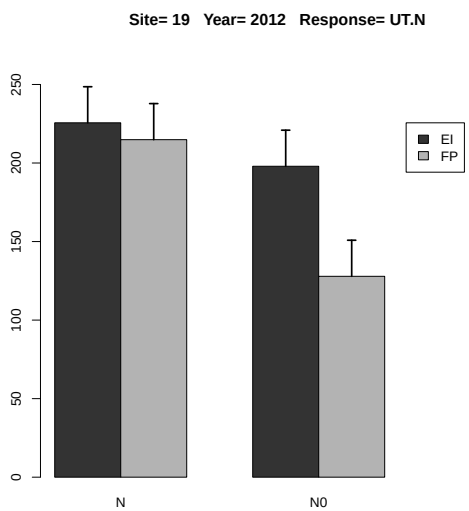

Figure 3.42: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	40.394	10.900	3.000	3.710	5.697	75.090	0.034
B N-N0	57.321	10.345	6.000	5.540	32.007	82.635	0.002
A:B EI N- FP N	10.731	15.027	7.700	0.710	-24.151	45.613	0.496
A:B EI N- EI N0	27.658	14.630	6.000	1.890	-8.141	63.457	0.108
A:B EI N- FP N0	97.714	15.027	7.700	6.500	62.832	132.596	0.000
A:B FP N- EI N0	16.927	15.027	7.700	1.130	-17.955	51.809	0.294
A:B FP N- FP N0	86.984	14.630	6.000	5.950	51.185	122.782	0.001
A:B EI N0- FP N0	70.056	15.027	7.700	4.660	35.174	104.938	0.002

Table 3.105: Estimate of contrast in two-way ANOVA for variable UT.N at site 19 in year 2012 .

3.1.22 Response Variable UT.P

	rep	A	B	y
1	1	FP	N0	22.558
2	2	FP	N0	26.125
3	3	FP	N0	22.888
4	4	FP	N0	22.081
5	1	FP	N	33.384
6	2	FP	N	29.304
7	3	FP	N	27.278
8	4	FP	N	27.911
9	1	EI	N0	25.031
10	2	EI	N0	20.460
11	3	EI	N0	20.537
12	4	EI	N0	20.892
13	1	EI	N	25.179
14	2	EI	N	32.481
15	3	EI	N	26.749
16	4	EI	N	23.136

Table 3.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	26.886	1.754	15.333	0.002
A FP	29.470	1.754	16.806	0.001
A EI-FP	-2.583	2.480	-1.042	0.594

Table 3.107: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 19 in year 2012 .

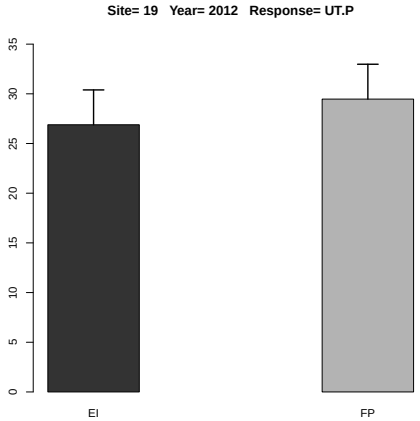

Figure 3.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	18.202	18.202	2.714	9.000	0.134
B	1.000	125.733	125.733	18.750	9.000	0.002
A:B	1.000	0.810	0.810	0.121	9.000	0.736

Table 3.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.308	1.074	6.700	22.630	21.742	26.874	0.000
2	FP		26.441	1.074	6.700	24.610	23.875	29.007	0.000
3		N	28.178	1.074	6.700	26.230	25.612	30.744	0.000
4		N0	22.571	1.074	6.700	21.010	20.005	25.137	0.000
5	EI	N	26.886	1.412	11.200	19.050	23.785	29.988	0.000
6	FP	N	29.470	1.412	11.200	20.880	26.368	32.571	0.000
7	EI	N0	21.730	1.412	11.200	15.390	18.628	24.831	0.000
8	FP	N0	23.413	1.412	11.200	16.590	20.311	26.514	0.000

Table 3.109: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.133	1.295	9.000	-1.650	-5.062	0.796	0.134
B N-N0	5.606	1.295	9.000	4.330	2.678	8.536	0.002
A:B EI N- FP N	-2.583	1.831	9.000	-1.410	-6.726	1.559	0.192
A:B EI N- EI N0	5.156	1.831	9.000	2.820	1.014	9.299	0.020
A:B EI N- FP N0	3.473	1.831	9.000	1.900	-0.669	7.616	0.090
A:B FP N- EI N0	7.740	1.831	9.000	4.230	3.598	11.882	0.002
A:B FP N- FP N0	6.057	1.831	9.000	3.310	1.914	10.199	0.009
A:B EI N0- FP N0	-1.683	1.831	9.000	-0.920	-5.825	2.459	0.382

Table 3.110: Estimate of contrast in two-way ANOVA for variable UT.P at site 19 in year 2012 .

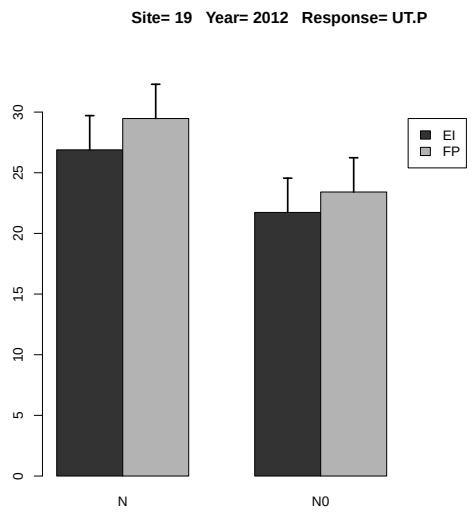

Figure 3.44: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.23 Response Variable UT.P2O5

	rep	A	B	y
1	1	FP	N0	25.249
2	2	FP	N0	28.519
3	3	FP	N0	25.268
4	4	FP	N0	24.481
5	1	FP	N	35.130
6	2	FP	N	32.015
7	3	FP	N	29.924
8	4	FP	N	30.722
9	1	EI	N0	27.613
10	2	EI	N0	22.924
11	3	EI	N0	22.457
12	4	EI	N0	23.476
13	1	EI	N	27.593
14	2	EI	N	34.724
15	3	EI	N	29.334
16	4	EI	N	25.500

Table 3.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	29.288	1.626	18.010	0.001
A FP	31.948	1.626	19.645	0.001
A EI-FP	-2.660	2.300	-1.157	0.538

Table 3.112: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 19 in year 2012 .

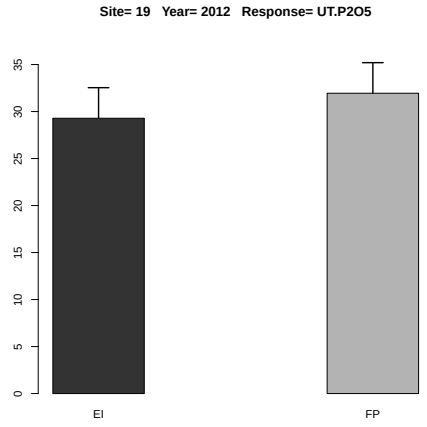

Figure 3.45: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	19.553	19.553	3.185	9.000	0.108
B	1.000	126.309	126.309	20.575	9.000	0.001
A:B	1.000	0.806	0.806	0.131	9.000	0.725

Table 3.113: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		26.703	1.043	6.500	25.610	24.200	29.206	0.000
2	FP		28.913	1.043	6.500	27.730	26.411	31.416	0.000
3		N	30.618	1.043	6.500	29.370	28.115	33.121	0.000
4		N0	24.998	1.043	6.500	23.980	22.495	27.501	0.000
5	EI	N	29.288	1.362	11.000	21.510	26.291	32.285	0.000
6	FP	N	31.948	1.362	11.000	23.460	28.951	34.944	0.000
7	EI	N0	24.117	1.362	11.000	17.710	21.121	27.114	0.000
8	FP	N0	25.879	1.362	11.000	19.000	22.883	28.876	0.000

Table 3.114: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 19 in year 2012 .

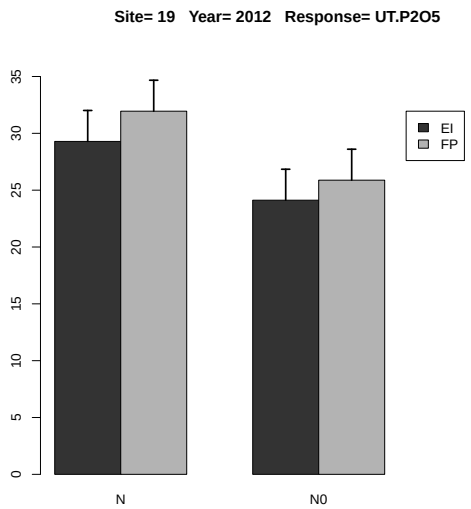

Figure 3.46: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.211	1.239	9.000	-1.780	-5.013	0.592	0.108
B N-N0	5.619	1.239	9.000	4.540	2.817	8.422	0.001
A:B EI N- FP N	-2.660	1.752	9.000	-1.520	-6.623	1.303	0.163
A:B EI N- EI N0	5.170	1.752	9.000	2.950	1.207	9.134	0.016
A:B EI N- FP N0	3.408	1.752	9.000	1.950	-0.555	7.372	0.084
A:B FP N- EI N0	7.830	1.752	9.000	4.470	3.867	11.794	0.002
A:B FP N- FP N0	6.068	1.752	9.000	3.460	2.105	10.032	0.007
A:B EI N0- FP N0	-1.762	1.752	9.000	-1.010	-5.725	2.201	0.341

Table 3.115: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 19 in year 2012 .

3.1.24 Response Variable UT.K

	rep	A	B	y
1	1	FP	N0	117.793
2	2	FP	N0	132.436
3	3	FP	N0	171.093
4	4	FP	N0	124.272
5	1	FP	N	203.406
6	2	FP	N	192.745
7	3	FP	N	154.547
8	4	FP	N	173.194
9	1	EI	N0	111.587
10	2	EI	N0	120.176
11	3	EI	N0	116.014
12	4	EI	N0	85.313
13	1	EI	N	139.520
14	2	EI	N	175.013
15	3	EI	N	129.039
16	4	EI	N	95.060

Table 3.116: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	134.658	10.350	13.010	0.002
A FP	180.973	10.350	17.485	0.001
A EI-FP	-46.315	14.638	-3.164	0.096

Table 3.117: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 19 in year 2012 .

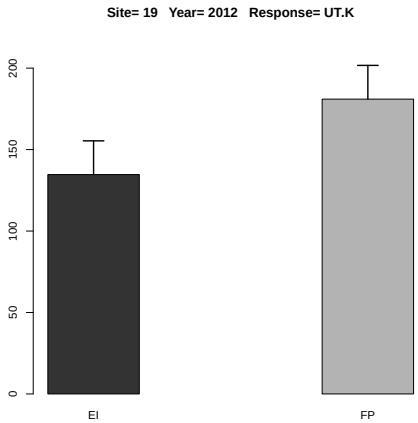

Figure 3.47: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5541.452	5541.452	11.234	9.000	0.009
B	1.000	5035.351	5035.351	10.208	9.000	0.011
A:B	1.000	330.848	330.848	0.671	9.000	0.434

Table 3.118: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		121.465	9.293	6.600	13.070	99.204	143.727	0.000
2	FP		158.686	9.293	6.600	17.080	136.424	180.947	0.000
3		N	157.816	9.293	6.600	16.980	135.554	180.077	0.000
4		N0	122.335	9.293	6.600	13.160	100.074	144.597	0.000
5	EI	N	134.658	12.166	11.100	11.070	107.903	161.413	0.000
6	FP	N	180.973	12.166	11.100	14.880	154.218	207.729	0.000
7	EI	N0	108.272	12.166	11.100	8.900	81.517	135.028	0.000
8	FP	N0	136.398	12.166	11.100	11.210	109.643	163.154	0.000

Table 3.119: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-37.221	11.105	9.000	-3.350	-62.342	-12.099	0.008
B N-N0	35.480	11.105	9.000	3.190	10.359	60.602	0.011
A:B EI N- FP N	-46.315	15.705	9.000	-2.950	-81.842	-10.788	0.016
A:B EI N- EI N0	26.386	15.705	9.000	1.680	-9.142	61.913	0.127
A:B EI N- FP N0	-1.740	15.705	9.000	-0.110	-37.268	33.787	0.914
A:B FP N- EI N0	72.701	15.705	9.000	4.630	37.173	108.228	0.001
A:B FP N- FP N0	44.575	15.705	9.000	2.840	9.047	80.102	0.019
A:B EI N0- FP N0	-28.126	15.705	9.000	-1.790	-63.653	7.401	0.107

Table 3.120: Estimate of contrast in two-way ANOVA for variable UT.K at site 19 in year 2012 .

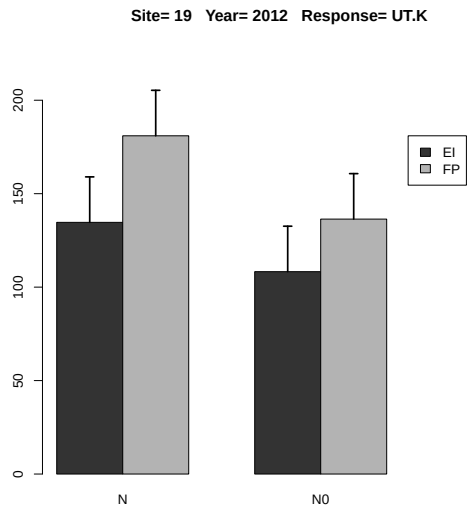

Figure 3.48: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.25 Response Variable UT.K2O

	rep	A	B	y
1	1	FP	N0	118.244
2	2	FP	N0	132.973
3	3	FP	N0	171.589
4	4	FP	N0	124.790
5	1	FP	N	203.783
6	2	FP	N	193.208
7	3	FP	N	155.038
8	4	FP	N	173.847
9	1	EI	N0	112.066
10	2	EI	N0	120.633
11	3	EI	N0	116.441
12	4	EI	N0	85.870
13	1	EI	N	140.008
14	2	EI	N	175.512
15	3	EI	N	129.562
16	4	EI	N	95.467

Table 3.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	135.137	10.381	13.018	0.002
A FP	181.469	10.381	17.481	0.000
A EI-FP	-46.332	14.681	-3.156	0.096

Table 3.122: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 19 in year 2012 .

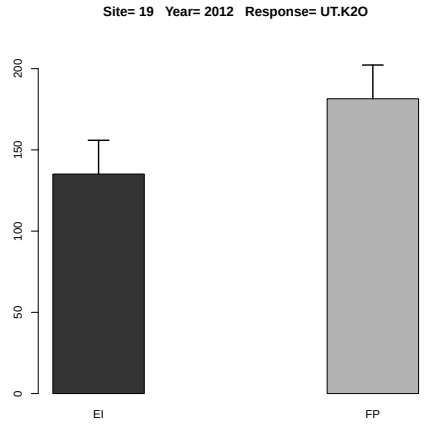

Figure 3.49: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5547.008	5547.008	11.237	9.000	0.008
B	1.000	5034.574	5034.574	10.199	9.000	0.011
A:B	1.000	330.701	330.701	0.670	9.000	0.434

Table 3.123: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		121.945	9.284	6.600	13.130	99.713	144.177	0.000
2	FP		159.184	9.284	6.600	17.150	136.952	181.416	0.000
3		N	158.303	9.284	6.600	17.050	136.071	180.535	0.000
4		N0	122.826	9.284	6.600	13.230	100.594	145.058	0.000
5	EI	N	135.137	12.162	11.100	11.110	108.396	161.879	0.000
6	FP	N	181.469	12.162	11.100	14.920	154.727	208.211	0.000
7	EI	N0	108.753	12.162	11.100	8.940	82.011	135.494	0.000
8	FP	N0	136.899	12.162	11.100	11.260	110.157	163.641	0.000

Table 3.124: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 19 in year 2012 .

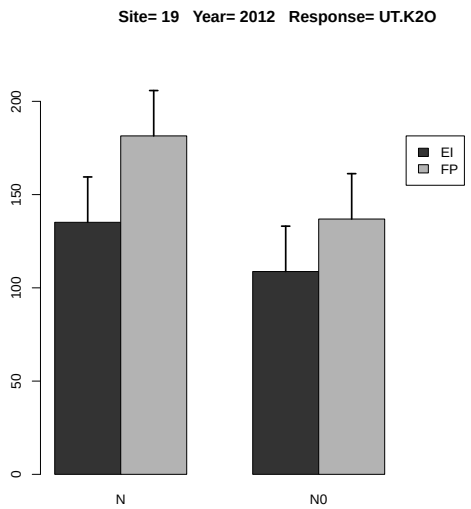

Figure 3.50: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-37.239	11.109	9.000	-3.350	-62.369	-12.109	0.008
B N-N0	35.477	11.109	9.000	3.190	10.347	60.608	0.011
A:B EI N- FP N	-46.332	15.710	9.000	-2.950	-81.871	-10.792	0.016
A:B EI N- EI N0	26.385	15.710	9.000	1.680	-9.155	61.924	0.127
A:B EI N- FP N0	-1.762	15.710	9.000	-0.110	-37.301	33.778	0.913
A:B FP N- EI N0	72.716	15.710	9.000	4.630	37.177	108.256	0.001
A:B FP N- FP N0	44.570	15.710	9.000	2.840	9.031	80.109	0.019
A:B EI N0- FP N0	-28.146	15.710	9.000	-1.790	-63.686	7.393	0.107

Table 3.125: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 19 in year 2012 .

3.1.26 Response Variable UT.Ca

	rep	A	B	y
1	1	FP	N0	14.635
2	2	FP	N0	12.749
3	3	FP	N0	14.631
4	4	FP	N0	13.485
5	1	FP	N	18.073
6	2	FP	N	18.104
7	3	FP	N	15.571
8	4	FP	N	15.486
9	1	EI	N0	18.819
10	2	EI	N0	16.716
11	3	EI	N0	15.626
12	4	EI	N0	13.093
13	1	EI	N	18.728
14	2	EI	N	22.089
15	3	EI	N	19.564
16	4	EI	N	15.332

Table 3.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Ca

	Estimate	S.E.	t-value	p-value
A EI	18.928	0.772	24.517	0.000
A FP	16.808	0.772	21.772	0.000
A EI-FP	2.120	1.092	1.941	0.264

Table 3.127: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Ca at site 19 in year 2012 .

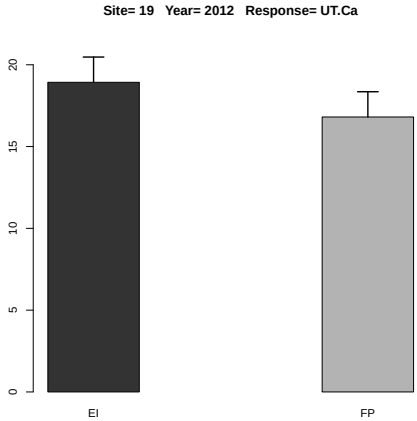

Figure 3.51: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13.592	13.592	5.925	2.999	0.093
B	1.000	33.616	33.616	14.653	6.000	0.009
A:B	1.000	0.005	0.005	0.002	6.000	0.965

Table 3.128: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17.496	0.863	4.900	20.270	15.263	19.729	0.000
2	FP		15.342	0.863	4.900	17.770	13.109	17.575	0.000
3		N	17.868	0.832	4.600	21.470	15.674	20.063	0.000
4		N0	14.969	0.832	4.600	17.990	12.775	17.164	0.000
5	EI	N	18.928	1.016	8.400	18.630	16.604	21.252	0.000
6	FP	N	16.808	1.016	8.400	16.550	14.484	19.133	0.000
7	EI	N0	16.064	1.016	8.400	15.810	13.739	18.388	0.000
8	FP	N0	13.875	1.016	8.400	13.660	11.551	16.199	0.000

Table 3.129: Estimate of treatment means in tow-way ANOVA for variable UT.Ca at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.154	0.885	3.000	2.430	-0.663	4.971	0.093
B N-N0	2.899	0.757	6.000	3.830	1.046	4.752	0.009
A:B EI N- FP N	2.120	1.165	7.100	1.820	-0.627	4.866	0.111
A:B EI N- EI N0	2.865	1.071	6.000	2.670	0.244	5.485	0.037
A:B EI N- FP N0	5.053	1.165	7.100	4.340	2.307	7.800	0.003
A:B FP N- EI N0	0.745	1.165	7.100	0.640	-2.002	3.491	0.543
A:B FP N- FP N0	2.933	1.071	6.000	2.740	0.313	5.554	0.034
A:B EI N0- FP N0	2.188	1.165	7.100	1.880	-0.558	4.935	0.102

Table 3.130: Estimate of contrast in two-way ANOVA for variable UT.Ca at site 19 in year 2012 .

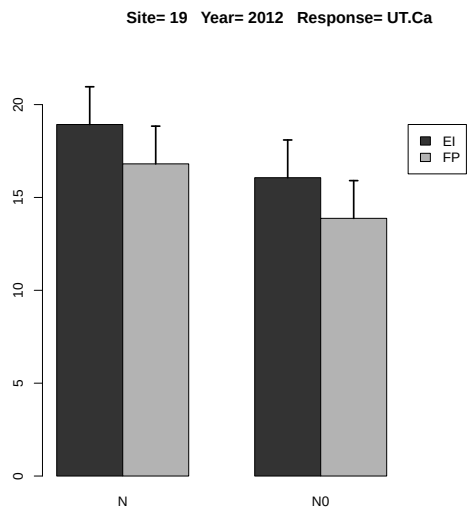

Figure 3.52: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.27 Response Variable UT.Mg

	rep	A	B	y
1	1	FP	N0	23.826
2	2	FP	N0	19.879
3	3	FP	N0	22.529
4	4	FP	N0	23.171
5	1	FP	N	24.841
6	2	FP	N	22.944
7	3	FP	N	23.911
8	4	FP	N	21.685
9	1	EI	N0	28.461
10	2	EI	N0	25.923
11	3	EI	N0	24.379
12	4	EI	N0	23.782
13	1	EI	N	24.476
14	2	EI	N	27.419
15	3	EI	N	25.917
16	4	EI	N	19.849

Table 3.131: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	24.415	0.978	24.953	0.000
A FP	23.345	0.978	23.859	0.000
A EI-FP	1.070	1.384	0.773	0.733

Table 3.132: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 19 in year 2012 .

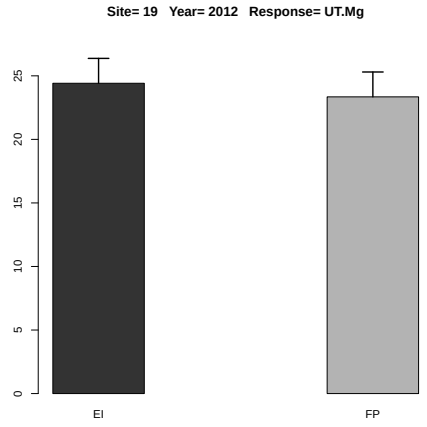

Figure 3.53: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11.091	11.091	3.279	2.999	0.168
B	1.000	0.052	0.052	0.015	6.000	0.906
A:B	1.000	4.905	4.905	1.450	6.000	0.274

Table 3.133: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.026	0.906	5.900	27.630	22.802	27.250	0.000
2	FP		22.848	0.906	5.900	25.220	20.624	25.073	0.000
3		N	23.880	0.819	5.800	29.160	21.858	25.902	0.000
4		N0	23.994	0.819	5.800	29.300	21.972	26.016	0.000
5	EI	N	24.415	1.115	10.800	21.900	21.954	26.876	0.000
6	FP	N	23.345	1.115	10.800	20.940	20.884	25.806	0.000
7	EI	N0	25.636	1.115	10.800	22.990	23.176	28.097	0.000
8	FP	N0	22.352	1.115	10.800	20.050	19.891	24.812	0.000

Table 3.134: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 19 in year 2012 .

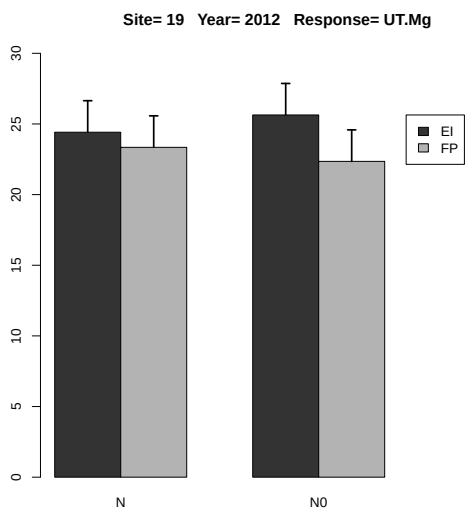

Figure 3.54: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.177	1.202	3.000	1.810	-1.649	6.004	0.168
B N-N0	-0.114	0.919	6.000	-0.120	-2.364	2.136	0.905
A:B EI N- FP N	1.070	1.514	6.400	0.710	-2.574	4.714	0.504
A:B EI N- EI N0	-1.221	1.300	6.000	-0.940	-4.403	1.961	0.384
A:B EI N- FP N0	2.064	1.514	6.400	1.360	-1.581	5.708	0.219
A:B FP N- EI N0	-2.291	1.514	6.400	-1.510	-5.935	1.353	0.178
A:B FP N- FP N0	0.994	1.300	6.000	0.760	-2.188	4.176	0.474
A:B EI N0- FP N0	3.285	1.514	6.400	2.170	-0.359	6.929	0.070

Table 3.135: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 19 in year 2012 .

3.1.28 Response Variable UT.S

	rep	A	B	y
1	1	FP	N0	9.227
2	2	FP	N0	9.328
3	3	FP	N0	8.167
4	4	FP	N0	4.885
5	1	FP	N	10.013
6	2	FP	N	8.546
7	3	FP	N	8.966
8	4	FP	N	5.134
9	1	EI	N0	11.501
10	2	EI	N0	10.297
11	3	EI	N0	11.872
12	4	EI	N0	6.829
13	1	EI	N	12.898
14	2	EI	N	14.323
15	3	EI	N	11.705
16	4	EI	N	8.461

Table 3.136: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	11.847	0.502	23.615	0.000
A FP	8.165	0.502	16.276	0.001
A EI-FP	3.681	0.709	5.189	0.027

Table 3.137: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 19 in year 2012 .

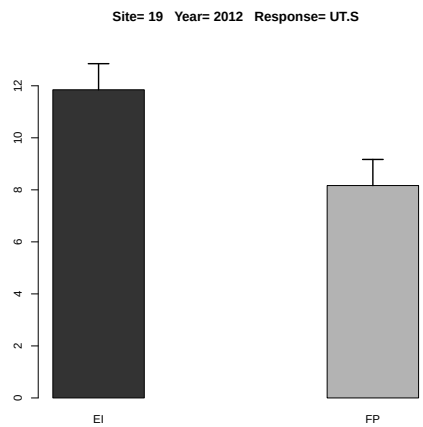

Figure 3.55: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	34.866	34.866	54.007	8.999	0.000
B	1.000	3.941	3.941	6.105	8.999	0.036
A:B	1.000	2.126	2.126	3.294	8.999	0.103

Table 3.138: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.986	1.090	3.200	10.080	7.643	14.328	0.002
2	FP		8.033	1.090	3.200	7.370	4.691	11.376	0.004
3		N	10.006	1.090	3.200	9.180	6.663	13.348	0.002
4		N0	9.013	1.090	3.200	8.270	5.671	12.355	0.003
5	EI	N	11.847	1.126	3.700	10.520	8.598	15.095	0.001
6	FP	N	8.165	1.126	3.700	7.250	4.917	11.414	0.003
7	EI	N0	10.125	1.126	3.700	8.990	6.876	13.373	0.001
8	FP	N0	7.902	1.126	3.700	7.010	4.653	11.150	0.003

Table 3.139: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.952	0.402	9.000	7.350	2.044	3.861	0.000
B N-N0	0.993	0.402	9.000	2.470	0.084	1.901	0.035
A:B EI N- FP N	3.682	0.568	9.000	6.480	2.396	4.967	0.000
A:B EI N- EI N0	1.722	0.568	9.000	3.030	0.436	3.007	0.014
A:B EI N- FP N0	3.945	0.568	9.000	6.940	2.660	5.230	0.000
A:B FP N- EI N0	-1.960	0.568	9.000	-3.450	-3.245	-0.674	0.007
A:B FP N- FP N0	0.264	0.568	9.000	0.460	-1.022	1.549	0.654
A:B EI N0- FP N0	2.223	0.568	9.000	3.910	0.938	3.509	0.004

Table 3.140: Estimate of contrast in two-way ANOVA for variable UT.S at site 19 in year 2012 .

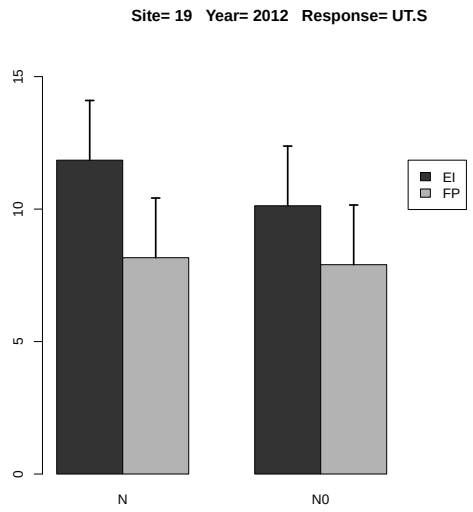

Figure 3.56: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.29 Response Variable HI.N

	rep	A	B	y
1	1	FP	N0	1.644
2	2	FP	N0	2.203
3	3	FP	N0	1.856
4	4	FP	N0	2.276
5	1	FP	N	4.413
6	2	FP	N	3.012
7	3	FP	N	2.479
8	4	FP	N	3.254
9	1	EI	N0	3.243
10	2	EI	N0	3.191
11	3	EI	N0	3.504
12	4	EI	N0	3.259
13	1	EI	N	3.480
14	2	EI	N	3.584
15	3	EI	N	3.469
16	4	EI	N	3.779

Table 3.141: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.578	0.293	6.000	12.220	2.861	4.294	0.000
A FP	3.290	0.293	6.000	11.240	2.573	4.006	0.000
A EI-FP	0.288	0.414	6.000	0.700	-0.725	1.301	0.513

Table 3.142: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 19 in year 2012 .

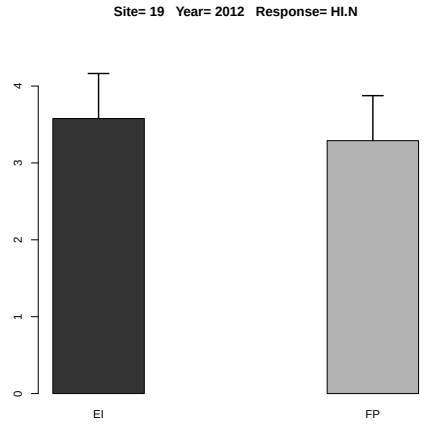

Figure 3.57: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.537	2.537	12.792	11.997	0.004
B	1.000	2.476	2.476	12.483	11.997	0.004
A:B	1.000	1.034	1.034	5.212	11.997	0.041

Table 3.143: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.439	0.158	12.000	21.840	3.095	3.782	0.000
2	FP		2.642	0.158	12.000	16.780	2.299	2.985	0.000
3		N	3.434	0.158	12.000	21.810	3.091	3.777	0.000
4		N0	2.647	0.158	12.000	16.810	2.304	2.990	0.000
5	EI	N	3.578	0.223	12.000	16.070	3.093	4.063	0.000
6	FP	N	3.290	0.223	12.000	14.770	2.804	3.775	0.000
7	EI	N0	3.299	0.223	12.000	14.820	2.814	3.785	0.000
8	FP	N0	1.994	0.223	12.000	8.960	1.509	2.480	0.000

Table 3.144: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 19 in year 2012 .

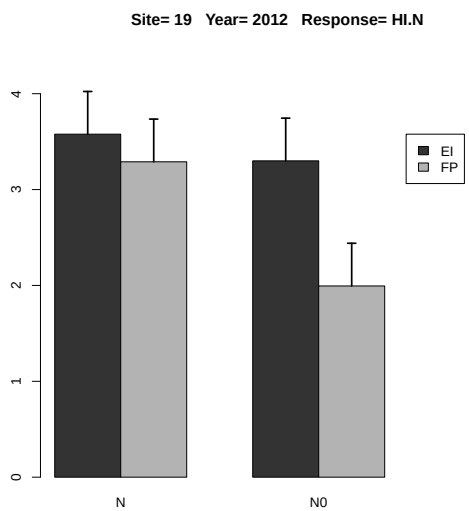

Figure 3.58: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.796	0.223	12.000	3.580	0.311	1.282	0.004
B N-N0	0.787	0.223	12.000	3.530	0.302	1.272	0.004
A:B EI N- FP N	0.288	0.315	12.000	0.910	-0.398	0.974	0.378
A:B EI N- EI N0	0.278	0.315	12.000	0.880	-0.408	0.965	0.394
A:B EI N- FP N0	1.583	0.315	12.000	5.030	0.897	2.269	0.000
A:B FP N- EI N0	-0.010	0.315	12.000	-0.030	-0.696	0.676	0.976
A:B FP N- FP N0	1.295	0.315	12.000	4.110	0.609	1.981	0.001
A:B EI N0- FP N0	1.305	0.315	12.000	4.140	0.619	1.991	0.001

Table 3.145: Estimate of contrast in two-way ANOVA for variable HI.N at site 19 in year 2012 .

3.1.30 Response Variable HI.P

	rep	A	B	y
1	1	FP	N0	1.150
2	2	FP	N0	1.812
3	3	FP	N0	1.402
4	4	FP	N0	1.587
5	1	FP	N	7.512
6	2	FP	N	6.493
7	3	FP	N	5.086
8	4	FP	N	5.235
9	1	EI	N0	3.133
10	2	EI	N0	2.918
11	3	EI	N0	3.232
12	4	EI	N0	3.085
13	1	EI	N	5.008
14	2	EI	N	6.253
15	3	EI	N	3.388
16	4	EI	N	4.551

Table 3.146: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4.800	0.582	4.300	8.240	3.233	6.367	0.001
A FP	6.081	0.582	4.300	10.450	4.514	7.649	0.000
A EI-FP	-1.281	0.509	3.000	-2.520	-2.902	0.339	0.086

Table 3.147: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 19 in year 2012 .

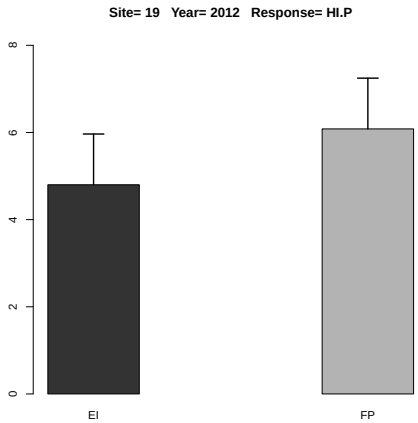

Figure 3.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.104	0.104	0.177	8.999	0.684
B	1.000	39.714	39.714	67.165	8.999	0.000
A:B	1.000	8.328	8.328	14.084	8.999	0.005

Table 3.148: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.946	0.319	6.700	12.380	3.185	4.707	0.000
2	FP		3.784	0.319	6.700	11.870	3.023	4.545	0.000
3		N	5.441	0.319	6.700	17.070	4.680	6.202	0.000
4		N0	2.290	0.319	6.700	7.180	1.529	3.051	0.000
5	EI	N	4.800	0.419	11.200	11.460	3.880	5.720	0.000
6	FP	N	6.081	0.419	11.200	14.520	5.161	7.002	0.000
7	EI	N0	3.092	0.419	11.200	7.380	2.172	4.012	0.000
8	FP	N0	1.488	0.419	11.200	3.550	0.567	2.408	0.004

Table 3.149: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.162	0.385	9.000	0.420	-0.708	1.031	0.684
B N-N0	3.151	0.385	9.000	8.200	2.281	4.021	0.000
A:B EI N- FP N	-1.281	0.544	9.000	-2.360	-2.511	-0.051	0.043
A:B EI N- EI N0	1.708	0.544	9.000	3.140	0.478	2.938	0.012
A:B EI N- FP N0	3.312	0.544	9.000	6.090	2.083	4.543	0.000
A:B FP N- EI N0	2.989	0.544	9.000	5.500	1.759	4.219	0.000
A:B FP N- FP N0	4.594	0.544	9.000	8.450	3.364	5.824	0.000
A:B EI N0- FP N0	1.605	0.544	9.000	2.950	0.374	2.834	0.016

Table 3.150: Estimate of contrast in two-way ANOVA for variable HI.P at site 19 in year 2012 .

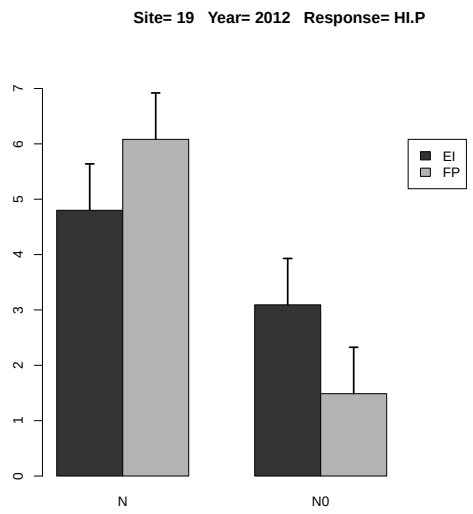

Figure 3.60: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.31 Response Variable HI.K

	rep	A	B	y
1	1	FP	N0	0.196
2	2	FP	N0	0.191
3	3	FP	N0	0.114
4	4	FP	N0	0.160
5	1	FP	N	0.224
6	2	FP	N	0.200
7	3	FP	N	0.163
8	4	FP	N	0.183
9	1	EI	N0	0.157
10	2	EI	N0	0.174
11	3	EI	N0	0.156
12	4	EI	N0	0.188
13	1	EI	N	0.141
14	2	EI	N	0.136
15	3	EI	N	0.176
16	4	EI	N	0.212

Table 3.151: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.166	0.015	6.000	10.830	0.129	0.204	0.000
A FP	0.192	0.015	6.000	12.540	0.155	0.230	0.000
A EI-FP	-0.026	0.022	6.000	-1.200	-0.079	0.027	0.274

Table 3.152: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 19 in year 2012 .

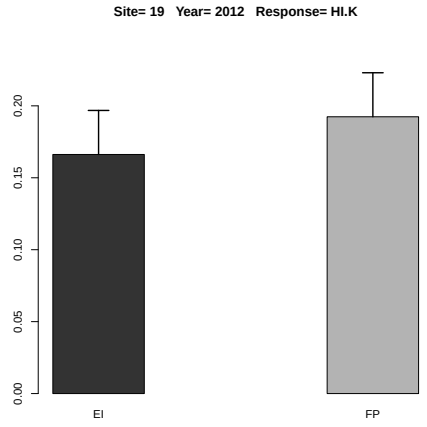

Figure 3.61: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.344	6.000	0.579
B	1.000	0.001	0.001	2.098	5.964	0.198
A:B	1.000	0.001	0.001	3.142	5.964	0.127

Table 3.153: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.168	0.014	6.000	12.300	0.134	0.201	0.000
2	FP		0.179	0.014	6.000	13.120	0.145	0.212	0.000
3		N	0.179	0.010	8.200	17.060	0.155	0.203	0.000
4		N0	0.167	0.010	8.200	15.910	0.143	0.191	0.000
5	EI	N	0.166	0.015	8.200	11.190	0.132	0.200	0.000
6	FP	N	0.192	0.015	8.200	12.950	0.158	0.227	0.000
7	EI	N0	0.169	0.015	8.200	11.370	0.135	0.203	0.000
8	FP	N0	0.165	0.015	8.200	11.130	0.131	0.200	0.000

Table 3.154: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 19 in year 2012 .

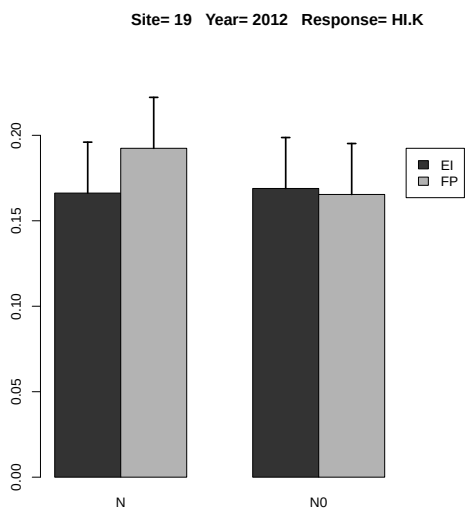

Figure 3.62: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.011	0.019	6.000	-0.590	-0.058	0.036	0.579
B N-N0	0.012	0.008	6.000	1.450	-0.008	0.033	0.198
A:B EI N- FP N	-0.026	0.021	8.200	-1.240	-0.074	0.022	0.248
A:B EI N- EI N0	-0.003	0.012	6.000	-0.230	-0.032	0.026	0.826
A:B EI N- FP N0	0.001	0.021	8.200	0.040	-0.048	0.049	0.970
A:B FP N- EI N0	0.023	0.021	8.200	1.110	-0.025	0.072	0.297
A:B FP N- FP N0	0.027	0.012	6.000	2.280	-0.002	0.056	0.063
A:B EI N0- FP N0	0.004	0.021	8.200	0.170	-0.045	0.052	0.870

Table 3.155: Estimate of contrast in two-way ANOVA for variable HI.K at site 19 in year 2012 .

3.1.32 Response Variable HI.Ca

	rep	A	B	y
1	1	FP	N0	0.000
2	2	FP	N0	0.000
3	3	FP	N0	0.000
4	4	FP	N0	0.000
5	1	FP	N	0.000
6	2	FP	N	0.000
7	3	FP	N	0.000
8	4	FP	N	0.000
9	1	EI	N0	0.000
10	2	EI	N0	0.000
11	3	EI	N0	0.000
12	4	EI	N0	0.094
13	1	EI	N	0.000
14	2	EI	N	0.000
15	3	EI	N	0.076
16	4	EI	N	0.000

Table 3.156: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Ca

There is no or sufficient data for this response variable at this site and year.

3.1.33 Response Variable HI.Mg

	rep	A	B	y
1	1	FP	N0	0.370
2	2	FP	N0	0.365
3	3	FP	N0	0.350
4	4	FP	N0	0.375
5	1	FP	N	0.776
6	2	FP	N	0.873
7	3	FP	N	0.751
8	4	FP	N	0.700
9	1	EI	N0	0.552
10	2	EI	N0	0.522
11	3	EI	N0	0.655
12	4	EI	N0	0.744
13	1	EI	N	0.677
14	2	EI	N	0.691
15	3	EI	N	0.592
16	4	EI	N	0.718

Table 3.157: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.669	0.032	6.000	20.890	0.591	0.748	0.000
A FP	0.775	0.032	6.000	24.180	0.697	0.853	0.000
A EI-FP	-0.105	0.045	3.000	-2.350	-0.249	0.037	0.101

Table 3.158: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 19 in year 2012 .

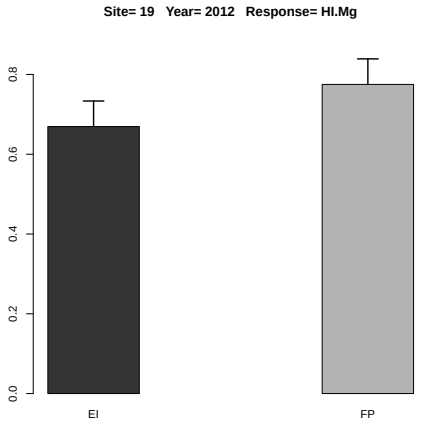

Figure 3.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.021	0.021	4.620	5.995	0.075
B	1.000	0.213	0.213	46.305	5.991	0.000
A:B	1.000	0.129	0.129	27.995	5.991	0.002

Table 3.159: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.644	0.024	6.000	26.540	0.584	0.703	0.000
2	FP		0.570	0.024	6.000	23.500	0.511	0.629	0.000
3		N	0.722	0.024	12.000	29.950	0.670	0.775	0.000
4		N0	0.492	0.024	12.000	20.390	0.439	0.544	0.000
5	EI	N	0.669	0.034	12.000	19.630	0.595	0.744	0.000
6	FP	N	0.775	0.034	12.000	22.730	0.701	0.849	0.000
7	EI	N0	0.618	0.034	12.000	18.130	0.544	0.692	0.000
8	FP	N0	0.365	0.034	12.000	10.710	0.291	0.439	0.000

Table 3.160: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 19 in year 2012 .

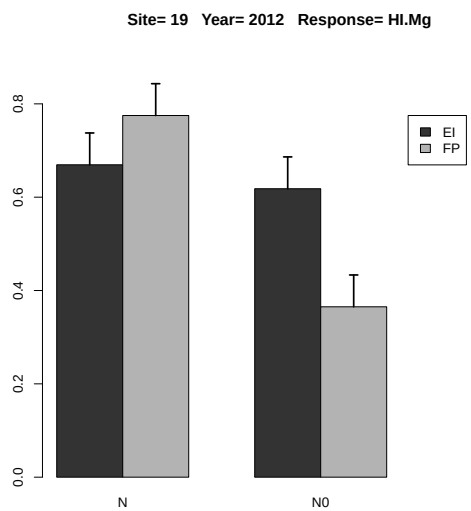

Figure 3.64: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.074	0.034	6.000	2.150	-0.010	0.158	0.075
B N-N0	0.231	0.034	6.000	6.800	0.148	0.314	0.000
A:B EI N- FP N	-0.105	0.048	12.000	-2.190	-0.211	-0.000	0.049
A:B EI N- EI N0	0.051	0.048	6.000	1.070	-0.066	0.169	0.326
A:B EI N- FP N0	0.304	0.048	12.000	6.310	0.199	0.409	0.000
A:B FP N- EI N0	0.157	0.048	12.000	3.250	0.052	0.262	0.007
A:B FP N- FP N0	0.410	0.048	6.000	8.550	0.293	0.527	0.000
A:B EI N0- FP N0	0.253	0.048	12.000	5.250	0.148	0.358	0.000

Table 3.161: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 19 in year 2012 .

3.1.34 Response Variable HI.S

	rep	A	B	y
1	1	FP	N0	1.097
2	2	FP	N0	0.904
3	3	FP	N0	1.046
4	4	FP	N0	2.836
5	1	FP	N	1.628
6	2	FP	N	1.670
7	3	FP	N	0.616
8	4	FP	N	6.658
9	1	EI	N0	1.941
10	2	EI	N0	1.608
11	3	EI	N0	1.563
12	4	EI	N0	4.717
13	1	EI	N	1.349
14	2	EI	N	2.167
15	3	EI	N	1.428
16	4	EI	N	5.280

Table 3.162: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.556	1.164	3.300	2.200	-0.978	6.090	0.108
A FP	2.643	1.164	3.300	2.270	-0.891	6.177	0.100
A EI-FP	-0.087	0.488	3.000	-0.180	-1.639	1.465	0.870

Table 3.163: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 19 in year 2012 .

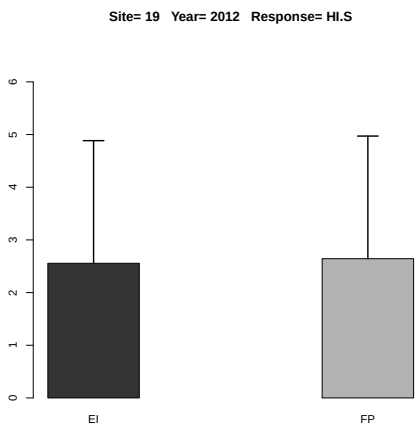

Figure 3.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.808	0.808	1.277	8.999	0.288
B	1.000	1.617	1.617	2.554	8.999	0.144
A:B	1.000	1.152	1.152	1.820	8.999	0.210

Table 3.164: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.506	0.891	3.300	2.810	-0.181	5.194	0.060
2	FP		2.057	0.891	3.300	2.310	-0.630	4.744	0.096
3		N	2.600	0.891	3.300	2.920	-0.087	5.287	0.054
4		N0	1.964	0.891	3.300	2.200	-0.723	4.651	0.106
5	EI	N	2.556	0.934	4.000	2.740	-0.042	5.154	0.052
6	FP	N	2.643	0.934	4.000	2.830	0.045	5.241	0.048
7	EI	N0	2.457	0.934	4.000	2.630	-0.141	5.055	0.058
8	FP	N0	1.471	0.934	4.000	1.570	-1.127	4.069	0.191

Table 3.165: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 19 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.450	0.398	9.000	1.130	-0.450	1.349	0.288
B N-N0	0.636	0.398	9.000	1.600	-0.264	1.536	0.144
A:B EI N- FP N	-0.087	0.563	9.000	-0.150	-1.360	1.185	0.880
A:B EI N- EI N0	0.099	0.563	9.000	0.180	-1.173	1.372	0.864
A:B EI N- FP N0	1.085	0.563	9.000	1.930	-0.187	2.358	0.086
A:B FP N- EI N0	0.186	0.563	9.000	0.330	-1.086	1.459	0.748
A:B FP N- FP N0	1.172	0.563	9.000	2.080	-0.100	2.445	0.067
A:B EI N0- FP N0	0.986	0.563	9.000	1.750	-0.286	2.259	0.114

Table 3.166: Estimate of contrast in two-way ANOVA for variable HI.S at site 19 in year 2012 .

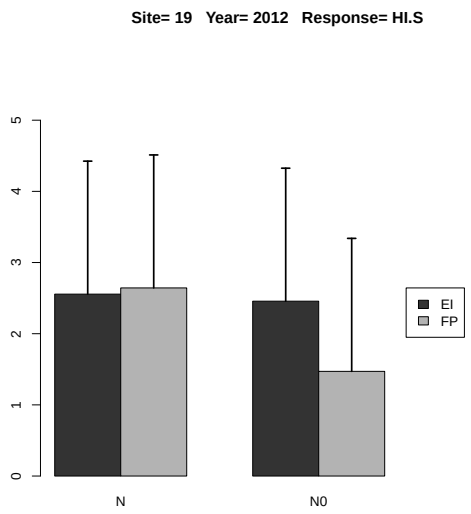

Figure 3.66: Estimated treatment means and standard error in the 2-way ANOVA.

3.1.35 Response Variable PFP.N

	rep	A	B	y
1	1	FP	N	86.146
2	2	FP	N	74.249
3	3	FP	N	63.322
4	4	FP	N	61.997
5	1	EI	N	68.589
6	2	EI	N	77.785
7	3	EI	N	76.490
8	4	EI	N	65.863

Table 3.167: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	72.182	4.482	6.000	16.110	61.216	83.148	0.000
A FP	71.429	4.482	6.000	15.940	60.463	82.395	0.000
A EI-FP	0.753	6.338	6.000	0.120	-14.755	16.262	0.909

Table 3.168: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 19 in year 2012 .

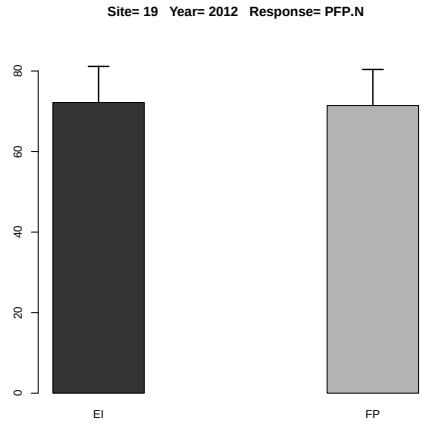

Figure 3.67: Estimated treatment means and standard error in the one-way ANOVA.

3.1.36 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	331.926
2	2	FP	N	286.087
3	3	FP	N	243.983
4	4	FP	N	238.878
5	1	EI	N	264.279
6	2	EI	N	299.709
7	3	EI	N	294.720
8	4	EI	N	253.774

Table 3.169: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	278.120	17.268	6.000	16.110	235.869	320.372	0.000
A FP	275.218	17.268	6.000	15.940	232.967	317.470	0.000
A EI-FP	2.902	24.420	6.000	0.120	-56.851	62.655	0.909

Table 3.170: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 19 in year 2012 .

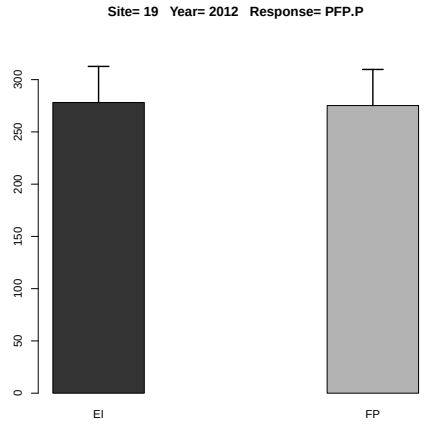

Figure 3.68: Estimated treatment means and standard error in the one-way ANOVA.

3.1.37 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	144.919
2	2	FP	N	124.906
3	3	FP	N	106.523
4	4	FP	N	104.294
5	1	EI	N	115.384
6	2	EI	N	130.853
7	3	EI	N	128.675
8	4	EI	N	110.798

Table 3.171: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	121.427	7.539	6.000	16.110	102.980	139.875	0.000
A FP	120.160	7.539	6.000	15.940	101.713	138.608	0.000
A EI-FP	1.267	10.662	6.000	0.120	-24.822	27.356	0.909

Table 3.172: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 19 in year 2012 .

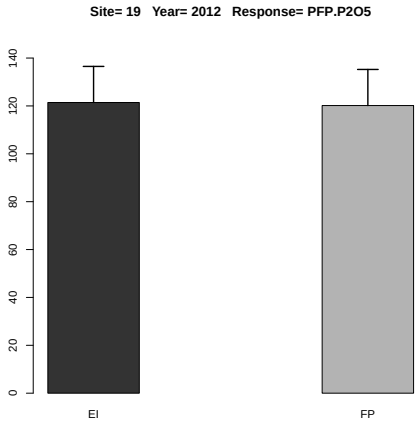

Figure 3.69: Estimated treatment means and standard error in the one-way ANOVA.

3.1.38 Response Variable PFP.K

	rep	A	B	y
1	1	FP	N	207.631
2	2	FP	N	178.958
3	3	FP	N	152.620
4	4	FP	N	149.426
5	1	EI	N	165.315
6	2	EI	N	187.479
7	3	EI	N	184.358
8	4	EI	N	158.745

Table 3.173: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	173.974	10.802	6.000	16.110	147.544	200.404	0.000
A FP	172.159	10.802	6.000	15.940	145.728	198.589	0.000
A EI-FP	1.815	15.276	6.000	0.120	-35.563	39.193	0.909

Table 3.174: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 19 in year 2012 .

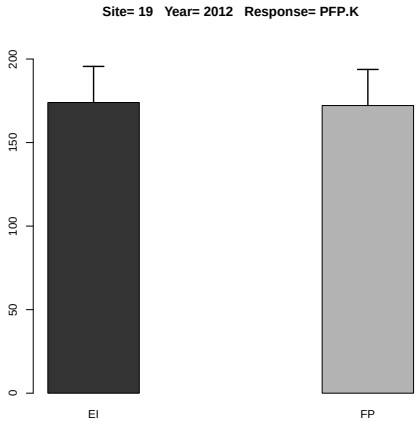

Figure 3.70: Estimated treatment means and standard error in the one-way ANOVA.

3.1.39 Response Variable PFP.K2O

	rep	A	B	y
1	1	FP	N	172.292
2	2	FP	N	148.499
3	3	FP	N	126.644
4	4	FP	N	123.994
5	1	EI	N	137.179
6	2	EI	N	155.570
7	3	EI	N	152.980
8	4	EI	N	131.726

Table 3.175: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	144.364	8.963	6.000	16.110	122.432	166.296	0.000
A FP	142.857	8.963	6.000	15.940	120.925	164.789	0.000
A EI-FP	1.506	12.676	6.000	0.120	-29.510	32.523	0.909

Table 3.176: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 19 in year 2012 .

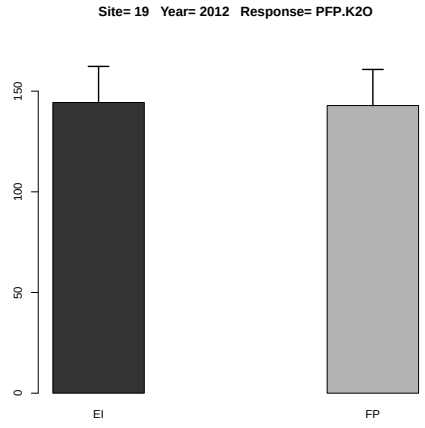

Figure 3.71: Estimated treatment means and standard error in the one-way ANOVA.

3.1.40 Response Variable PFP.S

	rep	A	B	y
1	1	FP	N	738.396
2	2	FP	N	636.424
3	3	FP	N	542.759
4	4	FP	N	531.403
5	1	EI	N	587.909
6	2	EI	N	666.727
7	3	EI	N	655.629
8	4	EI	N	564.541

Table 3.177: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	618.702	38.413	6.000	16.110	524.713	712.690	0.000
A FP	612.246	38.413	6.000	15.940	518.257	706.234	0.000
A EI-FP	6.456	54.325	6.000	0.120	-126.464	139.376	0.909

Table 3.178: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.S at site 19 in year 2012 .

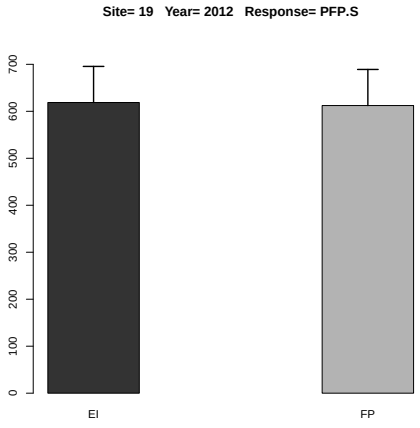

Figure 3.72: Estimated treatment means and standard error in the one-way ANOVA.

3.1.41 Response Variable PFP.Cl

	rep	A	B	y
1	1	FP	N	310.126
2	2	FP	N	267.298
3	3	FP	N	227.959
4	4	FP	N	223.189
5	1	EI	N	246.922
6	2	EI	N	280.025
7	3	EI	N	275.364
8	4	EI	N	237.107

Table 3.179: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Cl

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	259.855	16.134	6.000	16.110	220.378	299.331	0.000
A FP	257.143	16.134	6.000	15.940	217.666	296.620	0.000
A EI-FP	2.712	22.816	6.000	0.120	-53.117	58.540	0.909

Table 3.180: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Cl at site 19 in year 2012 .

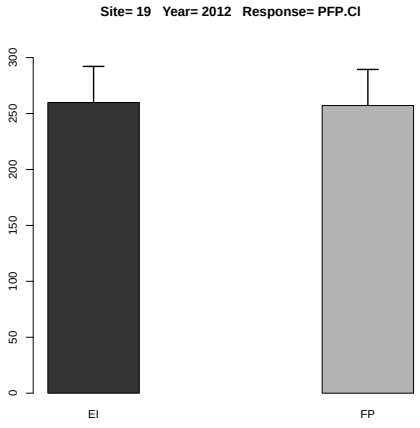

Figure 3.73: Estimated treatment means and standard error in the one-way ANOVA.

3.1.42 Response Variable PFP.Zn

	rep	A	B	y
1	1	FP	N	4698.885
2	2	FP	N	4049.973
3	3	FP	N	3453.921
4	4	FP	N	3381.655
5	1	EI	N	3741.239
6	2	EI	N	4242.809
7	3	EI	N	4172.182
8	4	EI	N	3592.536

Table 3.181: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3937.192	244.449	6.000	16.110	3339.747	4534.636	0.000
A FP	3896.108	244.449	6.000	15.940	3298.664	4493.553	0.000
A EI-FP	41.083	345.703	6.000	0.120	-803.831	885.998	0.909

Table 3.182: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 19 in year 2012 .

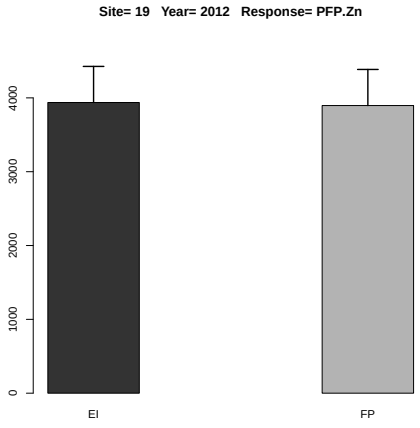

Figure 3.74: Estimated treatment means and standard error in the one-way ANOVA.

3.1.43 Response Variable PNB.N

	rep	A	B	y
1	1	FP	N	1.129
2	2	FP	N	0.943
3	3	FP	N	0.811
4	4	FP	N	0.763
5	1	EI	N	0.837
6	2	EI	N	1.112
7	3	EI	N	1.033
8	4	EI	N	0.935

Table 3.183: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.979	0.072	6.000	13.660	0.804	1.155	0.000
A FP	0.911	0.072	6.000	12.710	0.736	1.087	0.000
A EI-FP	0.068	0.101	6.000	0.670	-0.180	0.316	0.527

Table 3.184: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 19 in year 2012 .

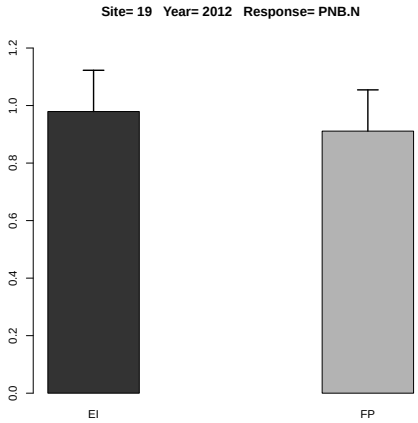

Figure 3.75: Estimated treatment means and standard error in the one-way ANOVA.

3.1.44 Response Variable PNB.P

	rep	A	B	y
1	1	FP	N	0.631
2	2	FP	N	0.544
3	3	FP	N	0.488
4	4	FP	N	0.502
5	1	EI	N	0.449
6	2	EI	N	0.599
7	3	EI	N	0.442
8	4	EI	N	0.406

Table 3.185: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.474	0.038	5.900	12.530	0.381	0.567	0.000
A FP	0.541	0.038	5.900	14.290	0.448	0.634	0.000
A EI-FP	-0.067	0.050	3.000	-1.350	-0.224	0.091	0.271

Table 3.186: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 19 in year 2012 .

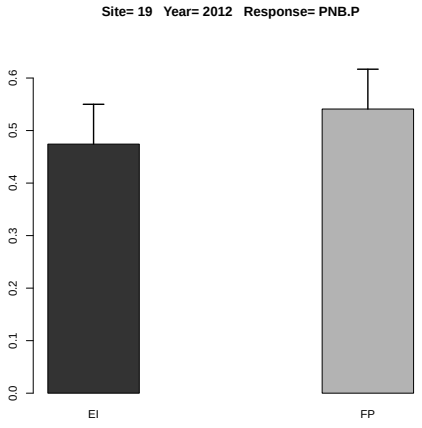

Figure 3.76: Estimated treatment means and standard error in the one-way ANOVA.

3.1.45 Response Variable PNB.K

	rep	A	B	y
1	1	FP	N	0.498
2	2	FP	N	0.429
3	3	FP	N	0.290
4	4	FP	N	0.359
5	1	EI	N	0.231
6	2	EI	N	0.281
7	3	EI	N	0.258
8	4	EI	N	0.222

Table 3.187: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.248	0.033	6.000	7.490	0.167	0.329	0.000
A FP	0.394	0.033	6.000	11.890	0.313	0.475	0.000
A EI-FP	-0.146	0.047	6.000	-3.110	-0.261	-0.031	0.021

Table 3.188: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 19 in year 2012 .

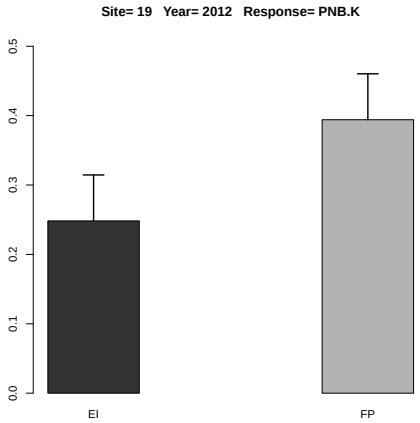

Figure 3.77: Estimated treatment means and standard error in the one-way ANOVA.

3.1.46 Response Variable PNB.S

	rep	A	B	y
1	1	FP	N	0.295
2	2	FP	N	0.255
3	3	FP	N	0.163
4	4	FP	N	0.213
5	1	EI	N	0.353
6	2	EI	N	0.467
7	3	EI	N	0.328
8	4	EI	N	0.339

Table 3.189: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.371	0.030	5.100	12.250	0.294	0.449	0.000
A FP	0.231	0.030	5.100	7.630	0.154	0.309	0.001
A EI-FP	0.140	0.033	3.000	4.280	0.036	0.244	0.024

Table 3.190: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.S at site 19 in year 2012 .

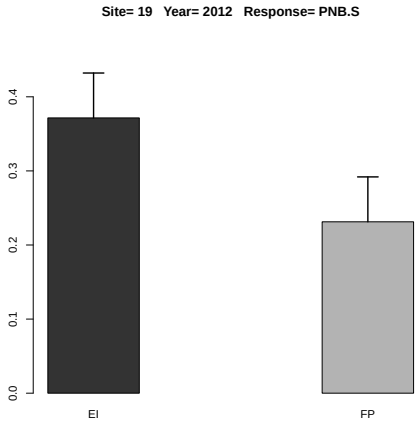

Figure 3.78: Estimated treatment means and standard error in the one-way ANOVA.

3.1.47 Response Variable AE

	rep	A	B	y
1	1	FP	N	53.304
2	2	FP	N	32.181
3	3	FP	N	21.778
4	4	FP	N	15.214
5	1	EI	N	-2.167
6	2	EI	N	9.308
7	3	EI	N	12.164
8	4	EI	N	4.186

Table 3.191: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	5.873	7.541	0.779	0.730
A FP	30.619	7.541	4.061	0.051
A EI-FP	-24.746	10.664	-2.321	0.189

Table 3.192: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 19 in year 2012 .

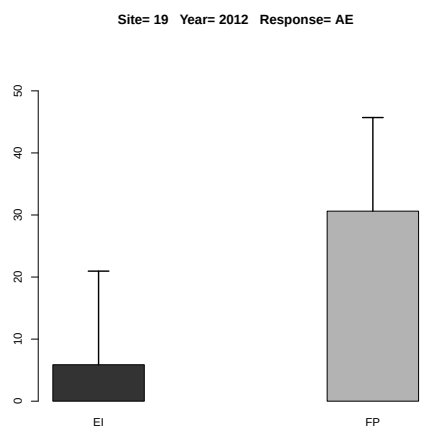

Figure 3.79: Estimated treatment means and standard error in the one-way ANOVA.

3.1.48 Response Variable RE

	rep	A	B	y
1	1	FP	N	0.837
2	2	FP	N	0.732
3	3	FP	N	0.554
4	4	FP	N	0.363
5	1	EI	N	-0.116
6	2	EI	N	0.293
7	3	EI	N	0.292
8	4	EI	N	0.321

Table 3.193: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.198	0.137	1.437	0.419
A FP	0.621	0.137	4.520	0.039
A EI-FP	-0.424	0.194	-2.180	0.214

Table 3.194: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 19 in year 2012 .

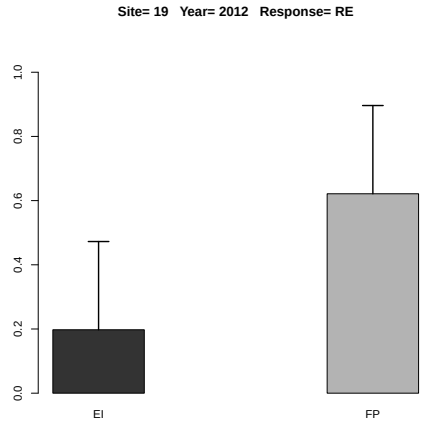

Figure 3.80: Estimated treatment means and standard error in the one-way ANOVA.

3.2 Year 2013

There are 44 variables not observed: UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.B PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

3.2.1 Response Variable YG

	rep	A	B	y
1	1	FP	N0	9603.440
2	2	FP	N0	9736.650
3	3	FP	N0	8393.170
4	4	FP	N0	8917.640
5	1	FP	N	12221.920
6	2	FP	N	11157.040
7	3	FP	N	12453.640
8	4	FP	N	11078.620
9	1	EI	N0	10625.640
10	2	EI	N0	11111.260
11	3	EI	N0	10978.150
12	4	EI	N0	9687.060
13	1	EI	N	12498.040
14	2	EI	N	10991.920
15	3	EI	N	12317.950
16	4	EI	N	11283.020

Table 3.195: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	11772.733	80.525	146.199	0.000
A FP	11727.805	80.525	145.641	0.000
A EI-FP	44.928	113.880	0.395	0.916

Table 3.196: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 19 in year 2013 .

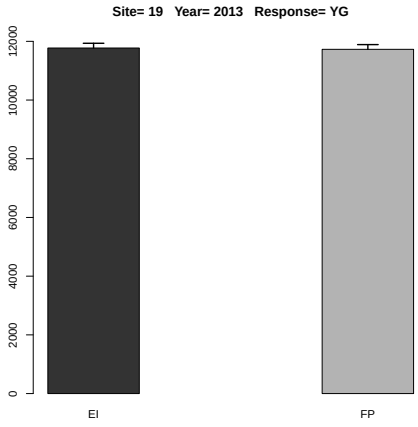

Figure 3.81: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2198488.253	2198488.253	5.880	8.954	0.038
B	1.000	13967299.171	13967299.171	37.359	8.954	0.000
A:B	1.000	1940100.766	1940100.766	5.189	8.954	0.049

Table 3.197: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11186.630	264.662	6.200	42.270	10545.135	11828.125	0.000
2	FP		10445.265	264.662	6.200	39.470	9803.770	11086.760	0.000
3		N	11750.269	264.662	6.200	44.400	11108.773	12391.764	0.000
4		N0	9881.626	264.662	6.200	37.340	9240.131	10523.121	0.000
5	EI	N	11772.733	341.730	10.800	34.450	11019.135	12526.330	0.000
6	FP	N	11727.805	341.730	10.800	34.320	10974.208	12481.402	0.000
7	EI	N0	10600.528	341.730	10.800	31.020	9846.930	11354.125	0.000
8	FP	N0	9162.725	341.730	10.800	26.810	8409.128	9916.322	0.000

Table 3.198: Estimate of treatment means in tow-way ANOVA for variable YG at site 19 in year 2013 .

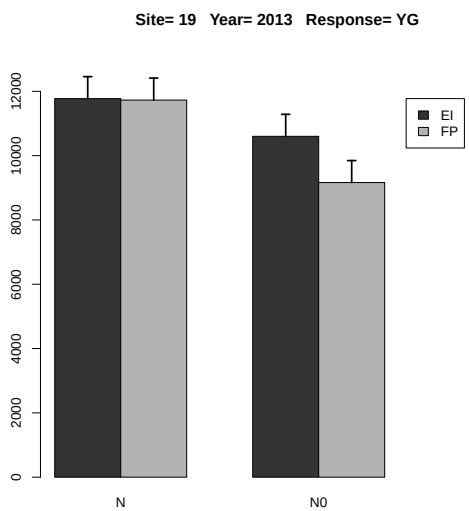

Figure 3.82: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	741.365	305.724	9.200	2.420	52.277	1430.453	0.038
B N-N0	1868.642	305.724	9.200	6.110	1179.554	2557.731	0.000
A:B EI N- FP N	44.928	432.359	9.200	0.100	-929.590	1019.445	0.919
A:B EI N- EI N0	1172.205	432.359	9.200	2.710	197.687	2146.723	0.024
A:B EI N- FP N0	2610.008	432.359	9.200	6.040	1635.490	3584.525	0.000
A:B FP N- EI N0	1127.277	432.359	9.200	2.610	152.760	2101.795	0.028
A:B FP N- FP N0	2565.080	432.359	9.200	5.930	1590.562	3539.598	0.000
A:B EI N0- FP N0	1437.803	432.359	9.200	3.330	463.285	2412.320	0.009

Table 3.199: Estimate of contrast in two-way ANOVA for variable YG at site 19 in year 2013 .

3.2.2 Response Variable YS

	rep	A	B	y
1	1	FP	N0	9332.100
2	2	FP	N0	8854.000
3	3	FP	N0	8780.900
4	4	FP	N0	8852.800
5	1	FP	N	7914.900
6	2	FP	N	8199.000
7	3	FP	N	10654.400
8	4	FP	N	8497.100
9	1	EI	N0	10066.100
10	2	EI	N0	8471.200
11	3	EI	N0	8600.700
12	4	EI	N0	8728.200
13	1	EI	N	8729.800
14	2	EI	N	11042.500
15	3	EI	N	8357.200
16	4	EI	N	8880.700

Table 3.200: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	9252.550	747.572	12.377	0.002
A FP	8816.350	747.572	11.793	0.003
A EI-FP	436.200	1057.227	0.413	0.909

Table 3.201: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 19 in year 2013 .

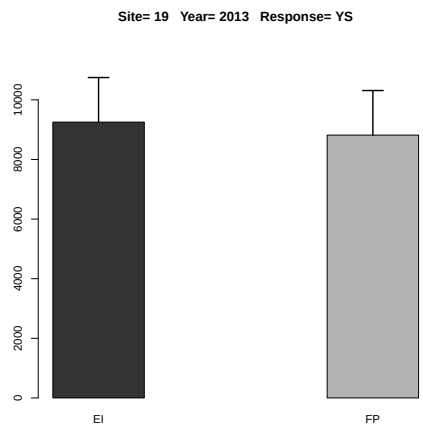

Figure 3.83: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	200524.840	200524.840	0.220	9.707	0.649
B	1.000	21726.760	21726.760	0.024	9.707	0.880
A:B	1.000	180285.160	180285.160	0.198	9.707	0.666

Table 3.202: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9109.550	337.413	9.700	27.000	8354.661	9864.439	0.000
2	FP		8885.650	337.413	9.700	26.330	8130.761	9640.539	0.000
3		N	9034.450	337.413	9.700	26.780	8279.561	9789.339	0.000
4		N0	8960.750	337.413	9.700	26.560	8205.861	9715.639	0.000
5	EI	N	9252.550	477.175	9.700	19.390	8184.976	10320.124	0.000
6	FP	N	8816.350	477.175	9.700	18.480	7748.776	9883.924	0.000
7	EI	N0	8966.550	477.175	9.700	18.790	7898.976	10034.124	0.000
8	FP	N0	8954.950	477.175	9.700	18.770	7887.376	10022.524	0.000

Table 3.203: Estimate of treatment means in tow-way ANOVA for variable YS at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	223.900	477.175	9.700	0.470	-843.674	1291.474	0.649
B N-N0	73.700	477.175	9.700	0.150	-993.874	1141.274	0.880
A:B EI N- FP N	436.200	674.827	9.700	0.650	-1073.577	1945.977	0.533
A:B EI N- EI N0	286.000	674.827	9.700	0.420	-1223.777	1795.777	0.681
A:B EI N- FP N0	297.600	674.827	9.700	0.440	-1212.177	1807.377	0.669
A:B FP N- EI N0	-150.200	674.827	9.700	-0.220	-1659.977	1359.577	0.829
A:B FP N- FP N0	-138.600	674.827	9.700	-0.210	-1648.377	1371.177	0.842
A:B EI N0- FP N0	11.600	674.827	9.700	0.020	-1498.177	1521.377	0.987

Table 3.204: Estimate of contrast in two-way ANOVA for variable YS at site 19 in year 2013 .

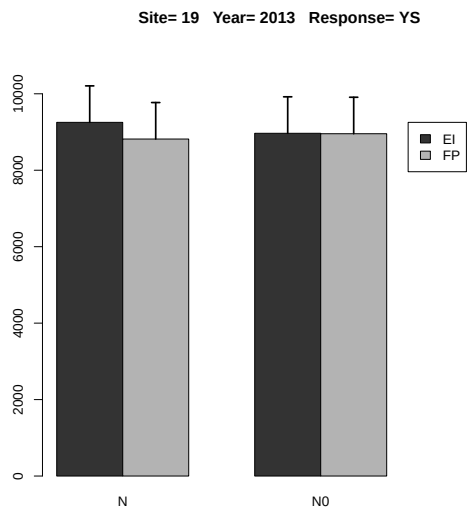

Figure 3.84: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.3 Response Variable YT

	rep	A	B	y
1	1	FP	N0	18935.540
2	2	FP	N0	18590.650
3	3	FP	N0	17174.070
4	4	FP	N0	17770.440
5	1	FP	N	20136.820
6	2	FP	N	19356.040
7	3	FP	N	23108.040
8	4	FP	N	19575.720
9	1	EI	N0	20691.740
10	2	EI	N0	19582.460
11	3	EI	N0	19578.850
12	4	EI	N0	18415.260
13	1	EI	N	21227.840
14	2	EI	N	22034.420
15	3	EI	N	20675.150
16	4	EI	N	20163.720

Table 3.205: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	21025.282	755.613	27.825	0.000
A FP	20544.155	755.613	27.189	0.000
A EI-FP	481.128	1068.597	0.450	0.893

Table 3.206: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 19 in year 2013 .

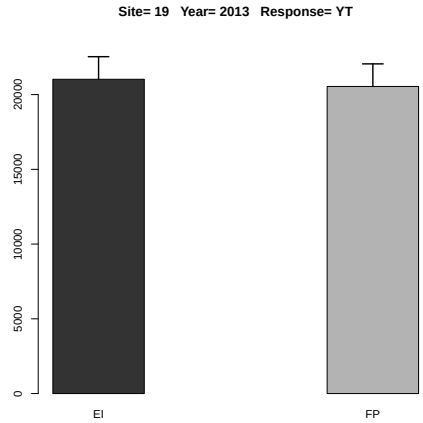

Figure 3.85: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3726946.081	3726946.081	2.905	7.027	0.132
B	1.000	15090777.549	15090777.549	11.761	7.027	0.011
A:B	1.000	937556.476	937556.476	0.731	7.027	0.421

Table 3.207: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		20296.180	403.366	8.800	50.320	19381.061	21211.299	0.000
2	FP		19330.915	403.366	8.800	47.920	18415.796	20246.034	0.000
3		N	20784.719	403.366	8.800	51.530	19869.600	21699.837	0.000
4		N0	18842.376	403.366	8.800	46.710	17927.258	19757.495	0.000
5	EI	N	21025.283	568.417	11.900	36.990	19785.094	22265.471	0.000
6	FP	N	20544.155	568.417	11.900	36.140	19303.966	21784.344	0.000
7	EI	N0	19567.077	568.417	11.900	34.420	18326.889	20807.266	0.000
8	FP	N0	18117.675	568.417	11.900	31.870	16877.486	19357.864	0.000

Table 3.208: Estimate of treatment means in tow-way ANOVA for variable YT at site 19 in year 2013 .

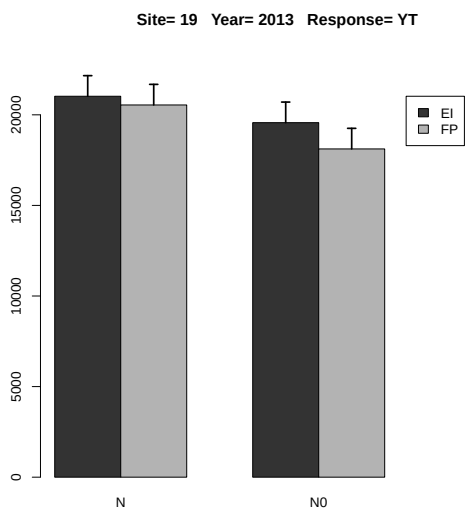

Figure 3.86: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	965.265	566.381	8.900	1.700	-319.289	2249.819	0.123
B N-N0	1942.342	566.381	8.900	3.430	657.789	3226.896	0.008
A:B EI N- FP N	481.127	800.983	8.900	0.600	-1335.506	2297.761	0.563
A:B EI N- EI N0	1458.205	800.983	8.900	1.820	-358.428	3274.838	0.103
A:B EI N- FP N0	2907.608	800.983	8.900	3.630	1090.974	4724.241	0.006
A:B FP N- EI N0	977.077	800.983	8.900	1.220	-839.556	2793.711	0.254
A:B FP N- FP N0	2426.480	800.983	8.900	3.030	609.846	4243.114	0.014
A:B EI N0- FP N0	1449.402	800.983	8.900	1.810	-367.231	3266.036	0.104

Table 3.209: Estimate of contrast in two-way ANOVA for variable YT at site 19 in year 2013 .

3.2.4 Response Variable HI.G

	rep	A	B	y
1	1	FP	N0	0.507
2	2	FP	N0	0.524
3	3	FP	N0	0.489
4	4	FP	N0	0.502
5	1	FP	N	0.607
6	2	FP	N	0.576
7	3	FP	N	0.539
8	4	FP	N	0.566
9	1	EI	N0	0.514
10	2	EI	N0	0.567
11	3	EI	N0	0.561
12	4	EI	N0	0.526
13	1	EI	N	0.589
14	2	EI	N	0.499
15	3	EI	N	0.596
16	4	EI	N	0.560

Table 3.210: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.561	0.019	28.786	0.000
A FP	0.572	0.019	29.367	0.000
A EI-FP	-0.011	0.028	-0.411	0.909

Table 3.211: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 19 in year 2013 .

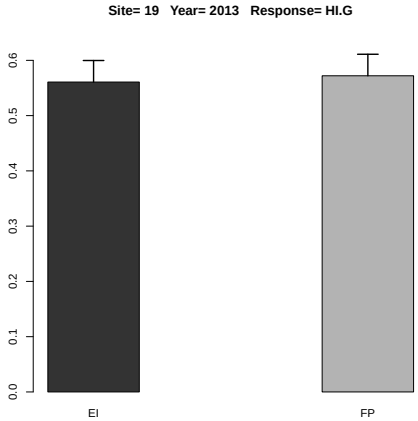

Figure 3.87: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	0.701	11.961	0.419
B	1.000	0.007	0.007	8.045	11.961	0.015
A:B	1.000	0.002	0.002	2.521	11.961	0.138

Table 3.212: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.551	0.011	12.000	51.720	0.528	0.575	0.000
2	FP		0.539	0.011	12.000	50.540	0.515	0.562	0.000
3		N	0.566	0.011	12.000	53.140	0.543	0.590	0.000
4		N0	0.524	0.011	12.000	49.120	0.500	0.547	0.000
5	EI	N	0.561	0.015	12.000	37.200	0.528	0.594	0.000
6	FP	N	0.572	0.015	12.000	37.950	0.539	0.605	0.000
7	EI	N0	0.542	0.015	12.000	35.950	0.509	0.575	0.000
8	FP	N0	0.505	0.015	12.000	33.520	0.472	0.538	0.000

Table 3.213: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.013	0.015	12.000	0.840	-0.020	0.045	0.419
B N-N0	0.043	0.015	12.000	2.840	0.010	0.076	0.015
A:B EI N- FP N	-0.011	0.021	12.000	-0.530	-0.058	0.035	0.605
A:B EI N- EI N0	0.019	0.021	12.000	0.880	-0.028	0.065	0.395
A:B EI N- FP N0	0.055	0.021	12.000	2.600	0.009	0.102	0.023
A:B FP N- EI N0	0.030	0.021	12.000	1.410	-0.016	0.077	0.183
A:B FP N- FP N0	0.067	0.021	12.000	3.130	0.020	0.113	0.009
A:B EI N0- FP N0	0.037	0.021	12.000	1.710	-0.010	0.083	0.112

Table 3.214: Estimate of contrast in two-way ANOVA for variable HI.G at site 19 in year 2013 .

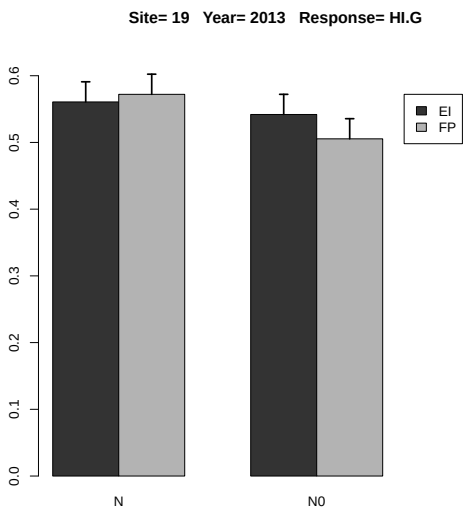

Figure 3.88: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.5 Response Variable UG.N

	rep	A	B	y
1	1	FP	N0	107.559
2	2	FP	N0	112.945
3	3	FP	N0	87.289
4	4	FP	N0	97.202
5	1	FP	N	158.885
6	2	FP	N	140.579
7	3	FP	N	143.217
8	4	FP	N	128.512
9	1	EI	N0	154.072
10	2	EI	N0	138.891
11	3	EI	N0	127.347
12	4	EI	N0	122.057
13	1	EI	N	153.726
14	2	EI	N	161.581
15	3	EI	N	156.438
16	4	EI	N	144.423

Table 3.215: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	154.042	4.031	38.214	0.000
A FP	142.798	4.031	35.425	0.000
A EI-FP	11.244	5.701	1.972	0.257

Table 3.216: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 19 in year 2013 .

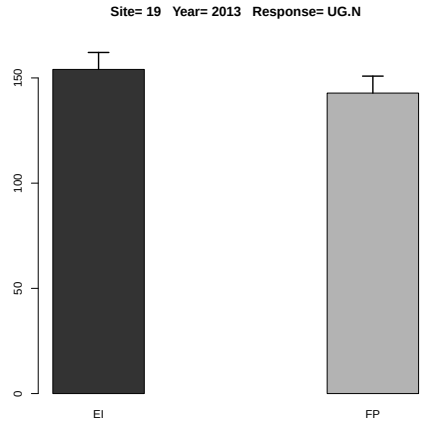

Figure 3.89: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2078.137	2078.137	32.478	9.000	0.000
B	1.000	3599.979	3599.979	56.261	9.000	0.000
A:B	1.000	533.563	533.563	8.339	9.000	0.018

Table 3.217: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		144.817	5.064	4.200	28.600	130.973	158.661	0.000
2	FP		122.023	5.064	4.200	24.100	108.180	135.867	0.000
3		N	148.420	5.064	4.200	29.310	134.576	162.264	0.000
4		N0	118.420	5.064	4.200	23.390	104.576	132.264	0.000
5	EI	N	154.042	5.800	6.600	26.560	140.145	167.939	0.000
6	FP	N	142.798	5.800	6.600	24.620	128.902	156.695	0.000
7	EI	N0	135.591	5.800	6.600	23.380	121.695	149.488	0.000
8	FP	N0	101.249	5.800	6.600	17.460	87.352	115.145	0.000

Table 3.218: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 19 in year 2013 .

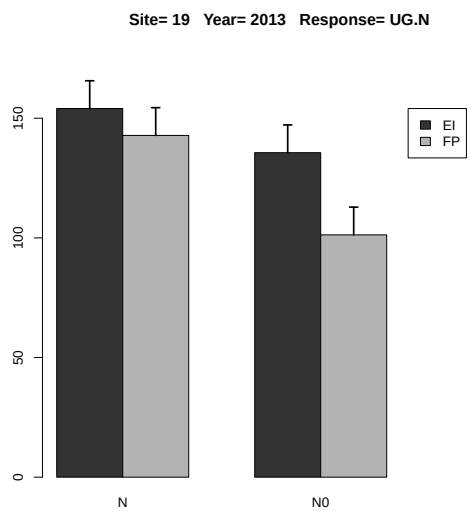

Figure 3.90: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	22.793	4.000	9.000	5.700	13.746	31.841	0.000
B N-N0	30.000	4.000	9.000	7.500	20.952	39.048	0.000
A:B EI N- FP N	11.244	5.656	9.000	1.990	-1.552	24.039	0.078
A:B EI N- EI N0	18.450	5.656	9.000	3.260	5.655	31.246	0.010
A:B EI N- FP N0	52.793	5.656	9.000	9.330	39.998	65.589	0.000
A:B FP N- EI N0	7.207	5.656	9.000	1.270	-5.589	20.002	0.234
A:B FP N- FP N0	41.549	5.656	9.000	7.350	28.754	54.345	0.000
A:B EI N0- FP N0	34.343	5.656	9.000	6.070	21.547	47.138	0.000

Table 3.219: Estimate of contrast in two-way ANOVA for variable UG.N at site 19 in year 2013 .

3.2.6 Response Variable UG.P

	rep	A	B	y
1	1	FP	N0	16.326
2	2	FP	N0	15.579
3	3	FP	N0	19.304
4	4	FP	N0	22.294
5	1	FP	N	25.666
6	2	FP	N	26.777
7	3	FP	N	23.662
8	4	FP	N	23.265
9	1	EI	N0	24.439
10	2	EI	N0	16.667
11	3	EI	N0	27.445
12	4	EI	N0	14.531
13	1	EI	N	24.996
14	2	EI	N	24.182
15	3	EI	N	19.709
16	4	EI	N	22.566

Table 3.220: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	22.863	0.564	40.554	0.000
A FP	24.842	0.564	44.064	0.000
A EI-FP	-1.979	0.797	-2.482	0.164

Table 3.221: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 19 in year 2013 .

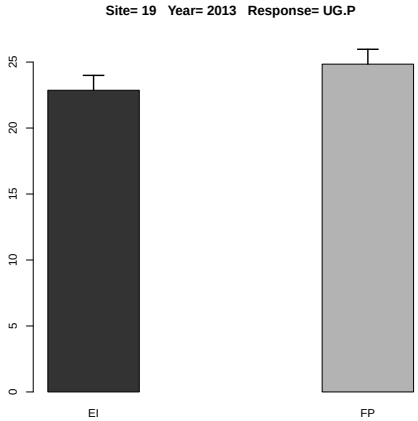

Figure 3.91: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.173	0.173	0.012	12.000	0.913
B	1.000	73.266	73.266	5.275	12.000	0.040
A:B	1.000	19.132	19.132	1.378	12.000	0.263

Table 3.222: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.817	1.318	12.000	16.560	18.946	24.688	0.000
2	FP		21.609	1.318	12.000	16.400	18.738	24.480	0.000
3		N	23.853	1.318	12.000	18.100	20.982	26.724	0.000
4		N0	19.573	1.318	12.000	14.860	16.702	22.444	0.000
5	EI	N	22.863	1.863	12.000	12.270	18.803	26.923	0.000
6	FP	N	24.843	1.863	12.000	13.330	20.783	28.902	0.000
7	EI	N0	20.770	1.863	12.000	11.150	16.711	24.830	0.000
8	FP	N0	18.376	1.863	12.000	9.860	14.316	22.436	0.000

Table 3.223: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.208	1.863	12.000	0.110	-3.852	4.268	0.913
B N-N0	4.280	1.863	12.000	2.300	0.220	8.340	0.040
A:B EI N- FP N	-1.979	2.635	12.000	-0.750	-7.721	3.762	0.467
A:B EI N- EI N0	2.093	2.635	12.000	0.790	-3.649	7.834	0.442
A:B EI N- FP N0	4.487	2.635	12.000	1.700	-1.254	10.229	0.114
A:B FP N- EI N0	4.072	2.635	12.000	1.550	-1.669	9.814	0.148
A:B FP N- FP N0	6.467	2.635	12.000	2.450	0.725	12.208	0.030
A:B EI N0- FP N0	2.395	2.635	12.000	0.910	-3.347	8.136	0.381

Table 3.224: Estimate of contrast in two-way ANOVA for variable UG.P at site 19 in year 2013 .

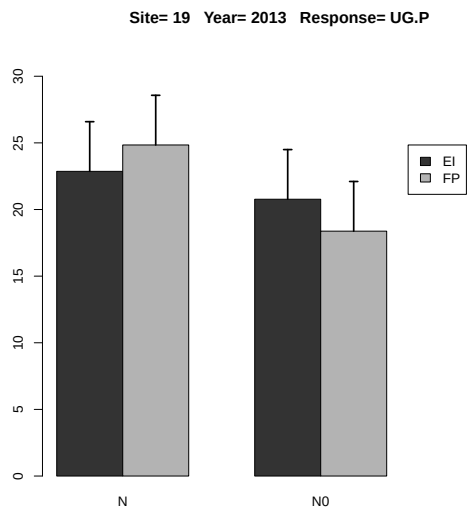

Figure 3.92: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	FP	N0	37.386
2	2	FP	N0	35.675
3	3	FP	N0	44.207
4	4	FP	N0	51.053
5	1	FP	N	58.775
6	2	FP	N	61.319
7	3	FP	N	54.186
8	4	FP	N	53.277
9	1	EI	N0	55.965
10	2	EI	N0	38.167
11	3	EI	N0	62.850
12	4	EI	N0	33.275
13	1	EI	N	57.241
14	2	EI	N	55.377
15	3	EI	N	45.133
16	4	EI	N	51.676

Table 3.225: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	52.357	1.291	40.554	0.000
A FP	56.889	1.291	44.064	0.000
A EI-FP	-4.532	1.826	-2.482	0.164

Table 3.226: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 19 in year 2013 .

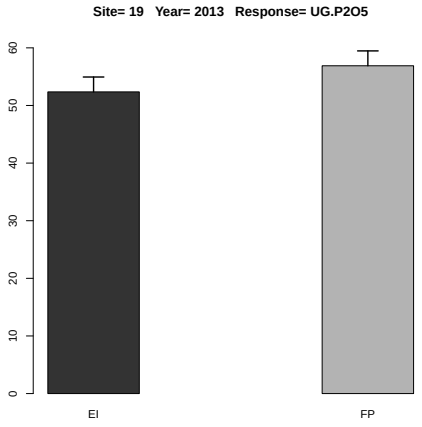

Figure 3.93: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.905	0.905	0.012	12.000	0.913
B	1.000	384.216	384.216	5.275	12.000	0.040
A:B	1.000	100.328	100.328	1.378	12.000	0.263

Table 3.227: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		49.961	3.017	12.000	16.560	43.386	56.535	0.000
2	FP		49.485	3.017	12.000	16.400	42.911	56.059	0.000
3		N	54.623	3.017	12.000	18.100	48.049	61.197	0.000
4		N0	44.822	3.017	12.000	14.860	38.248	51.397	0.000
5	EI	N	52.357	4.267	12.000	12.270	43.060	61.654	0.000
6	FP	N	56.889	4.267	12.000	13.330	47.592	66.186	0.000
7	EI	N0	47.564	4.267	12.000	11.150	38.267	56.861	0.000
8	FP	N0	42.080	4.267	12.000	9.860	32.783	51.378	0.000

Table 3.228: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 19 in year 2013 .

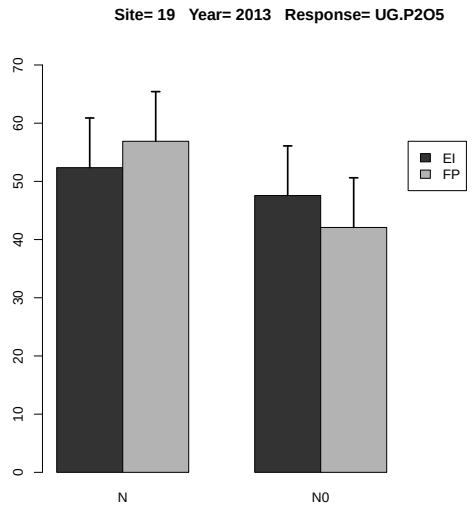

Figure 3.94: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.476	4.267	12.000	0.110	-8.821	9.773	0.913
B N-N0	9.801	4.267	12.000	2.300	0.504	19.098	0.040
A:B EI N- FP N	-4.532	6.035	12.000	-0.750	-17.681	8.616	0.467
A:B EI N- EI N0	4.793	6.035	12.000	0.790	-8.356	17.941	0.442
A:B EI N- FP N0	10.277	6.035	12.000	1.700	-2.872	23.425	0.114
A:B FP N- EI N0	9.325	6.035	12.000	1.550	-3.823	22.473	0.148
A:B FP N- FP N0	14.809	6.035	12.000	2.450	1.661	27.957	0.030
A:B EI N0- FP N0	5.484	6.035	12.000	0.910	-7.664	18.632	0.381

Table 3.229: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 19 in year 2013 .

3.2.8 Response Variable UG.K

	rep	A	B	y
1	1	FP	N0	18.247
2	2	FP	N0	19.473
3	3	FP	N0	12.590
4	4	FP	N0	13.376
5	1	FP	N	30.555
6	2	FP	N	22.314
7	3	FP	N	17.435
8	4	FP	N	23.265
9	1	EI	N0	15.938
10	2	EI	N0	15.556
11	3	EI	N0	18.663
12	4	EI	N0	18.405
13	1	EI	N	24.996
14	2	EI	N	21.984
15	3	EI	N	17.245
16	4	EI	N	22.566

Table 3.230: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	21.698	0.914	23.740	0.000
A FP	23.392	0.914	25.594	0.000
A EI-FP	-1.694	1.293	-1.311	0.470

Table 3.231: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 19 in year 2013 .

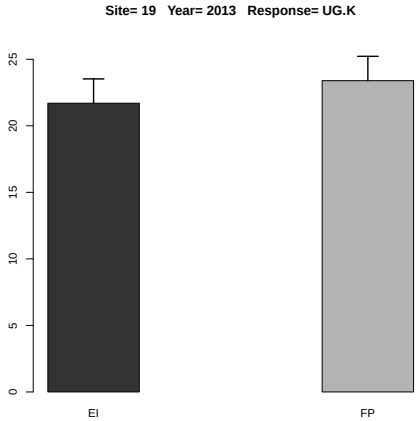

Figure 3.95: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.200	0.200	0.020	2.999	0.895
B	1.000	144.671	144.671	14.814	6.000	0.008
A:B	1.000	8.489	8.489	0.869	6.000	0.387

Table 3.232: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.419	1.475	5.300	13.170	15.690	23.148	0.000
2	FP		19.657	1.475	5.300	13.330	15.928	23.386	0.000
3		N	22.545	1.448	5.500	15.570	18.924	26.166	0.000
4		N0	16.531	1.448	5.500	11.420	12.911	20.152	0.000
5	EI	N	21.698	1.843	10.100	11.780	17.597	25.798	0.000
6	FP	N	23.392	1.843	10.100	12.690	19.292	27.493	0.000
7	EI	N0	17.141	1.843	10.100	9.300	13.040	21.241	0.000
8	FP	N0	15.921	1.843	10.100	8.640	11.821	20.022	0.000

Table 3.233: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.238	1.661	3.000	-0.140	-5.524	5.049	0.895
B N-N0	6.014	1.562	6.000	3.850	2.191	9.837	0.008
A:B EI N- FP N	-1.694	2.280	7.700	-0.740	-6.994	3.605	0.480
A:B EI N- EI N0	4.557	2.210	6.000	2.060	-0.850	9.964	0.085
A:B EI N- FP N0	5.776	2.280	7.700	2.530	0.477	11.075	0.036
A:B FP N- EI N0	6.252	2.280	7.700	2.740	0.952	11.551	0.026
A:B FP N- FP N0	7.471	2.210	6.000	3.380	2.064	12.878	0.015
A:B EI N0- FP N0	1.219	2.280	7.700	0.530	-4.080	6.518	0.608

Table 3.234: Estimate of contrast in two-way ANOVA for variable UG.K at site 19 in year 2013 .

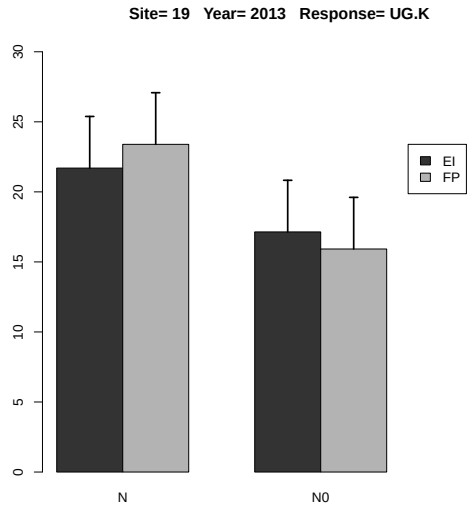

Figure 3.96: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	FP	N0	21.987
2	2	FP	N0	23.465
3	3	FP	N0	15.171
4	4	FP	N0	16.119
5	1	FP	N	36.819
6	2	FP	N	26.888
7	3	FP	N	21.009
8	4	FP	N	28.034
9	1	EI	N0	19.206
10	2	EI	N0	18.745
11	3	EI	N0	22.489
12	4	EI	N0	22.179
13	1	EI	N	30.120
14	2	EI	N	26.491
15	3	EI	N	20.780
16	4	EI	N	27.192

Table 3.235: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	26.146	1.101	23.740	0.000
A FP	28.188	1.101	25.594	0.000
A EI-FP	-2.042	1.558	-1.311	0.469

Table 3.236: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 19 in year 2013 .

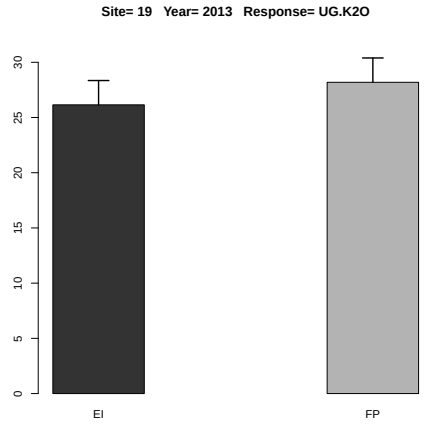

Figure 3.97: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.290	0.290	0.020	2.999	0.895
B	1.000	210.065	210.065	14.814	6.000	0.008
A:B	1.000	12.326	12.326	0.869	6.000	0.387

Table 3.237: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.400	1.777	5.300	13.170	18.907	27.894	0.000
2	FP		23.687	1.777	5.300	13.330	19.193	28.180	0.000
3		N	27.167	1.744	5.500	15.570	22.804	31.529	0.000
4		N0	19.920	1.744	5.500	11.420	15.557	24.283	0.000
5	EI	N	26.146	2.220	10.100	11.780	21.205	31.087	0.000
6	FP	N	28.188	2.220	10.100	12.690	23.247	33.129	0.000
7	EI	N0	20.654	2.220	10.100	9.300	15.713	25.596	0.000
8	FP	N0	19.185	2.220	10.100	8.640	14.244	24.127	0.000

Table 3.238: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 19 in year 2013 .

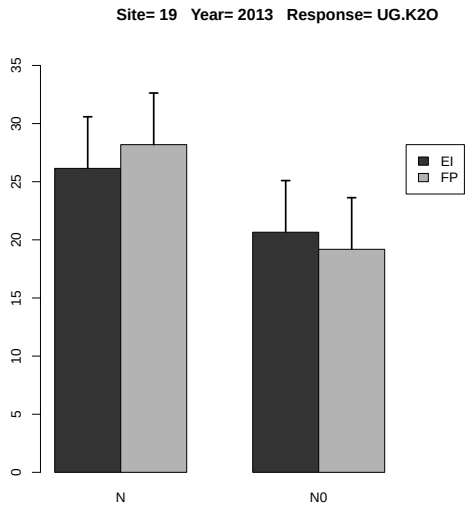

Figure 3.98: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.286	2.001	3.000	-0.140	-6.657	6.084	0.895
B N-N0	7.247	1.883	6.000	3.850	2.640	11.854	0.008
A:B EI N- FP N	-2.042	2.748	7.700	-0.740	-8.427	4.344	0.480
A:B EI N- EI N0	5.491	2.663	6.000	2.060	-1.024	12.007	0.085
A:B EI N- FP N0	6.960	2.748	7.700	2.530	0.575	13.346	0.036
A:B FP N- EI N0	7.533	2.748	7.700	2.740	1.148	13.919	0.026
A:B FP N- FP N0	9.002	2.663	6.000	3.380	2.487	15.518	0.015
A:B EI N0- FP N0	1.469	2.748	7.700	0.530	-4.917	7.855	0.608

Table 3.239: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 19 in year 2013 .

3.2.10 Response Variable UG.Ca

	rep	A	B	y
1	1	FP	N0	0.000
2	2	FP	N0	0.974
3	3	FP	N0	0.839
4	4	FP	N0	0.000
5	1	FP	N	1.222
6	2	FP	N	1.116
7	3	FP	N	1.245
8	4	FP	N	0.000
9	1	EI	N0	0.000
10	2	EI	N0	1.111
11	3	EI	N0	1.098
12	4	EI	N0	0.000
13	1	EI	N	1.250
14	2	EI	N	1.099
15	3	EI	N	1.232
16	4	EI	N	1.128

Table 3.240: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Ca

	Estimate	S.E.	t-value	p-value
A EI	1.177	0.200	5.894	0.019
A FP	0.896	0.200	4.485	0.040
A EI-FP	0.281	0.282	0.996	0.616

Table 3.241: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Ca at site 19 in year 2013 .

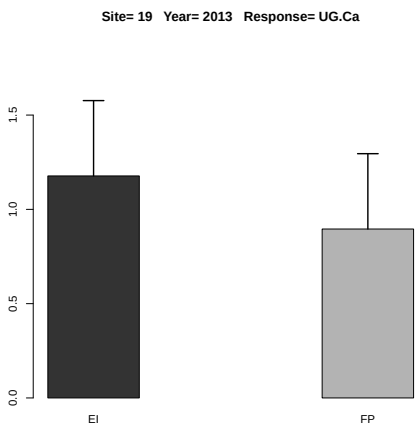

Figure 3.99: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.145	0.145	1.014	8.998	0.340
B	1.000	1.140	1.140	7.981	8.998	0.020
A:B	1.000	0.033	0.033	0.233	8.998	0.641

Table 3.242: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.865	0.218	4.500	3.960	0.282	1.447	0.013
2	FP		0.674	0.218	4.500	3.090	0.092	1.257	0.032
3		N	1.036	0.218	4.500	4.750	0.454	1.619	0.007
4		N0	0.503	0.218	4.500	2.300	-0.080	1.085	0.076
5	EI	N	1.177	0.256	7.400	4.600	0.578	1.776	0.002
6	FP	N	0.896	0.256	7.400	3.500	0.297	1.495	0.009
7	EI	N0	0.552	0.256	7.400	2.160	-0.047	1.151	0.066
8	FP	N0	0.453	0.256	7.400	1.770	-0.146	1.052	0.118

Table 3.243: Estimate of treatment means in tow-way ANOVA for variable UG.Ca at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.190	0.189	9.000	1.010	-0.237	0.618	0.340
B N-N0	0.534	0.189	9.000	2.830	0.106	0.961	0.020
A:B EI N- FP N	0.281	0.267	9.000	1.050	-0.323	0.886	0.320
A:B EI N- EI N0	0.625	0.267	9.000	2.340	0.020	1.230	0.044
A:B EI N- FP N0	0.724	0.267	9.000	2.710	0.119	1.329	0.024
A:B FP N- EI N0	0.344	0.267	9.000	1.290	-0.261	0.948	0.231
A:B FP N- FP N0	0.443	0.267	9.000	1.660	-0.162	1.047	0.132
A:B EI N0- FP N0	0.099	0.267	9.000	0.370	-0.505	0.704	0.720

Table 3.244: Estimate of contrast in two-way ANOVA for variable UG.Ca at site 19 in year 2013 .

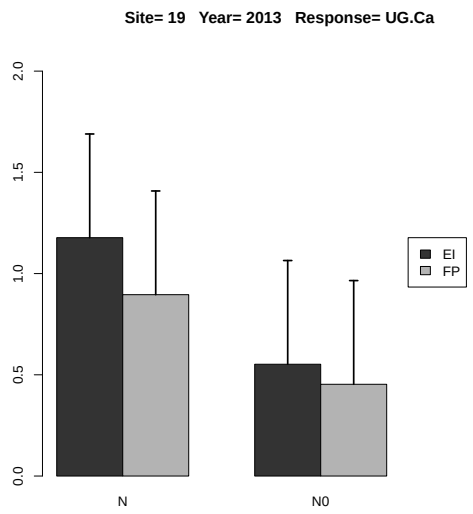

Figure 3.100: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.11 Response Variable UG.Mg

	rep	A	B	y
1	1	FP	N0	10.564
2	2	FP	N0	15.579
3	3	FP	N0	11.750
4	4	FP	N0	10.701
5	1	FP	N	19.555
6	2	FP	N	18.967
7	3	FP	N	11.208
8	4	FP	N	13.294
9	1	EI	N0	14.876
10	2	EI	N0	10.000
11	3	EI	N0	19.761
12	4	EI	N0	11.624
13	1	EI	N	18.747
14	2	EI	N	20.885
15	3	EI	N	12.318
16	4	EI	N	16.925

Table 3.245: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	17.219	0.651	26.430	0.000
A FP	15.756	0.651	24.186	0.000
A EI-FP	1.462	0.921	1.587	0.365

Table 3.246: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 19 in year 2013 .

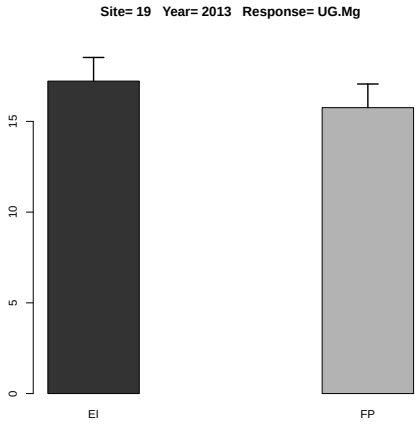

Figure 3.101: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11.419	11.419	0.838	12.000	0.378
B	1.000	45.710	45.710	3.355	12.000	0.092
A:B	1.000	0.206	0.206	0.015	12.000	0.904

Table 3.247: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.642	1.305	12.000	11.990	12.799	18.485	0.000
2	FP		13.952	1.305	12.000	10.690	11.109	16.796	0.000
3		N	16.487	1.305	12.000	12.630	13.644	19.331	0.000
4		N0	13.107	1.305	12.000	10.040	10.264	15.950	0.000
5	EI	N	17.218	1.845	12.000	9.330	13.198	21.239	0.000
6	FP	N	15.756	1.845	12.000	8.540	11.735	19.777	0.000
7	EI	N0	14.065	1.845	12.000	7.620	10.044	18.086	0.000
8	FP	N0	12.149	1.845	12.000	6.580	8.128	16.169	0.000

Table 3.248: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 19 in year 2013 .

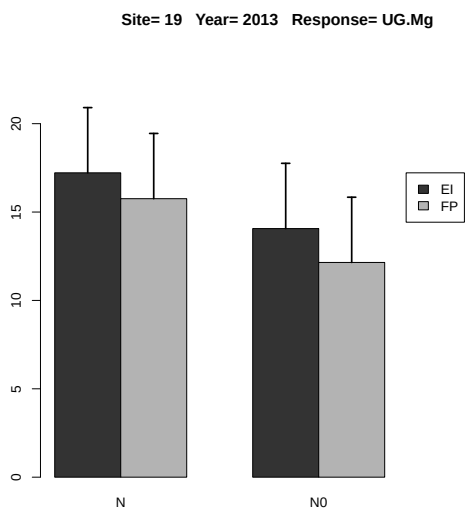

Figure 3.102: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.690	1.845	12.000	0.920	-2.331	5.710	0.378
B N-N0	3.381	1.845	12.000	1.830	-0.640	7.401	0.092
A:B EI N- FP N	1.462	2.610	12.000	0.560	-4.224	7.149	0.586
A:B EI N- EI N0	3.153	2.610	12.000	1.210	-2.533	8.840	0.250
A:B EI N- FP N0	5.070	2.610	12.000	1.940	-0.616	10.756	0.076
A:B FP N- EI N0	1.691	2.610	12.000	0.650	-3.995	7.377	0.529
A:B FP N- FP N0	3.608	2.610	12.000	1.380	-2.079	9.294	0.192
A:B EI N0- FP N0	1.917	2.610	12.000	0.730	-3.770	7.603	0.477

Table 3.249: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 19 in year 2013 .

3.2.12 Response Variable UG.S

	rep	A	B	y
1	1	FP	N0	2.881
2	2	FP	N0	3.895
3	3	FP	N0	4.197
4	4	FP	N0	2.675
5	1	FP	N	6.111
6	2	FP	N	3.347
7	3	FP	N	3.736
8	4	FP	N	4.431
9	1	EI	N0	5.313
10	2	EI	N0	4.445
11	3	EI	N0	4.391
12	4	EI	N0	3.875
13	1	EI	N	4.999
14	2	EI	N	3.298
15	3	EI	N	6.159
16	4	EI	N	4.513

Table 3.250: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	4.742	0.527	8.999	0.006
A FP	4.406	0.527	8.362	0.007
A EI-FP	0.336	0.745	0.451	0.893

Table 3.251: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 19 in year 2013 .

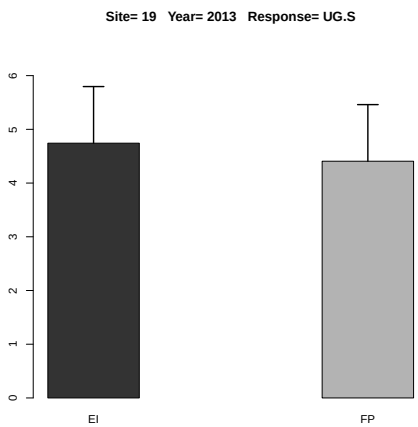

Figure 3.103: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.044	2.044	2.307	8.999	0.163
B	1.000	1.515	1.515	1.710	8.999	0.223
A:B	1.000	0.575	0.575	0.649	8.999	0.441

Table 3.252: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.624	0.357	7.800	12.960	3.798	5.450	0.000
2	FP		3.909	0.357	7.800	10.950	3.083	4.735	0.000
3		N	4.574	0.357	7.800	12.820	3.748	5.400	0.000
4		N0	3.959	0.357	7.800	11.090	3.133	4.785	0.000
5	EI	N	4.742	0.488	11.800	9.720	3.677	5.807	0.000
6	FP	N	4.406	0.488	11.800	9.030	3.341	5.471	0.000
7	EI	N0	4.506	0.488	11.800	9.230	3.441	5.571	0.000
8	FP	N0	3.412	0.488	11.800	6.990	2.347	4.477	0.000

Table 3.253: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.715	0.471	9.000	1.520	-0.350	1.780	0.163
B N-N0	0.616	0.471	9.000	1.310	-0.449	1.680	0.223
A:B EI N- FP N	0.336	0.666	9.000	0.500	-1.170	1.842	0.626
A:B EI N- EI N0	0.236	0.666	9.000	0.360	-1.269	1.742	0.731
A:B EI N- FP N0	1.330	0.666	9.000	2.000	-0.175	2.836	0.077
A:B FP N- EI N0	-0.099	0.666	9.000	-0.150	-1.605	1.406	0.884
A:B FP N- FP N0	0.995	0.666	9.000	1.490	-0.511	2.500	0.169
A:B EI N0- FP N0	1.094	0.666	9.000	1.640	-0.412	2.600	0.135

Table 3.254: Estimate of contrast in two-way ANOVA for variable UG.S at site 19 in year 2013 .

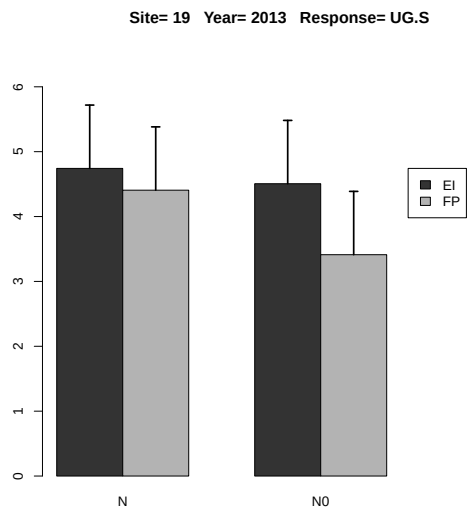

Figure 3.104: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.13 Response Variable US.N

	rep	A	B	y
1	1	FP	N0	52.502
2	2	FP	N0	52.838
3	3	FP	N0	43.505
4	4	FP	N0	47.916
5	1	FP	N	43.477
6	2	FP	N	66.009
7	3	FP	N	77.127
8	4	FP	N	55.028
9	1	EI	N0	61.721
10	2	EI	N0	73.370
11	3	EI	N0	57.630
12	4	EI	N0	66.158
13	1	EI	N	68.582
14	2	EI	N	86.033
15	3	EI	N	61.665
16	4	EI	N	67.698

Table 3.255: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	70.995	6.399	11.095	0.003
A FP	60.410	6.399	9.441	0.005
A EI-FP	10.584	9.049	1.170	0.532

Table 3.256: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 19 in year 2013 .

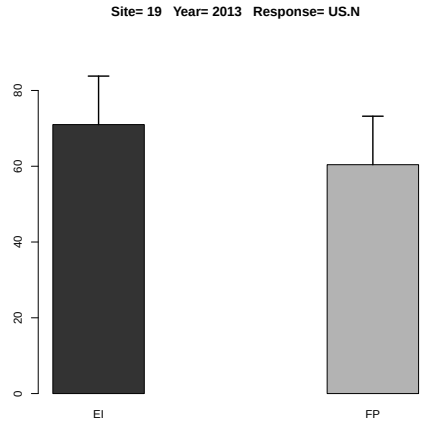

Figure 3.105: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	648.474	648.474	7.774	2.998	0.069
B	1.000	306.059	306.059	3.669	6.000	0.104
A:B	1.000	24.454	24.454	0.293	6.000	0.608

Table 3.257: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		67.857	3.681	5.800	18.440	58.770	76.944	0.000
2	FP		54.800	3.681	5.800	14.890	45.713	63.888	0.000
3		N	65.702	3.644	6.700	18.030	57.014	74.391	0.000
4		N0	56.955	3.644	6.700	15.630	48.267	65.643	0.000
5	EI	N	70.995	4.896	11.500	14.500	60.279	81.710	0.000
6	FP	N	60.410	4.896	11.500	12.340	49.695	71.126	0.000
7	EI	N0	64.720	4.896	11.500	13.220	54.004	75.436	0.000
8	FP	N0	49.191	4.896	11.500	10.050	38.475	59.906	0.000

Table 3.258: Estimate of treatment means in tow-way ANOVA for variable US.N at site 19 in year 2013 .

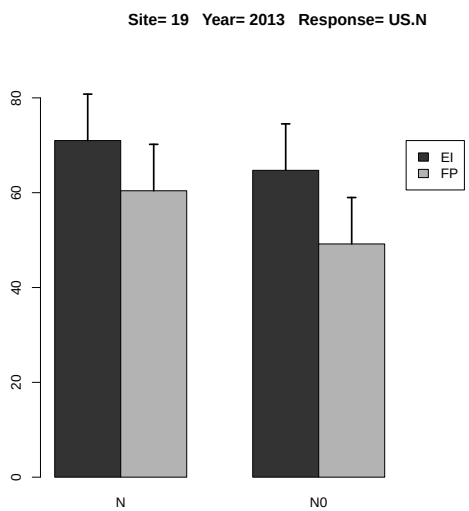

Figure 3.106: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	13.057	4.683	3.000	2.790	-1.851	27.965	0.069
B N-N0	8.747	4.566	6.000	1.920	-2.427	19.921	0.104
A:B EI N- FP N	10.584	6.541	7.900	1.620	-4.545	25.714	0.145
A:B EI N- EI N0	6.275	6.458	6.000	0.970	-9.528	22.077	0.369
A:B EI N- FP N0	21.804	6.541	7.900	3.330	6.675	36.934	0.011
A:B FP N- EI N0	-4.309	6.541	7.900	-0.660	-19.439	10.820	0.529
A:B FP N- FP N0	11.220	6.458	6.000	1.740	-4.582	27.022	0.133
A:B EI N0- FP N0	15.529	6.541	7.900	2.370	0.400	30.659	0.045

Table 3.259: Estimate of contrast in two-way ANOVA for variable US.N at site 19 in year 2013 .

3.2.14 Response Variable US.P

	rep	A	B	y
1	1	FP	N0	5.856
2	2	FP	N0	5.598
3	3	FP	N0	5.384
4	4	FP	N0	6.519
5	1	FP	N	4.294
6	2	FP	N	4.396
7	3	FP	N	5.336
8	4	FP	N	6.633
9	1	EI	N0	4.739
10	2	EI	N0	4.658
11	3	EI	N0	4.762
12	4	EI	N0	5.118
13	1	EI	N	5.365
14	2	EI	N	5.905
15	3	EI	N	5.423
16	4	EI	N	5.292

Table 3.260: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	5.496	0.447	12.306	0.002
A FP	5.165	0.447	11.564	0.002
A EI-FP	0.331	0.632	0.525	0.859

Table 3.261: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 19 in year 2013 .

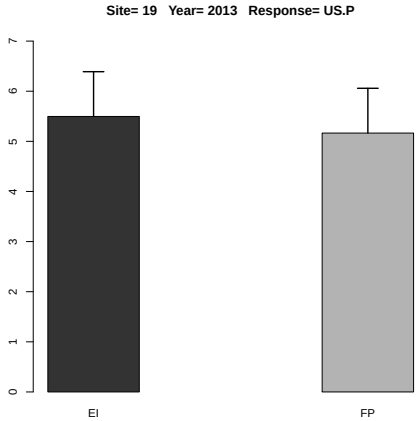

Figure 3.107: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.203	0.203	0.913	3.000	0.410
B	1.000	0.000	0.000	0.000	5.999	0.996
A:B	1.000	1.826	1.826	8.233	5.999	0.028

Table 3.262: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5.158	0.262	6.000	19.710	4.517	5.799	0.000
2	FP		5.502	0.262	6.000	21.020	4.861	6.143	0.000
3		N	5.331	0.223	5.400	23.860	4.768	5.894	0.000
4		N0	5.329	0.223	5.400	23.860	4.766	5.892	0.000
5	EI	N	5.496	0.310	10.100	17.720	4.807	6.186	0.000
6	FP	N	5.165	0.310	10.100	16.650	4.475	5.855	0.000
7	EI	N0	4.819	0.310	10.100	15.540	4.130	5.509	0.000
8	FP	N0	5.839	0.310	10.100	18.820	5.149	6.529	0.000

Table 3.263: Estimate of treatment means in tow-way ANOVA for variable US.P at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.344	0.360	3.000	-0.960	-1.491	0.802	0.410
B N-N0	0.001	0.235	6.000	0.010	-0.575	0.578	0.996
A:B EI N- FP N	0.331	0.430	5.600	0.770	-0.740	1.403	0.472
A:B EI N- EI N0	0.677	0.333	6.000	2.030	-0.138	1.492	0.088
A:B EI N- FP N0	-0.343	0.430	5.600	-0.800	-1.415	0.729	0.458
A:B FP N- EI N0	0.346	0.430	5.600	0.800	-0.726	1.417	0.455
A:B FP N- FP N0	-0.674	0.333	6.000	-2.020	-1.489	0.141	0.089
A:B EI N0- FP N0	-1.020	0.430	5.600	-2.370	-2.092	0.052	0.058

Table 3.264: Estimate of contrast in two-way ANOVA for variable US.P at site 19 in year 2013 .

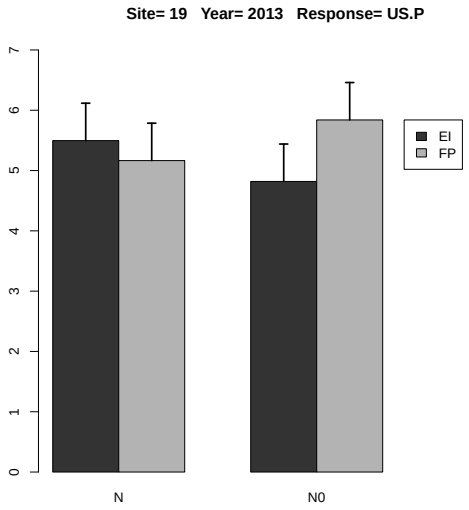

Figure 3.108: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.15 Response Variable US.P2O5

	rep	A	B	y
1	1	FP	N0	9.240
2	2	FP	N0	9.068
3	3	FP	N0	7.580
4	4	FP	N0	9.244
5	1	FP	N	6.477
6	2	FP	N	6.557
7	3	FP	N	7.514
8	4	FP	N	9.801
9	1	EI	N0	7.432
10	2	EI	N0	7.974
11	3	EI	N0	7.319
12	4	EI	N0	8.057
13	1	EI	N	7.461
14	2	EI	N	8.677
15	3	EI	N	8.033
16	4	EI	N	8.354

Table 3.265: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	8.131	0.526	15.454	0.001
A FP	7.587	0.526	14.421	0.001
A EI-FP	0.544	0.744	0.731	0.756

Table 3.266: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 19 in year 2013 .

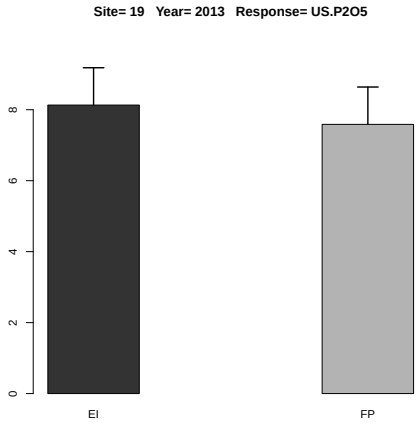

Figure 3.109: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.296	0.296	0.421	8.999	0.533
B	1.000	0.577	0.577	0.822	8.999	0.388
A:B	1.000	2.660	2.660	3.787	8.999	0.084

Table 3.267: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.913	0.358	6.400	22.090	7.048	8.778	0.000
2	FP		8.185	0.358	6.400	22.850	7.320	9.050	0.000
3		N	7.859	0.358	6.400	21.940	6.995	8.724	0.000
4		N0	8.239	0.358	6.400	23.000	7.374	9.104	0.000
5	EI	N	8.131	0.465	10.900	17.490	7.106	9.156	0.000
6	FP	N	7.588	0.465	10.900	16.320	6.562	8.613	0.000
7	EI	N0	7.696	0.465	10.900	16.550	6.670	8.720	0.000
8	FP	N0	8.783	0.465	10.900	18.890	7.758	9.808	0.000

Table 3.268: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 19 in year 2013 .

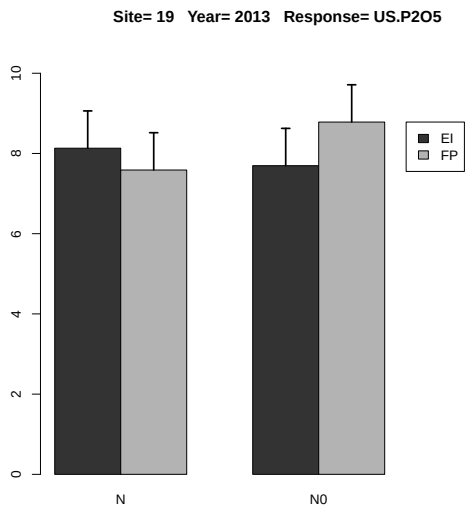

Figure 3.110: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.272	0.419	9.000	-0.650	-1.220	0.676	0.533
B N-N0	-0.380	0.419	9.000	-0.910	-1.328	0.568	0.388
A:B EI N- FP N	0.544	0.593	9.000	0.920	-0.797	1.884	0.383
A:B EI N- EI N0	0.436	0.593	9.000	0.740	-0.905	1.776	0.481
A:B EI N- FP N0	-0.652	0.593	9.000	-1.100	-1.993	0.689	0.300
A:B FP N- EI N0	-0.108	0.593	9.000	-0.180	-1.449	1.233	0.860
A:B FP N- FP N0	-1.195	0.593	9.000	-2.020	-2.536	0.145	0.074
A:B EI N0- FP N0	-1.087	0.593	9.000	-1.830	-2.428	0.253	0.100

Table 3.269: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 19 in year 2013 .

3.2.16 Response Variable US.K

	rep	A	B	y
1	1	FP	N0	107.887
2	2	FP	N0	115.658
3	3	FP	N0	91.917
4	4	FP	N0	79.373
5	1	FP	N	109.955
6	2	FP	N	122.926
7	3	FP	N	139.698
8	4	FP	N	117.413
9	1	EI	N0	120.911
10	2	EI	N0	104.326
11	3	EI	N0	100.620
12	4	EI	N0	91.590
13	1	EI	N	118.187
14	2	EI	N	139.566
15	3	EI	N	95.199
16	4	EI	N	135.526

Table 3.270: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	122.120	10.513	11.617	0.003
A FP	122.498	10.513	11.653	0.003
A EI-FP	-0.379	14.867	-0.025	1.000

Table 3.271: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 19 in year 2013 .

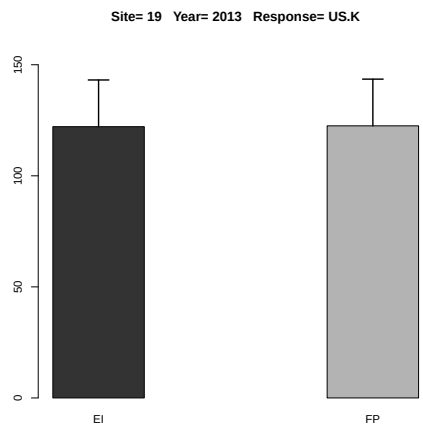

Figure 3.111: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	27.817	27.817	0.113	12.000	0.742
B	1.000	1726.163	1726.163	7.031	12.000	0.021
A:B	1.000	36.378	36.378	0.148	12.000	0.707

Table 3.272: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		113.241	5.540	12.000	20.440	101.171	125.310	0.000
2	FP		110.603	5.540	12.000	19.970	98.534	122.673	0.000
3		N	122.309	5.540	12.000	22.080	110.239	134.379	0.000
4		N0	101.535	5.540	12.000	18.330	89.466	113.605	0.000
5	EI	N	122.120	7.834	12.000	15.590	105.050	139.189	0.000
6	FP	N	122.498	7.834	12.000	15.640	105.429	139.567	0.000
7	EI	N0	104.362	7.834	12.000	13.320	87.292	121.431	0.000
8	FP	N0	98.709	7.834	12.000	12.600	81.640	115.778	0.000

Table 3.273: Estimate of treatment means in tow-way ANOVA for variable US.K at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.637	7.834	12.000	0.340	-14.432	19.706	0.742
B N-N0	20.774	7.834	12.000	2.650	3.704	37.843	0.021
A:B EI N- FP N	-0.379	11.079	12.000	-0.030	-24.518	23.761	0.973
A:B EI N- EI N0	17.758	11.079	12.000	1.600	-6.382	41.897	0.135
A:B EI N- FP N0	23.411	11.079	12.000	2.110	-0.729	47.550	0.056
A:B FP N- EI N0	18.136	11.079	12.000	1.640	-6.003	42.276	0.128
A:B FP N- FP N0	23.789	11.079	12.000	2.150	-0.350	47.929	0.053
A:B EI N0- FP N0	5.653	11.079	12.000	0.510	-18.487	29.792	0.619

Table 3.274: Estimate of contrast in two-way ANOVA for variable US.K at site 19 in year 2013 .

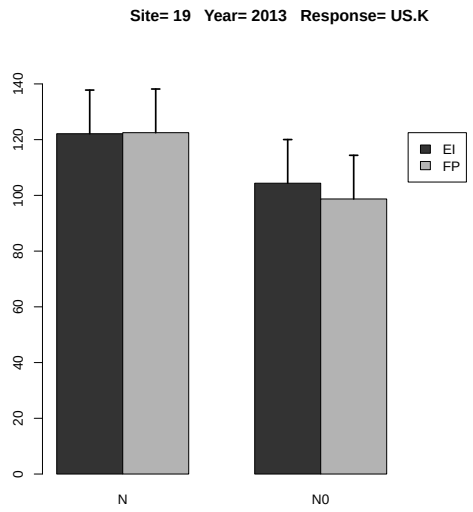

Figure 3.112: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.17 Response Variable US.K2O

	rep	A	B	y
1	1	FP	N0	108.297
2	2	FP	N0	116.112
3	3	FP	N0	92.499
4	4	FP	N0	79.837
5	1	FP	N	110.360
6	2	FP	N	123.441
7	3	FP	N	140.108
8	4	FP	N	117.790
9	1	EI	N0	121.238
10	2	EI	N0	104.884
11	3	EI	N0	101.162
12	4	EI	N0	92.024
13	1	EI	N	118.648
14	2	EI	N	140.074
15	3	EI	N	95.614
16	4	EI	N	136.077

Table 3.275: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	122.603	10.526	11.648	0.003
A FP	122.925	10.526	11.678	0.003
A EI-FP	-0.321	14.886	-0.022	1.000

Table 3.276: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 19 in year 2013 .

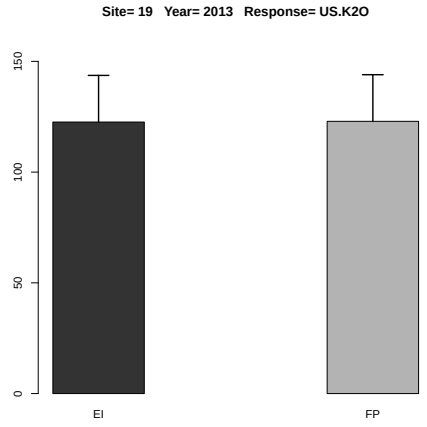

Figure 3.113: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	28.295	28.295	0.115	12.000	0.740
B	1.000	1723.502	1723.502	7.021	12.000	0.021
A:B	1.000	35.545	35.545	0.145	12.000	0.710

Table 3.277: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		113.715	5.540	12.000	20.530	101.646	125.785	0.000
2	FP		111.055	5.540	12.000	20.050	98.986	123.125	0.000
3		N	122.764	5.540	12.000	22.160	110.695	134.834	0.000
4		N0	102.007	5.540	12.000	18.410	89.937	114.076	0.000
5	EI	N	122.603	7.834	12.000	15.650	105.534	139.672	0.000
6	FP	N	122.925	7.834	12.000	15.690	105.856	139.994	0.000
7	EI	N0	104.827	7.834	12.000	13.380	87.758	121.896	0.000
8	FP	N0	99.186	7.834	12.000	12.660	82.117	116.255	0.000

Table 3.278: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 19 in year 2013 .

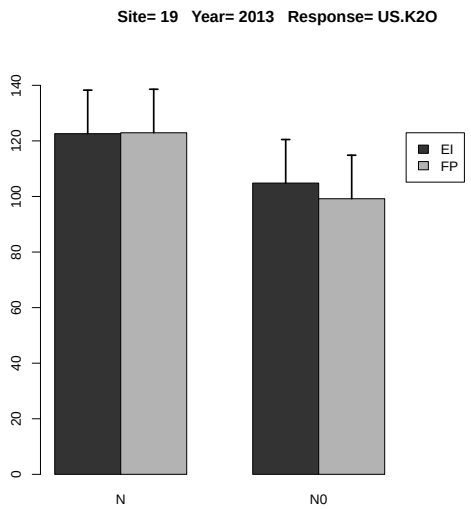

Figure 3.114: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.660	7.834	12.000	0.340	-14.409	19.729	0.740
B N-N0	20.758	7.834	12.000	2.650	3.689	37.827	0.021
A:B EI N- FP N	-0.321	11.079	12.000	-0.030	-24.460	23.818	0.977
A:B EI N- EI N0	17.777	11.079	12.000	1.600	-6.363	41.916	0.135
A:B EI N- FP N0	23.417	11.079	12.000	2.110	-0.722	47.556	0.056
A:B FP N- EI N0	18.098	11.079	12.000	1.630	-6.041	42.237	0.128
A:B FP N- FP N0	23.738	11.079	12.000	2.140	-0.401	47.878	0.053
A:B EI N0- FP N0	5.641	11.079	12.000	0.510	-18.498	29.780	0.620

Table 3.279: Estimate of contrast in two-way ANOVA for variable US.K2O at site 19 in year 2013 .

3.2.18 Response Variable US.Ca

	rep	A	B	y
1	1	FP	N0	16.291
2	2	FP	N0	13.975
3	3	FP	N0	17.810
4	4	FP	N0	15.573
5	1	FP	N	16.403
6	2	FP	N	19.188
7	3	FP	N	28.424
8	4	FP	N	19.647
9	1	EI	N0	23.863
10	2	EI	N0	15.461
11	3	EI	N0	23.096
12	4	EI	N0	19.336
13	1	EI	N	20.320
14	2	EI	N	23.639
15	3	EI	N	21.919
16	4	EI	N	23.514

Table 3.280: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Ca

	Estimate	S.E.	t-value	p-value
A EI	22.348	1.873	11.931	0.002
A FP	20.916	1.873	11.166	0.002
A EI-FP	1.433	2.649	0.541	0.852

Table 3.281: Estimate of treatment means and contrast in one-way ANOVA for variable US.Ca at site 19 in year 2013 .

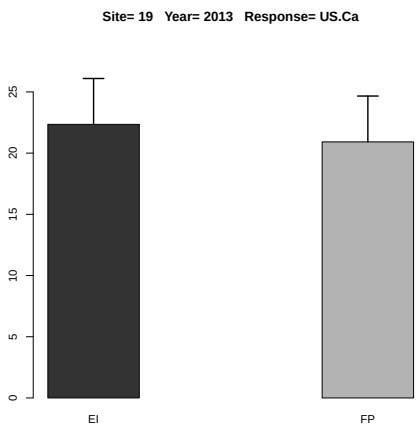

Figure 3.115: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	35.514	35.514	3.504	9.000	0.094
B	1.000	47.781	47.781	4.715	9.000	0.058
A:B	1.000	9.573	9.573	0.945	9.000	0.357

Table 3.282: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.394	1.293	6.900	16.550	18.329	24.458	0.000
2	FP		18.414	1.293	6.900	14.240	15.350	21.478	0.000
3		N	21.632	1.293	6.900	16.730	18.568	24.696	0.000
4		N0	18.176	1.293	6.900	14.060	15.111	21.240	0.000
5	EI	N	22.348	1.714	11.400	13.040	18.590	26.107	0.000
6	FP	N	20.916	1.714	11.400	12.200	17.157	24.674	0.000
7	EI	N0	20.439	1.714	11.400	11.920	16.680	24.198	0.000
8	FP	N0	15.912	1.714	11.400	9.280	12.154	19.671	0.000

Table 3.283: Estimate of treatment means in tow-way ANOVA for variable US.Ca at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.980	1.592	9.000	1.870	-0.621	6.580	0.094
B N-N0	3.456	1.592	9.000	2.170	-0.145	7.057	0.058
A:B EI N- FP N	1.433	2.251	9.000	0.640	-3.660	6.525	0.540
A:B EI N- EI N0	1.909	2.251	9.000	0.850	-3.183	7.002	0.418
A:B EI N- FP N0	6.436	2.251	9.000	2.860	1.343	11.528	0.019
A:B FP N- EI N0	0.476	2.251	9.000	0.210	-4.616	5.569	0.837
A:B FP N- FP N0	5.003	2.251	9.000	2.220	-0.089	10.096	0.053
A:B EI N0- FP N0	4.527	2.251	9.000	2.010	-0.566	9.619	0.075

Table 3.284: Estimate of contrast in two-way ANOVA for variable US.Ca at site 19 in year 2013 .

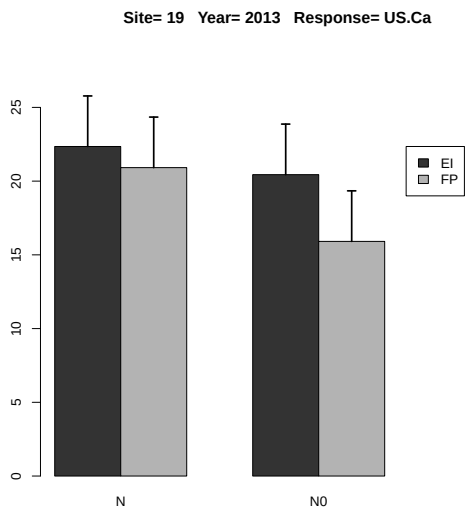

Figure 3.116: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.19 Response Variable US.Mg

	rep	A	B	y
1	1	FP	N0	21.391
2	2	FP	N0	18.655
3	3	FP	N0	18.830
4	4	FP	N0	19.396
5	1	FP	N	20.079
6	2	FP	N	20.828
7	3	FP	N	24.017
8	4	FP	N	18.562
9	1	EI	N0	17.161
10	2	EI	N0	19.243
11	3	EI	N0	18.562
12	4	EI	N0	21.082
13	1	EI	N	17.579
14	2	EI	N	23.196
15	3	EI	N	21.551
16	4	EI	N	20.181

Table 3.285: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	20.627	0.920	22.413	0.000
A FP	20.871	0.920	22.679	0.000
A EI-FP	-0.245	1.301	-0.188	0.980

Table 3.286: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 19 in year 2013 .

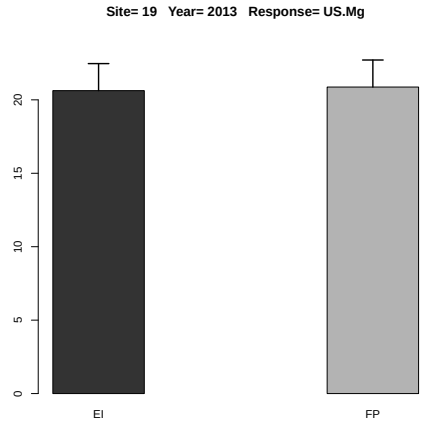

Figure 3.117: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.558	0.558	0.158	5.998	0.705
B	1.000	8.515	8.515	2.412	6.000	0.171
A:B	1.000	0.097	0.097	0.027	6.000	0.874

Table 3.287: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.819	0.712	6.000	27.840	18.077	21.561	0.000
2	FP		20.220	0.712	6.000	28.400	18.478	21.962	0.000
3		N	20.749	0.688	11.900	30.140	19.248	22.250	0.000
4		N0	19.290	0.688	11.900	28.020	17.789	20.791	0.000
5	EI	N	20.627	0.974	11.900	21.190	18.504	22.749	0.000
6	FP	N	20.872	0.974	11.900	21.440	18.749	22.994	0.000
7	EI	N0	19.012	0.974	11.900	19.530	16.890	21.134	0.000
8	FP	N0	19.568	0.974	11.900	20.100	17.445	21.690	0.000

Table 3.288: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 19 in year 2013 .

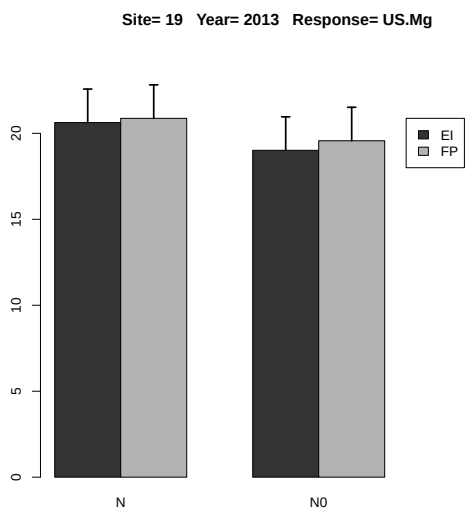

Figure 3.118: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.400	1.007	6.000	-0.400	-2.864	2.063	0.705
B N-N0	1.459	0.939	6.000	1.550	-0.840	3.758	0.171
A:B EI N- FP N	-0.245	1.377	11.900	-0.180	-3.247	2.757	0.862
A:B EI N- EI N0	1.615	1.329	6.000	1.220	-1.636	4.865	0.270
A:B EI N- FP N0	1.059	1.377	11.900	0.770	-1.943	4.060	0.457
A:B FP N- EI N0	1.859	1.377	11.900	1.350	-1.142	4.861	0.202
A:B FP N- FP N0	1.304	1.329	6.000	0.980	-1.947	4.554	0.364
A:B EI N0- FP N0	-0.556	1.377	11.900	-0.400	-3.558	2.446	0.694

Table 3.289: Estimate of contrast in two-way ANOVA for variable US.Mg at site 19 in year 2013 .

3.2.20 Response Variable US.S

	rep	A	B	y
1	1	FP	N0	3.733
2	2	FP	N0	4.269
3	3	FP	N0	3.512
4	4	FP	N0	3.390
5	1	FP	N	3.166
6	2	FP	N	3.960
7	3	FP	N	4.262
8	4	FP	N	3.399
9	1	EI	N0	3.904
10	2	EI	N0	4.084
11	3	EI	N0	3.605
12	4	EI	N0	3.491
13	1	EI	N	3.492
14	2	EI	N	5.356
15	3	EI	N	3.867
16	4	EI	N	3.710

Table 3.290: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	4.106	0.261	15.728	0.001
A FP	3.697	0.261	14.158	0.001
A EI-FP	0.410	0.369	1.110	0.560

Table 3.291: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 19 in year 2013 .

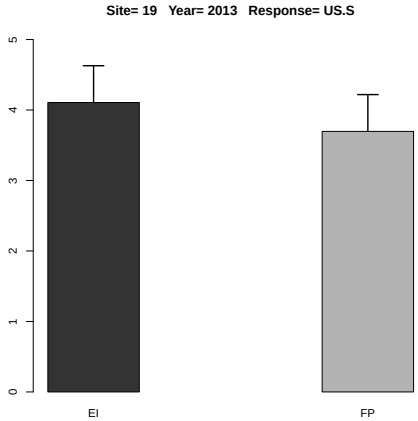

Figure 3.119: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.207	0.207	1.241	8.998	0.294
B	1.000	0.094	0.094	0.561	8.998	0.473
A:B	1.000	0.133	0.133	0.797	8.998	0.395

Table 3.292: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.939	0.232	4.500	16.970	3.323	4.555	0.000
2	FP		3.711	0.232	4.500	15.990	3.095	4.327	0.000
3		N	3.901	0.232	4.500	16.810	3.286	4.518	0.000
4		N0	3.749	0.232	4.500	16.150	3.133	4.365	0.000
5	EI	N	4.106	0.273	7.600	15.020	3.470	4.743	0.000
6	FP	N	3.697	0.273	7.600	13.520	3.060	4.333	0.000
7	EI	N0	3.771	0.273	7.600	13.800	3.135	4.408	0.000
8	FP	N0	3.726	0.273	7.600	13.630	3.089	4.363	0.000

Table 3.293: Estimate of treatment means in tow-way ANOVA for variable US.S at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.228	0.204	9.000	1.110	-0.234	0.689	0.294
B N-N0	0.153	0.204	9.000	0.750	-0.309	0.615	0.473
A:B EI N- FP N	0.410	0.289	9.000	1.420	-0.243	1.063	0.190
A:B EI N- EI N0	0.335	0.289	9.000	1.160	-0.318	0.989	0.276
A:B EI N- FP N0	0.380	0.289	9.000	1.320	-0.273	1.034	0.220
A:B FP N- EI N0	-0.075	0.289	9.000	-0.260	-0.728	0.579	0.802
A:B FP N- FP N0	-0.029	0.289	9.000	-0.100	-0.683	0.624	0.921
A:B EI N0- FP N0	0.045	0.289	9.000	0.160	-0.608	0.699	0.879

Table 3.294: Estimate of contrast in two-way ANOVA for variable US.S at site 19 in year 2013 .

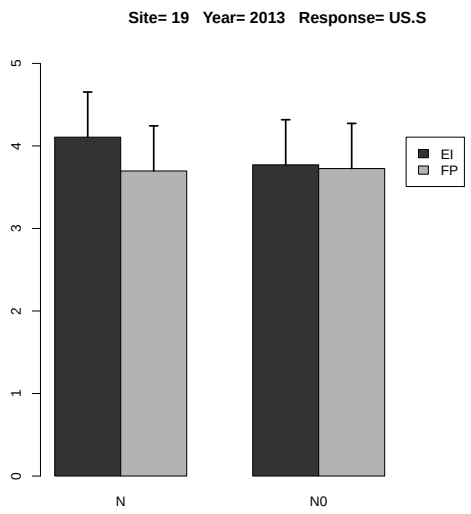

Figure 3.120: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.21 Response Variable UT.N

	rep	A	B	y
1	1	FP	N0	160.061
2	2	FP	N0	165.783
3	3	FP	N0	130.794
4	4	FP	N0	145.118
5	1	FP	N	202.362
6	2	FP	N	206.588
7	3	FP	N	220.344
8	4	FP	N	183.540
9	1	EI	N0	215.793
10	2	EI	N0	212.261
11	3	EI	N0	184.976
12	4	EI	N0	188.215
13	1	EI	N	222.308
14	2	EI	N	247.614
15	3	EI	N	218.103
16	4	EI	N	212.121

Table 3.295: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	225.036	6.445	34.915	0.000
A FP	203.208	6.445	31.528	0.000
A EI-FP	21.828	9.115	2.395	0.177

Table 3.296: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 19 in year 2013 .

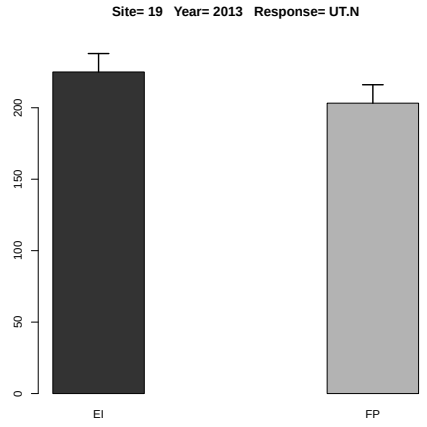

Figure 3.121: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5140.912	5140.912	34.852	9.000	0.000
B	1.000	6005.378	6005.378	40.712	9.000	0.000
A:B	1.000	786.472	786.472	5.332	9.000	0.046

Table 3.297: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		212.674	6.529	4.800	32.580	195.638	229.710	0.000
2	FP		176.824	6.529	4.800	27.080	159.788	193.860	0.000
3		N	214.123	6.529	4.800	32.800	197.086	231.159	0.000
4		N0	175.375	6.529	4.800	26.860	158.339	192.411	0.000
5	EI	N	225.036	7.814	8.200	28.800	207.078	242.995	0.000
6	FP	N	203.208	7.814	8.200	26.010	185.250	221.167	0.000
7	EI	N0	200.311	7.814	8.200	25.630	182.353	218.269	0.000
8	FP	N0	150.439	7.814	8.200	19.250	132.481	168.397	0.000

Table 3.298: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 19 in year 2013 .

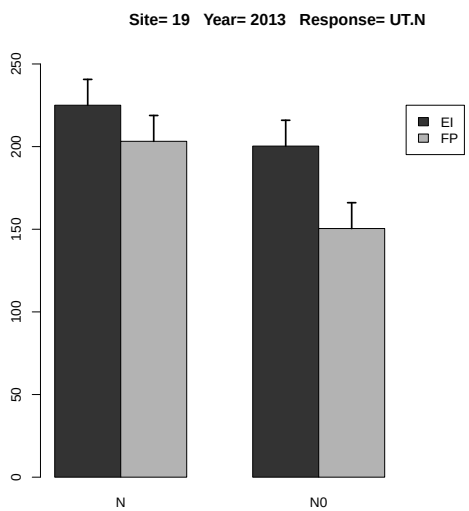

Figure 3.122: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	35.850	6.073	9.000	5.900	22.113	49.587	0.000
B N-N0	38.747	6.073	9.000	6.380	25.010	52.484	0.000
A:B EI N- FP N	21.828	8.588	9.000	2.540	2.401	41.255	0.032
A:B EI N- EI N0	24.725	8.588	9.000	2.880	5.298	44.153	0.018
A:B EI N- FP N0	74.597	8.588	9.000	8.690	55.170	94.025	0.000
A:B FP N- EI N0	2.897	8.588	9.000	0.340	-16.530	22.325	0.744
A:B FP N- FP N0	52.769	8.588	9.000	6.140	33.342	72.197	0.000
A:B EI N0- FP N0	49.872	8.588	9.000	5.810	30.445	69.300	0.000

Table 3.299: Estimate of contrast in two-way ANOVA for variable UT.N at site 19 in year 2013 .

3.2.22 Response Variable UT.P

	rep	A	B	y
1	1	FP	N0	22.182
2	2	FP	N0	21.177
3	3	FP	N0	24.688
4	4	FP	N0	28.813
5	1	FP	N	29.960
6	2	FP	N	31.173
7	3	FP	N	28.998
8	4	FP	N	29.898
9	1	EI	N0	29.178
10	2	EI	N0	21.325
11	3	EI	N0	32.207
12	4	EI	N0	19.649
13	1	EI	N	30.361
14	2	EI	N	30.087
15	3	EI	N	25.132
16	4	EI	N	27.859

Table 3.300: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	28.360	0.632	44.871	0.000
A FP	30.007	0.632	47.478	0.000
A EI-FP	-1.648	0.894	-1.844	0.289

Table 3.301: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 19 in year 2013 .

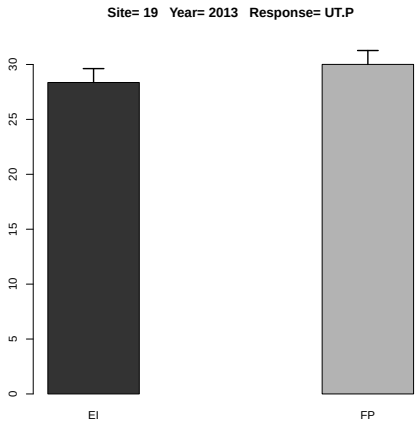

Figure 3.123: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.075	0.075	0.005	12.000	0.943
B	1.000	73.314	73.314	5.334	12.000	0.040
A:B	1.000	9.136	9.136	0.665	12.000	0.431

Table 3.302: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		26.975	1.311	12.000	20.580	24.119	29.831	0.000
2	FP		27.111	1.311	12.000	20.680	24.255	29.967	0.000
3		N	29.183	1.311	12.000	22.270	26.328	32.039	0.000
4		N0	24.902	1.311	12.000	19.000	22.047	27.758	0.000
5	EI	N	28.360	1.854	12.000	15.300	24.321	32.398	0.000
6	FP	N	30.008	1.854	12.000	16.190	25.969	34.046	0.000
7	EI	N0	25.590	1.854	12.000	13.810	21.551	29.628	0.000
8	FP	N0	24.215	1.854	12.000	13.060	20.176	28.254	0.000

Table 3.303: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.137	1.854	12.000	-0.070	-4.175	3.902	0.942
B N-N0	4.281	1.854	12.000	2.310	0.242	8.320	0.040
A:B EI N- FP N	-1.648	2.621	12.000	-0.630	-7.359	4.064	0.541
A:B EI N- EI N0	2.770	2.621	12.000	1.060	-2.942	8.482	0.311
A:B EI N- FP N0	4.145	2.621	12.000	1.580	-1.567	9.856	0.140
A:B FP N- EI N0	4.418	2.621	12.000	1.690	-1.294	10.129	0.118
A:B FP N- FP N0	5.793	2.621	12.000	2.210	0.081	11.504	0.047
A:B EI N0- FP N0	1.375	2.621	12.000	0.520	-4.337	7.087	0.610

Table 3.304: Estimate of contrast in two-way ANOVA for variable UT.P at site 19 in year 2013 .

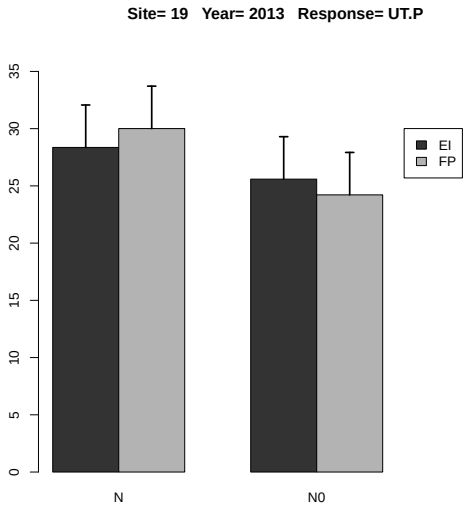

Figure 3.124: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.23 Response Variable UT.P2O5

	rep	A	B	y
1	1	FP	N0	25.566
2	2	FP	N0	24.646
3	3	FP	N0	26.885
4	4	FP	N0	31.538
5	1	FP	N	32.143
6	2	FP	N	33.334
7	3	FP	N	31.176
8	4	FP	N	33.067
9	1	EI	N0	31.871
10	2	EI	N0	24.641
11	3	EI	N0	34.765
12	4	EI	N0	22.587
13	1	EI	N	32.457
14	2	EI	N	32.859
15	3	EI	N	27.742
16	4	EI	N	30.920

Table 3.305: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	30.994	0.595	52.118	0.000
A FP	32.430	0.595	54.532	0.000
A EI-FP	-1.436	0.841	-1.707	0.327

Table 3.306: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 19 in year 2013 .

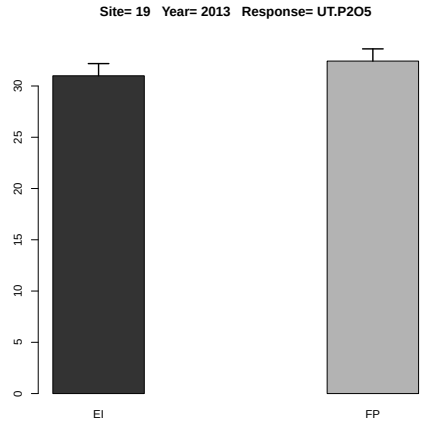

Figure 3.125: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.016	0.016	0.001	12.000	0.971
B	1.000	60.837	60.837	4.945	12.000	0.046
A:B	1.000	7.523	7.523	0.611	12.000	0.449

Table 3.307: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.730	1.240	12.000	23.970	27.028	32.432	0.000
2	FP		29.794	1.240	12.000	24.020	27.092	32.496	0.000
3		N	31.712	1.240	12.000	25.570	29.010	34.414	0.000
4		N0	27.812	1.240	12.000	22.430	25.110	30.514	0.000
5	EI	N	30.994	1.754	12.000	17.670	27.173	34.816	0.000
6	FP	N	32.430	1.754	12.000	18.490	28.609	36.251	0.000
7	EI	N0	28.466	1.754	12.000	16.230	24.645	32.287	0.000
8	FP	N0	27.159	1.754	12.000	15.490	23.337	30.980	0.000

Table 3.308: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 19 in year 2013 .

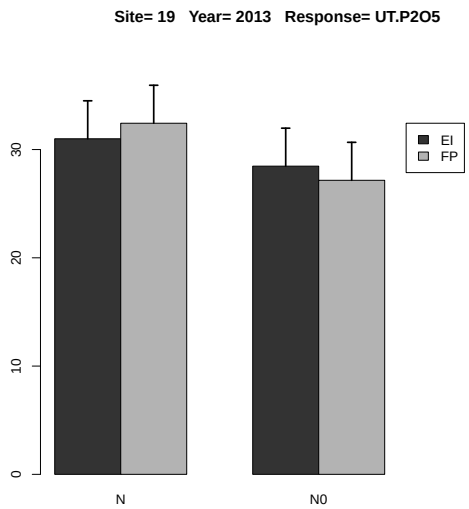

Figure 3.126: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.064	1.754	12.000	-0.040	-3.885	3.757	0.971
B N-N0	3.900	1.754	12.000	2.220	0.079	7.721	0.046
A:B EI N- FP N	-1.436	2.480	12.000	-0.580	-6.840	3.969	0.573
A:B EI N- EI N0	2.529	2.480	12.000	1.020	-2.876	7.933	0.328
A:B EI N- FP N0	3.836	2.480	12.000	1.550	-1.568	9.240	0.148
A:B FP N- EI N0	3.964	2.480	12.000	1.600	-1.440	9.368	0.136
A:B FP N- FP N0	5.271	2.480	12.000	2.130	-0.133	10.675	0.055
A:B EI N0- FP N0	1.307	2.480	12.000	0.530	-4.097	6.711	0.608

Table 3.309: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 19 in year 2013 .

3.2.24 Response Variable UT.K

	rep	A	B	y
1	1	FP	N0	126.134
2	2	FP	N0	135.131
3	3	FP	N0	104.507
4	4	FP	N0	92.750
5	1	FP	N	140.510
6	2	FP	N	145.240
7	3	FP	N	157.134
8	4	FP	N	140.678
9	1	EI	N0	136.849
10	2	EI	N0	119.882
11	3	EI	N0	119.283
12	4	EI	N0	109.996
13	1	EI	N	143.183
14	2	EI	N	161.550
15	3	EI	N	112.444
16	4	EI	N	158.092

Table 3.310: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	143.817	10.321	13.935	0.002
A FP	145.890	10.321	14.136	0.002
A EI-FP	-2.073	14.595	-0.142	0.988

Table 3.311: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 19 in year 2013 .

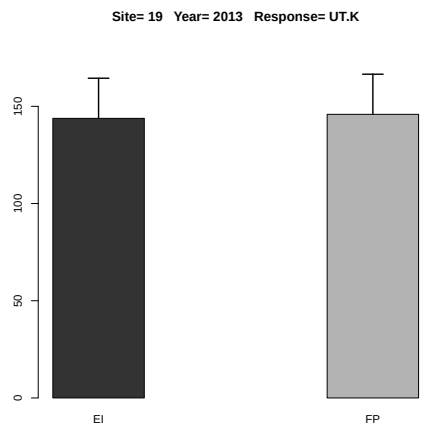

Figure 3.127: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	23.029	23.029	0.088	9.000	0.773
B	1.000	2870.283	2870.283	10.984	9.000	0.009
A:B	1.000	80.014	80.014	0.306	9.000	0.593

Table 3.312: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		132.660	5.823	8.700	22.780	119.411	145.909	0.000
2	FP		130.260	5.823	8.700	22.370	117.011	143.509	0.000
3		N	144.854	5.823	8.700	24.880	131.605	158.103	0.000
4		N0	118.066	5.823	8.700	20.280	104.817	131.315	0.000
5	EI	N	143.817	8.159	12.000	17.630	126.039	161.596	0.000
6	FP	N	145.890	8.159	12.000	17.880	128.112	163.669	0.000
7	EI	N0	121.502	8.159	12.000	14.890	103.724	139.281	0.000
8	FP	N0	114.630	8.159	12.000	14.050	96.852	132.409	0.000

Table 3.313: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.399	8.082	9.000	0.300	-15.884	20.683	0.773
B N-N0	26.788	8.082	9.000	3.310	8.504	45.071	0.009
A:B EI N- FP N	-2.073	11.430	9.000	-0.180	-27.930	23.784	0.860
A:B EI N- EI N0	22.315	11.430	9.000	1.950	-3.542	48.172	0.083
A:B EI N- FP N0	29.187	11.430	9.000	2.550	3.330	55.044	0.031
A:B FP N- EI N0	24.388	11.430	9.000	2.130	-1.469	50.245	0.062
A:B FP N- FP N0	31.260	11.430	9.000	2.730	5.403	57.117	0.023
A:B EI N0- FP N0	6.872	11.430	9.000	0.600	-18.985	32.729	0.562

Table 3.314: Estimate of contrast in two-way ANOVA for variable UT.K at site 19 in year 2013 .

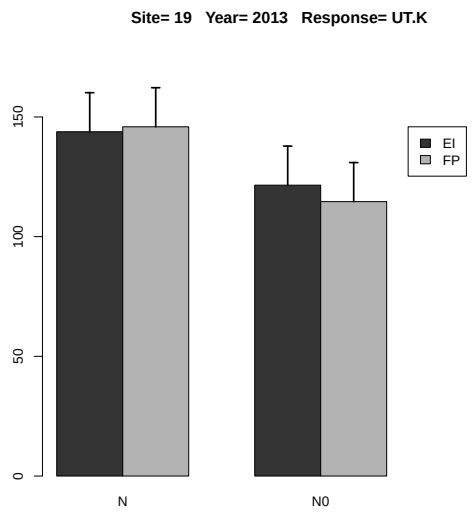

Figure 3.128: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.25 Response Variable UT.K2O

	rep	A	B	y
1	1	FP	N0	126.543
2	2	FP	N0	135.585
3	3	FP	N0	105.089
4	4	FP	N0	93.214
5	1	FP	N	140.915
6	2	FP	N	145.755
7	3	FP	N	157.543
8	4	FP	N	141.056
9	1	EI	N0	137.176
10	2	EI	N0	120.440
11	3	EI	N0	119.825
12	4	EI	N0	110.429
13	1	EI	N	143.644
14	2	EI	N	162.058
15	3	EI	N	112.859
16	4	EI	N	158.643

Table 3.315: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	144.301	10.334	13.964	0.002
A FP	146.317	10.334	14.159	0.001
A EI-FP	-2.016	14.614	-0.138	0.989

Table 3.316: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 19 in year 2013 .

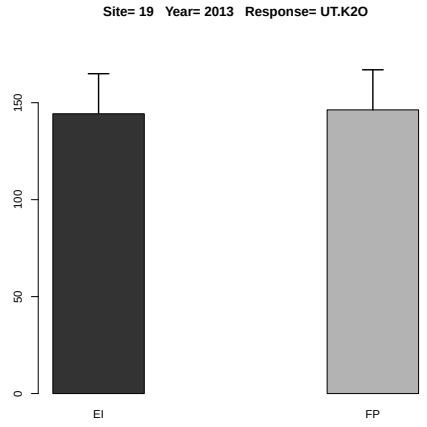

Figure 3.129: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	23.463	23.463	0.090	9.000	0.771
B	1.000	2866.852	2866.852	10.972	9.000	0.009
A:B	1.000	78.776	78.776	0.301	9.000	0.596

Table 3.317: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		133.134	5.822	8.700	22.870	119.888	146.380	0.000
2	FP		130.712	5.822	8.700	22.450	117.466	143.958	0.000
3		N	145.309	5.822	8.700	24.960	132.063	158.555	0.000
4		N0	118.538	5.822	8.700	20.360	105.292	131.784	0.000
5	EI	N	144.301	8.158	12.000	17.690	126.525	162.078	0.000
6	FP	N	146.317	8.158	12.000	17.940	128.541	164.094	0.000
7	EI	N0	121.968	8.158	12.000	14.950	104.191	139.744	0.000
8	FP	N0	115.108	8.158	12.000	14.110	97.331	132.884	0.000

Table 3.318: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 19 in year 2013 .

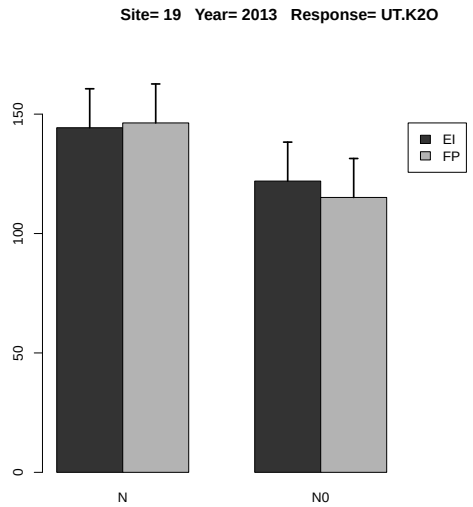

Figure 3.130: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.422	8.082	9.000	0.300	-15.861	20.705	0.771
B N-N0	26.771	8.082	9.000	3.310	8.489	45.054	0.009
A:B EI N- FP N	-2.016	11.430	9.000	-0.180	-27.872	23.840	0.864
A:B EI N- EI N0	22.334	11.430	9.000	1.950	-3.522	48.190	0.082
A:B EI N- FP N0	29.193	11.430	9.000	2.550	3.337	55.050	0.031
A:B FP N- EI N0	24.350	11.430	9.000	2.130	-1.507	50.206	0.062
A:B FP N- FP N0	31.209	11.430	9.000	2.730	5.353	57.065	0.023
A:B EI N0- FP N0	6.860	11.430	9.000	0.600	-18.996	32.716	0.563

Table 3.319: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 19 in year 2013 .

3.2.26 Response Variable UT.Ca

	rep	A	B	y
1	1	FP	N0	16.291
2	2	FP	N0	14.949
3	3	FP	N0	18.650
4	4	FP	N0	15.573
5	1	FP	N	17.625
6	2	FP	N	20.304
7	3	FP	N	29.669
8	4	FP	N	19.647
9	1	EI	N0	23.863
10	2	EI	N0	16.573
11	3	EI	N0	24.194
12	4	EI	N0	19.336
13	1	EI	N	21.570
14	2	EI	N	24.738
15	3	EI	N	23.151
16	4	EI	N	24.642

Table 3.320: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Ca

	Estimate	S.E.	t-value	p-value
A EI	23.526	1.946	12.088	0.002
A FP	21.811	1.946	11.207	0.003
A EI-FP	1.714	2.752	0.623	0.811

Table 3.321: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Ca at site 19 in year 2013 .

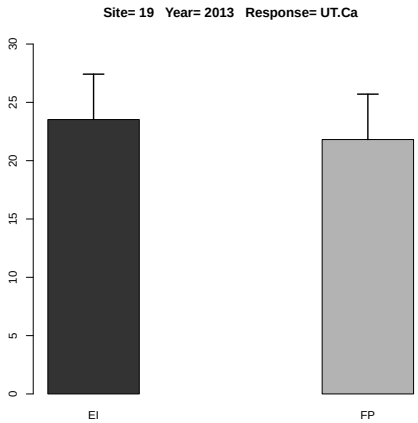

Figure 3.131: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	40.193	40.193	4.295	9.000	0.068
B	1.000	63.681	63.681	6.805	9.000	0.028
A:B	1.000	8.477	8.477	0.906	9.000	0.366

Table 3.322: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.258	1.334	6.200	16.690	19.016	25.501	0.000
2	FP		19.088	1.334	6.200	14.310	15.846	22.331	0.000
3		N	22.669	1.334	6.200	17.000	19.426	25.911	0.000
4		N0	18.678	1.334	6.200	14.010	15.436	21.921	0.000
5	EI	N	23.526	1.717	10.600	13.700	19.730	27.321	0.000
6	FP	N	21.811	1.717	10.600	12.700	18.016	25.607	0.000
7	EI	N0	20.991	1.717	10.600	12.220	17.196	24.786	0.000
8	FP	N0	16.366	1.717	10.600	9.530	12.570	20.161	0.000

Table 3.323: Estimate of treatment means in tow-way ANOVA for variable UT.Ca at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3.170	1.530	9.000	2.070	-0.290	6.630	0.068
B N-N0	3.990	1.530	9.000	2.610	0.530	7.450	0.028
A:B EI N- FP N	1.714	2.163	9.000	0.790	-3.179	6.608	0.449
A:B EI N- EI N0	2.534	2.163	9.000	1.170	-2.359	7.428	0.272
A:B EI N- FP N0	7.160	2.163	9.000	3.310	2.267	12.053	0.009
A:B FP N- EI N0	0.820	2.163	9.000	0.380	-4.073	5.713	0.713
A:B FP N- FP N0	5.446	2.163	9.000	2.520	0.552	10.339	0.033
A:B EI N0- FP N0	4.626	2.163	9.000	2.140	-0.268	9.519	0.061

Table 3.324: Estimate of contrast in two-way ANOVA for variable UT.Ca at site 19 in year 2013 .

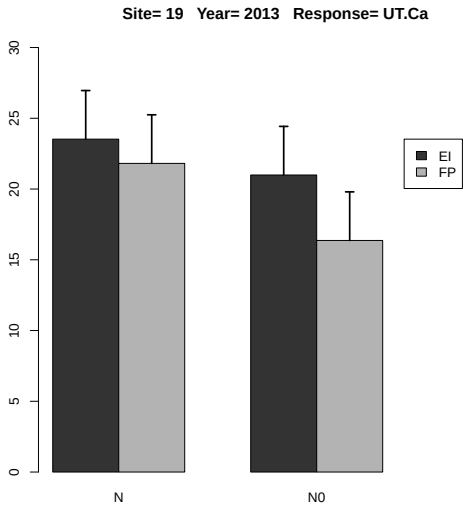

Figure 3.132: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.27 Response Variable UT.Mg

	rep	A	B	y
1	1	FP	N0	31.955
2	2	FP	N0	34.233
3	3	FP	N0	30.581
4	4	FP	N0	30.097
5	1	FP	N	39.634
6	2	FP	N	39.795
7	3	FP	N	35.226
8	4	FP	N	31.856
9	1	EI	N0	32.037
10	2	EI	N0	29.244
11	3	EI	N0	38.323
12	4	EI	N0	32.706
13	1	EI	N	36.326
14	2	EI	N	44.081
15	3	EI	N	33.868
16	4	EI	N	37.106

Table 3.325: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	37.845	1.483	25.520	0.000
A FP	36.628	1.483	24.699	0.000
A EI-FP	1.217	2.097	0.580	0.832

Table 3.326: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 19 in year 2013 .

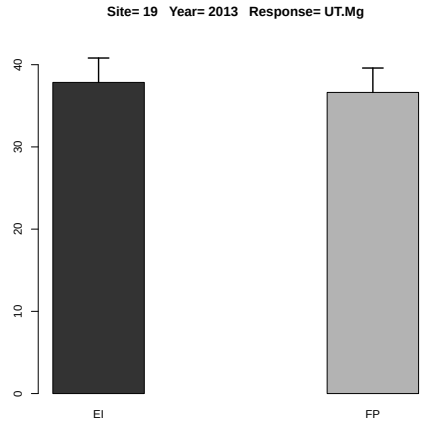

Figure 3.133: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6.648	6.648	0.514	12.000	0.487
B	1.000	93.684	93.684	7.249	12.000	0.020
A:B	1.000	0.021	0.021	0.002	12.000	0.969

Table 3.327: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		35.461	1.271	12.000	27.900	32.692	38.230	0.000
2	FP		34.172	1.271	12.000	26.890	31.403	36.941	0.000
3		N	37.236	1.271	12.000	29.300	34.467	40.006	0.000
4		N0	32.397	1.271	12.000	25.490	29.628	35.166	0.000
5	EI	N	37.845	1.798	12.000	21.050	33.929	41.761	0.000
6	FP	N	36.628	1.798	12.000	20.380	32.711	40.544	0.000
7	EI	N0	33.077	1.798	12.000	18.400	29.161	36.994	0.000
8	FP	N0	31.716	1.798	12.000	17.640	27.800	35.633	0.000

Table 3.328: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 19 in year 2013 .

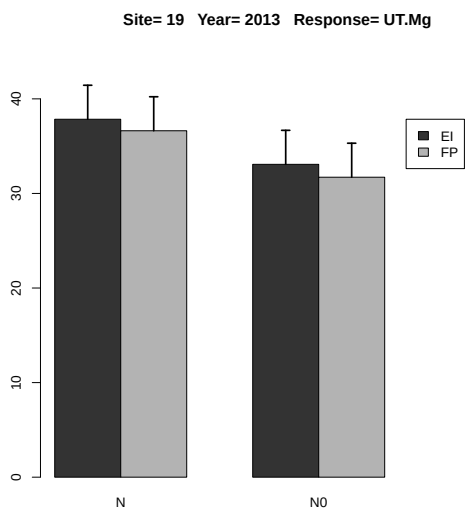

Figure 3.134: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.289	1.798	12.000	0.720	-2.627	5.206	0.487
B N-N0	4.840	1.798	12.000	2.690	0.923	8.756	0.020
A:B EI N- FP N	1.217	2.542	12.000	0.480	-4.321	6.756	0.641
A:B EI N- EI N0	4.768	2.542	12.000	1.880	-0.771	10.306	0.085
A:B EI N- FP N0	6.129	2.542	12.000	2.410	0.590	11.667	0.033
A:B FP N- EI N0	3.550	2.542	12.000	1.400	-1.988	9.089	0.188
A:B FP N- FP N0	4.911	2.542	12.000	1.930	-0.627	10.450	0.077
A:B EI N0- FP N0	1.361	2.542	12.000	0.540	-4.178	6.900	0.602

Table 3.329: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 19 in year 2013 .

3.2.28 Response Variable UT.S

	rep	A	B	y
1	1	FP	N0	6.614
2	2	FP	N0	8.163
3	3	FP	N0	7.709
4	4	FP	N0	6.066
5	1	FP	N	9.277
6	2	FP	N	7.307
7	3	FP	N	7.998
8	4	FP	N	7.830
9	1	EI	N0	9.216
10	2	EI	N0	8.529
11	3	EI	N0	7.997
12	4	EI	N0	7.366
13	1	EI	N	8.491
14	2	EI	N	8.654
15	3	EI	N	10.026
16	4	EI	N	8.224

Table 3.330: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	8.849	0.432	20.489	0.000
A FP	8.103	0.432	18.763	0.000
A EI-FP	0.746	0.611	1.221	0.508

Table 3.331: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 19 in year 2013 .

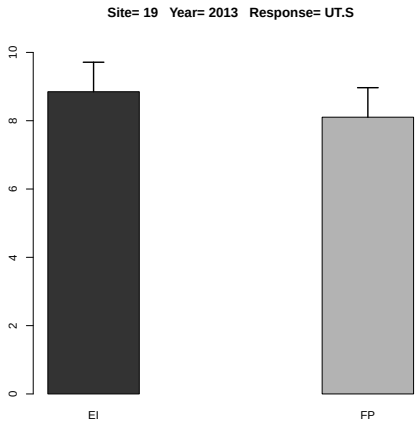

Figure 3.135: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.552	3.552	5.553	8.999	0.043
B	1.000	2.361	2.361	3.691	8.999	0.087
A:B	1.000	0.155	0.155	0.242	8.999	0.635

Table 3.332: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.563	0.318	7.200	26.910	7.814	9.312	0.000
2	FP		7.620	0.318	7.200	23.950	6.872	8.369	0.000
3		N	8.476	0.318	7.200	26.640	7.727	9.225	0.000
4		N0	7.707	0.318	7.200	24.230	6.959	8.456	0.000
5	EI	N	8.849	0.426	11.500	20.790	7.917	9.780	0.000
6	FP	N	8.103	0.426	11.500	19.040	7.171	9.035	0.000
7	EI	N0	8.277	0.426	11.500	19.440	7.345	9.209	0.000
8	FP	N0	7.138	0.426	11.500	16.770	6.206	8.070	0.000

Table 3.333: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.942	0.400	9.000	2.360	0.038	1.847	0.043
B N-N0	0.768	0.400	9.000	1.920	-0.136	1.673	0.087
A:B EI N- FP N	0.746	0.566	9.000	1.320	-0.534	2.025	0.220
A:B EI N- EI N0	0.572	0.566	9.000	1.010	-0.708	1.851	0.339
A:B EI N- FP N0	1.711	0.566	9.000	3.020	0.431	2.990	0.014
A:B FP N- EI N0	-0.174	0.566	9.000	-0.310	-1.454	1.105	0.765
A:B FP N- FP N0	0.965	0.566	9.000	1.710	-0.314	2.244	0.122
A:B EI N0- FP N0	1.139	0.566	9.000	2.010	-0.140	2.419	0.075

Table 3.334: Estimate of contrast in two-way ANOVA for variable UT.S at site 19 in year 2013 .

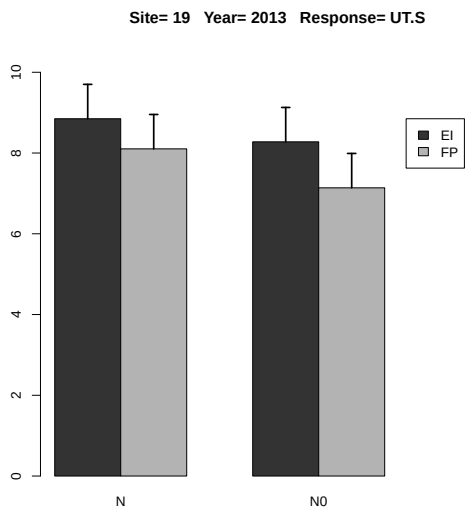

Figure 3.136: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.29 Response Variable HI.N

	rep	A	B	y
1	1	FP	N0	2.049
2	2	FP	N0	2.138
3	3	FP	N0	2.006
4	4	FP	N0	2.029
5	1	FP	N	3.654
6	2	FP	N	2.130
7	3	FP	N	1.857
8	4	FP	N	2.335
9	1	EI	N0	2.496
10	2	EI	N0	1.893
11	3	EI	N0	2.210
12	4	EI	N0	1.845
13	1	EI	N	2.241
14	2	EI	N	1.878
15	3	EI	N	2.537
16	4	EI	N	2.133

Table 3.335: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.197	0.298	6.000	7.370	1.468	2.927	0.000
A FP	2.494	0.298	6.000	8.360	1.764	3.224	0.000
A EI-FP	-0.297	0.422	6.000	-0.700	-1.329	0.735	0.508

Table 3.336: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 19 in year 2013 .

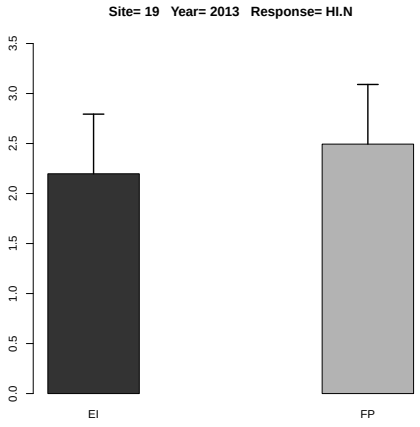

Figure 3.137: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.058	0.058	0.338	8.998	0.575
B	1.000	0.276	0.276	1.608	8.998	0.237
A:B	1.000	0.124	0.124	0.724	8.998	0.417

Table 3.337: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.154	0.170	6.800	12.660	1.749	2.559	0.000
2	FP		2.275	0.170	6.800	13.360	1.869	2.680	0.000
3		N	2.346	0.170	6.800	13.780	1.941	2.751	0.000
4		N0	2.083	0.170	6.800	12.240	1.678	2.488	0.000
5	EI	N	2.197	0.224	11.200	9.790	1.705	2.690	0.000
6	FP	N	2.494	0.224	11.200	11.110	2.001	2.987	0.000
7	EI	N0	2.111	0.224	11.200	9.400	1.618	2.604	0.000
8	FP	N0	2.055	0.224	11.200	9.150	1.562	2.548	0.000

Table 3.338: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 19 in year 2013 .

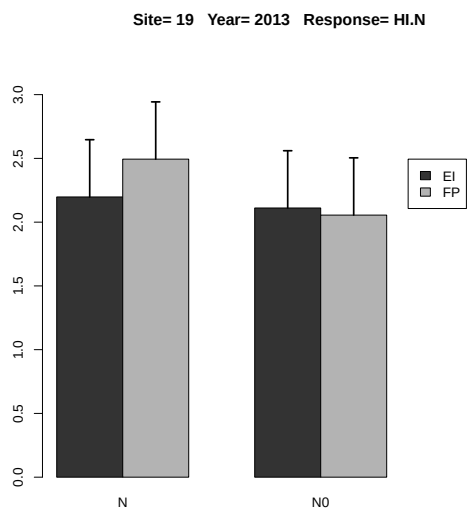

Figure 3.138: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.120	0.207	9.000	-0.580	-0.589	0.348	0.575
B N-N0	0.263	0.207	9.000	1.270	-0.206	0.731	0.236
A:B EI N- FP N	-0.297	0.293	9.000	-1.010	-0.959	0.366	0.338
A:B EI N- EI N0	0.086	0.293	9.000	0.300	-0.576	0.749	0.774
A:B EI N- FP N0	0.142	0.293	9.000	0.490	-0.520	0.805	0.639
A:B FP N- EI N0	0.383	0.293	9.000	1.310	-0.279	1.046	0.223
A:B FP N- FP N0	0.439	0.293	9.000	1.500	-0.224	1.101	0.168
A:B EI N0- FP N0	0.056	0.293	9.000	0.190	-0.607	0.718	0.853

Table 3.339: Estimate of contrast in two-way ANOVA for variable HI.N at site 19 in year 2013 .

3.2.30 Response Variable HI.P

	rep	A	B	y
1	1	FP	N0	2.788
2	2	FP	N0	2.783
3	3	FP	N0	3.586
4	4	FP	N0	3.420
5	1	FP	N	5.977
6	2	FP	N	6.091
7	3	FP	N	4.434
8	4	FP	N	3.507
9	1	EI	N0	5.157
10	2	EI	N0	3.578
11	3	EI	N0	5.764
12	4	EI	N0	2.839
13	1	EI	N	4.659
14	2	EI	N	4.095
15	3	EI	N	3.634
16	4	EI	N	4.264

Table 3.340: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4.163	0.467	5.700	8.920	3.008	5.319	0.000
A FP	5.002	0.467	5.700	10.710	3.847	6.158	0.000
A EI-FP	-0.839	0.586	3.000	-1.430	-2.703	1.024	0.247

Table 3.341: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 19 in year 2013 .

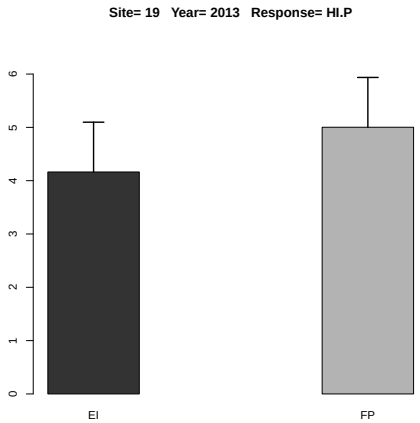

Figure 3.139: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.123	0.123	0.131	11.999	0.724
B	1.000	2.846	2.846	3.025	11.999	0.108
A:B	1.000	4.119	4.119	4.378	11.999	0.058

Table 3.342: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.249	0.343	12.000	12.390	3.502	4.996	0.000
2	FP		4.073	0.343	12.000	11.880	3.326	4.820	0.000
3		N	4.583	0.343	12.000	13.360	3.836	5.330	0.000
4		N0	3.739	0.343	12.000	10.900	2.992	4.486	0.000
5	EI	N	4.163	0.485	12.000	8.580	3.106	5.220	0.000
6	FP	N	5.002	0.485	12.000	10.310	3.946	6.059	0.000
7	EI	N0	4.334	0.485	12.000	8.940	3.278	5.391	0.000
8	FP	N0	3.144	0.485	12.000	6.480	2.087	4.201	0.000

Table 3.343: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.175	0.485	12.000	0.360	-0.881	1.232	0.724
B N-N0	0.844	0.485	12.000	1.740	-0.213	1.900	0.107
A:B EI N- FP N	-0.839	0.686	12.000	-1.220	-2.334	0.655	0.245
A:B EI N- EI N0	-0.171	0.686	12.000	-0.250	-1.666	1.323	0.807
A:B EI N- FP N0	1.019	0.686	12.000	1.490	-0.475	2.513	0.163
A:B FP N- EI N0	0.668	0.686	12.000	0.970	-0.826	2.162	0.349
A:B FP N- FP N0	1.858	0.686	12.000	2.710	0.364	3.353	0.019
A:B EI N0- FP N0	1.190	0.686	12.000	1.740	-0.304	2.685	0.108

Table 3.344: Estimate of contrast in two-way ANOVA for variable HI.P at site 19 in year 2013 .

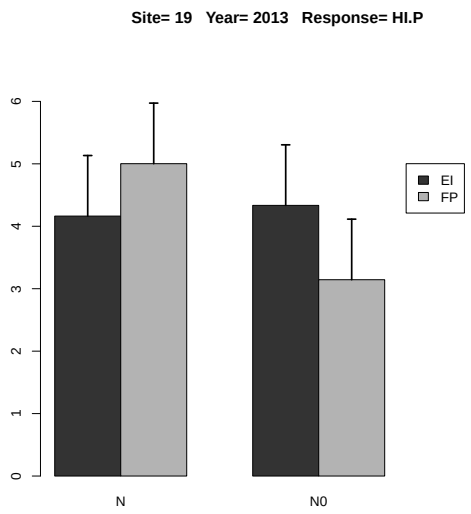

Figure 3.140: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.31 Response Variable HI.K

	rep	A	B	y
1	1	FP	N0	0.169
2	2	FP	N0	0.168
3	3	FP	N0	0.137
4	4	FP	N0	0.169
5	1	FP	N	0.278
6	2	FP	N	0.182
7	3	FP	N	0.125
8	4	FP	N	0.198
9	1	EI	N0	0.132
10	2	EI	N0	0.149
11	3	EI	N0	0.185
12	4	EI	N0	0.201
13	1	EI	N	0.211
14	2	EI	N	0.158
15	3	EI	N	0.181
16	4	EI	N	0.167

Table 3.345: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.179	0.024	5.100	7.510	0.118	0.240	0.001
A FP	0.196	0.024	5.100	8.200	0.135	0.257	0.000
A EI-FP	-0.016	0.026	3.000	-0.630	-0.099	0.066	0.572

Table 3.346: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 19 in year 2013 .

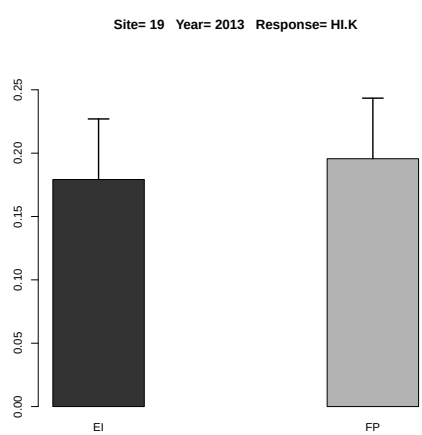

Figure 3.141: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.065	5.998	0.808
B	1.000	0.002	0.002	1.758	5.983	0.233
A:B	1.000	0.001	0.001	0.401	5.983	0.550

Table 3.347: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.173	0.014	6.000	12.060	0.138	0.208	0.000
2	FP		0.178	0.014	6.000	12.420	0.143	0.213	0.000
3		N	0.187	0.013	11.800	13.890	0.158	0.217	0.000
4		N0	0.164	0.013	11.800	12.140	0.134	0.193	0.000
5	EI	N	0.179	0.019	11.800	9.390	0.138	0.221	0.000
6	FP	N	0.196	0.019	11.800	10.250	0.154	0.237	0.000
7	EI	N0	0.167	0.019	11.800	8.740	0.125	0.208	0.000
8	FP	N0	0.161	0.019	11.800	8.430	0.119	0.202	0.000

Table 3.348: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 19 in year 2013 .

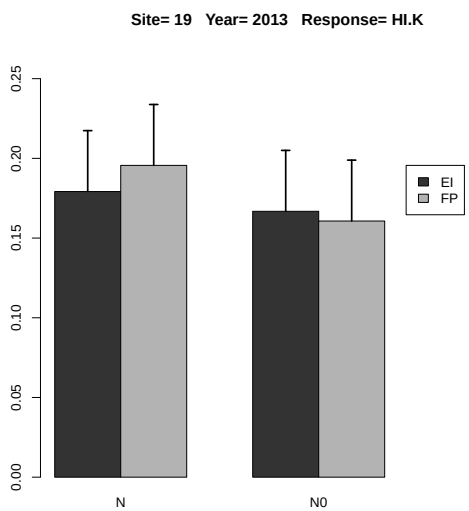

Figure 3.142: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.005	0.020	6.000	-0.250	-0.055	0.044	0.807
B N-N0	0.024	0.018	6.000	1.330	-0.020	0.067	0.233
A:B EI N- FP N	-0.016	0.027	11.800	-0.610	-0.075	0.042	0.554
A:B EI N- EI N0	0.012	0.025	6.000	0.490	-0.049	0.074	0.642
A:B EI N- FP N0	0.018	0.027	11.800	0.680	-0.040	0.077	0.508
A:B FP N- EI N0	0.029	0.027	11.800	1.070	-0.030	0.088	0.308
A:B FP N- FP N0	0.035	0.025	6.000	1.390	-0.027	0.096	0.215
A:B EI N0- FP N0	0.006	0.027	11.800	0.230	-0.053	0.065	0.825

Table 3.349: Estimate of contrast in two-way ANOVA for variable HI.K at site 19 in year 2013 .

3.2.32 Response Variable HI.Ca

	rep	A	B	y
1	1	FP	N0	0.000
2	2	FP	N0	0.070
3	3	FP	N0	0.047
4	4	FP	N0	0.000
5	1	FP	N	0.075
6	2	FP	N	0.058
7	3	FP	N	0.044
8	4	FP	N	0.000
9	1	EI	N0	0.000
10	2	EI	N0	0.072
11	3	EI	N0	0.048
12	4	EI	N0	0.000
13	1	EI	N	0.062
14	2	EI	N	0.046
15	3	EI	N	0.056
16	4	EI	N	0.048

Table 3.350: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.053	0.012	5.700	4.580	0.024	0.082	0.004
A FP	0.044	0.012	5.700	3.810	0.015	0.073	0.010
A EI-FP	0.009	0.014	3.000	0.630	-0.037	0.054	0.576

Table 3.351: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Ca at site 19 in year 2013 .

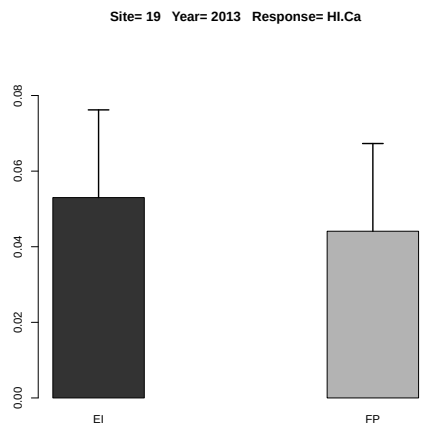

Figure 3.143: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.155	8.963	0.703
B	1.000	0.001	0.001	2.459	8.963	0.151
A:B	1.000	0.000	0.000	0.116	8.963	0.741

Table 3.352: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.041	0.012	5.100	3.390	0.010	0.073	0.019
2	FP		0.037	0.012	5.100	2.990	0.005	0.068	0.030
3		N	0.049	0.012	5.100	3.970	0.017	0.080	0.010
4		N0	0.029	0.012	5.100	2.410	-0.002	0.061	0.060
5	EI	N	0.053	0.015	8.900	3.550	0.019	0.087	0.006
6	FP	N	0.044	0.015	8.900	2.950	0.010	0.078	0.016
7	EI	N0	0.030	0.015	8.900	2.000	-0.004	0.064	0.077
8	FP	N0	0.029	0.015	8.900	1.950	-0.005	0.063	0.083

Table 3.353: Estimate of treatment means in tow-way ANOVA for variable HI.Ca at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.005	0.012	9.000	0.390	-0.023	0.032	0.703
B N-N0	0.019	0.012	9.000	1.570	-0.008	0.047	0.151
A:B EI N- FP N	0.009	0.017	9.000	0.520	-0.030	0.048	0.616
A:B EI N- EI N0	0.023	0.017	9.000	1.350	-0.016	0.062	0.210
A:B EI N- FP N0	0.024	0.017	9.000	1.390	-0.015	0.063	0.199
A:B FP N- EI N0	0.014	0.017	9.000	0.830	-0.025	0.053	0.428
A:B FP N- FP N0	0.015	0.017	9.000	0.870	-0.024	0.054	0.408
A:B EI N0- FP N0	0.001	0.017	9.000	0.040	-0.038	0.040	0.971

Table 3.354: Estimate of contrast in two-way ANOVA for variable HI.Ca at site 19 in year 2013 .

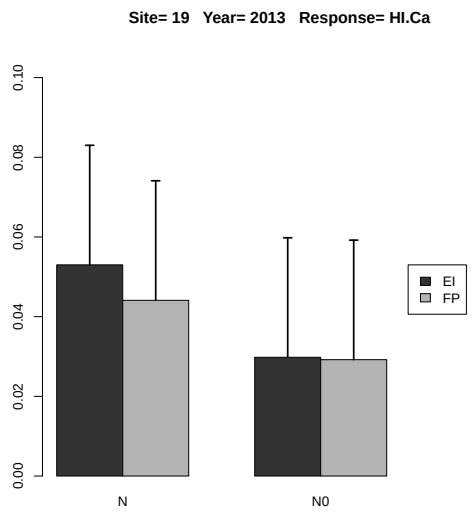

Figure 3.144: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.33 Response Variable HI.Mg

	rep	A	B	y
1	1	FP	N0	0.494
2	2	FP	N0	0.835
3	3	FP	N0	0.624
4	4	FP	N0	0.552
5	1	FP	N	0.974
6	2	FP	N	0.911
7	3	FP	N	0.467
8	4	FP	N	0.716
9	1	EI	N0	0.867
10	2	EI	N0	0.520
11	3	EI	N0	1.065
12	4	EI	N0	0.551
13	1	EI	N	1.066
14	2	EI	N	0.900
15	3	EI	N	0.572
16	4	EI	N	0.839

Table 3.355: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.844	0.109	3.100	7.770	0.506	1.183	0.004
A FP	0.767	0.109	3.100	7.060	0.428	1.105	0.005
A EI-FP	0.077	0.030	3.000	2.590	-0.018	0.173	0.081

Table 3.356: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 19 in year 2013 .

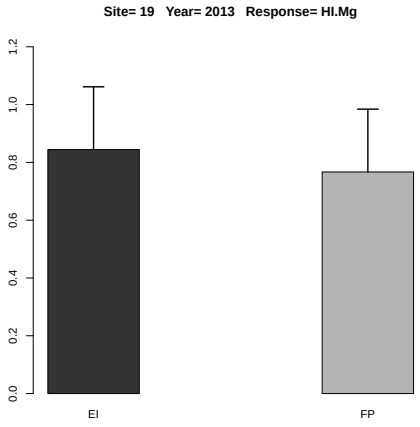

Figure 3.145: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.041	0.041	0.881	11.994	0.366
B	1.000	0.055	0.055	1.187	11.994	0.297
A:B	1.000	0.002	0.002	0.048	11.994	0.830

Table 3.357: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.797	0.076	12.000	10.490	0.632	0.963	0.000
2	FP		0.697	0.076	12.000	9.160	0.531	0.862	0.000
3		N	0.806	0.076	12.000	10.600	0.640	0.971	0.000
4		N0	0.688	0.076	12.000	9.050	0.523	0.854	0.000
5	EI	N	0.844	0.107	12.000	7.850	0.610	1.079	0.000
6	FP	N	0.767	0.107	12.000	7.130	0.533	1.001	0.000
7	EI	N0	0.751	0.107	12.000	6.980	0.516	0.985	0.000
8	FP	N0	0.626	0.107	12.000	5.820	0.392	0.861	0.000

Table 3.358: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 19 in year 2013 .

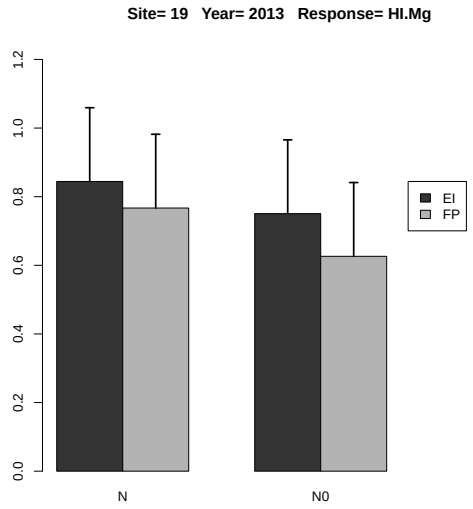

Figure 3.146: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.101	0.107	12.000	0.940	-0.133	0.335	0.366
B N-N0	0.117	0.107	12.000	1.090	-0.117	0.351	0.297
A:B EI N- FP N	0.077	0.152	12.000	0.510	-0.254	0.409	0.620
A:B EI N- EI N0	0.094	0.152	12.000	0.620	-0.238	0.425	0.549
A:B EI N- FP N0	0.218	0.152	12.000	1.430	-0.113	0.549	0.177
A:B FP N- EI N0	0.016	0.152	12.000	0.110	-0.315	0.348	0.917
A:B FP N- FP N0	0.141	0.152	12.000	0.930	-0.191	0.472	0.373
A:B EI N0- FP N0	0.124	0.152	12.000	0.820	-0.207	0.456	0.429

Table 3.359: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 19 in year 2013 .

3.2.34 Response Variable HI.S

	rep	A	B	y
1	1	FP	N0	0.772
2	2	FP	N0	0.912
3	3	FP	N0	1.195
4	4	FP	N0	0.789
5	1	FP	N	1.930
6	2	FP	N	0.845
7	3	FP	N	0.877
8	4	FP	N	1.304
9	1	EI	N0	1.361
10	2	EI	N0	1.088
11	3	EI	N0	1.218
12	4	EI	N0	1.110
13	1	EI	N	1.432
14	2	EI	N	0.616
15	3	EI	N	1.593
16	4	EI	N	1.216

Table 3.360: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.214	0.234	5.200	5.180	0.620	1.808	0.003
A FP	1.239	0.234	5.200	5.290	0.645	1.833	0.003
A EI-FP	-0.025	0.261	3.000	-0.100	-0.856	0.807	0.930

Table 3.361: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 19 in year 2013 .

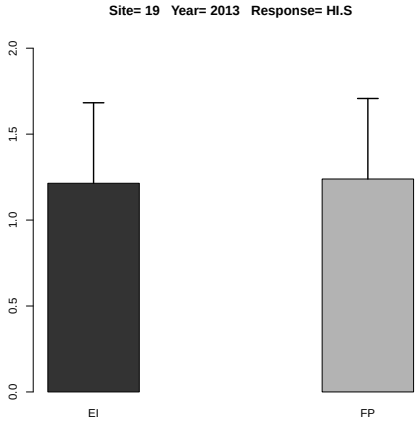

Figure 3.147: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.064	0.064	0.618	8.997	0.452
B	1.000	0.117	0.117	1.134	8.997	0.315
A:B	1.000	0.091	0.091	0.886	8.997	0.371

Table 3.362: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.204	0.134	6.600	9.000	0.884	1.524	0.000
2	FP		1.078	0.134	6.600	8.050	0.758	1.398	0.000
3		N	1.226	0.134	6.600	9.160	0.906	1.547	0.000
4		N0	1.056	0.134	6.600	7.890	0.735	1.376	0.000
5	EI	N	1.214	0.175	11.100	6.920	0.828	1.600	0.000
6	FP	N	1.239	0.175	11.100	7.060	0.853	1.625	0.000
7	EI	N0	1.194	0.175	11.100	6.800	0.808	1.580	0.000
8	FP	N0	0.917	0.175	11.100	5.230	0.531	1.303	0.000

Table 3.363: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 19 in year 2013 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.126	0.160	9.000	0.790	-0.237	0.489	0.452
B N-N0	0.171	0.160	9.000	1.060	-0.192	0.534	0.315
A:B EI N- FP N	-0.025	0.227	9.000	-0.110	-0.538	0.489	0.915
A:B EI N- EI N0	0.020	0.227	9.000	0.090	-0.494	0.533	0.932
A:B EI N- FP N0	0.297	0.227	9.000	1.310	-0.216	0.810	0.223
A:B FP N- EI N0	0.045	0.227	9.000	0.200	-0.469	0.558	0.848
A:B FP N- FP N0	0.322	0.227	9.000	1.420	-0.192	0.836	0.190
A:B EI N0- FP N0	0.277	0.227	9.000	1.220	-0.236	0.791	0.253

Table 3.364: Estimate of contrast in two-way ANOVA for variable HI.S at site 19 in year 2013 .

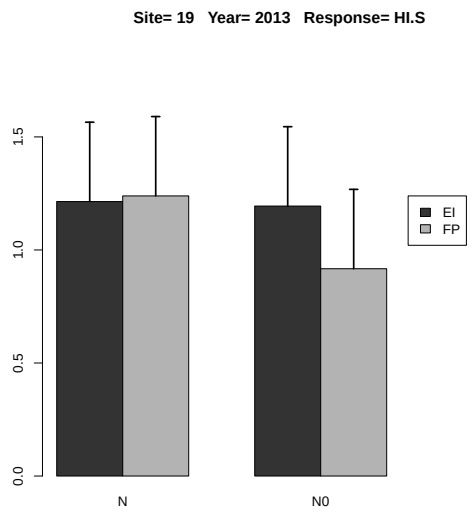

Figure 3.148: Estimated treatment means and standard error in the 2-way ANOVA.

3.2.35 Response Variable PFP.N

	rep	A	B	y
1	1	FP	N	67.900
2	2	FP	N	61.984
3	3	FP	N	69.187
4	4	FP	N	61.548
5	1	EI	N	69.434
6	2	EI	N	61.066
7	3	EI	N	68.433
8	4	EI	N	62.683

Table 3.365: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	65.404	2.026	3.100	32.290	59.127	71.681	0.000
A FP	65.154	2.026	3.100	32.160	58.878	71.431	0.000
A EI-FP	0.250	0.633	3.000	0.390	-1.764	2.263	0.720

Table 3.366: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 19 in year 2013 .

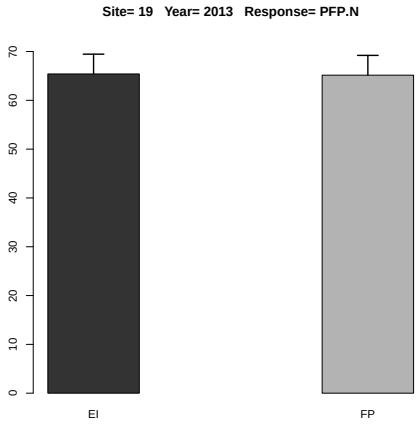

Figure 3.149: Estimated treatment means and standard error in the one-way ANOVA.

3.2.36 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	261.621
2	2	FP	N	238.826
3	3	FP	N	266.581
4	4	FP	N	237.147
5	1	EI	N	267.531
6	2	EI	N	235.291
7	3	EI	N	263.676
8	4	EI	N	241.523

Table 3.367: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	252.005	7.805	3.100	32.290	227.820	276.190	0.000
A FP	251.044	7.805	3.100	32.160	226.859	275.229	0.000
A EI-FP	0.962	2.438	3.000	0.390	-6.796	8.720	0.720

Table 3.368: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 19 in year 2013 .

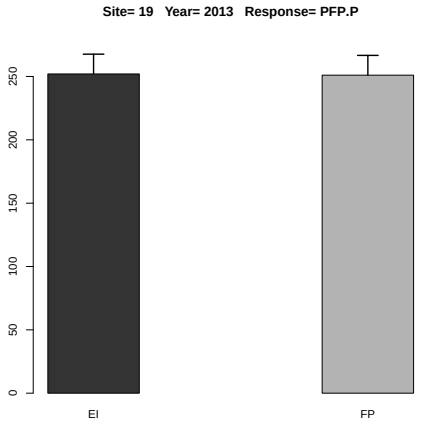

Figure 3.150: Estimated treatment means and standard error in the one-way ANOVA.

3.2.37 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	114.224
2	2	FP	N	104.271
3	3	FP	N	116.389
4	4	FP	N	103.539
5	1	EI	N	116.804
6	2	EI	N	102.728
7	3	EI	N	115.121
8	4	EI	N	105.449

Table 3.369: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	110.025	3.408	3.100	32.290	99.466	120.585	0.000
A FP	109.606	3.408	3.100	32.160	99.046	120.165	0.000
A EI-FP	0.420	1.064	3.000	0.390	-2.967	3.807	0.720

Table 3.370: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 19 in year 2013 .

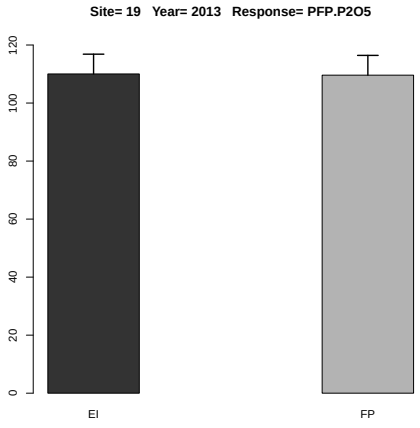

Figure 3.151: Estimated treatment means and standard error in the one-way ANOVA.

3.2.38 Response Variable PFP.K

	rep	A	B	y
1	1	FP	N	163.653
2	2	FP	N	149.394
3	3	FP	N	166.756
4	4	FP	N	148.344
5	1	EI	N	167.350
6	2	EI	N	147.183
7	3	EI	N	164.939
8	4	EI	N	151.081

Table 3.371: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	157.638	4.883	3.100	32.290	142.510	172.767	0.000
A FP	157.037	4.883	3.100	32.160	141.908	172.165	0.000
A EI-FP	0.602	1.525	3.000	0.390	-4.251	5.455	0.720

Table 3.372: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 19 in year 2013 .

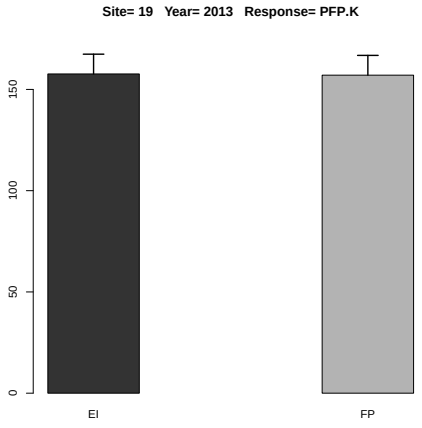

Figure 3.152: Estimated treatment means and standard error in the one-way ANOVA.

3.2.39 Response Variable PFP.K2O

	rep	A	B	y
1	1	FP	N	135.799
2	2	FP	N	123.967
3	3	FP	N	138.374
4	4	FP	N	123.096
5	1	EI	N	138.867
6	2	EI	N	122.132
7	3	EI	N	136.866
8	4	EI	N	125.367

Table 3.373: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	130.808	4.051	3.100	32.290	118.254	143.362	0.000
A FP	130.309	4.051	3.100	32.160	117.755	142.863	0.000
A EI-FP	0.499	1.265	3.000	0.390	-3.528	4.526	0.720

Table 3.374: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 19 in year 2013 .

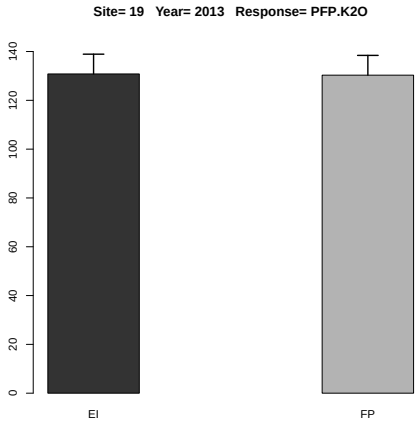

Figure 3.153: Estimated treatment means and standard error in the one-way ANOVA.

3.2.40 Response Variable PFP.S

	rep	A	B	y
1	1	FP	N	581.996
2	2	FP	N	531.288
3	3	FP	N	593.030
4	4	FP	N	527.553
5	1	EI	N	595.145
6	2	EI	N	523.425
7	3	EI	N	586.569
8	4	EI	N	537.287

Table 3.375: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	560.606	17.364	3.100	32.290	506.805	614.408	0.000
A FP	558.467	17.364	3.100	32.160	504.666	612.268	0.000
A EI-FP	2.139	5.423	3.000	0.390	-15.119	19.397	0.720

Table 3.376: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.S at site 19 in year 2013 .

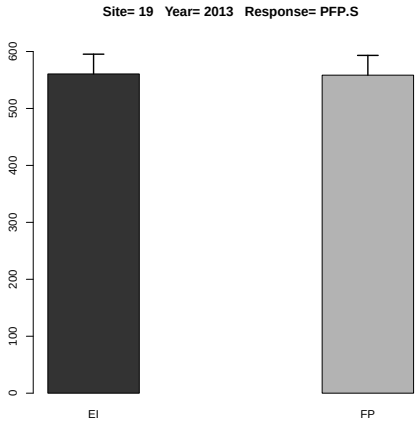

Figure 3.154: Estimated treatment means and standard error in the one-way ANOVA.

3.2.41 Response Variable PFP.Cl

	rep	A	B	y
1	1	FP	N	244.438
2	2	FP	N	223.141
3	3	FP	N	249.073
4	4	FP	N	221.572
5	1	EI	N	249.961
6	2	EI	N	219.838
7	3	EI	N	246.359
8	4	EI	N	225.660

Table 3.377: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Cl

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	235.455	7.293	3.100	32.290	212.858	258.051	0.000
A FP	234.556	7.293	3.100	32.160	211.959	257.153	0.000
A EI-FP	0.899	2.278	3.000	0.390	-6.350	8.147	0.720

Table 3.378: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Cl at site 19 in year 2013 .

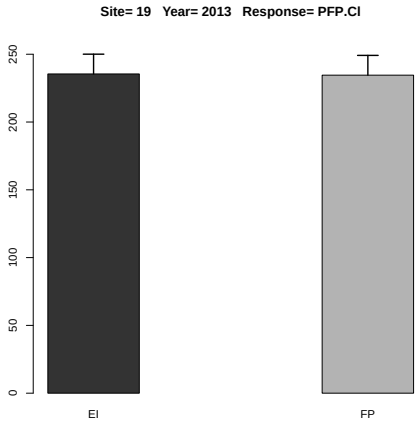

Figure 3.155: Estimated treatment means and standard error in the one-way ANOVA.

3.2.42 Response Variable PFP.Zn

	rep	A	B	y
1	1	FP	N	3703.612
2	2	FP	N	3380.921
3	3	FP	N	3773.830
4	4	FP	N	3357.158
5	1	EI	N	3787.285
6	2	EI	N	3330.885
7	3	EI	N	3732.712
8	4	EI	N	3419.097

Table 3.379: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3567.495	110.496	3.100	32.290	3225.122	3909.868	0.000
A FP	3553.880	110.496	3.100	32.160	3211.507	3896.253	0.000
A EI-FP	13.614	34.509	3.000	0.390	-96.187	123.416	0.720

Table 3.380: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 19 in year 2013 .

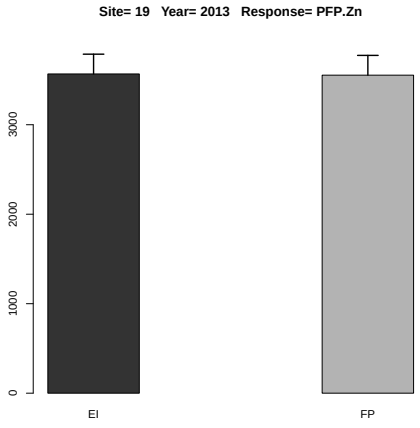

Figure 3.156: Estimated treatment means and standard error in the one-way ANOVA.

3.2.43 Response Variable PNB.N

	rep	A	B	y
1	1	FP	N	0.883
2	2	FP	N	0.781
3	3	FP	N	0.796
4	4	FP	N	0.714
5	1	EI	N	0.854
6	2	EI	N	0.898
7	3	EI	N	0.869
8	4	EI	N	0.802

Table 3.381: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.856	0.028	5.300	30.230	0.784	0.927	0.000
A FP	0.793	0.028	5.300	28.020	0.722	0.865	0.000
A EI-FP	0.062	0.032	3.000	1.970	-0.038	0.163	0.143

Table 3.382: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 19 in year 2013 .

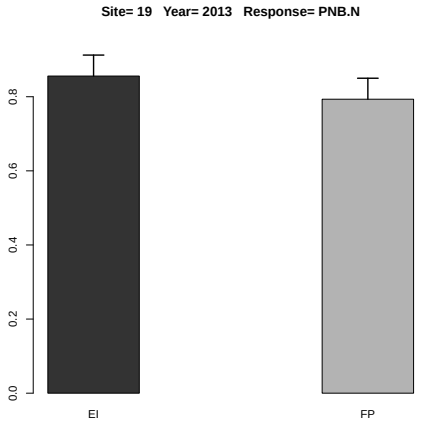

Figure 3.157: Estimated treatment means and standard error in the one-way ANOVA.

3.2.44 Response Variable PNB.P

	rep	A	B	y
1	1	FP	N	0.549
2	2	FP	N	0.573
3	3	FP	N	0.507
4	4	FP	N	0.498
5	1	EI	N	0.535
6	2	EI	N	0.518
7	3	EI	N	0.422
8	4	EI	N	0.483

Table 3.383: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.489	0.022	4.100	22.570	0.429	0.549	0.000
A FP	0.532	0.022	4.100	24.520	0.472	0.592	0.000
A EI-FP	-0.042	0.017	3.000	-2.480	-0.097	0.012	0.089

Table 3.384: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 19 in year 2013 .

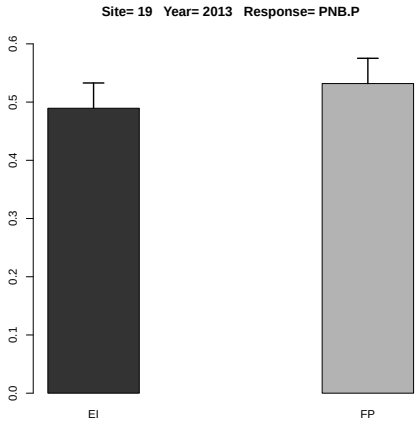

Figure 3.158: Estimated treatment means and standard error in the one-way ANOVA.

3.2.45 Response Variable PNB.K

	rep	A	B	y
1	1	FP	N	0.409
2	2	FP	N	0.299
3	3	FP	N	0.233
4	4	FP	N	0.312
5	1	EI	N	0.335
6	2	EI	N	0.294
7	3	EI	N	0.231
8	4	EI	N	0.302

Table 3.385: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.290	0.030	3.500	9.720	0.203	0.378	0.001
A FP	0.313	0.030	3.500	10.480	0.226	0.401	0.001
A EI-FP	-0.023	0.017	3.000	-1.310	-0.078	0.032	0.281

Table 3.386: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 19 in year 2013 .

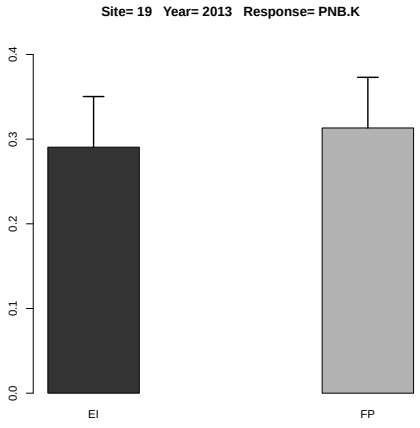

Figure 3.159: Estimated treatment means and standard error in the one-way ANOVA.

3.2.46 Response Variable PNB.S

	rep	A	B	y
1	1	FP	N	0.291
2	2	FP	N	0.159
3	3	FP	N	0.178
4	4	FP	N	0.211
5	1	EI	N	0.238
6	2	EI	N	0.157
7	3	EI	N	0.293
8	4	EI	N	0.215

Table 3.387: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.226	0.029	5.700	7.880	0.155	0.297	0.000
A FP	0.210	0.029	5.700	7.320	0.139	0.281	0.000
A EI-FP	0.016	0.035	3.000	0.450	-0.097	0.129	0.683

Table 3.388: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.S at site 19 in year 2013 .

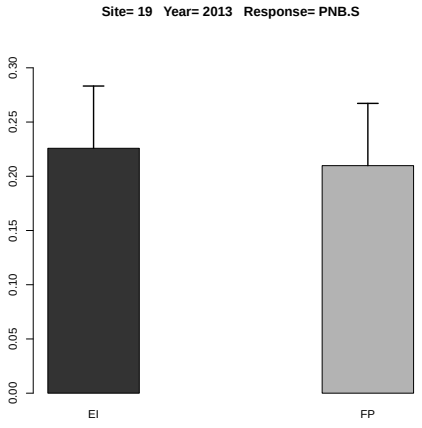

Figure 3.160: Estimated treatment means and standard error in the one-way ANOVA.

3.2.47 Response Variable AE

	rep	A	B	y
1	1	FP	N	18.703
2	2	FP	N	10.146
3	3	FP	N	29.003
4	4	FP	N	15.436
5	1	EI	N	13.374
6	2	EI	N	-0.852
7	3	EI	N	9.570
8	4	EI	N	11.400

Table 3.389: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	8.373	2.478	3.379	0.082
A FP	18.322	2.478	7.394	0.010
A EI-FP	-9.949	3.504	-2.839	0.123

Table 3.390: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 19 in year 2013 .

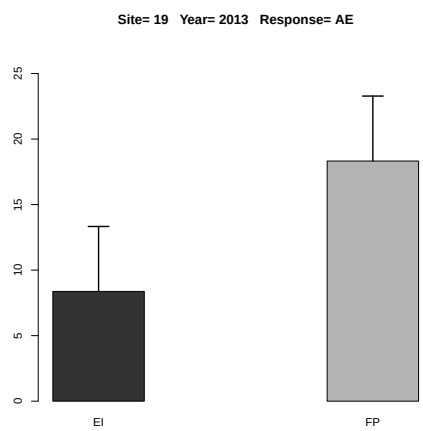

Figure 3.161: Estimated treatment means and standard error in the one-way ANOVA.

3.2.48 Response Variable RE

	rep	A	B	y
1	1	FP	N	0.302
2	2	FP	N	0.291
3	3	FP	N	0.640
4	4	FP	N	0.274
5	1	EI	N	0.047
6	2	EI	N	0.253
7	3	EI	N	0.237
8	4	EI	N	0.171

Table 3.391: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.177	0.058	3.068	0.103
A FP	0.377	0.058	6.548	0.014
A EI-FP	-0.200	0.081	-2.461	0.168

Table 3.392: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 19 in year 2013 .

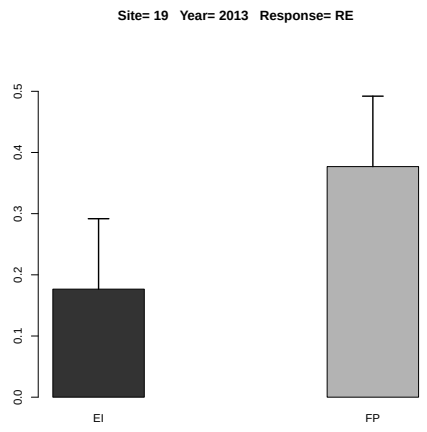

Figure 3.162: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 4

Analysis of Variance for Site 20

4.1 Year 2009

There are 72 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

4.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	4471.000
2	2	EI	N0	4178.000
3	3	EI	N0	3930.000
4	4	EI	N0	4116.000
5	1	EI	N	7369.000
6	2	EI	N	7675.000
7	3	EI	N	6981.000
8	4	EI	N	7230.000
9	1	FP	N0	4523.000
10	2	FP	N0	4687.000
11	3	FP	N0	4261.000
12	4	FP	N0	4151.000
13	1	FP	N	6474.000
14	2	FP	N	6500.000
15	3	FP	N	6556.000
16	4	FP	N	6192.000

Table 4.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	7313.750	115.325	63.419	0.000
A FP	6430.500	115.325	55.760	0.000
A EI-FP	883.250	163.094	5.416	0.024

Table 4.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 20 in year 2009 .

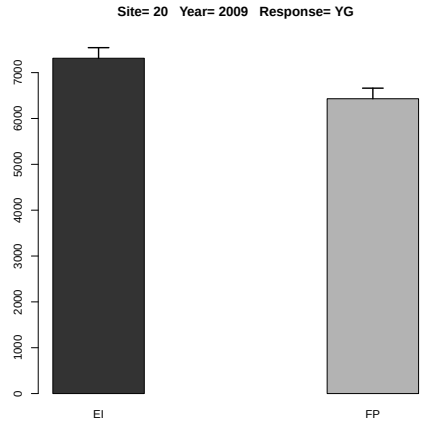

Figure 4.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	286594.513	286594.513	10.809	2.999	0.046
B	1.000	26677225.000	26677225.000	1006.099	5.983	0.000
A:B	1.000	1243225.000	1243225.000	46.887	5.983	0.000

Table 4.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5743.750	102.203	4.700	56.200	5475.597	6011.903	0.000
2	FP		5418.000	102.203	4.700	53.010	5149.847	5686.153	0.000
3		N	6872.125	98.225	4.300	69.960	6606.315	7137.935	0.000
4		N0	4289.625	98.225	4.300	43.670	4023.815	4555.435	0.000
5	EI	N	7313.750	117.302	7.500	62.350	7040.307	7587.193	0.000
6	FP	N	6430.500	117.302	7.500	54.820	6157.057	6703.943	0.000
7	EI	N0	4173.750	117.302	7.500	35.580	3900.307	4447.193	0.000
8	FP	N0	4405.500	117.302	7.500	37.560	4132.057	4678.943	0.000

Table 4.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 20 in year 2009
.

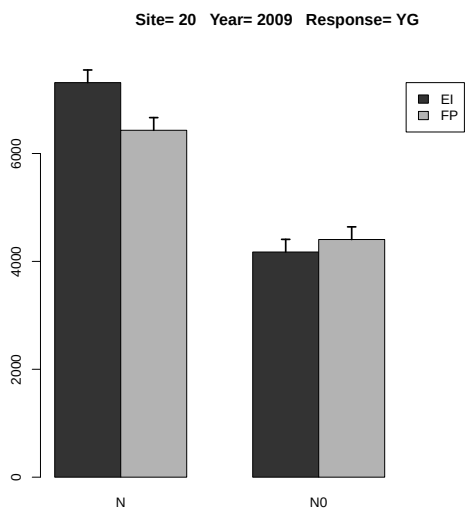

Figure 4.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	325.750	99.083	3.000	3.290	10.387	641.113	0.046
B N-N0	2582.500	81.418	6.000	31.720	2383.137	2781.863	0.000
A:B EI N- FP N	883.250	128.243	6.900	6.890	578.667	1187.833	0.000
A:B EI N- EI N0	3140.000	115.142	6.000	27.270	2858.058	3421.942	0.000
A:B EI N- FP N0	2908.250	128.243	6.900	22.680	2603.667	3212.833	0.000
A:B FP N- EI N0	2256.750	128.243	6.900	17.600	1952.167	2561.333	0.000
A:B FP N- FP N0	2025.000	115.142	6.000	17.590	1743.058	2306.942	0.000
A:B EI N0- FP N0	-231.750	128.243	6.900	-1.810	-536.333	72.833	0.115

Table 4.5: Estimate of contrast in two-way ANOVA for variable YG at site 20 in year 2009 .

4.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	5091.000
2	2	EI	N0	4617.000
3	3	EI	N0	5203.000
4	4	EI	N0	4079.000
5	1	EI	N	4948.000
6	2	EI	N	4645.000
7	3	EI	N	4679.000
8	4	EI	N	4607.000
9	1	FP	N0	5063.000
10	2	FP	N0	5097.000
11	3	FP	N0	4749.000
12	4	FP	N0	4275.000
13	1	FP	N	4632.000
14	2	FP	N	5409.000
15	3	FP	N	5174.000
16	4	FP	N	4713.000

Table 4.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	4719.750	166.422	28.360	0.000
A FP	4982.000	166.422	29.936	0.000
A EI-FP	-262.250	235.357	-1.114	0.558

Table 4.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 20 in year 2009 .

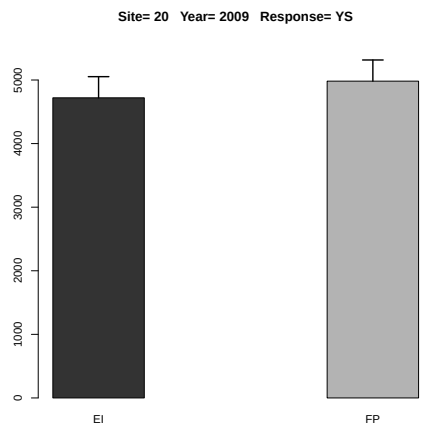

Figure 4.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	76598.436	76598.436	0.844	2.999	0.426
B	1.000	25043.063	25043.063	0.276	6.055	0.618
A:B	1.000	45689.062	45689.062	0.504	6.055	0.504

Table 4.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4733.625	155.904	5.100	30.360	4335.876	5131.374	0.000
2	FP		4889.000	155.904	5.100	31.360	4491.251	5286.749	0.000
3		N	4850.875	151.089	5.000	32.110	4463.352	5238.398	0.000
4		N0	4771.750	151.089	5.000	31.580	4384.227	5159.273	0.000
5	EI	N	4719.750	188.804	9.300	25.000	4294.837	5144.663	0.000
6	FP	N	4982.000	188.804	9.300	26.390	4557.087	5406.913	0.000
7	EI	N0	4747.500	188.804	9.300	25.150	4322.587	5172.413	0.000
8	FP	N0	4796.000	188.804	9.300	25.400	4371.087	5220.913	0.000

Table 4.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 20 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-155.375	169.097	3.000	-0.920	-693.601	382.851	0.426
B N-N0	79.125	150.603	6.100	0.530	-288.578	446.828	0.618
A:B EI N- FP N	-262.250	226.440	7.400	-1.160	-792.525	268.025	0.283
A:B EI N- EI N0	-27.750	212.985	6.100	-0.130	-547.760	492.260	0.901
A:B EI N- FP N0	-76.250	226.440	7.400	-0.340	-606.525	454.025	0.746
A:B FP N- EI N0	234.500	226.440	7.400	1.040	-295.775	764.775	0.333
A:B FP N- FP N0	186.000	212.985	6.100	0.870	-334.010	706.010	0.416
A:B EI N0- FP N0	-48.500	226.440	7.400	-0.210	-578.775	481.775	0.836

Table 4.10: Estimate of contrast in two-way ANOVA for variable YS at site 20 in year 2009 .

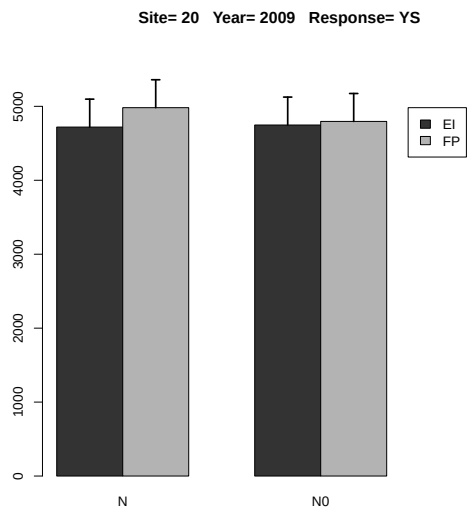

Figure 4.4: Estimated treatment means and standard error in the 2-way ANOVA.

4.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	9562.000
2	2	EI	N0	8795.000
3	3	EI	N0	9133.000
4	4	EI	N0	8195.000
5	1	EI	N	12317.000
6	2	EI	N	12320.000
7	3	EI	N	11660.000
8	4	EI	N	11837.000
9	1	FP	N0	9586.000
10	2	FP	N0	9784.000
11	3	FP	N0	9010.000
12	4	FP	N0	8426.000
13	1	FP	N	11106.000
14	2	FP	N	11909.000
15	3	FP	N	11730.000
16	4	FP	N	10905.000

Table 4.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	12033.500	200.666	59.968	0.000
A FP	11412.500	200.666	56.873	0.000
A EI-FP	621.000	283.784	2.188	0.212

Table 4.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 20 in year 2009 .

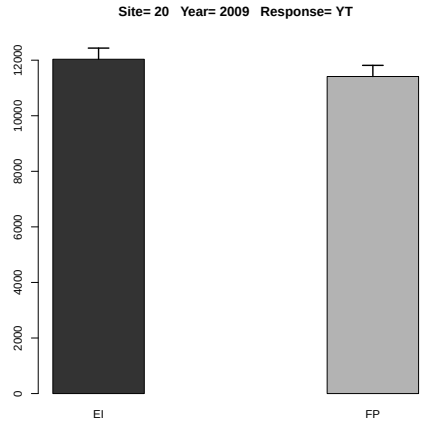

Figure 4.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	113759.568	113759.568	0.786	2.997	0.441
B	1.000	28336990.562	28336990.562	195.774	5.930	0.000
A:B	1.000	812251.562	812251.562	5.612	5.930	0.056

Table 4.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10477.375	218.657	4.400	47.920	9889.427	11065.323	0.000
2	FP		10307.000	218.657	4.400	47.140	9719.052	10894.948	0.000
3		N	11723.000	218.229	4.500	53.720	11140.603	12305.397	0.000
4		N0	9061.375	218.229	4.500	41.520	8478.978	9643.772	0.000
5	EI	N	12033.500	256.717	7.500	46.870	11434.804	12632.196	0.000
6	FP	N	11412.500	256.717	7.500	44.460	10813.804	12011.196	0.000
7	EI	N0	8921.250	256.717	7.500	34.750	8322.554	9519.946	0.000
8	FP	N0	9201.500	256.717	7.500	35.840	8602.804	9800.196	0.000

Table 4.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 20 in year 2009 .

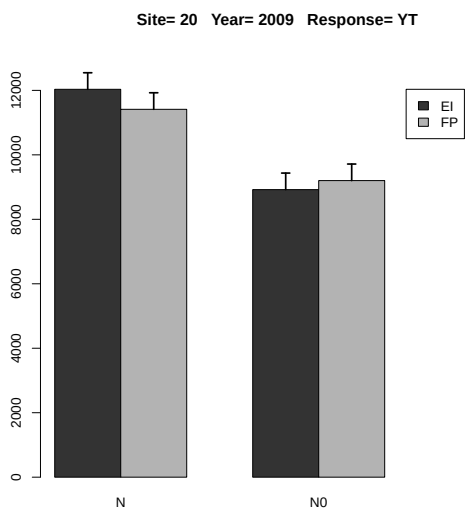

Figure 4.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	170.375	192.181	3.000	0.890	-441.573	782.323	0.441
B N-N0	2661.625	190.226	6.100	13.990	2198.652	3124.598	0.000
A:B EI N- FP N	621.000	270.406	8.000	2.300	-2.564	1244.564	0.051
A:B EI N- EI N0	3112.250	269.020	6.100	11.570	2457.507	3766.993	0.000
A:B EI N- FP N0	2832.000	270.406	8.000	10.470	2208.436	3455.564	0.000
A:B FP N- EI N0	2491.250	270.406	8.000	9.210	1867.686	3114.814	0.000
A:B FP N- FP N0	2211.000	269.020	6.100	8.220	1556.257	2865.743	0.000
A:B EI N0- FP N0	-280.250	270.406	8.000	-1.040	-903.814	343.314	0.330

Table 4.15: Estimate of contrast in two-way ANOVA for variable YT at site 20 in year 2009 .

4.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.468
2	2	EI	N0	0.475
3	3	EI	N0	0.430
4	4	EI	N0	0.502
5	1	EI	N	0.598
6	2	EI	N	0.623
7	3	EI	N	0.599
8	4	EI	N	0.611
9	1	FP	N0	0.472
10	2	FP	N0	0.479
11	3	FP	N0	0.473
12	4	FP	N0	0.493
13	1	FP	N	0.583
14	2	FP	N	0.546
15	3	FP	N	0.559
16	4	FP	N	0.568

Table 4.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.608	0.009	67.604	0.000
A FP	0.564	0.009	62.729	0.000
A EI-FP	0.044	0.013	3.448	0.078

Table 4.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 20 in year 2009 .

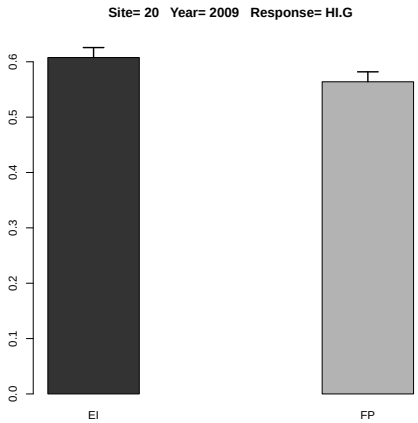

Figure 4.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	3.586	2.999	0.155
B	1.000	0.050	0.050	196.652	5.963	0.000
A:B	1.000	0.003	0.003	11.524	5.963	0.015

Table 4.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.538	0.007	5.600	74.110	0.520	0.556	0.000
2	FP		0.521	0.007	5.600	71.800	0.503	0.540	0.000
3		N	0.586	0.007	5.900	83.620	0.568	0.603	0.000
4		N0	0.474	0.007	5.900	67.660	0.457	0.491	0.000
5	EI	N	0.608	0.009	10.700	66.090	0.587	0.628	0.000
6	FP	N	0.564	0.009	10.700	61.330	0.544	0.584	0.000
7	EI	N0	0.469	0.009	10.700	50.990	0.449	0.489	0.000
8	FP	N0	0.479	0.009	10.700	52.110	0.459	0.499	0.000

Table 4.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 20 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.017	0.009	3.000	1.890	-0.011	0.045	0.155
B N-N0	0.112	0.008	6.000	14.020	0.092	0.131	0.000
A:B EI N- FP N	0.044	0.012	7.400	3.680	0.016	0.072	0.007
A:B EI N- EI N0	0.139	0.011	6.000	12.320	0.111	0.167	0.000
A:B EI N- FP N0	0.129	0.012	7.400	10.790	0.101	0.156	0.000
A:B FP N- EI N0	0.095	0.012	7.400	7.980	0.067	0.123	0.000
A:B FP N- FP N0	0.085	0.011	6.000	7.520	0.057	0.112	0.000
A:B EI N0- FP N0	-0.010	0.012	7.400	-0.870	-0.038	0.018	0.414

Table 4.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 20 in year 2009 .

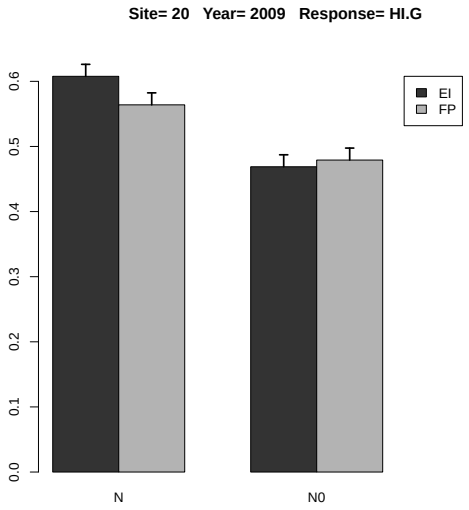

Figure 4.8: Estimated treatment means and standard error in the 2-way ANOVA.

4.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	53.652
2	2	EI	N0	41.780
3	3	EI	N0	35.370
4	4	EI	N0	41.160
5	1	EI	N	95.797
6	2	EI	N	84.425
7	3	EI	N	90.753
8	4	EI	N	86.760
9	1	FP	N0	45.230
10	2	FP	N0	46.870
11	3	FP	N0	46.871
12	4	FP	N0	37.359
13	1	FP	N	77.688
14	2	FP	N	97.500
15	3	FP	N	98.340
16	4	FP	N	86.688

Table 4.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	89.434	4.809	18.599	0.001
A FP	90.054	4.809	18.728	0.000
A EI-FP	-0.620	6.800	-0.091	0.995

Table 4.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 20 in year 2009 .

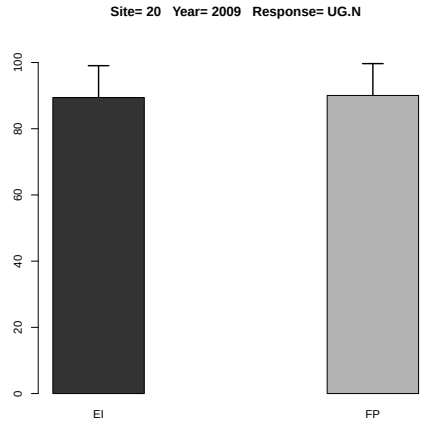

Figure 4.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.249	1.249	0.042	5.999	0.845
B	1.000	8540.486	8540.486	285.202	6.000	0.000
A:B	1.000	0.223	0.223	0.007	6.000	0.934

Table 4.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		66.212	2.964	6.000	22.340	58.959	73.466	0.000
2	FP		67.068	2.964	6.000	22.630	59.815	74.322	0.000
3		N	89.744	2.503	10.300	35.850	84.191	95.297	0.000
4		N0	43.536	2.503	10.300	17.390	37.983	49.090	0.000
5	EI	N	89.434	3.540	10.300	25.270	81.580	97.287	0.000
6	FP	N	90.054	3.540	10.300	25.440	82.201	97.907	0.000
7	EI	N0	42.990	3.540	10.300	12.140	35.137	50.844	0.000
8	FP	N0	44.083	3.540	10.300	12.450	36.229	51.936	0.000

Table 4.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 20 in year 2009 .

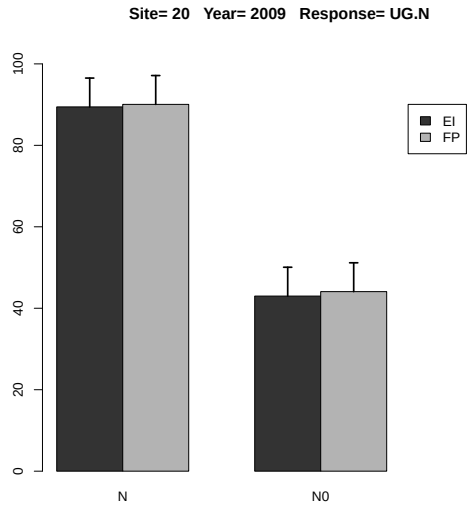

Figure 4.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.856	4.192	6.000	-0.200	-11.114	9.402	0.845
B N-N0	46.207	2.736	6.000	16.890	39.512	52.903	0.000
A:B EI N- FP N	-0.620	5.006	10.300	-0.120	-11.727	10.486	0.904
A:B EI N- EI N0	46.443	3.869	6.000	12.000	36.975	55.911	0.000
A:B EI N- FP N0	45.351	5.006	10.300	9.060	34.245	56.458	0.000
A:B FP N- EI N0	47.063	5.006	10.300	9.400	35.957	58.170	0.000
A:B FP N- FP N0	45.971	3.869	6.000	11.880	36.503	55.440	0.000
A:B EI N0- FP N0	-1.092	5.006	10.300	-0.220	-12.198	10.014	0.832

Table 4.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 20 in year 2009 .

4.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	13.413
2	2	EI	N0	12.534
3	3	EI	N0	11.790
4	4	EI	N0	12.348
5	1	EI	N	22.107
6	2	EI	N	23.025
7	3	EI	N	13.962
8	4	EI	N	21.690
9	1	FP	N0	13.569
10	2	FP	N0	14.061
11	3	FP	N0	12.783
12	4	FP	N0	12.453
13	1	FP	N	19.422
14	2	FP	N	19.500
15	3	FP	N	19.668
16	4	FP	N	24.768

Table 4.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	20.196	1.581	12.772	0.002
A FP	20.839	1.581	13.179	0.002
A EI-FP	-0.644	2.236	-0.288	0.954

Table 4.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 20 in year 2009 .

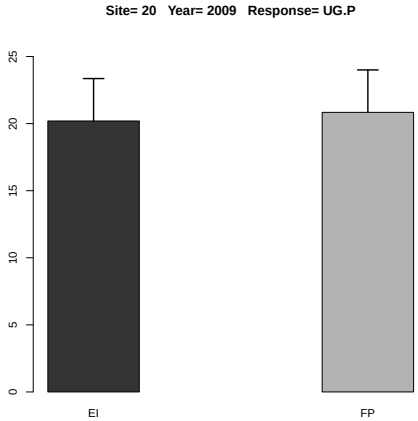

Figure 4.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.792	1.792	0.318	9.000	0.587
B	1.000	234.021	234.021	41.458	9.000	0.000
A:B	1.000	0.003	0.003	0.000	9.000	0.983

Table 4.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16.359	0.940	7.200	17.390	14.149	18.568	0.000
2	FP		17.028	0.940	7.200	18.110	14.819	19.237	0.000
3		N	20.518	0.940	7.200	21.820	18.308	22.727	0.000
4		N0	12.869	0.940	7.200	13.680	10.660	15.078	0.000
5	EI	N	20.196	1.261	11.600	16.020	17.437	22.955	0.000
6	FP	N	20.840	1.261	11.600	16.530	18.080	23.599	0.000
7	EI	N0	12.521	1.261	11.600	9.930	9.762	15.280	0.000
8	FP	N0	13.216	1.261	11.600	10.480	10.457	15.976	0.000

Table 4.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 20 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.669	1.188	9.000	-0.560	-3.357	2.018	0.587
B N-N0	7.649	1.188	9.000	6.440	4.962	10.336	0.000
A:B EI N- FP N	-0.643	1.680	9.000	-0.380	-4.444	3.157	0.711
A:B EI N- EI N0	7.675	1.680	9.000	4.570	3.874	11.475	0.001
A:B EI N- FP N0	6.979	1.680	9.000	4.150	3.179	10.780	0.002
A:B FP N- EI N0	8.318	1.680	9.000	4.950	4.518	12.119	0.001
A:B FP N- FP N0	7.623	1.680	9.000	4.540	3.823	11.423	0.001
A:B EI N0- FP N0	-0.695	1.680	9.000	-0.410	-4.496	3.105	0.689

Table 4.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 20 in year 2009 .

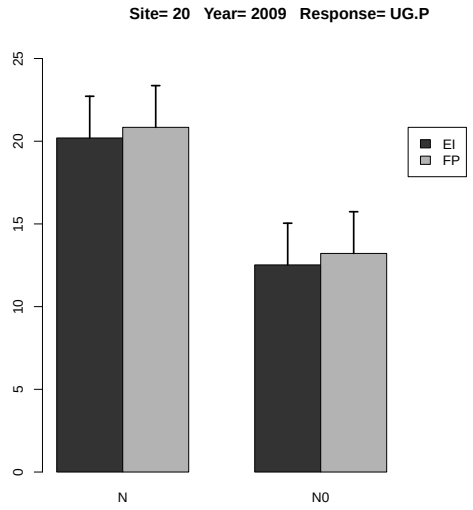

Figure 4.12: Estimated treatment means and standard error in the 2-way ANOVA.

4.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	30.716
2	2	EI	N0	28.703
3	3	EI	N0	26.999
4	4	EI	N0	28.277
5	1	EI	N	50.625
6	2	EI	N	52.727
7	3	EI	N	31.973
8	4	EI	N	49.670
9	1	FP	N0	31.073
10	2	FP	N0	32.200
11	3	FP	N0	29.273
12	4	FP	N0	28.517
13	1	FP	N	44.476
14	2	FP	N	44.655
15	3	FP	N	45.040
16	4	FP	N	56.719

Table 4.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	46.249	3.621	12.772	0.002
A FP	47.722	3.621	13.179	0.002
A EI-FP	-1.474	5.121	-0.288	0.954

Table 4.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 20 in year 2009 .

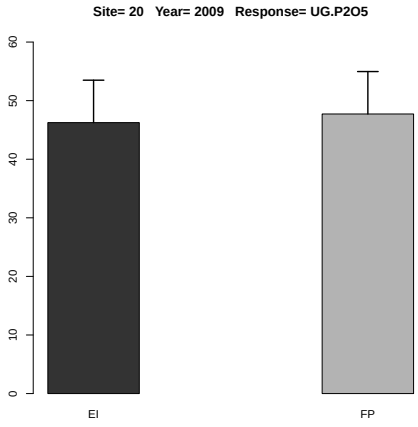

Figure 4.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9.399	9.399	0.318	9.000	0.587
B	1.000	1227.230	1227.230	41.458	9.000	0.000
A:B	1.000	0.014	0.014	0.000	9.000	0.983

Table 4.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		37.461	2.154	7.200	17.390	32.402	42.520	0.000
2	FP		38.994	2.154	7.200	18.110	33.935	44.053	0.000
3		N	46.986	2.154	7.200	21.820	41.926	52.045	0.000
4		N0	29.470	2.154	7.200	13.680	24.411	34.529	0.000
5	EI	N	46.249	2.888	11.600	16.020	39.930	52.567	0.000
6	FP	N	47.722	2.888	11.600	16.530	41.404	54.041	0.000
7	EI	N0	28.674	2.888	11.600	9.930	22.355	34.992	0.000
8	FP	N0	30.266	2.888	11.600	10.480	23.947	36.584	0.000

Table 4.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 20 in year 2009 .

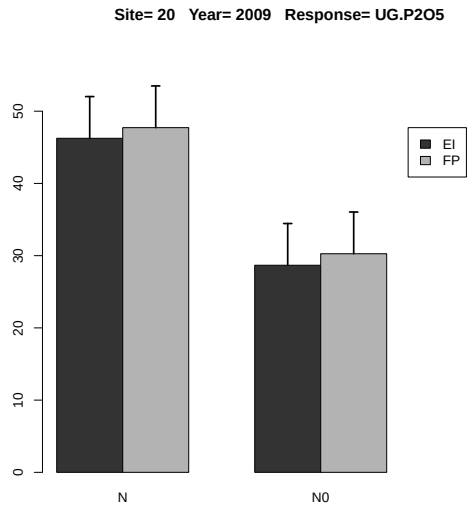

Figure 4.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.533	2.720	9.000	-0.560	-7.687	4.621	0.587
B N-N0	17.516	2.720	9.000	6.440	11.362	23.670	0.000
A:B EI N- FP N	-1.474	3.847	9.000	-0.380	-10.177	7.229	0.711
A:B EI N- EI N0	17.575	3.847	9.000	4.570	8.872	26.278	0.001
A:B EI N- FP N0	15.983	3.847	9.000	4.150	7.280	24.686	0.002
A:B FP N- EI N0	19.049	3.847	9.000	4.950	10.346	27.752	0.001
A:B FP N- FP N0	17.457	3.847	9.000	4.540	8.754	26.160	0.001
A:B EI N0- FP N0	-1.592	3.847	9.000	-0.410	-10.295	7.111	0.689

Table 4.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 20 in year 2009 .

4.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	13.413
2	2	EI	N0	16.712
3	3	EI	N0	11.790
4	4	EI	N0	16.464
5	1	EI	N	22.107
6	2	EI	N	30.700
7	3	EI	N	20.943
8	4	EI	N	21.690
9	1	FP	N0	18.092
10	2	FP	N0	18.748
11	3	FP	N0	17.044
12	4	FP	N0	16.604
13	1	FP	N	19.422
14	2	FP	N	26.000
15	3	FP	N	26.224
16	4	FP	N	18.576

Table 4.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	23.860	1.582	15.081	0.001
A FP	22.556	1.582	14.256	0.001
A EI-FP	1.304	2.238	0.583	0.831

Table 4.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 20 in year 2009 .

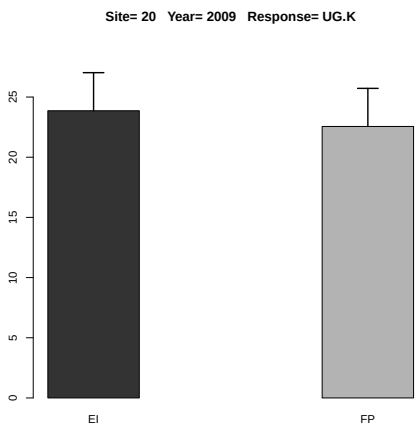

Figure 4.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.097	2.097	0.299	2.999	0.622
B	1.000	201.605	201.605	28.759	6.000	0.002
A:B	1.000	18.764	18.764	2.677	6.000	0.153

Table 4.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.227	1.385	5.300	13.880	15.732	22.722	0.000
2	FP		20.089	1.385	5.300	14.500	16.594	23.584	0.000
3		N	23.208	1.318	5.100	17.610	19.835	26.580	0.000
4		N0	16.108	1.318	5.100	12.220	12.736	19.481	0.000
5	EI	N	23.860	1.672	9.500	14.270	20.111	27.609	0.000
6	FP	N	22.555	1.672	9.500	13.490	18.806	26.305	0.000
7	EI	N0	14.595	1.672	9.500	8.730	10.846	18.344	0.000
8	FP	N0	17.622	1.672	9.500	10.540	13.873	21.371	0.000

Table 4.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 20 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.861	1.575	3.000	-0.550	-5.873	4.151	0.623
B N-N0	7.099	1.324	6.000	5.360	3.860	10.339	0.002
A:B EI N- FP N	1.304	2.057	7.000	0.630	-3.561	6.170	0.546
A:B EI N- EI N0	9.265	1.872	6.000	4.950	4.684	13.846	0.003
A:B EI N- FP N0	6.238	2.057	7.000	3.030	1.372	11.104	0.019
A:B FP N- EI N0	7.961	2.057	7.000	3.870	3.095	12.827	0.006
A:B FP N- FP N0	4.934	1.872	6.000	2.640	0.352	9.515	0.039
A:B EI N0- FP N0	-3.027	2.057	7.000	-1.470	-7.893	1.839	0.185

Table 4.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 20 in year 2009 .

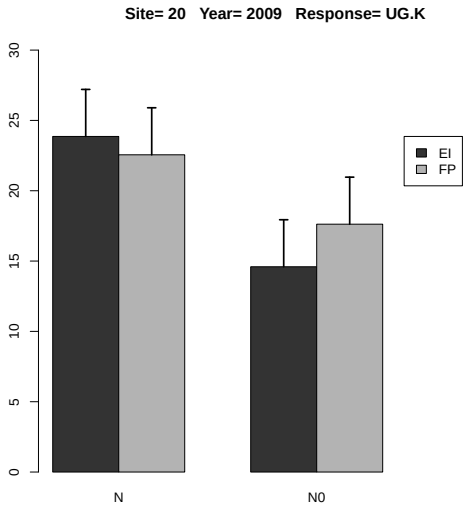

Figure 4.16: Estimated treatment means and standard error in the 2-way ANOVA.

4.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	16.163
2	2	EI	N0	20.138
3	3	EI	N0	14.207
4	4	EI	N0	19.839
5	1	EI	N	26.639
6	2	EI	N	36.994
7	3	EI	N	25.236
8	4	EI	N	26.136
9	1	FP	N0	21.801
10	2	FP	N0	22.591
11	3	FP	N0	20.538
12	4	FP	N0	20.008
13	1	FP	N	23.404
14	2	FP	N	31.330
15	3	FP	N	31.600
16	4	FP	N	22.384

Table 4.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	28.751	1.907	15.081	0.001
A FP	27.179	1.907	14.256	0.001
A EI-FP	1.572	2.696	0.583	0.831

Table 4.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 20 in year 2009 .

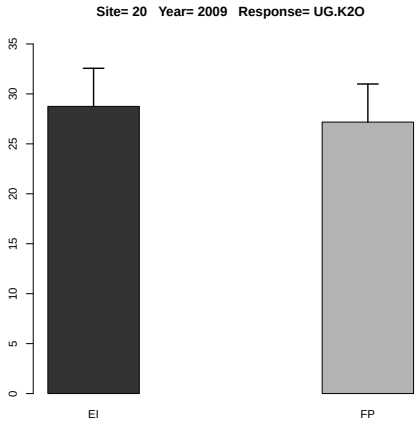

Figure 4.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.046	3.046	0.299	2.999	0.622
B	1.000	292.735	292.735	28.759	6.000	0.002
A:B	1.000	27.246	27.246	2.677	6.000	0.153

Table 4.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.169	1.669	5.300	13.880	18.957	27.380	0.000
2	FP		24.207	1.669	5.300	14.500	19.995	28.418	0.000
3		N	27.965	1.588	5.100	17.610	23.901	32.029	0.000
4		N0	19.411	1.588	5.100	12.220	15.347	23.474	0.000
5	EI	N	28.751	2.014	9.500	14.270	24.234	33.269	0.000
6	FP	N	27.179	2.014	9.500	13.490	22.662	31.697	0.000
7	EI	N0	17.587	2.014	9.500	8.730	13.069	22.104	0.000
8	FP	N0	21.235	2.014	9.500	10.540	16.717	25.752	0.000

Table 4.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 20 in year 2009 .

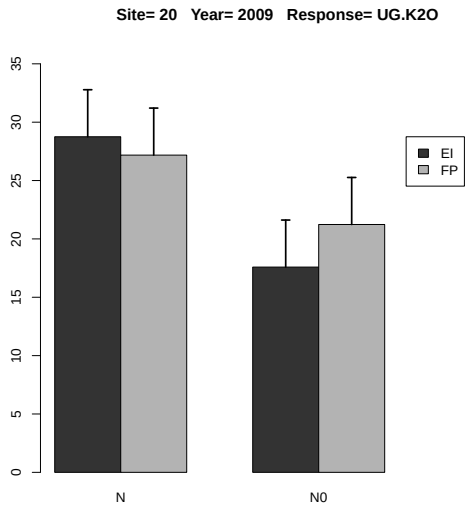

Figure 4.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.038	1.898	3.000	-0.550	-7.078	5.002	0.623
B N-N0	8.555	1.595	6.000	5.360	4.651	12.458	0.002
A:B EI N- FP N	1.572	2.479	7.000	0.630	-4.291	7.435	0.546
A:B EI N- EI N0	11.165	2.256	6.000	4.950	5.644	16.685	0.003
A:B EI N- FP N0	7.517	2.479	7.000	3.030	1.653	13.380	0.019
A:B FP N- EI N0	9.593	2.479	7.000	3.870	3.729	15.456	0.006
A:B FP N- FP N0	5.945	2.256	6.000	2.640	0.425	11.465	0.039
A:B EI N0- FP N0	-3.648	2.479	7.000	-1.470	-9.511	2.216	0.185

Table 4.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 20 in year 2009 .

4.1.10 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	40.939
2	2	EI	N	42.639
3	3	EI	N	38.783
4	4	EI	N	40.167
5	1	FP	N	25.793
6	2	FP	N	25.896
7	3	FP	N	26.120
8	4	FP	N	24.669

Table 4.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	40.632	0.613	6.000	66.290	39.132	42.132	0.000
A FP	25.619	0.613	6.000	41.800	24.119	27.120	0.000
A EI-FP	15.012	0.855	3.000	17.570	12.293	17.732	0.000

Table 4.47: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 20 in year 2009 .

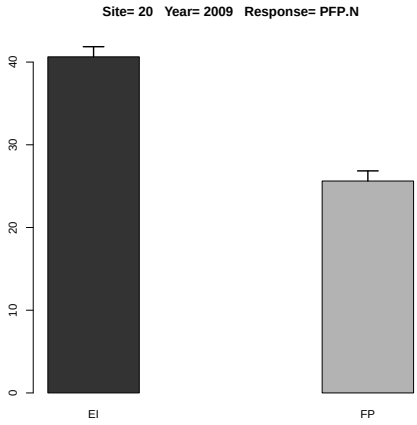

Figure 4.19: Estimated treatment means and standard error in the one-way ANOVA.

4.1.11 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	225.042
2	2	EI	N	234.387
3	3	EI	N	213.193
4	4	EI	N	220.797
5	1	FP	N	102.264
6	2	FP	N	102.674
7	3	FP	N	103.559
8	4	FP	N	97.809

Table 4.48: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	223.355	3.254	6.000	68.630	215.391	231.319	0.000
A FP	101.576	3.254	6.000	31.210	93.613	109.540	0.000
A EI-FP	121.778	4.552	3.000	26.750	107.292	136.265	0.000

Table 4.49: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 20 in year 2009 .

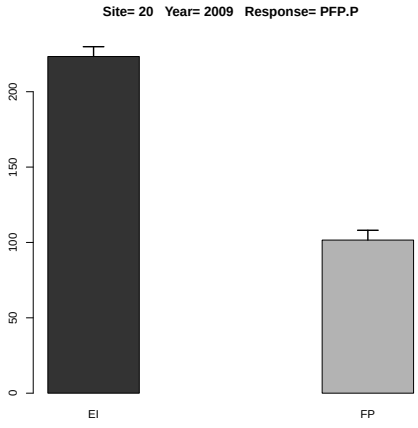

Figure 4.20: Estimated treatment means and standard error in the one-way ANOVA.

4.1.12 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	98.253
2	2	EI	N	102.333
3	3	EI	N	93.080
4	4	EI	N	96.400
5	1	FP	N	44.648
6	2	FP	N	44.828
7	3	FP	N	45.214
8	4	FP	N	42.703

Table 4.50: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	97.517	1.421	6.000	68.630	94.040	100.994	0.000
A FP	44.348	1.421	6.000	31.210	40.871	47.825	0.000
A EI-FP	53.168	1.987	3.000	26.750	46.843	59.493	0.000

Table 4.51: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 20 in year 2009 .

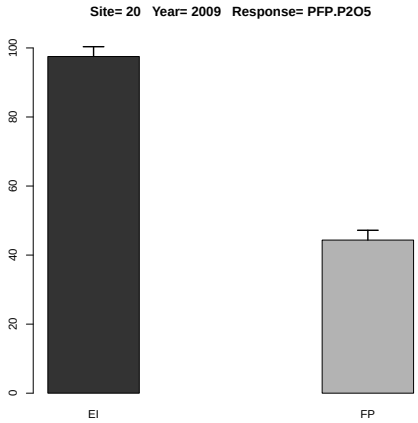

Figure 4.21: Estimated treatment means and standard error in the one-way ANOVA.

4.1.13 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	98.672
2	2	EI	N	102.769
3	3	EI	N	93.476
4	4	EI	N	96.810
5	1	FP	N	78.019
6	2	FP	N	78.332
7	3	FP	N	79.007
8	4	FP	N	74.620

Table 4.52: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	97.932	1.535	6.000	63.780	94.174	101.690	0.000
A FP	77.495	1.535	6.000	50.470	73.737	81.253	0.000
A EI-FP	20.437	2.136	3.000	9.570	13.640	27.234	0.002

Table 4.53: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 20 in year 2009 .

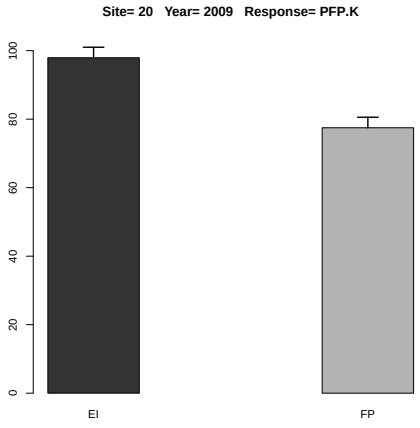

Figure 4.22: Estimated treatment means and standard error in the one-way ANOVA.

4.1.14 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	81.878
2	2	EI	N	85.278
3	3	EI	N	77.567
4	4	EI	N	80.333
5	1	FP	N	64.740
6	2	FP	N	65.000
7	3	FP	N	65.560
8	4	FP	N	61.920

Table 4.54: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	81.264	1.274	6.000	63.780	78.145	84.382	0.000
A FP	64.305	1.274	6.000	50.470	61.187	67.423	0.000
A EI-FP	16.959	1.772	3.000	9.570	11.319	22.599	0.002

Table 4.55: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 20 in year 2009 .

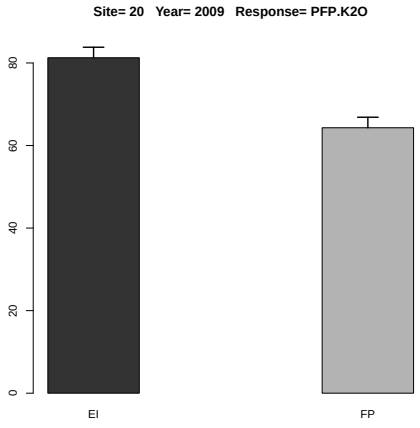

Figure 4.23: Estimated treatment means and standard error in the one-way ANOVA.

4.1.15 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	368.450
2	2	EI	N	383.750
3	3	EI	N	349.050
4	4	EI	N	361.500

Table 4.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

4.1.16 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	1473.800
2	2	EI	N	1535.000
3	3	EI	N	1396.200
4	4	EI	N	1446.000

Table 4.57: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

4.1.17 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.532
2	2	EI	N	0.469
3	3	EI	N	0.504
4	4	EI	N	0.482
5	1	FP	N	0.310
6	2	FP	N	0.388
7	3	FP	N	0.392
8	4	FP	N	0.345

Table 4.58: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.497	0.017	6.000	29.360	0.455	0.538	0.000
A FP	0.359	0.017	6.000	21.200	0.317	0.400	0.000
A EI-FP	0.138	0.024	6.000	5.770	0.080	0.197	0.001

Table 4.59: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 20 in year 2009 .

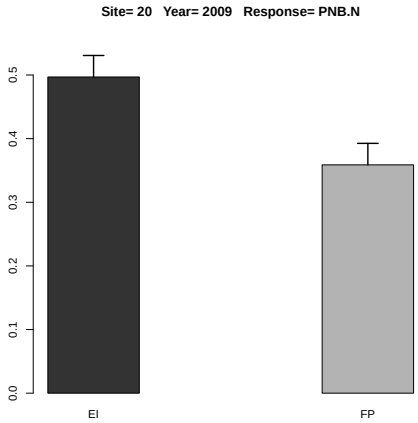

Figure 4.24: Estimated treatment means and standard error in the one-way ANOVA.

4.1.18 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.675
2	2	EI	N	0.703
3	3	EI	N	0.426
4	4	EI	N	0.662
5	1	FP	N	0.307
6	2	FP	N	0.308
7	3	FP	N	0.311
8	4	FP	N	0.391

Table 4.60: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.617	0.048	5.900	12.960	0.500	0.734	0.000
A FP	0.329	0.048	5.900	6.920	0.212	0.446	0.000
A EI-FP	0.288	0.063	3.000	4.550	0.086	0.489	0.020

Table 4.61: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 20 in year 2009 .

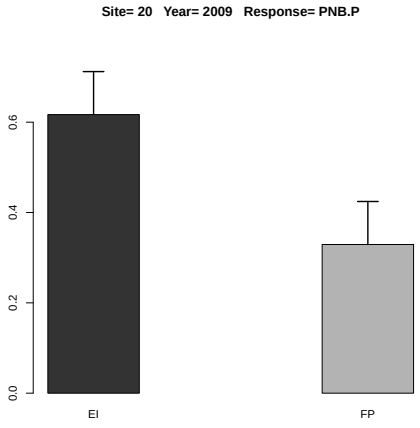

Figure 4.25: Estimated treatment means and standard error in the one-way ANOVA.

4.1.19 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.296
2	2	EI	N	0.411
3	3	EI	N	0.280
4	4	EI	N	0.290
5	1	FP	N	0.234
6	2	FP	N	0.313
7	3	FP	N	0.316
8	4	FP	N	0.224

Table 4.62: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.320	0.028	4.900	11.440	0.247	0.392	0.000
A FP	0.272	0.028	4.900	9.730	0.200	0.344	0.000
A EI-FP	0.048	0.029	3.000	1.650	-0.044	0.140	0.198

Table 4.63: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 20 in year 2009 .

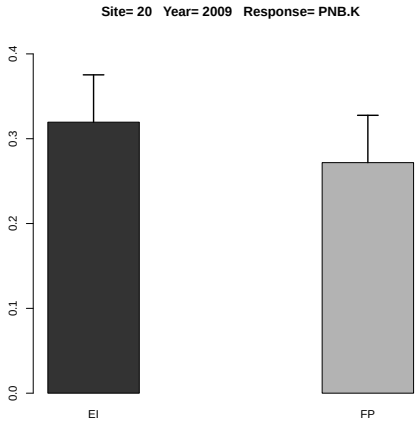

Figure 4.26: Estimated treatment means and standard error in the one-way ANOVA.

4.1.20 Response Variable AE

	rep	A	B	y
1	1	EI	N	16.100
2	2	EI	N	19.428
3	3	EI	N	16.950
4	4	EI	N	17.300
5	1	FP	N	7.773
6	2	FP	N	7.223
7	3	FP	N	9.143
8	4	FP	N	8.131

Table 4.64: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	17.444	0.695	25.084	0.000
A FP	8.068	0.695	11.601	0.002
A EI-FP	9.377	0.984	9.534	0.005

Table 4.65: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 20 in year 2009 .

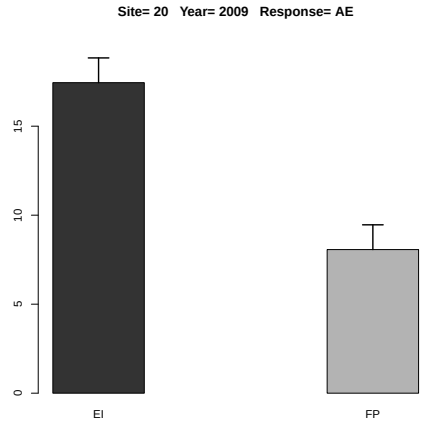

Figure 4.27: Estimated treatment means and standard error in the one-way ANOVA.

4.2 Year 2010

There are 74 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

4.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	4391.000
2	2	EI	N0	4745.000
3	3	EI	N0	4661.000
4	4	EI	N0	4919.000
5	1	EI	N	9942.000
6	2	EI	N	9178.000
7	3	EI	N	9537.000
8	4	EI	N	9498.000
9	1	FP	N0	4895.000
10	2	FP	N0	4839.000
11	3	FP	N0	4688.000
12	4	FP	N0	4789.000
13	1	FP	N	9733.000
14	2	FP	N	9531.000
15	3	FP	N	9841.000
16	4	FP	N	9991.000

Table 4.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	9538.750	108.471	87.938	0.000
A FP	9774.000	108.471	90.107	0.000
A EI-FP	-235.250	153.402	-1.534	0.383

Table 4.67: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 20 in year 2010 .

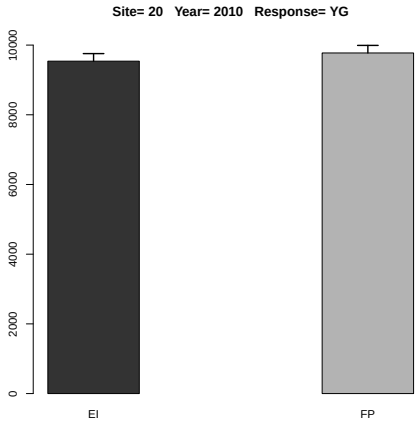

Figure 4.28: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	128881.000	128881.000	2.689	11.987	0.127
B	1.000	96648561.000	96648561.000	2016.566	11.987	0.000
A:B	1.000	12432.250	12432.250	0.259	11.987	0.620

Table 4.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7108.875	77.401	12.000	91.840	6940.213	7277.537	0.000
2	FP		7288.375	77.401	12.000	94.160	7119.713	7457.037	0.000
3		N	9656.375	77.401	12.000	124.760	9487.713	9825.037	0.000
4		N0	4740.875	77.401	12.000	61.250	4572.213	4909.537	0.000
5	EI	N	9538.750	109.462	12.000	87.140	9300.226	9777.274	0.000
6	FP	N	9774.000	109.462	12.000	89.290	9535.476	10012.524	0.000
7	EI	N0	4679.000	109.462	12.000	42.750	4440.475	4917.525	0.000
8	FP	N0	4802.750	109.462	12.000	43.880	4564.225	5041.275	0.000

Table 4.69: Estimate of treatment means in tow-way ANOVA for variable YG at site 20 in year 2010 .

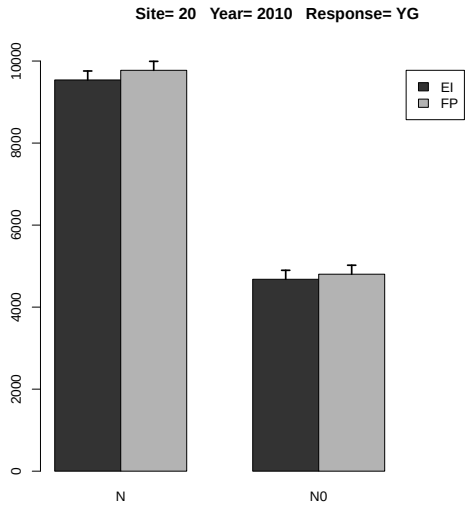

Figure 4.29: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-179.500	109.462	12.000	-1.640	-418.024	59.025	0.127
B N-N0	4915.500	109.462	12.000	44.910	4676.975	5154.025	0.000
A:B EI N- FP N	-235.250	154.802	12.000	-1.520	-572.575	102.075	0.154
A:B EI N- EI N0	4859.750	154.802	12.000	31.390	4522.425	5197.075	0.000
A:B EI N- FP N0	4736.000	154.802	12.000	30.590	4398.675	5073.325	0.000
A:B FP N- EI N0	5095.000	154.802	12.000	32.910	4757.675	5432.325	0.000
A:B FP N- FP N0	4971.250	154.802	12.000	32.110	4633.925	5308.575	0.000
A:B EI N0- FP N0	-123.750	154.802	12.000	-0.800	-461.075	213.575	0.440

Table 4.70: Estimate of contrast in two-way ANOVA for variable YG at site 20 in year 2010 .

4.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	5905.000
2	2	EI	N0	5977.000
3	3	EI	N0	5755.000
4	4	EI	N0	6283.000
5	1	EI	N	8614.000
6	2	EI	N	8064.000
7	3	EI	N	8403.000
8	4	EI	N	8425.000
9	1	FP	N0	6721.000
10	2	FP	N0	7670.000
11	3	FP	N0	6161.000
12	4	FP	N0	5816.000
13	1	FP	N	9849.000
14	2	FP	N	9540.000
15	3	FP	N	9529.000
16	4	FP	N	9929.000

Table 4.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	8376.500	65.231	128.412	0.000
A FP	9711.750	65.231	148.882	0.000
A EI-FP	-1335.250	92.251	-14.474	0.001

Table 4.72: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 20 in year 2010 .

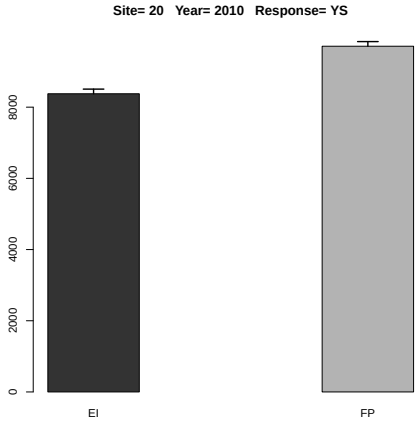

Figure 4.30: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3791782.562	3791782.562	18.953	12.083	0.001
B	1.000	30429014.062	30429014.062	152.096	12.083	0.000
A:B	1.000	523090.562	523090.562	2.615	12.083	0.132

Table 4.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7178.250	158.139	12.100	45.390	6833.956	7522.544	0.000
2	FP		8151.875	158.139	12.100	51.550	7807.581	8496.169	0.000
3		N	9044.125	158.139	12.100	57.190	8699.831	9388.419	0.000
4		N0	6286.000	158.139	12.100	39.750	5941.706	6630.294	0.000
5	EI	N	8376.500	223.643	12.100	37.450	7889.595	8863.405	0.000
6	FP	N	9711.750	223.643	12.100	43.430	9224.845	10198.655	0.000
7	EI	N0	5980.000	223.643	12.100	26.740	5493.095	6466.905	0.000
8	FP	N0	6592.000	223.643	12.100	29.480	6105.095	7078.905	0.000

Table 4.74: Estimate of treatment means in tow-way ANOVA for variable YS at site 20 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-973.625	223.643	12.100	-4.350	-1460.530	-486.720	0.001
B N-N0	2758.125	223.643	12.100	12.330	2271.220	3245.030	0.000
A:B EI N- FP N	-1335.250	316.279	12.100	-4.220	-2023.837	-646.663	0.001
A:B EI N- EI N0	2396.500	316.279	12.100	7.580	1707.913	3085.087	0.000
A:B EI N- FP N0	1784.500	316.279	12.100	5.640	1095.913	2473.087	0.000
A:B FP N- EI N0	3731.750	316.279	12.100	11.800	3043.163	4420.337	0.000
A:B FP N- FP N0	3119.750	316.279	12.100	9.860	2431.163	3808.337	0.000
A:B EI N0- FP N0	-612.000	316.279	12.100	-1.940	-1300.587	76.587	0.077

Table 4.75: Estimate of contrast in two-way ANOVA for variable YS at site 20 in year 2010 .

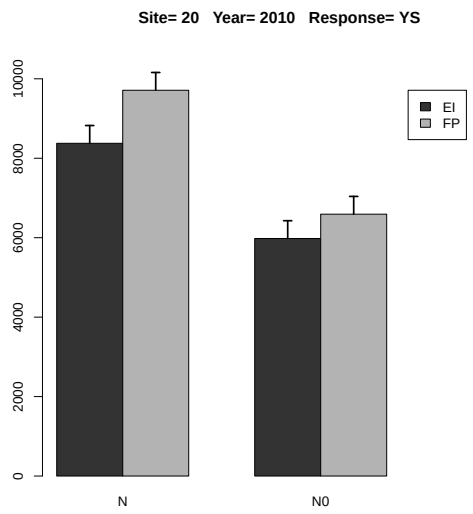

Figure 4.31: Estimated treatment means and standard error in the 2-way ANOVA.

4.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	10296.000
2	2	EI	N0	10722.000
3	3	EI	N0	10416.000
4	4	EI	N0	11202.000
5	1	EI	N	18556.000
6	2	EI	N	17242.000
7	3	EI	N	17940.000
8	4	EI	N	17923.000
9	1	FP	N0	11616.000
10	2	FP	N0	12509.000
11	3	FP	N0	10849.000
12	4	FP	N0	10605.000
13	1	FP	N	19582.000
14	2	FP	N	19071.000
15	3	FP	N	19370.000
16	4	FP	N	19920.000

Table 4.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	17915.250	153.425	116.768	0.000
A FP	19485.750	153.425	127.005	0.000
A EI-FP	-1570.500	216.976	-7.238	0.011

Table 4.77: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 20 in year 2010 .

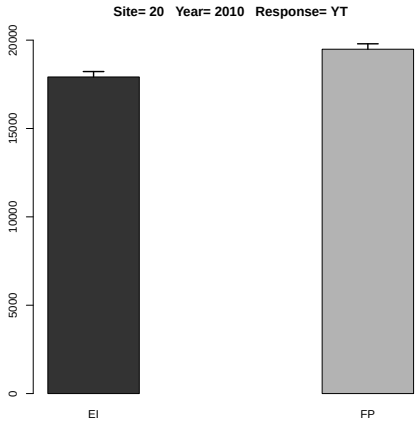

Figure 4.32: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5318789.062	5318789.062	16.161	11.693	0.002
B	1.000	235538082.562	235538082.562	715.660	11.693	0.000
A:B	1.000	696807.562	696807.562	2.117	11.693	0.172

Table 4.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14287.125	202.830	11.700	70.440	13843.905	14730.345	0.000
2	FP		15440.250	202.830	11.700	76.120	14997.030	15883.470	0.000
3		N	18700.500	202.830	11.700	92.200	18257.280	19143.720	0.000
4		N0	11026.875	202.830	11.700	54.370	10583.655	11470.095	0.000
5	EI	N	17915.250	286.845	11.700	62.460	17288.442	18542.058	0.000
6	FP	N	19485.750	286.845	11.700	67.930	18858.942	20112.558	0.000
7	EI	N0	10659.000	286.845	11.700	37.160	10032.192	11285.808	0.000
8	FP	N0	11394.750	286.845	11.700	39.720	10767.942	12021.558	0.000

Table 4.79: Estimate of treatment means in tow-way ANOVA for variable YT at site 20 in year 2010
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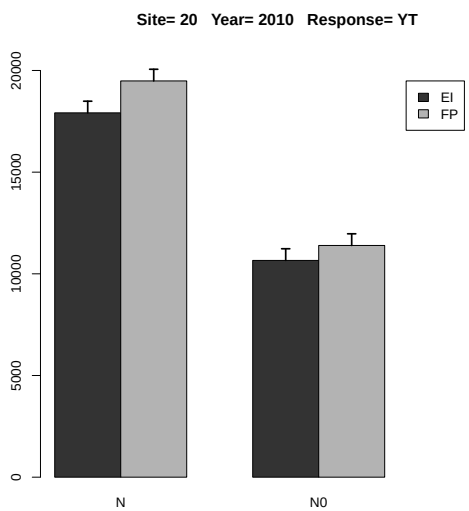

Figure 4.33: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1153.125	286.845	11.700	-4.020	-1779.933	-526.317	0.002
B N-N0	7673.625	286.845	11.700	26.750	7046.817	8300.433	0.000
A:B EI N- FP N	-1570.500	405.660	11.700	-3.870	-2456.940	-684.060	0.002
A:B EI N- EI N0	7256.250	405.660	11.700	17.890	6369.810	8142.690	0.000
A:B EI N- FP N0	6520.500	405.660	11.700	16.070	5634.060	7406.940	0.000
A:B FP N- EI N0	8826.750	405.660	11.700	21.760	7940.310	9713.190	0.000
A:B FP N- FP N0	8091.000	405.660	11.700	19.950	7204.560	8977.440	0.000
A:B EI N0- FP N0	-735.750	405.660	11.700	-1.810	-1622.190	150.690	0.095

Table 4.80: Estimate of contrast in two-way ANOVA for variable YT at site 20 in year 2010 .

4.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.426
2	2	EI	N0	0.443
3	3	EI	N0	0.447
4	4	EI	N0	0.439
5	1	EI	N	0.536
6	2	EI	N	0.532
7	3	EI	N	0.532
8	4	EI	N	0.530
9	1	FP	N0	0.421
10	2	FP	N0	0.387
11	3	FP	N0	0.432
12	4	FP	N0	0.452
13	1	FP	N	0.497
14	2	FP	N	0.500
15	3	FP	N	0.508
16	4	FP	N	0.502

Table 4.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.532	0.002	233.693	0.000
A FP	0.502	0.002	220.172	0.000
A EI-FP	0.031	0.003	9.561	0.005

Table 4.82: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 20 in year 2010 .

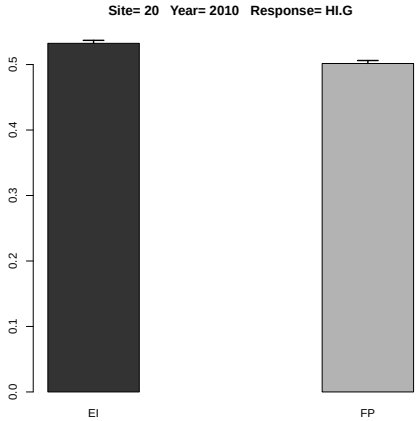

Figure 4.34: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.002	0.002	9.710	5.998	0.021
B	1.000	0.030	0.030	149.858	5.958	0.000
A:B	1.000	0.000	0.000	1.120	5.958	0.331

Table 4.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.486	0.005	6.000	91.610	0.473	0.499	0.000
2	FP		0.462	0.005	6.000	87.200	0.449	0.475	0.000
3		N	0.517	0.005	11.900	100.610	0.506	0.528	0.000
4		N0	0.431	0.005	11.900	83.860	0.420	0.442	0.000
5	EI	N	0.532	0.007	11.900	73.260	0.517	0.548	0.000
6	FP	N	0.502	0.007	11.900	69.020	0.486	0.517	0.000
7	EI	N0	0.439	0.007	11.900	60.390	0.423	0.455	0.000
8	FP	N0	0.423	0.007	11.900	58.200	0.407	0.439	0.000

Table 4.84: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 20 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.023	0.007	6.000	3.120	0.005	0.042	0.021
B N-N0	0.086	0.007	6.000	12.240	0.069	0.103	0.000
A:B EI N- FP N	0.031	0.010	11.900	3.000	0.008	0.053	0.011
A:B EI N- EI N0	0.093	0.010	6.000	9.400	0.069	0.118	0.000
A:B EI N- FP N0	0.109	0.010	11.900	10.650	0.087	0.132	0.000
A:B FP N- EI N0	0.063	0.010	11.900	6.100	0.040	0.085	0.000
A:B FP N- FP N0	0.079	0.010	6.000	7.910	0.054	0.103	0.000
A:B EI N0- FP N0	0.016	0.010	11.900	1.550	-0.006	0.038	0.148

Table 4.85: Estimate of contrast in two-way ANOVA for variable HI.G at site 20 in year 2010 .

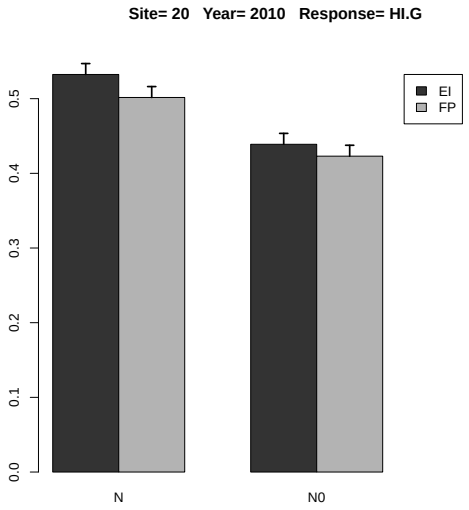

Figure 4.35: Estimated treatment means and standard error in the 2-way ANOVA.

4.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	43.910
2	2	EI	N0	42.705
3	3	EI	N0	51.271
4	4	EI	N0	59.028
5	1	EI	N	129.246
6	2	EI	N	119.314
7	3	EI	N	133.518
8	4	EI	N	132.972
9	1	FP	N0	48.950
10	2	FP	N0	67.746
11	3	FP	N0	46.880
12	4	FP	N0	47.890
13	1	FP	N	107.063
14	2	FP	N	133.434
15	3	FP	N	127.933
16	4	FP	N	149.865

Table 4.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	128.762	6.472	19.894	0.000
A FP	129.574	6.472	20.020	0.001
A EI-FP	-0.811	9.153	-0.089	0.995

Table 4.87: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 20 in year 2010 .

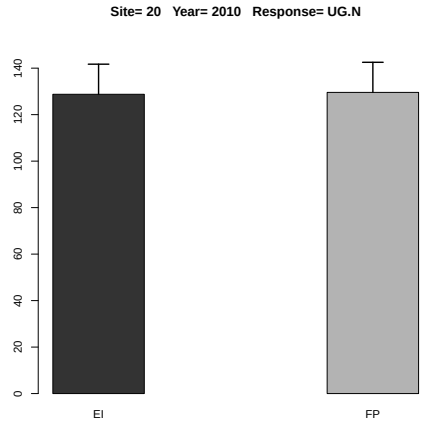

Figure 4.36: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	12.806	12.806	0.127	5.999	0.733
B	1.000	24411.328	24411.328	243.033	6.000	0.000
A:B	1.000	7.991	7.991	0.080	6.000	0.787

Table 4.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		88.996	4.406	6.000	20.200	78.215	99.776	0.000
2	FP		91.220	4.406	6.000	20.710	80.440	102.001	0.000
3		N	129.168	3.998	11.500	32.310	120.413	137.923	0.000
4		N0	51.047	3.998	11.500	12.770	42.292	59.803	0.000
5	EI	N	128.762	5.654	11.500	22.770	116.381	141.144	0.000
6	FP	N	129.574	5.654	11.500	22.920	117.192	141.955	0.000
7	EI	N0	49.228	5.654	11.500	8.710	36.847	61.610	0.000
8	FP	N0	52.867	5.654	11.500	9.350	40.485	65.248	0.000

Table 4.89: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 20 in year 2010 .

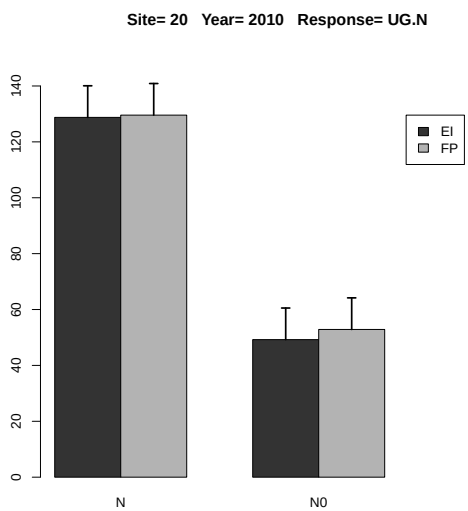

Figure 4.37: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.225	6.230	6.000	-0.360	-17.471	13.021	0.733
B N-N0	78.121	5.011	6.000	15.590	65.859	90.382	0.000
A:B EI N- FP N	-0.811	7.996	11.500	-0.100	-18.321	16.699	0.921
A:B EI N- EI N0	79.534	7.087	6.000	11.220	62.193	96.875	0.000
A:B EI N- FP N0	75.896	7.996	11.500	9.490	58.386	93.406	0.000
A:B FP N- EI N0	80.345	7.996	11.500	10.050	62.835	97.855	0.000
A:B FP N- FP N0	76.707	7.087	6.000	10.820	59.367	94.048	0.000
A:B EI N0- FP N0	-3.638	7.996	11.500	-0.460	-21.148	13.872	0.658

Table 4.90: Estimate of contrast in two-way ANOVA for variable UG.N at site 20 in year 2010 .

4.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	13.173
2	2	EI	N0	14.235
3	3	EI	N0	13.983
4	4	EI	N0	14.757
5	1	EI	N	19.884
6	2	EI	N	27.534
7	3	EI	N	28.611
8	4	EI	N	18.996
9	1	FP	N0	14.685
10	2	FP	N0	14.517
11	3	FP	N0	14.064
12	4	FP	N0	14.367
13	1	FP	N	29.199
14	2	FP	N	28.593
15	3	FP	N	19.682
16	4	FP	N	29.973

Table 4.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	23.756	3.224	7.367	0.010
A FP	26.862	3.224	8.331	0.007
A EI-FP	-3.106	4.560	-0.681	0.782

Table 4.92: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 20 in year 2010 .

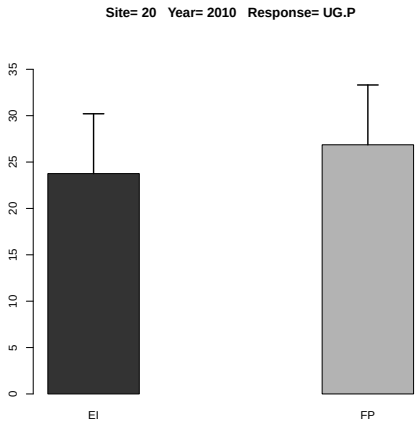

Figure 4.38: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10.962	10.962	0.943	5.997	0.369
B	1.000	491.631	491.631	42.281	6.000	0.001
A:B	1.000	7.476	7.476	0.643	6.000	0.453

Table 4.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.897	1.266	6.000	14.930	15.799	21.995	0.000
2	FP		20.635	1.266	6.000	16.300	17.537	23.733	0.000
3		N	25.309	1.236	12.000	20.470	22.615	28.003	0.000
4		N0	14.223	1.236	12.000	11.510	11.528	16.917	0.000
5	EI	N	23.756	1.748	12.000	13.590	19.946	27.566	0.000
6	FP	N	26.862	1.748	12.000	15.370	23.052	30.672	0.000
7	EI	N0	14.037	1.748	12.000	8.030	10.227	17.847	0.000
8	FP	N0	14.408	1.748	12.000	8.240	10.598	18.218	0.000

Table 4.94: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 20 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.738	1.790	6.000	-0.970	-6.120	2.643	0.369
B N-N0	11.086	1.705	6.000	6.500	6.914	15.258	0.001
A:B EI N- FP N	-3.106	2.472	12.000	-1.260	-8.494	2.283	0.233
A:B EI N- EI N0	9.719	2.411	6.000	4.030	3.819	15.619	0.007
A:B EI N- FP N0	9.348	2.472	12.000	3.780	3.960	14.736	0.003
A:B FP N- EI N0	12.825	2.472	12.000	5.190	7.436	18.213	0.000
A:B FP N- FP N0	12.454	2.411	6.000	5.160	6.553	18.354	0.002
A:B EI N0- FP N0	-0.371	2.472	12.000	-0.150	-5.760	5.017	0.883

Table 4.95: Estimate of contrast in two-way ANOVA for variable UG.P at site 20 in year 2010 .

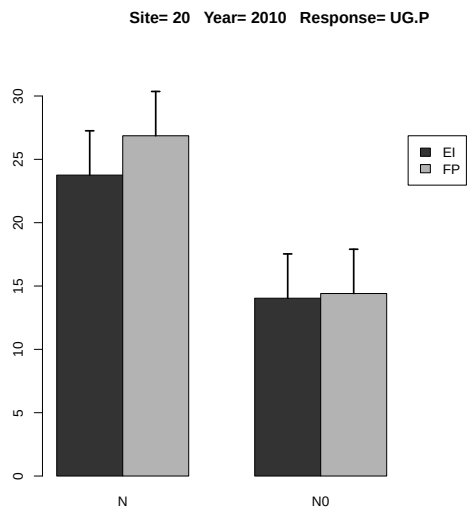

Figure 4.39: Estimated treatment means and standard error in the 2-way ANOVA.

4.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	30.166
2	2	EI	N0	32.598
3	3	EI	N0	32.021
4	4	EI	N0	33.794
5	1	EI	N	45.534
6	2	EI	N	63.053
7	3	EI	N	65.519
8	4	EI	N	43.501
9	1	FP	N0	33.629
10	2	FP	N0	33.244
11	3	FP	N0	32.207
12	4	FP	N0	32.900
13	1	FP	N	66.866
14	2	FP	N	65.478
15	3	FP	N	45.072
16	4	FP	N	68.638

Table 4.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	54.402	7.384	7.367	0.010
A FP	61.513	7.384	8.331	0.007
A EI-FP	-7.112	10.443	-0.681	0.781

Table 4.97: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 20 in year 2010 .

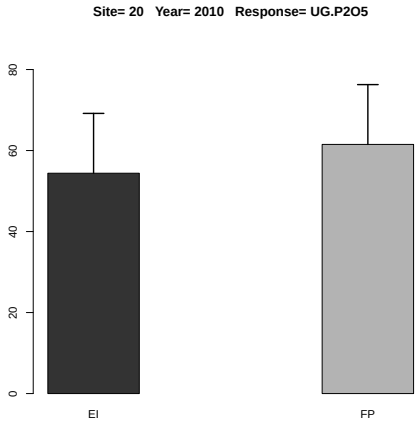

Figure 4.40: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	57.486	57.486	0.943	5.997	0.369
B	1.000	2578.161	2578.161	42.281	6.000	0.001
A:B	1.000	39.206	39.206	0.643	6.000	0.453

Table 4.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		43.273	2.899	6.000	14.930	36.179	50.368	0.000
2	FP		47.254	2.899	6.000	16.300	40.160	54.349	0.000
3		N	57.958	2.831	12.000	20.470	51.788	64.127	0.000
4		N0	32.570	2.831	12.000	11.510	26.400	38.739	0.000
5	EI	N	54.402	4.003	12.000	13.590	45.677	63.127	0.000
6	FP	N	61.513	4.003	12.000	15.370	52.788	70.238	0.000
7	EI	N0	32.145	4.003	12.000	8.030	23.420	40.870	0.000
8	FP	N0	32.995	4.003	12.000	8.240	24.270	41.720	0.000

Table 4.99: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 20 in year 2010 .

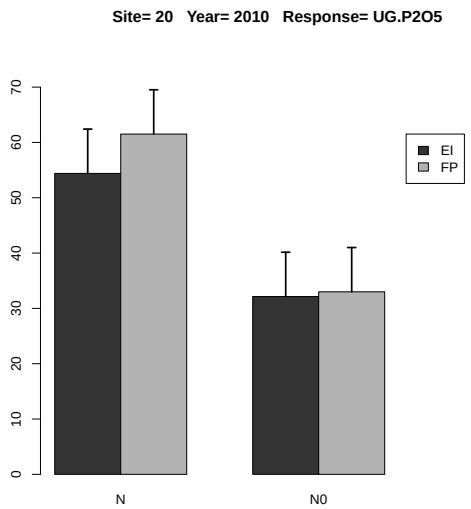

Figure 4.41: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.981	4.100	6.000	-0.970	-14.014	6.053	0.369
B N-N0	25.388	3.904	6.000	6.500	15.834	34.941	0.001
A:B EI N- FP N	-7.112	5.662	12.000	-1.260	-19.451	5.227	0.233
A:B EI N- EI N0	22.257	5.522	6.000	4.030	8.746	35.768	0.007
A:B EI N- FP N0	21.407	5.662	12.000	3.780	9.068	33.746	0.003
A:B FP N- EI N0	29.369	5.662	12.000	5.190	17.030	41.708	0.000
A:B FP N- FP N0	28.518	5.522	6.000	5.160	15.008	42.030	0.002
A:B EI N0- FP N0	-0.850	5.662	12.000	-0.150	-13.189	11.489	0.883

Table 4.100: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 20 in year 2010 .

4.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	8.782
2	2	EI	N0	9.490
3	3	EI	N0	9.322
4	4	EI	N0	9.838
5	1	EI	N	19.884
6	2	EI	N	18.356
7	3	EI	N	19.074
8	4	EI	N	18.996
9	1	FP	N0	9.790
10	2	FP	N0	9.678
11	3	FP	N0	9.376
12	4	FP	N0	9.578
13	1	FP	N	19.466
14	2	FP	N	19.062
15	3	FP	N	19.682
16	4	FP	N	19.982

Table 4.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	19.077	0.217	87.938	0.000
A FP	19.548	0.217	90.107	0.000
A EI-FP	-0.471	0.307	-1.534	0.383

Table 4.102: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 20 in year 2010 .

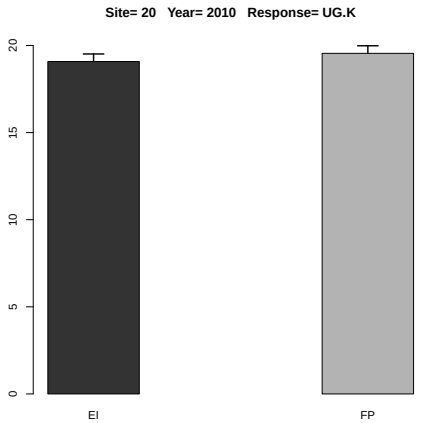

Figure 4.42: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.516	0.516	2.689	11.997	0.127
B	1.000	386.594	386.594	2016.566	11.997	0.000
A:B	1.000	0.050	0.050	0.259	11.997	0.620

Table 4.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14.218	0.155	12.000	91.840	13.880	14.555	0.000
2	FP		14.577	0.155	12.000	94.160	14.239	14.914	0.000
3		N	19.313	0.155	12.000	124.760	18.976	19.650	0.000
4		N0	9.482	0.155	12.000	61.250	9.145	9.819	0.000
5	EI	N	19.078	0.219	12.000	87.140	18.601	19.555	0.000
6	FP	N	19.548	0.219	12.000	89.290	19.071	20.025	0.000
7	EI	N0	9.358	0.219	12.000	42.750	8.881	9.835	0.000
8	FP	N0	9.605	0.219	12.000	43.880	9.129	10.082	0.000

Table 4.104: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 20 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.359	0.219	12.000	-1.640	-0.836	0.118	0.127
B N-N0	9.831	0.219	12.000	44.910	9.354	10.308	0.000
A:B EI N- FP N	-0.470	0.310	12.000	-1.520	-1.145	0.204	0.154
A:B EI N- EI N0	9.720	0.310	12.000	31.390	9.045	10.394	0.000
A:B EI N- FP N0	9.472	0.310	12.000	30.590	8.797	10.147	0.000
A:B FP N- EI N0	10.190	0.310	12.000	32.910	9.515	10.865	0.000
A:B FP N- FP N0	9.943	0.310	12.000	32.110	9.268	10.617	0.000
A:B EI N0- FP N0	-0.247	0.310	12.000	-0.800	-0.922	0.427	0.440

Table 4.105: Estimate of contrast in two-way ANOVA for variable UG.K at site 20 in year 2010 .

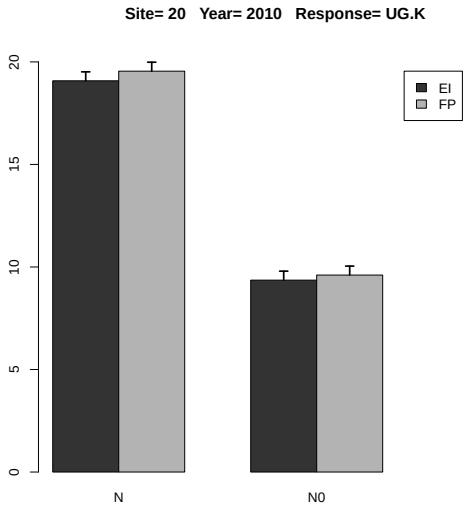

Figure 4.43: Estimated treatment means and standard error in the 2-way ANOVA.

4.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	10.582
2	2	EI	N0	11.435
3	3	EI	N0	11.233
4	4	EI	N0	11.855
5	1	EI	N	23.960
6	2	EI	N	22.119
7	3	EI	N	22.984
8	4	EI	N	22.890
9	1	FP	N0	11.797
10	2	FP	N0	11.662
11	3	FP	N0	11.298
12	4	FP	N0	11.541
13	1	FP	N	23.457
14	2	FP	N	22.970
15	3	FP	N	23.717
16	4	FP	N	24.078

Table 4.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	22.988	0.261	87.938	0.000
A FP	23.555	0.261	90.107	0.000
A EI-FP	-0.567	0.370	-1.534	0.384

Table 4.107: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 20 in year 2010 .

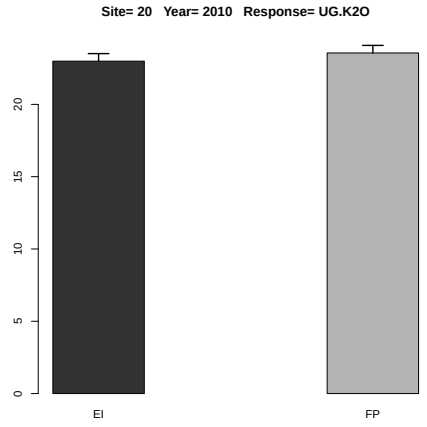

Figure 4.44: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.749	0.749	2.689	11.998	0.127
B	1.000	561.345	561.345	2016.566	11.998	0.000
A:B	1.000	0.072	0.072	0.259	11.998	0.620

Table 4.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17.132	0.186	12.000	91.840	16.726	17.539	0.000
2	FP		17.565	0.186	12.000	94.160	17.159	17.971	0.000
3		N	23.272	0.186	12.000	124.760	22.865	23.678	0.000
4		N0	11.425	0.186	12.000	61.250	11.019	11.832	0.000
5	EI	N	22.988	0.264	12.000	87.140	22.414	23.563	0.000
6	FP	N	23.555	0.264	12.000	89.290	22.981	24.130	0.000
7	EI	N0	11.276	0.264	12.000	42.750	10.702	11.851	0.000
8	FP	N0	11.575	0.264	12.000	43.880	11.000	12.149	0.000

Table 4.109: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 20 in year 2010 .

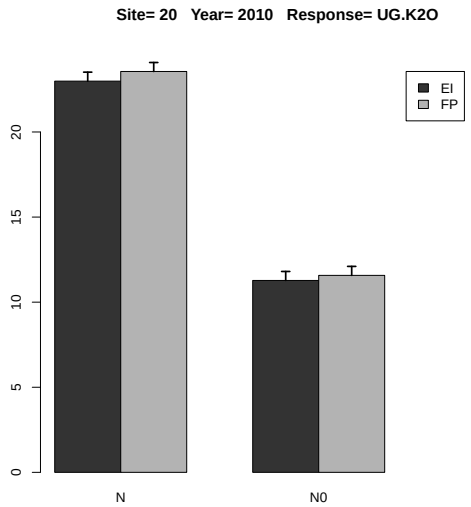

Figure 4.45: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.433	0.264	12.000	-1.640	-1.007	0.142	0.127
B N-N0	11.846	0.264	12.000	44.910	11.272	12.421	0.000
A:B EI N- FP N	-0.567	0.373	12.000	-1.520	-1.380	0.246	0.154
A:B EI N- EI N0	11.712	0.373	12.000	31.390	10.899	12.525	0.000
A:B EI N- FP N0	11.414	0.373	12.000	30.590	10.601	12.227	0.000
A:B FP N- EI N0	12.279	0.373	12.000	32.910	11.466	13.092	0.000
A:B FP N- FP N0	11.981	0.373	12.000	32.110	11.168	12.794	0.000
A:B EI N0- FP N0	-0.298	0.373	12.000	-0.800	-1.111	0.515	0.440

Table 4.110: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 20 in year 2010 .

4.2.10 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	55.233
2	2	EI	N	50.989
3	3	EI	N	52.983
4	4	EI	N	52.767
5	1	FP	N	38.777
6	2	FP	N	37.972
7	3	FP	N	39.207
8	4	FP	N	39.805

Table 4.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	52.993	0.673	5.600	78.740	51.320	54.666	0.000
A FP	38.940	0.673	5.600	57.860	37.268	40.613	0.000
A EI-FP	14.053	0.823	3.000	17.090	11.435	16.670	0.000

Table 4.112: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 20 in year 2010 .

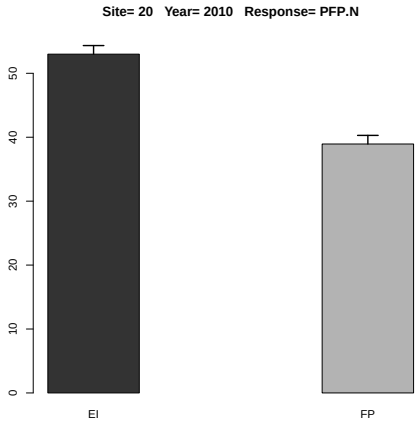

Figure 4.46: Estimated treatment means and standard error in the one-way ANOVA.

4.2.11 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	303.619
2	2	EI	N	280.287
3	3	EI	N	291.251
4	4	EI	N	290.060
5	1	FP	N	153.743
6	2	FP	N	150.552
7	3	FP	N	155.449
8	4	FP	N	157.818

Table 4.113: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	291.304	3.551	5.800	82.040	282.532	300.076	0.000
A FP	154.391	3.551	5.800	43.480	145.618	163.163	0.000
A EI-FP	136.913	4.497	3.000	30.450	122.604	151.223	0.000

Table 4.114: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 20 in year 2010 .

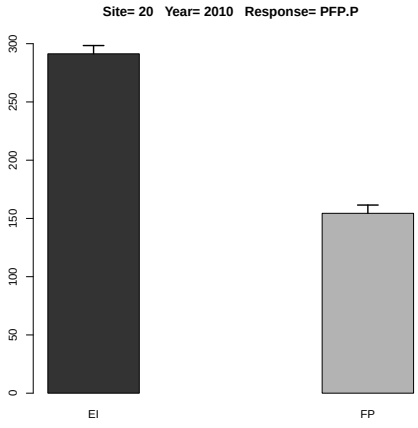

Figure 4.47: Estimated treatment means and standard error in the one-way ANOVA.

4.2.12 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	132.560
2	2	EI	N	122.373
3	3	EI	N	127.160
4	4	EI	N	126.640
5	1	FP	N	67.124
6	2	FP	N	65.731
7	3	FP	N	67.869
8	4	FP	N	68.903

Table 4.115: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	127.183	1.550	5.800	82.040	123.353	131.013	0.000
A FP	67.407	1.550	5.800	43.480	63.577	71.237	0.000
A EI-FP	59.776	1.963	3.000	30.450	53.529	66.024	0.000

Table 4.116: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 20 in year 2010 .

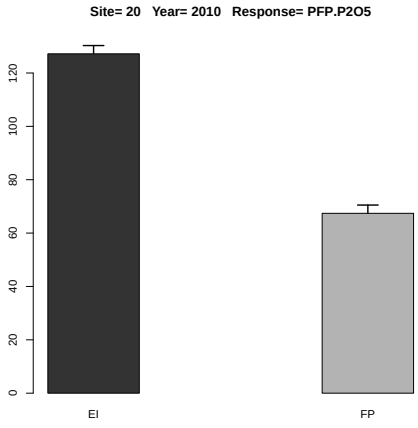

Figure 4.48: Estimated treatment means and standard error in the one-way ANOVA.

4.2.13 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	133.124
2	2	EI	N	122.894
3	3	EI	N	127.701
4	4	EI	N	127.179
5	1	FP	N	117.293
6	2	FP	N	114.859
7	3	FP	N	118.595
8	4	FP	N	120.403

Table 4.117: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	127.725	1.697	5.500	75.270	123.487	131.963	0.000
A FP	117.787	1.697	5.500	69.420	113.549	122.026	0.000
A EI-FP	9.938	2.021	3.000	4.920	3.504	16.371	0.016

Table 4.118: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 20 in year 2010 .

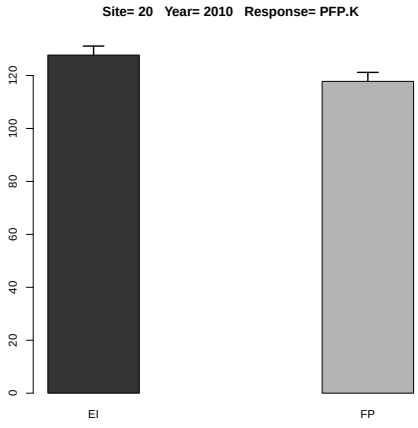

Figure 4.49: Estimated treatment means and standard error in the one-way ANOVA.

4.2.14 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	110.467
2	2	EI	N	101.978
3	3	EI	N	105.967
4	4	EI	N	105.533
5	1	FP	N	97.330
6	2	FP	N	95.310
7	3	FP	N	98.410
8	4	FP	N	99.910

Table 4.119: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	105.986	1.408	5.500	75.270	102.469	109.503	0.000
A FP	97.740	1.408	5.500	69.420	94.223	101.257	0.000
A EI-FP	8.246	1.677	3.000	4.920	2.908	13.584	0.016

Table 4.120: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 20 in year 2010 .

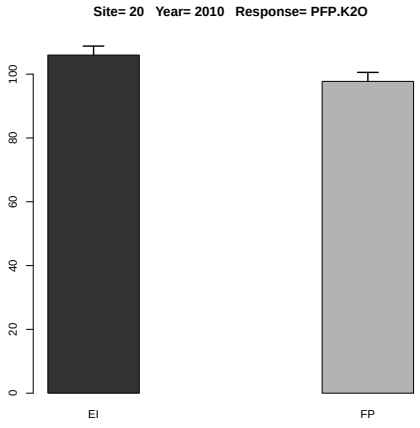

Figure 4.50: Estimated treatment means and standard error in the one-way ANOVA.

4.2.15 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.718
2	2	EI	N	0.663
3	3	EI	N	0.742
4	4	EI	N	0.739
5	1	FP	N	0.427
6	2	FP	N	0.532
7	3	FP	N	0.510
8	4	FP	N	0.597

Table 4.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.715	0.028	6.000	25.510	0.647	0.784	0.000
A FP	0.516	0.028	6.000	18.410	0.448	0.585	0.000
A EI-FP	0.199	0.038	3.000	5.210	0.077	0.321	0.014

Table 4.122: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 20 in year 2010 .

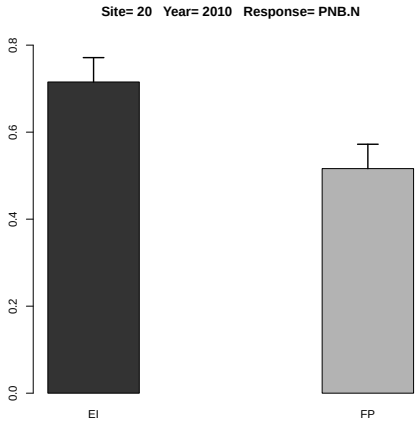

Figure 4.51: Estimated treatment means and standard error in the one-way ANOVA.

4.2.16 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.607
2	2	EI	N	0.841
3	3	EI	N	0.874
4	4	EI	N	0.580
5	1	FP	N	0.461
6	2	FP	N	0.452
7	3	FP	N	0.311
8	4	FP	N	0.473

Table 4.123: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.726	0.060	6.000	11.990	0.578	0.874	0.000
A FP	0.424	0.060	6.000	7.020	0.276	0.572	0.000
A EI-FP	0.301	0.086	6.000	3.520	0.092	0.510	0.012

Table 4.124: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 20 in year 2010 .

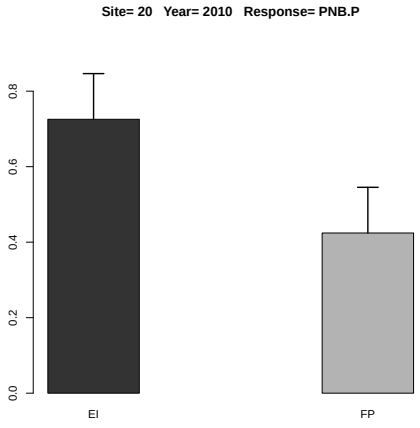

Figure 4.52: Estimated treatment means and standard error in the one-way ANOVA.

4.2.17 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.266
2	2	EI	N	0.246
3	3	EI	N	0.255
4	4	EI	N	0.254
5	1	FP	N	0.235
6	2	FP	N	0.230
7	3	FP	N	0.237
8	4	FP	N	0.241

Table 4.125: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.255	0.003	5.500	75.270	0.247	0.264	0.000
A FP	0.236	0.003	5.500	69.420	0.227	0.244	0.000
A EI-FP	0.020	0.004	2.900	4.920	0.007	0.033	0.017

Table 4.126: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 20 in year 2010 .

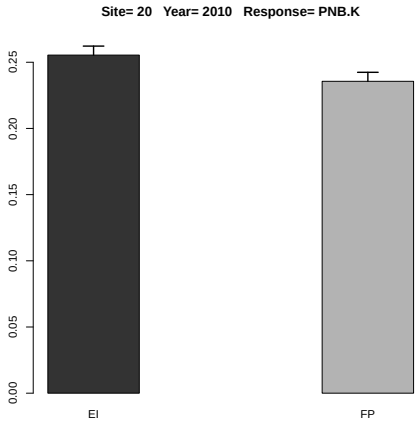

Figure 4.53: Estimated treatment means and standard error in the one-way ANOVA.

4.2.18 Response Variable AE

	rep	A	B	y
1	1	EI	N	30.839
2	2	EI	N	24.628
3	3	EI	N	27.089
4	4	EI	N	25.439
5	1	FP	N	19.275
6	2	FP	N	18.693
7	3	FP	N	20.530
8	4	FP	N	20.725

Table 4.127: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	26.999	1.065	25.343	0.000
A FP	19.806	1.065	18.591	0.001
A EI-FP	7.193	1.507	4.774	0.034

Table 4.128: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 20 in year 2010 .

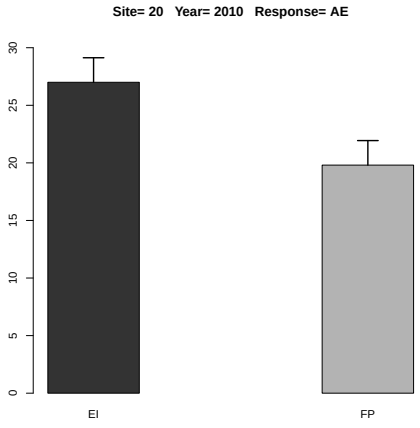

Figure 4.54: Estimated treatment means and standard error in the one-way ANOVA.

4.3 Year 2011

There are 74 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

4.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	3357.000
2	2	EI	N0	3512.000
3	3	EI	N0	3803.000
4	4	EI	N0	3272.000
5	1	EI	N	10329.000
6	2	EI	N	10366.000
7	3	EI	N	9544.000
8	4	EI	N	9897.000
9	1	FP	N0	2944.000
10	2	FP	N0	3233.000
11	3	FP	N0	3383.000
12	4	FP	N0	3579.000
13	1	FP	N	8737.000
14	2	FP	N	8810.000
15	3	FP	N	9024.000
16	4	FP	N	8683.000

Table 4.129: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	10034.000	175.750	57.092	0.000
A FP	8813.500	175.750	50.148	0.000
A EI-FP	1220.500	248.548	4.911	0.032

Table 4.130: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 20 in year 2011 .

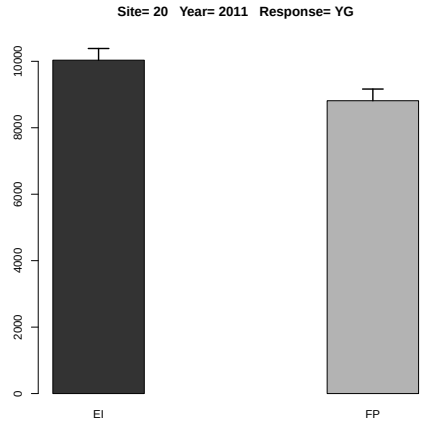

Figure 4.55: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2021373.062	2021373.062	26.893	12.016	0.000
B	1.000	145847890.562	145847890.562	1940.435	12.016	0.000
A:B	1.000	1038870.562	1038870.562	13.822	12.016	0.003

Table 4.131: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6760.000	96.929	12.000	69.740	6548.841	6971.159	0.000
2	FP		6049.125	96.929	12.000	62.410	5837.966	6260.284	0.000
3		N	9423.750	96.929	12.000	97.220	9212.591	9634.909	0.000
4		N0	3385.375	96.929	12.000	34.930	3174.216	3596.534	0.000
5	EI	N	10034.000	137.079	12.000	73.200	9735.376	10332.624	0.000
6	FP	N	8813.500	137.079	12.000	64.300	8514.876	9112.124	0.000
7	EI	N0	3486.000	137.079	12.000	25.430	3187.376	3784.624	0.000
8	FP	N0	3284.750	137.079	12.000	23.960	2986.126	3583.374	0.000

Table 4.132: Estimate of treatment means in tow-way ANOVA for variable YG at site 20 in year 2011 .

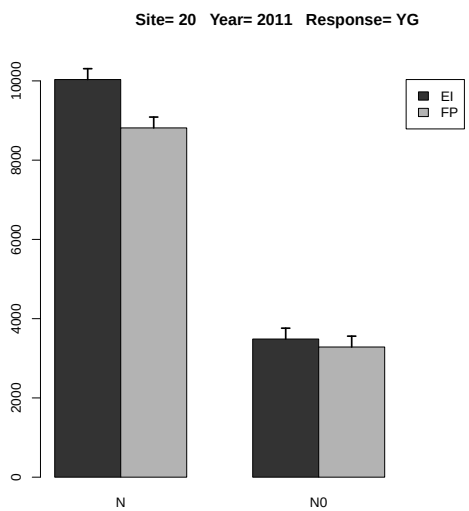

Figure 4.56: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	710.875	137.079	12.000	5.190	412.251	1009.499	0.000
B N-N0	6038.375	137.079	12.000	44.050	5739.751	6336.999	0.000
A:B EI N- FP N	1220.500	193.859	12.000	6.300	798.182	1642.818	0.000
A:B EI N- EI N0	6548.000	193.859	12.000	33.780	6125.682	6970.318	0.000
A:B EI N- FP N0	6749.250	193.859	12.000	34.820	6326.932	7171.568	0.000
A:B FP N- EI N0	5327.500	193.859	12.000	27.480	4905.182	5749.818	0.000
A:B FP N- FP N0	5528.750	193.859	12.000	28.520	5106.432	5951.068	0.000
A:B EI N0- FP N0	201.250	193.859	12.000	1.040	-221.068	623.568	0.320

Table 4.133: Estimate of contrast in two-way ANOVA for variable YG at site 20 in year 2011 .

4.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	3189.000
2	2	EI	N0	3069.000
3	3	EI	N0	3442.000
4	4	EI	N0	3082.000
5	1	EI	N	9636.000
6	2	EI	N	9504.000
7	3	EI	N	8830.000
8	4	EI	N	8849.000
9	1	FP	N0	2802.000
10	2	FP	N0	2948.000
11	3	FP	N0	3120.000
12	4	FP	N0	3089.000
13	1	FP	N	8386.000
14	2	FP	N	8278.000
15	3	FP	N	8392.000
16	4	FP	N	7967.000

Table 4.134: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	9204.750	134.310	68.534	0.000
A FP	8255.750	134.310	61.468	0.000
A EI-FP	949.000	189.943	4.996	0.030

Table 4.135: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 20 in year 2011 .

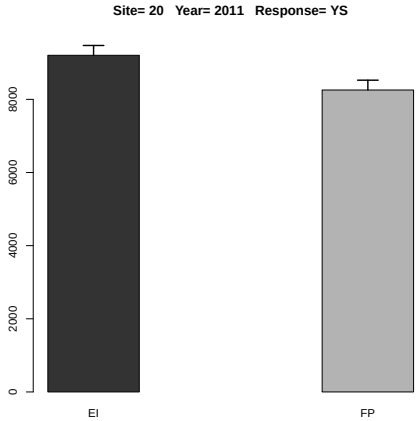

Figure 4.57: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1333447.562	1333447.562	19.623	11.974	0.001
B	1.000	127131262.562	127131262.562	1870.904	11.974	0.000
A:B	1.000	552420.562	552420.562	8.130	11.974	0.015

Table 4.136: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6200.125	92.163	12.000	67.270	5999.271	6400.979	0.000
2	FP		5622.750	92.163	12.000	61.010	5421.896	5823.604	0.000
3		N	8730.250	92.163	12.000	94.730	8529.396	8931.104	0.000
4		N0	3092.625	92.163	12.000	33.560	2891.771	3293.479	0.000
5	EI	N	9204.750	130.338	12.000	70.620	8920.700	9488.800	0.000
6	FP	N	8255.750	130.338	12.000	63.340	7971.700	8539.800	0.000
7	EI	N0	3195.500	130.338	12.000	24.520	2911.450	3479.550	0.000
8	FP	N0	2989.750	130.338	12.000	22.940	2705.700	3273.800	0.000

Table 4.137: Estimate of treatment means in tow-way ANOVA for variable YS at site 20 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	577.375	130.338	12.000	4.430	293.325	861.425	0.001
B N-N0	5637.625	130.338	12.000	43.250	5353.575	5921.675	0.000
A:B EI N- FP N	949.000	184.326	12.000	5.150	547.293	1350.707	0.000
A:B EI N- EI N0	6009.250	184.326	12.000	32.600	5607.543	6410.957	0.000
A:B EI N- FP N0	6215.000	184.326	12.000	33.720	5813.293	6616.707	0.000
A:B FP N- EI N0	5060.250	184.326	12.000	27.450	4658.543	5461.957	0.000
A:B FP N- FP N0	5266.000	184.326	12.000	28.570	4864.293	5667.707	0.000
A:B EI N0- FP N0	205.750	184.326	12.000	1.120	-195.957	607.457	0.286

Table 4.138: Estimate of contrast in two-way ANOVA for variable YS at site 20 in year 2011 .

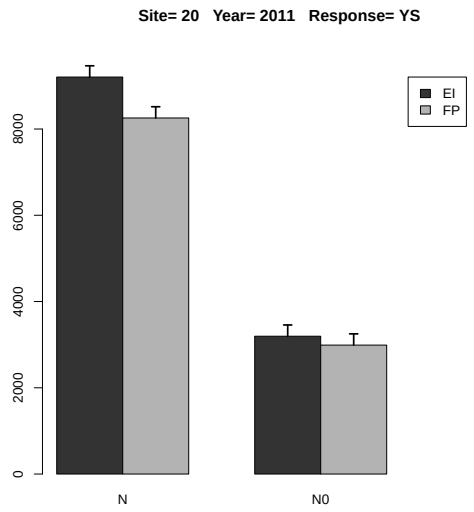

Figure 4.58: Estimated treatment means and standard error in the 2-way ANOVA.

4.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	6546.000
2	2	EI	N0	6581.000
3	3	EI	N0	7245.000
4	4	EI	N0	6354.000
5	1	EI	N	19965.000
6	2	EI	N	19870.000
7	3	EI	N	18374.000
8	4	EI	N	18746.000
9	1	FP	N0	5746.000
10	2	FP	N0	6181.000
11	3	FP	N0	6503.000
12	4	FP	N0	6668.000
13	1	FP	N	17123.000
14	2	FP	N	17088.000
15	3	FP	N	17416.000
16	4	FP	N	16650.000

Table 4.139: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	19238.750	309.606	62.139	0.000
A FP	17069.250	309.606	55.132	0.000
A EI-FP	2169.500	437.850	4.955	0.031

Table 4.140: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 20 in year 2011 .

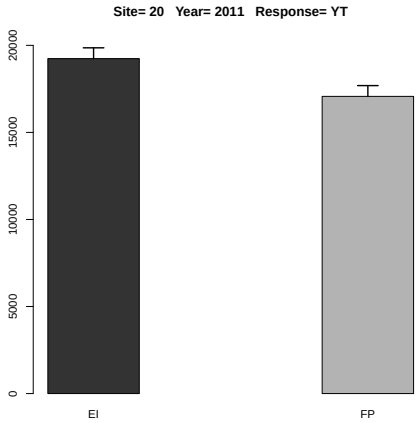

Figure 4.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6638352.250	6638352.250	25.176	11.991	0.000
B	1.000	545315904.000	545315904.000	2068.126	11.991	0.000
A:B	1.000	3106406.250	3106406.250	11.781	11.991	0.005

Table 4.141: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12960.125	181.548	12.000	71.390	12564.532	13355.718	0.000
2	FP		11671.875	181.548	12.000	64.290	11276.282	12067.468	0.000
3		N	18154.000	181.548	12.000	100.000	17758.407	18549.593	0.000
4		N0	6478.000	181.548	12.000	35.680	6082.407	6873.593	0.000
5	EI	N	19238.750	256.747	12.000	74.930	18679.298	19798.202	0.000
6	FP	N	17069.250	256.747	12.000	66.480	16509.798	17628.702	0.000
7	EI	N0	6681.500	256.747	12.000	26.020	6122.047	7240.953	0.000
8	FP	N0	6274.500	256.747	12.000	24.440	5715.047	6833.953	0.000

Table 4.142: Estimate of treatment means in tow-way ANOVA for variable YT at site 20 in year 2011 .

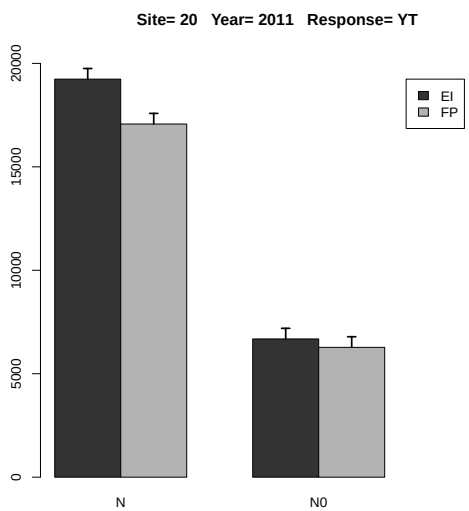

Figure 4.60: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1288.250	256.747	12.000	5.020	728.798	1847.703	0.000
B N-N0	11676.000	256.747	12.000	45.480	11116.548	12235.452	0.000
A:B EI N- FP N	2169.500	363.095	12.000	5.980	1378.315	2960.685	0.000
A:B EI N- EI N0	12557.250	363.095	12.000	34.580	11766.065	13348.435	0.000
A:B EI N- FP N0	12964.250	363.095	12.000	35.700	12173.065	13755.435	0.000
A:B FP N- EI N0	10387.750	363.095	12.000	28.610	9596.565	11178.935	0.000
A:B FP N- FP N0	10794.750	363.095	12.000	29.730	10003.565	11585.935	0.000
A:B EI N0- FP N0	407.000	363.095	12.000	1.120	-384.185	1198.185	0.284

Table 4.143: Estimate of contrast in two-way ANOVA for variable YT at site 20 in year 2011 .

4.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.513
2	2	EI	N0	0.534
3	3	EI	N0	0.525
4	4	EI	N0	0.515
5	1	EI	N	0.517
6	2	EI	N	0.522
7	3	EI	N	0.519
8	4	EI	N	0.528
9	1	FP	N0	0.512
10	2	FP	N0	0.523
11	3	FP	N0	0.520
12	4	FP	N0	0.537
13	1	FP	N	0.510
14	2	FP	N	0.516
15	3	FP	N	0.518
16	4	FP	N	0.522

Table 4.144: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.522	0.001	552.772	0.000
A FP	0.516	0.001	547.218	0.000
A EI-FP	0.005	0.001	3.928	0.056

Table 4.145: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 20 in year 2011 .

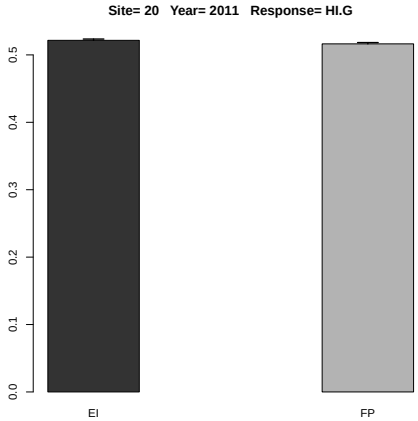

Figure 4.61: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.303	2.999	0.620
B	1.000	0.000	0.000	1.128	5.907	0.330
A:B	1.000	0.000	0.000	1.141	5.907	0.327

Table 4.146: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.522	0.003	5.100	165.190	0.513	0.530	0.000
2	FP		0.520	0.003	5.100	164.600	0.512	0.528	0.000
3		N	0.519	0.003	5.100	167.620	0.511	0.527	0.000
4		N0	0.522	0.003	5.100	168.710	0.514	0.530	0.000
5	EI	N	0.522	0.004	9.400	134.870	0.513	0.530	0.000
6	FP	N	0.516	0.004	9.400	133.510	0.508	0.525	0.000
7	EI	N0	0.522	0.004	9.400	134.870	0.513	0.530	0.000
8	FP	N0	0.523	0.004	9.400	135.250	0.514	0.532	0.000

Table 4.147: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 20 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.002	0.003	3.000	0.550	-0.009	0.013	0.620
B N-N0	-0.003	0.003	5.900	-1.060	-0.011	0.004	0.330
A:B EI N- FP N	0.005	0.005	7.500	1.130	-0.006	0.016	0.293
A:B EI N- EI N0	0.000	0.004	5.900	0.000	-0.011	0.011	0.997
A:B EI N- FP N0	-0.002	0.005	7.500	-0.320	-0.012	0.009	0.757
A:B FP N- EI N0	-0.005	0.005	7.500	-1.130	-0.016	0.006	0.294
A:B FP N- FP N0	-0.007	0.004	5.900	-1.510	-0.018	0.004	0.183
A:B EI N0- FP N0	-0.002	0.005	7.500	-0.320	-0.012	0.009	0.754

Table 4.148: Estimate of contrast in two-way ANOVA for variable HI.G at site 20 in year 2011 .

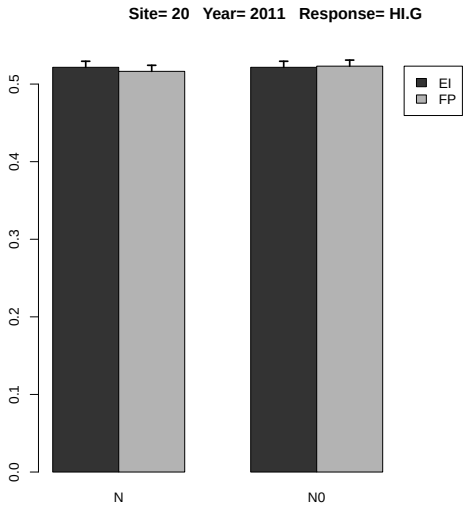

Figure 4.62: Estimated treatment means and standard error in the 2-way ANOVA.

4.3.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	27.863
2	2	EI	N0	35.120
3	3	EI	N0	46.397
4	4	EI	N0	21.595
5	1	EI	N	135.310
6	2	EI	N	123.355
7	3	EI	N	95.440
8	4	EI	N	134.599
9	1	FP	N0	30.029
10	2	FP	N0	40.089
11	3	FP	N0	23.343
12	4	FP	N0	30.779
13	1	FP	N	131.929
14	2	FP	N	158.580
15	3	FP	N	127.238
16	4	FP	N	147.611

Table 4.149: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	122.176	6.337	19.281	0.001
A FP	141.340	6.337	22.305	0.000
A EI-FP	-19.163	8.962	-2.138	0.222

Table 4.150: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 20 in year 2011 .

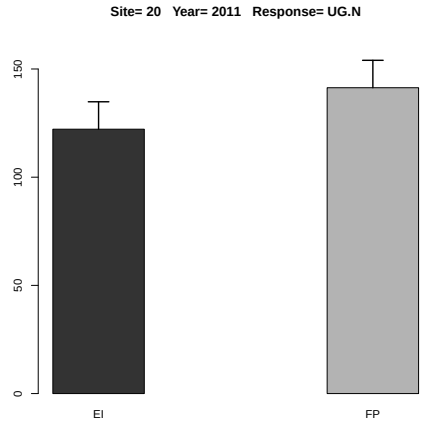

Figure 4.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	305.540	305.540	1.710	9.000	0.223
B	1.000	39884.843	39884.843	223.225	9.000	0.000
A:B	1.000	434.602	434.602	2.432	9.000	0.153

Table 4.151: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		77.460	4.738	8.900	16.350	66.733	88.187	0.000
2	FP		86.200	4.738	8.900	18.190	75.473	96.927	0.000
3		N	131.758	4.738	8.900	27.810	121.031	142.485	0.000
4		N0	31.902	4.738	8.900	6.730	21.175	42.629	0.000
5	EI	N	122.176	6.692	12.000	18.260	107.596	136.756	0.000
6	FP	N	141.339	6.692	12.000	21.120	126.760	155.920	0.000
7	EI	N0	32.744	6.692	12.000	4.890	18.164	47.324	0.000
8	FP	N0	31.060	6.692	12.000	4.640	16.480	45.640	0.001

Table 4.152: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 20 in year 2011 .

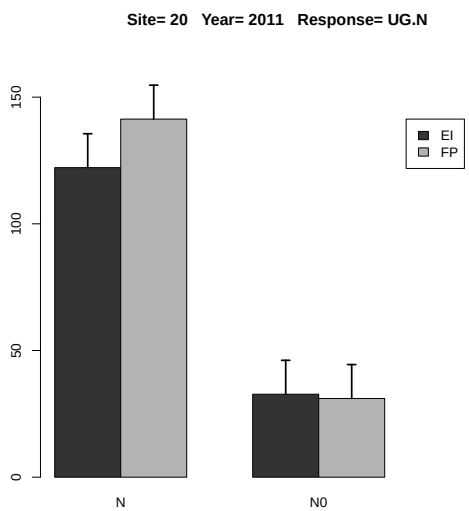

Figure 4.64: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-8.740	6.684	9.000	-1.310	-23.859	6.379	0.223
B N-N0	99.856	6.684	9.000	14.940	84.737	114.975	0.000
A:B EI N- FP N	-19.163	9.452	9.000	-2.030	-40.545	2.218	0.073
A:B EI N- EI N0	89.432	9.452	9.000	9.460	68.051	110.814	0.000
A:B EI N- FP N0	91.116	9.452	9.000	9.640	69.734	112.498	0.000
A:B FP N- EI N0	108.596	9.452	9.000	11.490	87.214	129.978	0.000
A:B FP N- FP N0	110.279	9.452	9.000	11.670	88.898	131.661	0.000
A:B EI N0- FP N0	1.684	9.452	9.000	0.180	-19.698	23.066	0.863

Table 4.153: Estimate of contrast in two-way ANOVA for variable UG.N at site 20 in year 2011 .

4.3.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	8.393
2	2	EI	N0	9.131
3	3	EI	N0	8.367
4	4	EI	N0	8.180
5	1	EI	N	19.625
6	2	EI	N	21.769
7	3	EI	N	21.951
8	4	EI	N	16.825
9	1	FP	N0	7.949
10	2	FP	N0	9.052
11	3	FP	N0	8.457
12	4	FP	N0	10.021
13	1	FP	N	19.221
14	2	FP	N	24.668
15	3	FP	N	19.853
16	4	FP	N	21.707

Table 4.154: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	20.042	1.115	17.974	0.001
A FP	21.362	1.115	19.157	0.000
A EI-FP	-1.320	1.577	-0.837	0.700

Table 4.155: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 20 in year 2011 .

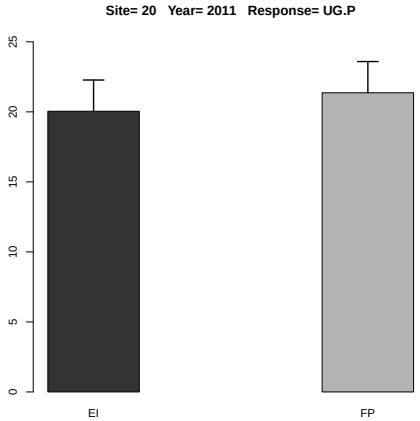

Figure 4.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.613	1.613	0.718	3.000	0.459
B	1.000	576.832	576.832	256.792	6.000	0.000
A:B	1.000	0.936	0.936	0.417	6.000	0.542

Table 4.156: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14.280	0.714	6.000	19.990	12.531	16.029	0.000
2	FP		15.116	0.714	6.000	21.160	13.367	16.865	0.000
3		N	20.702	0.638	6.100	32.440	19.149	22.256	0.000
4		N0	8.694	0.638	6.100	13.620	7.141	10.247	0.000
5	EI	N	20.042	0.889	11.100	22.540	18.086	21.999	0.000
6	FP	N	21.362	0.889	11.100	24.020	19.406	23.319	0.000
7	EI	N0	8.518	0.889	11.100	9.580	6.561	10.474	0.000
8	FP	N0	8.870	0.889	11.100	9.970	6.914	10.826	0.000

Table 4.157: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 20 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.836	0.987	3.000	-0.850	-3.976	2.304	0.459
B N-N0	12.009	0.749	6.000	16.020	10.175	13.842	0.000
A:B EI N- FP N	-1.320	1.239	6.400	-1.070	-4.307	1.667	0.325
A:B EI N- EI N0	11.525	1.060	6.000	10.870	8.932	14.118	0.000
A:B EI N- FP N0	11.172	1.239	6.400	9.020	8.186	14.159	0.000
A:B FP N- EI N0	12.845	1.239	6.400	10.370	9.858	15.832	0.000
A:B FP N- FP N0	12.492	1.060	6.000	11.790	9.899	15.086	0.000
A:B EI N0- FP N0	-0.352	1.239	6.400	-0.280	-3.339	2.634	0.785

Table 4.158: Estimate of contrast in two-way ANOVA for variable UG.P at site 20 in year 2011 .

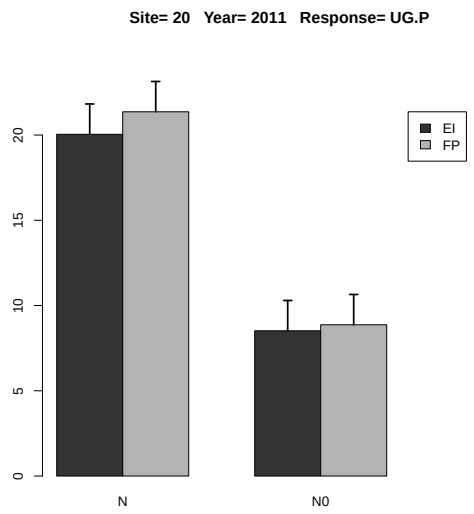

Figure 4.66: Estimated treatment means and standard error in the 2-way ANOVA.

4.3.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	19.219
2	2	EI	N0	20.910
3	3	EI	N0	19.160
4	4	EI	N0	18.732
5	1	EI	N	44.941
6	2	EI	N	49.850
7	3	EI	N	50.268
8	4	EI	N	38.529
9	1	FP	N0	18.203
10	2	FP	N0	20.730
11	3	FP	N0	19.368
12	4	FP	N0	22.949
13	1	FP	N	44.017
14	2	FP	N	56.490
15	3	FP	N	45.463
16	4	FP	N	49.710

Table 4.159: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	45.897	2.554	17.974	0.000
A FP	48.920	2.554	19.157	0.001
A EI-FP	-3.023	3.611	-0.837	0.699

Table 4.160: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 20 in year 2011 .

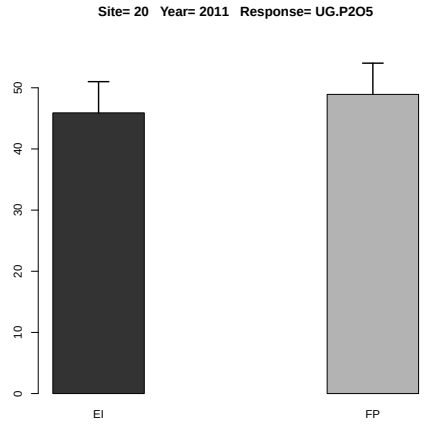

Figure 4.67: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.461	8.461	0.718	3.000	0.459
B	1.000	3024.964	3024.964	256.792	6.000	0.000
A:B	1.000	4.910	4.910	0.417	6.000	0.542

Table 4.161: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		32.701	1.636	6.000	19.990	28.697	36.706	0.000
2	FP		34.616	1.636	6.000	21.160	30.612	38.621	0.000
3		N	47.409	1.461	6.100	32.440	43.852	50.965	0.000
4		N0	19.909	1.461	6.100	13.620	16.352	23.465	0.000
5	EI	N	45.897	2.037	11.100	22.540	41.417	50.377	0.000
6	FP	N	48.920	2.037	11.100	24.020	44.440	53.400	0.000
7	EI	N0	19.505	2.037	11.100	9.580	15.025	23.985	0.000
8	FP	N0	20.312	2.037	11.100	9.970	15.832	24.792	0.000

Table 4.162: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 20 in year 2011 .

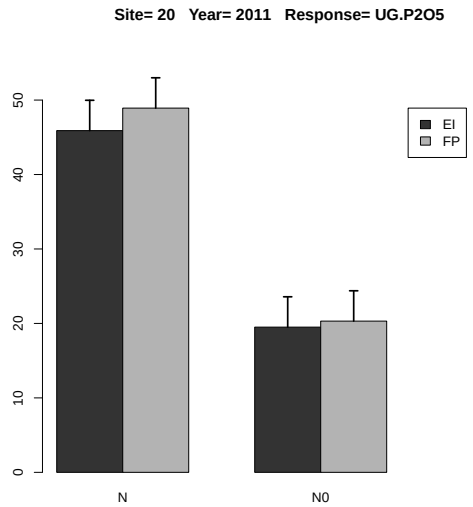

Figure 4.68: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.915	2.259	3.000	-0.850	-9.106	5.276	0.459
B N-N0	27.500	1.716	6.000	16.020	23.301	31.699	0.000
A:B EI N- FP N	-3.023	2.837	6.400	-1.070	-9.863	3.817	0.325
A:B EI N- EI N0	26.392	2.427	6.000	10.870	20.453	32.331	0.000
A:B EI N- FP N0	25.585	2.837	6.400	9.020	18.745	32.425	0.000
A:B FP N- EI N0	29.415	2.837	6.400	10.370	22.575	36.255	0.000
A:B FP N- FP N0	28.608	2.427	6.000	11.790	22.669	34.546	0.000
A:B EI N0- FP N0	-0.807	2.837	6.400	-0.280	-7.647	6.033	0.785

Table 4.163: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 20 in year 2011 .

4.3.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	11.749
2	2	EI	N0	12.292
3	3	EI	N0	11.409
4	4	EI	N0	11.125
5	1	EI	N	27.888
6	2	EI	N	30.061
7	3	EI	N	29.586
8	4	EI	N	26.722
9	1	FP	N0	10.010
10	2	FP	N0	10.992
11	3	FP	N0	11.502
12	4	FP	N0	12.526
13	1	FP	N	25.337
14	2	FP	N	28.192
15	3	FP	N	25.267
16	4	FP	N	27.786

Table 4.164: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	28.565	0.792	36.060	0.000
A FP	26.646	0.792	33.638	0.000
A EI-FP	1.919	1.120	1.713	0.325

Table 4.165: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 20 in year 2011 .

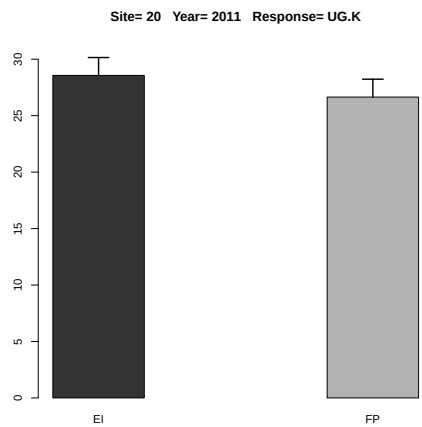

Figure 4.69: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.135	2.135	2.417	5.999	0.171
B	1.000	1043.844	1043.844	1181.720	5.999	0.000
A:B	1.000	2.349	2.349	2.660	5.999	0.154

Table 4.166: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		20.104	0.524	6.000	38.350	18.821	21.387	0.000
2	FP		18.952	0.524	6.000	36.150	17.669	20.235	0.000
3		N	27.605	0.439	10.100	62.890	26.629	28.581	0.000
4		N0	11.451	0.439	10.100	26.090	10.475	12.427	0.000
5	EI	N	28.564	0.621	10.100	46.020	27.184	29.945	0.000
6	FP	N	26.645	0.621	10.100	42.930	25.265	28.026	0.000
7	EI	N0	11.644	0.621	10.100	18.760	10.264	13.024	0.000
8	FP	N0	11.258	0.621	10.100	18.140	9.877	12.638	0.000

Table 4.167: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 20 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.153	0.741	6.000	1.550	-0.662	2.967	0.171
B N-N0	16.154	0.470	6.000	34.380	15.004	17.304	0.000
A:B EI N- FP N	1.919	0.878	10.100	2.190	-0.033	3.871	0.053
A:B EI N- EI N0	16.921	0.665	6.000	25.460	15.294	18.547	0.000
A:B EI N- FP N0	17.307	0.878	10.100	19.720	15.355	19.259	0.000
A:B FP N- EI N0	15.002	0.878	10.100	17.090	13.050	16.954	0.000
A:B FP N- FP N0	15.388	0.665	6.000	23.150	13.762	17.014	0.000
A:B EI N0- FP N0	0.386	0.878	10.100	0.440	-1.566	2.338	0.669

Table 4.168: Estimate of contrast in two-way ANOVA for variable UG.K at site 20 in year 2011 .

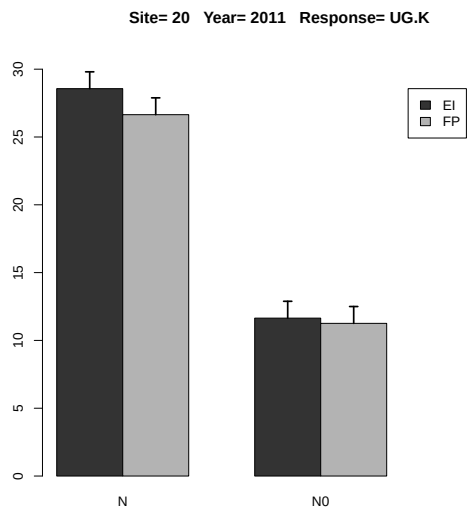

Figure 4.70: Estimated treatment means and standard error in the 2-way ANOVA.

4.3.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	14.158
2	2	EI	N0	14.812
3	3	EI	N0	13.748
4	4	EI	N0	13.405
5	1	EI	N	33.605
6	2	EI	N	36.224
7	3	EI	N	35.652
8	4	EI	N	32.200
9	1	FP	N0	12.062
10	2	FP	N0	13.246
11	3	FP	N0	13.860
12	4	FP	N0	15.094
13	1	FP	N	30.531
14	2	FP	N	33.971
15	3	FP	N	30.447
16	4	FP	N	33.482

Table 4.169: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	34.420	0.955	36.060	0.000
A FP	32.108	0.955	33.638	0.000
A EI-FP	2.312	1.350	1.713	0.325

Table 4.170: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 20 in year 2011 .

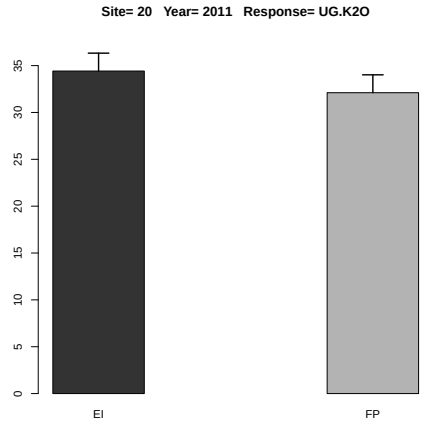

Figure 4.71: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.099	3.099	2.417	5.999	0.171
B	1.000	1515.688	1515.688	1181.720	5.999	0.000
A:B	1.000	3.411	3.411	2.660	5.999	0.154

Table 4.171: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.226	0.632	6.000	38.350	22.680	25.771	0.000
2	FP		22.837	0.632	6.000	36.150	21.291	24.383	0.000
3		N	33.264	0.529	10.100	62.890	32.088	34.440	0.000
4		N0	13.798	0.529	10.100	26.090	12.622	14.974	0.000
5	EI	N	34.420	0.748	10.100	46.020	32.757	36.084	0.000
6	FP	N	32.108	0.748	10.100	42.930	30.445	33.771	0.000
7	EI	N0	14.031	0.748	10.100	18.760	12.368	15.694	0.000
8	FP	N0	13.565	0.748	10.100	18.140	11.902	15.229	0.000

Table 4.172: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 20 in year 2011 .

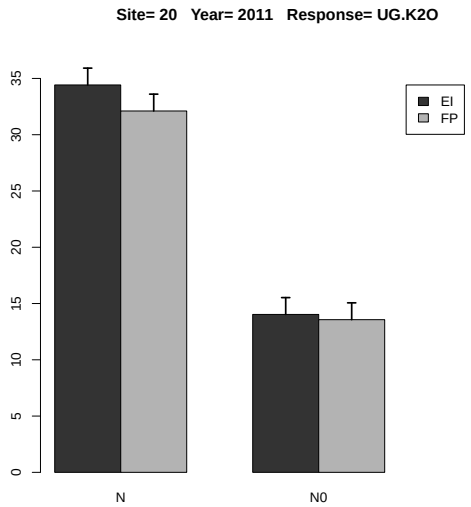

Figure 4.72: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.389	0.893	6.000	1.550	-0.797	3.575	0.171
B N-N0	19.466	0.566	6.000	34.380	18.080	20.852	0.000
A:B EI N- FP N	2.312	1.058	10.100	2.190	-0.040	4.665	0.053
A:B EI N- EI N0	20.389	0.801	6.000	25.460	18.430	22.349	0.000
A:B EI N- FP N0	20.855	1.058	10.100	19.720	18.503	23.207	0.000
A:B FP N- EI N0	18.077	1.058	10.100	17.090	15.725	20.429	0.000
A:B FP N- FP N0	18.542	0.801	6.000	23.150	16.583	20.502	0.000
A:B EI N0- FP N0	0.465	1.058	10.100	0.440	-1.887	2.817	0.669

Table 4.173: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 20 in year 2011 .

4.3.10 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	57.383
2	2	EI	N	57.589
3	3	EI	N	53.022
4	4	EI	N	54.983
5	1	FP	N	34.809
6	2	FP	N	35.100
7	3	FP	N	35.952
8	4	FP	N	34.594

Table 4.174: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	55.744	0.794	6.000	70.170	53.801	57.688	0.000
A FP	35.114	0.794	6.000	44.200	33.170	37.057	0.000
A EI-FP	20.631	1.123	6.000	18.360	17.882	23.380	0.000

Table 4.175: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 20 in year 2011 .

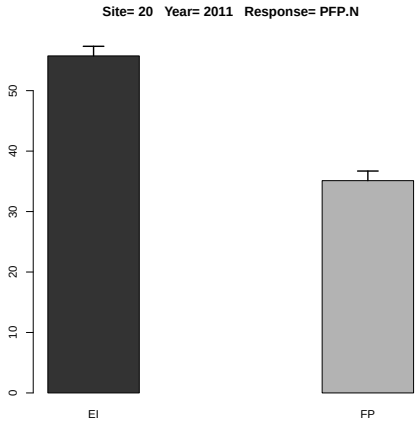

Figure 4.73: Estimated treatment means and standard error in the one-way ANOVA.

4.3.11 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	315.437
2	2	EI	N	316.567
3	3	EI	N	291.464
4	4	EI	N	302.245
5	1	FP	N	138.010
6	2	FP	N	139.163
7	3	FP	N	142.543
8	4	FP	N	137.157

Table 4.176: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	306.428	4.292	6.000	71.390	295.926	316.931	0.000
A FP	139.218	4.292	6.000	32.430	128.716	149.721	0.000
A EI-FP	167.210	6.070	6.000	27.550	152.357	182.063	0.000

Table 4.177: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 20 in year 2011 .

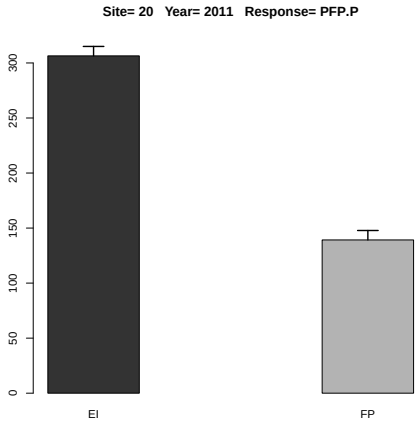

Figure 4.74: Estimated treatment means and standard error in the one-way ANOVA.

4.3.12 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	137.720
2	2	EI	N	138.213
3	3	EI	N	127.253
4	4	EI	N	131.960
5	1	FP	N	60.255
6	2	FP	N	60.759
7	3	FP	N	62.234
8	4	FP	N	59.883

Table 4.178: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	133.787	1.874	6.000	71.390	129.201	138.372	0.000
A FP	60.783	1.874	6.000	32.430	56.197	65.368	0.000
A EI-FP	73.004	2.650	6.000	27.550	66.519	79.489	0.000

Table 4.179: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 20 in year 2011 .

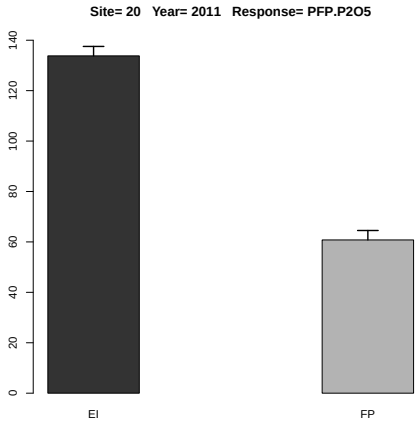

Figure 4.75: Estimated treatment means and standard error in the one-way ANOVA.

4.3.13 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	138.306
2	2	EI	N	138.802
3	3	EI	N	127.795
4	4	EI	N	132.522
5	1	FP	N	105.290
6	2	FP	N	106.170
7	3	FP	N	108.749
8	4	FP	N	104.640

Table 4.180: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	134.356	1.953	6.000	68.800	129.577	139.135	0.000
A FP	106.212	1.953	6.000	54.380	101.433	110.991	0.000
A EI-FP	28.144	2.762	6.000	10.190	21.386	34.902	0.000

Table 4.181: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 20 in year 2011 .

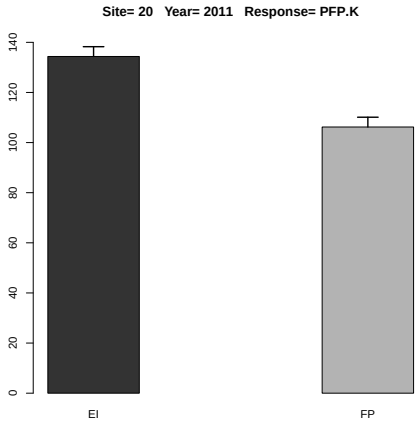

Figure 4.76: Estimated treatment means and standard error in the one-way ANOVA.

4.3.14 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	114.767
2	2	EI	N	115.178
3	3	EI	N	106.044
4	4	EI	N	109.967
5	1	FP	N	87.370
6	2	FP	N	88.100
7	3	FP	N	90.240
8	4	FP	N	86.830

Table 4.182: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	111.489	1.621	6.000	68.800	107.523	115.454	0.000
A FP	88.135	1.621	6.000	54.380	84.169	92.100	0.000
A EI-FP	23.354	2.292	6.000	10.190	17.746	28.962	0.000

Table 4.183: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 20 in year 2011 .

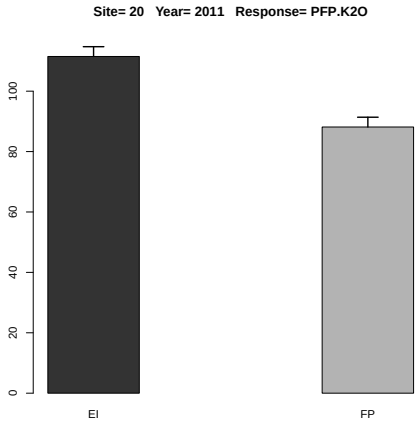

Figure 4.77: Estimated treatment means and standard error in the one-way ANOVA.

4.3.15 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.752
2	2	EI	N	0.685
3	3	EI	N	0.530
4	4	EI	N	0.748
5	1	FP	N	0.526
6	2	FP	N	0.632
7	3	FP	N	0.507
8	4	FP	N	0.588

Table 4.184: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.679	0.042	5.300	16.210	0.573	0.785	0.000
A FP	0.563	0.042	5.300	13.450	0.457	0.669	0.000
A EI-FP	0.116	0.047	3.000	2.460	-0.034	0.265	0.091

Table 4.185: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 20 in year 2011 .

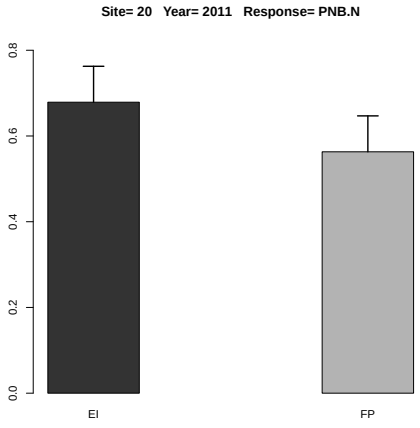

Figure 4.78: Estimated treatment means and standard error in the one-way ANOVA.

4.3.16 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.599
2	2	EI	N	0.665
3	3	EI	N	0.670
4	4	EI	N	0.514
5	1	FP	N	0.304
6	2	FP	N	0.390
7	3	FP	N	0.314
8	4	FP	N	0.343

Table 4.186: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.612	0.029	5.900	20.960	0.540	0.684	0.000
A FP	0.337	0.029	5.900	11.560	0.266	0.409	0.000
A EI-FP	0.275	0.039	3.000	7.100	0.151	0.398	0.006

Table 4.187: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 20 in year 2011 .

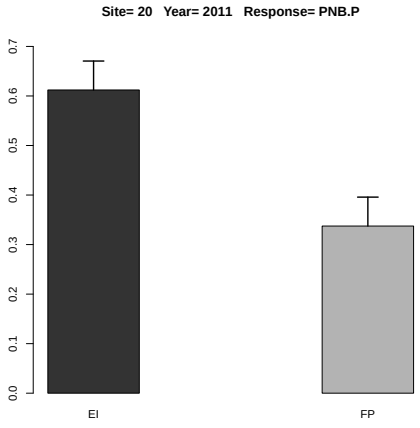

Figure 4.79: Estimated treatment means and standard error in the one-way ANOVA.

4.3.17 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.373
2	2	EI	N	0.403
3	3	EI	N	0.396
4	4	EI	N	0.358
5	1	FP	N	0.305
6	2	FP	N	0.340
7	3	FP	N	0.304
8	4	FP	N	0.335

Table 4.188: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.383	0.010	6.000	38.730	0.358	0.407	0.000
A FP	0.321	0.010	6.000	32.520	0.297	0.345	0.000
A EI-FP	0.061	0.014	6.000	4.390	0.027	0.096	0.005

Table 4.189: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 20 in year 2011 .

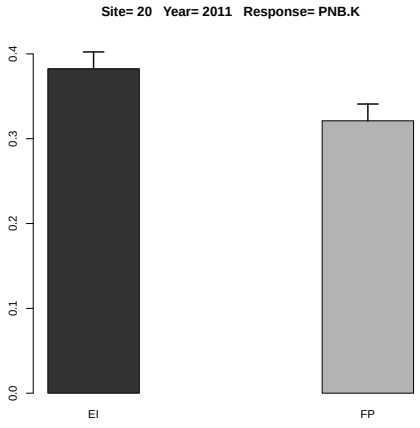

Figure 4.80: Estimated treatment means and standard error in the one-way ANOVA.

4.3.18 Response Variable AE

	rep	A	B	y
1	1	EI	N	38.733
2	2	EI	N	38.078
3	3	EI	N	31.894
4	4	EI	N	36.806
5	1	FP	N	23.080
6	2	FP	N	22.219
7	3	FP	N	22.474
8	4	FP	N	20.335

Table 4.190: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	36.378	1.169	31.129	0.000
A FP	22.027	1.169	18.849	0.001
A EI-FP	14.351	1.653	8.684	0.006

Table 4.191: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 20 in year 2011 .

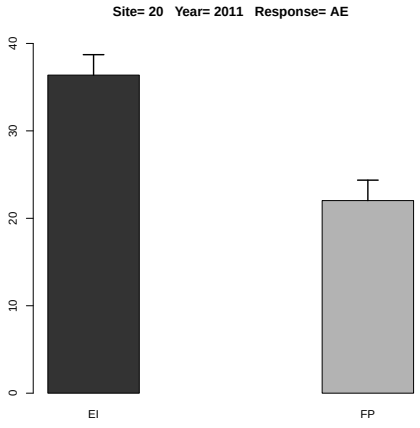

Figure 4.81: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 5

Analysis of Variance for Site 21

5.1 Year 2009

There are 60 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

5.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	6308.000
2	2	EI	N0	6603.000
3	3	EI	N0	5946.000
4	4	EI	N0	5611.000
5	1	EI	N	6570.000
6	2	EI	N	7014.000
7	3	EI	N	7214.000
8	4	EI	N	6699.000
9	1	FP	N0	5742.000
10	2	FP	N0	6633.000
11	3	FP	N0	6052.000
12	4	FP	N0	5236.000
13	1	FP	N	6817.000
14	2	FP	N	5988.000
15	3	FP	N	6474.000
16	4	FP	N	6569.000

Table 5.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	6874.250	203.959	33.704	0.000
A FP	6462.000	203.959	31.683	0.000
A EI-FP	412.250	288.442	1.429	0.421

Table 5.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 21 in year 2009 .

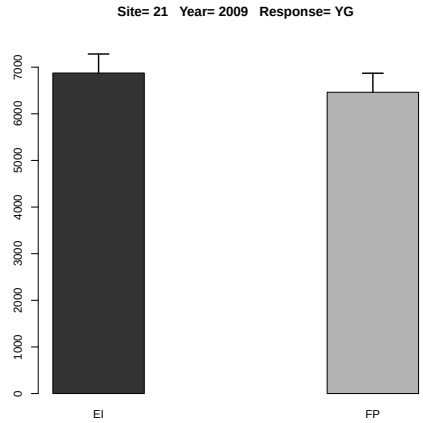

Figure 5.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	376382.250	376382.250	2.123	8.841	0.180
B	1.000	1699112.250	1699112.250	9.584	8.841	0.013
A:B	1.000	44521.000	44521.000	0.251	8.841	0.629

Table 5.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6495.625	154.113	8.400	42.150	6142.932	6848.318	0.000
2	FP		6188.875	154.113	8.400	40.160	5836.182	6541.568	0.000
3		N	6668.125	154.113	8.400	43.270	6315.432	7020.818	0.000
4		N0	6016.375	154.113	8.400	39.040	5663.682	6369.068	0.000
5	EI	N	6874.250	214.269	11.800	32.080	6406.557	7341.943	0.000
6	FP	N	6462.000	214.269	11.800	30.160	5994.307	6929.693	0.000
7	EI	N0	6117.000	214.269	11.800	28.550	5649.307	6584.693	0.000
8	FP	N0	5915.750	214.269	11.800	27.610	5448.057	6383.443	0.000

Table 5.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 21 in year 2009
.

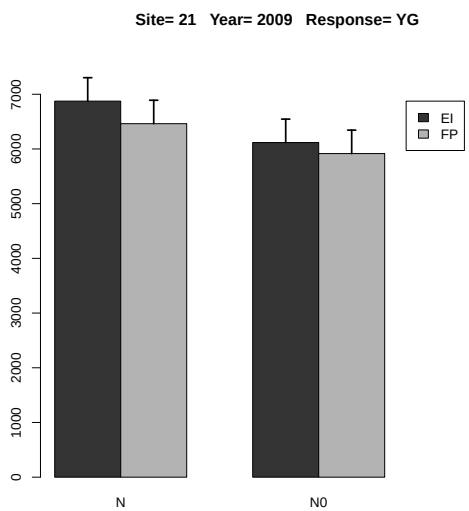

Figure 5.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	306.750	210.525	8.800	1.460	-170.801	784.301	0.180
B N-N0	651.750	210.525	8.800	3.100	174.199	1129.301	0.013
A:B EI N- FP N	412.250	297.728	8.800	1.380	-263.109	1087.609	0.200
A:B EI N- EI N0	757.250	297.728	8.800	2.540	81.891	1432.609	0.032
A:B EI N- FP N0	958.500	297.728	8.800	3.220	283.141	1633.859	0.011
A:B FP N- EI N0	345.000	297.728	8.800	1.160	-330.359	1020.359	0.277
A:B FP N- FP N0	546.250	297.728	8.800	1.830	-129.109	1221.609	0.100
A:B EI N0- FP N0	201.250	297.728	8.800	0.680	-474.109	876.609	0.516

Table 5.5: Estimate of contrast in two-way ANOVA for variable YG at site 21 in year 2009 .

5.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	6337.000
2	2	EI	N0	5965.000
3	3	EI	N0	5841.000
4	4	EI	N0	5315.000
5	1	EI	N	6199.000
6	2	EI	N	7638.000
7	3	EI	N	6436.000
8	4	EI	N	6895.000
9	1	FP	N0	5313.000
10	2	FP	N0	6092.000
11	3	FP	N0	5845.000
12	4	FP	N0	4914.000
13	1	FP	N	6745.000
14	2	FP	N	5569.000
15	3	FP	N	6511.000
16	4	FP	N	5528.000

Table 5.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	6792.000	431.670	15.734	0.001
A FP	6088.250	431.670	14.104	0.001
A EI-FP	703.750	610.474	1.153	0.540

Table 5.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 21 in year 2009 .

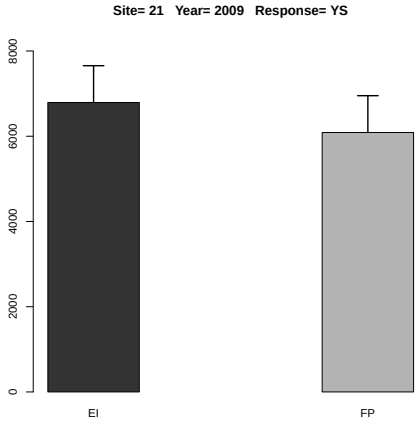

Figure 5.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1055242.562	1055242.562	3.374	8.777	0.100
B	1.000	2174887.563	2174887.563	6.954	8.777	0.028
A:B	1.000	144590.063	144590.063	0.462	8.777	0.514

Table 5.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6328.250	198.887	8.800	31.820	5877.055	6779.445	0.000
2	FP		5814.625	198.887	8.800	29.240	5363.430	6265.820	0.000
3		N	6440.125	198.887	8.800	32.380	5988.930	6891.320	0.000
4		N0	5702.750	198.887	8.800	28.670	5251.555	6153.945	0.000
5	EI	N	6792.000	280.447	11.800	24.220	6179.678	7404.322	0.000
6	FP	N	6088.250	280.447	11.800	21.710	5475.928	6700.572	0.000
7	EI	N0	5864.500	280.447	11.800	20.910	5252.178	6476.822	0.000
8	FP	N0	5541.000	280.447	11.800	19.760	4928.678	6153.322	0.000

Table 5.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	513.625	279.623	8.800	1.840	-121.380	1148.630	0.100
B N-N0	737.375	279.623	8.800	2.640	102.370	1372.380	0.028
A:B EI N- FP N	703.750	395.447	8.800	1.780	-194.283	1601.783	0.110
A:B EI N- EI N0	927.500	395.447	8.800	2.350	29.467	1825.533	0.044
A:B EI N- FP N0	1251.000	395.447	8.800	3.160	352.967	2149.033	0.012
A:B FP N- EI N0	223.750	395.447	8.800	0.570	-674.283	1121.783	0.586
A:B FP N- FP N0	547.250	395.447	8.800	1.380	-350.783	1445.283	0.201
A:B EI N0- FP N0	323.500	395.447	8.800	0.820	-574.533	1221.533	0.435

Table 5.10: Estimate of contrast in two-way ANOVA for variable YS at site 21 in year 2009 .

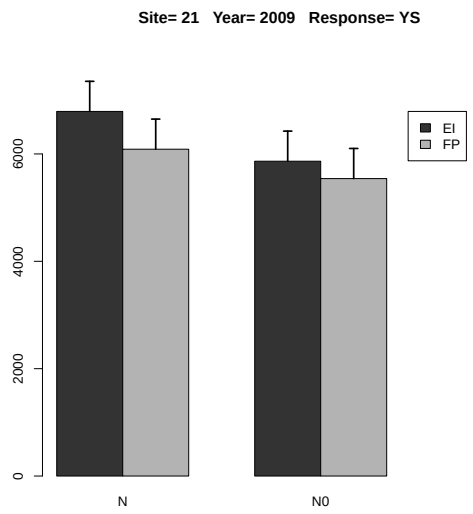

Figure 5.4: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	12645.000
2	2	EI	N0	12568.000
3	3	EI	N0	11787.000
4	4	EI	N0	10926.000
5	1	EI	N	12769.000
6	2	EI	N	14652.000
7	3	EI	N	13650.000
8	4	EI	N	13594.000
9	1	FP	N0	11055.000
10	2	FP	N0	12725.000
11	3	FP	N0	11897.000
12	4	FP	N0	10150.000
13	1	FP	N	13562.000
14	2	FP	N	11557.000
15	3	FP	N	12985.000
16	4	FP	N	12097.000

Table 5.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	13666.250	574.068	23.806	0.000
A FP	12550.250	574.068	21.862	0.000
A EI-FP	1116.000	811.854	1.375	0.443

Table 5.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 21 in year 2009 .

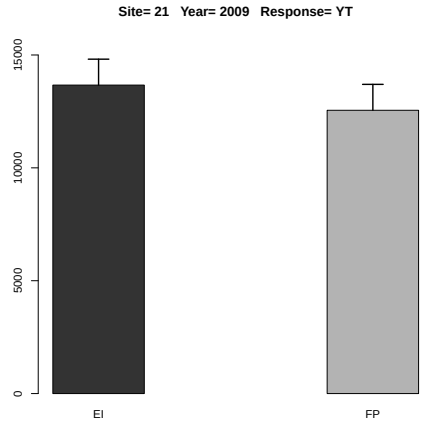

Figure 5.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2692060.563	2692060.563	3.610	9.185	0.089
B	1.000	7718673.063	7718673.063	10.352	9.185	0.010
A:B	1.000	349576.563	349576.563	0.469	9.185	0.510

Table 5.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12823.875	332.931	7.300	38.520	12043.112	13604.638	0.000
2	FP		12003.500	332.931	7.300	36.050	11222.737	12784.263	0.000
3		N	13108.250	332.931	7.300	39.370	12327.487	13889.013	0.000
4		N0	11719.125	332.931	7.300	35.200	10938.362	12499.888	0.000
5	EI	N	13666.250	451.716	10.100	30.250	12660.478	14672.022	0.000
6	FP	N	12550.250	451.716	10.100	27.780	11544.478	13556.022	0.000
7	EI	N0	11981.500	451.716	10.100	26.520	10975.728	12987.272	0.000
8	FP	N0	11456.750	451.716	10.100	25.360	10450.978	12462.522	0.000

Table 5.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 21 in year 2009 .

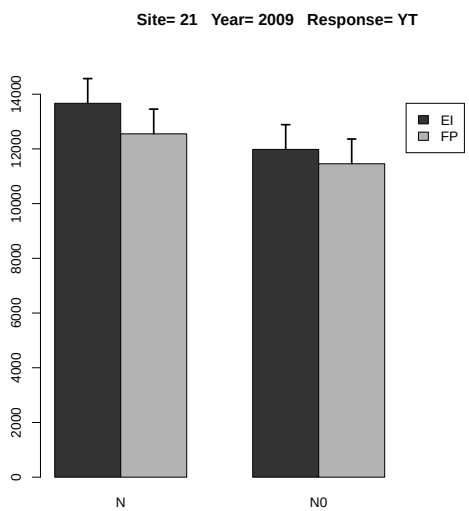

Figure 5.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	820.375	431.751	7.100	1.900	-198.629	1839.379	0.099
B N-N0	1389.125	431.751	7.100	3.220	370.121	2408.129	0.014
A:B EI N- FP N	1116.000	610.588	7.100	1.830	-325.089	2557.089	0.110
A:B EI N- EI N0	1684.750	610.588	7.100	2.760	243.661	3125.839	0.028
A:B EI N- FP N0	2209.500	610.588	7.100	3.620	768.411	3650.589	0.008
A:B FP N- EI N0	568.750	610.588	7.100	0.930	-872.339	2009.839	0.382
A:B FP N- FP N0	1093.500	610.588	7.100	1.790	-347.589	2534.589	0.116
A:B EI N0- FP N0	524.750	610.588	7.100	0.860	-916.339	1965.839	0.418

Table 5.15: Estimate of contrast in two-way ANOVA for variable YT at site 21 in year 2009 .

5.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.499
2	2	EI	N0	0.525
3	3	EI	N0	0.504
4	4	EI	N0	0.514
5	1	EI	N	0.515
6	2	EI	N	0.479
7	3	EI	N	0.528
8	4	EI	N	0.493
9	1	FP	N0	0.519
10	2	FP	N0	0.521
11	3	FP	N0	0.509
12	4	FP	N0	0.516
13	1	FP	N	0.503
14	2	FP	N	0.518
15	3	FP	N	0.499
16	4	FP	N	0.543

Table 5.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.504	0.014	36.612	0.000
A FP	0.516	0.014	37.482	0.000
A EI-FP	-0.012	0.019	-0.615	0.815

Table 5.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 21 in year 2009 .

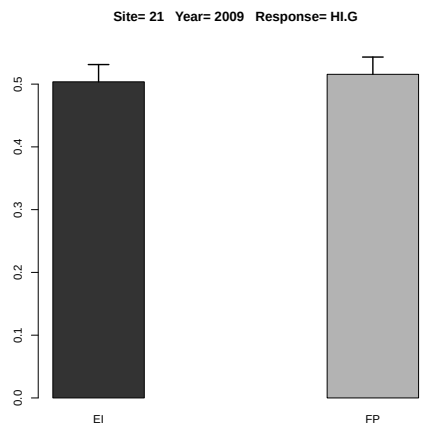

Figure 5.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	1.181	11.928	0.299
B	1.000	0.000	0.000	0.220	11.928	0.648
A:B	1.000	0.000	0.000	0.146	11.928	0.709

Table 5.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.507	0.006	11.900	88.010	0.494	0.520	0.000
2	FP		0.516	0.006	11.900	89.550	0.503	0.528	0.000
3		N	0.510	0.006	11.900	88.450	0.497	0.522	0.000
4		N0	0.513	0.006	11.900	89.110	0.501	0.526	0.000
5	EI	N	0.504	0.008	11.900	61.810	0.486	0.521	0.000
6	FP	N	0.516	0.008	11.900	63.280	0.498	0.533	0.000
7	EI	N0	0.511	0.008	11.900	62.660	0.493	0.528	0.000
8	FP	N0	0.516	0.008	11.900	63.360	0.498	0.534	0.000

Table 5.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.009	0.008	11.900	-1.090	-0.027	0.009	0.299
B N-N0	-0.004	0.008	11.900	-0.470	-0.022	0.014	0.648
A:B EI N- FP N	-0.012	0.011	11.900	-1.040	-0.037	0.013	0.320
A:B EI N- EI N0	-0.007	0.011	11.900	-0.600	-0.032	0.018	0.559
A:B EI N- FP N0	-0.013	0.011	11.900	-1.100	-0.038	0.012	0.293
A:B FP N- EI N0	0.005	0.011	11.900	0.440	-0.020	0.030	0.670
A:B FP N- FP N0	-0.001	0.011	11.900	-0.060	-0.026	0.024	0.952
A:B EI N0- FP N0	-0.006	0.011	11.900	-0.500	-0.031	0.019	0.627

Table 5.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 21 in year 2009 .

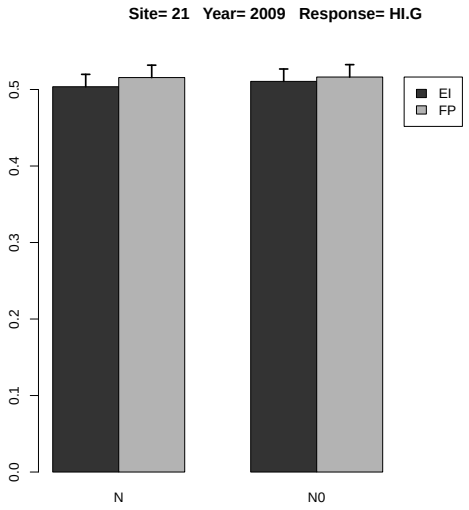

Figure 5.8: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	141.299
2	2	EI	N0	143.285
3	3	EI	N0	129.623
4	4	EI	N0	125.686
5	1	EI	N	156.366
6	2	EI	N	173.947
7	3	EI	N	180.350
8	4	EI	N	164.126
9	1	FP	N0	122.879
10	2	FP	N0	150.569
11	3	FP	N0	134.354
12	4	FP	N0	125.140
13	1	FP	N	147.929
14	2	FP	N	141.916
15	3	FP	N	153.434
16	4	FP	N	149.116

Table 5.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	168.697	3.818	44.190	0.000
A FP	148.099	3.818	38.794	0.000
A EI-FP	20.599	5.399	3.815	0.061

Table 5.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 21 in year 2009 .

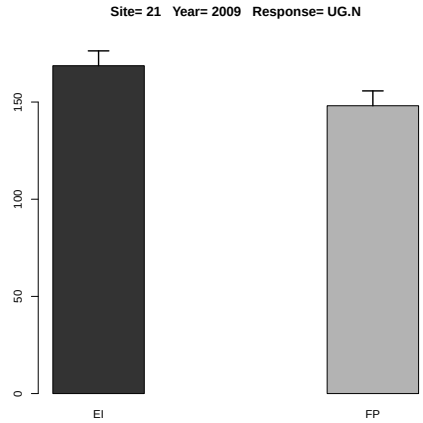

Figure 5.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	498.907	498.907	6.140	9.000	0.035
B	1.000	2360.675	2360.675	29.053	9.000	0.000
A:B	1.000	355.731	355.731	4.378	9.000	0.066

Table 5.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		151.835	3.579	7.200	42.420	143.418	160.253	0.000
2	FP		140.667	3.579	7.200	39.300	132.250	149.085	0.000
3		N	158.398	3.579	7.200	44.250	149.980	166.815	0.000
4		N0	134.105	3.579	7.200	37.460	125.687	142.522	0.000
5	EI	N	168.697	4.793	11.500	35.200	158.208	179.186	0.000
6	FP	N	148.099	4.793	11.500	30.900	137.610	158.588	0.000
7	EI	N0	134.973	4.793	11.500	28.160	124.484	145.462	0.000
8	FP	N0	133.236	4.793	11.500	27.800	122.747	143.725	0.000

Table 5.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 21 in year 2009 .

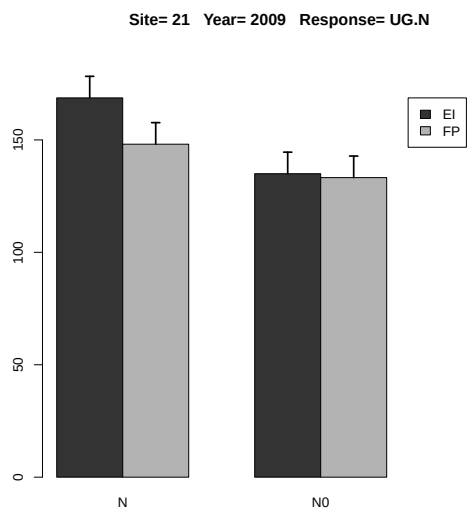

Figure 5.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	11.168	4.507	9.000	2.480	0.973	21.364	0.035
B N-N0	24.293	4.507	9.000	5.390	14.098	34.489	0.000
A:B EI N- FP N	20.599	6.374	9.000	3.230	6.180	35.017	0.010
A:B EI N- EI N0	33.724	6.374	9.000	5.290	19.305	48.143	0.000
A:B EI N- FP N0	35.462	6.374	9.000	5.560	21.043	49.880	0.000
A:B FP N- EI N0	13.125	6.374	9.000	2.060	-1.294	27.544	0.070
A:B FP N- FP N0	14.863	6.374	9.000	2.330	0.444	29.282	0.045
A:B EI N0- FP N0	1.738	6.374	9.000	0.270	-12.681	16.157	0.791

Table 5.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 21 in year 2009 .

5.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	16.401
2	2	EI	N0	18.488
3	3	EI	N0	16.054
4	4	EI	N0	15.150
5	1	EI	N	16.425
6	2	EI	N	18.236
7	3	EI	N	18.756
8	4	EI	N	17.417
9	1	FP	N0	14.929
10	2	FP	N0	17.909
11	3	FP	N0	16.340
12	4	FP	N0	14.137
13	1	FP	N	16.361
14	2	FP	N	16.766
15	3	FP	N	15.538
16	4	FP	N	17.079

Table 5.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	17.709	0.507	34.954	0.000
A FP	16.436	0.507	32.441	0.000
A EI-FP	1.273	0.716	1.776	0.307

Table 5.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 21 in year 2009 .

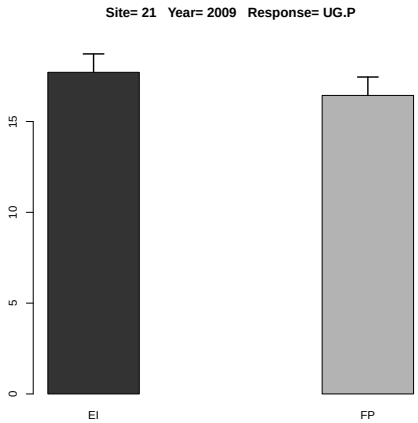

Figure 5.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.869	3.869	3.700	8.999	0.087
B	1.000	3.213	3.213	3.073	8.999	0.114
A:B	1.000	0.335	0.335	0.320	8.999	0.585

Table 5.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17.116	0.509	5.200	33.660	15.822	18.410	0.000
2	FP		16.133	0.509	5.200	31.720	14.838	17.427	0.000
3		N	17.072	0.509	5.200	33.570	15.778	18.367	0.000
4		N0	16.176	0.509	5.200	31.810	14.882	17.470	0.000
5	EI	N	17.709	0.624	9.100	28.380	16.299	19.119	0.000
6	FP	N	16.436	0.624	9.100	26.340	15.026	17.846	0.000
7	EI	N0	16.523	0.624	9.100	26.480	15.113	17.933	0.000
8	FP	N0	15.829	0.624	9.100	25.370	14.419	17.239	0.000

Table 5.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.984	0.511	9.000	1.920	-0.173	2.140	0.087
B N-N0	0.896	0.511	9.000	1.750	-0.260	2.053	0.114
A:B EI N- FP N	1.273	0.723	9.000	1.760	-0.363	2.908	0.112
A:B EI N- EI N0	1.185	0.723	9.000	1.640	-0.450	2.821	0.136
A:B EI N- FP N0	1.880	0.723	9.000	2.600	0.244	3.515	0.029
A:B FP N- EI N0	-0.087	0.723	9.000	-0.120	-1.723	1.548	0.907
A:B FP N- FP N0	0.607	0.723	9.000	0.840	-1.029	2.243	0.423
A:B EI N0- FP N0	0.694	0.723	9.000	0.960	-0.941	2.330	0.362

Table 5.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 21 in year 2009 .

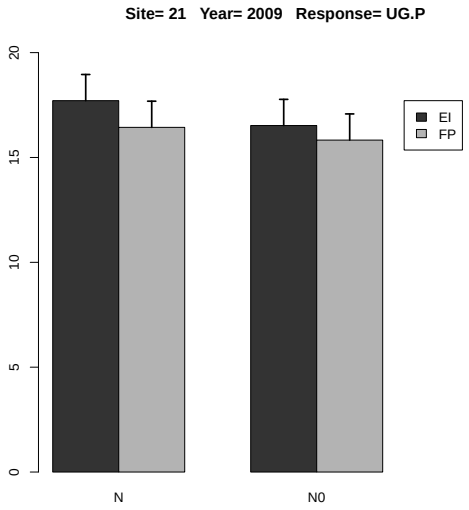

Figure 5.12: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	37.558
2	2	EI	N0	42.338
3	3	EI	N0	36.764
4	4	EI	N0	34.693
5	1	EI	N	37.613
6	2	EI	N	41.761
7	3	EI	N	42.952
8	4	EI	N	39.886
9	1	FP	N0	34.188
10	2	FP	N0	41.012
11	3	FP	N0	37.420
12	4	FP	N0	32.374
13	1	FP	N	37.466
14	2	FP	N	38.395
15	3	FP	N	35.581
16	4	FP	N	39.112

Table 5.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	40.553	1.160	34.954	0.000
A FP	37.639	1.160	32.441	0.000
A EI-FP	2.915	1.641	1.776	0.307

Table 5.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 21 in year 2009 .

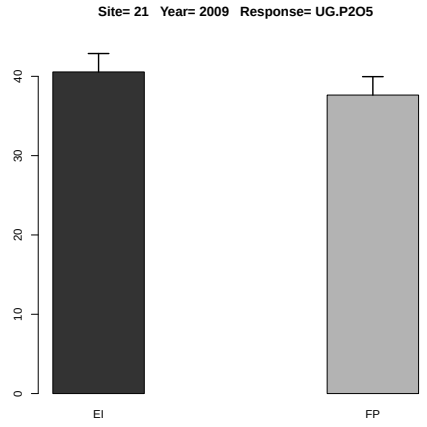

Figure 5.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	20.291	20.291	3.700	9.000	0.087
B	1.000	16.851	16.851	3.073	9.000	0.113
A:B	1.000	1.755	1.755	0.320	9.000	0.585

Table 5.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		39.196	1.165	5.200	33.660	36.232	42.160	0.000
2	FP		36.944	1.165	5.200	31.720	33.980	39.907	0.000
3		N	39.096	1.165	5.200	33.570	36.132	42.060	0.000
4		N0	37.043	1.165	5.200	31.810	34.080	40.007	0.000
5	EI	N	40.553	1.429	9.100	28.380	37.324	43.782	0.000
6	FP	N	37.639	1.429	9.100	26.340	34.410	40.867	0.000
7	EI	N0	37.838	1.429	9.100	26.480	34.609	41.067	0.000
8	FP	N0	36.248	1.429	9.100	25.370	33.019	39.477	0.000

Table 5.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 21 in year 2009 .

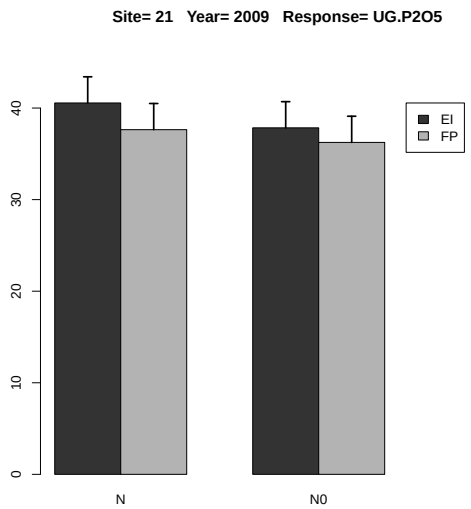

Figure 5.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.252	1.171	9.000	1.920	-0.396	4.901	0.086
B N-N0	2.053	1.171	9.000	1.750	-0.596	4.701	0.114
A:B EI N- FP N	2.915	1.656	9.000	1.760	-0.831	6.660	0.112
A:B EI N- EI N0	2.715	1.656	9.000	1.640	-1.031	6.461	0.136
A:B EI N- FP N0	4.305	1.656	9.000	2.600	0.559	8.050	0.029
A:B FP N- EI N0	-0.200	1.656	9.000	-0.120	-3.946	3.546	0.907
A:B FP N- FP N0	1.390	1.656	9.000	0.840	-2.356	5.136	0.423
A:B EI N0- FP N0	1.590	1.656	9.000	0.960	-2.156	5.336	0.362

Table 5.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 21 in year 2009 .

5.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	13.878
2	2	EI	N0	14.527
3	3	EI	N0	13.676
4	4	EI	N0	12.905
5	1	EI	N	13.140
6	2	EI	N	14.729
7	3	EI	N	15.871
8	4	EI	N	14.068
9	1	FP	N0	11.484
10	2	FP	N0	13.266
11	3	FP	N0	13.314
12	4	FP	N0	10.996
13	1	FP	N	13.634
14	2	FP	N	13.174
15	3	FP	N	12.948
16	4	FP	N	14.452

Table 5.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	14.452	0.581	24.856	0.000
A FP	13.552	0.581	23.308	0.000
A EI-FP	0.900	0.822	1.095	0.567

Table 5.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 21 in year 2009 .

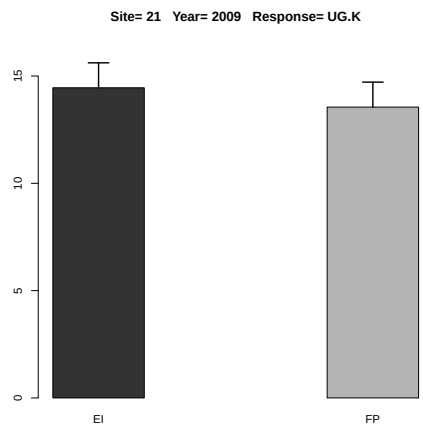

Figure 5.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.672	5.672	6.448	8.999	0.032
B	1.000	3.970	3.970	4.513	8.999	0.063
A:B	1.000	0.338	0.338	0.384	8.999	0.551

Table 5.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14.099	0.344	8.400	41.030	13.313	14.885	0.000
2	FP		12.908	0.344	8.400	37.560	12.122	13.695	0.000
3		N	14.002	0.344	8.400	40.750	13.216	14.788	0.000
4		N0	13.006	0.344	8.400	37.850	12.219	13.792	0.000
5	EI	N	14.452	0.477	12.000	30.260	13.411	15.493	0.000
6	FP	N	13.552	0.477	12.000	28.380	12.511	14.593	0.000
7	EI	N0	13.746	0.477	12.000	28.790	12.705	14.787	0.000
8	FP	N0	12.265	0.477	12.000	25.680	11.224	13.306	0.000

Table 5.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.191	0.469	9.000	2.540	0.130	2.252	0.032
B N-N0	0.996	0.469	9.000	2.120	-0.065	2.057	0.063
A:B EI N- FP N	0.900	0.663	9.000	1.360	-0.600	2.400	0.208
A:B EI N- EI N0	0.706	0.663	9.000	1.060	-0.795	2.206	0.315
A:B EI N- FP N0	2.187	0.663	9.000	3.300	0.687	3.687	0.009
A:B FP N- EI N0	-0.195	0.663	9.000	-0.290	-1.695	1.306	0.776
A:B FP N- FP N0	1.287	0.663	9.000	1.940	-0.213	2.787	0.084
A:B EI N0- FP N0	1.481	0.663	9.000	2.230	-0.019	2.982	0.052

Table 5.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 21 in year 2009 .

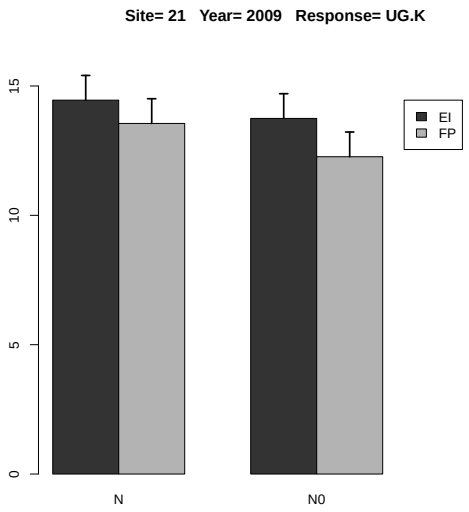

Figure 5.16: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	16.723
2	2	EI	N0	17.505
3	3	EI	N0	16.479
4	4	EI	N0	15.551
5	1	EI	N	15.834
6	2	EI	N	17.749
7	3	EI	N	19.124
8	4	EI	N	16.952
9	1	FP	N0	13.838
10	2	FP	N0	15.986
11	3	FP	N0	16.044
12	4	FP	N0	13.250
13	1	FP	N	16.429
14	2	FP	N	15.874
15	3	FP	N	15.602
16	4	FP	N	17.414

Table 5.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	17.415	0.701	24.856	0.000
A FP	16.330	0.701	23.308	0.000
A EI-FP	1.085	0.991	1.095	0.568

Table 5.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 21 in year 2009 .

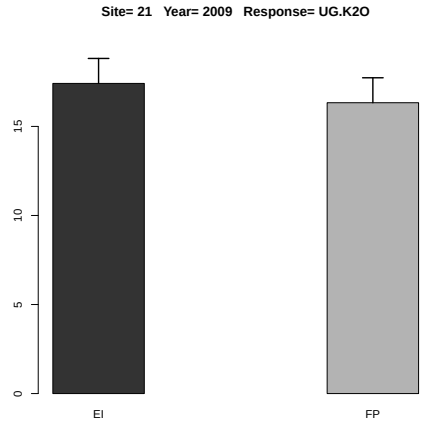

Figure 5.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.235	8.235	6.448	8.999	0.032
B	1.000	5.765	5.765	4.513	8.999	0.063
A:B	1.000	0.490	0.490	0.384	8.999	0.551

Table 5.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16.989	0.414	8.400	41.030	16.042	17.937	0.000
2	FP		15.555	0.414	8.400	37.560	14.607	16.502	0.000
3		N	16.872	0.414	8.400	40.750	15.925	17.820	0.000
4		N0	15.672	0.414	8.400	37.850	14.724	16.619	0.000
5	EI	N	17.415	0.575	12.000	30.260	16.160	18.669	0.000
6	FP	N	16.330	0.575	12.000	28.380	15.076	17.584	0.000
7	EI	N0	16.564	0.575	12.000	28.790	15.310	17.819	0.000
8	FP	N0	14.779	0.575	12.000	25.680	13.525	16.034	0.000

Table 5.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 21 in year 2009 .

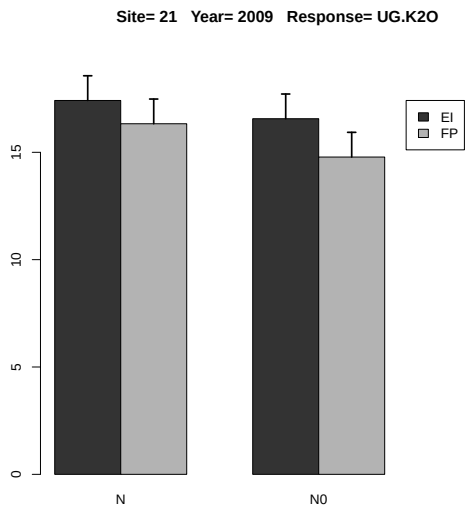

Figure 5.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.435	0.565	9.000	2.540	0.156	2.713	0.032
B N-N0	1.200	0.565	9.000	2.120	-0.078	2.479	0.063
A:B EI N- FP N	1.085	0.799	9.000	1.360	-0.723	2.893	0.208
A:B EI N- EI N0	0.850	0.799	9.000	1.060	-0.957	2.658	0.315
A:B EI N- FP N0	2.635	0.799	9.000	3.300	0.828	4.443	0.009
A:B FP N- EI N0	-0.234	0.799	9.000	-0.290	-2.042	1.573	0.776
A:B FP N- FP N0	1.551	0.799	9.000	1.940	-0.257	3.358	0.084
A:B EI N0- FP N0	1.785	0.799	9.000	2.230	-0.023	3.593	0.052

Table 5.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 21 in year 2009 .

5.1.10 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	41.215
2	2	EI	N0	43.886
3	3	EI	N0	42.438
4	4	EI	N0	39.355
5	1	EI	N	57.335
6	2	EI	N	70.815
7	3	EI	N	53.514
8	4	EI	N	50.150
9	1	FP	N0	38.322
10	2	FP	N0	44.692
11	3	FP	N0	38.323
12	4	FP	N0	31.678
13	1	FP	N	48.896
14	2	FP	N	40.598
15	3	FP	N	48.683
16	4	FP	N	34.891

Table 5.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	57.953	3.967	14.609	0.001
A FP	43.267	3.967	10.907	0.003
A EI-FP	14.686	5.610	2.618	0.147

Table 5.47: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 21 in year 2009 .

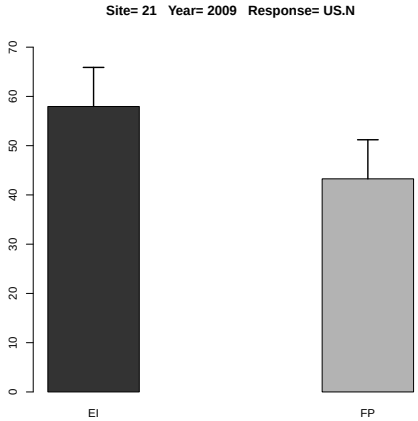

Figure 5.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	329.649	329.649	12.992	9.000	0.006
B	1.000	451.276	451.276	17.785	9.000	0.002
A:B	1.000	125.815	125.815	4.958	9.000	0.053

Table 5.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		49.839	2.615	4.900	19.060	43.090	56.587	0.000
2	FP		40.760	2.615	4.900	15.590	34.012	47.509	0.000
3		N	50.610	2.615	4.900	19.350	43.861	57.359	0.000
4		N0	39.989	2.615	4.900	15.290	33.240	46.737	0.000
5	EI	N	57.953	3.164	8.600	18.320	50.739	65.168	0.000
6	FP	N	43.267	3.164	8.600	13.680	36.053	50.481	0.000
7	EI	N0	41.724	3.164	8.600	13.190	34.510	48.938	0.000
8	FP	N0	38.254	3.164	8.600	12.090	31.040	45.468	0.000

Table 5.49: Estimate of treatment means in tow-way ANOVA for variable US.N at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	9.078	2.519	9.000	3.600	3.381	14.776	0.006
B N-N0	10.622	2.519	9.000	4.220	4.924	16.319	0.002
A:B EI N- FP N	14.687	3.562	9.000	4.120	6.629	22.744	0.003
A:B EI N- EI N0	16.230	3.562	9.000	4.560	8.172	24.288	0.001
A:B EI N- FP N0	19.700	3.562	9.000	5.530	11.642	27.757	0.000
A:B FP N- EI N0	1.544	3.562	9.000	0.430	-6.514	9.601	0.675
A:B FP N- FP N0	5.013	3.562	9.000	1.410	-3.044	13.071	0.193
A:B EI N0- FP N0	3.470	3.562	9.000	0.970	-4.588	11.527	0.355

Table 5.50: Estimate of contrast in two-way ANOVA for variable US.N at site 21 in year 2009 .

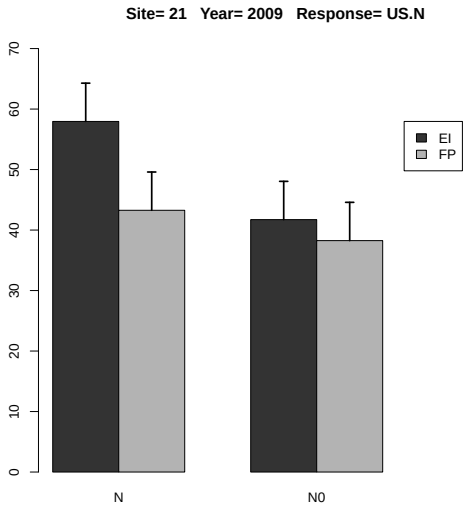

Figure 5.20: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.11 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	6.337
2	2	EI	N0	5.965
3	3	EI	N0	5.841
4	4	EI	N0	5.315
5	1	EI	N	6.199
6	2	EI	N	7.638
7	3	EI	N	6.436
8	4	EI	N	6.895
9	1	FP	N0	5.313
10	2	FP	N0	6.092
11	3	FP	N0	5.845
12	4	FP	N0	4.914
13	1	FP	N	6.745
14	2	FP	N	5.569
15	3	FP	N	6.511
16	4	FP	N	5.528

Table 5.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	6.792	0.432	15.734	0.001
A FP	6.088	0.432	14.104	0.001
A EI-FP	0.704	0.610	1.153	0.540

Table 5.52: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 21 in year 2009 .

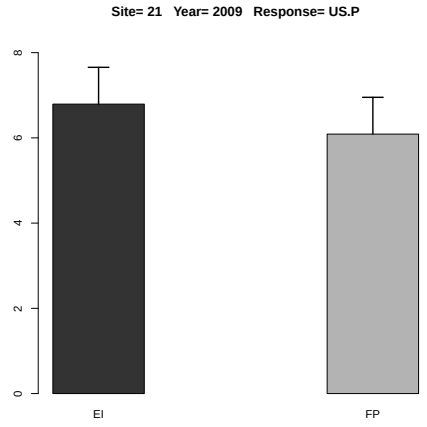

Figure 5.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.055	1.055	3.374	8.998	0.099
B	1.000	2.175	2.175	6.954	8.998	0.027
A:B	1.000	0.145	0.145	0.462	8.998	0.514

Table 5.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.328	0.199	8.900	31.820	5.878	6.779	0.000
2	FP		5.815	0.199	8.900	29.240	5.364	6.265	0.000
3		N	6.440	0.199	8.900	32.380	5.989	6.891	0.000
4		N0	5.703	0.199	8.900	28.670	5.252	6.154	0.000
5	EI	N	6.792	0.280	12.000	24.220	6.181	7.403	0.000
6	FP	N	6.088	0.280	12.000	21.710	5.477	6.699	0.000
7	EI	N0	5.864	0.280	12.000	20.910	5.253	6.476	0.000
8	FP	N0	5.541	0.280	12.000	19.760	4.930	6.152	0.000

Table 5.54: Estimate of treatment means in tow-way ANOVA for variable US.P at site 21 in year 2009 .

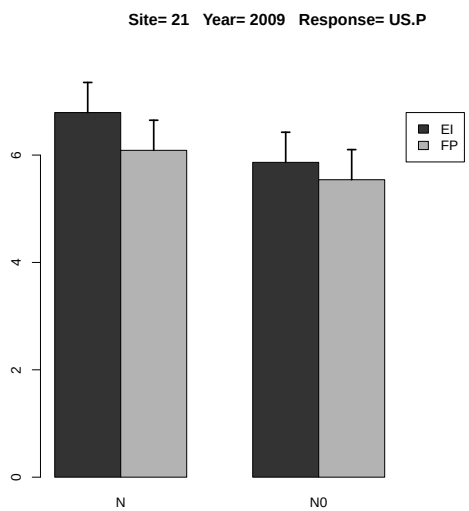

Figure 5.22: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.514	0.280	9.000	1.840	-0.119	1.146	0.099
B N-N0	0.737	0.280	9.000	2.640	0.105	1.370	0.027
A:B EI N- FP N	0.704	0.395	9.000	1.780	-0.191	1.598	0.109
A:B EI N- EI N0	0.927	0.395	9.000	2.350	0.033	1.822	0.044
A:B EI N- FP N0	1.251	0.395	9.000	3.160	0.356	2.146	0.011
A:B FP N- EI N0	0.224	0.395	9.000	0.570	-0.671	1.118	0.585
A:B FP N- FP N0	0.547	0.395	9.000	1.380	-0.347	1.442	0.200
A:B EI N0- FP N0	0.324	0.395	9.000	0.820	-0.571	1.218	0.434

Table 5.55: Estimate of contrast in two-way ANOVA for variable US.P at site 21 in year 2009 .

5.1.12 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	7.351
2	2	EI	N0	6.789
3	3	EI	N0	6.763
4	4	EI	N0	6.132
5	1	EI	N	7.057
6	2	EI	N	8.664
7	3	EI	N	7.384
8	4	EI	N	7.972
9	1	FP	N0	6.212
10	2	FP	N0	6.961
11	3	FP	N0	6.681
12	4	FP	N0	5.616
13	1	FP	N	7.834
14	2	FP	N	6.419
15	3	FP	N	7.389
16	4	FP	N	6.510

Table 5.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	7.769	0.485	16.024	0.001
A FP	7.038	0.485	14.516	0.001
A EI-FP	0.731	0.686	1.066	0.581

Table 5.57: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 21 in year 2009 .

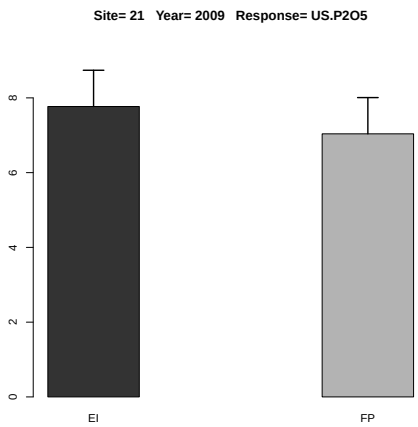

Figure 5.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.260	1.260	3.216	11.998	0.098
B	1.000	2.825	2.825	7.212	11.998	0.020
A:B	1.000	0.116	0.116	0.295	11.998	0.597

Table 5.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.264	0.221	12.000	32.830	6.782	7.746	0.000
2	FP		6.703	0.221	12.000	30.290	6.221	7.185	0.000
3		N	7.404	0.221	12.000	33.460	6.921	7.886	0.000
4		N0	6.563	0.221	12.000	29.660	6.081	7.045	0.000
5	EI	N	7.769	0.313	12.000	24.830	7.087	8.451	0.000
6	FP	N	7.038	0.313	12.000	22.490	6.356	7.720	0.000
7	EI	N0	6.759	0.313	12.000	21.600	6.077	7.441	0.000
8	FP	N0	6.368	0.313	12.000	20.350	5.686	7.049	0.000

Table 5.59: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.561	0.313	12.000	1.790	-0.121	1.243	0.098
B N-N0	0.840	0.313	12.000	2.690	0.158	1.522	0.020
A:B EI N- FP N	0.731	0.443	12.000	1.650	-0.233	1.696	0.124
A:B EI N- EI N0	1.010	0.443	12.000	2.280	0.046	1.975	0.042
A:B EI N- FP N0	1.402	0.443	12.000	3.170	0.437	2.366	0.008
A:B FP N- EI N0	0.279	0.443	12.000	0.630	-0.685	1.244	0.540
A:B FP N- FP N0	0.670	0.443	12.000	1.510	-0.294	1.635	0.156
A:B EI N0- FP N0	0.391	0.443	12.000	0.880	-0.573	1.355	0.394

Table 5.60: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 21 in year 2009 .

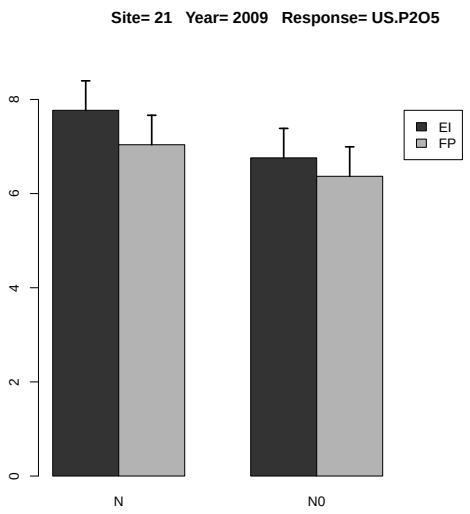

Figure 5.24: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.13 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	114.901
2	2	EI	N0	107.584
3	3	EI	N0	78.199
4	4	EI	N0	71.245
5	1	EI	N	95.194
6	2	EI	N	96.909
7	3	EI	N	80.728
8	4	EI	N	73.340
9	1	FP	N0	72.988
10	2	FP	N0	76.500
11	3	FP	N0	84.435
12	4	FP	N0	75.360
13	1	FP	N	113.814
14	2	FP	N	69.761
15	3	FP	N	105.239
16	4	FP	N	73.587

Table 5.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	86.543	8.213	10.538	0.003
A FP	90.600	8.213	11.032	0.002
A EI-FP	-4.058	11.614	-0.349	0.933

Table 5.62: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 21 in year 2009 .

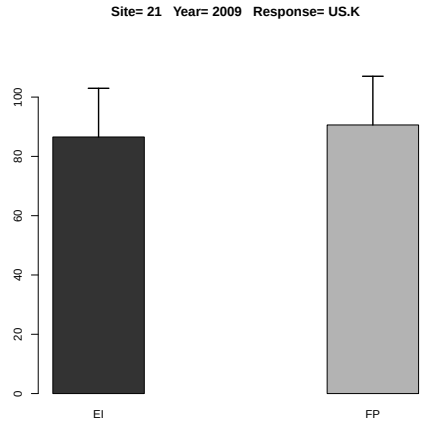

Figure 5.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	55.290	55.290	0.371	3.000	0.586
B	1.000	46.786	46.786	0.314	6.000	0.596
A:B	1.000	388.839	388.839	2.607	6.000	0.158

Table 5.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		89.763	7.117	5.900	12.610	72.303	107.222	0.000
2	FP		83.960	7.117	5.900	11.800	66.501	101.420	0.000
3		N	88.572	6.104	5.100	14.510	72.930	104.213	0.000
4		N0	85.151	6.104	5.100	13.950	69.510	100.793	0.000
5	EI	N	86.543	8.324	9.800	10.400	67.944	105.142	0.000
6	FP	N	90.600	8.324	9.800	10.880	72.001	109.200	0.000
7	EI	N0	92.982	8.324	9.800	11.170	74.383	111.582	0.000
8	FP	N0	77.321	8.324	9.800	9.290	58.721	95.920	0.000

Table 5.64: Estimate of treatment means in tow-way ANOVA for variable US.K at site 21 in year 2009 .

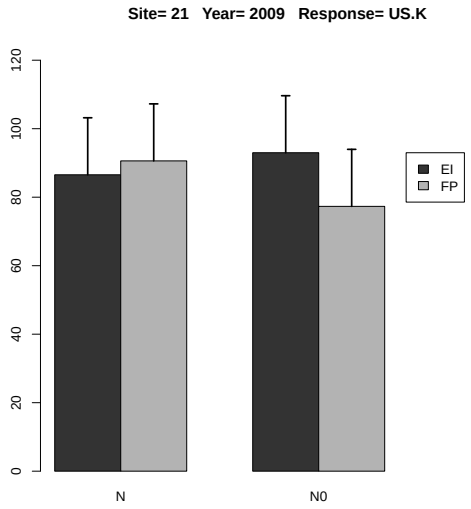

Figure 5.26: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.802	9.530	3.000	0.610	-24.529	36.133	0.586
B N-N0	3.420	6.107	6.000	0.560	-11.523	18.363	0.596
A:B EI N- FP N	-4.058	11.319	5.500	-0.360	-32.368	24.253	0.733
A:B EI N- EI N0	-6.439	8.636	6.000	-0.750	-27.571	14.692	0.484
A:B EI N- FP N0	9.222	11.319	5.500	0.810	-19.089	37.533	0.449
A:B FP N- EI N0	-2.382	11.319	5.500	-0.210	-30.693	25.929	0.841
A:B FP N- FP N0	13.280	8.636	6.000	1.540	-7.852	34.411	0.175
A:B EI N0- FP N0	15.662	11.319	5.500	1.380	-12.649	43.972	0.220

Table 5.65: Estimate of contrast in two-way ANOVA for variable US.K at site 21 in year 2009 .

5.1.14 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	116.835
2	2	EI	N0	108.894
3	3	EI	N0	79.518
4	4	EI	N0	72.413
5	1	EI	N	96.557
6	2	EI	N	98.539
7	3	EI	N	82.084
8	4	EI	N	74.709
9	1	FP	N0	74.703
10	2	FP	N0	77.744
11	3	FP	N0	85.763
12	4	FP	N0	76.475
13	1	FP	N	115.371
14	2	FP	N	70.977
15	3	FP	N	106.495
16	4	FP	N	74.991

Table 5.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	87.972	8.282	10.623	0.003
A FP	91.959	8.282	11.104	0.003
A EI-FP	-3.986	11.712	-0.340	0.936

Table 5.67: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 21 in year 2009 .

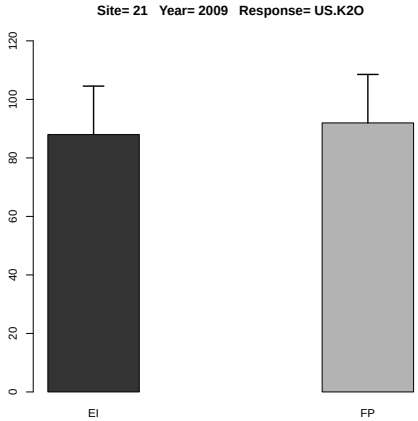

Figure 5.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	56.273	56.273	0.377	3.000	0.582
B	1.000	46.853	46.853	0.314	6.000	0.595
A:B	1.000	389.272	389.272	2.610	6.000	0.157

Table 5.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		91.194	7.186	5.900	12.690	73.555	108.832	0.000
2	FP		85.315	7.186	5.900	11.870	67.676	102.954	0.000
3		N	89.966	6.169	5.000	14.580	74.104	105.827	0.000
4		N0	86.543	6.169	5.000	14.030	70.682	102.404	0.000
5	EI	N	87.972	8.383	9.700	10.490	69.220	106.725	0.000
6	FP	N	91.959	8.383	9.700	10.970	73.206	110.711	0.000
7	EI	N0	94.415	8.383	9.700	11.260	75.663	113.167	0.000
8	FP	N0	78.671	8.383	9.700	9.380	59.919	97.423	0.000

Table 5.69: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.879	9.571	3.000	0.610	-24.581	36.338	0.583
B N-N0	3.422	6.106	6.000	0.560	-11.519	18.364	0.595
A:B EI N- FP N	-3.986	11.353	5.500	-0.350	-32.410	24.438	0.739
A:B EI N- EI N0	-6.442	8.636	6.000	-0.750	-27.573	14.688	0.484
A:B EI N- FP N0	9.301	11.353	5.500	0.820	-19.123	37.725	0.447
A:B FP N- EI N0	-2.456	11.353	5.500	-0.220	-30.880	25.968	0.837
A:B FP N- FP N0	13.287	8.636	6.000	1.540	-7.843	34.418	0.175
A:B EI N0- FP N0	15.744	11.353	5.500	1.390	-12.680	44.168	0.219

Table 5.70: Estimate of contrast in two-way ANOVA for variable US.K2O at site 21 in year 2009 .

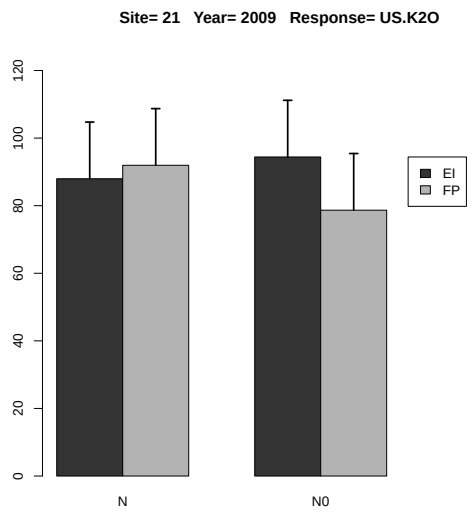

Figure 5.28: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.15 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	182.514
2	2	EI	N0	187.171
3	3	EI	N0	172.061
4	4	EI	N0	165.041
5	1	EI	N	213.701
6	2	EI	N	244.762
7	3	EI	N	233.864
8	4	EI	N	214.276
9	1	FP	N0	161.201
10	2	FP	N0	195.261
11	3	FP	N0	172.677
12	4	FP	N0	156.818
13	1	FP	N	196.825
14	2	FP	N	182.514
15	3	FP	N	202.117
16	4	FP	N	184.007

Table 5.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	226.651	6.781	33.424	0.000
A FP	191.366	6.781	28.220	0.000
A EI-FP	35.285	9.590	3.679	0.066

Table 5.72: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 21 in year 2009 .

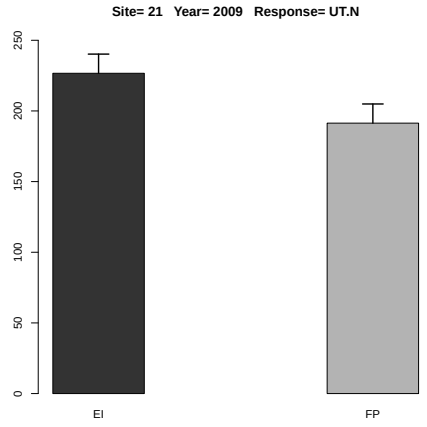

Figure 5.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1639.641	1639.641	13.724	9.000	0.005
B	1.000	4876.232	4876.232	40.814	9.000	0.000
A:B	1.000	904.661	904.661	7.572	9.000	0.022

Table 5.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		201.674	5.497	5.100	36.690	187.633	215.715	0.000
2	FP		181.428	5.497	5.100	33.000	167.387	195.468	0.000
3		N	209.008	5.497	5.100	38.020	194.967	223.049	0.000
4		N0	174.093	5.497	5.100	31.670	160.052	188.134	0.000
5	EI	N	226.651	6.720	8.900	33.730	211.432	241.869	0.000
6	FP	N	191.366	6.720	8.900	28.480	176.147	206.584	0.000
7	EI	N0	176.697	6.720	8.900	26.300	161.478	191.916	0.000
8	FP	N0	171.489	6.720	8.900	25.520	156.271	186.708	0.000

Table 5.74: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 21 in year 2009 .

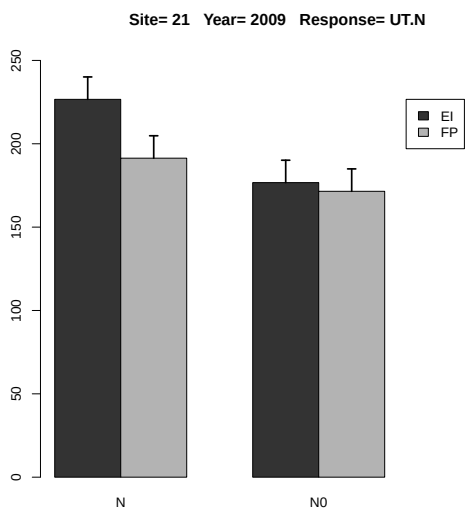

Figure 5.30: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	20.246	5.465	9.000	3.700	7.883	32.609	0.005
B N-N0	34.915	5.465	9.000	6.390	22.552	47.278	0.000
A:B EI N- FP N	35.285	7.729	9.000	4.570	17.801	52.769	0.001
A:B EI N- EI N0	49.954	7.729	9.000	6.460	32.470	67.438	0.000
A:B EI N- FP N0	55.161	7.729	9.000	7.140	37.677	72.645	0.000
A:B FP N- EI N0	14.669	7.729	9.000	1.900	-2.816	32.153	0.090
A:B FP N- FP N0	19.876	7.729	9.000	2.570	2.392	37.361	0.030
A:B EI N0- FP N0	5.207	7.729	9.000	0.670	-12.277	22.692	0.517

Table 5.75: Estimate of contrast in two-way ANOVA for variable UT.N at site 21 in year 2009 .

5.1.16 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	22.738
2	2	EI	N0	24.453
3	3	EI	N0	21.895
4	4	EI	N0	20.465
5	1	EI	N	22.624
6	2	EI	N	25.874
7	3	EI	N	25.192
8	4	EI	N	24.312
9	1	FP	N0	20.242
10	2	FP	N0	24.001
11	3	FP	N0	22.185
12	4	FP	N0	19.051
13	1	FP	N	23.106
14	2	FP	N	22.335
15	3	FP	N	22.049
16	4	FP	N	22.607

Table 5.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	24.501	0.643	38.107	0.000
A FP	22.524	0.643	35.033	0.000
A EI-FP	1.976	0.909	2.174	0.214

Table 5.77: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 21 in year 2009 .

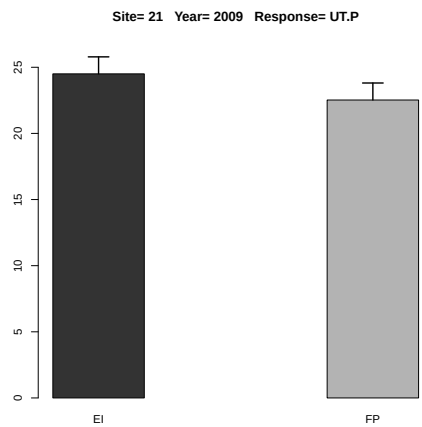

Figure 5.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.966	8.966	5.536	8.999	0.043
B	1.000	10.676	10.676	6.591	8.999	0.030
A:B	1.000	0.919	0.919	0.567	8.999	0.471

Table 5.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.444	0.635	5.200	36.900	21.825	25.063	0.000
2	FP		21.947	0.635	5.200	34.540	20.328	23.566	0.000
3		N	23.513	0.635	5.200	37.010	21.893	25.132	0.000
4		N0	21.879	0.635	5.200	34.430	20.260	23.498	0.000
5	EI	N	24.501	0.779	9.000	31.470	22.740	26.262	0.000
6	FP	N	22.524	0.779	9.000	28.930	20.764	24.285	0.000
7	EI	N0	22.388	0.779	9.000	28.750	20.627	24.148	0.000
8	FP	N0	21.370	0.779	9.000	27.450	19.609	23.131	0.000

Table 5.79: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.497	0.636	9.000	2.350	0.058	2.937	0.043
B N-N0	1.634	0.636	9.000	2.570	0.194	3.073	0.030
A:B EI N- FP N	1.976	0.900	9.000	2.200	-0.059	4.012	0.056
A:B EI N- EI N0	2.113	0.900	9.000	2.350	0.077	4.149	0.043
A:B EI N- FP N0	3.131	0.900	9.000	3.480	1.095	5.167	0.007
A:B FP N- EI N0	0.137	0.900	9.000	0.150	-1.899	2.172	0.883
A:B FP N- FP N0	1.154	0.900	9.000	1.280	-0.881	3.190	0.232
A:B EI N0- FP N0	1.018	0.900	9.000	1.130	-1.018	3.054	0.287

Table 5.80: Estimate of contrast in two-way ANOVA for variable UT.P at site 21 in year 2009 .

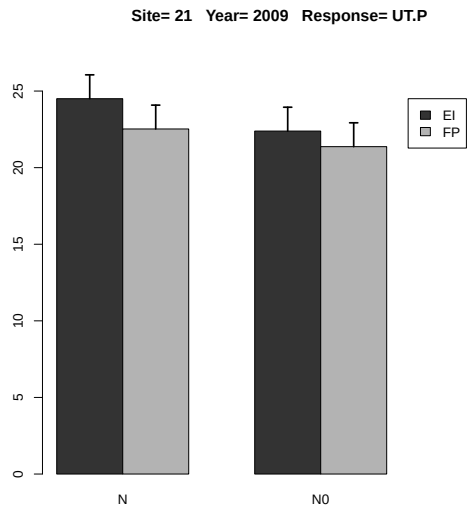

Figure 5.32: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.17 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	23.752
2	2	EI	N0	25.278
3	3	EI	N0	22.818
4	4	EI	N0	21.281
5	1	EI	N	23.482
6	2	EI	N	26.900
7	3	EI	N	26.141
8	4	EI	N	25.390
9	1	FP	N0	21.141
10	2	FP	N0	24.871
11	3	FP	N0	23.021
12	4	FP	N0	19.753
13	1	FP	N	24.195
14	2	FP	N	23.186
15	3	FP	N	22.927
16	4	FP	N	23.589

Table 5.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	25.478	0.701	36.319	0.000
A FP	23.474	0.701	33.463	0.000
A EI-FP	2.004	0.992	2.020	0.246

Table 5.82: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 21 in year 2009 .

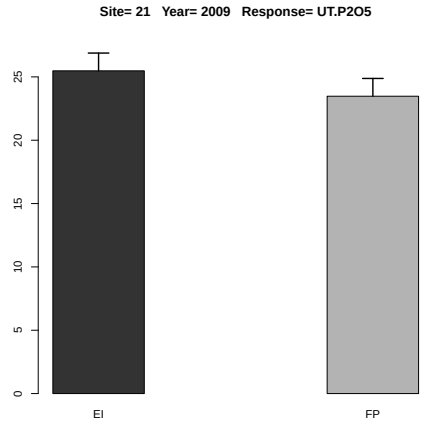

Figure 5.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9.545	9.545	5.211	8.999	0.048
B	1.000	12.065	12.065	6.587	8.999	0.030
A:B	1.000	0.843	0.843	0.460	8.999	0.514

Table 5.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.380	0.641	5.500	38.040	22.776	25.984	0.000
2	FP		22.835	0.641	5.500	35.630	21.231	24.439	0.000
3		N	24.476	0.641	5.500	38.190	22.872	26.080	0.000
4		N0	22.739	0.641	5.500	35.480	21.135	24.343	0.000
5	EI	N	25.478	0.800	9.700	31.860	23.687	27.269	0.000
6	FP	N	23.474	0.800	9.700	29.350	21.683	25.265	0.000
7	EI	N0	23.282	0.800	9.700	29.110	21.491	25.073	0.000
8	FP	N0	22.197	0.800	9.700	27.750	20.406	23.987	0.000

Table 5.84: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 21 in year 2009 .

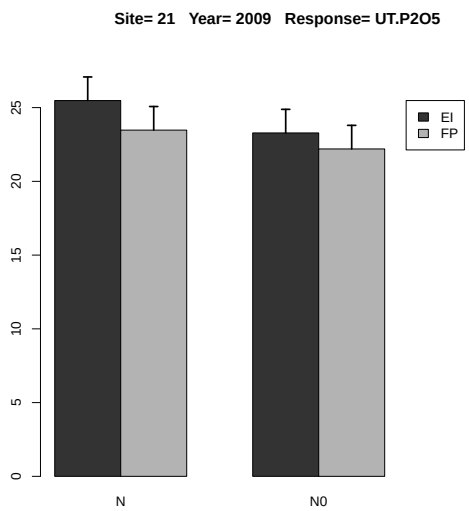

Figure 5.34: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.545	0.677	9.000	2.280	0.014	3.075	0.048
B N-N0	1.737	0.677	9.000	2.570	0.206	3.268	0.030
A:B EI N- FP N	2.004	0.957	9.000	2.090	-0.161	4.169	0.066
A:B EI N- EI N0	2.196	0.957	9.000	2.290	0.031	4.361	0.047
A:B EI N- FP N0	3.281	0.957	9.000	3.430	1.117	5.446	0.007
A:B FP N- EI N0	0.192	0.957	9.000	0.200	-1.973	2.357	0.846
A:B FP N- FP N0	1.278	0.957	9.000	1.330	-0.887	3.442	0.215
A:B EI N0- FP N0	1.085	0.957	9.000	1.130	-1.079	3.250	0.286

Table 5.85: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 21 in year 2009 .

5.1.18 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	128.779
2	2	EI	N0	122.111
3	3	EI	N0	91.875
4	4	EI	N0	84.150
5	1	EI	N	108.334
6	2	EI	N	111.638
7	3	EI	N	96.599
8	4	EI	N	87.408
9	1	FP	N0	84.472
10	2	FP	N0	89.766
11	3	FP	N0	97.749
12	4	FP	N0	86.356
13	1	FP	N	127.448
14	2	FP	N	82.935
15	3	FP	N	118.187
16	4	FP	N	88.039

Table 5.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	100.995	8.205	12.309	0.002
A FP	104.152	8.205	12.693	0.002
A EI-FP	-3.157	11.604	-0.272	0.958

Table 5.87: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 21 in year 2009 .

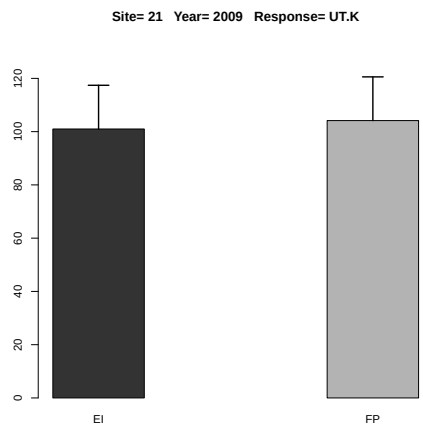

Figure 5.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	85.352	85.352	0.541	3.000	0.515
B	1.000	78.014	78.014	0.494	6.000	0.508
A:B	1.000	412.096	412.096	2.610	6.000	0.157

Table 5.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		103.862	7.115	5.900	14.600	86.403	121.320	0.000
2	FP		96.869	7.115	5.900	13.620	79.411	114.327	0.000
3		N	102.573	6.154	5.200	16.670	86.903	118.244	0.000
4		N0	98.157	6.154	5.200	15.950	82.487	113.827	0.000
5	EI	N	100.995	8.388	10.000	12.040	82.296	119.694	0.000
6	FP	N	104.152	8.388	10.000	12.420	85.453	122.851	0.000
7	EI	N0	106.729	8.388	10.000	12.720	88.030	125.427	0.000
8	FP	N0	89.586	8.388	10.000	10.680	70.887	108.285	0.000

Table 5.89: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	6.993	9.510	3.000	0.740	-23.276	37.261	0.515
B N-N0	4.416	6.282	6.000	0.700	-10.956	19.789	0.508
A:B EI N- FP N	-3.157	11.398	5.700	-0.280	-31.470	25.156	0.792
A:B EI N- EI N0	-5.734	8.885	6.000	-0.650	-27.474	16.006	0.543
A:B EI N- FP N0	11.409	11.398	5.700	1.000	-16.904	39.722	0.358
A:B FP N- EI N0	-2.576	11.398	5.700	-0.230	-30.890	25.737	0.829
A:B FP N- FP N0	14.566	8.885	6.000	1.640	-7.174	36.306	0.152
A:B EI N0- FP N0	17.143	11.398	5.700	1.500	-11.170	45.456	0.186

Table 5.90: Estimate of contrast in two-way ANOVA for variable UT.K at site 21 in year 2009 .

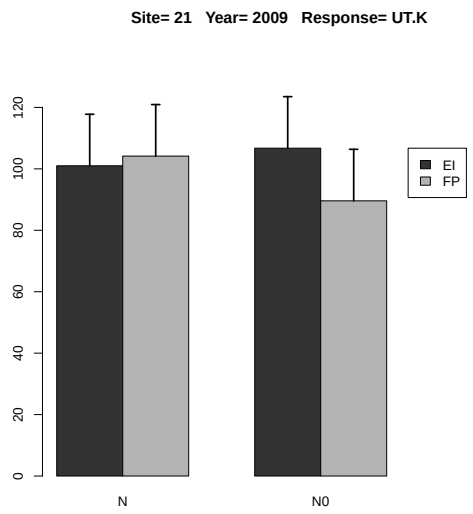

Figure 5.36: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.19 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	130.712
2	2	EI	N0	123.421
3	3	EI	N0	93.194
4	4	EI	N0	85.318
5	1	EI	N	109.697
6	2	EI	N	113.268
7	3	EI	N	97.955
8	4	EI	N	88.777
9	1	FP	N0	86.187
10	2	FP	N0	91.010
11	3	FP	N0	99.078
12	4	FP	N0	87.471
13	1	FP	N	129.005
14	2	FP	N	84.150
15	3	FP	N	119.443
16	4	FP	N	89.443

Table 5.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	102.424	8.278	12.373	0.002
A FP	105.510	8.278	12.745	0.001
A EI-FP	-3.086	11.707	-0.264	0.961

Table 5.92: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 21 in year 2009 .

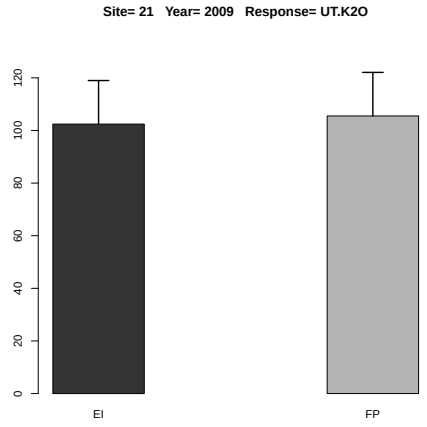

Figure 5.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	86.604	86.604	0.548	3.000	0.513
B	1.000	78.101	78.101	0.494	6.000	0.508
A:B	1.000	412.541	412.541	2.609	6.000	0.157

Table 5.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		105.293	7.183	5.900	14.660	87.658	122.928	0.000
2	FP		98.223	7.183	5.900	13.670	80.588	115.858	0.000
3		N	103.967	6.219	5.100	16.720	88.085	119.850	0.000
4		N0	99.549	6.219	5.100	16.010	83.667	115.431	0.000
5	EI	N	102.424	8.447	9.900	12.120	83.574	121.275	0.000
6	FP	N	105.510	8.447	9.900	12.490	86.660	124.361	0.000
7	EI	N0	108.161	8.447	9.900	12.800	89.311	127.012	0.000
8	FP	N0	90.936	8.447	9.900	10.760	72.086	109.787	0.000

Table 5.94: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 21 in year 2009 .

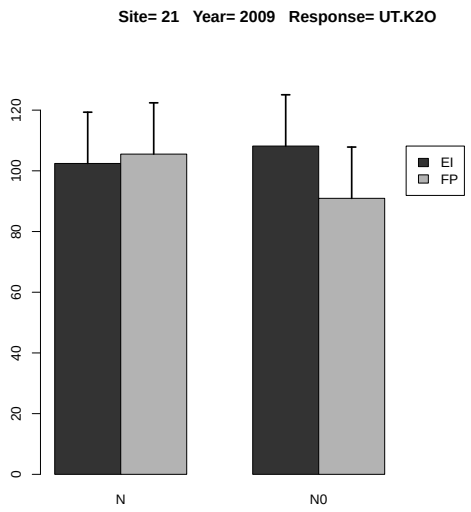

Figure 5.38: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	7.069	9.552	3.000	0.740	-23.330	37.469	0.513
B N-N0	4.419	6.287	6.000	0.700	-10.965	19.802	0.508
A:B EI N- FP N	-3.086	11.435	5.600	-0.270	-31.514	25.342	0.797
A:B EI N- EI N0	-5.737	8.891	6.000	-0.650	-27.492	16.018	0.543
A:B EI N- FP N0	11.488	11.435	5.600	1.000	-16.940	39.916	0.356
A:B FP N- EI N0	-2.651	11.435	5.600	-0.230	-31.079	25.777	0.825
A:B FP N- FP N0	14.574	8.891	6.000	1.640	-7.181	36.330	0.152
A:B EI N0- FP N0	17.225	11.435	5.600	1.510	-11.203	45.653	0.186

Table 5.95: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 21 in year 2009 .

5.1.20 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	3.428
2	2	EI	N0	3.265
3	3	EI	N0	3.054
4	4	EI	N0	3.194
5	1	EI	N	2.727
6	2	EI	N	2.456
7	3	EI	N	3.370
8	4	EI	N	3.273
9	1	FP	N0	3.206
10	2	FP	N0	3.369
11	3	FP	N0	3.506
12	4	FP	N0	3.950
13	1	FP	N	3.025
14	2	FP	N	3.496
15	3	FP	N	3.152
16	4	FP	N	4.274

Table 5.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.957	0.252	5.600	11.750	2.329	3.584	0.000
A FP	3.487	0.252	5.600	13.860	2.859	4.114	0.000
A EI-FP	-0.530	0.302	3.000	-1.750	-1.492	0.431	0.178

Table 5.97: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 21 in year 2009 .

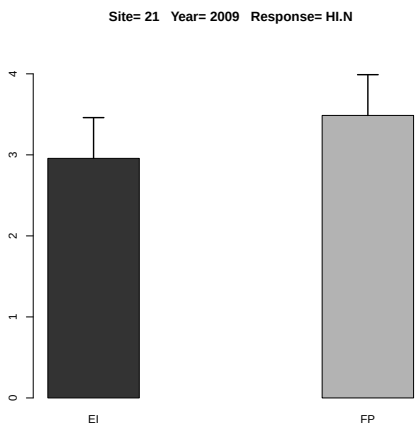

Figure 5.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.417	0.417	4.111	2.999	0.136
B	1.000	0.090	0.090	0.887	5.998	0.383
A:B	1.000	0.066	0.066	0.653	5.998	0.450

Table 5.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.096	0.164	5.600	18.900	2.688	3.504	0.000
2	FP		3.497	0.164	5.600	21.350	3.089	3.905	0.000
3		N	3.222	0.153	5.300	21.070	2.835	3.608	0.000
4		N0	3.372	0.153	5.300	22.050	2.985	3.759	0.000
5	EI	N	2.957	0.199	10.000	14.870	2.514	3.399	0.000
6	FP	N	3.487	0.199	10.000	17.540	3.044	3.929	0.000
7	EI	N0	3.235	0.199	10.000	16.270	2.793	3.678	0.000
8	FP	N0	3.508	0.199	10.000	17.650	3.065	3.951	0.000

Table 5.99: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.401	0.198	3.000	-2.030	-1.031	0.229	0.136
B N-N0	-0.150	0.159	6.000	-0.940	-0.540	0.240	0.383
A:B EI N- FP N	-0.530	0.254	6.700	-2.090	-1.136	0.076	0.077
A:B EI N- EI N0	-0.279	0.225	6.000	-1.240	-0.830	0.272	0.262
A:B EI N- FP N0	-0.551	0.254	6.700	-2.170	-1.157	0.054	0.068
A:B FP N- EI N0	0.251	0.254	6.700	0.990	-0.354	0.857	0.357
A:B FP N- FP N0	-0.021	0.225	6.000	-0.090	-0.573	0.530	0.928
A:B EI N0- FP N0	-0.273	0.254	6.700	-1.070	-0.878	0.333	0.320

Table 5.100: Estimate of contrast in two-way ANOVA for variable HI.N at site 21 in year 2009 .

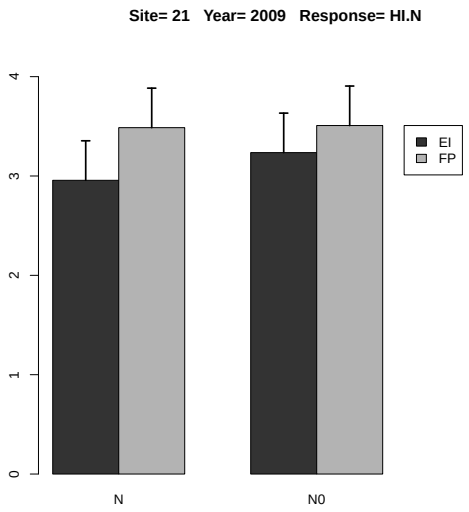

Figure 5.40: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.21 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	2.588
2	2	EI	N0	3.099
3	3	EI	N0	2.749
4	4	EI	N0	2.850
5	1	EI	N	2.650
6	2	EI	N	2.388
7	3	EI	N	2.914
8	4	EI	N	2.526
9	1	FP	N0	2.810
10	2	FP	N0	2.940
11	3	FP	N0	2.796
12	4	FP	N0	2.877
13	1	FP	N	2.426
14	2	FP	N	3.011
15	3	FP	N	2.386
16	4	FP	N	3.090

Table 5.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.619	0.154	6.000	17.010	2.243	2.996	0.000
A FP	2.728	0.154	6.000	17.720	2.351	3.105	0.000
A EI-FP	-0.109	0.218	6.000	-0.500	-0.642	0.424	0.636

Table 5.102: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 21 in year 2009 .

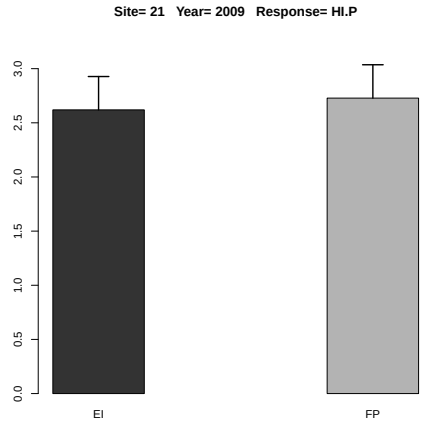

Figure 5.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.020	0.020	0.339	11.995	0.571
B	1.000	0.109	0.109	1.811	11.995	0.203
A:B	1.000	0.006	0.006	0.093	11.995	0.766

Table 5.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.720	0.087	12.000	31.410	2.532	2.909	0.000
2	FP		2.792	0.087	12.000	32.230	2.603	2.981	0.000
3		N	2.674	0.087	12.000	30.870	2.485	2.862	0.000
4		N0	2.839	0.087	12.000	32.770	2.650	3.027	0.000
5	EI	N	2.619	0.122	12.000	21.380	2.353	2.886	0.000
6	FP	N	2.728	0.122	12.000	22.270	2.461	2.995	0.000
7	EI	N0	2.822	0.122	12.000	23.030	2.555	3.088	0.000
8	FP	N0	2.856	0.122	12.000	23.310	2.589	3.123	0.000

Table 5.104: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 21 in year 2009 .

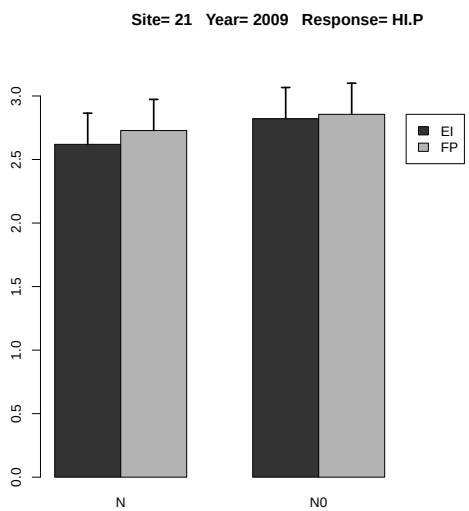

Figure 5.42: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.071	0.122	12.000	-0.580	-0.338	0.196	0.571
B N-N0	-0.165	0.122	12.000	-1.350	-0.432	0.102	0.203
A:B EI N- FP N	-0.109	0.173	12.000	-0.630	-0.486	0.269	0.542
A:B EI N- EI N0	-0.202	0.173	12.000	-1.170	-0.580	0.175	0.266
A:B EI N- FP N0	-0.236	0.173	12.000	-1.360	-0.614	0.141	0.198
A:B FP N- EI N0	-0.094	0.173	12.000	-0.540	-0.471	0.284	0.599
A:B FP N- FP N0	-0.128	0.173	12.000	-0.740	-0.505	0.250	0.476
A:B EI N0- FP N0	-0.034	0.173	12.000	-0.200	-0.411	0.344	0.848

Table 5.105: Estimate of contrast in two-way ANOVA for variable HI.P at site 21 in year 2009 .

5.1.22 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.121
2	2	EI	N0	0.135
3	3	EI	N0	0.175
4	4	EI	N0	0.181
5	1	EI	N	0.138
6	2	EI	N	0.152
7	3	EI	N	0.197
8	4	EI	N	0.192
9	1	FP	N0	0.157
10	2	FP	N0	0.173
11	3	FP	N0	0.158
12	4	FP	N0	0.146
13	1	FP	N	0.120
14	2	FP	N	0.189
15	3	FP	N	0.123
16	4	FP	N	0.196

Table 5.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.170	0.018	5.900	9.510	0.126	0.213	0.000
A FP	0.157	0.018	5.900	8.800	0.113	0.201	0.000
A EI-FP	0.013	0.023	3.000	0.540	-0.061	0.087	0.626

Table 5.107: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 21 in year 2009 .

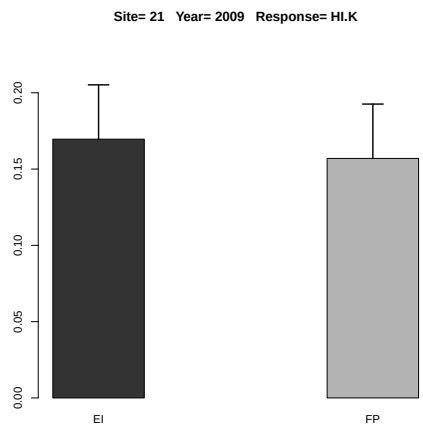

Figure 5.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.039	3.000	0.856
B	1.000	0.000	0.000	0.501	5.972	0.506
A:B	1.000	0.000	0.000	0.732	5.972	0.425

Table 5.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.161	0.013	6.000	12.550	0.130	0.193	0.000
2	FP		0.158	0.013	6.000	12.280	0.126	0.189	0.000
3		N	0.163	0.011	5.000	15.200	0.136	0.191	0.000
4		N0	0.156	0.011	5.000	14.500	0.128	0.183	0.000
5	EI	N	0.170	0.015	9.600	11.390	0.136	0.203	0.000
6	FP	N	0.157	0.015	9.600	10.540	0.124	0.190	0.000
7	EI	N0	0.153	0.015	9.600	10.270	0.120	0.186	0.000
8	FP	N0	0.159	0.015	9.600	10.650	0.125	0.192	0.000

Table 5.109: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 21 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.004	0.018	3.000	0.200	-0.053	0.060	0.856
B N-N0	0.007	0.011	6.000	0.710	-0.019	0.034	0.506
A:B EI N- FP N	0.013	0.021	5.200	0.610	-0.040	0.065	0.567
A:B EI N- EI N0	0.017	0.015	6.000	1.110	-0.020	0.054	0.312
A:B EI N- FP N0	0.011	0.021	5.200	0.530	-0.041	0.063	0.615
A:B FP N- EI N0	0.004	0.021	5.200	0.200	-0.048	0.056	0.852
A:B FP N- FP N0	-0.002	0.015	6.000	-0.100	-0.038	0.035	0.920
A:B EI N0- FP N0	-0.006	0.021	5.200	-0.270	-0.058	0.047	0.795

Table 5.110: Estimate of contrast in two-way ANOVA for variable HI.K at site 21 in year 2009 .

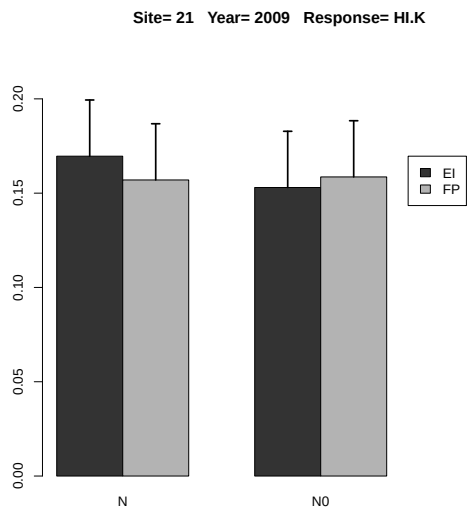

Figure 5.44: Estimated treatment means and standard error in the 2-way ANOVA.

5.1.23 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	27.375
2	2	EI	N	29.225
3	3	EI	N	30.058
4	4	EI	N	27.913
5	1	FP	N	48.693
6	2	FP	N	42.771
7	3	FP	N	46.243
8	4	FP	N	46.921

Table 5.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	28.643	0.978	6.000	29.280	26.249	31.036	0.000
A FP	46.157	0.978	6.000	47.180	43.763	48.551	0.000
A EI-FP	-17.514	1.383	6.000	-12.660	-20.900	-14.129	0.000

Table 5.112: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 21 in year 2009 .

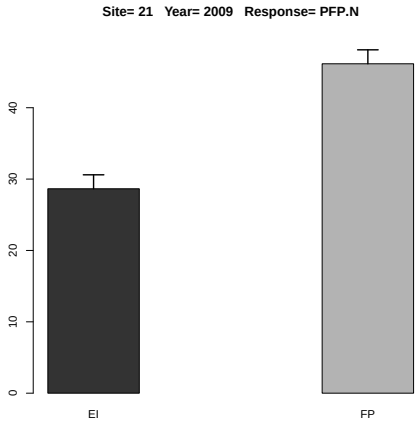

Figure 5.45: Estimated treatment means and standard error in the one-way ANOVA.

5.1.24 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	250.802
2	2	EI	N	267.751
3	3	EI	N	275.386
4	4	EI	N	255.726
5	1	FP	N	113.144
6	2	FP	N	99.385
7	3	FP	N	107.451
8	4	FP	N	109.028

Table 5.113: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	262.416	4.454	6.000	58.920	251.517	273.315	0.000
A FP	107.252	4.454	6.000	24.080	96.353	118.150	0.000
A EI-FP	155.164	6.299	6.000	24.630	139.751	170.577	0.000

Table 5.114: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 21 in year 2009 .

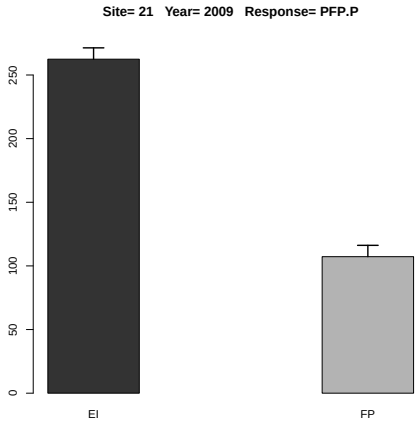

Figure 5.46: Estimated treatment means and standard error in the one-way ANOVA.

5.1.25 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	109.500
2	2	EI	N	116.900
3	3	EI	N	120.233
4	4	EI	N	111.650
5	1	FP	N	49.399
6	2	FP	N	43.391
7	3	FP	N	46.913
8	4	FP	N	47.601

Table 5.115: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	114.571	1.945	6.000	58.920	109.812	119.329	0.000
A FP	46.826	1.945	6.000	24.080	42.068	51.584	0.000
A EI-FP	67.745	2.750	6.000	24.630	61.015	74.474	0.000

Table 5.116: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 21 in year 2009 .

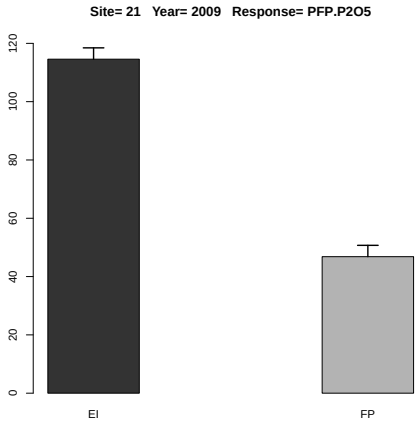

Figure 5.47: Estimated treatment means and standard error in the one-way ANOVA.

5.1.26 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	87.973
2	2	EI	N	93.918
3	3	EI	N	96.596
4	4	EI	N	89.700

Table 5.117: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

There is no or sufficient data for this response variable at this site and year.

5.1.27 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	73.000
2	2	EI	N	77.933
3	3	EI	N	80.156
4	4	EI	N	74.433

Table 5.118: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

There is no or sufficient data for this response variable at this site and year.

5.1.28 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.652
2	2	EI	N	0.725
3	3	EI	N	0.751
4	4	EI	N	0.684
5	1	FP	N	1.057
6	2	FP	N	1.014
7	3	FP	N	1.096
8	4	FP	N	1.065

Table 5.119: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.703	0.020	5.800	35.720	0.654	0.751	0.000
A FP	1.058	0.020	5.800	53.750	1.009	1.106	0.000
A EI-FP	-0.355	0.025	3.000	-14.030	-0.436	-0.274	0.001

Table 5.120: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 21 in year 2009 .

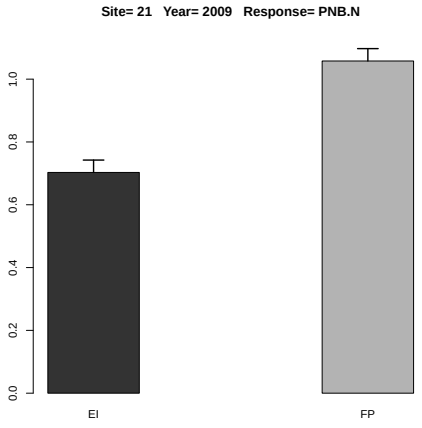

Figure 5.48: Estimated treatment means and standard error in the one-way ANOVA.

5.1.29 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.627
2	2	EI	N	0.696
3	3	EI	N	0.716
4	4	EI	N	0.665
5	1	FP	N	0.272
6	2	FP	N	0.278
7	3	FP	N	0.258
8	4	FP	N	0.283

Table 5.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.676	0.014	6.000	47.320	0.641	0.711	0.000
A FP	0.273	0.014	6.000	19.090	0.238	0.308	0.000
A EI-FP	0.403	0.020	6.000	19.960	0.354	0.453	0.000

Table 5.122: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 21 in year 2009 .

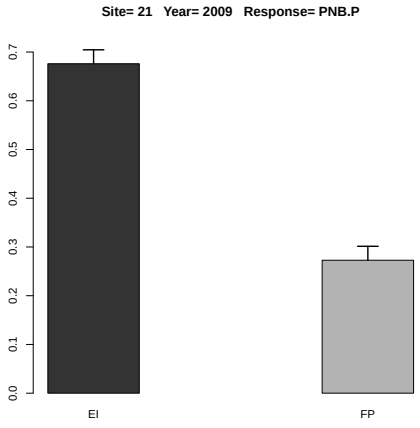

Figure 5.49: Estimated treatment means and standard error in the one-way ANOVA.

5.1.30 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.176
2	2	EI	N	0.197
3	3	EI	N	0.213
4	4	EI	N	0.188

Table 5.123: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

There is no or sufficient data for this response variable at this site and year.

5.1.31 Response Variable AE

	rep	A	B	y
1	1	EI	N	1.092
2	2	EI	N	1.712
3	3	EI	N	5.283
4	4	EI	N	4.533
5	1	FP	N	7.679
6	2	FP	N	-4.607
7	3	FP	N	3.014
8	4	FP	N	9.521

Table 5.124: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	3.155	2.152	1.466	0.408
A FP	3.902	2.152	1.813	0.296
A EI-FP	-0.747	3.043	-0.245	0.966

Table 5.125: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 21 in year 2009 .

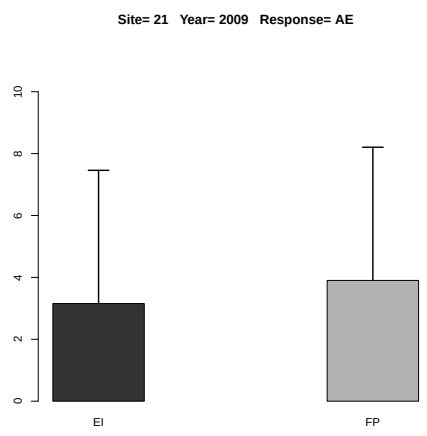

Figure 5.50: Estimated treatment means and standard error in the one-way ANOVA.

5.1.32 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.130
2	2	EI	N	0.240
3	3	EI	N	0.258
4	4	EI	N	0.205
5	1	FP	N	0.254
6	2	FP	N	-0.091
7	3	FP	N	0.210
8	4	FP	N	0.194

Table 5.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.208	0.068	3.076	0.102
A FP	0.142	0.068	2.098	0.229
A EI-FP	0.066	0.096	0.691	0.776

Table 5.127: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 21 in year 2009 .

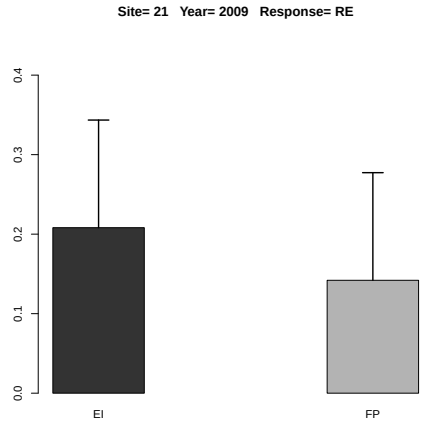

Figure 5.51: Estimated treatment means and standard error in the one-way ANOVA.

5.2 Year 2010

There are 60 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

5.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	5702.000
2	2	EI	N0	5057.000
3	3	EI	N0	6102.000
4	4	EI	N0	5521.000
5	1	EI	N	7224.000
6	2	EI	N	7443.000
7	3	EI	N	6760.000
8	4	EI	N	6115.000
9	1	FP	N0	5108.000
10	2	FP	N0	5805.000
11	3	FP	N0	5521.000
12	4	FP	N0	5186.000
13	1	FP	N	7688.000
14	2	FP	N	6605.000
15	3	FP	N	6992.000
16	4	FP	N	6837.000

Table 5.128: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	6885.500	242.259	28.422	0.000
A FP	7030.500	242.259	29.021	0.000
A EI-FP	-145.000	342.606	-0.423	0.904

Table 5.129: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 21 in year 2010 .

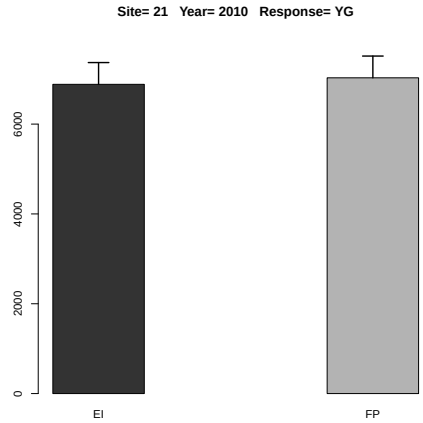

Figure 5.52: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2070.250	2070.250	0.010	12.127	0.923
B	1.000	8500140.250	8500140.250	39.842	12.127	0.000
A:B	1.000	112560.250	112560.250	0.528	12.127	0.481

Table 5.130: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6240.500	163.304	12.100	38.210	5885.106	6595.894	0.000
2	FP		6217.750	163.304	12.100	38.070	5862.356	6573.144	0.000
3		N	6958.000	163.304	12.100	42.610	6602.606	7313.394	0.000
4		N0	5500.250	163.304	12.100	33.680	5144.856	5855.644	0.000
5	EI	N	6885.500	230.946	12.100	29.810	6382.896	7388.104	0.000
6	FP	N	7030.500	230.946	12.100	30.440	6527.896	7533.104	0.000
7	EI	N0	5595.500	230.946	12.100	24.230	5092.896	6098.104	0.000
8	FP	N0	5405.000	230.946	12.100	23.400	4902.396	5907.604	0.000

Table 5.131: Estimate of treatment means in tow-way ANOVA for variable YG at site 21 in year 2010 .

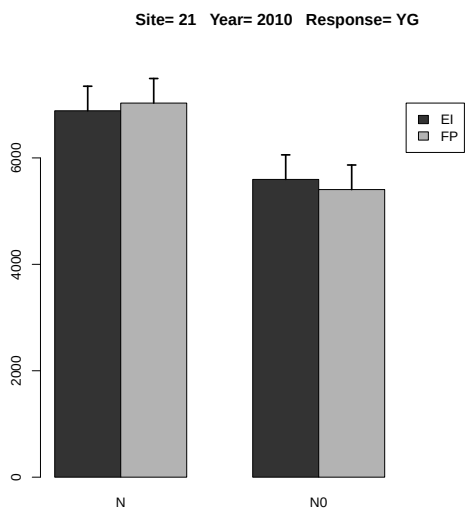

Figure 5.53: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	22.750	230.946	12.100	0.100	-479.853	525.354	0.923
B N-N0	1457.750	230.946	12.100	6.310	955.146	1960.353	0.000
A:B EI N- FP N	-145.000	326.607	12.100	-0.440	-855.789	565.789	0.665
A:B EI N- EI N0	1290.000	326.607	12.100	3.950	579.211	2000.789	0.002
A:B EI N- FP N0	1480.500	326.607	12.100	4.530	769.711	2191.289	0.001
A:B FP N- EI N0	1435.000	326.607	12.100	4.390	724.211	2145.789	0.001
A:B FP N- FP N0	1625.500	326.607	12.100	4.980	914.711	2336.289	0.000
A:B EI N0- FP N0	190.500	326.607	12.100	0.580	-520.289	901.289	0.570

Table 5.132: Estimate of contrast in two-way ANOVA for variable YG at site 21 in year 2010 .

5.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	5495.000
2	2	EI	N0	4462.000
3	3	EI	N0	5923.000
4	4	EI	N0	5367.000
5	1	EI	N	7133.000
6	2	EI	N	6775.000
7	3	EI	N	6388.000
8	4	EI	N	5732.000
9	1	FP	N0	4807.000
10	2	FP	N0	5318.000
11	3	FP	N0	4894.000
12	4	FP	N0	4813.000
13	1	FP	N	6748.000
14	2	FP	N	6968.000
15	3	FP	N	5938.000
16	4	FP	N	7321.000

Table 5.133: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	6507.000	334.707	19.441	0.001
A FP	6743.750	334.707	20.148	0.000
A EI-FP	-236.750	473.347	-0.500	0.871

Table 5.134: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 21 in year 2010 .

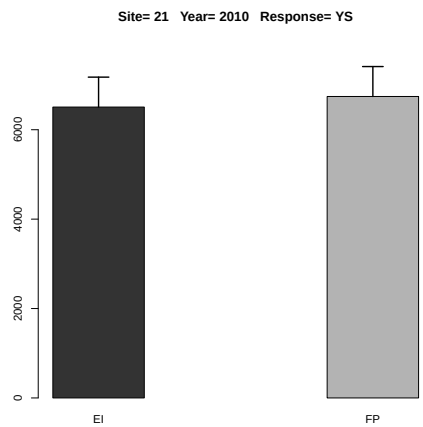

Figure 5.54: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13689.000	13689.000	0.048	11.952	0.830
B	1.000	8886361.000	8886361.000	31.170	11.952	0.000
A:B	1.000	348690.250	348690.250	1.223	11.952	0.291

Table 5.135: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5909.375	188.776	12.000	31.300	5497.882	6320.868	0.000
2	FP		5850.875	188.776	12.000	30.990	5439.382	6262.368	0.000
3		N	6625.375	188.776	12.000	35.100	6213.882	7036.868	0.000
4		N0	5134.875	188.776	12.000	27.200	4723.382	5546.368	0.000
5	EI	N	6507.000	266.970	12.000	24.370	5925.061	7088.939	0.000
6	FP	N	6743.750	266.970	12.000	25.260	6161.811	7325.689	0.000
7	EI	N0	5311.750	266.970	12.000	19.900	4729.811	5893.689	0.000
8	FP	N0	4958.000	266.970	12.000	18.570	4376.061	5539.939	0.000

Table 5.136: Estimate of treatment means in tow-way ANOVA for variable YS at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	58.500	266.970	12.000	0.220	-523.439	640.439	0.830
B N-N0	1490.500	266.970	12.000	5.580	908.561	2072.439	0.000
A:B EI N- FP N	-236.750	377.552	12.000	-0.630	-1059.736	586.236	0.542
A:B EI N- EI N0	1195.250	377.552	12.000	3.170	372.264	2018.236	0.008
A:B EI N- FP N0	1549.000	377.552	12.000	4.100	726.014	2371.985	0.002
A:B FP N- EI N0	1432.000	377.552	12.000	3.790	609.014	2254.985	0.003
A:B FP N- FP N0	1785.750	377.552	12.000	4.730	962.764	2608.735	0.000
A:B EI N0- FP N0	353.750	377.552	12.000	0.940	-469.236	1176.736	0.367

Table 5.137: Estimate of contrast in two-way ANOVA for variable YS at site 21 in year 2010 .

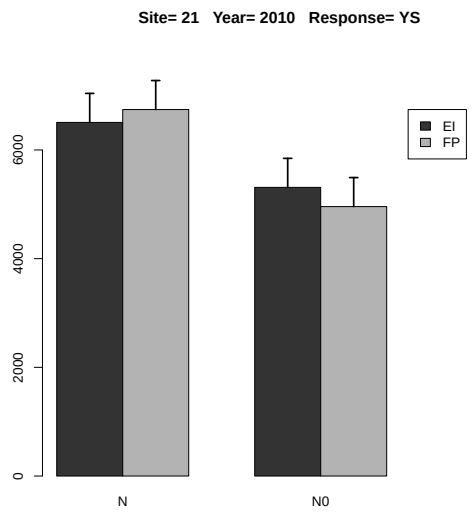

Figure 5.55: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	11197.000
2	2	EI	N0	9519.000
3	3	EI	N0	12025.000
4	4	EI	N0	10888.000
5	1	EI	N	14357.000
6	2	EI	N	14218.000
7	3	EI	N	13148.000
8	4	EI	N	11847.000
9	1	FP	N0	9915.000
10	2	FP	N0	11123.000
11	3	FP	N0	10415.000
12	4	FP	N0	9999.000
13	1	FP	N	14436.000
14	2	FP	N	13573.000
15	3	FP	N	12930.000
16	4	FP	N	14158.000

Table 5.138: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	13392.500	466.707	28.696	0.000
A FP	13774.250	466.707	29.514	0.001
A EI-FP	-381.750	660.024	-0.578	0.833

Table 5.139: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 21 in year 2010 .

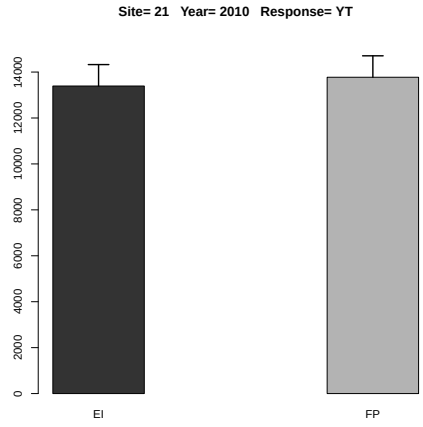

Figure 5.56: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	26406.250	26406.250	0.033	10.770	0.859
B	1.000	34768712.250	34768712.250	43.584	10.770	0.000
A:B	1.000	857476.000	857476.000	1.075	10.770	0.323

Table 5.140: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12149.875	315.782	10.800	38.480	11453.028	12846.722	0.000
2	FP		12068.625	315.782	10.800	38.220	11371.778	12765.472	0.000
3		N	13583.375	315.782	10.800	43.020	12886.528	14280.222	0.000
4		N0	10635.125	315.782	10.800	33.680	9938.278	11331.972	0.000
5	EI	N	13392.500	446.583	10.800	29.990	12407.009	14377.991	0.000
6	FP	N	13774.250	446.583	10.800	30.840	12788.759	14759.741	0.000
7	EI	N0	10907.250	446.583	10.800	24.420	9921.759	11892.741	0.000
8	FP	N0	10363.000	446.583	10.800	23.210	9377.509	11348.491	0.000

Table 5.141: Estimate of treatment means in tow-way ANOVA for variable YT at site 21 in year 2010 .

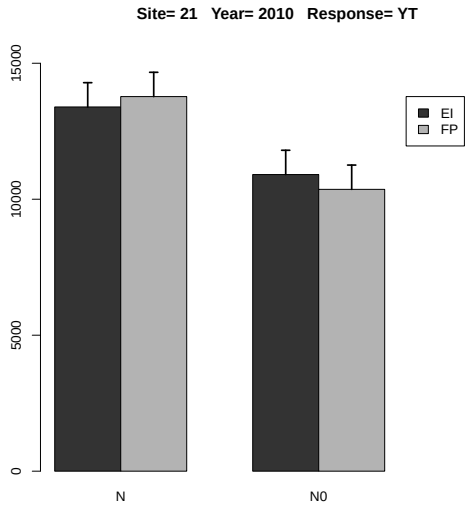

Figure 5.57: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	81.250	446.583	10.800	0.180	-904.241	1066.741	0.859
B N-N0	2948.250	446.583	10.800	6.600	1962.759	3933.741	0.000
A:B EI N- FP N	-381.750	631.563	10.800	-0.600	-1775.445	1011.945	0.558
A:B EI N- EI N0	2485.250	631.563	10.800	3.940	1091.555	3878.945	0.002
A:B EI N- FP N0	3029.500	631.563	10.800	4.800	1635.805	4423.195	0.001
A:B FP N- EI N0	2867.000	631.563	10.800	4.540	1473.305	4260.695	0.001
A:B FP N- FP N0	3411.250	631.563	10.800	5.400	2017.555	4804.945	0.000
A:B EI N0- FP N0	544.250	631.563	10.800	0.860	-849.445	1937.945	0.408

Table 5.142: Estimate of contrast in two-way ANOVA for variable YT at site 21 in year 2010 .

5.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.509
2	2	EI	N0	0.531
3	3	EI	N0	0.507
4	4	EI	N0	0.507
5	1	EI	N	0.503
6	2	EI	N	0.523
7	3	EI	N	0.514
8	4	EI	N	0.516
9	1	FP	N0	0.515
10	2	FP	N0	0.522
11	3	FP	N0	0.530
12	4	FP	N0	0.519
13	1	FP	N	0.533
14	2	FP	N	0.487
15	3	FP	N	0.541
16	4	FP	N	0.483

Table 5.143: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.514	0.013	39.898	0.000
A FP	0.511	0.013	39.624	0.000
A EI-FP	0.004	0.018	0.194	0.979

Table 5.144: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 21 in year 2010 .

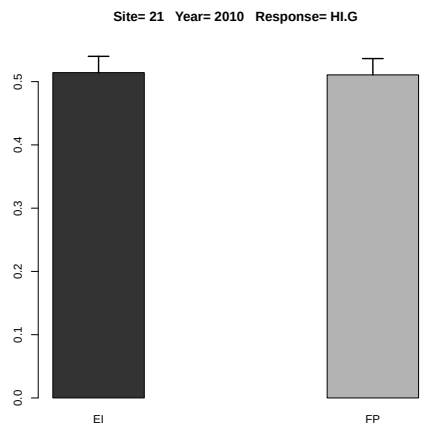

Figure 5.58: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.049	5.999	0.832
B	1.000	0.000	0.000	0.467	5.960	0.520
A:B	1.000	0.000	0.000	0.561	5.960	0.482

Table 5.145: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.514	0.007	6.000	77.180	0.498	0.530	0.000
2	FP		0.516	0.007	6.000	77.500	0.500	0.532	0.000
3		N	0.512	0.006	11.400	85.140	0.499	0.526	0.000
4		N0	0.518	0.006	11.400	85.990	0.504	0.531	0.000
5	EI	N	0.514	0.008	11.400	60.410	0.496	0.533	0.000
6	FP	N	0.511	0.008	11.400	60.000	0.492	0.529	0.000
7	EI	N0	0.514	0.008	11.400	60.350	0.495	0.532	0.000
8	FP	N0	0.521	0.008	11.400	61.260	0.503	0.540	0.000

Table 5.146: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.002	0.009	6.000	-0.220	-0.025	0.021	0.832
B N-N0	-0.005	0.007	6.000	-0.680	-0.024	0.013	0.520
A:B EI N- FP N	0.004	0.012	11.400	0.290	-0.023	0.030	0.775
A:B EI N- EI N0	0.000	0.011	6.000	0.050	-0.025	0.026	0.965
A:B EI N- FP N0	-0.007	0.012	11.400	-0.600	-0.034	0.019	0.561
A:B FP N- EI N0	-0.003	0.012	11.400	-0.250	-0.029	0.023	0.805
A:B FP N- FP N0	-0.011	0.011	6.000	-1.010	-0.037	0.015	0.350
A:B EI N0- FP N0	-0.008	0.012	11.400	-0.640	-0.034	0.019	0.535

Table 5.147: Estimate of contrast in two-way ANOVA for variable HI.G at site 21 in year 2010 .

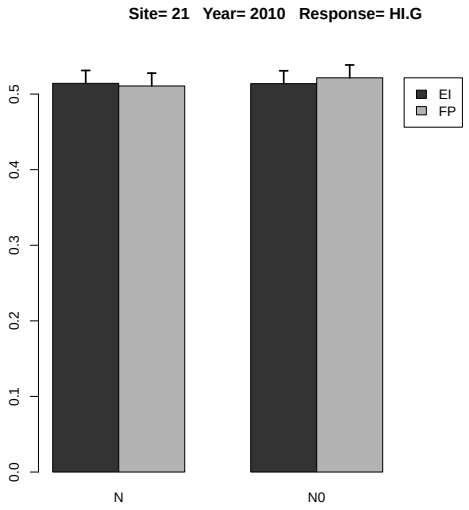

Figure 5.59: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	73.556
2	2	EI	N0	66.752
3	3	EI	N0	78.716
4	4	EI	N0	57.418
5	1	EI	N	109.082
6	2	EI	N	89.316
7	3	EI	N	100.048
8	4	EI	N	89.279
9	1	FP	N0	58.742
10	2	FP	N0	70.240
11	3	FP	N0	69.565
12	4	FP	N0	59.639
13	1	FP	N	116.089
14	2	FP	N	131.440
15	3	FP	N	131.450
16	4	FP	N	101.188

Table 5.148: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	96.931	5.828	16.633	0.001
A FP	120.041	5.828	20.599	0.001
A EI-FP	-23.110	8.241	-2.804	0.127

Table 5.149: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 21 in year 2010 .

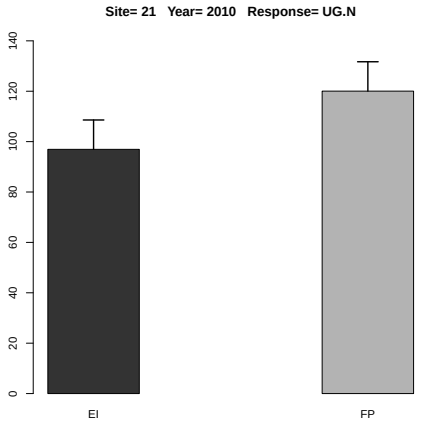

Figure 5.60: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	98.157	98.157	2.826	3.000	0.191
B	1.000	6941.489	6941.489	199.881	6.000	0.000
A:B	1.000	765.856	765.856	22.053	6.000	0.003

Table 5.150: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		83.021	4.713	5.500	17.610	71.204	94.838	0.000
2	FP		92.294	4.713	5.500	19.580	80.477	104.111	0.000
3		N	108.486	4.096	3.900	26.480	97.013	119.959	0.000
4		N0	66.829	4.096	3.900	16.310	55.356	78.301	0.000
5	EI	N	96.931	5.153	7.500	18.810	84.919	108.944	0.000
6	FP	N	120.041	5.153	7.500	23.290	108.029	132.054	0.000
7	EI	N0	69.111	5.153	7.500	13.410	57.098	81.123	0.000
8	FP	N0	64.546	5.153	7.500	12.530	52.534	76.559	0.000

Table 5.151: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 21 in year 2010 .

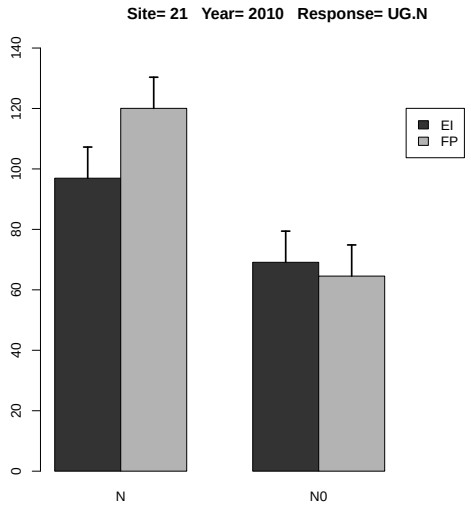

Figure 5.61: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-9.273	5.516	3.000	-1.680	-26.827	8.281	0.191
B N-N0	41.658	2.946	6.000	14.140	34.448	48.868	0.000
A:B EI N- FP N	-23.110	6.253	4.800	-3.700	-39.429	-6.791	0.015
A:B EI N- EI N0	27.821	4.167	6.000	6.680	17.624	38.017	0.000
A:B EI N- FP N0	32.385	6.253	4.800	5.180	16.066	48.704	0.004
A:B FP N- EI N0	50.931	6.253	4.800	8.140	34.612	67.250	0.001
A:B FP N- FP N0	55.495	4.167	6.000	13.320	45.298	65.691	0.000
A:B EI N0- FP N0	4.564	6.253	4.800	0.730	-11.755	20.883	0.500

Table 5.152: Estimate of contrast in two-way ANOVA for variable UG.N at site 21 in year 2010 .

5.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	11.404
2	2	EI	N0	9.608
3	3	EI	N0	12.204
4	4	EI	N0	9.938
5	1	EI	N	13.003
6	2	EI	N	13.397
7	3	EI	N	13.520
8	4	EI	N	11.618
9	1	FP	N0	9.705
10	2	FP	N0	11.030
11	3	FP	N0	11.042
12	4	FP	N0	9.853
13	1	FP	N	13.838
14	2	FP	N	16.512
15	3	FP	N	13.984
16	4	FP	N	12.990

Table 5.153: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	12.885	0.415	31.065	0.000
A FP	14.331	0.415	34.552	0.000
A EI-FP	-1.447	0.587	-2.466	0.167

Table 5.154: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 21 in year 2010 .

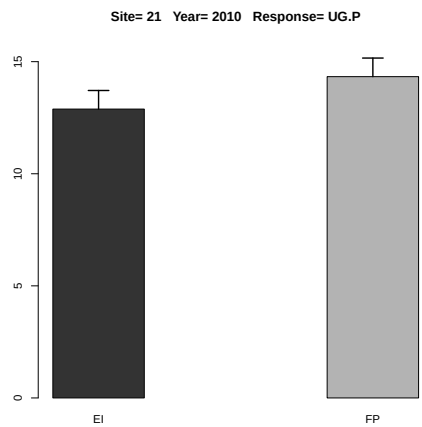

Figure 5.62: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.477	0.477	0.720	3.000	0.459
B	1.000	36.241	36.241	54.687	5.999	0.000
A:B	1.000	3.340	3.340	5.040	5.999	0.066

Table 5.155: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.837	0.485	5.800	24.380	10.641	13.033	0.000
2	FP		12.369	0.485	5.800	25.480	11.174	13.565	0.000
3		N	13.608	0.423	4.900	32.200	12.512	14.704	0.000
4		N0	10.598	0.423	4.900	25.080	9.502	11.694	0.000
5	EI	N	12.885	0.564	9.500	22.830	11.619	14.151	0.000
6	FP	N	14.331	0.564	9.500	25.390	13.065	15.598	0.000
7	EI	N0	10.789	0.564	9.500	19.110	9.522	12.055	0.000
8	FP	N0	10.408	0.564	9.500	18.440	9.141	11.674	0.000

Table 5.156: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.533	0.628	3.000	-0.850	-2.531	1.466	0.459
B N-N0	3.010	0.407	6.000	7.400	2.014	4.006	0.000
A:B EI N- FP N	-1.446	0.748	5.600	-1.930	-3.313	0.420	0.105
A:B EI N- EI N0	2.096	0.576	6.000	3.640	0.688	3.505	0.011
A:B EI N- FP N0	2.477	0.748	5.600	3.310	0.610	4.344	0.018
A:B FP N- EI N0	3.543	0.748	5.600	4.730	1.676	5.410	0.004
A:B FP N- FP N0	3.924	0.576	6.000	6.820	2.515	5.332	0.000
A:B EI N0- FP N0	0.381	0.748	5.600	0.510	-1.486	2.248	0.630

Table 5.157: Estimate of contrast in two-way ANOVA for variable UG.P at site 21 in year 2010 .

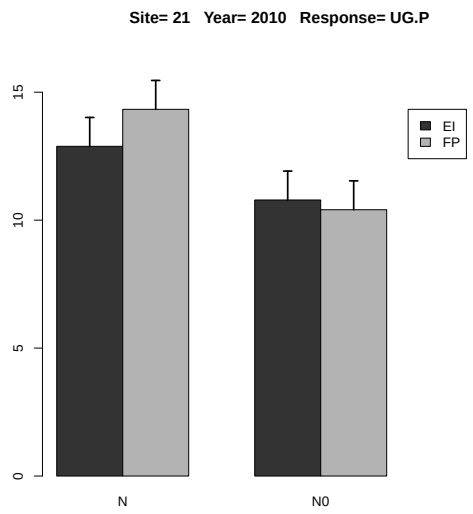

Figure 5.63: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	26.115
2	2	EI	N0	22.003
3	3	EI	N0	27.947
4	4	EI	N0	22.758
5	1	EI	N	29.777
6	2	EI	N	30.680
7	3	EI	N	30.961
8	4	EI	N	26.606
9	1	FP	N0	22.225
10	2	FP	N0	25.258
11	3	FP	N0	25.286
12	4	FP	N0	22.564
13	1	FP	N	31.690
14	2	FP	N	37.814
15	3	FP	N	32.023
16	4	FP	N	29.748

Table 5.158: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	29.506	0.950	31.065	0.000
A FP	32.819	0.950	34.552	0.000
A EI-FP	-3.313	1.343	-2.466	0.167

Table 5.159: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 21 in year 2010 .

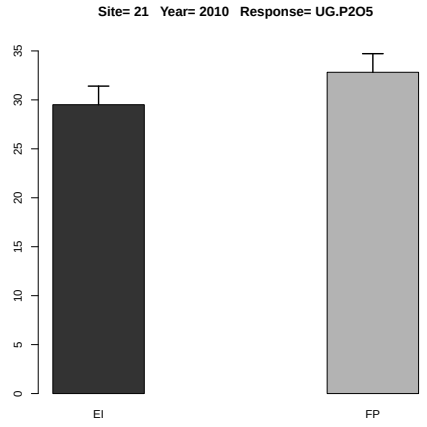

Figure 5.64: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.502	2.502	0.720	3.000	0.459
B	1.000	190.050	190.050	54.687	6.000	0.000
A:B	1.000	17.514	17.514	5.040	6.000	0.066

Table 5.160: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		27.106	1.112	5.800	24.380	24.367	29.845	0.000
2	FP		28.326	1.112	5.800	25.480	25.587	31.064	0.000
3		N	31.162	0.968	4.900	32.200	28.653	33.671	0.000
4		N0	24.270	0.968	4.900	25.080	21.761	26.778	0.000
5	EI	N	29.506	1.293	9.500	22.830	26.607	32.406	0.000
6	FP	N	32.819	1.293	9.500	25.390	29.919	35.718	0.000
7	EI	N0	24.706	1.293	9.500	19.110	21.806	27.605	0.000
8	FP	N0	23.833	1.293	9.500	18.440	20.934	26.733	0.000

Table 5.161: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 21 in year 2010 .

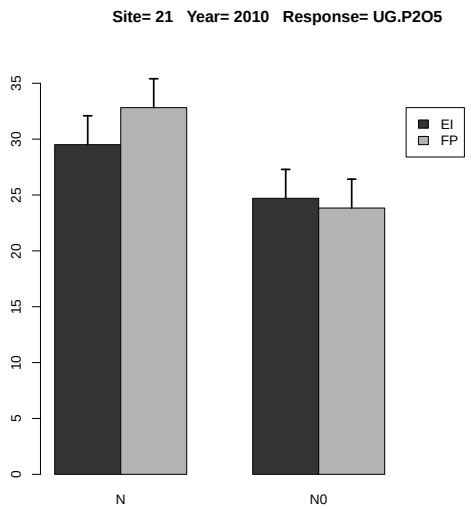

Figure 5.65: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.220	1.438	3.000	-0.850	-5.797	3.357	0.459
B N-N0	6.893	0.932	6.000	7.400	4.612	9.174	0.000
A:B EI N- FP N	-3.312	1.714	5.600	-1.930	-7.588	0.963	0.105
A:B EI N- EI N0	4.800	1.318	6.000	3.640	1.575	8.026	0.011
A:B EI N- FP N0	5.673	1.714	5.600	3.310	1.398	9.948	0.018
A:B FP N- EI N0	8.113	1.714	5.600	4.730	3.838	12.388	0.004
A:B FP N- FP N0	8.985	1.318	6.000	6.820	5.760	12.211	0.000
A:B EI N0- FP N0	0.873	1.714	5.600	0.510	-3.403	5.148	0.630

Table 5.162: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 21 in year 2010
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5.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	10.834
2	2	EI	N0	10.620
3	3	EI	N0	11.594
4	4	EI	N0	11.594
5	1	EI	N	13.726
6	2	EI	N	13.397
7	3	EI	N	11.492
8	4	EI	N	12.841
9	1	FP	N0	9.705
10	2	FP	N0	11.030
11	3	FP	N0	12.146
12	4	FP	N0	9.335
13	1	FP	N	14.607
14	2	FP	N	19.154
15	3	FP	N	13.984
16	4	FP	N	13.674

Table 5.163: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	12.864	0.817	15.751	0.001
A FP	15.355	0.817	18.801	0.001
A EI-FP	-2.491	1.155	-2.157	0.218

Table 5.164: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 21 in year 2010 .

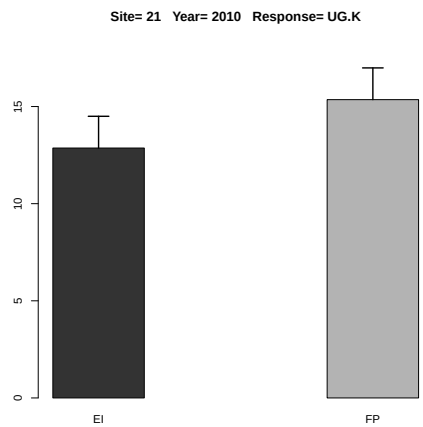

Figure 5.66: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.025	3.025	1.392	5.998	0.283
B	1.000	42.312	42.312	19.464	6.000	0.005
A:B	1.000	9.593	9.593	4.413	6.000	0.080

Table 5.165: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.012	0.565	6.000	21.270	10.630	13.394	0.000
2	FP		12.954	0.565	6.000	22.940	11.572	14.336	0.000
3		N	14.110	0.543	11.900	25.960	12.925	15.294	0.000
4		N0	10.857	0.543	11.900	19.980	9.672	12.042	0.000
5	EI	N	12.864	0.769	11.900	16.740	11.188	14.540	0.000
6	FP	N	15.355	0.769	11.900	19.980	13.679	17.031	0.000
7	EI	N0	11.160	0.769	11.900	14.520	9.485	12.836	0.000
8	FP	N0	10.554	0.769	11.900	13.730	8.878	12.230	0.000

Table 5.166: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.942	0.799	6.000	-1.180	-2.897	1.012	0.283
B N-N0	3.252	0.737	6.000	4.410	1.448	5.056	0.004
A:B EI N- FP N	-2.491	1.087	11.900	-2.290	-4.861	-0.121	0.041
A:B EI N- EI N0	1.704	1.043	6.000	1.630	-0.847	4.255	0.153
A:B EI N- FP N0	2.310	1.087	11.900	2.130	-0.060	4.680	0.055
A:B FP N- EI N0	4.195	1.087	11.900	3.860	1.825	6.564	0.002
A:B FP N- FP N0	4.801	1.043	6.000	4.610	2.250	7.352	0.004
A:B EI N0- FP N0	0.606	1.087	11.900	0.560	-1.764	2.976	0.587

Table 5.167: Estimate of contrast in two-way ANOVA for variable UG.K at site 21 in year 2010 .

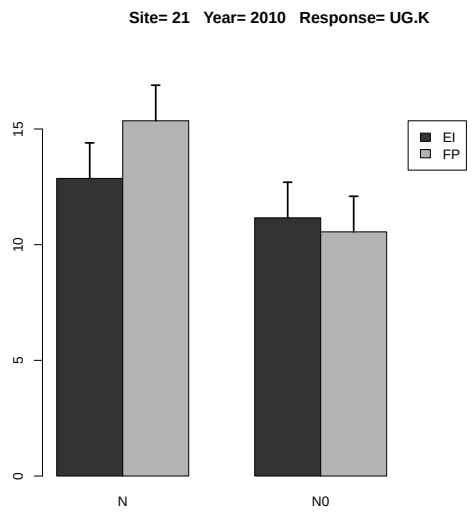

Figure 5.67: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	13.055
2	2	EI	N0	12.797
3	3	EI	N0	13.971
4	4	EI	N0	13.971
5	1	EI	N	16.539
6	2	EI	N	16.144
7	3	EI	N	13.848
8	4	EI	N	15.474
9	1	FP	N0	11.695
10	2	FP	N0	13.291
11	3	FP	N0	14.636
12	4	FP	N0	11.248
13	1	FP	N	17.602
14	2	FP	N	23.081
15	3	FP	N	16.851
16	4	FP	N	16.477

Table 5.168: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	15.501	0.984	15.751	0.001
A FP	18.503	0.984	18.801	0.001
A EI-FP	-3.001	1.392	-2.157	0.218

Table 5.169: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 21 in year 2010 .

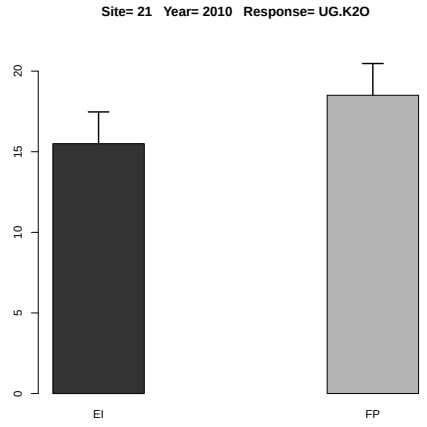

Figure 5.68: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4.392	4.392	1.392	5.998	0.283
B	1.000	61.438	61.438	19.464	6.000	0.005
A:B	1.000	13.929	13.929	4.413	6.000	0.080

Table 5.170: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14.475	0.681	6.000	21.270	12.809	16.140	0.000
2	FP		15.610	0.681	6.000	22.940	13.945	17.276	0.000
3		N	17.002	0.655	11.900	25.960	15.574	18.430	0.000
4		N0	13.083	0.655	11.900	19.980	11.655	14.511	0.000
5	EI	N	15.501	0.926	11.900	16.740	13.482	17.521	0.000
6	FP	N	18.503	0.926	11.900	19.980	16.483	20.522	0.000
7	EI	N0	13.448	0.926	11.900	14.520	11.429	15.467	0.000
8	FP	N0	12.717	0.926	11.900	13.730	10.698	14.737	0.000

Table 5.171: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 21 in year 2010 .

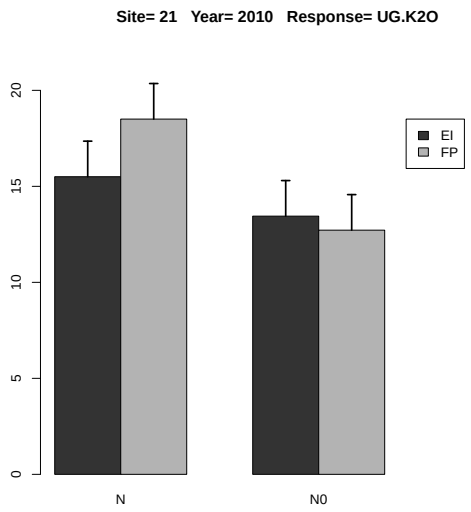

Figure 5.69: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.135	0.962	6.000	-1.180	-3.491	1.220	0.283
B N-N0	3.919	0.888	6.000	4.410	1.745	6.093	0.004
A:B EI N- FP N	-3.001	1.310	11.900	-2.290	-5.857	-0.146	0.041
A:B EI N- EI N0	2.053	1.256	6.000	1.630	-1.021	5.127	0.153
A:B EI N- FP N0	2.784	1.310	11.900	2.130	-0.072	5.639	0.055
A:B FP N- EI N0	5.054	1.310	11.900	3.860	2.199	7.910	0.002
A:B FP N- FP N0	5.785	1.256	6.000	4.610	2.711	8.859	0.004
A:B EI N0- FP N0	0.731	1.310	11.900	0.560	-2.125	3.587	0.587

Table 5.172: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 21 in year 2010 .

5.2.10 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	40.441
2	2	EI	N0	30.228
3	3	EI	N0	41.027
4	4	EI	N0	34.768
5	1	EI	N	90.233
6	2	EI	N	80.517
7	3	EI	N	71.728
8	4	EI	N	73.842
9	1	FP	N0	35.801
10	2	FP	N0	37.199
11	3	FP	N0	31.414
12	4	FP	N0	33.600
13	1	FP	N	71.715
14	2	FP	N	117.155
15	3	FP	N	68.695
16	4	FP	N	71.238

Table 5.173: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	79.080	8.322	9.502	0.005
A FP	82.201	8.322	9.877	0.004
A EI-FP	-3.120	11.770	-0.265	0.960

Table 5.174: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 21 in year 2010 .

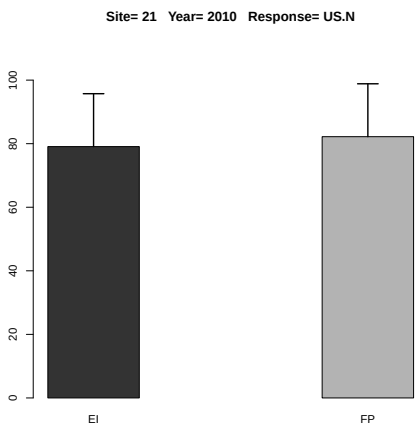

Figure 5.70: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.755	0.755	0.005	5.999	0.943
B	1.000	8129.137	8129.137	58.979	6.000	0.000
A:B	1.000	27.383	27.383	0.199	6.000	0.671

Table 5.175: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		57.848	4.815	6.000	12.010	46.065	69.631	0.000
2	FP		58.352	4.815	6.000	12.120	46.569	70.135	0.000
3		N	80.641	4.495	11.700	17.940	70.823	90.459	0.000
4		N0	35.560	4.495	11.700	7.910	25.742	45.378	0.000
5	EI	N	79.080	6.357	11.700	12.440	65.195	92.965	0.000
6	FP	N	82.201	6.357	11.700	12.930	68.316	96.085	0.000
7	EI	N0	36.616	6.357	11.700	5.760	22.731	50.501	0.000
8	FP	N0	34.504	6.357	11.700	5.430	20.619	48.388	0.000

Table 5.176: Estimate of treatment means in tow-way ANOVA for variable US.N at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.504	6.810	6.000	-0.070	-17.168	16.160	0.943
B N-N0	45.081	5.870	6.000	7.680	30.717	59.444	0.000
A:B EI N- FP N	-3.120	8.991	11.700	-0.350	-22.756	16.515	0.735
A:B EI N- EI N0	42.464	8.302	6.000	5.120	22.151	62.778	0.002
A:B EI N- FP N0	44.577	8.991	11.700	4.960	24.941	64.213	0.000
A:B FP N- EI N0	45.585	8.991	11.700	5.070	25.949	65.221	0.000
A:B FP N- FP N0	47.697	8.302	6.000	5.750	27.384	68.010	0.001
A:B EI N0- FP N0	2.112	8.991	11.700	0.230	-17.524	21.748	0.818

Table 5.177: Estimate of contrast in two-way ANOVA for variable US.N at site 21 in year 2010 .

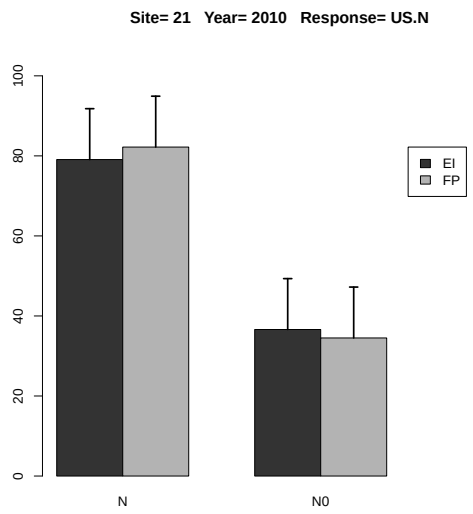

Figure 5.71: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.11 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	3.030
2	2	EI	N0	2.440
3	3	EI	N0	3.241
4	4	EI	N0	2.953
5	1	EI	N	4.585
6	2	EI	N	3.833
7	3	EI	N	4.190
8	4	EI	N	4.058
9	1	FP	N0	3.141
10	2	FP	N0	3.407
11	3	FP	N0	2.747
12	4	FP	N0	2.654
13	1	FP	N	4.251
14	2	FP	N	8.414
15	3	FP	N	3.308
16	4	FP	N	4.683

Table 5.178: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	4.166	0.873	4.772	0.034
A FP	5.164	0.873	5.915	0.019
A EI-FP	-0.998	1.235	-0.808	0.715

Table 5.179: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 21 in year 2010 .

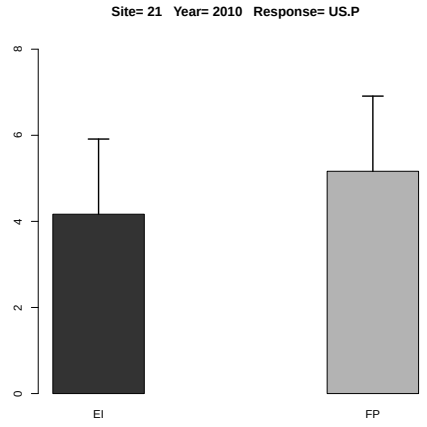

Figure 5.72: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.680	0.680	0.679	5.999	0.441
B	1.000	11.745	11.745	11.738	5.999	0.014
A:B	1.000	0.858	0.858	0.858	5.999	0.390

Table 5.180: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.541	0.458	6.000	7.730	2.420	4.663	0.000
2	FP		4.076	0.458	6.000	8.890	2.954	5.197	0.000
3		N	4.665	0.409	11.300	11.400	3.767	5.564	0.000
4		N0	2.952	0.409	11.300	7.210	2.053	3.850	0.000
5	EI	N	4.167	0.579	11.300	7.200	2.896	5.437	0.000
6	FP	N	5.164	0.579	11.300	8.920	3.893	6.435	0.000
7	EI	N0	2.916	0.579	11.300	5.040	1.645	4.187	0.000
8	FP	N0	2.987	0.579	11.300	5.160	1.717	4.258	0.000

Table 5.181: Estimate of treatment means in tow-way ANOVA for variable US.P at site 21 in year 2010 .

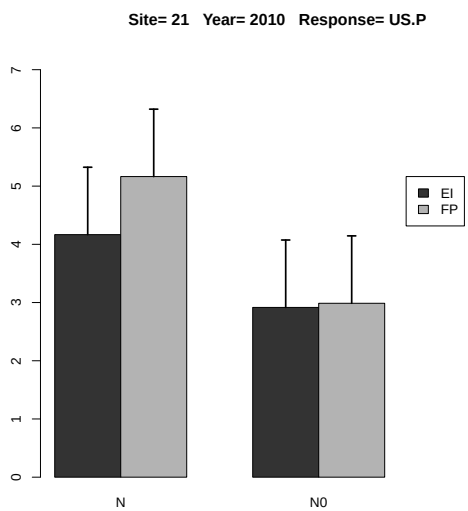

Figure 5.73: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.534	0.648	6.000	-0.820	-2.121	1.052	0.441
B N-N0	1.714	0.500	6.000	3.430	0.490	2.937	0.014
A:B EI N- FP N	-0.998	0.819	11.300	-1.220	-2.794	0.799	0.248
A:B EI N- EI N0	1.250	0.707	6.000	1.770	-0.480	2.981	0.128
A:B EI N- FP N0	1.179	0.819	11.300	1.440	-0.618	2.976	0.177
A:B FP N- EI N0	2.248	0.819	11.300	2.750	0.451	4.045	0.019
A:B FP N- FP N0	2.177	0.707	6.000	3.080	0.446	3.908	0.022
A:B EI N0- FP N0	-0.071	0.819	11.300	-0.090	-1.868	1.726	0.932

Table 5.182: Estimate of contrast in two-way ANOVA for variable US.P at site 21 in year 2010 .

5.2.12 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	3.202
2	2	EI	N0	2.593
3	3	EI	N0	3.443
4	4	EI	N0	3.125
5	1	EI	N	4.796
6	2	EI	N	4.132
7	3	EI	N	4.462
8	4	EI	N	4.285
9	1	FP	N0	3.358
10	2	FP	N0	3.570
11	3	FP	N0	2.991
12	4	FP	N0	2.805
13	1	FP	N	4.495
14	2	FP	N	8.934
15	3	FP	N	3.637
16	4	FP	N	4.911

Table 5.183: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	4.419	0.904	4.891	0.031
A FP	5.494	0.904	6.081	0.017
A EI-FP	-1.075	1.278	-0.841	0.697

Table 5.184: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 21 in year 2010 .

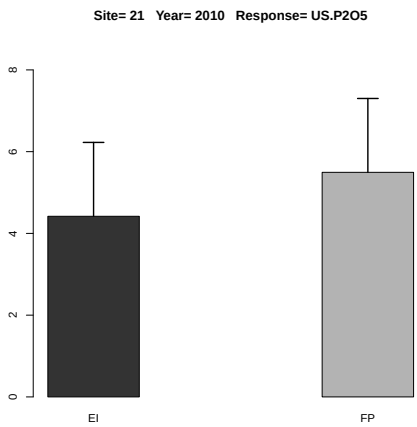

Figure 5.74: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.870	0.870	0.759	5.999	0.417
B	1.000	13.258	13.258	11.569	5.999	0.014
A:B	1.000	0.970	0.970	0.847	5.999	0.393

Table 5.185: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.755	0.473	6.000	7.940	2.598	4.912	0.000
2	FP		4.338	0.473	6.000	9.170	3.180	5.495	0.000
3		N	4.956	0.428	11.400	11.570	4.018	5.895	0.000
4		N0	3.136	0.428	11.400	7.320	2.198	4.074	0.000
5	EI	N	4.419	0.606	11.400	7.300	3.092	5.746	0.000
6	FP	N	5.494	0.606	11.400	9.070	4.167	6.821	0.000
7	EI	N0	3.091	0.606	11.400	5.100	1.764	4.418	0.000
8	FP	N0	3.181	0.606	11.400	5.250	1.854	4.508	0.000

Table 5.186: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.583	0.669	6.000	-0.870	-2.219	1.054	0.417
B N-N0	1.821	0.535	6.000	3.400	0.511	3.130	0.014
A:B EI N- FP N	-1.075	0.857	11.400	-1.260	-2.951	0.801	0.234
A:B EI N- EI N0	1.328	0.757	6.000	1.750	-0.524	3.180	0.130
A:B EI N- FP N0	1.238	0.857	11.400	1.450	-0.638	3.114	0.175
A:B FP N- EI N0	2.403	0.857	11.400	2.810	0.527	4.279	0.016
A:B FP N- FP N0	2.313	0.757	6.000	3.060	0.461	4.165	0.022
A:B EI N0- FP N0	-0.090	0.857	11.400	-0.110	-1.966	1.786	0.918

Table 5.187: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 21 in year 2010
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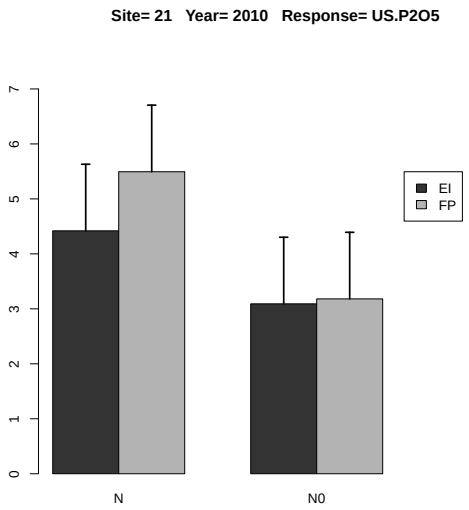

Figure 5.75: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.13 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	116.348
2	2	EI	N0	74.495
3	3	EI	N0	101.073
4	4	EI	N0	91.009
5	1	EI	N	146.644
6	2	EI	N	81.530
7	3	EI	N	142.752
8	4	EI	N	53.888
9	1	FP	N0	43.263
10	2	FP	N0	79.229
11	3	FP	N0	49.540
12	4	FP	N0	64.112
13	1	FP	N	56.279
14	2	FP	N	75.632
15	3	FP	N	41.228
16	4	FP	N	55.689

Table 5.188: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	106.204	19.266	5.512	0.023
A FP	57.207	19.266	2.969	0.112
A EI-FP	48.997	27.246	1.798	0.301

Table 5.189: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 21 in year 2010 .

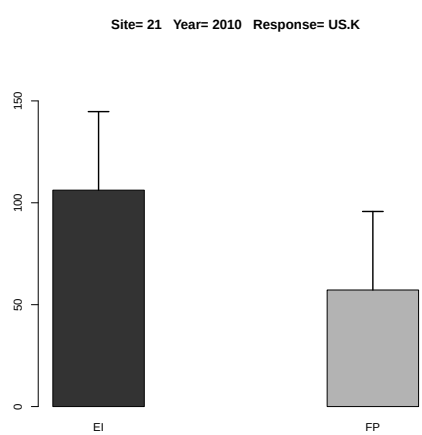

Figure 5.76: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2186.419	2186.419	6.638	6.000	0.042
B	1.000	74.710	74.710	0.227	6.000	0.651
A:B	1.000	151.312	151.312	0.459	6.000	0.523

Table 5.190: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		100.968	11.760	6.000	8.590	72.192	129.743	0.000
2	FP		58.121	11.760	6.000	4.940	29.346	86.897	0.003
3		N	81.705	9.473	9.300	8.630	60.375	103.035	0.000
4		N0	77.384	9.473	9.300	8.170	56.054	98.714	0.000
5	EI	N	106.204	13.396	9.300	7.930	76.038	136.369	0.000
6	FP	N	57.207	13.396	9.300	4.270	27.042	87.372	0.002
7	EI	N0	95.731	13.396	9.300	7.150	65.566	125.897	0.000
8	FP	N0	59.036	13.396	9.300	4.410	28.871	89.201	0.002

Table 5.191: Estimate of treatment means in tow-way ANOVA for variable US.K at site 21 in year 2010 .

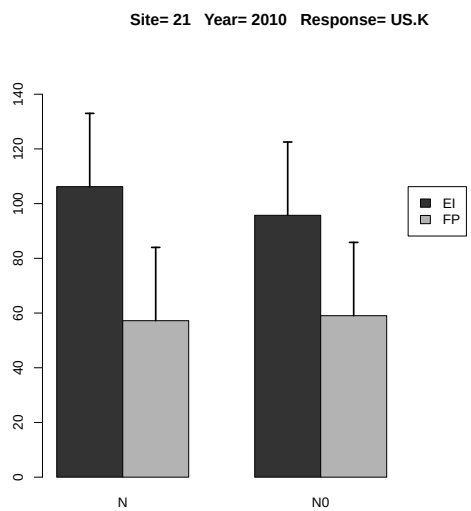

Figure 5.77: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	42.846	16.631	6.000	2.580	2.152	83.540	0.042
B N-N0	4.322	9.075	6.000	0.480	-17.883	26.527	0.651
A:B EI N- FP N	48.997	18.945	9.300	2.590	6.337	91.656	0.029
A:B EI N- EI N0	10.472	12.834	6.000	0.820	-20.930	41.875	0.446
A:B EI N- FP N0	47.168	18.945	9.300	2.490	4.508	89.828	0.034
A:B FP N- EI N0	-38.524	18.945	9.300	-2.030	-81.184	4.136	0.072
A:B FP N- FP N0	-1.829	12.834	6.000	-0.140	-33.231	29.574	0.891
A:B EI N0- FP N0	36.696	18.945	9.300	1.940	-5.964	79.356	0.084

Table 5.192: Estimate of contrast in two-way ANOVA for variable US.K at site 21 in year 2010 .

5.2.14 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	117.634
2	2	EI	N0	75.493
3	3	EI	N0	102.612
4	4	EI	N0	92.131
5	1	EI	N	148.217
6	2	EI	N	82.992
7	3	EI	N	144.051
8	4	EI	N	55.186
9	1	FP	N0	44.296
10	2	FP	N0	80.290
11	3	FP	N0	50.783
12	4	FP	N0	65.117
13	1	FP	N	58.061
14	2	FP	N	77.744
15	3	FP	N	42.588
16	4	FP	N	56.813

Table 5.193: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	107.611	19.282	5.581	0.022
A FP	58.801	19.282	3.049	0.105
A EI-FP	48.810	27.269	1.790	0.303

Table 5.194: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 21 in year 2010 .

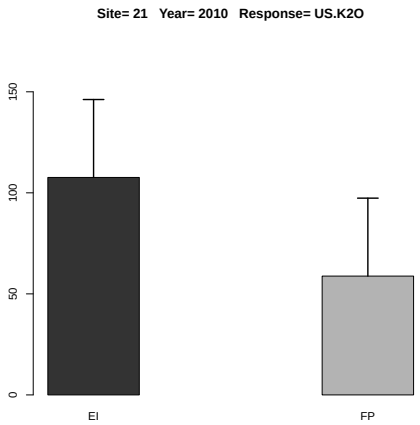

Figure 5.78: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2161.151	2161.151	6.573	5.999	0.043
B	1.000	86.929	86.929	0.264	6.000	0.626
A:B	1.000	143.137	143.137	0.435	6.000	0.534

Table 5.195: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		102.289	11.812	6.000	8.660	73.385	131.194	0.000
2	FP		59.462	11.812	6.000	5.030	30.557	88.366	0.002
3		N	83.206	9.503	9.300	8.760	61.797	104.616	0.000
4		N0	78.544	9.503	9.300	8.260	57.135	99.954	0.000
5	EI	N	107.611	13.440	9.300	8.010	77.334	137.889	0.000
6	FP	N	58.801	13.440	9.300	4.380	28.524	89.079	0.002
7	EI	N0	96.968	13.440	9.300	7.210	66.690	127.245	0.000
8	FP	N0	60.122	13.440	9.300	4.470	29.844	90.399	0.001

Table 5.196: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	42.828	16.705	6.000	2.560	1.951	83.705	0.043
B N-N0	4.662	9.066	6.000	0.510	-17.523	26.846	0.625
A:B EI N- FP N	48.810	19.007	9.300	2.570	5.991	91.629	0.030
A:B EI N- EI N0	10.644	12.822	6.000	0.830	-20.730	42.017	0.438
A:B EI N- FP N0	47.490	19.007	9.300	2.500	4.671	90.308	0.033
A:B FP N- EI N0	-38.166	19.007	9.300	-2.010	-80.985	4.653	0.075
A:B FP N- FP N0	-1.320	12.822	6.000	-0.100	-32.694	30.053	0.921
A:B EI N0- FP N0	36.846	19.007	9.300	1.940	-5.973	79.665	0.084

Table 5.197: Estimate of contrast in two-way ANOVA for variable US.K2O at site 21 in year 2010 .

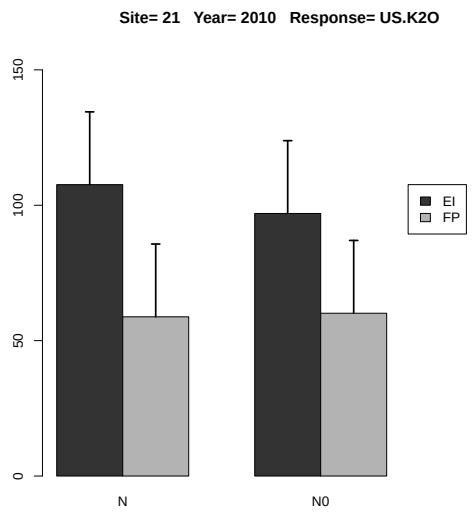

Figure 5.79: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.15 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	113.997
2	2	EI	N0	96.981
3	3	EI	N0	119.742
4	4	EI	N0	92.186
5	1	EI	N	199.316
6	2	EI	N	169.834
7	3	EI	N	171.776
8	4	EI	N	163.121
9	1	FP	N0	94.543
10	2	FP	N0	107.439
11	3	FP	N0	100.979
12	4	FP	N0	93.239
13	1	FP	N	187.804
14	2	FP	N	248.595
15	3	FP	N	200.145
16	4	FP	N	172.425

Table 5.198: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	176.012	13.655	12.890	0.002
A FP	202.242	13.655	14.811	0.001
A EI-FP	-26.231	19.311	-1.358	0.450

Table 5.199: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 21 in year 2010 .

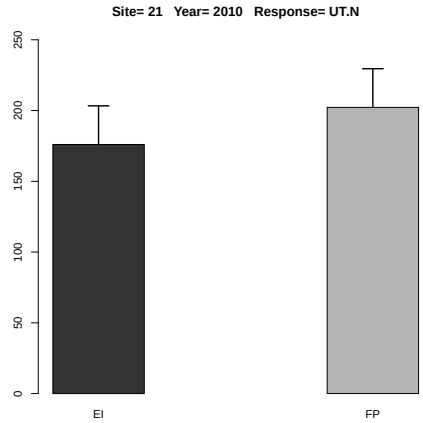

Figure 5.80: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	155.419	155.419	0.691	5.999	0.438
B	1.000	30094.382	30094.382	133.828	6.000	0.000
A:B	1.000	1082.869	1082.869	4.815	6.000	0.071

Table 5.200: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		140.869	8.316	6.000	16.940	120.520	161.218	0.000
2	FP		150.646	8.316	6.000	18.120	130.297	170.995	0.000
3		N	189.127	6.974	10.200	27.120	173.627	204.627	0.000
4		N0	102.388	6.974	10.200	14.680	86.888	117.888	0.000
5	EI	N	176.012	9.862	10.200	17.850	154.091	197.932	0.000
6	FP	N	202.242	9.862	10.200	20.510	180.322	224.162	0.000
7	EI	N0	105.726	9.862	10.200	10.720	83.806	127.647	0.000
8	FP	N0	99.050	9.862	10.200	10.040	77.130	120.970	0.000

Table 5.201: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 21 in year 2010 .

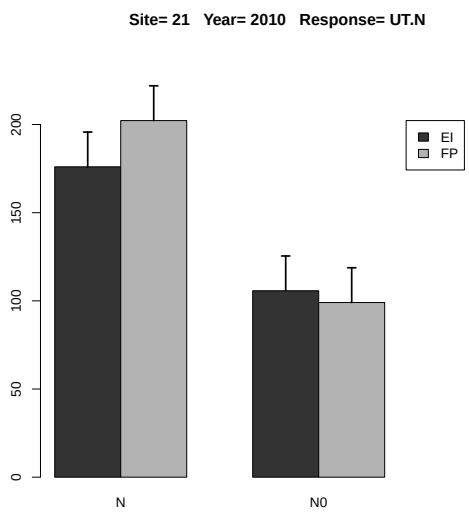

Figure 5.81: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-9.777	11.760	6.000	-0.830	-38.555	19.000	0.438
B N-N0	86.739	7.498	6.000	11.570	68.392	105.085	0.000
A:B EI N- FP N	-26.230	13.947	10.200	-1.880	-57.230	4.769	0.089
A:B EI N- EI N0	70.285	10.604	6.000	6.630	44.339	96.231	0.001
A:B EI N- FP N0	76.962	13.947	10.200	5.520	45.962	107.962	0.000
A:B FP N- EI N0	96.516	13.947	10.200	6.920	65.516	127.516	0.000
A:B FP N- FP N0	103.192	10.604	6.000	9.730	77.246	129.138	0.000
A:B EI N0- FP N0	6.676	13.947	10.200	0.480	-24.323	37.676	0.642

Table 5.202: Estimate of contrast in two-way ANOVA for variable UT.N at site 21 in year 2010 .

5.2.16 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	14.434
2	2	EI	N0	12.048
3	3	EI	N0	15.445
4	4	EI	N0	12.891
5	1	EI	N	17.588
6	2	EI	N	17.230
7	3	EI	N	17.710
8	4	EI	N	15.677
9	1	FP	N0	12.846
10	2	FP	N0	14.437
11	3	FP	N0	13.789
12	4	FP	N0	12.508
13	1	FP	N	18.090
14	2	FP	N	24.927
15	3	FP	N	17.292
16	4	FP	N	17.673

Table 5.203: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	17.051	1.287	13.247	0.002
A FP	19.495	1.287	15.146	0.001
A EI-FP	-2.444	1.820	-1.343	0.456

Table 5.204: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 21 in year 2010 .

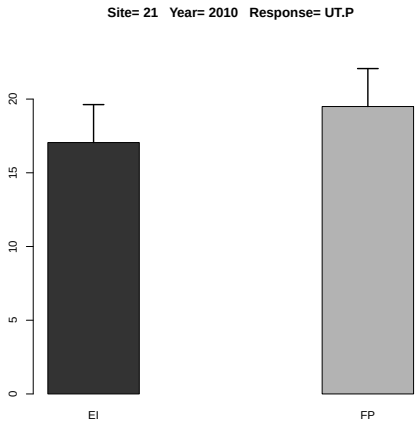

Figure 5.82: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.096	2.096	0.773	5.999	0.413
B	1.000	89.249	89.249	32.937	6.000	0.001
A:B	1.000	7.584	7.584	2.799	6.000	0.145

Table 5.205: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.378	0.858	6.000	17.920	13.278	17.477	0.000
2	FP		16.445	0.858	6.000	19.170	14.345	18.545	0.000
3		N	18.273	0.733	10.600	24.930	16.651	19.895	0.000
4		N0	13.550	0.733	10.600	18.480	11.928	15.172	0.000
5	EI	N	17.051	1.037	10.600	16.450	14.758	19.345	0.000
6	FP	N	19.495	1.037	10.600	18.800	17.202	21.789	0.000
7	EI	N0	13.705	1.037	10.600	13.220	11.411	15.998	0.000
8	FP	N0	13.395	1.037	10.600	12.920	11.101	15.688	0.000

Table 5.206: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.067	1.213	6.000	-0.880	-4.036	1.902	0.413
B N-N0	4.724	0.823	6.000	5.740	2.710	6.738	0.001
A:B EI N- FP N	-2.444	1.466	10.600	-1.670	-5.688	0.800	0.125
A:B EI N- EI N0	3.347	1.164	6.000	2.880	0.498	6.195	0.028
A:B EI N- FP N0	3.656	1.466	10.600	2.490	0.413	6.900	0.031
A:B FP N- EI N0	5.791	1.466	10.600	3.950	2.547	9.034	0.002
A:B FP N- FP N0	6.101	1.164	6.000	5.240	3.252	8.949	0.002
A:B EI N0- FP N0	0.310	1.466	10.600	0.210	-2.934	3.554	0.837

Table 5.207: Estimate of contrast in two-way ANOVA for variable UT.P at site 21 in year 2010 .

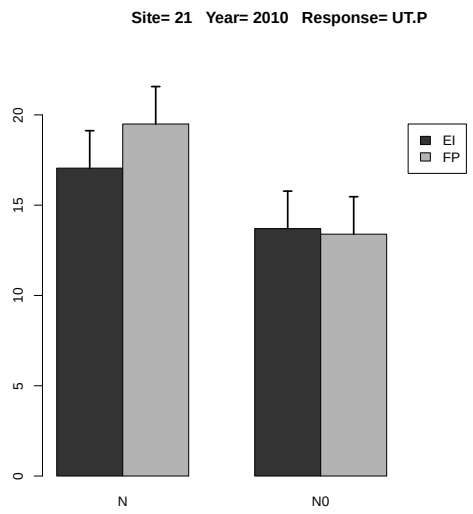

Figure 5.83: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.17 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	14.606
2	2	EI	N0	12.201
3	3	EI	N0	15.647
4	4	EI	N0	13.063
5	1	EI	N	17.799
6	2	EI	N	17.530
7	3	EI	N	17.982
8	4	EI	N	15.903
9	1	FP	N0	13.063
10	2	FP	N0	14.599
11	3	FP	N0	14.033
12	4	FP	N0	12.658
13	1	FP	N	18.333
14	2	FP	N	25.446
15	3	FP	N	17.621
16	4	FP	N	17.901

Table 5.208: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	17.304	1.317	13.137	0.001
A FP	19.825	1.317	15.051	0.001
A EI-FP	-2.522	1.863	-1.354	0.451

Table 5.209: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 21 in year 2010 .

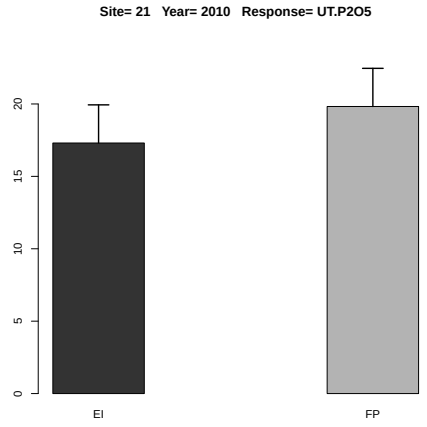

Figure 5.84: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.387	2.387	0.809	5.999	0.403
B	1.000	93.337	93.337	31.641	6.000	0.001
A:B	1.000	7.911	7.911	2.682	6.000	0.153

Table 5.210: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.591	0.877	6.000	17.780	13.446	17.737	0.000
2	FP		16.707	0.877	6.000	19.060	14.562	18.852	0.000
3		N	18.564	0.754	10.700	24.620	16.898	20.230	0.000
4		N0	13.734	0.754	10.700	18.210	12.068	15.400	0.000
5	EI	N	17.304	1.066	10.700	16.220	14.948	19.660	0.000
6	FP	N	19.825	1.066	10.700	18.590	17.469	22.181	0.000
7	EI	N0	13.879	1.066	10.700	13.010	11.523	16.235	0.000
8	FP	N0	13.588	1.066	10.700	12.740	11.232	15.944	0.000

Table 5.211: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 21 in year 2010 .

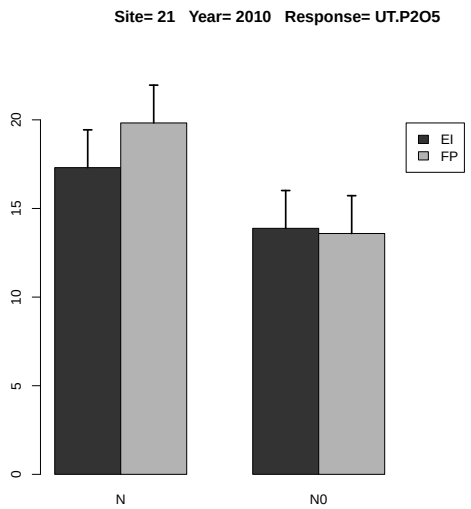

Figure 5.85: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.115	1.240	6.000	-0.900	-4.149	1.919	0.403
B N-N0	4.831	0.859	6.000	5.630	2.729	6.932	0.001
A:B EI N- FP N	-2.522	1.508	10.700	-1.670	-5.854	0.810	0.124
A:B EI N- EI N0	3.424	1.214	6.000	2.820	0.453	6.396	0.030
A:B EI N- FP N0	3.715	1.508	10.700	2.460	0.383	7.047	0.032
A:B FP N- EI N0	5.946	1.508	10.700	3.940	2.614	9.278	0.002
A:B FP N- FP N0	6.237	1.214	6.000	5.140	3.265	9.209	0.002
A:B EI N0- FP N0	0.291	1.508	10.700	0.190	-3.041	3.623	0.851

Table 5.212: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 21 in year 2010 .

5.2.18 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	127.182
2	2	EI	N0	85.114
3	3	EI	N0	112.667
4	4	EI	N0	102.603
5	1	EI	N	160.370
6	2	EI	N	94.927
7	3	EI	N	154.244
8	4	EI	N	66.730
9	1	FP	N0	52.968
10	2	FP	N0	90.258
11	3	FP	N0	61.686
12	4	FP	N0	73.446
13	1	FP	N	70.886
14	2	FP	N	94.786
15	3	FP	N	55.212
16	4	FP	N	69.363

Table 5.213: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	119.068	19.547	6.091	0.017
A FP	72.562	19.547	3.712	0.065
A EI-FP	46.506	27.644	1.682	0.334

Table 5.214: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 21 in year 2010 .

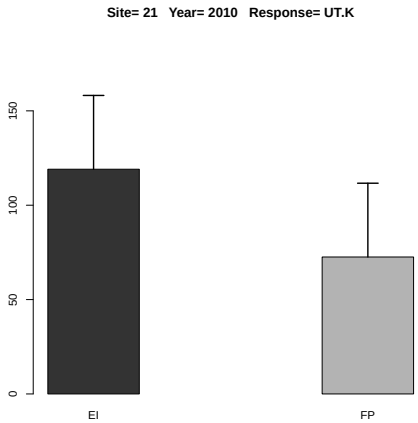

Figure 5.86: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2058.353	2058.353	6.198	5.999	0.047
B	1.000	229.470	229.470	0.691	6.000	0.438
A:B	1.000	84.708	84.708	0.255	6.000	0.632

Table 5.215: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		112.980	11.902	6.000	9.490	83.857	142.103	0.000
2	FP		71.076	11.902	6.000	5.970	41.953	100.199	0.001
3		N	95.815	9.570	9.200	10.010	74.251	117.379	0.000
4		N0	88.241	9.570	9.200	9.220	66.677	109.804	0.000
5	EI	N	119.068	13.534	9.200	8.800	88.572	149.563	0.000
6	FP	N	72.562	13.534	9.200	5.360	42.066	103.058	0.000
7	EI	N0	106.892	13.534	9.200	7.900	76.396	137.387	0.000
8	FP	N0	69.590	13.534	9.200	5.140	39.094	100.085	0.001

Table 5.216: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	41.904	16.831	6.000	2.490	0.718	83.090	0.047
B N-N0	7.574	9.112	6.000	0.830	-14.721	29.870	0.438
A:B EI N- FP N	46.506	19.140	9.200	2.430	3.379	89.633	0.037
A:B EI N- EI N0	12.176	12.886	6.000	0.940	-19.355	43.706	0.381
A:B EI N- FP N0	49.478	19.140	9.200	2.590	6.351	92.605	0.029
A:B FP N- EI N0	-34.330	19.140	9.200	-1.790	-77.457	8.797	0.106
A:B FP N- FP N0	2.972	12.886	6.000	0.230	-28.558	34.503	0.825
A:B EI N0- FP N0	37.302	19.140	9.200	1.950	-5.825	80.429	0.082

Table 5.217: Estimate of contrast in two-way ANOVA for variable UT.K at site 21 in year 2010 .

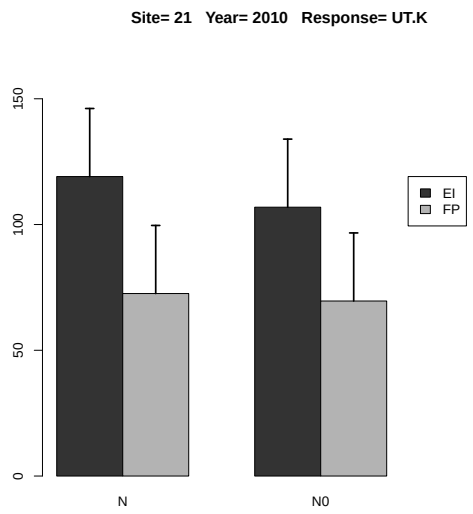

Figure 5.87: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.19 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	128.467
2	2	EI	N0	86.113
3	3	EI	N0	114.206
4	4	EI	N0	103.725
5	1	EI	N	161.942
6	2	EI	N	96.389
7	3	EI	N	155.543
8	4	EI	N	68.027
9	1	FP	N0	54.001
10	2	FP	N0	91.319
11	3	FP	N0	62.930
12	4	FP	N0	74.452
13	1	FP	N	72.668
14	2	FP	N	96.899
15	3	FP	N	56.572
16	4	FP	N	70.487

Table 5.218: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	120.475	19.568	6.157	0.017
A FP	74.156	19.568	3.790	0.062
A EI-FP	46.319	27.673	1.674	0.337

Table 5.219: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 21 in year 2010 .

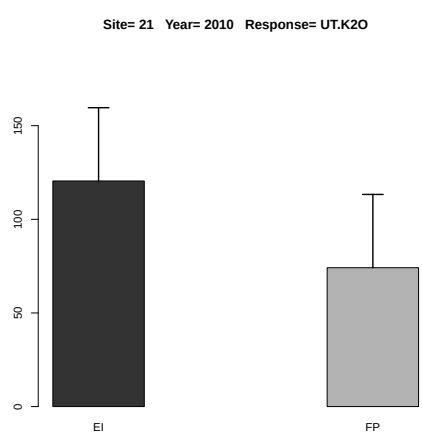

Figure 5.88: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2038.479	2038.479	6.136	5.999	0.048
B	1.000	250.537	250.537	0.754	6.000	0.419
A:B	1.000	78.620	78.620	0.237	6.000	0.644

Table 5.220: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		114.302	11.957	6.000	9.560	85.044	143.559	0.000
2	FP		72.416	11.957	6.000	6.060	43.158	101.673	0.001
3		N	97.316	9.604	9.200	10.130	75.666	118.966	0.000
4		N0	89.402	9.604	9.200	9.310	67.752	111.052	0.000
5	EI	N	120.475	13.583	9.200	8.870	89.858	151.093	0.000
6	FP	N	74.156	13.583	9.200	5.460	43.539	104.774	0.000
7	EI	N0	108.128	13.583	9.200	7.960	77.510	138.745	0.000
8	FP	N0	70.675	13.583	9.200	5.200	40.058	101.293	0.000

Table 5.221: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 21 in year 2010 .

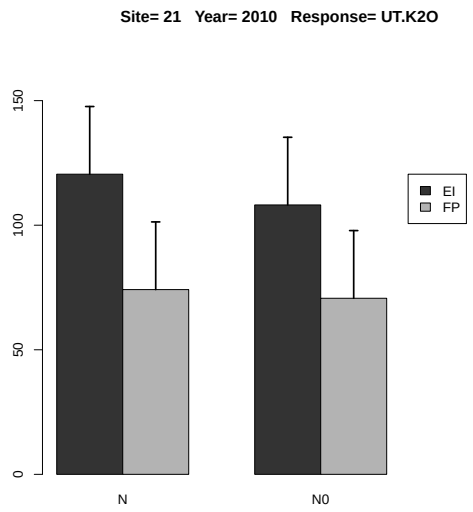

Figure 5.89: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	41.886	16.909	6.000	2.480	0.509	83.262	0.048
B N-N0	7.914	9.113	6.000	0.870	-14.386	30.214	0.418
A:B EI N- FP N	46.319	19.209	9.200	2.410	3.019	89.619	0.039
A:B EI N- EI N0	12.348	12.888	6.000	0.960	-19.189	43.884	0.375
A:B EI N- FP N0	49.800	19.209	9.200	2.590	6.500	93.100	0.029
A:B FP N- EI N0	-33.971	19.209	9.200	-1.770	-77.272	9.329	0.110
A:B FP N- FP N0	3.481	12.888	6.000	0.270	-28.056	35.017	0.796
A:B EI N0- FP N0	37.452	19.209	9.200	1.950	-5.848	80.752	0.082

Table 5.222: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 21 in year 2010 .

5.2.20 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	1.819
2	2	EI	N0	2.208
3	3	EI	N0	1.919
4	4	EI	N0	1.651
5	1	EI	N	1.209
6	2	EI	N	1.109
7	3	EI	N	1.395
8	4	EI	N	1.209
9	1	FP	N0	1.641
10	2	FP	N0	1.888
11	3	FP	N0	2.214
12	4	FP	N0	1.775
13	1	FP	N	1.619
14	2	FP	N	1.122
15	3	FP	N	1.914
16	4	FP	N	1.420

Table 5.223: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.230	0.125	4.400	9.840	0.895	1.566	0.000
A FP	1.519	0.125	4.400	12.140	1.184	1.854	0.000
A EI-FP	-0.288	0.112	3.000	-2.580	-0.644	0.068	0.082

Table 5.224: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 21 in year 2010 .

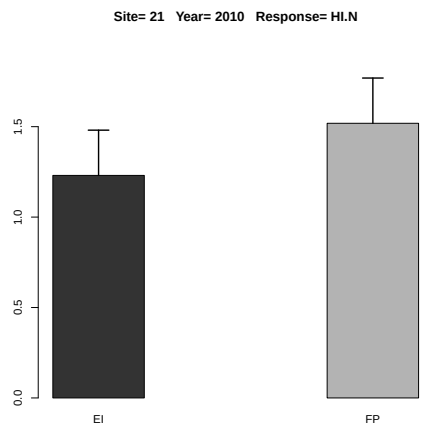

Figure 5.90: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.062	0.062	1.361	2.999	0.328
B	1.000	1.060	1.060	23.408	5.997	0.003
A:B	1.000	0.095	0.095	2.092	5.997	0.198

Table 5.225: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.565	0.097	5.500	16.200	1.324	1.806	0.000
2	FP		1.699	0.097	5.500	17.590	1.458	1.940	0.000
3		N	1.375	0.094	5.800	14.610	1.143	1.606	0.000
4		N0	1.889	0.094	5.800	20.090	1.658	2.121	0.000
5	EI	N	1.230	0.122	10.700	10.050	0.960	1.501	0.000
6	FP	N	1.519	0.122	10.700	12.400	1.248	1.789	0.000
7	EI	N0	1.899	0.122	10.700	15.510	1.629	2.170	0.000
8	FP	N0	1.880	0.122	10.700	15.350	1.609	2.150	0.000

Table 5.226: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.134	0.115	3.000	-1.170	-0.500	0.232	0.328
B N-N0	-0.515	0.106	6.000	-4.840	-0.775	-0.254	0.003
A:B EI N- FP N	-0.288	0.157	7.600	-1.840	-0.653	0.077	0.105
A:B EI N- EI N0	-0.669	0.150	6.000	-4.440	-1.037	-0.300	0.004
A:B EI N- FP N0	-0.649	0.157	7.600	-4.140	-1.014	-0.284	0.004
A:B FP N- EI N0	-0.381	0.157	7.600	-2.430	-0.746	-0.015	0.043
A:B FP N- FP N0	-0.361	0.150	6.000	-2.400	-0.729	0.007	0.053
A:B EI N0- FP N0	0.020	0.157	7.600	0.130	-0.345	0.385	0.903

Table 5.227: Estimate of contrast in two-way ANOVA for variable HI.N at site 21 in year 2010 .

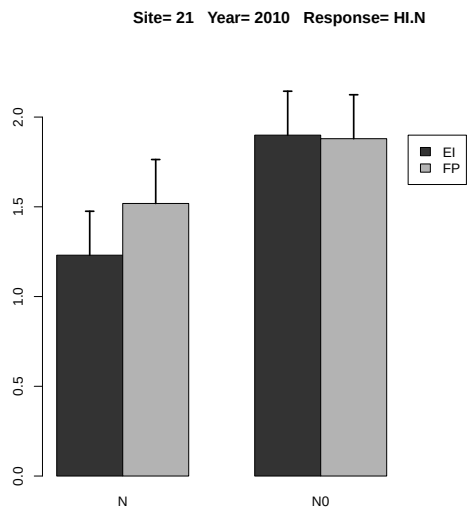

Figure 5.91: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.21 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	3.763
2	2	EI	N0	3.938
3	3	EI	N0	3.766
4	4	EI	N0	3.365
5	1	EI	N	2.836
6	2	EI	N	3.496
7	3	EI	N	3.227
8	4	EI	N	2.863
9	1	FP	N0	3.090
10	2	FP	N0	3.237
11	3	FP	N0	4.020
12	4	FP	N0	3.712
13	1	FP	N	3.255
14	2	FP	N	1.962
15	3	FP	N	4.228
16	4	FP	N	2.774

Table 5.228: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.105	0.353	6.000	8.800	2.242	3.969	0.000
A FP	3.055	0.353	6.000	8.660	2.192	3.918	0.000
A EI-FP	0.050	0.499	6.000	0.100	-1.170	1.271	0.923

Table 5.229: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 21 in year 2010 .

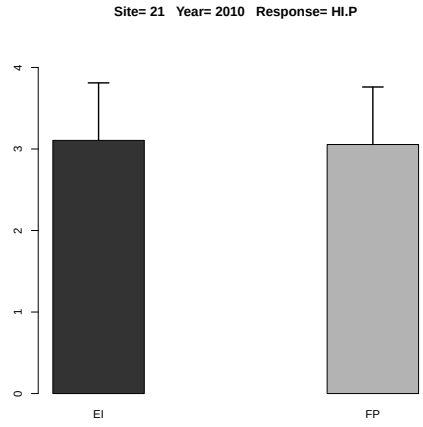

Figure 5.92: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.020	0.020	0.128	5.999	0.732
B	1.000	1.129	1.129	7.230	5.998	0.036
A:B	1.000	0.020	0.020	0.130	5.998	0.730

Table 5.230: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.407	0.241	6.000	14.160	2.818	3.995	0.000
2	FP		3.285	0.241	6.000	13.650	2.696	3.873	0.000
3		N	3.080	0.197	9.600	15.660	2.639	3.521	0.000
4		N0	3.611	0.197	9.600	18.360	3.171	4.052	0.000
5	EI	N	3.105	0.278	9.600	11.160	2.482	3.728	0.000
6	FP	N	3.055	0.278	9.600	10.980	2.432	3.678	0.000
7	EI	N0	3.708	0.278	9.600	13.330	3.085	4.331	0.000
8	FP	N0	3.515	0.278	9.600	12.630	2.892	4.138	0.000

Table 5.231: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 21 in year 2010 .

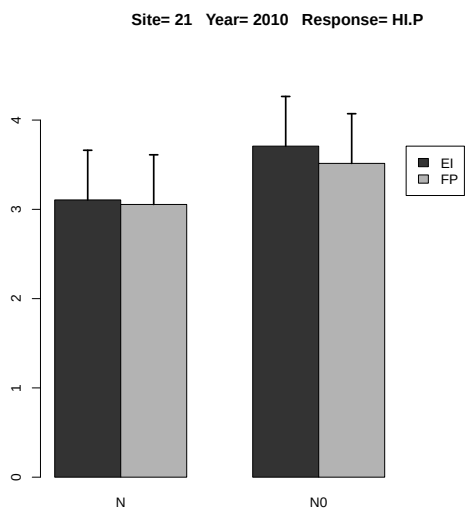

Figure 5.93: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.122	0.340	6.000	0.360	-0.711	0.954	0.733
B N-N0	-0.531	0.198	6.000	-2.690	-1.015	-0.048	0.036
A:B EI N- FP N	0.050	0.393	9.600	0.130	-0.831	0.932	0.900
A:B EI N- EI N0	-0.603	0.280	6.000	-2.160	-1.287	0.081	0.074
A:B EI N- FP N0	-0.409	0.393	9.600	-1.040	-1.291	0.472	0.323
A:B FP N- EI N0	-0.653	0.393	9.600	-1.660	-1.534	0.228	0.129
A:B FP N- FP N0	-0.460	0.280	6.000	-1.650	-1.144	0.224	0.151
A:B EI N0- FP N0	0.193	0.393	9.600	0.490	-0.688	1.074	0.634

Table 5.232: Estimate of contrast in two-way ANOVA for variable HI.P at site 21 in year 2010 .

5.2.22 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.093
2	2	EI	N0	0.143
3	3	EI	N0	0.115
4	4	EI	N0	0.127
5	1	EI	N	0.094
6	2	EI	N	0.164
7	3	EI	N	0.081
8	4	EI	N	0.238
9	1	FP	N0	0.224
10	2	FP	N0	0.139
11	3	FP	N0	0.245
12	4	FP	N0	0.146
13	1	FP	N	0.260
14	2	FP	N	0.253
15	3	FP	N	0.339
16	4	FP	N	0.246

Table 5.233: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.144	0.030	6.000	4.810	0.071	0.218	0.003
A FP	0.274	0.030	6.000	9.150	0.201	0.348	0.000
A EI-FP	-0.130	0.042	6.000	-3.070	-0.234	-0.026	0.022

Table 5.234: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 21 in year 2010 .

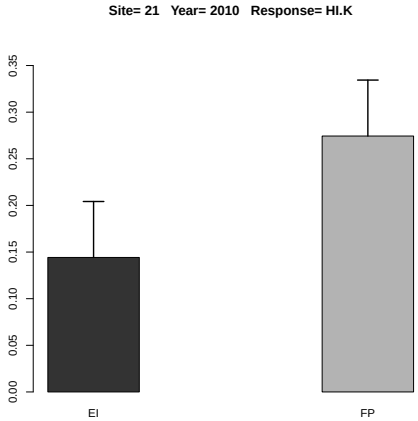

Figure 5.94: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.012	0.012	9.895	5.999	0.020
B	1.000	0.012	0.012	9.698	5.983	0.021
A:B	1.000	0.004	0.004	2.960	5.983	0.136

Table 5.235: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.132	0.022	6.000	5.880	0.077	0.187	0.001
2	FP		0.232	0.022	6.000	10.330	0.177	0.286	0.000
3		N	0.209	0.018	9.400	11.530	0.169	0.250	0.000
4		N0	0.154	0.018	9.400	8.480	0.113	0.195	0.000
5	EI	N	0.144	0.026	9.400	5.610	0.086	0.202	0.000
6	FP	N	0.274	0.026	9.400	10.680	0.217	0.332	0.000
7	EI	N0	0.119	0.026	9.400	4.650	0.062	0.177	0.001
8	FP	N0	0.189	0.026	9.400	7.340	0.131	0.246	0.000

Table 5.236: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 21 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.100	0.032	6.000	-3.150	-0.177	-0.022	0.020
B N-N0	0.055	0.018	6.000	3.110	0.012	0.099	0.021
A:B EI N- FP N	-0.130	0.036	9.400	-3.590	-0.212	-0.049	0.005
A:B EI N- EI N0	0.025	0.025	6.000	0.990	-0.037	0.086	0.362
A:B EI N- FP N0	-0.044	0.036	9.400	-1.220	-0.126	0.037	0.251
A:B FP N- EI N0	0.155	0.036	9.400	4.270	0.073	0.236	0.002
A:B FP N- FP N0	0.086	0.025	6.000	3.420	0.024	0.147	0.014
A:B EI N0- FP N0	-0.069	0.036	9.400	-1.900	-0.151	0.012	0.088

Table 5.237: Estimate of contrast in two-way ANOVA for variable HI.K at site 21 in year 2010 .

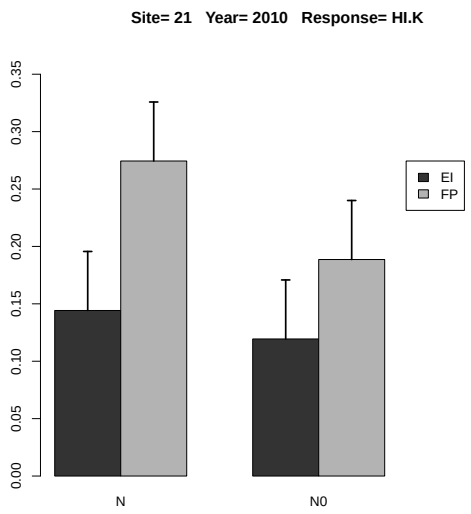

Figure 5.95: Estimated treatment means and standard error in the 2-way ANOVA.

5.2.23 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	40.133
2	2	EI	N	41.350
3	3	EI	N	37.556
4	4	EI	N	33.972
5	1	FP	N	25.627
6	2	FP	N	22.017
7	3	FP	N	23.307
8	4	FP	N	22.790

Table 5.238: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	38.253	1.278	5.900	29.940	35.113	41.393	0.000
A FP	23.435	1.278	5.900	18.340	20.295	26.575	0.000
A EI-FP	14.818	1.684	3.000	8.800	9.459	20.177	0.003

Table 5.239: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 21 in year 2010 .

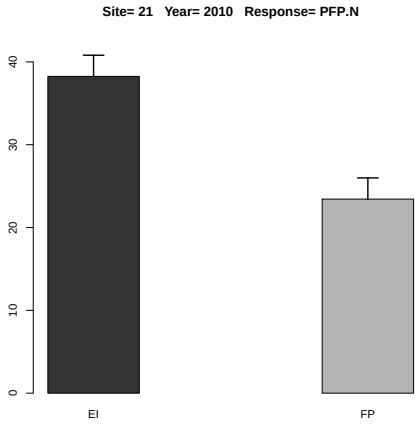

Figure 5.96: Estimated treatment means and standard error in the one-way ANOVA.

5.2.24 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	275.767
2	2	EI	N	284.127
3	3	EI	N	258.055
4	4	EI	N	233.433
5	1	FP	N	130.436
6	2	FP	N	112.061
7	3	FP	N	118.627
8	4	FP	N	115.997

Table 5.240: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	262.846	8.406	5.900	31.270	242.221	283.470	0.000
A FP	119.280	8.406	5.900	14.190	98.656	139.905	0.000
A EI-FP	143.565	11.237	3.000	12.780	107.802	179.328	0.001

Table 5.241: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 21 in year 2010 .

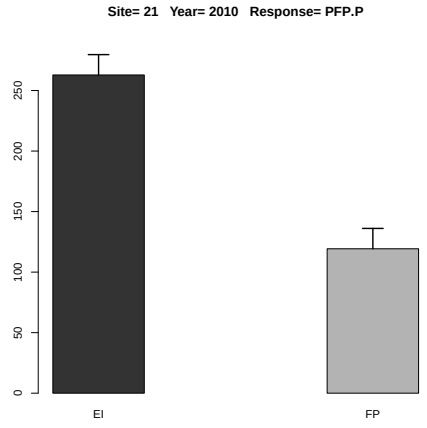

Figure 5.97: Estimated treatment means and standard error in the one-way ANOVA.

5.2.25 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	120.400
2	2	EI	N	124.050
3	3	EI	N	112.667
4	4	EI	N	101.917
5	1	FP	N	56.948
6	2	FP	N	48.926
7	3	FP	N	51.793
8	4	FP	N	50.644

Table 5.242: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	114.758	3.670	5.900	31.270	105.754	123.763	0.000
A FP	52.078	3.670	5.900	14.190	43.073	61.083	0.000
A EI-FP	62.681	4.906	3.000	12.780	47.067	78.294	0.001

Table 5.243: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 21 in year 2010 .

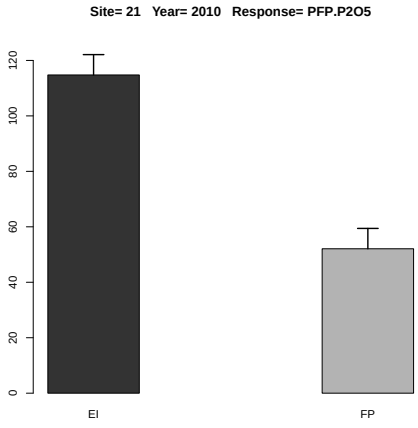

Figure 5.98: Estimated treatment means and standard error in the one-way ANOVA.

5.2.26 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	96.730
2	2	EI	N	99.663
3	3	EI	N	90.517
4	4	EI	N	81.881

Table 5.244: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

There is no or sufficient data for this response variable at this site and year.

5.2.27 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	80.267
2	2	EI	N	82.700
3	3	EI	N	75.111
4	4	EI	N	67.944

Table 5.245: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

There is no or sufficient data for this response variable at this site and year.

5.2.28 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.606
2	2	EI	N	0.496
3	3	EI	N	0.556
4	4	EI	N	0.496
5	1	FP	N	0.387
6	2	FP	N	0.438
7	3	FP	N	0.438
8	4	FP	N	0.337

Table 5.246: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.538	0.025	5.900	21.210	0.476	0.601	0.000
A FP	0.400	0.025	5.900	15.760	0.338	0.463	0.000
A EI-FP	0.138	0.034	3.000	4.080	0.030	0.246	0.027

Table 5.247: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 21 in year 2010 .

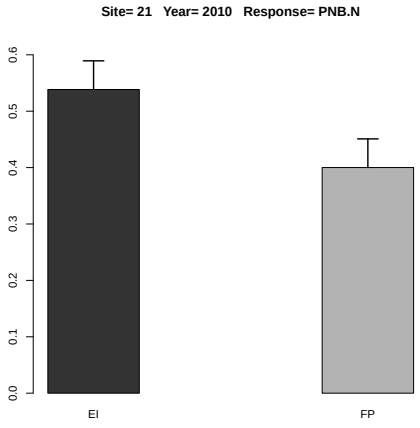

Figure 5.99: Estimated treatment means and standard error in the one-way ANOVA.

5.2.29 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.496
2	2	EI	N	0.511
3	3	EI	N	0.516
4	4	EI	N	0.444
5	1	FP	N	0.235
6	2	FP	N	0.280
7	3	FP	N	0.237
8	4	FP	N	0.220

Table 5.248: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.492	0.015	4.300	33.040	0.452	0.532	0.000
A FP	0.243	0.015	4.300	16.330	0.203	0.283	0.000
A EI-FP	0.249	0.013	3.000	19.110	0.207	0.290	0.000

Table 5.249: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 21 in year 2010 .

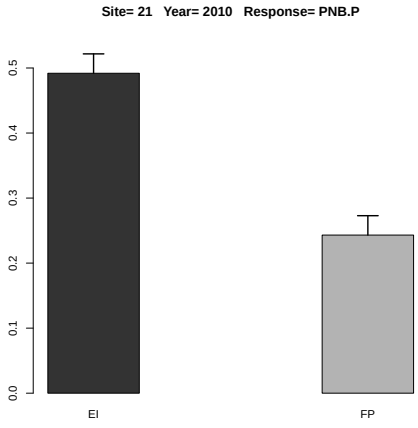

Figure 5.100: Estimated treatment means and standard error in the one-way ANOVA.

5.2.30 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.184
2	2	EI	N	0.179
3	3	EI	N	0.154
4	4	EI	N	0.172

Table 5.250: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

There is no or sufficient data for this response variable at this site and year.

5.2.31 Response Variable AE

	rep	A	B	y
1	1	EI	N	8.456
2	2	EI	N	13.256
3	3	EI	N	3.656
4	4	EI	N	3.300
5	1	FP	N	8.600
6	2	FP	N	2.667
7	3	FP	N	4.903
8	4	FP	N	5.503

Table 5.251: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	7.167	2.105	3.405	0.080
A FP	5.418	2.105	2.574	0.153
A EI-FP	1.748	2.977	0.587	0.829

Table 5.252: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 21 in year 2010 .

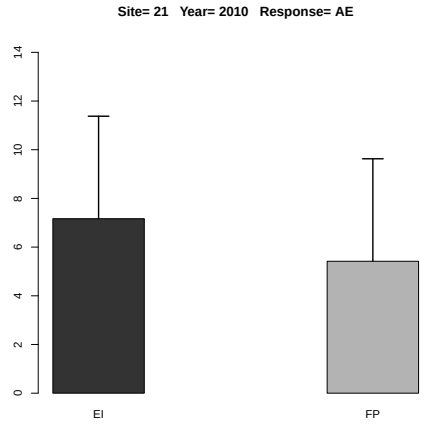

Figure 5.101: Estimated treatment means and standard error in the one-way ANOVA.

5.2.32 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.474
2	2	EI	N	0.405
3	3	EI	N	0.289
4	4	EI	N	0.394
5	1	FP	N	0.311
6	2	FP	N	0.471
7	3	FP	N	0.331
8	4	FP	N	0.264

Table 5.253: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.390	0.041	9.454	0.005
A FP	0.344	0.041	8.328	0.007
A EI-FP	0.046	0.058	0.796	0.721

Table 5.254: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 21 in year 2010 .

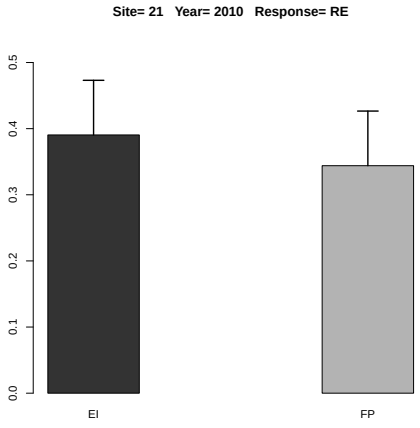

Figure 5.102: Estimated treatment means and standard error in the one-way ANOVA.

5.3 Year 2011

There are 91 variables not observed: YG YT HI.G UG.N UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.N PFP.P2O5 PFP.K2O PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.N PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.P PFP.K PNB.P PNB.K

5.3.1 Response Variable YS

	rep	A	B	y
1	1	EI	N0	1503.000
2	2	EI	N0	1013.000
3	3	EI	N0	1574.000
4	4	EI	N0	1454.000
5	1	EI	N	1687.000
6	2	EI	N	1814.000
7	3	EI	N	2206.000
8	4	EI	N	1731.000
9	1	FP	N0	878.000
10	2	FP	N0	1546.000
11	3	FP	N0	1679.000
12	4	FP	N0	1482.000
13	1	FP	N	1540.000
14	2	FP	N	2252.000
15	3	FP	N	2063.000
16	4	FP	N	2305.000

Table 5.255: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	1859.500	134.328	13.843	0.001
A FP	2040.000	134.328	15.187	0.001
A EI-FP	-180.500	189.969	-0.950	0.640

Table 5.256: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 21 in year 2011 .

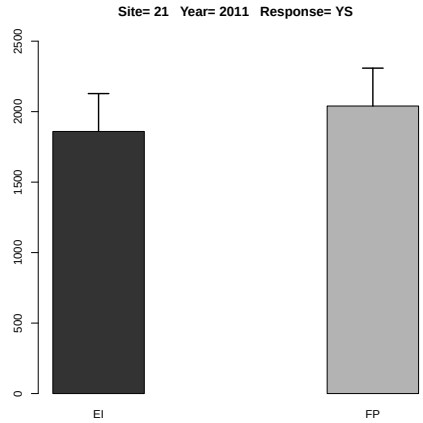

Figure 5.103: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	7425.849	7425.849	0.248	3.000	0.652
B	1.000	1248247.562	1248247.562	41.770	5.976	0.001
A:B	1.000	28985.062	28985.062	0.970	5.976	0.363

Table 5.257: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1622.750	138.886	6.000	11.680	1282.685	1962.815	0.000
2	FP		1718.125	138.886	6.000	12.370	1378.060	2058.190	0.000
3		N	1949.750	109.569	4.100	17.790	1649.433	2250.067	0.000
4		N0	1391.125	109.569	4.100	12.700	1090.808	1691.442	0.000
5	EI	N	1859.500	151.739	8.200	12.250	1511.193	2207.807	0.000
6	FP	N	2040.000	151.739	8.200	13.440	1691.693	2388.307	0.000
7	EI	N0	1386.000	151.739	8.200	9.130	1037.693	1734.307	0.000
8	FP	N0	1396.250	151.739	8.200	9.200	1047.943	1744.557	0.000

Table 5.258: Estimate of treatment means in tow-way ANOVA for variable YS at site 21 in year 2011 .

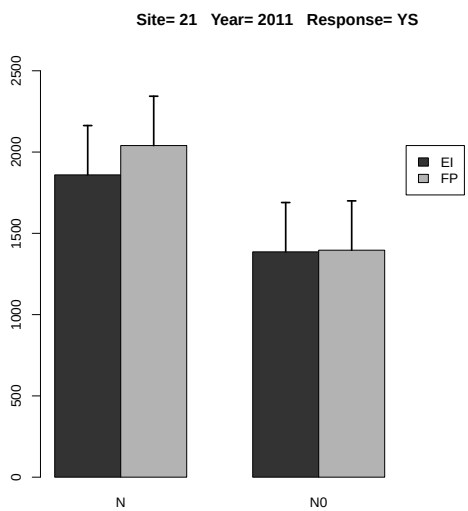

Figure 5.104: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-95.375	191.329	3.000	-0.500	-704.303	513.553	0.652
B N-N0	558.625	86.435	6.000	6.460	346.920	770.330	0.001
A:B EI N- FP N	-180.500	209.948	4.300	-0.860	-749.641	388.641	0.436
A:B EI N- EI N0	473.500	122.238	6.000	3.870	174.104	772.896	0.008
A:B EI N- FP N0	463.250	209.948	4.300	2.210	-105.891	1032.391	0.088
A:B FP N- EI N0	654.000	209.948	4.300	3.120	84.859	1223.141	0.033
A:B FP N- FP N0	643.750	122.238	6.000	5.270	344.354	943.146	0.002
A:B EI N0- FP N0	-10.250	209.948	4.300	-0.050	-579.391	558.891	0.963

Table 5.259: Estimate of contrast in two-way ANOVA for variable YS at site 21 in year 2011 .

Chapter 6

Analysis of Variance for Site 22

6.1 Year 2009

There are 73 variables not observed: UG.Ca UG.Mg UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

6.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	1057.000
2	2	EI	N0	1319.000
3	3	EI	N0	1750.000
4	1	EI	N	4696.000
5	2	EI	N	4736.000
6	3	EI	N	5106.000
7	1	FP	N0	1582.000
8	2	FP	N0	2210.000
9	3	FP	N0	1192.000
10	1	FP	N	3161.000
11	2	FP	N	3300.000
12	3	FP	N	3871.000

Table 6.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	4846.000	62.406	77.653	0.000
A FP	3444.000	62.406	55.187	0.001
A EI-FP	1402.000	88.255	15.886	0.007

Table 6.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 22 in year 2009 .

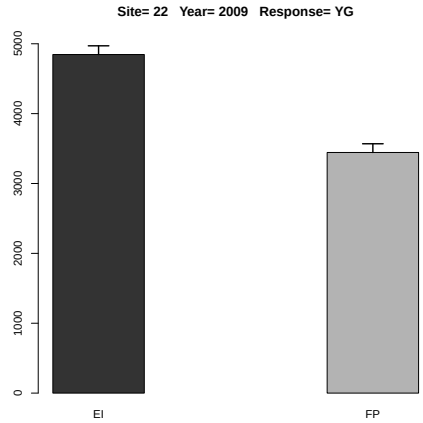

Figure 6.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	934092.000	934092.000	6.454	7.918	0.035
B	1.000	20698133.333	20698133.333	143.012	7.918	0.000
A:B	1.000	2137008.000	2137008.000	14.765	7.918	0.005

Table 6.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3110.667	155.312	7.900	20.030	2751.874	3469.459	0.000
2	FP		2552.667	155.312	7.900	16.440	2193.874	2911.459	0.000
3		N	4145.000	155.312	7.900	26.690	3786.208	4503.792	0.000
4		N0	1518.333	155.312	7.900	9.780	1159.541	1877.126	0.000
5	EI	N	4846.000	219.644	7.900	22.060	4338.591	5353.409	0.000
6	FP	N	3444.000	219.644	7.900	15.680	2936.591	3951.409	0.000
7	EI	N0	1375.333	219.644	7.900	6.260	867.924	1882.742	0.000
8	FP	N0	1661.333	219.644	7.900	7.560	1153.924	2168.742	0.000

Table 6.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 22 in year 2009
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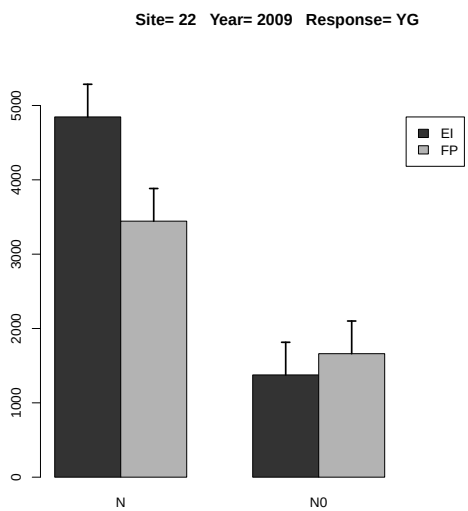

Figure 6.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	558.000	219.644	7.900	2.540	50.591	1065.409	0.035
B N-N0	2626.667	219.644	7.900	11.960	2119.258	3134.076	0.000
A:B EI N- FP N	1402.000	310.623	7.900	4.510	684.415	2119.585	0.002
A:B EI N- EI N0	3470.667	310.623	7.900	11.170	2753.082	4188.251	0.000
A:B EI N- FP N0	3184.667	310.623	7.900	10.250	2467.082	3902.251	0.000
A:B FP N- EI N0	2068.667	310.623	7.900	6.660	1351.082	2786.251	0.000
A:B FP N- FP N0	1782.667	310.623	7.900	5.740	1065.082	2500.251	0.000
A:B EI N0- FP N0	-286.000	310.623	7.900	-0.920	-1003.585	431.585	0.384

Table 6.5: Estimate of contrast in two-way ANOVA for variable YG at site 22 in year 2009 .

6.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	3252.000
2	2	EI	N0	4016.000
3	3	EI	N0	5268.000
4	1	EI	N	11129.000
5	2	EI	N	11177.000
6	3	EI	N	12050.000
7	1	FP	N0	4604.000
8	2	FP	N0	6138.000
9	3	FP	N0	3480.000
10	1	FP	N	8629.000
11	2	FP	N	9009.000
12	3	FP	N	10490.000

Table 6.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	11452.000	194.614	58.845	0.000
A FP	9376.000	194.614	48.177	0.000
A EI-FP	2076.000	275.226	7.543	0.031

Table 6.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 22 in year 2009 .

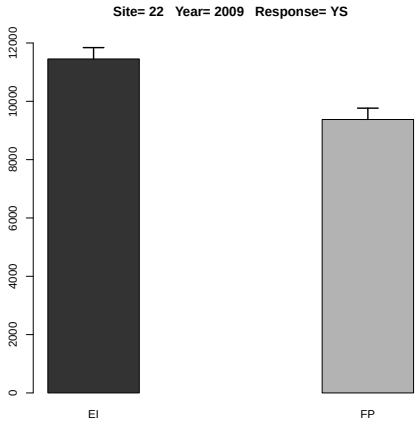

Figure 6.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1719147.000	1719147.000	1.697	8.637	0.226
B	1.000	106362256.333	106362256.333	105.003	8.637	0.000
A:B	1.000	5219283.000	5219283.000	5.153	8.637	0.051

Table 6.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7815.333	410.882	8.600	19.020	6879.862	8750.805	0.000
2	FP		7058.333	410.882	8.600	17.180	6122.862	7993.805	0.000
3		N	10414.000	410.882	8.600	25.350	9478.529	11349.471	0.000
4		N0	4459.667	410.882	8.600	10.850	3524.195	5395.138	0.000
5	EI	N	11452.000	581.076	8.600	19.710	10129.044	12774.956	0.000
6	FP	N	9376.000	581.076	8.600	16.140	8053.044	10698.956	0.000
7	EI	N0	4178.667	581.076	8.600	7.190	2855.710	5501.623	0.000
8	FP	N0	4740.667	581.076	8.600	8.160	3417.710	6063.623	0.000

Table 6.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 22 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	757.000	581.076	8.600	1.300	-565.956	2079.956	0.226
B N-N0	5954.333	581.076	8.600	10.250	4631.377	7277.290	0.000
A:B EI N- FP N	2076.000	821.765	8.600	2.530	205.057	3946.943	0.033
A:B EI N- EI N0	7273.333	821.765	8.600	8.850	5402.391	9144.276	0.000
A:B EI N- FP N0	6711.333	821.765	8.600	8.170	4840.390	8582.276	0.000
A:B FP N- EI N0	5197.333	821.765	8.600	6.320	3326.390	7068.276	0.000
A:B FP N- FP N0	4635.333	821.765	8.600	5.640	2764.390	6506.276	0.000
A:B EI N0- FP N0	-562.000	821.765	8.600	-0.680	-2432.943	1308.943	0.512

Table 6.10: Estimate of contrast in two-way ANOVA for variable YS at site 22 in year 2009 .

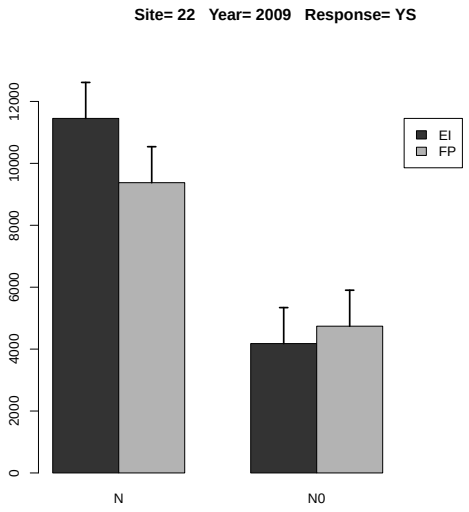

Figure 6.4: Estimated treatment means and standard error in the 2-way ANOVA.

6.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	4309.000
2	2	EI	N0	5335.000
3	3	EI	N0	7018.000
4	1	EI	N	15825.000
5	2	EI	N	15913.000
6	3	EI	N	17156.000
7	1	FP	N0	6186.000
8	2	FP	N0	8348.000
9	3	FP	N0	4672.000
10	1	FP	N	11790.000
11	2	FP	N	12309.000
12	3	FP	N	14361.000

Table 6.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	16298.000	257.004	63.415	0.000
A FP	12820.000	257.004	49.882	0.001
A EI-FP	3478.000	363.459	9.569	0.019

Table 6.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 22 in year 2009 .

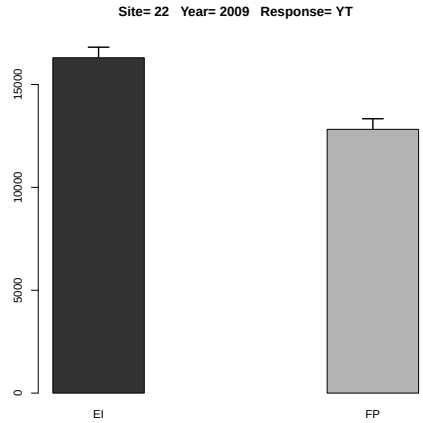

Figure 6.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5187675.000	5187675.000	2.700	9.558	0.133
B	1.000	220900683.000	220900683.000	114.958	9.558	0.000
A:B	1.000	14035707.000	14035707.000	7.304	9.558	0.023

Table 6.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10926.000	565.917	9.600	19.310	9657.100	12194.900	0.000
2	FP		9611.000	565.917	9.600	16.980	8342.100	10879.900	0.000
3		N	14559.000	565.917	9.600	25.730	13290.100	15827.900	0.000
4		N0	5978.000	565.917	9.600	10.560	4709.100	7246.900	0.000
5	EI	N	16298.000	800.327	9.600	20.360	14503.505	18092.495	0.000
6	FP	N	12820.000	800.327	9.600	16.020	11025.505	14614.495	0.000
7	EI	N0	5554.000	800.327	9.600	6.940	3759.505	7348.495	0.000
8	FP	N0	6402.000	800.327	9.600	8.000	4607.505	8196.495	0.000

Table 6.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 22 in year 2009 .

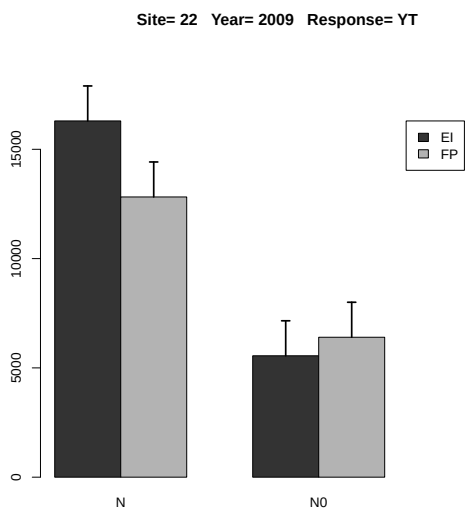

Figure 6.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1315.000	800.327	9.600	1.640	-479.495	3109.495	0.133
B N-N0	8581.000	800.327	9.600	10.720	6786.505	10375.495	0.000
A:B EI N- FP N	3478.000	1131.834	9.600	3.070	940.201	6015.799	0.012
A:B EI N- EI N0	10744.000	1131.834	9.600	9.490	8206.201	13281.799	0.000
A:B EI N- FP N0	9896.000	1131.834	9.600	8.740	7358.201	12433.799	0.000
A:B FP N- EI N0	7266.000	1131.834	9.600	6.420	4728.201	9803.799	0.000
A:B FP N- FP N0	6418.000	1131.834	9.600	5.670	3880.201	8955.799	0.000
A:B EI N0- FP N0	-848.000	1131.834	9.600	-0.750	-3385.799	1689.799	0.472

Table 6.15: Estimate of contrast in two-way ANOVA for variable YT at site 22 in year 2009 .

6.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.245
2	2	EI	N0	0.247
3	3	EI	N0	0.249
4	1	EI	N	0.297
5	2	EI	N	0.298
6	3	EI	N	0.298
7	1	FP	N0	0.256
8	2	FP	N0	0.265
9	3	FP	N0	0.255
10	1	FP	N	0.268
11	2	FP	N	0.268
12	3	FP	N	0.270

Table 6.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.297	0.000	996.884	0.000
A FP	0.269	0.000	900.512	0.000
A EI-FP	0.029	0.000	68.145	0.000

Table 6.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 22 in year 2009 .

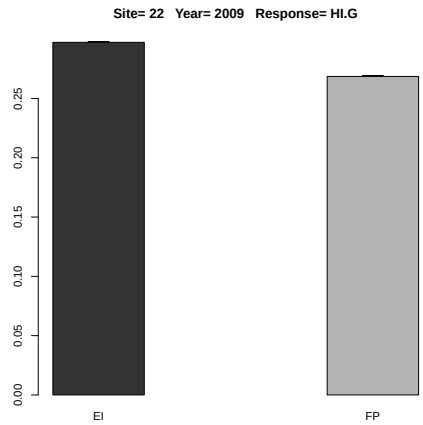

Figure 6.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	27.274	5.810	0.002
B	1.000	0.003	0.003	321.249	5.810	0.000
A:B	1.000	0.001	0.001	142.277	5.810	0.000

Table 6.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.272	0.001	5.800	228.010	0.269	0.275	0.000
2	FP		0.264	0.001	5.800	220.680	0.261	0.267	0.000
3		N	0.283	0.001	5.800	236.920	0.280	0.286	0.000
4		N0	0.253	0.001	5.800	211.770	0.250	0.256	0.000
5	EI	N	0.297	0.002	7.800	176.720	0.293	0.301	0.000
6	FP	N	0.269	0.002	7.800	159.630	0.265	0.273	0.000
7	EI	N0	0.247	0.002	7.800	146.980	0.243	0.251	0.000
8	FP	N0	0.259	0.002	7.800	153.660	0.255	0.262	0.000

Table 6.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 22 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.009	0.002	5.800	5.220	0.005	0.013	0.002
B N-N0	0.030	0.002	5.800	17.920	0.026	0.034	0.000
A:B EI N- FP N	0.029	0.002	5.800	12.130	0.023	0.035	0.000
A:B EI N- EI N0	0.050	0.002	5.800	21.110	0.044	0.056	0.000
A:B EI N- FP N0	0.039	0.002	5.800	16.370	0.033	0.045	0.000
A:B FP N- EI N0	0.021	0.002	5.800	8.980	0.015	0.027	0.000
A:B FP N- FP N0	0.010	0.002	5.800	4.240	0.004	0.016	0.006
A:B EI N0- FP N0	-0.011	0.002	5.800	-4.740	-0.017	-0.005	0.004

Table 6.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 22 in year 2009 .

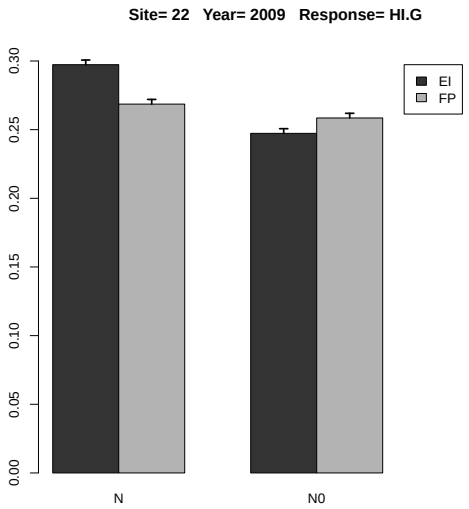

Figure 6.8: Estimated treatment means and standard error in the 2-way ANOVA.

6.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	13.107
2	2	EI	N0	16.619
3	3	EI	N0	21.175
4	1	EI	N	72.318
5	2	EI	N	71.514
6	3	EI	N	75.058
7	1	FP	N0	21.041
8	2	FP	N0	29.393
9	3	FP	N0	17.522
10	1	FP	N	37.616
11	2	FP	N	43.890
12	3	FP	N	48.775

Table 6.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	72.963	1.847	39.508	0.000
A FP	43.427	1.847	23.515	0.003
A EI-FP	29.537	2.612	11.309	0.014

Table 6.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 22 in year 2009 .

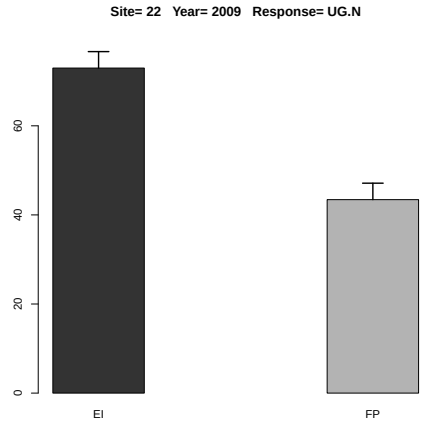

Figure 6.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	426.675	426.675	20.803	6.000	0.004
B	1.000	4420.359	4420.359	215.521	6.000	0.000
A:B	1.000	930.416	930.416	45.364	6.000	0.001

Table 6.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		44.965	1.985	5.200	22.660	39.927	50.003	0.000
2	FP		33.039	1.985	5.200	16.650	28.001	38.077	0.000
3		N	58.195	1.985	5.200	29.320	53.157	63.233	0.000
4		N0	19.809	1.985	5.200	9.980	14.771	24.848	0.000
5	EI	N	72.963	2.712	7.900	26.900	66.692	79.234	0.000
6	FP	N	43.427	2.712	7.900	16.010	37.156	49.698	0.000
7	EI	N0	16.967	2.712	7.900	6.260	10.696	23.238	0.000
8	FP	N0	22.652	2.712	7.900	8.350	16.381	28.923	0.000

Table 6.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 22 in year 2009 .

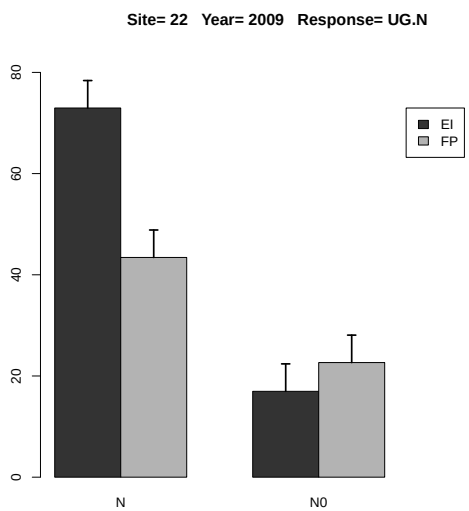

Figure 6.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	11.926	2.615	6.000	4.560	5.528	18.324	0.004
B N-N0	38.386	2.615	6.000	14.680	31.988	44.784	0.000
A:B EI N- FP N	29.537	3.698	6.000	7.990	20.488	38.585	0.000
A:B EI N- EI N0	55.996	3.698	6.000	15.140	46.948	65.044	0.000
A:B EI N- FP N0	50.311	3.698	6.000	13.610	41.263	59.359	0.000
A:B FP N- EI N0	26.460	3.698	6.000	7.160	17.412	35.508	0.000
A:B FP N- FP N0	20.775	3.698	6.000	5.620	11.727	29.823	0.001
A:B EI N0- FP N0	-5.685	3.698	6.000	-1.540	-14.733	3.363	0.175

Table 6.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 22 in year 2009 .

6.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	3.382
2	2	EI	N0	5.276
3	3	EI	N0	7.175
4	1	EI	N	17.375
5	2	EI	N	17.997
6	3	EI	N	20.935
7	1	FP	N0	5.537
8	2	FP	N0	6.851
9	3	FP	N0	4.649
10	1	FP	N	12.012
11	2	FP	N	10.230
12	3	FP	N	12.000

Table 6.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	18.769	0.743	25.249	0.003
A FP	11.414	0.743	15.355	0.007
A EI-FP	7.355	1.051	6.996	0.035

Table 6.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 22 in year 2009 .

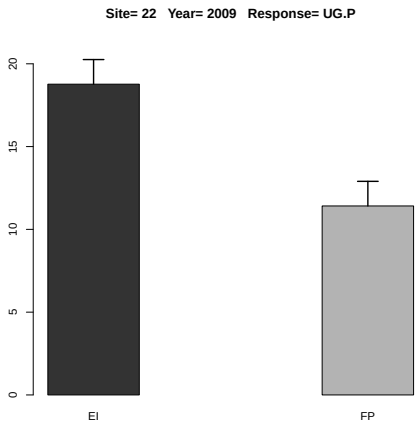

Figure 6.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	12.325	12.325	10.241	4.000	0.033
B	1.000	277.232	277.232	230.365	4.000	0.000
A:B	1.000	45.117	45.117	37.490	4.000	0.004

Table 6.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.023	0.768	4.000	15.650	9.890	14.156	0.000
2	FP		8.546	0.768	4.000	11.120	6.413	10.680	0.000
3		N	15.091	0.629	6.400	24.000	13.578	16.605	0.000
4		N0	5.478	0.629	6.400	8.710	3.965	6.992	0.000
5	EI	N	18.769	0.889	6.400	21.110	16.628	20.910	0.000
6	FP	N	11.414	0.889	6.400	12.840	9.273	13.555	0.000
7	EI	N0	5.278	0.889	6.400	5.940	3.137	7.418	0.001
8	FP	N0	5.679	0.889	6.400	6.390	3.538	7.820	0.000

Table 6.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 22 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3.477	1.087	4.000	3.200	0.460	6.494	0.033
B N-N0	9.613	0.633	4.000	15.180	7.854	11.372	0.000
A:B EI N- FP N	7.355	1.258	6.400	5.850	4.328	10.382	0.001
A:B EI N- EI N0	13.491	0.896	4.000	15.060	11.004	15.978	0.000
A:B EI N- FP N0	13.090	1.258	6.400	10.410	10.063	16.117	0.000
A:B FP N- EI N0	6.136	1.258	6.400	4.880	3.109	9.164	0.002
A:B FP N- FP N0	5.735	0.896	4.000	6.400	3.248	8.222	0.003
A:B EI N0- FP N0	-0.401	1.258	6.400	-0.320	-3.429	2.626	0.760

Table 6.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 22 in year 2009 .

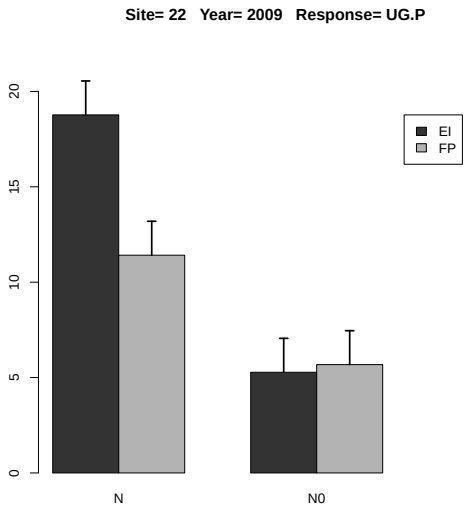

Figure 6.12: Estimated treatment means and standard error in the 2-way ANOVA.

6.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	7.746
2	2	EI	N0	12.082
3	3	EI	N0	16.431
4	1	EI	N	39.789
5	2	EI	N	41.213
6	3	EI	N	47.940
7	1	FP	N0	12.680
8	2	FP	N0	15.689
9	3	FP	N0	10.646
10	1	FP	N	27.507
11	2	FP	N	23.427
12	3	FP	N	27.480

Table 6.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	42.981	1.702	25.249	0.003
A FP	26.138	1.702	15.355	0.008
A EI-FP	16.843	2.407	6.996	0.035

Table 6.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 22 in year 2009 .

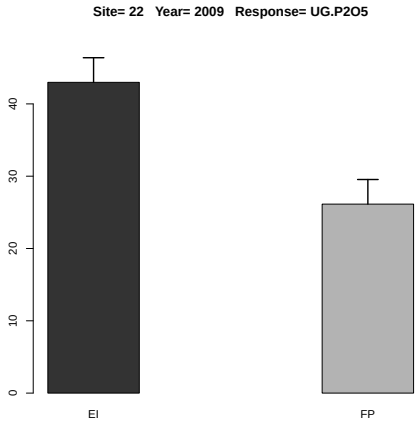

Figure 6.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	64.632	64.632	10.241	4.000	0.033
B	1.000	1453.833	1453.833	230.365	4.000	0.000
A:B	1.000	236.598	236.598	37.490	4.000	0.004

Table 6.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		27.533	1.759	4.000	15.650	22.649	32.418	0.000
2	FP		19.571	1.759	4.000	11.120	14.687	24.456	0.000
3		N	34.559	1.440	6.400	24.000	31.093	38.026	0.000
4		N0	12.546	1.440	6.400	8.710	9.079	16.012	0.000
5	EI	N	42.981	2.036	6.400	21.110	38.079	47.883	0.000
6	FP	N	26.138	2.036	6.400	12.840	21.236	31.040	0.000
7	EI	N0	12.086	2.036	6.400	5.940	7.184	16.988	0.001
8	FP	N0	13.005	2.036	6.400	6.390	8.103	17.907	0.000

Table 6.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 22 in year 2009 .

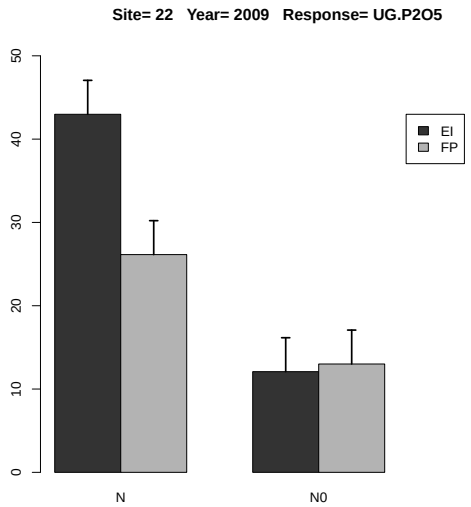

Figure 6.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	7.962	2.488	4.000	3.200	1.054	14.870	0.033
B N-N0	22.014	1.450	4.000	15.180	17.987	26.041	0.000
A:B EI N- FP N	16.843	2.880	6.400	5.850	9.910	23.775	0.001
A:B EI N- EI N0	30.895	2.051	4.000	15.060	25.200	36.590	0.000
A:B EI N- FP N0	29.976	2.880	6.400	10.410	23.043	36.908	0.000
A:B FP N- EI N0	14.052	2.880	6.400	4.880	7.119	20.984	0.002
A:B FP N- FP N0	13.133	2.051	4.000	6.400	7.438	18.828	0.003
A:B EI N0- FP N0	-0.919	2.880	6.400	-0.320	-7.851	6.014	0.760

Table 6.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 22 in year 2009 .

6.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	3.382
2	2	EI	N0	4.089
3	3	EI	N0	5.600
4	1	EI	N	13.618
5	2	EI	N	12.787
6	3	EI	N	16.339
7	1	FP	N0	4.271
8	2	FP	N0	6.630
9	3	FP	N0	3.814
10	1	FP	N	8.535
11	2	FP	N	8.250
12	3	FP	N	9.678

Table 6.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	14.248	0.450	31.636	0.002
A FP	8.821	0.450	19.585	0.004
A EI-FP	5.428	0.637	8.521	0.024

Table 6.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 22 in year 2009 .

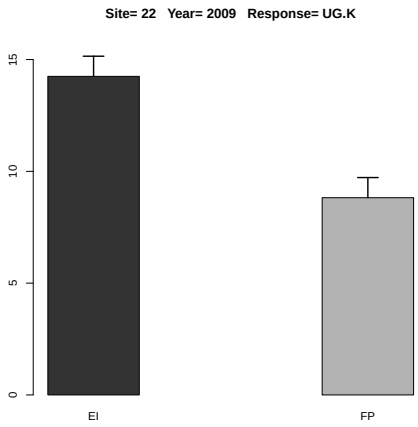

Figure 6.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10.805	10.805	7.553	3.999	0.051
B	1.000	142.967	142.967	99.938	4.000	0.001
A:B	1.000	26.782	26.782	18.721	4.000	0.012

Table 6.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.303	0.628	4.000	14.820	7.560	11.046	0.000
2	FP		6.863	0.628	4.000	10.930	5.120	8.606	0.000
3		N	11.534	0.562	7.500	20.510	10.224	12.845	0.000
4		N0	4.631	0.562	7.500	8.240	3.321	5.942	0.000
5	EI	N	14.248	0.795	7.500	17.920	12.395	16.102	0.000
6	FP	N	8.821	0.795	7.500	11.090	6.967	10.674	0.000
7	EI	N0	4.357	0.795	7.500	5.480	2.504	6.210	0.001
8	FP	N0	4.905	0.795	7.500	6.170	3.052	6.759	0.000

Table 6.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 22 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.440	0.888	4.000	2.750	-0.025	4.904	0.051
B N-N0	6.903	0.690	4.000	10.000	4.986	8.821	0.001
A:B EI N- FP N	5.428	1.125	7.500	4.830	2.806	8.049	0.002
A:B EI N- EI N0	9.891	0.977	4.000	10.130	7.180	12.603	0.000
A:B EI N- FP N0	9.343	1.125	7.500	8.310	6.722	11.964	0.000
A:B FP N- EI N0	4.464	1.125	7.500	3.970	1.843	7.085	0.005
A:B FP N- FP N0	3.916	0.977	4.000	4.010	1.204	6.627	0.016
A:B EI N0- FP N0	-0.548	1.125	7.500	-0.490	-3.169	2.073	0.640

Table 6.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 22 in year 2009 .

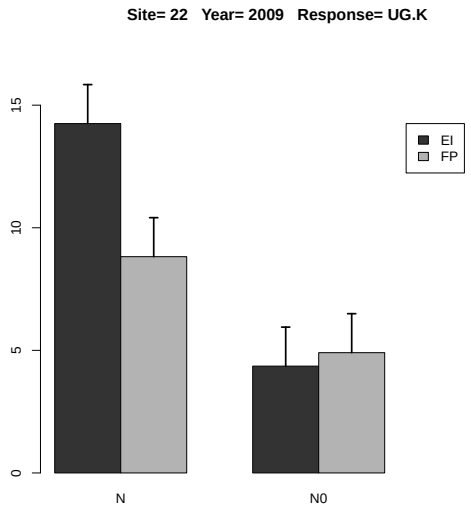

Figure 6.16: Estimated treatment means and standard error in the 2-way ANOVA.

6.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	4.076
2	2	EI	N0	4.927
3	3	EI	N0	6.748
4	1	EI	N	16.410
5	2	EI	N	15.409
6	3	EI	N	19.689
7	1	FP	N0	5.147
8	2	FP	N0	7.989
9	3	FP	N0	4.596
10	1	FP	N	10.284
11	2	FP	N	9.941
12	3	FP	N	11.661

Table 6.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	17.169	0.543	31.636	0.002
A FP	10.629	0.543	19.585	0.005
A EI-FP	6.540	0.768	8.521	0.024

Table 6.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 22 in year 2009 .

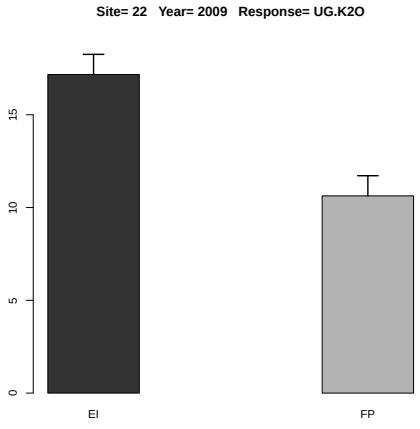

Figure 6.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	15.690	15.690	7.553	3.999	0.051
B	1.000	207.592	207.592	99.938	4.000	0.001
A:B	1.000	38.888	38.888	18.721	4.000	0.012

Table 6.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.210	0.756	4.000	14.820	9.110	13.310	0.000
2	FP		8.270	0.756	4.000	10.930	6.170	10.370	0.000
3		N	13.899	0.678	7.500	20.510	12.320	15.478	0.000
4		N0	5.581	0.678	7.500	8.240	4.001	7.160	0.000
5	EI	N	17.169	0.958	7.500	17.920	14.936	19.402	0.000
6	FP	N	10.629	0.958	7.500	11.090	8.396	12.862	0.000
7	EI	N0	5.250	0.958	7.500	5.480	3.017	7.484	0.001
8	FP	N0	5.911	0.958	7.500	6.170	3.678	8.144	0.000

Table 6.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 22 in year 2009 .

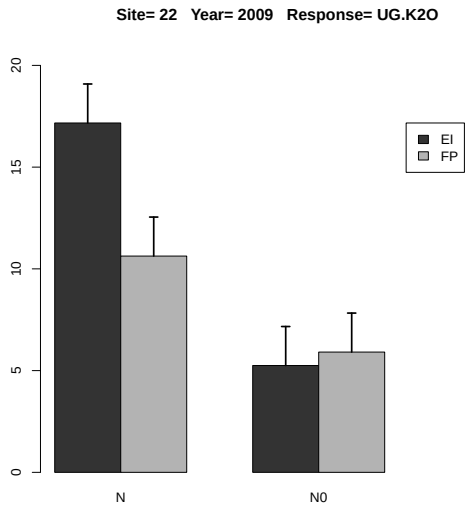

Figure 6.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.940	1.070	4.000	2.750	-0.030	5.910	0.051
B N-N0	8.319	0.832	4.000	10.000	6.008	10.629	0.001
A:B EI N- FP N	6.540	1.355	7.500	4.830	3.382	9.699	0.002
A:B EI N- EI N0	11.919	1.177	4.000	10.130	8.652	15.186	0.000
A:B EI N- FP N0	11.258	1.355	7.500	8.310	8.100	14.417	0.000
A:B FP N- EI N0	5.379	1.355	7.500	3.970	2.220	8.537	0.005
A:B FP N- FP N0	4.718	1.177	4.000	4.010	1.451	7.986	0.016
A:B EI N0- FP N0	-0.660	1.355	7.500	-0.490	-3.819	2.498	0.640

Table 6.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 22 in year 2009 .

6.1.10 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	0.539
2	2	EI	N0	0.686
3	3	EI	N0	0.875
4	1	EI	N	2.301
5	2	EI	N	2.131
6	3	EI	N	2.706
7	1	FP	N0	0.728
8	2	FP	N0	0.950
9	3	FP	N0	0.477
10	1	FP	N	1.359
11	2	FP	N	1.320
12	3	FP	N	1.665

Table 6.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	2.379	0.047	50.434	0.001
A FP	1.448	0.047	30.689	0.002
A EI-FP	0.932	0.067	13.962	0.009

Table 6.47: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 22 in year 2009 .

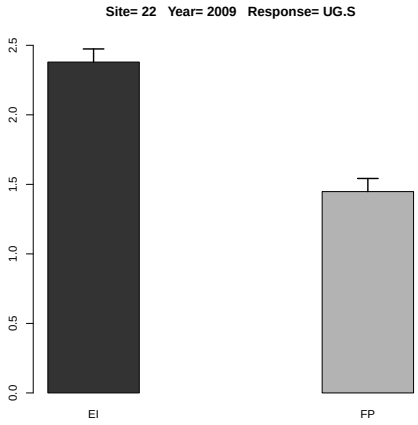

Figure 6.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.626	0.626	12.069	7.996	0.008
B	1.000	4.353	4.353	83.986	7.996	0.000
A:B	1.000	0.677	0.677	13.055	7.996	0.007

Table 6.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.540	0.093	8.000	16.570	1.325	1.754	0.000
2	FP		1.083	0.093	8.000	11.650	0.869	1.297	0.000
3		N	1.914	0.093	8.000	20.590	1.699	2.128	0.000
4		N0	0.709	0.093	8.000	7.630	0.495	0.923	0.000
5	EI	N	2.380	0.131	8.000	18.100	2.076	2.683	0.000
6	FP	N	1.448	0.131	8.000	11.020	1.145	1.751	0.000
7	EI	N0	0.700	0.131	8.000	5.330	0.397	1.003	0.001
8	FP	N0	0.718	0.131	8.000	5.460	0.415	1.021	0.001

Table 6.49: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 22 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.457	0.131	8.000	3.470	0.153	0.760	0.008
B N-N0	1.205	0.131	8.000	9.160	0.901	1.508	0.000
A:B EI N- FP N	0.932	0.186	8.000	5.010	0.503	1.360	0.001
A:B EI N- EI N0	1.679	0.186	8.000	9.040	1.251	2.108	0.000
A:B EI N- FP N0	1.661	0.186	8.000	8.940	1.232	2.090	0.000
A:B FP N- EI N0	0.748	0.186	8.000	4.020	0.319	1.177	0.004
A:B FP N- FP N0	0.730	0.186	8.000	3.930	0.301	1.158	0.004
A:B EI N0- FP N0	-0.018	0.186	8.000	-0.100	-0.447	0.410	0.924

Table 6.50: Estimate of contrast in two-way ANOVA for variable UG.S at site 22 in year 2009 .

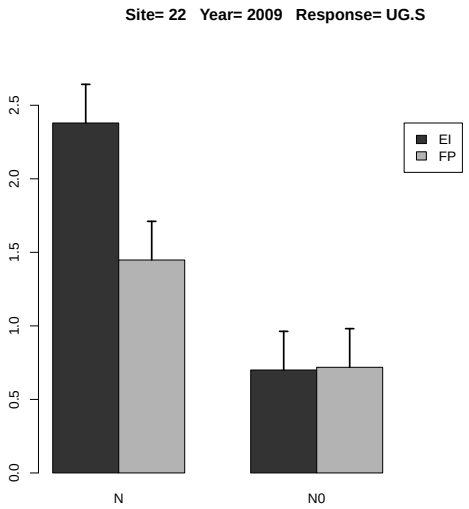

Figure 6.20: Estimated treatment means and standard error in the 2-way ANOVA.

6.1.11 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	26.089
2	2	EI	N	26.311
3	3	EI	N	28.367
4	1	FP	N	59.642
5	2	FP	N	62.264
6	3	FP	N	73.038

Table 6.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	26.922	2.943	3.600	9.150	18.360	35.484	0.001
A FP	64.981	2.943	3.600	22.080	56.419	73.543	0.000
A EI-FP	-38.059	3.378	2.000	-11.270	-52.593	-23.525	0.008

Table 6.52: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 22 in year 2009 .

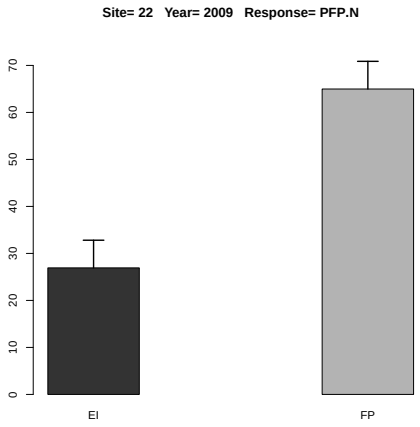

Figure 6.21: Estimated treatment means and standard error in the one-way ANOVA.

6.1.12 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	119.509
2	2	EI	N	120.527
3	3	EI	N	129.944
4	1	FP	N	1448.007
5	2	FP	N	1511.681
6	3	FP	N	1773.248

Table 6.53: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	123.327	70.406	4.000	1.750	-72.488	319.141	0.155
A FP	1577.645	70.406	4.000	22.410	1381.831	1773.460	0.000
A EI-FP	-1454.319	96.208	2.000	-15.120	-1868.198	-1040.439	0.004

Table 6.54: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 22 in year 2009 .

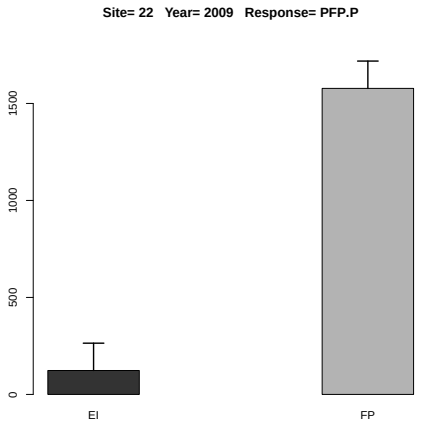

Figure 6.22: Estimated treatment means and standard error in the one-way ANOVA.

6.1.13 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	52.178
2	2	EI	N	52.622
3	3	EI	N	56.733
4	1	FP	N	632.200
5	2	FP	N	660.000
6	3	FP	N	774.200

Table 6.55: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	53.844	30.739	4.000	1.750	-31.652	139.341	0.155
A FP	688.800	30.739	4.000	22.410	603.304	774.296	0.000
A EI-FP	-634.956	42.005	2.000	-15.120	-815.702	-454.209	0.004

Table 6.56: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 22 in year 2009 .

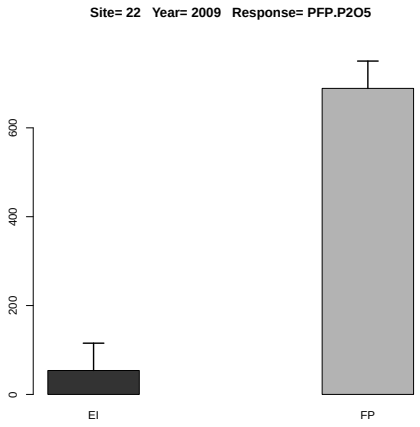

Figure 6.23: Estimated treatment means and standard error in the one-way ANOVA.

6.1.14 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	56.592
2	2	EI	N	57.074
3	3	EI	N	61.533
4	1	FP	N	1269.784
5	2	FP	N	1325.621
6	3	FP	N	1554.993

Table 6.57: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	58.400	61.716	4.000	0.950	-113.008	229.807	0.398
A FP	1383.466	61.716	4.000	22.420	1212.059	1554.873	0.000
A EI-FP	-1325.066	85.700	2.000	-15.460	-1693.469	-956.663	0.004

Table 6.58: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 22 in year 2009 .

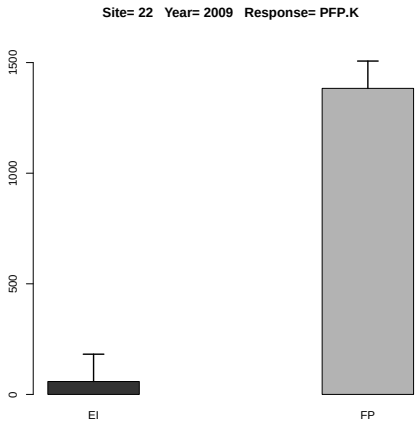

Figure 6.24: Estimated treatment means and standard error in the one-way ANOVA.

6.1.15 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	46.960
2	2	EI	N	47.360
3	3	EI	N	51.060
4	1	FP	N	1053.667
5	2	FP	N	1100.000
6	3	FP	N	1290.333

Table 6.59: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	48.460	51.212	4.000	0.950	-93.826	190.745	0.398
A FP	1148.000	51.212	4.000	22.420	1005.715	1290.285	0.000
A EI-FP	-1099.540	71.114	2.000	-15.460	-1405.809	-793.271	0.004

Table 6.60: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 22 in year 2009 .

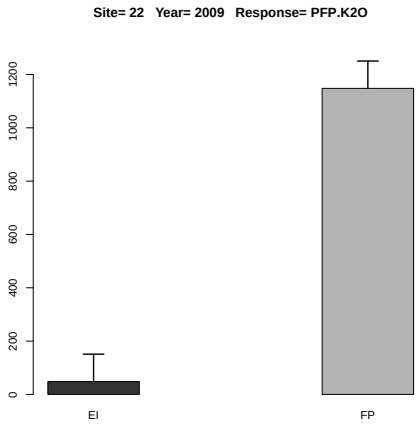

Figure 6.25: Estimated treatment means and standard error in the one-way ANOVA.

6.1.16 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.402
2	2	EI	N	0.397
3	3	EI	N	0.417
4	1	FP	N	0.710
5	2	FP	N	0.828
6	3	FP	N	0.920

Table 6.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.405	0.043	3.900	9.360	0.284	0.526	0.001
A FP	0.819	0.043	3.900	18.930	0.698	0.940	0.000
A EI-FP	-0.414	0.057	2.000	-7.260	-0.660	-0.168	0.018

Table 6.62: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 22 in year 2009 .

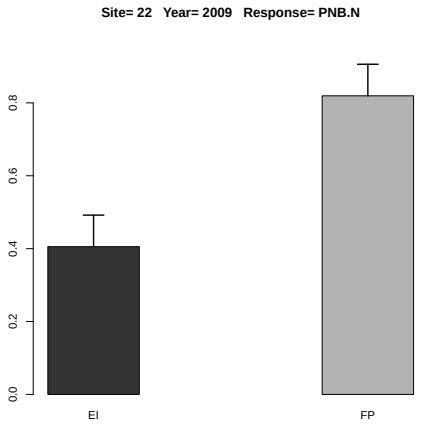

Figure 6.26: Estimated treatment means and standard error in the one-way ANOVA.

6.1.17 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.442
2	2	EI	N	0.458
3	3	EI	N	0.533
4	1	FP	N	5.502
5	2	FP	N	4.686
6	3	FP	N	5.497

Table 6.63: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.478	0.193	4.000	2.480	-0.059	1.014	0.069
A FP	5.229	0.193	4.000	27.120	4.692	5.765	0.000
A EI-FP	-4.751	0.263	2.000	-18.080	-5.882	-3.620	0.003

Table 6.64: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 22 in year 2009 .

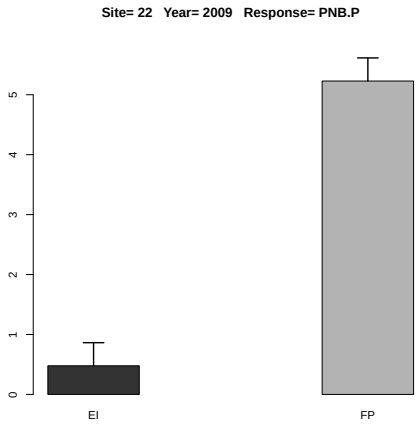

Figure 6.27: Estimated treatment means and standard error in the one-way ANOVA.

6.1.18 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.164
2	2	EI	N	0.154
3	3	EI	N	0.197
4	1	FP	N	3.428
5	2	FP	N	3.314
6	3	FP	N	3.887

Table 6.65: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.172	0.124	3.900	1.380	-0.176	0.520	0.241
A FP	3.543	0.124	3.900	28.520	3.195	3.891	0.000
A EI-FP	-3.372	0.162	2.000	-20.770	-4.070	-2.673	0.002

Table 6.66: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 22 in year 2009 .

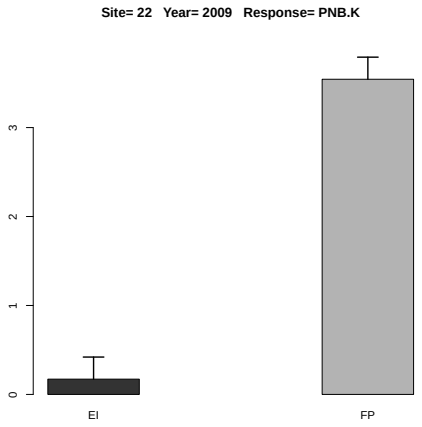

Figure 6.28: Estimated treatment means and standard error in the one-way ANOVA.

6.1.19 Response Variable AE

	rep	A	B	y
1	1	EI	N	20.217
2	2	EI	N	18.983
3	3	EI	N	18.644
4	1	FP	N	39.475
5	2	FP	N	27.250
6	3	FP	N	66.975

Table 6.67: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	19.281	8.451	2.282	0.253
A FP	44.567	8.451	5.274	0.059
A EI-FP	-25.285	11.952	-2.116	0.282

Table 6.68: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 22 in year 2009 .

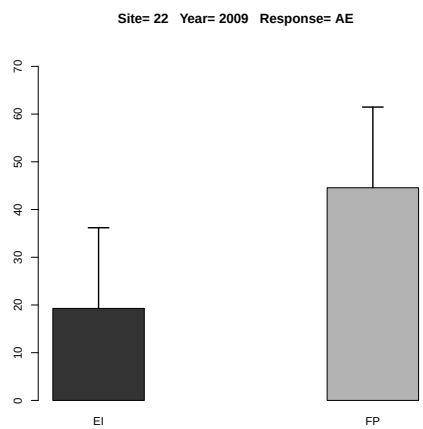

Figure 6.29: Estimated treatment means and standard error in the one-way ANOVA.

6.2 Year 2010

There are 73 variables not observed: UG.Ca UG.Mg UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

6.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	1990.000
2	2	EI	N0	1870.000
3	3	EI	N0	1200.000
4	1	EI	N	7600.000
5	2	EI	N	7130.000
6	3	EI	N	6550.000
7	1	FP	N0	2260.000
8	2	FP	N0	2350.000
9	3	FP	N0	1940.000
10	1	FP	N	3170.000
11	2	FP	N	3510.000
12	3	FP	N	3040.000

Table 6.69: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	7093.333	205.115	34.582	0.001
A FP	3240.000	205.115	15.796	0.007
A EI-FP	3853.333	290.077	13.284	0.010

Table 6.70: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 22 in year 2010 .

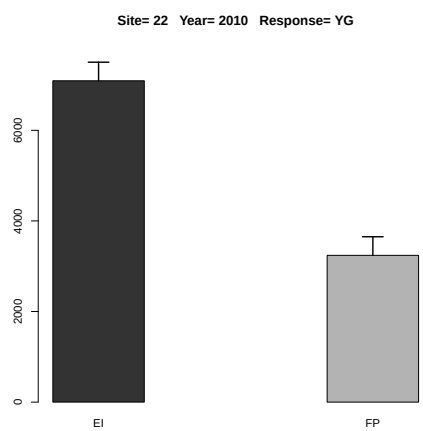

Figure 6.30: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	816394.002	816394.002	65.225	-0.000	
B	1.000	31331008.333	31331008.333	2503.147	4.000	0.000
A:B	1.000	14191875.000	14191875.000	1133.840	4.000	0.000

Table 6.71: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4390.000	211.772	3.200	20.730	3734.094	5045.906	0.000
2	FP		2711.667	211.772	3.200	12.800	2055.760	3367.573	0.001
3		N	5166.667	187.333	2.100	27.580	4403.865	5929.468	0.001
4		N0	1935.000	187.333	2.100	10.330	1172.199	2697.801	0.007
5	EI	N	7093.333	216.641	3.400	32.740	6451.756	7734.911	0.000
6	FP	N	3240.000	216.641	3.400	14.960	2598.422	3881.578	0.000
7	EI	N0	1686.667	216.641	3.400	7.790	1045.089	2328.244	0.003
8	FP	N0	2183.333	216.641	3.400	10.080	1541.756	2824.911	0.001

Table 6.72: Estimate of treatment means in tow-way ANOVA for variable YG at site 22 in year 2010 .

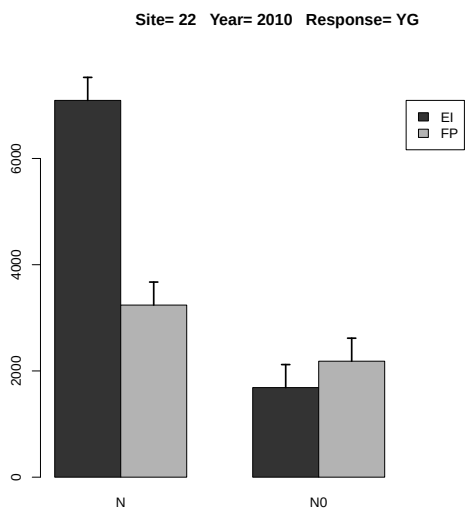

Figure 6.31: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1678.333	207.813	2.000	8.080	784.142	2572.525	0.015
B N-N0	3231.667	64.593	4.000	50.030	3052.167	3411.166	0.000
A:B EI N- FP N	3853.333	217.620	2.400	17.710	3050.159	4656.507	0.001
A:B EI N- EI N0	5406.667	91.348	4.000	59.190	5152.816	5660.517	0.000
A:B EI N- FP N0	4910.000	217.620	2.400	22.560	4106.826	5713.174	0.001
A:B FP N- EI N0	1553.333	217.620	2.400	7.140	750.159	2356.507	0.011
A:B FP N- FP N0	1056.667	91.348	4.000	11.570	802.816	1310.517	0.000
A:B EI N0- FP N0	-496.667	217.620	2.400	-2.280	-1299.841	306.507	0.129

Table 6.73: Estimate of contrast in two-way ANOVA for variable YG at site 22 in year 2010 .

6.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	5758.000
2	2	EI	N0	5085.000
3	3	EI	N0	3790.000
4	1	EI	N	11000.000
5	2	EI	N	8843.000
6	3	EI	N	10740.000
7	1	FP	N0	5559.000
8	2	FP	N0	6423.000
9	3	FP	N0	4879.000
10	1	FP	N	7160.000
11	2	FP	N	7301.000
12	3	FP	N	6195.000

Table 6.74: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	10194.333	641.089	15.902	0.007
A FP	6885.333	641.089	10.740	0.015
A EI-FP	3309.000	906.637	3.650	0.117

Table 6.75: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 22 in year 2010 .

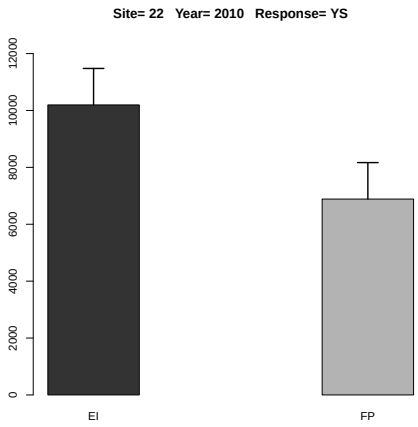

Figure 6.32: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3304318.996	3304318.996	4.924	3.999	0.091
B	1.000	32488752.083	32488752.083	48.418	3.628	0.003
A:B	1.000	12312002.083	12312002.083	18.349	3.628	0.016

Table 6.76: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7536.000	408.875	4.000	18.430	6400.690	8671.310	0.000
2	FP		6252.833	408.875	4.000	15.290	5117.523	7388.143	0.000
3		N	8539.833	373.506	7.500	22.860	7667.571	9412.095	0.000
4		N0	5249.000	373.506	7.500	14.050	4376.738	6121.262	0.000
5	EI	N	10194.333	528.218	7.500	19.300	8960.769	11427.898	0.000
6	FP	N	6885.333	528.218	7.500	13.040	5651.769	8118.898	0.000
7	EI	N0	4877.667	528.218	7.500	9.230	3644.102	6111.231	0.000
8	FP	N0	5620.333	528.218	7.500	10.640	4386.769	6853.898	0.000

Table 6.77: Estimate of treatment means in tow-way ANOVA for variable YS at site 22 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1283.167	578.237	4.000	2.220	-322.404	2888.738	0.091
B N-N0	3290.833	472.937	3.600	6.960	1922.890	4658.777	0.003
A:B EI N- FP N	3309.000	747.013	7.500	4.430	1564.476	5053.524	0.003
A:B EI N- EI N0	5316.667	668.834	3.600	7.950	3382.102	7251.231	0.002
A:B EI N- FP N0	4574.000	747.013	7.500	6.120	2829.476	6318.524	0.000
A:B FP N- EI N0	2007.667	747.013	7.500	2.690	263.143	3752.191	0.029
A:B FP N- FP N0	1265.000	668.834	3.600	1.890	-669.564	3199.564	0.139
A:B EI N0- FP N0	-742.667	747.013	7.500	-0.990	-2487.191	1001.857	0.351

Table 6.78: Estimate of contrast in two-way ANOVA for variable YS at site 22 in year 2010 .

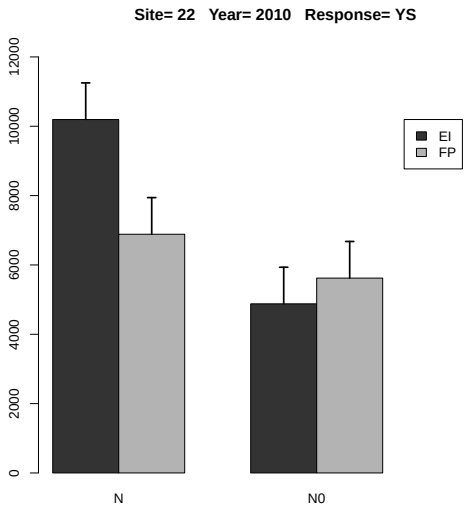

Figure 6.33: Estimated treatment means and standard error in the 2-way ANOVA.

6.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	7748.000
2	2	EI	N0	6955.000
3	3	EI	N0	4990.000
4	1	EI	N	18600.000
5	2	EI	N	15973.000
6	3	EI	N	17290.000
7	1	FP	N0	7819.000
8	2	FP	N0	8773.000
9	3	FP	N0	6819.000
10	1	FP	N	10330.000
11	2	FP	N	10811.000
12	3	FP	N	9235.000

Table 6.79: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	17287.667	708.585	24.397	0.003
A FP	10125.333	708.585	14.290	0.008
A EI-FP	7162.333	1002.091	7.147	0.033

Table 6.80: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 22 in year 2010 .

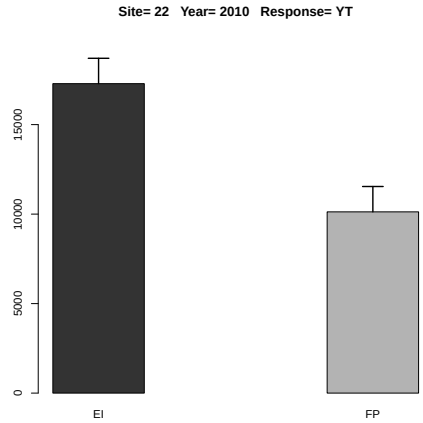

Figure 6.34: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	12216119.294	12216119.294	17.654	-0.000	
B	1.000	127629018.750	127629018.750	184.441	4.851	0.000
A:B	1.000	52941002.083	52941002.083	76.507	4.851	0.000

Table 6.81: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11926.000	574.783	3.800	20.750	10290.537	13561.463	0.000
2	FP		8964.500	574.783	3.800	15.600	7329.037	10599.963	0.000
3		N	13706.500	513.654	3.200	26.680	12120.964	15292.036	0.000
4		N0	7184.000	513.654	3.200	13.990	5598.464	8769.536	0.001
5	EI	N	17287.667	667.611	6.300	25.890	15670.644	18904.690	0.000
6	FP	N	10125.333	667.611	6.300	15.170	8508.310	11742.356	0.000
7	EI	N0	6564.333	667.611	6.300	9.830	4947.310	8181.356	0.000
8	FP	N0	7803.667	667.611	6.300	11.690	6186.644	9420.690	0.000

Table 6.82: Estimate of treatment means in tow-way ANOVA for variable YT at site 22 in year 2010
.

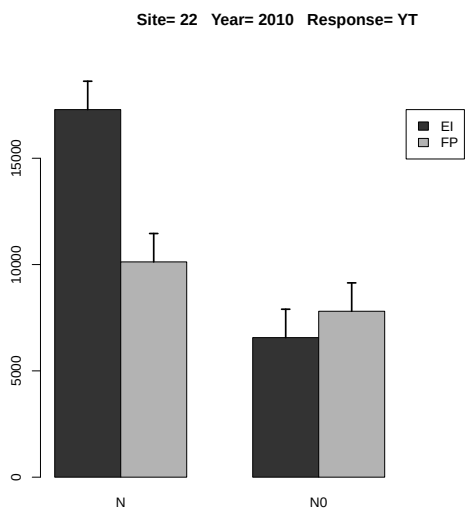

Figure 6.35: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2961.500	704.840	2.000	4.200	-71.558	5994.558	0.052
B N-N0	6522.500	480.269	4.800	13.580	5276.350	7768.650	0.000
A:B EI N- FP N	7162.333	852.912	3.900	8.400	4779.438	9545.228	0.001
A:B EI N- EI N0	10723.333	679.204	4.800	15.790	8961.011	12485.656	0.000
A:B EI N- FP N0	9484.000	852.912	3.900	11.120	7101.105	11866.895	0.000
A:B FP N- EI N0	3561.000	852.912	3.900	4.180	1178.105	5943.895	0.014
A:B FP N- FP N0	2321.667	679.204	4.800	3.420	559.344	4083.989	0.020
A:B EI N0- FP N0	-1239.333	852.912	3.900	-1.450	-3622.228	1143.562	0.221

Table 6.83: Estimate of contrast in two-way ANOVA for variable YT at site 22 in year 2010 .

6.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.257
2	2	EI	N0	0.269
3	3	EI	N0	0.240
4	1	EI	N	0.409
5	2	EI	N	0.446
6	3	EI	N	0.379
7	1	FP	N0	0.289
8	2	FP	N0	0.268
9	3	FP	N0	0.284
10	1	FP	N	0.307
11	2	FP	N	0.325
12	3	FP	N	0.329

Table 6.84: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.411	0.015	27.079	0.002
A FP	0.320	0.015	21.085	0.004
A EI-FP	0.091	0.021	4.238	0.090

Table 6.85: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 22 in year 2010 .

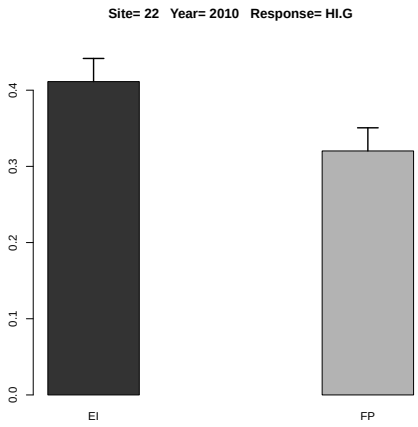

Figure 6.36: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	5.368	4.000	0.081
B	1.000	0.029	0.029	144.680	3.972	0.000
A:B	1.000	0.010	0.010	50.949	3.972	0.002

Table 6.86: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.333	0.010	4.000	33.120	0.305	0.361	0.000
2	FP		0.300	0.010	4.000	29.840	0.272	0.328	0.000
3		N	0.366	0.008	6.300	44.620	0.346	0.386	0.000
4		N0	0.268	0.008	6.300	32.690	0.248	0.288	0.000
5	EI	N	0.411	0.012	6.300	35.480	0.383	0.439	0.000
6	FP	N	0.320	0.012	6.300	27.630	0.292	0.348	0.000
7	EI	N0	0.255	0.012	6.300	22.030	0.227	0.283	0.000
8	FP	N0	0.281	0.012	6.300	24.200	0.252	0.308	0.000

Table 6.87: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 22 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.033	0.014	4.000	2.320	-0.006	0.072	0.081
B N-N0	0.098	0.008	4.000	12.030	0.075	0.120	0.000
A:B EI N- FP N	0.091	0.016	6.300	5.550	0.051	0.131	0.001
A:B EI N- EI N0	0.156	0.011	4.000	13.550	0.124	0.188	0.000
A:B EI N- FP N0	0.131	0.016	6.300	7.980	0.091	0.170	0.000
A:B FP N- EI N0	0.065	0.016	6.300	3.960	0.025	0.104	0.007
A:B FP N- FP N0	0.040	0.011	4.000	3.460	0.008	0.072	0.026
A:B EI N0- FP N0	-0.025	0.016	6.300	-1.530	-0.065	0.014	0.174

Table 6.88: Estimate of contrast in two-way ANOVA for variable HI.G at site 22 in year 2010 .

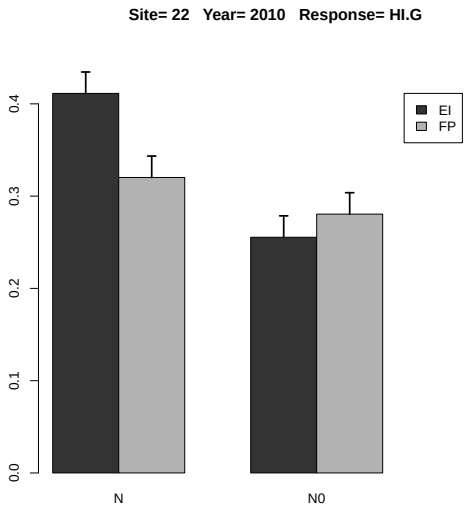

Figure 6.37: Estimated treatment means and standard error in the 2-way ANOVA.

6.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	19.502
2	2	EI	N0	15.708
3	3	EI	N0	11.760
4	1	EI	N	74.480
5	2	EI	N	84.847
6	3	EI	N	77.945
7	1	FP	N0	22.148
8	2	FP	N0	23.500
9	3	FP	N0	19.982
10	1	FP	N	28.847
11	2	FP	N	25.623
12	3	FP	N	26.752

Table 6.89: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	79.091	2.789	28.353	0.002
A FP	27.074	2.789	9.706	0.019
A EI-FP	52.017	3.945	13.186	0.010

Table 6.90: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 22 in year 2010 .

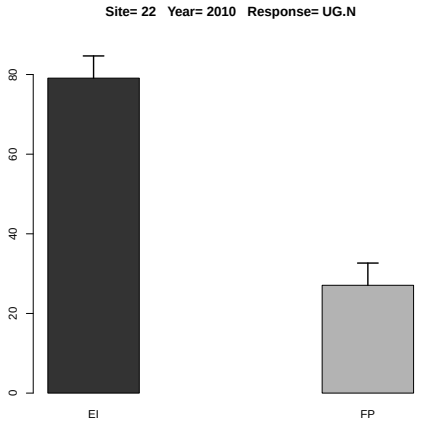

Figure 6.38: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1573.001	1573.001	129.291	8.000	0.000
B	1.000	3532.695	3532.695	290.367	8.000	0.000
A:B	1.000	2543.632	2543.632	209.071	8.000	0.000

Table 6.91: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		47.374	1.424	8.000	33.270	44.090	50.657	0.000
2	FP		24.475	1.424	8.000	17.190	21.192	27.759	0.000
3		N	53.082	1.424	8.000	37.280	49.799	56.366	0.000
4		N0	18.767	1.424	8.000	13.180	15.483	22.050	0.000
5	EI	N	79.091	2.014	8.000	39.270	74.447	83.735	0.000
6	FP	N	27.074	2.014	8.000	13.440	22.430	31.718	0.000
7	EI	N0	15.657	2.014	8.000	7.770	11.013	20.301	0.000
8	FP	N0	21.877	2.014	8.000	10.860	17.233	26.521	0.000

Table 6.92: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 22 in year 2010 .

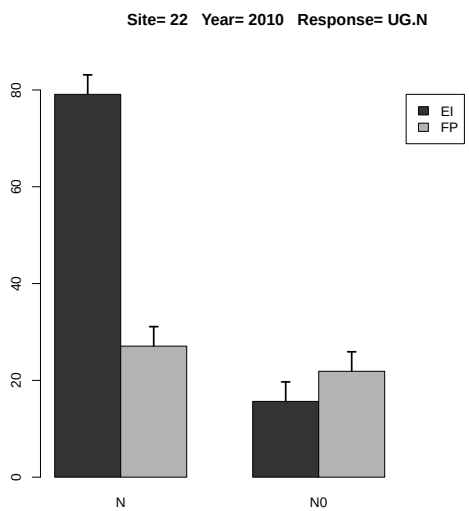

Figure 6.39: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	22.898	2.014	8.000	11.370	18.254	27.542	0.000
B N-N0	34.316	2.014	8.000	17.040	29.672	38.960	0.000
A:B EI N- FP N	52.017	2.848	8.000	18.260	45.449	58.584	0.000
A:B EI N- EI N0	63.434	2.848	8.000	22.270	56.867	70.001	0.000
A:B EI N- FP N0	57.214	2.848	8.000	20.090	50.647	63.781	0.000
A:B FP N- EI N0	11.417	2.848	8.000	4.010	4.850	17.985	0.004
A:B FP N- FP N0	5.197	2.848	8.000	1.820	-1.370	11.765	0.105
A:B EI N0- FP N0	-6.220	2.848	8.000	-2.180	-12.787	0.347	0.060

Table 6.93: Estimate of contrast in two-way ANOVA for variable UG.N at site 22 in year 2010 .

6.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	4.179
2	2	EI	N0	5.610
3	3	EI	N0	2.880
4	1	EI	N	19.760
5	2	EI	N	14.973
6	3	EI	N	12.445
7	1	FP	N0	5.876
8	2	FP	N0	6.110
9	3	FP	N0	5.238
10	1	FP	N	8.242
11	2	FP	N	6.669
12	3	FP	N	6.688

Table 6.94: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	15.726	1.179	13.343	0.010
A FP	7.200	1.179	6.109	0.045
A EI-FP	8.526	1.667	5.115	0.063

Table 6.95: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 22 in year 2010 .

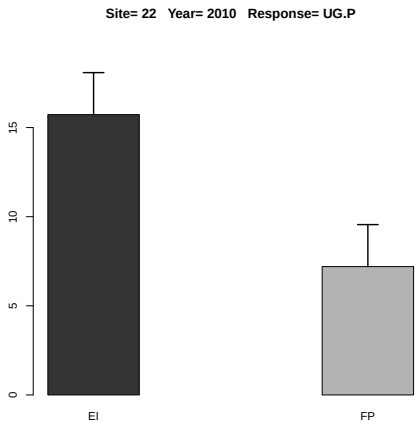

Figure 6.40: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	36.834	36.834	11.823	6.000	0.014
B	1.000	125.997	125.997	40.444	6.000	0.001
A:B	1.000	75.671	75.671	24.290	6.000	0.003

Table 6.96: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.975	0.933	3.800	10.690	7.336	12.613	0.000
2	FP		6.471	0.933	3.800	6.930	3.832	9.109	0.003
3		N	11.463	0.933	3.800	12.280	8.825	14.101	0.000
4		N0	4.982	0.933	3.800	5.340	2.344	7.620	0.007
5	EI	N	15.726	1.179	6.700	13.340	12.913	18.539	0.000
6	FP	N	7.200	1.179	6.700	6.110	4.387	10.013	0.001
7	EI	N0	4.223	1.179	6.700	3.580	1.410	7.036	0.010
8	FP	N0	5.741	1.179	6.700	4.870	2.928	8.554	0.002

Table 6.97: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 22 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3.504	1.019	6.000	3.440	1.010	5.997	0.014
B N-N0	6.481	1.019	6.000	6.360	3.987	8.974	0.001
A:B EI N- FP N	8.526	1.441	6.000	5.920	5.000	12.053	0.001
A:B EI N- EI N0	11.503	1.441	6.000	7.980	7.977	15.029	0.000
A:B EI N- FP N0	9.985	1.441	6.000	6.930	6.458	13.511	0.000
A:B FP N- EI N0	2.977	1.441	6.000	2.070	-0.550	6.503	0.084
A:B FP N- FP N0	1.458	1.441	6.000	1.010	-2.068	4.985	0.351
A:B EI N0- FP N0	-1.518	1.441	6.000	-1.050	-5.045	2.008	0.333

Table 6.98: Estimate of contrast in two-way ANOVA for variable UG.P at site 22 in year 2010 .

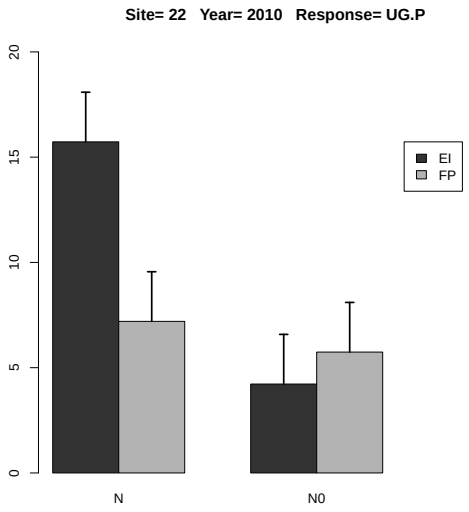

Figure 6.41: Estimated treatment means and standard error in the 2-way ANOVA.

6.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	9.570
2	2	EI	N0	12.847
3	3	EI	N0	6.595
4	1	EI	N	45.250
5	2	EI	N	34.288
6	3	EI	N	28.499
7	1	FP	N0	13.456
8	2	FP	N0	13.992
9	3	FP	N0	11.995
10	1	FP	N	18.874
11	2	FP	N	15.272
12	3	FP	N	15.316

Table 6.99: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	36.013	2.699	13.343	0.009
A FP	16.487	2.699	6.109	0.045
A EI-FP	19.525	3.817	5.115	0.063

Table 6.100: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 22 in year 2010 .

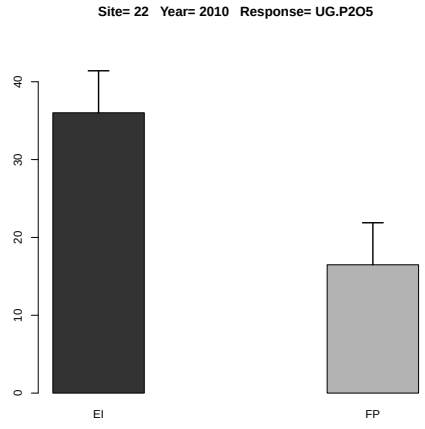

Figure 6.42: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	193.161	193.161	11.823	6.000	0.014
B	1.000	660.742	660.742	40.444	6.000	0.001
A:B	1.000	396.829	396.829	24.290	6.000	0.003

Table 6.101: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.842	2.138	3.800	10.690	16.800	28.883	0.000
2	FP		14.817	2.138	3.800	6.930	8.776	20.859	0.003
3		N	26.250	2.138	3.800	12.280	20.208	32.291	0.000
4		N0	11.409	2.138	3.800	5.340	5.367	17.451	0.007
5	EI	N	36.013	2.700	6.700	13.340	29.571	42.454	0.000
6	FP	N	16.487	2.700	6.700	6.110	10.045	22.929	0.001
7	EI	N0	9.671	2.700	6.700	3.580	3.229	16.113	0.010
8	FP	N0	13.148	2.700	6.700	4.870	6.706	19.590	0.002

Table 6.102: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 22 in year 2010 .

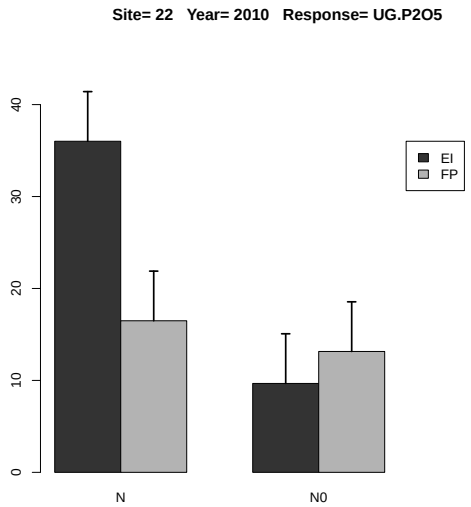

Figure 6.43: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	8.024	2.334	6.000	3.440	2.314	13.734	0.014
B N-N0	14.841	2.334	6.000	6.360	9.131	20.551	0.001
A:B EI N- FP N	19.525	3.300	6.000	5.920	11.450	27.601	0.001
A:B EI N- EI N0	26.342	3.300	6.000	7.980	18.267	34.417	0.000
A:B EI N- FP N0	22.865	3.300	6.000	6.930	14.790	30.940	0.000
A:B FP N- EI N0	6.817	3.300	6.000	2.070	-1.259	14.892	0.084
A:B FP N- FP N0	3.340	3.300	6.000	1.010	-4.736	11.415	0.351
A:B EI N0- FP N0	-3.477	3.300	6.000	-1.050	-11.552	4.598	0.333

Table 6.103: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 22 in year 2010 .

6.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	7.562
2	2	EI	N0	8.976
3	3	EI	N0	48.000
4	1	EI	N	31.920
5	2	EI	N	25.668
6	3	EI	N	20.960
7	1	FP	N0	10.396
8	2	FP	N0	10.340
9	3	FP	N0	8.148
10	1	FP	N	12.997
11	2	FP	N	13.689
12	3	FP	N	11.856

Table 6.104: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	26.183	2.061	12.705	0.011
A FP	12.847	2.061	6.234	0.044
A EI-FP	13.335	2.914	4.576	0.077

Table 6.105: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 22 in year 2010 .

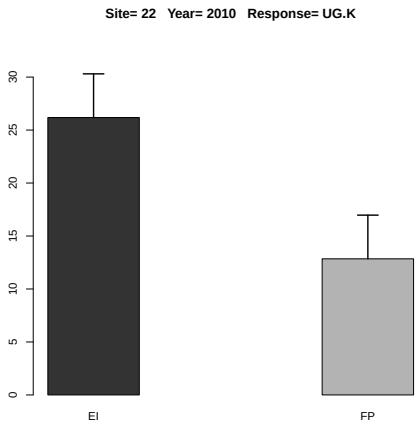

Figure 6.44: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	477.036	477.036	3.411	8.000	0.102
B	1.000	46.681	46.681	0.334	8.000	0.579
A:B	1.000	1.578	1.578	0.011	8.000	0.918

Table 6.106: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.848	4.828	8.000	4.940	12.714	34.981	0.001
2	FP		11.238	4.828	8.000	2.330	0.104	22.371	0.048
3		N	19.515	4.828	8.000	4.040	8.382	30.648	0.004
4		N0	15.570	4.828	8.000	3.230	4.437	26.704	0.012
5	EI	N	26.183	6.828	8.000	3.830	10.438	41.928	0.005
6	FP	N	12.847	6.828	8.000	1.880	-2.897	28.592	0.097
7	EI	N0	21.513	6.828	8.000	3.150	5.768	37.258	0.014
8	FP	N0	9.628	6.828	8.000	1.410	-6.117	25.373	0.196

Table 6.107: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 22 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	12.610	6.828	8.000	1.850	-3.135	28.355	0.102
B N-N0	3.945	6.828	8.000	0.580	-11.800	19.689	0.579
A:B EI N- FP N	13.335	9.656	8.000	1.380	-8.931	35.602	0.205
A:B EI N- EI N0	4.670	9.656	8.000	0.480	-17.596	26.936	0.642
A:B EI N- FP N0	16.555	9.656	8.000	1.710	-5.712	38.821	0.125
A:B FP N- EI N0	-8.665	9.656	8.000	-0.900	-30.932	13.601	0.396
A:B FP N- FP N0	3.219	9.656	8.000	0.330	-19.047	25.486	0.747
A:B EI N0- FP N0	11.885	9.656	8.000	1.230	-10.382	34.151	0.253

Table 6.108: Estimate of contrast in two-way ANOVA for variable UG.K at site 22 in year 2010 .

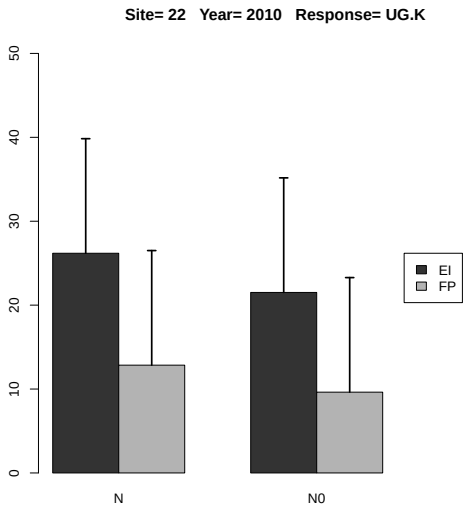

Figure 6.45: Estimated treatment means and standard error in the 2-way ANOVA.

6.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	9.112
2	2	EI	N0	10.816
3	3	EI	N0	57.840
4	1	EI	N	38.464
5	2	EI	N	30.930
6	3	EI	N	25.257
7	1	FP	N0	12.527
8	2	FP	N0	12.460
9	3	FP	N0	9.818
10	1	FP	N	15.661
11	2	FP	N	16.495
12	3	FP	N	14.286

Table 6.109: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	31.550	2.483	12.705	0.011
A FP	15.481	2.483	6.234	0.043
A EI-FP	16.069	3.512	4.576	0.077

Table 6.110: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 22 in year 2010 .

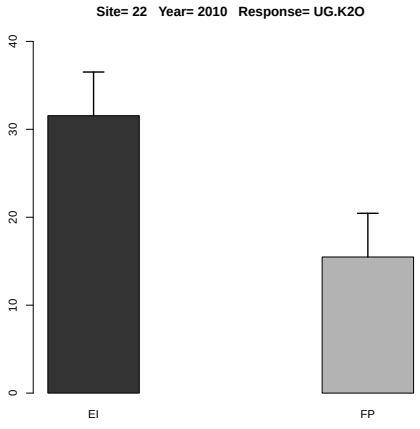

Figure 6.46: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	692.669	692.669	3.411	8.000	0.102
B	1.000	67.782	67.782	0.334	8.000	0.579
A:B	1.000	2.292	2.292	0.011	8.000	0.918

Table 6.111: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		28.736	5.818	8.000	4.940	15.321	42.152	0.001
2	FP		13.541	5.818	8.000	2.330	0.126	26.957	0.048
3		N	23.516	5.818	8.000	4.040	10.100	36.931	0.004
4		N0	18.762	5.818	8.000	3.230	5.347	32.178	0.012
5	EI	N	31.550	8.227	8.000	3.830	12.578	50.523	0.005
6	FP	N	15.481	8.227	8.000	1.880	-3.491	34.453	0.097
7	EI	N0	25.923	8.227	8.000	3.150	6.950	44.895	0.014
8	FP	N0	11.602	8.227	8.000	1.410	-7.371	30.574	0.196

Table 6.112: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 22 in year 2010 .

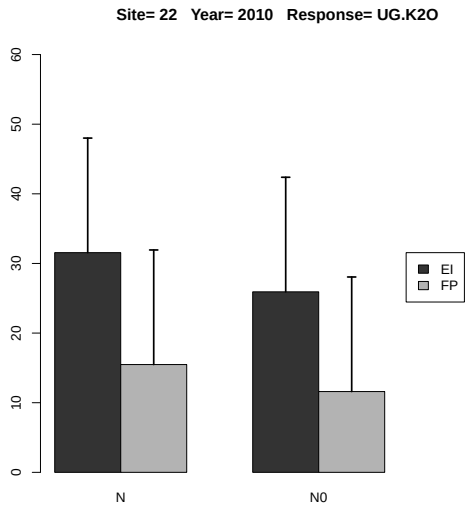

Figure 6.47: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	15.195	8.227	8.000	1.850	-3.777	34.167	0.102
B N-N0	4.753	8.227	8.000	0.580	-14.219	23.726	0.579
A:B EI N- FP N	16.069	11.635	8.000	1.380	-10.762	42.900	0.205
A:B EI N- EI N0	5.627	11.635	8.000	0.480	-21.204	32.459	0.642
A:B EI N- FP N0	19.948	11.635	8.000	1.710	-6.883	46.779	0.125
A:B FP N- EI N0	-10.442	11.635	8.000	-0.900	-37.273	16.389	0.396
A:B FP N- FP N0	3.879	11.635	8.000	0.330	-22.952	30.710	0.747
A:B EI N0- FP N0	14.321	11.635	8.000	1.230	-12.510	41.152	0.253

Table 6.113: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 22 in year 2010 .

6.2.10 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	0.796
2	2	EI	N0	0.804
3	3	EI	N0	0.240
4	1	EI	N	5.320
5	2	EI	N	3.565
6	3	EI	N	3.930
7	1	FP	N0	0.904
8	2	FP	N0	0.940
9	3	FP	N0	0.582
10	1	FP	N	2.536
11	2	FP	N	2.106
12	3	FP	N	1.520

Table 6.114: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	4.272	0.279	15.317	0.008
A FP	2.054	0.279	7.365	0.031
A EI-FP	2.218	0.394	5.623	0.053

Table 6.115: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 22 in year 2010 .

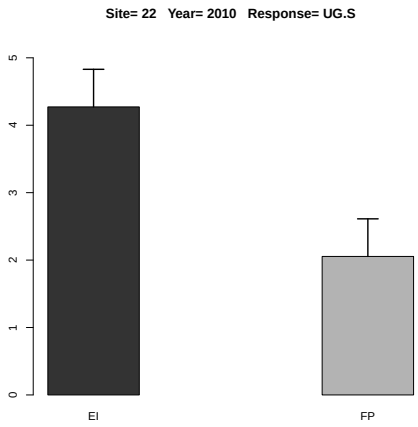

Figure 6.48: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.067	3.067	16.250	5.999	0.007
B	1.000	18.034	18.034	95.538	5.999	0.000
A:B	1.000	4.367	4.367	23.134	5.999	0.003

Table 6.116: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.442	0.271	3.200	9.000	1.603	3.282	0.002
2	FP		1.431	0.271	3.200	5.270	0.592	2.271	0.012
3		N	3.163	0.271	3.200	11.660	2.323	4.003	0.001
4		N0	0.711	0.271	3.200	2.620	-0.129	1.551	0.075
5	EI	N	4.272	0.324	5.400	13.180	3.456	5.087	0.000
6	FP	N	2.054	0.324	5.400	6.340	1.239	2.869	0.001
7	EI	N0	0.613	0.324	5.400	1.890	-0.202	1.429	0.113
8	FP	N0	0.809	0.324	5.400	2.490	-0.007	1.624	0.051

Table 6.117: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 22 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.011	0.251	6.000	4.030	0.397	1.625	0.007
B N-N0	2.452	0.251	6.000	9.770	1.838	3.066	0.000
A:B EI N- FP N	2.218	0.355	6.000	6.250	1.350	3.086	0.001
A:B EI N- EI N0	3.658	0.355	6.000	10.310	2.790	4.526	0.000
A:B EI N- FP N0	3.463	0.355	6.000	9.760	2.595	4.331	0.000
A:B FP N- EI N0	1.441	0.355	6.000	4.060	0.573	2.309	0.007
A:B FP N- FP N0	1.245	0.355	6.000	3.510	0.377	2.113	0.013
A:B EI N0- FP N0	-0.195	0.355	6.000	-0.550	-1.063	0.673	0.602

Table 6.118: Estimate of contrast in two-way ANOVA for variable UG.S at site 22 in year 2010 .

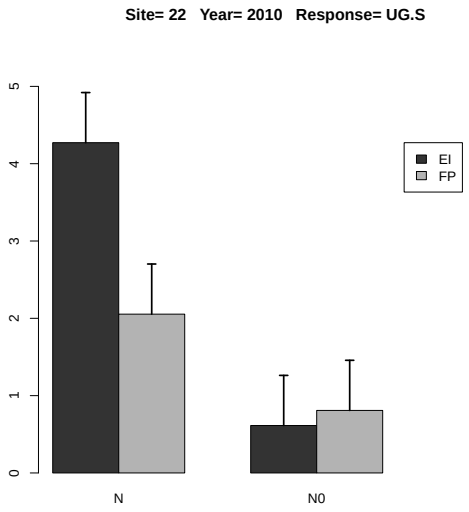

Figure 6.49: Estimated treatment means and standard error in the 2-way ANOVA.

6.2.11 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	42.222
2	2	EI	N	39.611
3	3	EI	N	36.389
4	1	FP	N	59.811
5	2	FP	N	66.226
6	3	FP	N	57.358

Table 6.119: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	39.407	2.218	3.700	17.770	33.033	45.782	0.000
A FP	61.132	2.218	3.700	27.570	54.757	67.507	0.000
A EI-FP	-21.725	2.633	2.000	-8.250	-33.053	-10.396	0.014

Table 6.120: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 22 in year 2010 .

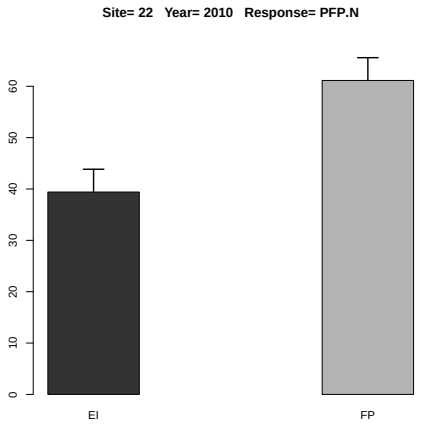

Figure 6.50: Estimated treatment means and standard error in the one-way ANOVA.

6.2.12 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	193.414
2	2	EI	N	181.453
3	3	EI	N	166.692
4	1	FP	N	1452.130
5	2	FP	N	1607.879
6	3	FP	N	1392.579

Table 6.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	180.519	45.714	4.000	3.950	53.312	307.727	0.017
A FP	1484.196	45.714	4.000	32.470	1356.988	1611.404	0.000
A EI-FP	-1303.677	62.102	2.000	-20.990	-1570.676	-1036.677	0.002

Table 6.122: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 22 in year 2010 .

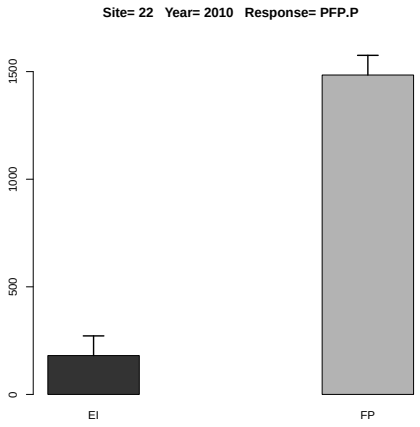

Figure 6.51: Estimated treatment means and standard error in the one-way ANOVA.

6.2.13 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	84.444
2	2	EI	N	79.222
3	3	EI	N	72.778
4	1	FP	N	634.000
5	2	FP	N	702.000
6	3	FP	N	608.000

Table 6.123: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	78.815	19.959	4.000	3.950	23.268	134.362	0.017
A FP	648.000	19.959	4.000	32.470	592.453	703.547	0.000
A EI-FP	-569.185	27.114	2.000	-20.990	-685.858	-452.513	0.002

Table 6.124: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 22 in year 2010 .

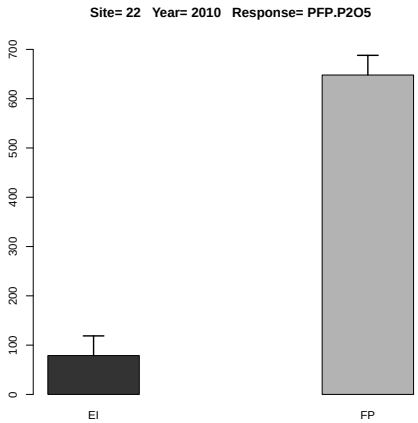

Figure 6.52: Estimated treatment means and standard error in the one-way ANOVA.

6.2.14 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	91.588
2	2	EI	N	85.924
3	3	EI	N	78.935
4	1	FP	N	1273.399
5	2	FP	N	1409.978
6	3	FP	N	1221.178

Table 6.125: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	85.482	39.884	4.000	2.140	-25.334	196.299	0.099
A FP	1301.518	39.884	4.000	32.630	1190.702	1412.335	0.000
A EI-FP	-1216.036	55.203	2.000	-22.030	-1453.568	-978.504	0.002

Table 6.126: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 22 in year 2010 .

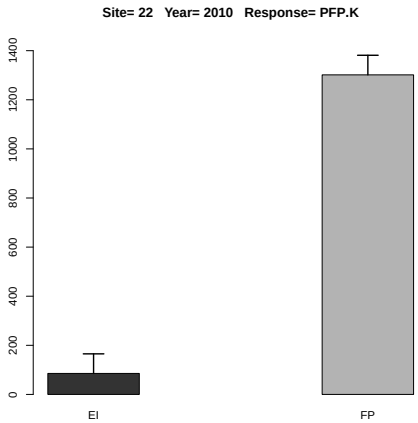

Figure 6.53: Estimated treatment means and standard error in the one-way ANOVA.

6.2.15 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	76.000
2	2	EI	N	71.300
3	3	EI	N	65.500
4	1	FP	N	1056.667
5	2	FP	N	1170.000
6	3	FP	N	1013.333

Table 6.127: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	70.933	33.096	4.000	2.140	-21.017	162.884	0.099
A FP	1080.000	33.096	4.000	32.630	988.049	1171.951	0.000
A EI-FP	-1009.067	45.808	2.000	-22.030	-1206.116	-812.018	0.002

Table 6.128: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 22 in year 2010 .

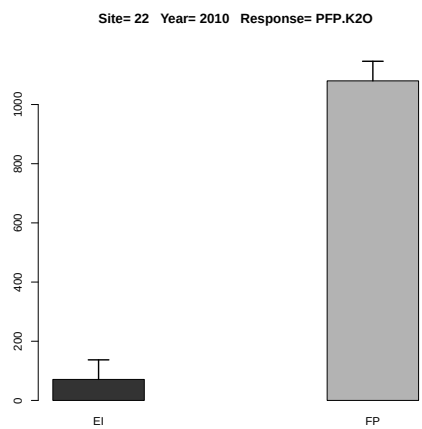

Figure 6.54: Estimated treatment means and standard error in the one-way ANOVA.

6.2.16 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.414
2	2	EI	N	0.471
3	3	EI	N	0.433
4	1	FP	N	0.544
5	2	FP	N	0.483
6	3	FP	N	0.505

Table 6.129: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.439	0.017	4.000	25.280	0.391	0.488	0.000
A FP	0.511	0.017	4.000	29.390	0.463	0.559	0.000
A EI-FP	-0.071	0.025	4.000	-2.910	-0.140	-0.003	0.044

Table 6.130: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 22 in year 2010 .

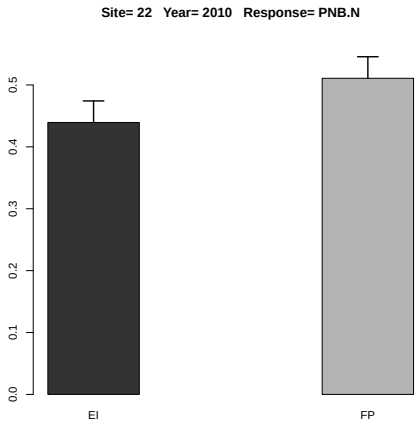

Figure 6.55: Estimated treatment means and standard error in the one-way ANOVA.

6.2.17 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.503
2	2	EI	N	0.381
3	3	EI	N	0.317
4	1	FP	N	3.776
5	2	FP	N	3.055
6	3	FP	N	3.064

Table 6.131: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.400	0.173	3.400	2.310	-0.114	0.914	0.093
A FP	3.298	0.173	3.400	19.040	2.784	3.812	0.000
A EI-FP	-2.898	0.189	2.000	-15.370	-3.710	-2.086	0.004

Table 6.132: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 22 in year 2010 .

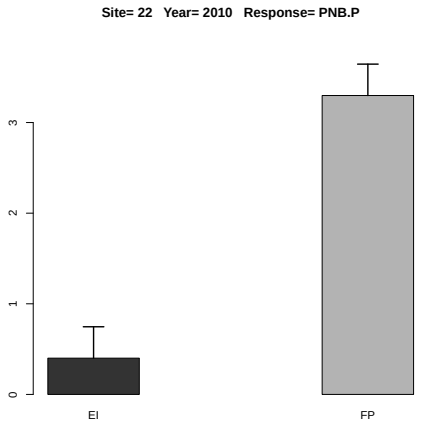

Figure 6.56: Estimated treatment means and standard error in the one-way ANOVA.

6.2.18 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.385
2	2	EI	N	0.309
3	3	EI	N	0.253
4	1	FP	N	5.221
5	2	FP	N	5.499
6	3	FP	N	4.763

Table 6.133: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.316	0.154	3.900	2.050	-0.119	0.750	0.113
A FP	5.161	0.154	3.900	33.470	4.726	5.595	0.000
A EI-FP	-4.845	0.196	2.000	-24.690	-5.690	-4.001	0.002

Table 6.134: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 22 in year 2010 .

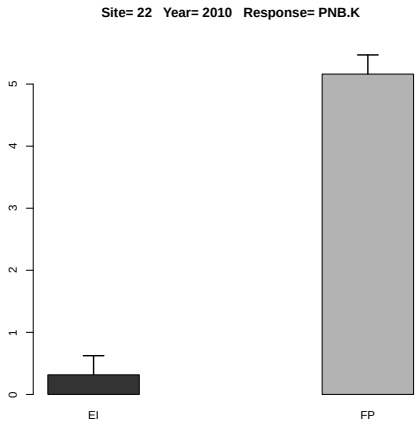

Figure 6.57: Estimated treatment means and standard error in the one-way ANOVA.

6.2.19 Response Variable AE

	rep	A	B	y
1	1	EI	N	31.167
2	2	EI	N	29.222
3	3	EI	N	29.722
4	1	FP	N	22.750
5	2	FP	N	29.000
6	3	FP	N	27.500

Table 6.135: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	30.037	1.744	17.221	0.006
A FP	26.417	1.744	15.145	0.007
A EI-FP	3.620	2.467	1.468	0.448

Table 6.136: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 22 in year 2010 .

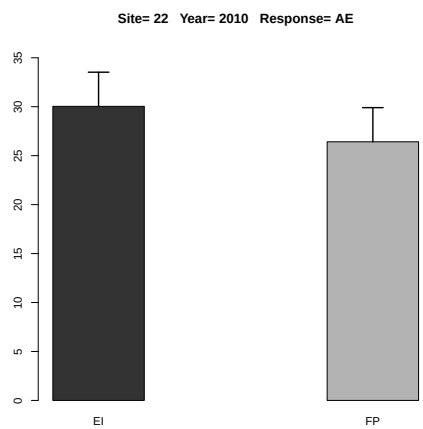

Figure 6.58: Estimated treatment means and standard error in the one-way ANOVA.

6.3 Year 2011

There are 73 variables not observed: UG.Ca UG.Mg UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

6.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	668.000
2	2	EI	N0	735.000
3	3	EI	N0	785.000
4	1	EI	N	7799.000
5	2	EI	N	6663.000
6	3	EI	N	6430.000
7	1	FP	N0	1236.000
8	2	FP	N0	1052.000
9	3	FP	N0	1086.000
10	1	FP	N	2288.000
11	2	FP	N	2589.000
12	3	FP	N	1954.000

Table 6.137: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	6964.000	302.664	23.009	0.003
A FP	2277.000	302.664	7.523	0.031
A EI-FP	4687.000	428.032	10.950	0.015

Table 6.138: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 22 in year 2011 .

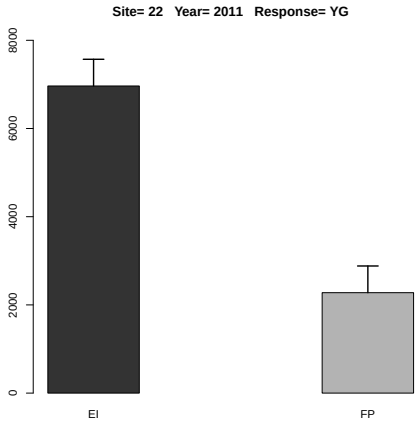

Figure 6.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13813802.083	13813802.083	89.802	6.088	0.000
B	1.000	40925826.750	40925826.750	266.055	6.088	0.000
A:B	1.000	19372584.083	19372584.083	125.939	6.088	0.000

Table 6.139: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3846.667	169.010	5.400	22.760	3421.419	4271.915	0.000
2	FP		1700.833	169.010	5.400	10.060	1275.585	2126.081	0.000
3		N	4620.500	169.010	5.400	27.340	4195.252	5045.748	0.000
4		N0	927.000	169.010	5.400	5.480	501.752	1352.248	0.002
5	EI	N	6964.000	232.812	7.900	29.910	6426.090	7501.910	0.000
6	FP	N	2277.000	232.812	7.900	9.780	1739.090	2814.910	0.000
7	EI	N0	729.333	232.812	7.900	3.130	191.423	1267.244	0.014
8	FP	N0	1124.667	232.812	7.900	4.830	586.756	1662.577	0.001

Table 6.140: Estimate of treatment means in tow-way ANOVA for variable YG at site 22 in year 2011 .

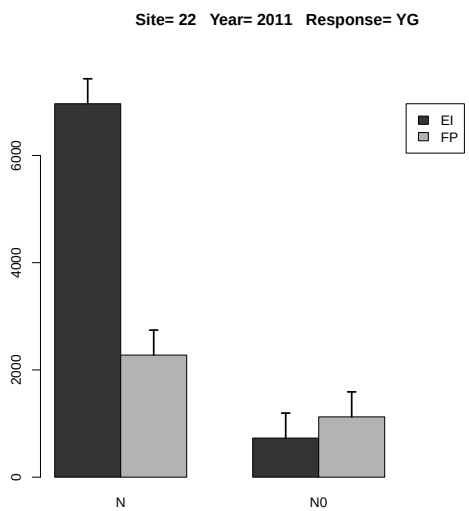

Figure 6.60: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2145.833	226.440	6.000	9.480	1591.282	2700.385	0.000
B N-N0	3693.500	226.440	6.000	16.310	3138.948	4248.051	0.000
A:B EI N- FP N	4687.000	320.234	6.000	14.640	3902.746	5471.254	0.000
A:B EI N- EI N0	6234.667	320.234	6.000	19.470	5450.412	7018.921	0.000
A:B EI N- FP N0	5839.333	320.234	6.000	18.230	5055.079	6623.588	0.000
A:B FP N- EI N0	1547.667	320.234	6.000	4.830	763.412	2331.921	0.003
A:B FP N- FP N0	1152.333	320.234	6.000	3.600	368.079	1936.588	0.011
A:B EI N0- FP N0	-395.333	320.234	6.000	-1.230	-1179.588	388.921	0.263

Table 6.141: Estimate of contrast in two-way ANOVA for variable YG at site 22 in year 2011 .

6.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	2072.000
2	2	EI	N0	1857.000
3	3	EI	N0	1827.000
4	1	EI	N	10330.000
5	2	EI	N	8409.000
6	3	EI	N	7693.000
7	1	FP	N0	2132.000
8	2	FP	N0	2329.000
9	3	FP	N0	2895.000
10	1	FP	N	4085.000
11	2	FP	N	3801.000
12	3	FP	N	3032.000

Table 6.142: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	8810.667	379.753	23.201	0.003
A FP	3639.333	379.753	9.583	0.019
A EI-FP	5171.333	537.051	9.629	0.019

Table 6.143: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 22 in year 2011 .

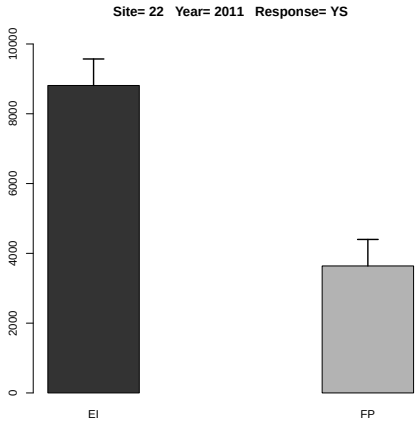

Figure 6.61: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	16133283.000	16133283.000	29.011	6.298	0.001
B	1.000	48956720.333	48956720.333	88.034	6.298	0.000
A:B	1.000	24407416.333	24407416.333	43.889	6.298	0.000

Table 6.144: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5364.667	318.692	5.500	16.830	4568.401	6160.932	0.000
2	FP		3045.667	318.692	5.500	9.560	2249.401	3841.932	0.000
3		N	6225.000	318.692	5.500	19.530	5428.734	7021.266	0.000
4		N0	2185.333	318.692	5.500	6.860	1389.068	2981.599	0.001
5	EI	N	8810.667	440.738	8.200	19.990	7798.907	9822.426	0.000
6	FP	N	3639.333	440.738	8.200	8.260	2627.574	4651.093	0.000
7	EI	N0	1918.667	440.738	8.200	4.350	906.907	2930.426	0.002
8	FP	N0	2452.000	440.738	8.200	5.560	1440.241	3463.759	0.000

Table 6.145: Estimate of treatment means in tow-way ANOVA for variable YS at site 22 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2319.000	430.547	6.300	5.390	1277.458	3360.542	0.001
B N-N0	4039.667	430.547	6.300	9.380	2998.124	5081.209	0.000
A:B EI N- FP N	5171.333	608.885	6.300	8.490	3698.370	6644.297	0.000
A:B EI N- EI N0	6892.000	608.885	6.300	11.320	5419.037	8364.963	0.000
A:B EI N- FP N0	6358.667	608.885	6.300	10.440	4885.703	7831.630	0.000
A:B FP N- EI N0	1720.667	608.885	6.300	2.830	247.703	3193.630	0.029
A:B FP N- FP N0	1187.333	608.885	6.300	1.950	-285.630	2660.297	0.097
A:B EI N0- FP N0	-533.333	608.885	6.300	-0.880	-2006.297	939.630	0.413

Table 6.146: Estimate of contrast in two-way ANOVA for variable YS at site 22 in year 2011 .

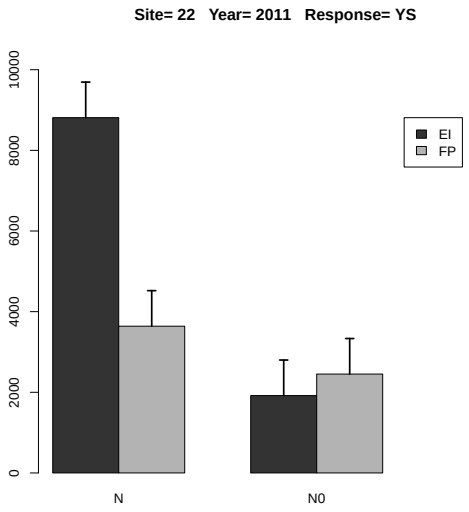

Figure 6.62: Estimated treatment means and standard error in the 2-way ANOVA.

6.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	2740.000
2	2	EI	N0	2592.000
3	3	EI	N0	2612.000
4	1	EI	N	18129.000
5	2	EI	N	15072.000
6	3	EI	N	14123.000
7	1	FP	N0	3368.000
8	2	FP	N0	3381.000
9	3	FP	N0	3981.000
10	1	FP	N	6373.000
11	2	FP	N	6390.000
12	3	FP	N	4986.000

Table 6.147: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	15774.667	677.324	23.290	0.004
A FP	5916.333	677.324	8.735	0.023
A EI-FP	9858.333	957.881	10.292	0.017

Table 6.148: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 22 in year 2011 .

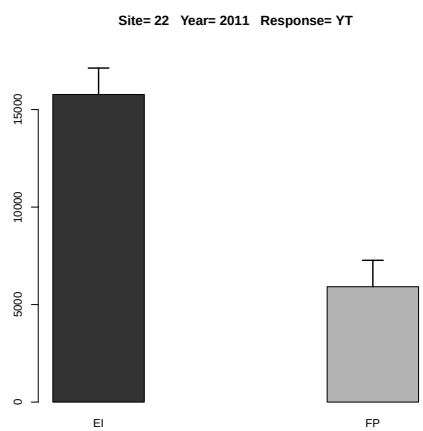

Figure 6.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	59804210.083	59804210.083	49.674	6.554	0.000
B	1.000	179405600.083	179405600.083	149.018	6.554	0.000
A:B	1.000	87269526.750	87269526.750	72.488	6.554	0.000

Table 6.149: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9211.333	478.956	5.500	19.230	8013.656	10409.011	0.000
2	FP		4746.500	478.956	5.500	9.910	3548.822	5944.178	0.000
3		N	10845.500	478.956	5.500	22.640	9647.822	12043.178	0.000
4		N0	3112.333	478.956	5.500	6.500	1914.656	4310.011	0.001
5	EI	N	15774.667	655.784	9.600	24.050	14304.911	17244.422	0.000
6	FP	N	5916.333	655.784	9.600	9.020	4446.578	7386.089	0.000
7	EI	N0	2648.000	655.784	9.600	4.040	1178.244	4117.756	0.003
8	FP	N0	3576.667	655.784	9.600	5.450	2106.911	5046.422	0.000

Table 6.150: Estimate of treatment means in tow-way ANOVA for variable YT at site 22 in year 2011 .

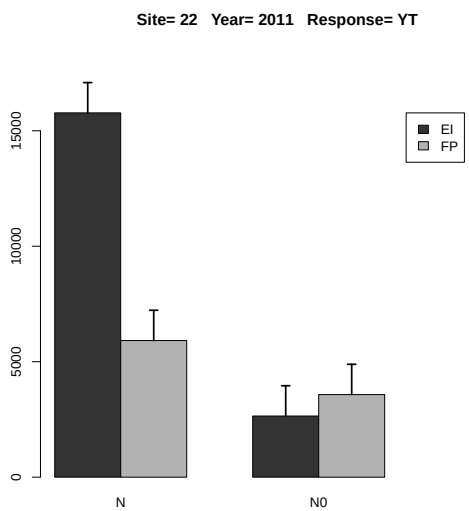

Figure 6.64: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4464.833	633.488	8.300	7.050	3012.123	5917.544	0.000
B N-N0	7733.167	633.488	8.300	12.210	6280.456	9185.877	0.000
A:B EI N- FP N	9858.333	895.888	8.300	11.000	7803.890	11912.776	0.000
A:B EI N- EI N0	13126.667	895.888	8.300	14.650	11072.224	15181.110	0.000
A:B EI N- FP N0	12198.000	895.888	8.300	13.620	10143.557	14252.443	0.000
A:B FP N- EI N0	3268.333	895.888	8.300	3.650	1213.890	5322.776	0.006
A:B FP N- FP N0	2339.667	895.888	8.300	2.610	285.224	4394.110	0.030
A:B EI N0- FP N0	-928.667	895.888	8.300	-1.040	-2983.110	1125.776	0.329

Table 6.151: Estimate of contrast in two-way ANOVA for variable YT at site 22 in year 2011 .

6.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.244
2	2	EI	N0	0.284
3	3	EI	N0	0.301
4	1	EI	N	0.430
5	2	EI	N	0.442
6	3	EI	N	0.455
7	1	FP	N0	0.367
8	2	FP	N0	0.311
9	3	FP	N0	0.273
10	1	FP	N	0.359
11	2	FP	N	0.405
12	3	FP	N	0.392

Table 6.152: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.443	0.007	60.347	0.000
A FP	0.385	0.007	52.552	0.001
A EI-FP	0.057	0.010	5.512	0.055

Table 6.153: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 22 in year 2011 .

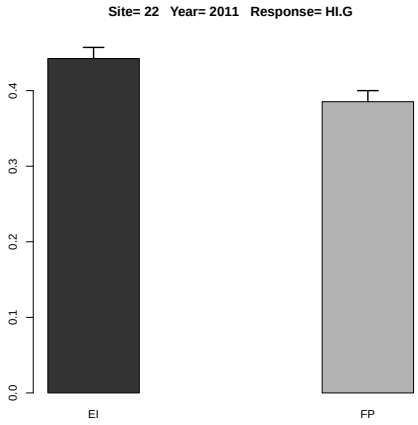

Figure 6.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.205	7.974	0.663
B	1.000	0.041	0.041	43.421	7.974	0.000
A:B	1.000	0.007	0.007	7.582	7.974	0.025

Table 6.154: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.359	0.013	8.000	28.500	0.330	0.388	0.000
2	FP		0.351	0.013	8.000	27.860	0.322	0.380	0.000
3		N	0.414	0.013	8.000	32.840	0.385	0.443	0.000
4		N0	0.296	0.013	8.000	23.520	0.267	0.326	0.000
5	EI	N	0.442	0.018	8.000	24.820	0.401	0.484	0.000
6	FP	N	0.385	0.018	8.000	21.620	0.344	0.426	0.000
7	EI	N0	0.276	0.018	8.000	15.480	0.235	0.317	0.000
8	FP	N0	0.317	0.018	8.000	17.780	0.276	0.358	0.000

Table 6.155: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 22 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.008	0.018	8.000	0.450	-0.033	0.049	0.663
B N-N0	0.117	0.018	8.000	6.590	0.076	0.159	0.000
A:B EI N- FP N	0.057	0.025	8.000	2.270	-0.001	0.115	0.053
A:B EI N- EI N0	0.167	0.025	8.000	6.610	0.108	0.225	0.000
A:B EI N- FP N0	0.126	0.025	8.000	4.980	0.067	0.184	0.001
A:B FP N- EI N0	0.109	0.025	8.000	4.340	0.051	0.168	0.002
A:B FP N- FP N0	0.068	0.025	8.000	2.710	0.010	0.127	0.027
A:B EI N0- FP N0	-0.041	0.025	8.000	-1.630	-0.099	0.017	0.143

Table 6.156: Estimate of contrast in two-way ANOVA for variable HI.G at site 22 in year 2011 .

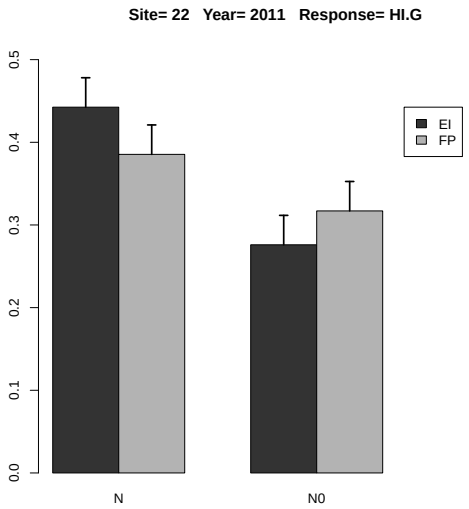

Figure 6.66: Estimated treatment means and standard error in the 2-way ANOVA.

6.3.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	5.144
2	2	EI	N0	5.219
3	3	EI	N0	5.495
4	1	EI	N	60.052
5	2	EI	N	46.641
6	3	EI	N	45.010
7	1	FP	N0	8.652
8	2	FP	N0	9.573
9	3	FP	N0	7.602
10	1	FP	N	20.821
11	2	FP	N	28.997
12	3	FP	N	19.149

Table 6.157: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	50.568	4.448	11.368	0.014
A FP	22.989	4.448	5.168	0.062
A EI-FP	27.579	6.291	4.384	0.084

Table 6.158: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 22 in year 2011 .

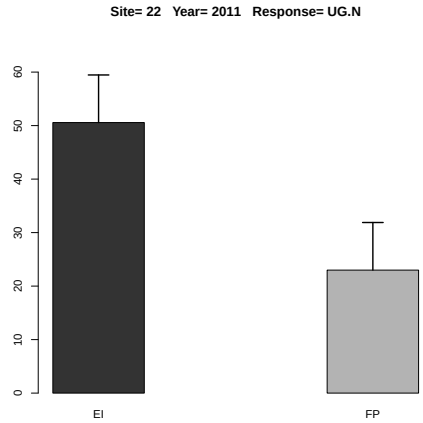

Figure 6.67: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	379.274	379.274	16.934	3.999	0.015
B	1.000	2669.660	2669.660	119.195	4.000	0.000
A:B	1.000	716.209	716.209	31.977	4.000	0.005

Table 6.159: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		27.927	2.084	4.000	13.400	22.140	33.714	0.000
2	FP		15.799	2.084	4.000	7.580	10.012	21.586	0.002
3		N	36.778	2.009	8.000	18.300	32.140	41.417	0.000
4		N0	6.947	2.009	8.000	3.460	2.309	11.586	0.009
5	EI	N	50.568	2.842	8.000	17.790	44.008	57.127	0.000
6	FP	N	22.989	2.842	8.000	8.090	16.429	29.549	0.000
7	EI	N0	5.286	2.842	8.000	1.860	-1.274	11.845	0.100
8	FP	N0	8.609	2.842	8.000	3.030	2.049	15.169	0.016

Table 6.160: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 22 in year 2011 .

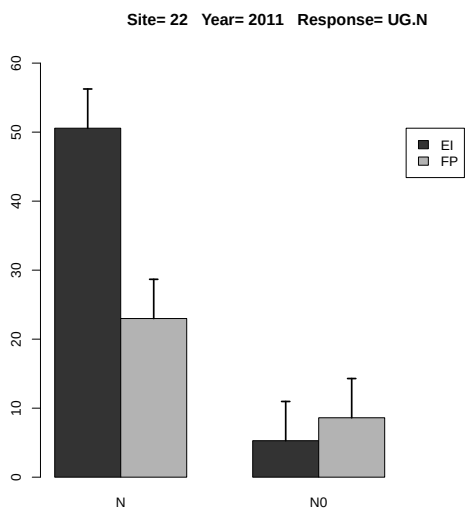

Figure 6.68: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	12.128	2.947	4.000	4.120	3.944	20.311	0.015
B N-N0	29.831	2.732	4.000	10.920	22.245	37.417	0.000
A:B EI N- FP N	27.579	4.019	8.000	6.860	18.302	36.856	0.000
A:B EI N- EI N0	45.282	3.864	4.000	11.720	34.553	56.011	0.000
A:B EI N- FP N0	41.959	4.019	8.000	10.440	32.682	51.236	0.000
A:B FP N- EI N0	17.703	4.019	8.000	4.410	8.426	26.980	0.002
A:B FP N- FP N0	14.380	3.864	4.000	3.720	3.651	25.108	0.020
A:B EI N0- FP N0	-3.323	4.019	8.000	-0.830	-12.600	5.954	0.432

Table 6.161: Estimate of contrast in two-way ANOVA for variable UG.N at site 22 in year 2011 .

6.3.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	0.955
2	2	EI	N0	1.330
3	3	EI	N0	0.958
4	1	EI	N	18.796
5	2	EI	N	17.524
6	3	EI	N	11.252
7	1	FP	N0	2.460
8	2	FP	N0	2.956
9	3	FP	N0	2.465
10	1	FP	N	6.544
11	2	FP	N	6.395
12	3	FP	N	4.553

Table 6.162: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	15.857	1.198	13.231	0.010
A FP	5.830	1.198	4.865	0.069
A EI-FP	10.027	1.695	5.916	0.048

Table 6.163: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 22 in year 2011 .

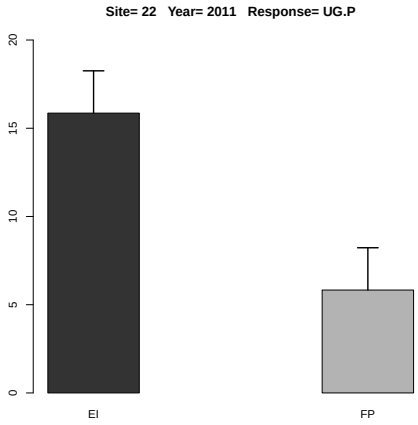

Figure 6.69: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	53.945	53.945	15.392	6.000	0.008
B	1.000	242.450	242.450	69.180	6.000	0.000
A:B	1.000	100.446	100.446	28.661	6.000	0.002

Table 6.164: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.469	0.942	4.100	8.990	5.880	11.058	0.001
2	FP		4.229	0.942	4.100	4.490	1.640	6.817	0.010
3		N	10.844	0.942	4.100	11.510	8.255	13.433	0.000
4		N0	1.854	0.942	4.100	1.970	-0.735	4.443	0.119
5	EI	N	15.857	1.213	7.100	13.070	12.996	18.719	0.000
6	FP	N	5.830	1.213	7.100	4.810	2.969	8.692	0.002
7	EI	N0	1.081	1.213	7.100	0.890	-1.780	3.942	0.402
8	FP	N0	2.627	1.213	7.100	2.170	-0.234	5.488	0.067

Table 6.165: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 22 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.240	1.081	6.000	3.920	1.596	6.885	0.008
B N-N0	8.990	1.081	6.000	8.320	6.345	11.634	0.000
A:B EI N- FP N	10.027	1.528	6.000	6.560	6.287	13.767	0.001
A:B EI N- EI N0	14.776	1.528	6.000	9.670	11.036	18.516	0.000
A:B EI N- FP N0	13.230	1.528	6.000	8.660	9.490	16.971	0.000
A:B FP N- EI N0	4.749	1.528	6.000	3.110	1.009	8.490	0.021
A:B FP N- FP N0	3.203	1.528	6.000	2.100	-0.537	6.944	0.081
A:B EI N0- FP N0	-1.546	1.528	6.000	-1.010	-5.286	2.194	0.351

Table 6.166: Estimate of contrast in two-way ANOVA for variable UG.P at site 22 in year 2011 .

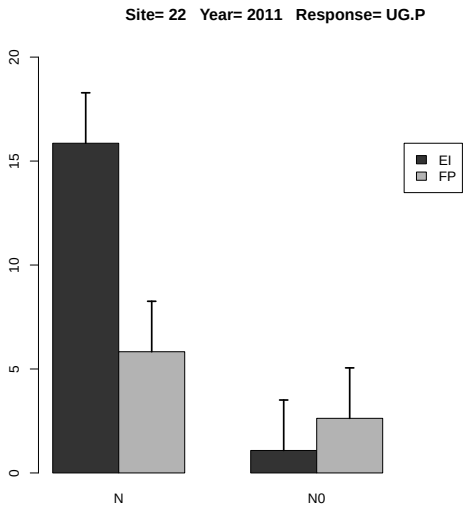

Figure 6.70: Estimated treatment means and standard error in the 2-way ANOVA.

6.3.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	2.187
2	2	EI	N0	3.047
3	3	EI	N0	2.193
4	1	EI	N	43.042
5	2	EI	N	40.129
6	3	EI	N	25.768
7	1	FP	N0	5.633
8	2	FP	N0	6.770
9	3	FP	N0	5.645
10	1	FP	N	14.985
11	2	FP	N	14.644
12	3	FP	N	10.426

Table 6.167: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	36.313	2.744	13.231	0.010
A FP	13.352	2.744	4.865	0.069
A EI-FP	22.961	3.881	5.916	0.048

Table 6.168: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 22 in year 2011 .

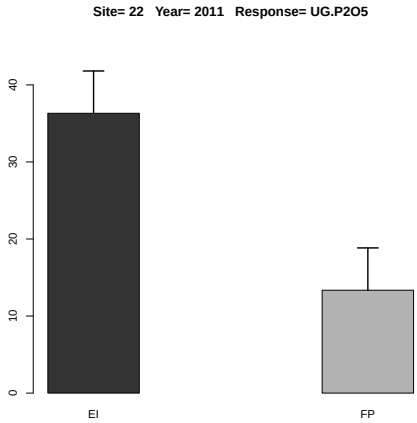

Figure 6.71: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	282.890	282.890	15.392	6.000	0.008
B	1.000	1271.431	1271.431	69.180	6.000	0.000
A:B	1.000	526.748	526.748	28.661	6.000	0.002

Table 6.169: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.394	2.158	4.100	8.990	13.466	25.323	0.001
2	FP		9.684	2.158	4.100	4.490	3.756	15.612	0.010
3		N	24.832	2.158	4.100	11.510	18.904	30.761	0.000
4		N0	4.246	2.158	4.100	1.970	-1.682	10.174	0.119
5	EI	N	36.313	2.778	7.100	13.070	29.761	42.866	0.000
6	FP	N	13.352	2.778	7.100	4.810	6.799	19.904	0.002
7	EI	N0	2.476	2.778	7.100	0.890	-4.077	9.028	0.402
8	FP	N0	6.016	2.778	7.100	2.170	-0.537	12.568	0.067

Table 6.170: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 22 in year 2011 .

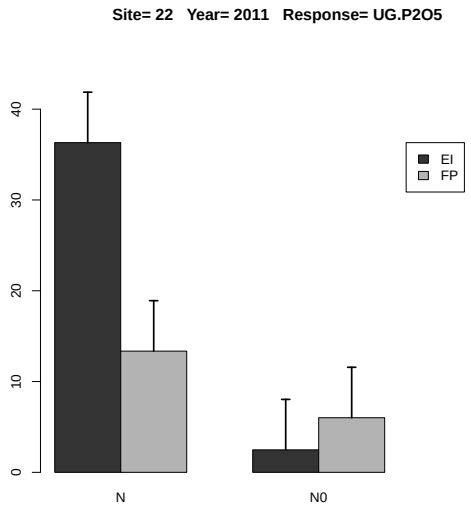

Figure 6.72: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	9.711	2.475	6.000	3.920	3.654	15.767	0.008
B N-N0	20.587	2.475	6.000	8.320	14.530	26.643	0.000
A:B EI N- FP N	22.961	3.500	6.000	6.560	14.396	31.526	0.001
A:B EI N- EI N0	33.837	3.500	6.000	9.670	25.272	42.403	0.000
A:B EI N- FP N0	30.297	3.500	6.000	8.660	21.732	38.862	0.000
A:B FP N- EI N0	10.876	3.500	6.000	3.110	2.311	19.441	0.021
A:B FP N- FP N0	7.336	3.500	6.000	2.100	-1.229	15.901	0.081
A:B EI N0- FP N0	-3.540	3.500	6.000	-1.010	-12.105	5.025	0.351

Table 6.171: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 22 in year 2011 .

6.3.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	1.870
2	2	EI	N0	2.058
3	3	EI	N0	1.923
4	1	EI	N	28.856
5	2	EI	N	25.653
6	3	EI	N	20.576
7	1	FP	N0	4.141
8	2	FP	N0	3.892
9	3	FP	N0	3.964
10	1	FP	N	8.694
11	2	FP	N	10.227
12	3	FP	N	6.448

Table 6.172: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	25.028	1.297	19.303	0.004
A FP	8.456	1.297	6.522	0.040
A EI-FP	16.572	1.834	9.037	0.021

Table 6.173: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 22 in year 2011 .

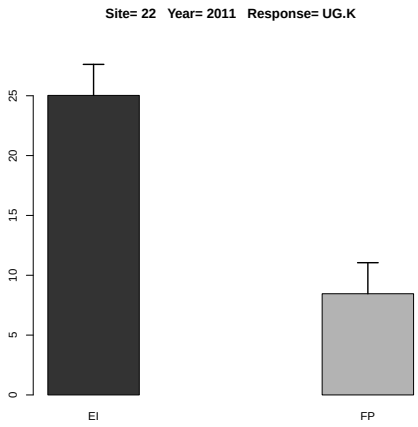

Figure 6.73: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	158.199	158.199	36.776	6.000	0.001
B	1.000	568.638	568.638	132.189	6.000	0.000
A:B	1.000	260.037	260.037	60.450	6.000	0.000

Table 6.174: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13.489	1.019	4.300	13.230	10.728	16.251	0.000
2	FP		6.228	1.019	4.300	6.110	3.466	8.989	0.003
3		N	16.742	1.019	4.300	16.430	13.981	19.504	0.000
4		N0	2.975	1.019	4.300	2.920	0.213	5.736	0.040
5	EI	N	25.028	1.325	7.300	18.890	21.918	28.139	0.000
6	FP	N	8.456	1.325	7.300	6.380	5.346	11.567	0.000
7	EI	N0	1.951	1.325	7.300	1.470	-1.160	5.061	0.183
8	FP	N0	3.999	1.325	7.300	3.020	0.889	7.109	0.019

Table 6.175: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 22 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	7.262	1.198	6.000	6.060	4.332	10.192	0.001
B N-N0	13.768	1.198	6.000	11.500	10.838	16.698	0.000
A:B EI N- FP N	16.572	1.694	6.000	9.790	12.428	20.716	0.000
A:B EI N- EI N0	23.078	1.694	6.000	13.630	18.934	27.221	0.000
A:B EI N- FP N0	21.029	1.694	6.000	12.420	16.886	25.173	0.000
A:B FP N- EI N0	6.506	1.694	6.000	3.840	2.362	10.650	0.008
A:B FP N- FP N0	4.457	1.694	6.000	2.630	0.314	8.601	0.039
A:B EI N0- FP N0	-2.048	1.694	6.000	-1.210	-6.192	2.095	0.272

Table 6.176: Estimate of contrast in two-way ANOVA for variable UG.K at site 22 in year 2011 .

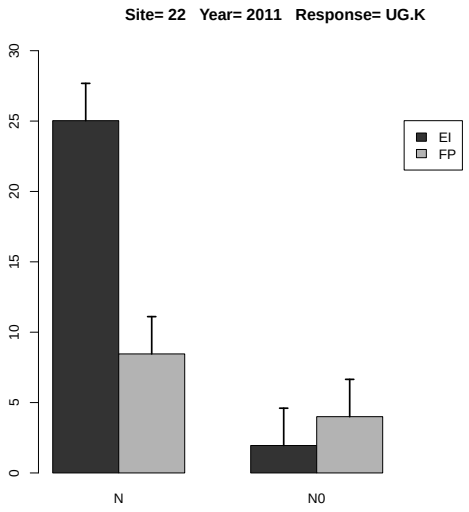

Figure 6.74: Estimated treatment means and standard error in the 2-way ANOVA.

6.3.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	2.254
2	2	EI	N0	2.480
3	3	EI	N0	2.318
4	1	EI	N	34.772
5	2	EI	N	30.911
6	3	EI	N	24.794
7	1	FP	N0	4.989
8	2	FP	N0	4.690
9	3	FP	N0	4.776
10	1	FP	N	10.477
11	2	FP	N	12.323
12	3	FP	N	7.770

Table 6.177: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	30.159	1.562	19.303	0.005
A FP	10.190	1.562	6.522	0.040
A EI-FP	19.969	2.210	9.037	0.022

Table 6.178: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 22 in year 2011 .

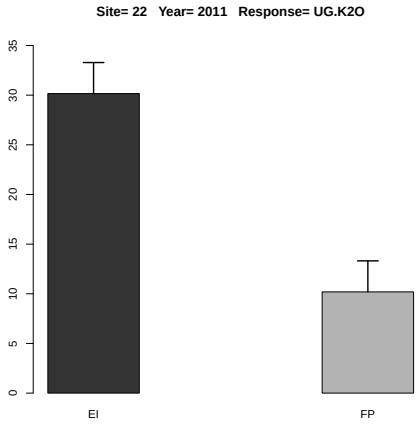

Figure 6.75: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	229.708	229.708	36.776	6.000	0.001
B	1.000	825.677	825.677	132.189	6.000	0.000
A:B	1.000	377.580	377.580	60.450	6.000	0.000

Table 6.179: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16.255	1.228	4.300	13.230	12.927	19.582	0.000
2	FP		7.504	1.228	4.300	6.110	4.177	10.832	0.003
3		N	20.174	1.228	4.300	16.430	16.847	23.502	0.000
4		N0	3.585	1.228	4.300	2.920	0.257	6.912	0.040
5	EI	N	30.159	1.597	7.300	18.890	26.411	33.907	0.000
6	FP	N	10.190	1.597	7.300	6.380	6.442	13.938	0.000
7	EI	N0	2.350	1.597	7.300	1.470	-1.397	6.098	0.183
8	FP	N0	4.819	1.597	7.300	3.020	1.071	8.566	0.019

Table 6.180: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 22 in year 2011 .

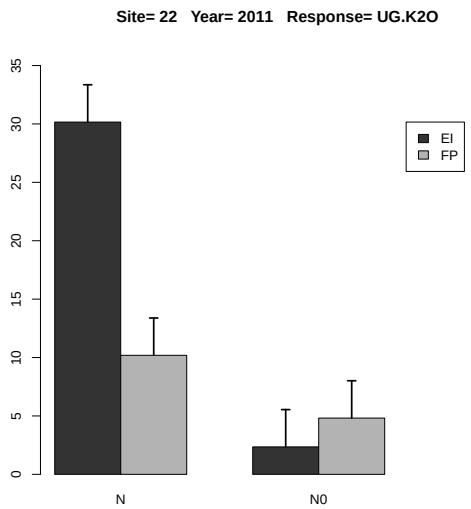

Figure 6.76: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	8.750	1.443	6.000	6.060	5.220	12.281	0.001
B N-N0	16.590	1.443	6.000	11.500	13.059	20.121	0.000
A:B EI N- FP N	19.969	2.041	6.000	9.790	14.976	24.962	0.000
A:B EI N- EI N0	27.809	2.041	6.000	13.630	22.815	32.802	0.000
A:B EI N- FP N0	25.340	2.041	6.000	12.420	20.347	30.334	0.000
A:B FP N- EI N0	7.840	2.041	6.000	3.840	2.846	12.833	0.008
A:B FP N- FP N0	5.371	2.041	6.000	2.630	0.378	10.364	0.039
A:B EI N0- FP N0	-2.468	2.041	6.000	-1.210	-7.462	2.525	0.272

Table 6.181: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 22 in year 2011 .

6.3.10 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	1.830
2	2	EI	N0	1.918
3	3	EI	N0	2.755
4	1	EI	N	20.901
5	2	EI	N	13.059
6	3	EI	N	17.618
7	1	FP	N0	3.387
8	2	FP	N0	3.934
9	3	FP	N0	3.269
10	1	FP	N	12.104
11	2	FP	N	10.874
12	3	FP	N	7.836

Table 6.182: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	17.193	1.687	10.194	0.016
A FP	10.271	1.687	6.090	0.045
A EI-FP	6.922	2.385	2.902	0.173

Table 6.183: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 22 in year 2011 .

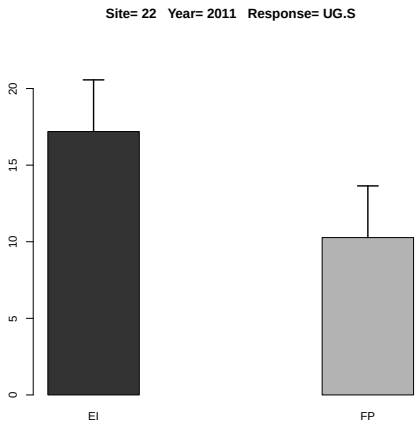

Figure 6.77: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	21.783	21.783	4.340	3.998	0.106
B	1.000	355.318	355.318	70.794	4.000	0.001
A:B	1.000	51.469	51.469	10.255	4.000	0.033

Table 6.184: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.681	0.944	4.000	10.260	7.060	12.301	0.000
2	FP		6.901	0.944	4.000	7.310	4.280	9.521	0.002
3		N	13.732	0.929	8.000	14.780	11.589	15.875	0.000
4		N0	2.849	0.929	8.000	3.070	0.706	4.992	0.015
5	EI	N	17.193	1.314	8.000	13.080	14.162	20.224	0.000
6	FP	N	10.271	1.314	8.000	7.820	7.240	13.302	0.000
7	EI	N0	2.168	1.314	8.000	1.650	-0.863	5.199	0.138
8	FP	N0	3.530	1.314	8.000	2.690	0.499	6.561	0.028

Table 6.185: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 22 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.780	1.335	4.000	2.080	-0.926	6.486	0.106
B N-N0	10.883	1.293	4.000	8.410	7.292	14.474	0.001
A:B EI N- FP N	6.922	1.858	8.000	3.720	2.636	11.208	0.006
A:B EI N- EI N0	15.025	1.829	4.000	8.210	9.946	20.104	0.001
A:B EI N- FP N0	13.663	1.858	8.000	7.350	9.377	17.949	0.000
A:B FP N- EI N0	8.103	1.858	8.000	4.360	3.817	12.389	0.002
A:B FP N- FP N0	6.741	1.829	4.000	3.690	1.662	11.820	0.021
A:B EI N0- FP N0	-1.362	1.858	8.000	-0.730	-5.648	2.924	0.485

Table 6.186: Estimate of contrast in two-way ANOVA for variable UG.S at site 22 in year 2011 .

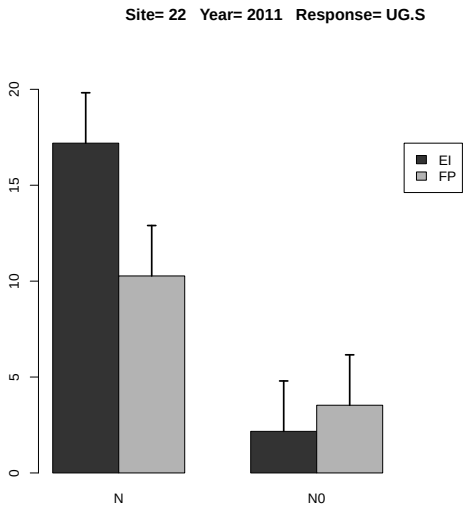

Figure 6.78: Estimated treatment means and standard error in the 2-way ANOVA.

6.3.11 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	43.328
2	2	EI	N	37.017
3	3	EI	N	35.722
4	1	FP	N	43.170
5	2	FP	N	48.849
6	3	FP	N	36.868

Table 6.187: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	38.689	2.957	3.900	13.080	30.377	47.001	0.000
A FP	42.962	2.957	3.900	14.530	34.651	51.274	0.000
A EI-FP	-4.273	3.798	2.000	-1.130	-20.616	12.069	0.377

Table 6.188: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 22 in year 2011 .

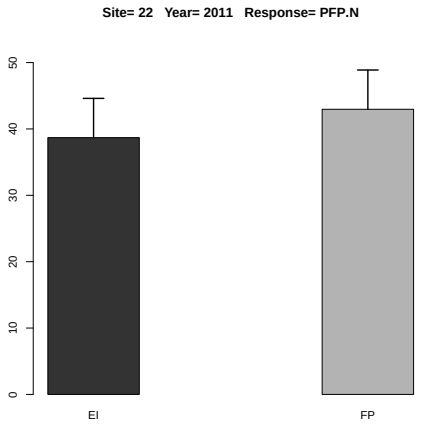

Figure 6.79: Estimated treatment means and standard error in the one-way ANOVA.

6.3.12 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	198.478
2	2	EI	N	169.568
3	3	EI	N	163.638
4	1	FP	N	1048.099
5	2	FP	N	1185.983
6	3	FP	N	895.098

Table 6.189: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	177.228	59.889	4.000	2.960	10.822	343.634	0.042
A FP	1043.060	59.889	4.000	17.420	876.654	1209.466	0.000
A EI-FP	-865.832	82.658	2.000	-10.470	-1221.233	-510.431	0.009

Table 6.190: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 22 in year 2011 .

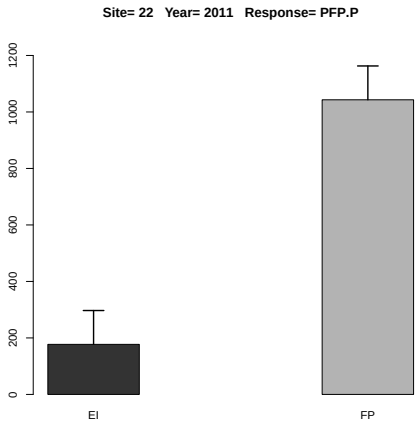

Figure 6.80: Estimated treatment means and standard error in the one-way ANOVA.

6.3.13 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	86.656
2	2	EI	N	74.033
3	3	EI	N	71.444
4	1	FP	N	457.600
5	2	FP	N	517.800
6	3	FP	N	390.800

Table 6.191: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	77.378	26.147	4.000	2.960	4.710	150.046	0.042
A FP	455.400	26.147	4.000	17.420	382.732	528.068	0.000
A EI-FP	-378.022	36.088	2.000	-10.470	-533.368	-222.677	0.009

Table 6.192: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 22 in year 2011 .

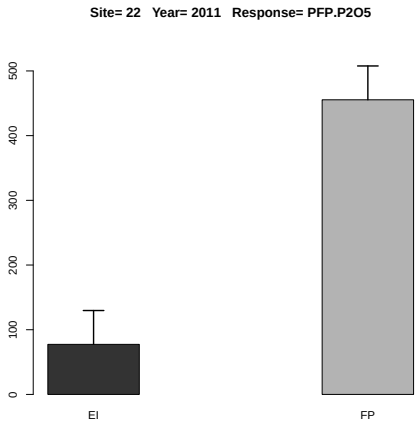

Figure 6.81: Estimated treatment means and standard error in the one-way ANOVA.

6.3.14 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	93.987
2	2	EI	N	80.296
3	3	EI	N	77.489
4	1	FP	N	919.097
5	2	FP	N	1040.010
6	3	FP	N	784.928

Table 6.193: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	83.924	52.216	4.000	1.610	-61.078	228.926	0.183
A FP	914.678	52.216	4.000	17.520	769.676	1059.680	0.000
A EI-FP	-830.754	72.880	2.000	-11.400	-1144.194	-517.315	0.008

Table 6.194: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 22 in year 2011 .

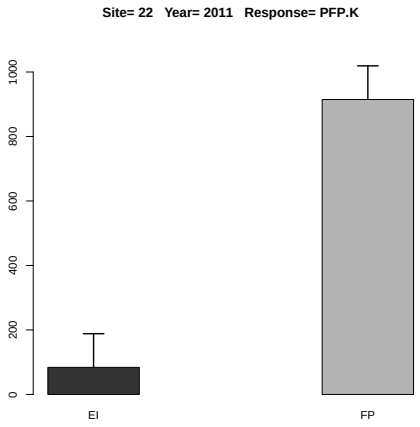

Figure 6.82: Estimated treatment means and standard error in the one-way ANOVA.

6.3.15 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	77.990
2	2	EI	N	66.630
3	3	EI	N	64.300
4	1	FP	N	762.667
5	2	FP	N	863.000
6	3	FP	N	651.333

Table 6.195: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	69.640	43.329	4.000	1.610	-50.668	189.948	0.183
A FP	759.000	43.329	4.000	17.520	638.692	879.308	0.000
A EI-FP	-689.360	60.476	2.000	-11.400	-949.283	-429.437	0.008

Table 6.196: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 22 in year 2011 .

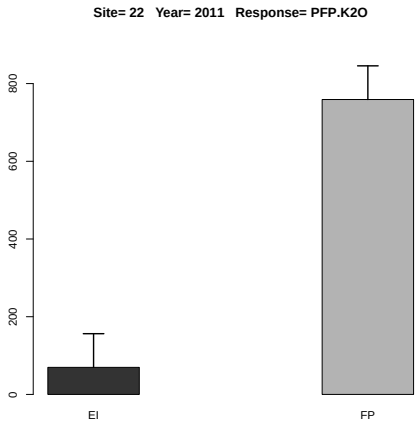

Figure 6.83: Estimated treatment means and standard error in the one-way ANOVA.

6.3.16 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.334
2	2	EI	N	0.259
3	3	EI	N	0.250
4	1	FP	N	0.393
5	2	FP	N	0.547
6	3	FP	N	0.361

Table 6.197: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.281	0.045	4.000	6.280	0.157	0.405	0.003
A FP	0.434	0.045	4.000	9.700	0.310	0.558	0.001
A EI-FP	-0.153	0.063	4.000	-2.420	-0.328	0.023	0.073

Table 6.198: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 22 in year 2011 .

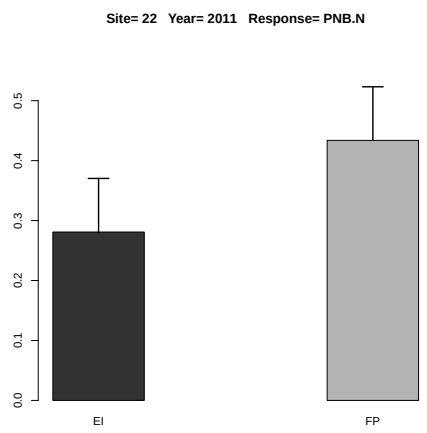

Figure 6.84: Estimated treatment means and standard error in the one-way ANOVA.

6.3.17 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.478
2	2	EI	N	0.446
3	3	EI	N	0.286
4	1	FP	N	2.998
5	2	FP	N	2.929
6	3	FP	N	2.086

Table 6.199: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.404	0.212	3.500	1.910	-0.220	1.028	0.140
A FP	2.671	0.212	3.500	12.620	2.047	3.295	0.000
A EI-FP	-2.267	0.234	2.000	-9.680	-3.276	-1.259	0.010

Table 6.200: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 22 in year 2011 .

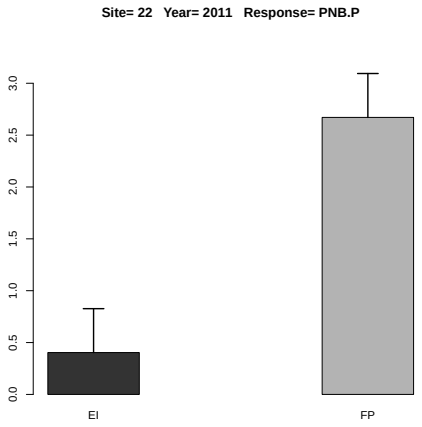

Figure 6.85: Estimated treatment means and standard error in the one-way ANOVA.

6.3.18 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.348
2	2	EI	N	0.309
3	3	EI	N	0.248
4	1	FP	N	3.493
5	2	FP	N	4.108
6	3	FP	N	2.590

Table 6.201: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.302	0.312	4.000	0.970	-0.568	1.172	0.389
A FP	3.397	0.312	4.000	10.880	2.527	4.267	0.000
A EI-FP	-3.095	0.421	2.000	-7.350	-4.908	-1.283	0.018

Table 6.202: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 22 in year 2011 .

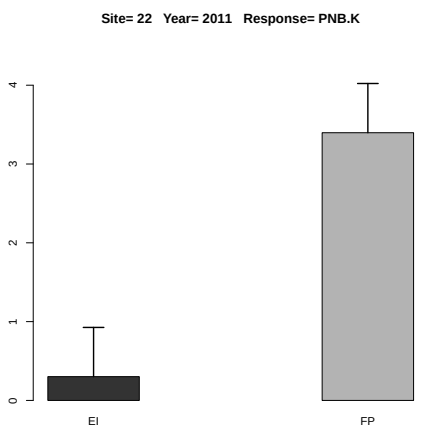

Figure 6.86: Estimated treatment means and standard error in the one-way ANOVA.

6.3.19 Response Variable AE

	rep	A	B	y
1	1	EI	N	39.617
2	2	EI	N	32.933
3	3	EI	N	31.361
4	1	FP	N	26.300
5	2	FP	N	38.425
6	3	FP	N	21.700

Table 6.203: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	34.637	4.071	8.508	0.024
A FP	28.808	4.071	7.076	0.034
A EI-FP	5.829	5.758	1.012	0.629

Table 6.204: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 22 in year 2011 .

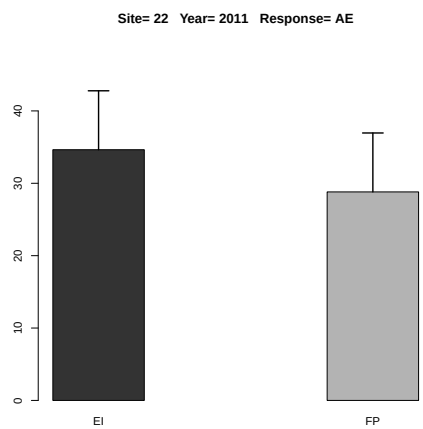

Figure 6.87: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 7

Analysis of Variance for Site 23

7.1 Year 2009

There are 73 variables not observed: UG.Ca UG.Mg UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

7.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	2078.000
2	2	EI	N0	1895.000
3	3	EI	N0	2051.000
4	1	EI	N	4874.000
5	2	EI	N	4274.000
6	3	EI	N	4402.000
7	1	FP	N0	1768.000
8	2	FP	N0	2076.000
9	3	FP	N0	1796.000
10	1	FP	N	3267.000
11	2	FP	N	3122.000
12	3	FP	N	3680.000

Table 7.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	4516.667	180.674	24.999	0.003
A FP	3356.333	180.674	18.577	0.005
A EI-FP	1160.333	255.511	4.541	0.079

Table 7.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 23 in year 2009 .

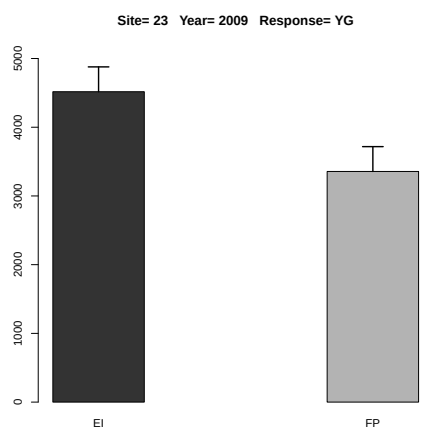

Figure 7.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1244852.083	1244852.083	22.384	8.002	0.001
B	1.000	11910168.750	11910168.750	214.159	8.002	0.000
A:B	1.000	799284.083	799284.083	14.372	8.002	0.005

Table 7.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3262.333	96.275	8.000	33.890	3040.521	3484.146	0.000
2	FP		2618.167	96.275	8.000	27.190	2396.354	2839.979	0.000
3		N	3936.500	96.275	8.000	40.890	3714.688	4158.312	0.000
4		N0	1944.000	96.275	8.000	20.190	1722.188	2165.812	0.000
5	EI	N	4516.667	136.154	8.000	33.170	4202.977	4830.356	0.000
6	FP	N	3356.333	136.154	8.000	24.650	3042.644	3670.023	0.000
7	EI	N0	2008.000	136.154	8.000	14.750	1694.310	2321.690	0.000
8	FP	N0	1880.000	136.154	8.000	13.810	1566.310	2193.690	0.000

Table 7.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 23 in year 2009
.

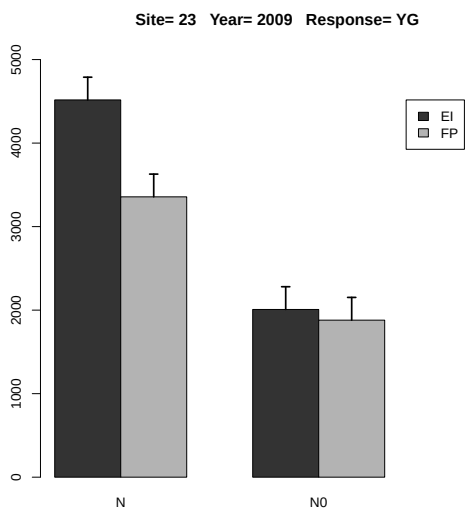

Figure 7.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	644.167	136.154	8.000	4.730	330.477	957.856	0.002
B N-N0	1992.500	136.154	8.000	14.630	1678.810	2306.190	0.000
A:B EI N- FP N	1160.333	192.551	8.000	6.030	716.709	1603.958	0.000
A:B EI N- EI N0	2508.667	192.551	8.000	13.030	2065.042	2952.291	0.000
A:B EI N- FP N0	2636.667	192.551	8.000	13.690	2193.042	3080.291	0.000
A:B FP N- EI N0	1348.333	192.551	8.000	7.000	904.709	1791.958	0.000
A:B FP N- FP N0	1476.333	192.551	8.000	7.670	1032.709	1919.958	0.000
A:B EI N0- FP N0	128.000	192.551	8.000	0.660	-315.624	571.624	0.525

Table 7.5: Estimate of contrast in two-way ANOVA for variable YG at site 23 in year 2009 .

7.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	2786.000
2	2	EI	N0	2648.000
3	3	EI	N0	2883.000
4	1	EI	N	6871.000
5	2	EI	N	6780.000
6	3	EI	N	7612.000
7	1	FP	N0	2522.000
8	2	FP	N0	2855.000
9	3	FP	N0	2650.000
10	1	FP	N	5513.000
11	2	FP	N	5288.000
12	3	FP	N	5851.000

Table 7.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	7087.667	83.786	84.592	0.000
A FP	5550.667	83.786	66.248	0.000
A EI-FP	1537.000	118.492	12.971	0.011

Table 7.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 23 in year 2009 .

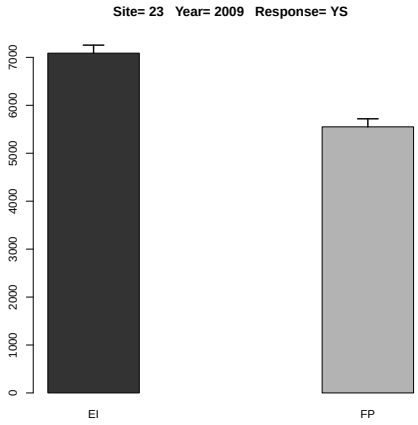

Figure 7.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2001650.083	2001650.083	34.380	6.025	0.001
B	1.000	38775670.083	38775670.083	666.008	6.025	0.000
A:B	1.000	1555920.083	1555920.083	26.724	6.025	0.002

Table 7.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4930.000	133.632	3.600	36.890	4542.310	5317.690	0.000
2	FP		4113.167	133.632	3.600	30.780	3725.477	4500.857	0.000
3		N	6319.167	133.632	3.600	47.290	5931.477	6706.857	0.000
4		N0	2724.000	133.632	3.600	20.380	2336.310	3111.690	0.000
5	EI	N	7087.667	166.016	6.300	42.690	6686.716	7488.617	0.000
6	FP	N	5550.667	166.016	6.300	33.430	5149.716	5951.617	0.000
7	EI	N0	2772.333	166.016	6.300	16.700	2371.383	3173.284	0.000
8	FP	N0	2675.667	166.016	6.300	16.120	2274.716	3076.617	0.000

Table 7.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 23 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	816.833	139.309	6.000	5.860	476.306	1157.361	0.001
B N-N0	3595.167	139.309	6.000	25.810	3254.639	3935.694	0.000
A:B EI N- FP N	1537.000	197.013	6.000	7.800	1055.422	2018.578	0.000
A:B EI N- EI N0	4315.333	197.013	6.000	21.900	3833.755	4796.912	0.000
A:B EI N- FP N0	4412.000	197.013	6.000	22.390	3930.422	4893.578	0.000
A:B FP N- EI N0	2778.333	197.013	6.000	14.100	2296.755	3259.912	0.000
A:B FP N- FP N0	2875.000	197.013	6.000	14.590	2393.422	3356.578	0.000
A:B EI N0- FP N0	96.667	197.013	6.000	0.490	-384.912	578.245	0.641

Table 7.10: Estimate of contrast in two-way ANOVA for variable YS at site 23 in year 2009 .

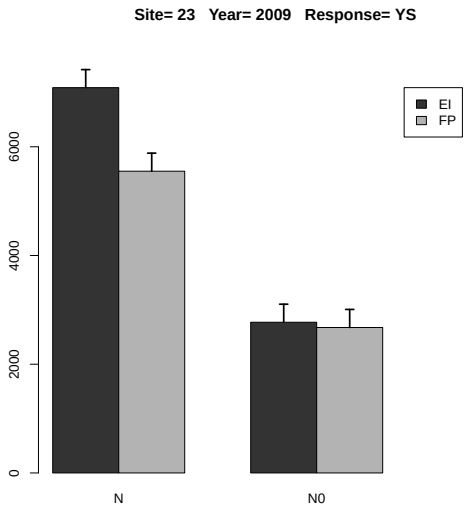

Figure 7.4: Estimated treatment means and standard error in the 2-way ANOVA.

7.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	4864.000
2	2	EI	N0	4543.000
3	3	EI	N0	4934.000
4	1	EI	N	11745.000
5	2	EI	N	11054.000
6	3	EI	N	12014.000
7	1	FP	N0	4290.000
8	2	FP	N0	4931.000
9	3	FP	N0	4446.000
10	1	FP	N	8780.000
11	2	FP	N	8410.000
12	3	FP	N	9531.000

Table 7.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	11604.333	100.178	115.837	0.000
A FP	8907.000	100.178	88.911	0.000
A EI-FP	2697.333	141.674	19.039	0.004

Table 7.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 23 in year 2009 .

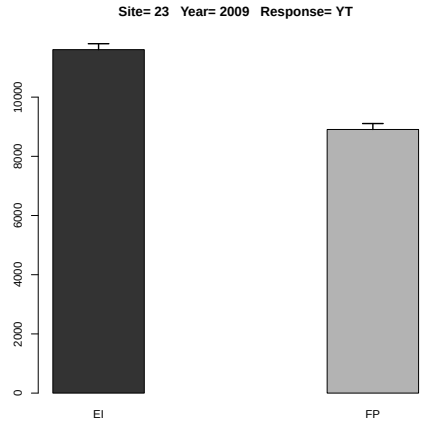

Figure 7.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6403563.000	6403563.000	40.475	6.038	0.001
B	1.000	93666056.333	93666056.333	592.033	6.038	0.000
A:B	1.000	4585560.333	4585560.333	28.984	6.038	0.002

Table 7.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8192.333	184.907	4.700	44.310	7707.272	8677.394	0.000
2	FP		6731.333	184.907	4.700	36.400	6246.272	7216.394	0.000
3		N	10255.667	184.907	4.700	55.460	9770.606	10740.728	0.000
4		N0	4668.000	184.907	4.700	25.250	4182.939	5153.061	0.000
5	EI	N	11604.333	246.088	7.600	47.160	11032.224	12176.442	0.000
6	FP	N	8907.000	246.088	7.600	36.190	8334.891	9479.109	0.000
7	EI	N0	4780.333	246.088	7.600	19.430	4208.224	5352.442	0.000
8	FP	N0	4555.667	246.088	7.600	18.510	3983.558	5127.776	0.000

Table 7.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 23 in year 2009 .

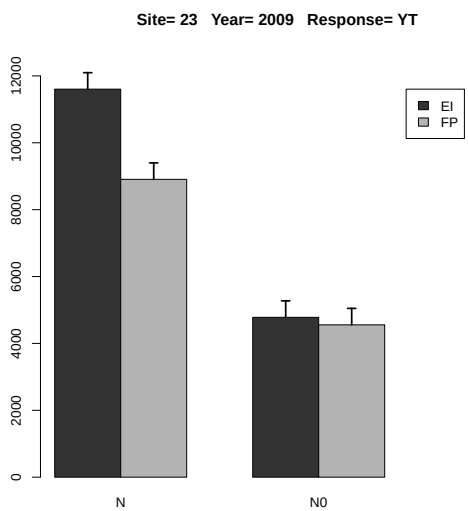

Figure 7.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1461.000	229.645	6.000	6.360	899.926	2022.074	0.001
B N-N0	5587.667	229.645	6.000	24.330	5026.592	6148.741	0.000
A:B EI N- FP N	2697.333	324.768	6.000	8.310	1903.855	3490.812	0.000
A:B EI N- EI N0	6824.000	324.768	6.000	21.010	6030.521	7617.479	0.000
A:B EI N- FP N0	7048.667	324.768	6.000	21.700	6255.188	7842.145	0.000
A:B FP N- EI N0	4126.667	324.768	6.000	12.710	3333.188	4920.145	0.000
A:B FP N- FP N0	4351.333	324.768	6.000	13.400	3557.855	5144.812	0.000
A:B EI N0- FP N0	224.667	324.768	6.000	0.690	-568.812	1018.145	0.515

Table 7.15: Estimate of contrast in two-way ANOVA for variable YT at site 23 in year 2009 .

7.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.427
2	2	EI	N0	0.417
3	3	EI	N0	0.416
4	1	EI	N	0.415
5	2	EI	N	0.387
6	3	EI	N	0.366
7	1	FP	N0	0.412
8	2	FP	N0	0.421
9	3	FP	N0	0.404
10	1	FP	N	0.372
11	2	FP	N	0.371
12	3	FP	N	0.386

Table 7.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.389	0.013	30.398	0.002
A FP	0.376	0.013	29.393	0.002
A EI-FP	0.013	0.018	0.710	0.774

Table 7.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 23 in year 2009 .

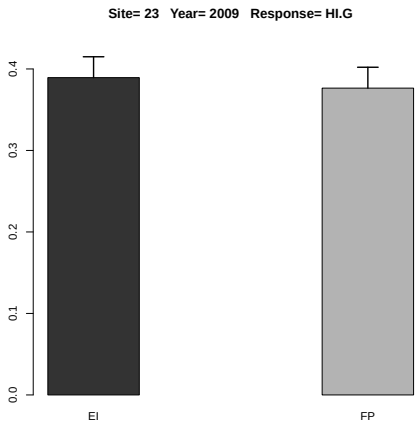

Figure 7.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	1.338	3.999	0.312
B	1.000	0.003	0.003	21.749	3.968	0.010
A:B	1.000	0.000	0.000	0.134	3.968	0.733

Table 7.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.405	0.006	4.000	64.530	0.387	0.422	0.000
2	FP		0.394	0.006	4.000	62.890	0.377	0.412	0.000
3		N	0.383	0.006	7.600	67.280	0.370	0.396	0.000
4		N0	0.416	0.006	7.600	73.120	0.403	0.429	0.000
5	EI	N	0.389	0.008	7.600	48.370	0.371	0.408	0.000
6	FP	N	0.376	0.008	7.600	46.770	0.358	0.395	0.000
7	EI	N0	0.420	0.008	7.600	52.180	0.401	0.439	0.000
8	FP	N0	0.412	0.008	7.600	51.230	0.394	0.431	0.000

Table 7.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 23 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.010	0.009	4.000	1.160	-0.014	0.035	0.312
B N-N0	-0.033	0.007	4.000	-4.660	-0.053	-0.013	0.010
A:B EI N- FP N	0.013	0.011	7.600	1.130	-0.014	0.039	0.293
A:B EI N- EI N0	-0.031	0.010	4.000	-3.040	-0.059	-0.003	0.039
A:B EI N- FP N0	-0.023	0.011	7.600	-2.020	-0.050	0.004	0.080
A:B FP N- EI N0	-0.043	0.011	7.600	-3.820	-0.070	-0.017	0.006
A:B FP N- FP N0	-0.036	0.010	4.000	-3.560	-0.064	-0.008	0.024
A:B EI N0- FP N0	0.008	0.011	7.600	0.670	-0.019	0.034	0.522

Table 7.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 23 in year 2009 .

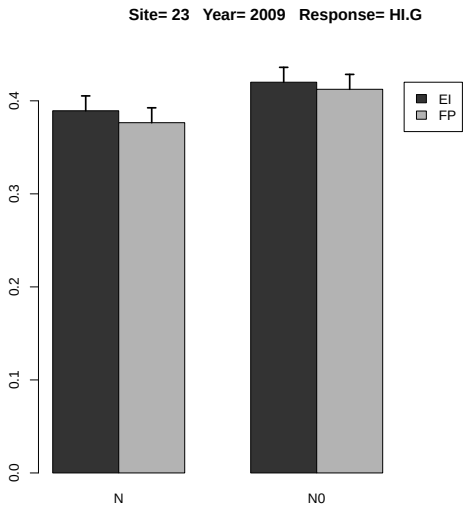

Figure 7.8: Estimated treatment means and standard error in the 2-way ANOVA.

7.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	23.274
2	2	EI	N0	17.434
3	3	EI	N0	20.920
4	1	EI	N	83.833
5	2	EI	N	61.973
6	3	EI	N	69.552
7	1	FP	N0	16.266
8	2	FP	N0	17.646
9	3	FP	N0	18.858
10	1	FP	N	49.658
11	2	FP	N	31.532
12	3	FP	N	36.064

Table 7.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	71.786	0.811	88.484	0.000
A FP	39.085	0.811	48.177	0.000
A EI-FP	32.701	1.147	28.502	0.002

Table 7.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 23 in year 2009 .

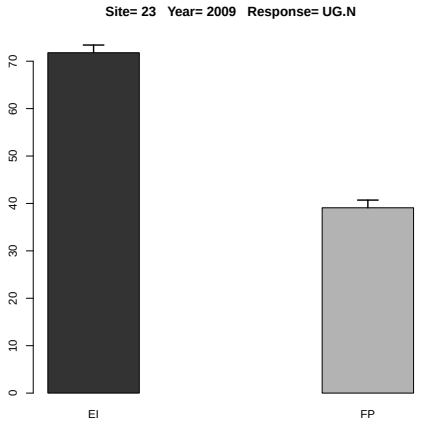

Figure 7.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	953.388	953.388	29.608	6.000	0.002
B	1.000	3968.134	3968.134	123.232	6.000	0.000
A:B	1.000	663.717	663.717	20.612	6.000	0.004

Table 7.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		46.164	3.630	3.100	12.720	34.793	57.535	0.001
2	FP		28.337	3.630	3.100	7.810	16.966	39.709	0.004
3		N	55.435	3.630	3.100	15.270	44.064	66.807	0.000
4		N0	19.066	3.630	3.100	5.250	7.695	30.438	0.012
5	EI	N	71.786	4.306	5.200	16.670	60.856	82.715	0.000
6	FP	N	39.085	4.306	5.200	9.080	28.155	50.014	0.000
7	EI	N0	20.543	4.306	5.200	4.770	9.613	31.472	0.004
8	FP	N0	17.590	4.306	5.200	4.080	6.660	28.519	0.009

Table 7.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 23 in year 2009 .

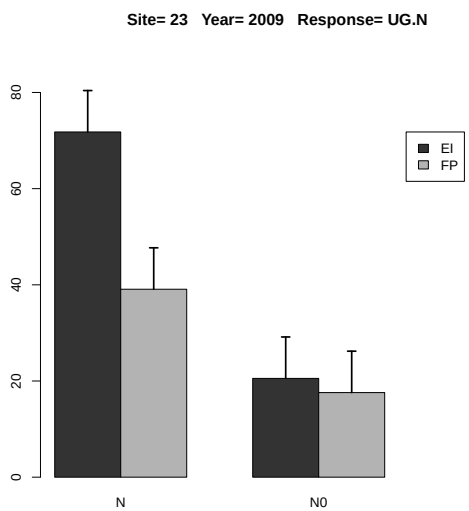

Figure 7.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	17.827	3.276	6.000	5.440	9.810	25.843	0.002
B N-N0	36.369	3.276	6.000	11.100	28.352	44.386	0.000
A:B EI N- FP N	32.701	4.633	6.000	7.060	21.364	44.038	0.000
A:B EI N- EI N0	51.243	4.633	6.000	11.060	39.906	62.580	0.000
A:B EI N- FP N0	54.196	4.633	6.000	11.700	42.859	65.533	0.000
A:B FP N- EI N0	18.542	4.633	6.000	4.000	7.205	29.880	0.007
A:B FP N- FP N0	21.495	4.633	6.000	4.640	10.158	32.832	0.004
A:B EI N0- FP N0	2.953	4.633	6.000	0.640	-8.384	14.290	0.547

Table 7.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 23 in year 2009 .

7.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	14.359
2	2	EI	N0	14.819
3	3	EI	N0	10.358
4	1	EI	N	44.890
5	2	EI	N	34.833
6	3	EI	N	30.154
7	1	FP	N0	11.032
8	2	FP	N0	14.864
9	3	FP	N0	12.285
10	1	FP	N	29.240
11	2	FP	N	24.414
12	3	FP	N	33.304

Table 7.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	36.625	3.961	9.246	0.020
A FP	28.986	3.961	7.317	0.032
A EI-FP	7.640	5.602	1.364	0.485

Table 7.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 23 in year 2009 .

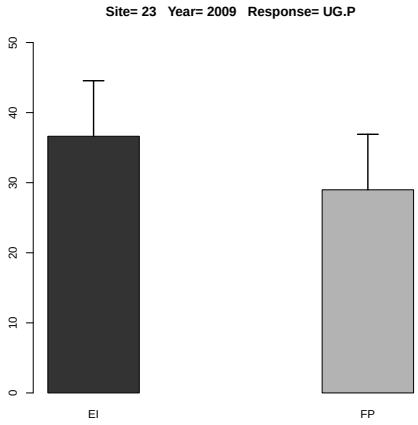

Figure 7.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	36.281	36.281	1.978	3.999	0.232
B	1.000	1182.415	1182.415	64.455	4.000	0.001
A:B	1.000	38.752	38.752	2.112	4.000	0.220

Table 7.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.902	2.034	4.000	12.240	19.254	30.550	0.000
2	FP		20.857	2.034	4.000	10.250	15.208	26.505	0.000
3		N	32.806	1.897	7.800	17.300	28.415	37.197	0.000
4		N0	12.953	1.897	7.800	6.830	8.562	17.344	0.000
5	EI	N	36.625	2.682	7.800	13.650	30.416	42.835	0.000
6	FP	N	28.986	2.682	7.800	10.810	22.776	35.196	0.000
7	EI	N0	13.178	2.682	7.800	4.910	6.968	19.388	0.001
8	FP	N0	12.727	2.682	7.800	4.740	6.517	18.937	0.002

Table 7.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 23 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.045	2.877	4.000	1.410	-3.942	12.033	0.232
B N-N0	19.853	2.473	4.000	8.030	12.987	26.719	0.001
A:B EI N- FP N	7.639	3.793	7.800	2.010	-1.143	16.422	0.080
A:B EI N- EI N0	23.447	3.497	4.000	6.700	13.737	33.157	0.003
A:B EI N- FP N0	23.898	3.793	7.800	6.300	15.116	32.681	0.000
A:B FP N- EI N0	15.807	3.793	7.800	4.170	7.025	24.590	0.003
A:B FP N- FP N0	16.259	3.497	4.000	4.650	6.549	25.968	0.010
A:B EI N0- FP N0	0.451	3.793	7.800	0.120	-8.331	9.234	0.908

Table 7.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 23 in year 2009 .

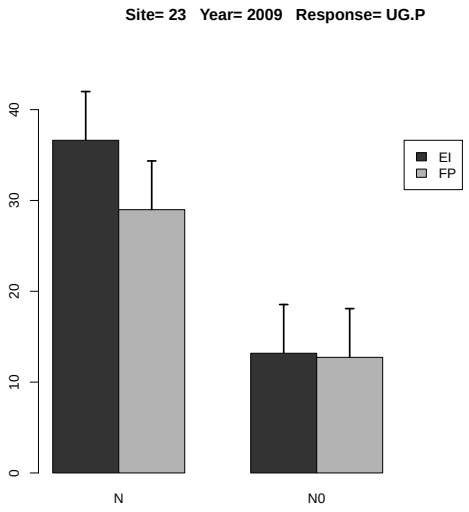

Figure 7.12: Estimated treatment means and standard error in the 2-way ANOVA.

7.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	32.882
2	2	EI	N0	33.935
3	3	EI	N0	23.719
4	1	EI	N	102.797
5	2	EI	N	79.768
6	3	EI	N	69.052
7	1	FP	N0	25.264
8	2	FP	N0	34.039
9	3	FP	N0	28.132
10	1	FP	N	66.959
11	2	FP	N	55.908
12	3	FP	N	76.266

Table 7.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	83.872	9.072	9.246	0.020
A FP	66.378	9.072	7.317	0.032
A EI-FP	17.495	12.829	1.364	0.484

Table 7.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 23 in year 2009 .

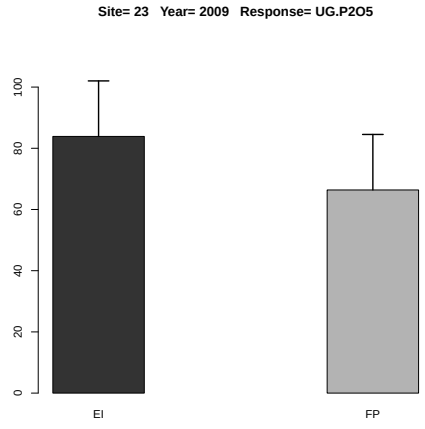

Figure 7.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	190.263	190.263	1.978	3.999	0.232
B	1.000	6200.700	6200.700	64.455	4.000	0.001
A:B	1.000	203.218	203.218	2.112	4.000	0.220

Table 7.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		57.026	4.658	4.000	12.240	44.091	69.960	0.000
2	FP		47.761	4.658	4.000	10.250	34.827	60.696	0.000
3		N	75.125	4.343	7.800	17.300	65.069	85.181	0.000
4		N0	29.662	4.343	7.800	6.830	19.606	39.717	0.000
5	EI	N	83.872	6.143	7.800	13.650	69.652	98.093	0.000
6	FP	N	66.378	6.143	7.800	10.810	52.157	80.598	0.000
7	EI	N0	30.179	6.143	7.800	4.910	15.958	44.399	0.001
8	FP	N0	29.145	6.143	7.800	4.740	14.924	43.366	0.002

Table 7.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 23 in year 2009 .

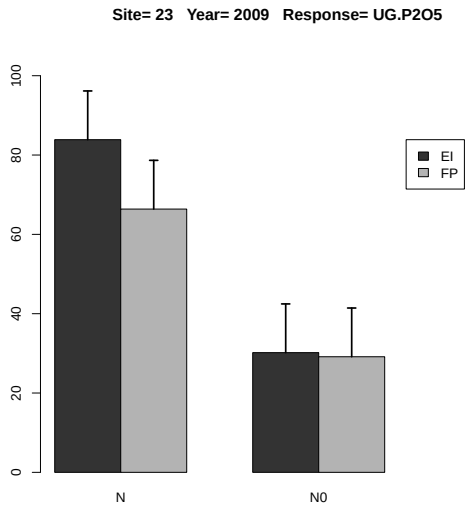

Figure 7.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	9.264	6.588	4.000	1.410	-9.027	27.556	0.232
B N-N0	45.463	5.663	4.000	8.030	29.741	61.186	0.001
A:B EI N- FP N	17.495	8.687	7.800	2.010	-2.617	37.606	0.080
A:B EI N- EI N0	53.694	8.008	4.000	6.700	31.459	75.928	0.003
A:B EI N- FP N0	54.727	8.687	7.800	6.300	34.616	74.838	0.000
A:B FP N- EI N0	36.199	8.687	7.800	4.170	16.088	56.310	0.003
A:B FP N- FP N0	37.233	8.008	4.000	4.650	14.998	59.468	0.010
A:B EI N0- FP N0	1.034	8.687	7.800	0.120	-19.077	21.145	0.908

Table 7.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 23 in year 2009 .

7.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	8.416
2	2	EI	N0	8.565
3	3	EI	N0	9.947
4	1	EI	N	25.491
5	2	EI	N	20.857
6	3	EI	N	23.066
7	1	FP	N0	5.746
8	2	FP	N0	9.861
9	3	FP	N0	5.837
10	1	FP	N	16.270
11	2	FP	N	16.422
12	3	FP	N	14.168

Table 7.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	23.138	1.092	21.189	0.004
A FP	15.620	1.092	14.304	0.009
A EI-FP	7.518	1.544	4.868	0.069

Table 7.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 23 in year 2009 .

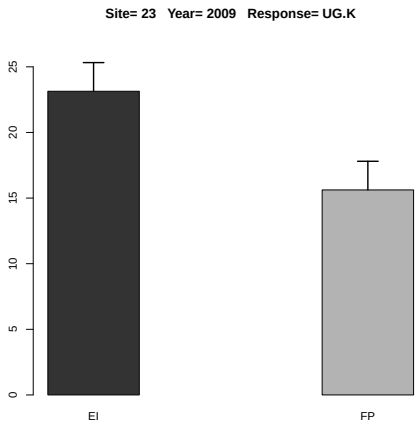

Figure 7.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	43.143	43.143	16.472	3.999	0.015
B	1.000	384.216	384.216	146.690	4.000	0.000
A:B	1.000	24.284	24.284	9.271	4.000	0.038

Table 7.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16.057	0.814	4.000	19.720	13.796	18.318	0.000
2	FP		11.384	0.814	4.000	13.980	9.123	13.645	0.000
3		N	19.379	0.741	7.700	26.140	17.657	21.102	0.000
4		N0	8.062	0.741	7.700	10.870	6.340	9.785	0.000
5	EI	N	23.138	1.049	7.700	22.070	20.702	25.574	0.000
6	FP	N	15.620	1.049	7.700	14.900	13.184	18.056	0.000
7	EI	N0	8.976	1.049	7.700	8.560	6.540	11.412	0.000
8	FP	N0	7.148	1.049	7.700	6.820	4.712	9.584	0.000

Table 7.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 23 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.673	1.151	4.000	4.060	1.476	7.871	0.015
B N-N0	11.317	0.934	4.000	12.110	8.723	13.911	0.000
A:B EI N- FP N	7.518	1.483	7.700	5.070	4.073	10.963	0.001
A:B EI N- EI N0	14.162	1.321	4.000	10.720	10.493	17.831	0.000
A:B EI N- FP N0	15.990	1.483	7.700	10.780	12.545	19.435	0.000
A:B FP N- EI N0	6.644	1.483	7.700	4.480	3.199	10.089	0.002
A:B FP N- FP N0	8.472	1.321	4.000	6.410	4.803	12.141	0.003
A:B EI N0- FP N0	1.828	1.483	7.700	1.230	-1.617	5.273	0.254

Table 7.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 23 in year 2009 .

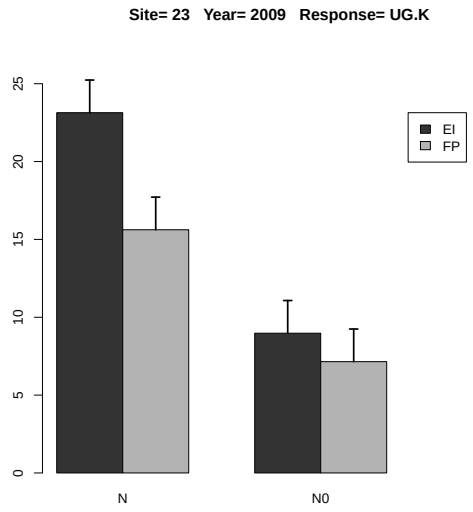

Figure 7.16: Estimated treatment means and standard error in the 2-way ANOVA.

7.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	10.141
2	2	EI	N0	10.321
3	3	EI	N0	11.987
4	1	EI	N	30.717
5	2	EI	N	25.133
6	3	EI	N	27.795
7	1	FP	N0	6.924
8	2	FP	N0	11.883
9	3	FP	N0	7.034
10	1	FP	N	19.605
11	2	FP	N	19.788
12	3	FP	N	17.072

Table 7.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	27.882	1.316	21.189	0.004
A FP	18.822	1.316	14.304	0.009
A EI-FP	9.060	1.861	4.868	0.069

Table 7.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 23 in year 2009 .

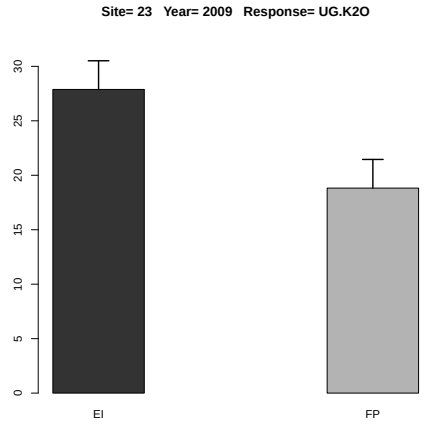

Figure 7.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	62.645	62.645	16.472	3.999	0.015
B	1.000	557.891	557.891	146.690	4.000	0.000
A:B	1.000	35.261	35.261	9.271	4.000	0.038

Table 7.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.349	0.981	4.000	19.720	16.625	22.073	0.000
2	FP		13.718	0.981	4.000	13.980	10.993	16.442	0.000
3		N	23.352	0.893	7.700	26.140	21.276	25.427	0.000
4		N0	9.715	0.893	7.700	10.870	7.639	11.790	0.000
5	EI	N	27.881	1.264	7.700	22.070	24.946	30.817	0.000
6	FP	N	18.822	1.264	7.700	14.900	15.886	21.757	0.000
7	EI	N0	10.816	1.264	7.700	8.560	7.881	13.752	0.000
8	FP	N0	8.613	1.264	7.700	6.820	5.678	11.549	0.000

Table 7.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 23 in year 2009 .

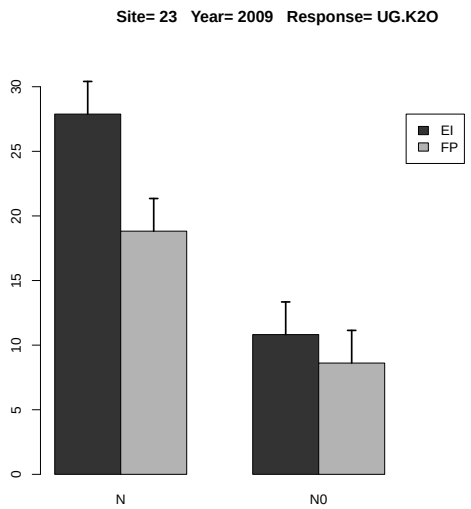

Figure 7.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.631	1.387	4.000	4.060	1.779	9.484	0.015
B N-N0	13.637	1.126	4.000	12.110	10.511	16.763	0.000
A:B EI N- FP N	9.060	1.787	7.700	5.070	4.908	13.211	0.001
A:B EI N- EI N0	17.065	1.592	4.000	10.720	12.644	21.486	0.000
A:B EI N- FP N0	19.268	1.787	7.700	10.780	15.117	23.419	0.000
A:B FP N- EI N0	8.005	1.787	7.700	4.480	3.854	12.157	0.002
A:B FP N- FP N0	10.209	1.592	4.000	6.410	5.787	14.630	0.003
A:B EI N0- FP N0	2.203	1.787	7.700	1.230	-1.948	6.354	0.254

Table 7.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 23 in year 2009 .

7.1.10 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	7.273
2	2	EI	N0	6.159
3	3	EI	N0	7.835
4	1	EI	N	20.520
5	2	EI	N	16.455
6	3	EI	N	18.576
7	1	FP	N0	6.453
8	2	FP	N0	8.615
9	3	FP	N0	6.430
10	1	FP	N	16.270
11	2	FP	N	13.393
12	3	FP	N	12.107

Table 7.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	18.517	0.706	26.223	0.003
A FP	13.923	0.706	19.718	0.004
A EI-FP	4.594	0.999	4.600	0.077

Table 7.47: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 23 in year 2009 .

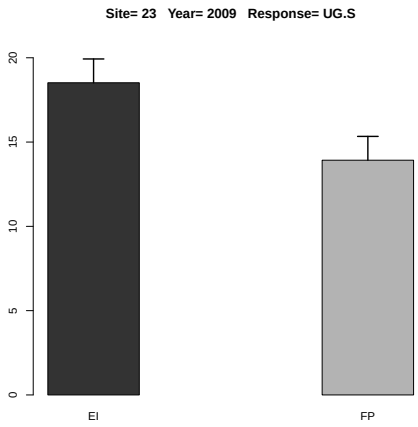

Figure 7.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	12.220	12.220	5.013	3.999	0.089
B	1.000	248.032	248.032	101.750	4.000	0.001
A:B	1.000	16.362	16.362	6.712	4.000	0.061

Table 7.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.803	0.713	4.000	17.950	10.823	14.783	0.000
2	FP		10.545	0.713	4.000	14.790	8.565	12.525	0.000
3		N	16.220	0.676	7.900	23.980	14.657	17.783	0.000
4		N0	7.128	0.676	7.900	10.540	5.564	8.691	0.000
5	EI	N	18.517	0.957	7.900	19.360	16.306	20.727	0.000
6	FP	N	13.923	0.957	7.900	14.560	11.713	16.134	0.000
7	EI	N0	7.089	0.957	7.900	7.410	4.878	9.299	0.000
8	FP	N0	7.166	0.957	7.900	7.490	4.956	9.377	0.000

Table 7.49: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 23 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.258	1.009	4.000	2.240	-0.542	5.059	0.089
B N-N0	9.093	0.901	4.000	10.090	6.590	11.595	0.000
A:B EI N- FP N	4.593	1.353	7.900	3.400	1.467	7.720	0.010
A:B EI N- EI N0	11.428	1.275	4.000	8.960	7.889	14.968	0.001
A:B EI N- FP N0	11.351	1.353	7.900	8.390	8.225	14.477	0.000
A:B FP N- EI N0	6.835	1.353	7.900	5.050	3.708	9.961	0.001
A:B FP N- FP N0	6.757	1.275	4.000	5.300	3.218	10.297	0.006
A:B EI N0- FP N0	-0.077	1.353	7.900	-0.060	-3.203	3.049	0.956

Table 7.50: Estimate of contrast in two-way ANOVA for variable UG.S at site 23 in year 2009 .

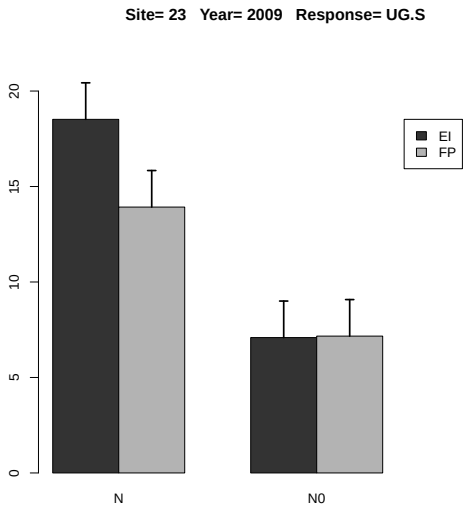

Figure 7.20: Estimated treatment means and standard error in the 2-way ANOVA.

7.1.11 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	27.078
2	2	EI	N	23.744
3	3	EI	N	24.456
4	1	FP	N	28.409
5	2	FP	N	27.148
6	3	FP	N	32.000

Table 7.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	25.093	1.253	4.000	20.030	21.613	28.572	0.000
A FP	29.186	1.253	4.000	23.290	25.706	32.665	0.000
A EI-FP	-4.093	1.772	4.000	-2.310	-9.013	0.827	0.082

Table 7.52: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 23 in year 2009 .

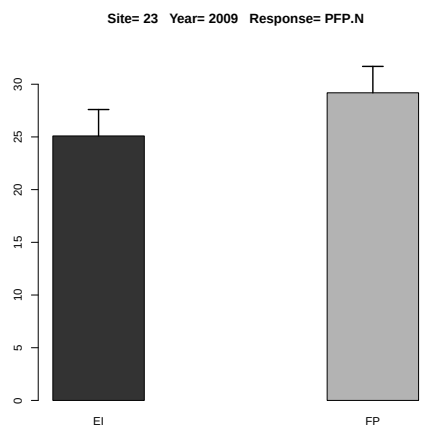

Figure 7.21: Estimated treatment means and standard error in the one-way ANOVA.

7.1.12 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	124.039
2	2	EI	N	108.770
3	3	EI	N	112.027
4	1	FP	N	143.900
5	2	FP	N	137.514
6	3	FP	N	162.092

Table 7.53: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	114.945	6.155	4.000	18.670	97.856	132.035	0.000
A FP	147.835	6.155	4.000	24.020	130.746	164.924	0.000
A EI-FP	-32.890	8.705	4.000	-3.780	-57.058	-8.722	0.019

Table 7.54: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 23 in year 2009 .

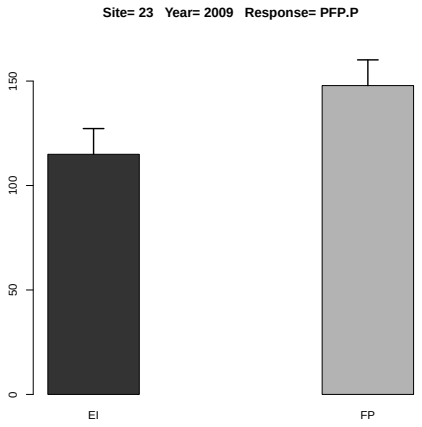

Figure 7.22: Estimated treatment means and standard error in the one-way ANOVA.

7.1.13 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	54.156
2	2	EI	N	47.489
3	3	EI	N	48.911
4	1	FP	N	62.827
5	2	FP	N	60.038
6	3	FP	N	70.769

Table 7.55: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	50.185	2.687	4.000	18.670	42.724	57.646	0.000
A FP	64.545	2.687	4.000	24.020	57.084	72.006	0.000
A EI-FP	-14.360	3.800	4.000	-3.780	-24.911	-3.808	0.019

Table 7.56: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 23 in year 2009 .

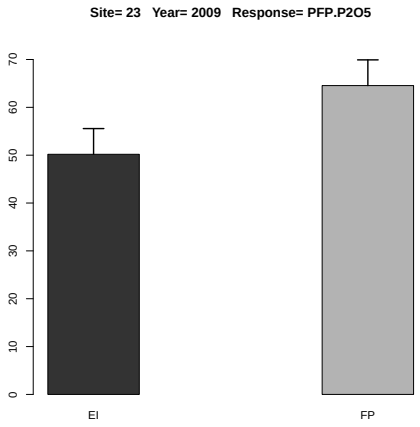

Figure 7.23: Estimated treatment means and standard error in the one-way ANOVA.

7.1.14 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	58.737
2	2	EI	N	51.506
3	3	EI	N	53.049
4	1	FP	N	87.491
5	2	FP	N	83.608
6	3	FP	N	98.551

Table 7.57: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	54.431	3.527	4.000	15.430	44.639	64.222	0.000
A FP	89.883	3.527	4.000	25.490	80.092	99.675	0.000
A EI-FP	-35.453	4.987	4.000	-7.110	-49.300	-21.605	0.002

Table 7.58: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 23 in year 2009 .

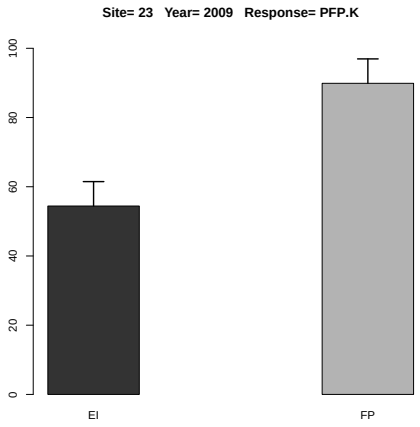

Figure 7.24: Estimated treatment means and standard error in the one-way ANOVA.

7.1.15 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	48.740
2	2	EI	N	42.740
3	3	EI	N	44.020
4	1	FP	N	72.600
5	2	FP	N	69.378
6	3	FP	N	81.778

Table 7.59: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	45.167	2.926	4.000	15.430	37.042	53.292	0.000
A FP	74.585	2.926	4.000	25.490	66.460	82.710	0.000
A EI-FP	-29.419	4.138	4.000	-7.110	-40.909	-17.928	0.002

Table 7.60: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 23 in year 2009 .

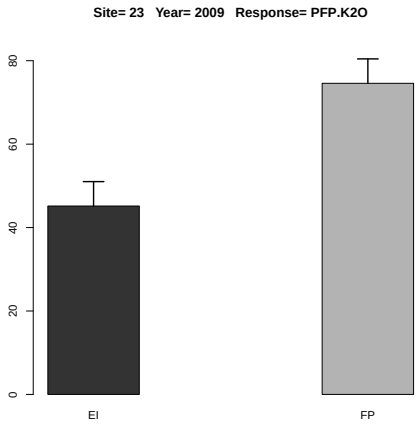

Figure 7.25: Estimated treatment means and standard error in the one-way ANOVA.

7.1.16 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.466
2	2	EI	N	0.344
3	3	EI	N	0.386
4	1	FP	N	0.432
5	2	FP	N	0.274
6	3	FP	N	0.314

Table 7.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.399	0.042	2.100	9.520	0.226	0.572	0.009
A FP	0.340	0.042	2.100	8.110	0.167	0.513	0.013
A EI-FP	0.059	0.012	2.000	4.700	0.005	0.113	0.043

Table 7.62: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 23 in year 2009 .

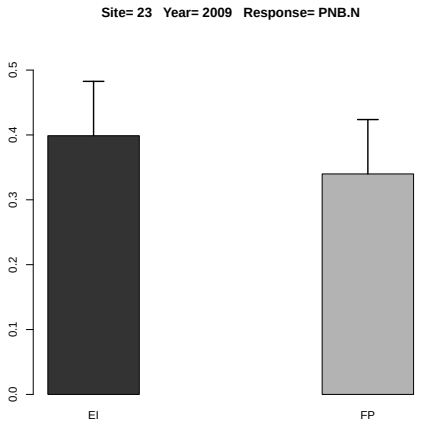

Figure 7.26: Estimated treatment means and standard error in the one-way ANOVA.

7.1.17 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	1.142
2	2	EI	N	0.886
3	3	EI	N	0.767
4	1	FP	N	1.288
5	2	FP	N	1.075
6	3	FP	N	1.467

Table 7.63: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.932	0.112	4.000	8.330	0.621	1.243	0.001
A FP	1.277	0.112	4.000	11.410	0.966	1.587	0.000
A EI-FP	-0.345	0.158	4.000	-2.180	-0.784	0.095	0.095

Table 7.64: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 23 in year 2009 .

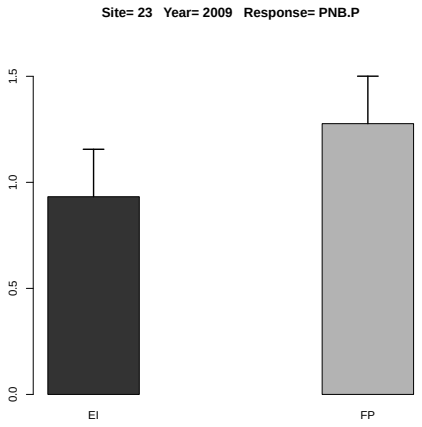

Figure 7.27: Estimated treatment means and standard error in the one-way ANOVA.

7.1.18 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.307
2	2	EI	N	0.251
3	3	EI	N	0.278
4	1	FP	N	0.436
5	2	FP	N	0.440
6	3	FP	N	0.379

Table 7.65: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.279	0.018	4.000	15.600	0.229	0.329	0.000
A FP	0.418	0.018	4.000	23.400	0.369	0.468	0.000
A EI-FP	-0.140	0.025	4.000	-5.520	-0.210	-0.069	0.005

Table 7.66: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 23 in year 2009 .

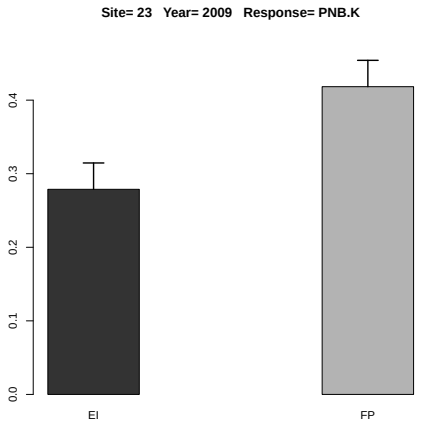

Figure 7.28: Estimated treatment means and standard error in the one-way ANOVA.

7.1.19 Response Variable AE

	rep	A	B	y
1	1	EI	N	15.533
2	2	EI	N	13.217
3	3	EI	N	13.061
4	1	FP	N	13.035
5	2	FP	N	9.096
6	3	FP	N	16.383

Table 7.67: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	13.937	1.598	8.723	0.023
A FP	12.838	1.598	8.035	0.027
A EI-FP	1.099	2.260	0.487	0.879

Table 7.68: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 23 in year 2009 .

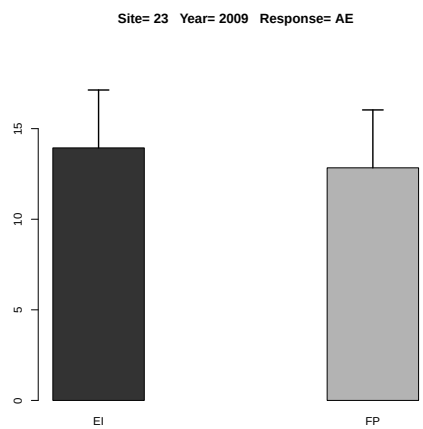

Figure 7.29: Estimated treatment means and standard error in the one-way ANOVA.

7.2 Year 2010

There are 73 variables not observed: UG.Ca UG.Mg UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

7.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	1288.000
2	2	EI	N0	1184.000
3	3	EI	N0	1274.000
4	1	EI	N	4009.000
5	2	EI	N	4255.000
6	3	EI	N	4032.000
7	1	FP	N0	1458.000
8	2	FP	N0	1001.000
9	3	FP	N0	1278.000
10	1	FP	N	3260.000
11	2	FP	N	3707.000
12	3	FP	N	2977.000

Table 7.69: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	4098.667	104.228	39.324	0.000
A FP	3314.667	104.228	31.802	0.001
A EI-FP	784.000	147.401	5.319	0.059

Table 7.70: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 23 in year 2010 .

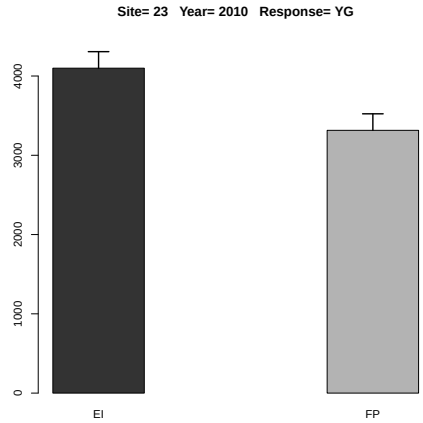

Figure 7.30: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	464526.750	464526.750	8.843	8.062	0.018
B	1.000	18147420.750	18147420.750	345.484	8.062	0.000
A:B	1.000	457470.750	457470.750	8.709	8.062	0.018

Table 7.71: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2673.667	93.566	8.100	28.580	2458.191	2889.143	0.000
2	FP		2280.167	93.566	8.100	24.370	2064.691	2495.643	0.000
3		N	3706.667	93.566	8.100	39.620	3491.191	3922.143	0.000
4		N0	1247.167	93.566	8.100	13.330	1031.691	1462.643	0.000
5	EI	N	4098.667	132.322	8.100	30.970	3793.937	4403.396	0.000
6	FP	N	3314.667	132.322	8.100	25.050	3009.937	3619.396	0.000
7	EI	N0	1248.667	132.322	8.100	9.440	943.937	1553.396	0.000
8	FP	N0	1245.667	132.322	8.100	9.410	940.937	1550.396	0.000

Table 7.72: Estimate of treatment means in tow-way ANOVA for variable YG at site 23 in year 2010 .

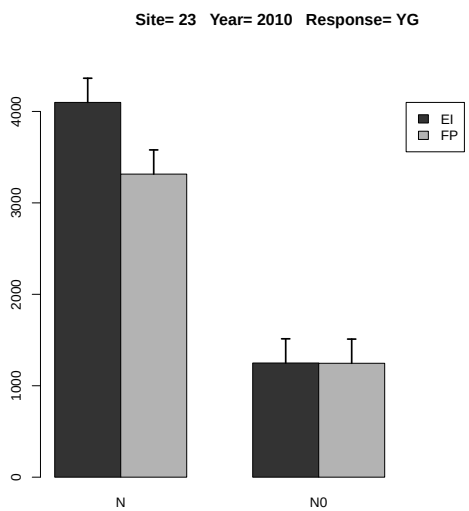

Figure 7.31: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	393.500	132.322	8.100	2.970	88.771	698.229	0.018
B N-N0	2459.500	132.322	8.100	18.590	2154.771	2764.229	0.000
A:B EI N- FP N	784.000	187.132	8.100	4.190	353.048	1214.952	0.003
A:B EI N- EI N0	2850.000	187.132	8.100	15.230	2419.048	3280.952	0.000
A:B EI N- FP N0	2853.000	187.132	8.100	15.250	2422.048	3283.952	0.000
A:B FP N- EI N0	2066.000	187.132	8.100	11.040	1635.048	2496.952	0.000
A:B FP N- FP N0	2069.000	187.132	8.100	11.060	1638.048	2499.952	0.000
A:B EI N0- FP N0	3.000	187.132	8.100	0.020	-427.952	433.952	0.988

Table 7.73: Estimate of contrast in two-way ANOVA for variable YG at site 23 in year 2010 .

7.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	2717.000
2	2	EI	N0	2416.000
3	3	EI	N0	2416.000
4	1	EI	N	7548.000
5	2	EI	N	7095.000
6	3	EI	N	6492.000
7	1	FP	N0	2416.000
8	2	FP	N0	2717.000
9	3	FP	N0	2114.000
10	1	FP	N	6341.000
11	2	FP	N	5737.000
12	3	FP	N	6643.000

Table 7.74: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	7045.000	339.282	20.764	0.004
A FP	6240.333	339.282	18.393	0.005
A EI-FP	804.667	479.817	1.677	0.384

Table 7.75: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 23 in year 2010 .

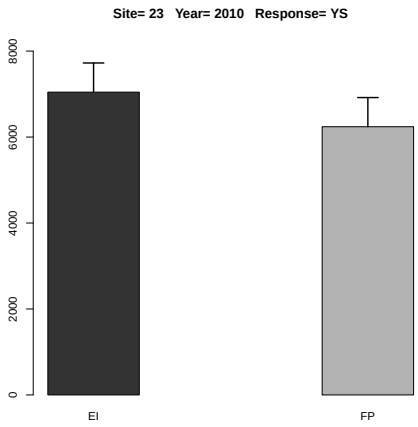

Figure 7.32: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	614721.333	614721.333	4.001	8.024	0.080
B	1.000	52333633.333	52333633.333	340.619	8.024	0.000
A:B	1.000	371712.000	371712.000	2.419	8.024	0.158

Table 7.76: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4780.667	160.022	8.000	29.880	4411.846	5149.487	0.000
2	FP		4328.000	160.022	8.000	27.050	3959.180	4696.820	0.000
3		N	6642.667	160.022	8.000	41.510	6273.846	7011.487	0.000
4		N0	2466.000	160.022	8.000	15.410	2097.180	2834.820	0.000
5	EI	N	7045.000	226.306	8.000	31.130	6523.409	7566.591	0.000
6	FP	N	6240.333	226.306	8.000	27.570	5718.743	6761.924	0.000
7	EI	N0	2516.333	226.306	8.000	11.120	1994.743	3037.924	0.000
8	FP	N0	2415.667	226.306	8.000	10.670	1894.076	2937.257	0.000

Table 7.77: Estimate of treatment means in tow-way ANOVA for variable YS at site 23 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	452.667	226.306	8.000	2.000	-68.924	974.257	0.080
B N-N0	4176.667	226.306	8.000	18.460	3655.076	4698.257	0.000
A:B EI N- FP N	804.667	320.045	8.000	2.510	67.026	1542.307	0.036
A:B EI N- EI N0	4528.667	320.045	8.000	14.150	3791.026	5266.307	0.000
A:B EI N- FP N0	4629.333	320.045	8.000	14.460	3891.693	5366.974	0.000
A:B FP N- EI N0	3724.000	320.045	8.000	11.640	2986.360	4461.640	0.000
A:B FP N- FP N0	3824.667	320.045	8.000	11.950	3087.026	4562.307	0.000
A:B EI N0- FP N0	100.667	320.045	8.000	0.310	-636.974	838.307	0.761

Table 7.78: Estimate of contrast in two-way ANOVA for variable YS at site 23 in year 2010 .

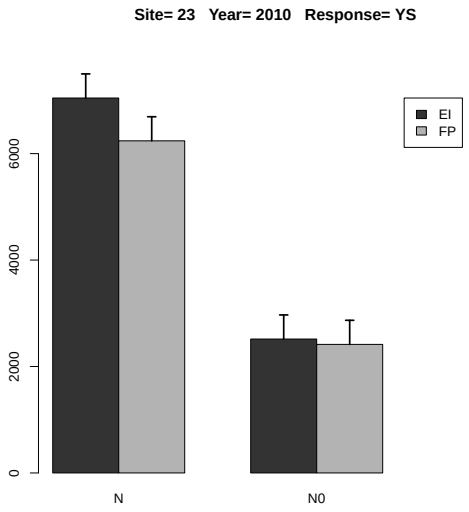

Figure 7.33: Estimated treatment means and standard error in the 2-way ANOVA.

7.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	4005.000
2	2	EI	N0	3600.000
3	3	EI	N0	3690.000
4	1	EI	N	11557.000
5	2	EI	N	11350.000
6	3	EI	N	10524.000
7	1	FP	N0	3874.000
8	2	FP	N0	3718.000
9	3	FP	N0	3392.000
10	1	FP	N	9601.000
11	2	FP	N	9444.000
12	3	FP	N	9620.000

Table 7.79: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	11143.667	242.281	45.995	0.000
A FP	9555.000	242.281	39.438	0.001
A EI-FP	1588.667	342.637	4.637	0.076

Table 7.80: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 23 in year 2010 .

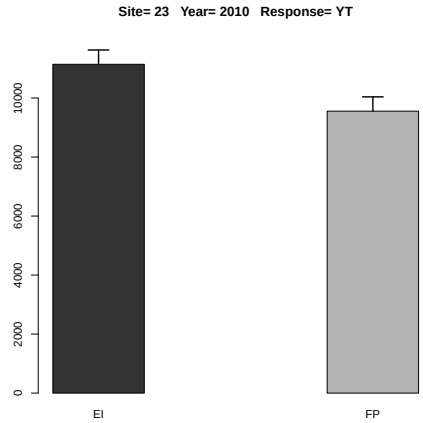

Figure 7.34: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2147994.083	2147994.083	30.872	5.984	0.001
B	1.000	132116124.083	132116124.083	1898.823	5.984	0.000
A:B	1.000	1653918.750	1653918.750	23.771	5.984	0.003

Table 7.81: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7454.333	151.270	3.500	49.280	7006.779	7901.887	0.000
2	FP		6608.167	151.270	3.500	43.680	6160.613	7055.721	0.000
3		N	10349.333	151.270	3.500	68.420	9901.779	10796.887	0.000
4		N0	3713.167	151.270	3.500	24.550	3265.613	4160.721	0.000
5	EI	N	11143.667	185.685	6.000	60.010	10689.977	11597.357	0.000
6	FP	N	9555.000	185.685	6.000	51.460	9101.310	10008.690	0.000
7	EI	N0	3765.000	185.685	6.000	20.280	3311.310	4218.690	0.000
8	FP	N0	3661.333	185.685	6.000	19.720	3207.643	4115.023	0.000

Table 7.82: Estimate of treatment means in tow-way ANOVA for variable YT at site 23 in year 2010
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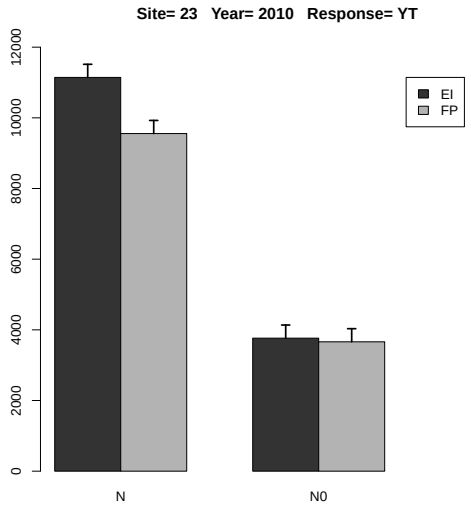

Figure 7.35: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	846.167	152.291	5.900	5.560	472.529	1219.804	0.002
B N-N0	6636.167	152.291	5.900	43.580	6262.529	7009.804	0.000
A:B EI N- FP N	1588.667	215.372	5.900	7.380	1060.263	2117.070	0.000
A:B EI N- EI N0	7378.667	215.372	5.900	34.260	6850.263	7907.070	0.000
A:B EI N- FP N0	7482.333	215.372	5.900	34.740	6953.930	8010.737	0.000
A:B FP N- EI N0	5790.000	215.372	5.900	26.880	5261.597	6318.403	0.000
A:B FP N- FP N0	5893.667	215.372	5.900	27.370	5365.263	6422.070	0.000
A:B EI N0- FP N0	103.667	215.372	5.900	0.480	-424.737	632.070	0.647

Table 7.83: Estimate of contrast in two-way ANOVA for variable YT at site 23 in year 2010 .

7.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.322
2	2	EI	N0	0.329
3	3	EI	N0	0.345
4	1	EI	N	0.347
5	2	EI	N	0.375
6	3	EI	N	0.383
7	1	FP	N0	0.376
8	2	FP	N0	0.269
9	3	FP	N0	0.377
10	1	FP	N	0.340
11	2	FP	N	0.393
12	3	FP	N	0.309

Table 7.84: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.368	0.019	19.120	0.005
A FP	0.347	0.019	18.023	0.006
A EI-FP	0.021	0.027	0.775	0.742

Table 7.85: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 23 in year 2010 .

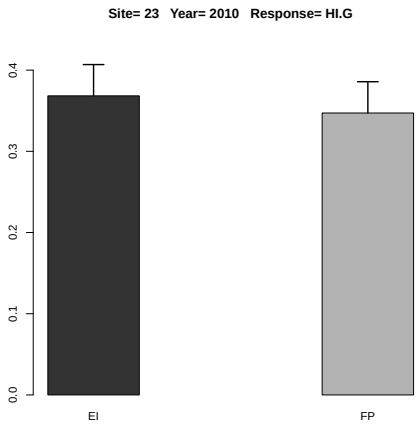

Figure 7.36: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.074	7.980	0.793
B	1.000	0.001	0.001	0.898	7.980	0.371
A:B	1.000	0.001	0.001	0.441	7.980	0.525

Table 7.86: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.350	0.016	8.000	21.930	0.313	0.387	0.000
2	FP		0.344	0.016	8.000	21.550	0.307	0.381	0.000
3		N	0.358	0.016	8.000	22.410	0.321	0.395	0.000
4		N0	0.336	0.016	8.000	21.070	0.299	0.373	0.000
5	EI	N	0.368	0.023	8.000	16.310	0.316	0.420	0.000
6	FP	N	0.347	0.023	8.000	15.380	0.295	0.399	0.000
7	EI	N0	0.332	0.023	8.000	14.700	0.280	0.384	0.000
8	FP	N0	0.341	0.023	8.000	15.090	0.289	0.393	0.000

Table 7.87: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 23 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.006	0.023	8.000	0.270	-0.046	0.058	0.793
B N-N0	0.021	0.023	8.000	0.950	-0.031	0.073	0.371
A:B EI N- FP N	0.021	0.032	8.000	0.660	-0.052	0.095	0.527
A:B EI N- EI N0	0.036	0.032	8.000	1.140	-0.037	0.110	0.287
A:B EI N- FP N0	0.028	0.032	8.000	0.860	-0.046	0.101	0.414
A:B FP N- EI N0	0.015	0.032	8.000	0.480	-0.058	0.089	0.645
A:B FP N- FP N0	0.006	0.032	8.000	0.200	-0.067	0.080	0.846
A:B EI N0- FP N0	-0.009	0.032	8.000	-0.280	-0.082	0.065	0.788

Table 7.88: Estimate of contrast in two-way ANOVA for variable HI.G at site 23 in year 2010 .

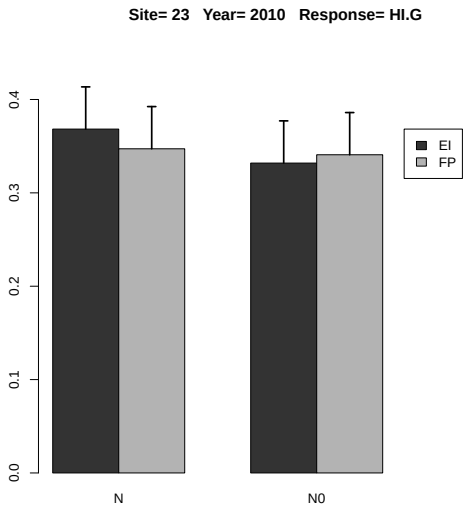

Figure 7.37: Estimated treatment means and standard error in the 2-way ANOVA.

7.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	12.622
2	2	EI	N0	9.709
3	3	EI	N0	9.555
4	1	EI	N	60.135
5	2	EI	N	53.188
6	3	EI	N	52.819
7	1	FP	N0	11.810
8	2	FP	N0	6.506
9	3	FP	N0	11.758
10	1	FP	N	38.468
11	2	FP	N	52.269
12	3	FP	N	35.724

Table 7.89: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	55.381	4.451	12.444	0.011
A FP	42.154	4.451	9.472	0.019
A EI-FP	13.227	6.294	2.102	0.284

Table 7.90: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 23 in year 2010 .

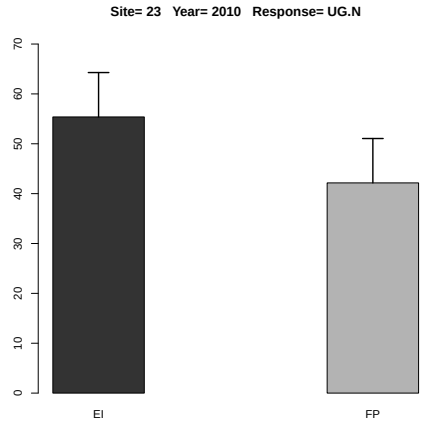

Figure 7.38: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	143.474	143.474	5.320	8.000	0.050
B	1.000	4432.989	4432.989	164.372	8.000	0.000
A:B	1.000	119.503	119.503	4.431	8.000	0.068

Table 7.91: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		33.005	2.120	8.000	15.570	28.116	37.894	0.000
2	FP		26.089	2.120	8.000	12.310	21.200	30.978	0.000
3		N	48.767	2.120	8.000	23.000	43.878	53.656	0.000
4		N0	10.327	2.120	8.000	4.870	5.438	15.216	0.001
5	EI	N	55.381	2.998	8.000	18.470	48.467	62.295	0.000
6	FP	N	42.154	2.998	8.000	14.060	35.239	49.068	0.000
7	EI	N0	10.629	2.998	8.000	3.540	3.715	17.543	0.008
8	FP	N0	10.025	2.998	8.000	3.340	3.111	16.939	0.010

Table 7.92: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 23 in year 2010 .

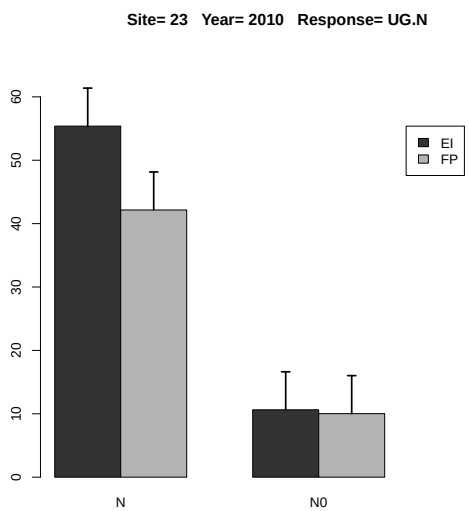

Figure 7.39: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	6.916	2.998	8.000	2.310	0.001	13.830	0.050
B N-N0	38.440	2.998	8.000	12.820	31.526	45.355	0.000
A:B EI N- FP N	13.227	4.240	8.000	3.120	3.449	23.005	0.014
A:B EI N- EI N0	44.752	4.240	8.000	10.550	34.974	54.530	0.000
A:B EI N- FP N0	45.356	4.240	8.000	10.700	35.578	55.134	0.000
A:B FP N- EI N0	31.525	4.240	8.000	7.430	21.747	41.303	0.000
A:B FP N- FP N0	32.129	4.240	8.000	7.580	22.351	41.907	0.000
A:B EI N0- FP N0	0.604	4.240	8.000	0.140	-9.174	10.382	0.890

Table 7.93: Estimate of contrast in two-way ANOVA for variable UG.N at site 23 in year 2010 .

7.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	6.698
2	2	EI	N0	9.354
3	3	EI	N0	9.555
4	1	EI	N	32.874
5	2	EI	N	38.721
6	3	EI	N	26.208
7	1	FP	N0	11.081
8	2	FP	N0	6.306
9	3	FP	N0	10.352
10	1	FP	N	29.992
11	2	FP	N	30.397
12	3	FP	N	19.351

Table 7.94: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	32.601	1.149	28.363	0.003
A FP	26.580	1.149	23.125	0.003
A EI-FP	6.021	1.626	3.704	0.114

Table 7.95: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 23 in year 2010 .

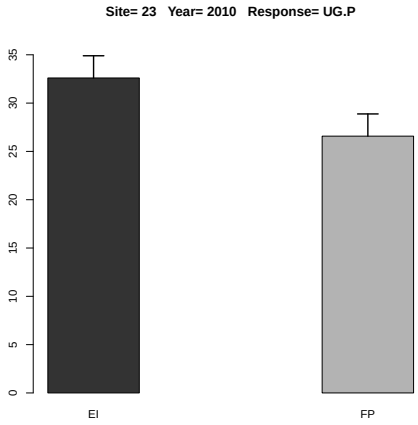

Figure 7.40: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	21.146	21.146	1.027	6.000	0.350
B	1.000	1285.410	1285.410	62.456	6.000	0.000
A:B	1.000	33.987	33.987	1.651	6.000	0.246

Table 7.96: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		20.568	1.967	5.300	10.460	15.603	25.533	0.000
2	FP		17.913	1.967	5.300	9.110	12.948	22.878	0.000
3		N	29.590	1.967	5.300	15.040	24.625	34.555	0.000
4		N0	8.891	1.967	5.300	4.520	3.926	13.856	0.005
5	EI	N	32.601	2.702	7.900	12.070	26.359	38.843	0.000
6	FP	N	26.580	2.702	7.900	9.840	20.338	32.822	0.000
7	EI	N0	8.535	2.702	7.900	3.160	2.293	14.778	0.014
8	FP	N0	9.246	2.702	7.900	3.420	3.004	15.489	0.009

Table 7.97: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 23 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.655	2.619	6.000	1.010	-3.754	9.064	0.350
B N-N0	20.700	2.619	6.000	7.900	14.290	27.109	0.000
A:B EI N- FP N	6.021	3.704	6.000	1.630	-3.043	15.085	0.155
A:B EI N- EI N0	24.065	3.704	6.000	6.500	15.002	33.129	0.001
A:B EI N- FP N0	23.355	3.704	6.000	6.300	14.291	32.418	0.001
A:B FP N- EI N0	18.045	3.704	6.000	4.870	8.981	27.108	0.003
A:B FP N- FP N0	17.334	3.704	6.000	4.680	8.270	26.397	0.003
A:B EI N0- FP N0	-0.711	3.704	6.000	-0.190	-9.775	8.353	0.854

Table 7.98: Estimate of contrast in two-way ANOVA for variable UG.P at site 23 in year 2010 .

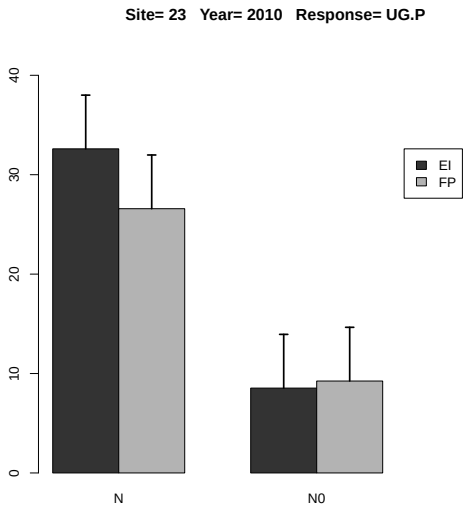

Figure 7.41: Estimated treatment means and standard error in the 2-way ANOVA.

7.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	15.338
2	2	EI	N0	21.420
3	3	EI	N0	21.881
4	1	EI	N	75.281
5	2	EI	N	88.670
6	3	EI	N	60.016
7	1	FP	N0	25.375
8	2	FP	N0	14.441
9	3	FP	N0	23.706
10	1	FP	N	68.682
11	2	FP	N	69.610
12	3	FP	N	44.313

Table 7.99: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	74.656	2.632	28.363	0.002
A FP	60.868	2.632	23.125	0.003
A EI-FP	13.788	3.722	3.704	0.114

Table 7.100: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 23 in year 2010 .

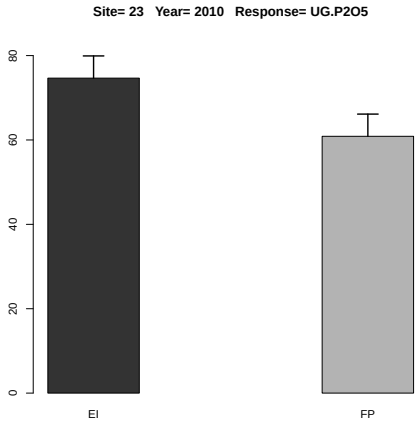

Figure 7.42: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	110.893	110.893	1.027	6.000	0.350
B	1.000	6740.818	6740.818	62.456	6.000	0.000
A:B	1.000	178.230	178.230	1.651	6.000	0.246

Table 7.101: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		47.101	4.505	5.300	10.460	35.731	58.471	0.000
2	FP		41.021	4.505	5.300	9.110	29.651	52.391	0.000
3		N	67.762	4.505	5.300	15.040	56.392	79.132	0.000
4		N0	20.360	4.505	5.300	4.520	8.990	31.730	0.005
5	EI	N	74.656	6.187	7.900	12.070	60.361	88.950	0.000
6	FP	N	60.868	6.187	7.900	9.840	46.574	75.163	0.000
7	EI	N0	19.546	6.187	7.900	3.160	5.252	33.841	0.014
8	FP	N0	21.174	6.187	7.900	3.420	6.880	35.469	0.009

Table 7.102: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 23 in year 2010 .

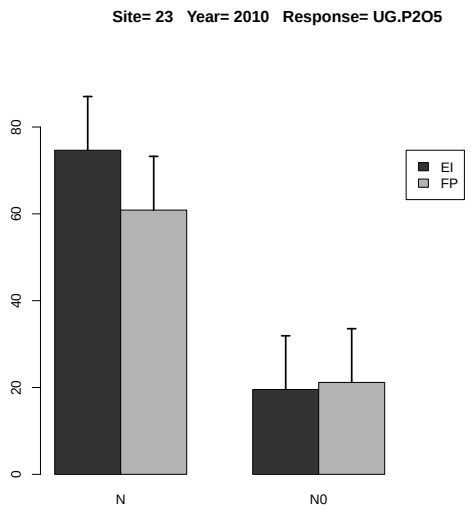

Figure 7.43: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	6.080	5.998	6.000	1.010	-8.597	20.757	0.350
B N-N0	47.402	5.998	6.000	7.900	32.725	62.079	0.000
A:B EI N- FP N	13.788	8.482	6.000	1.630	-6.968	34.544	0.155
A:B EI N- EI N0	55.110	8.482	6.000	6.500	34.354	75.866	0.001
A:B EI N- FP N0	53.482	8.482	6.000	6.300	32.726	74.238	0.001
A:B FP N- EI N0	41.322	8.482	6.000	4.870	20.566	62.078	0.003
A:B FP N- FP N0	39.694	8.482	6.000	4.680	18.938	60.450	0.003
A:B EI N0- FP N0	-1.628	8.482	6.000	-0.190	-22.384	19.128	0.854

Table 7.103: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 23 in year 2010 .

7.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	4.894
2	2	EI	N0	3.789
3	3	EI	N0	5.351
4	1	EI	N	17.239
5	2	EI	N	17.020
6	3	EI	N	20.966
7	1	FP	N0	6.124
8	2	FP	N0	3.303
9	3	FP	N0	5.751
10	1	FP	N	16.952
11	2	FP	N	14.457
12	3	FP	N	12.206

Table 7.104: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	18.408	1.790	10.281	0.016
A FP	14.538	1.790	8.120	0.026
A EI-FP	3.870	2.532	1.528	0.428

Table 7.105: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 23 in year 2010 .

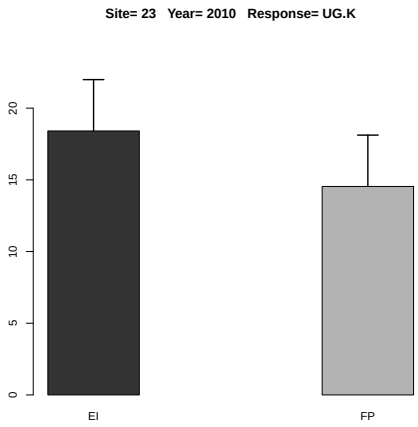

Figure 7.44: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.129	5.129	2.105	3.999	0.220
B	1.000	404.007	404.007	165.769	4.000	0.000
A:B	1.000	13.555	13.555	5.562	4.000	0.078

Table 7.106: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.543	0.850	4.000	13.580	9.182	13.904	0.000
2	FP		9.799	0.850	4.000	11.530	7.438	12.159	0.000
3		N	16.473	0.751	7.400	21.920	14.717	18.230	0.000
4		N0	4.869	0.751	7.400	6.480	3.112	6.625	0.000
5	EI	N	18.408	1.063	7.400	17.320	15.924	20.893	0.000
6	FP	N	14.538	1.063	7.400	13.680	12.054	17.023	0.000
7	EI	N0	4.678	1.063	7.400	4.400	2.194	7.162	0.003
8	FP	N0	5.059	1.063	7.400	4.760	2.575	7.544	0.002

Table 7.107: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 23 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.744	1.202	4.000	1.450	-1.594	5.083	0.220
B N-N0	11.605	0.901	4.000	12.880	9.102	14.107	0.000
A:B EI N- FP N	3.870	1.503	7.400	2.580	0.357	7.383	0.035
A:B EI N- EI N0	13.730	1.275	4.000	10.770	10.191	17.270	0.000
A:B EI N- FP N0	13.349	1.503	7.400	8.880	9.836	16.862	0.000
A:B FP N- EI N0	9.860	1.503	7.400	6.560	6.347	13.374	0.000
A:B FP N- FP N0	9.479	1.275	4.000	7.440	5.940	13.018	0.002
A:B EI N0- FP N0	-0.381	1.503	7.400	-0.250	-3.895	3.132	0.807

Table 7.108: Estimate of contrast in two-way ANOVA for variable UG.K at site 23 in year 2010 .

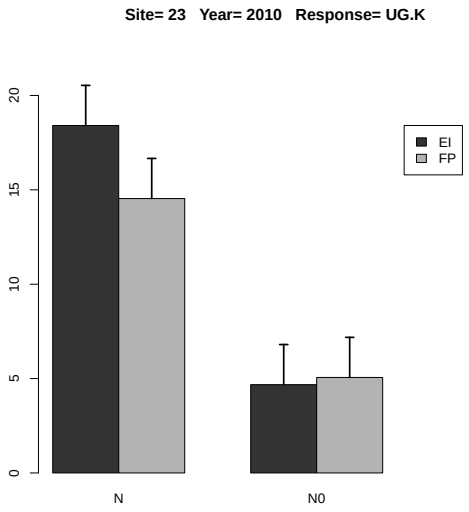

Figure 7.45: Estimated treatment means and standard error in the 2-way ANOVA.

7.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	5.898
2	2	EI	N0	4.566
3	3	EI	N0	6.448
4	1	EI	N	20.773
5	2	EI	N	20.509
6	3	EI	N	25.265
7	1	FP	N0	7.379
8	2	FP	N0	3.980
9	3	FP	N0	6.930
10	1	FP	N	20.427
11	2	FP	N	17.421
12	3	FP	N	14.708

Table 7.109: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	22.182	2.157	10.281	0.017
A FP	17.519	2.157	8.120	0.026
A EI-FP	4.663	3.051	1.528	0.428

Table 7.110: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 23 in year 2010 .

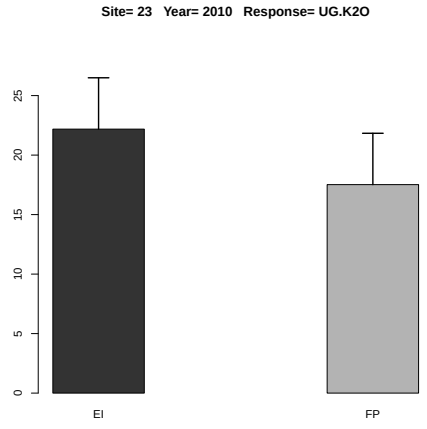

Figure 7.46: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	7.448	7.448	2.105	3.999	0.220
B	1.000	586.629	586.629	165.769	4.000	0.000
A:B	1.000	19.683	19.683	5.562	4.000	0.078

Table 7.111: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13.909	1.024	4.000	13.580	11.065	16.754	0.000
2	FP		11.808	1.024	4.000	11.530	8.963	14.652	0.000
3		N	19.850	0.905	7.400	21.920	17.734	21.967	0.000
4		N0	5.867	0.905	7.400	6.480	3.750	7.984	0.000
5	EI	N	22.182	1.280	7.400	17.320	19.189	25.176	0.000
6	FP	N	17.519	1.280	7.400	13.680	14.525	20.512	0.000
7	EI	N0	5.637	1.280	7.400	4.400	2.643	8.631	0.003
8	FP	N0	6.096	1.280	7.400	4.760	3.103	9.090	0.002

Table 7.112: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 23 in year 2010 .

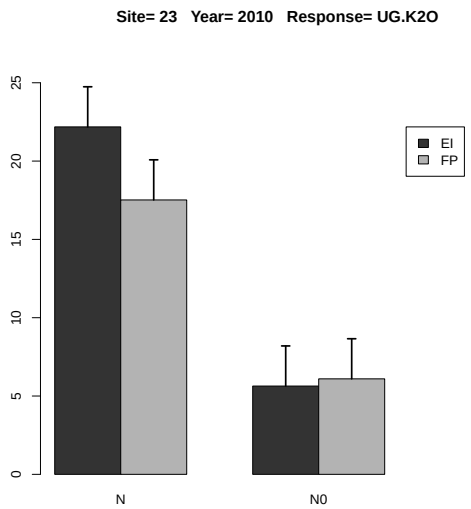

Figure 7.47: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.102	1.449	4.000	1.450	-1.921	6.125	0.220
B N-N0	13.984	1.086	4.000	12.880	10.968	16.999	0.000
A:B EI N- FP N	4.663	1.811	7.400	2.580	0.430	8.897	0.035
A:B EI N- EI N0	16.545	1.536	4.000	10.770	12.280	20.810	0.000
A:B EI N- FP N0	16.086	1.811	7.400	8.880	11.852	20.319	0.000
A:B FP N- EI N0	11.882	1.811	7.400	6.560	7.648	16.115	0.000
A:B FP N- FP N0	11.422	1.536	4.000	7.440	7.158	15.687	0.002
A:B EI N0- FP N0	-0.460	1.811	7.400	-0.250	-4.693	3.774	0.807

Table 7.113: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 23 in year 2010 .

7.2.10 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	4.379
2	2	EI	N0	4.499
3	3	EI	N0	4.204
4	1	EI	N	16.838
5	2	EI	N	20.424
6	3	EI	N	13.306
7	1	FP	N0	4.811
8	2	FP	N0	4.104
9	3	FP	N0	4.729
10	1	FP	N	14.670
11	2	FP	N	11.862
12	3	FP	N	10.420

Table 7.114: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	16.856	1.430	11.788	0.013
A FP	12.317	1.430	8.614	0.023
A EI-FP	4.539	2.022	2.244	0.259

Table 7.115: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 23 in year 2010 .

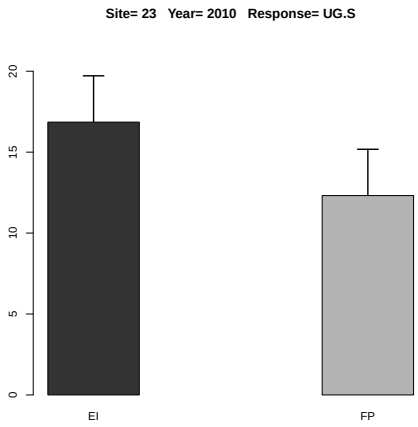

Figure 7.48: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	14.181	14.181	3.549	-0.000	
B	1.000	307.978	307.978	77.075	4.000	0.001
A:B	1.000	16.749	16.749	4.192	4.000	0.110

Table 7.116: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.608	0.891	3.900	11.910	8.108	13.109	0.000
2	FP		8.433	0.891	3.900	9.470	5.932	10.933	0.001
3		N	14.587	0.890	4.700	16.380	12.255	16.918	0.000
4		N0	4.454	0.890	4.700	5.000	2.123	6.786	0.005
5	EI	N	16.856	1.208	7.800	13.950	14.059	19.652	0.000
6	FP	N	12.317	1.208	7.800	10.200	9.521	15.114	0.000
7	EI	N0	4.361	1.208	7.800	3.610	1.564	7.158	0.007
8	FP	N0	4.548	1.208	7.800	3.760	1.751	7.345	0.006

Table 7.117: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 23 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.176	1.155	2.000	1.880	-2.812	7.163	0.201
B N-N0	10.132	1.154	4.000	8.780	6.928	13.336	0.001
A:B EI N- FP N	4.538	1.633	5.300	2.780	0.417	8.660	0.036
A:B EI N- EI N0	12.495	1.632	4.000	7.660	7.963	17.027	0.002
A:B EI N- FP N0	12.308	1.633	5.300	7.540	8.186	16.429	0.000
A:B FP N- EI N0	7.956	1.633	5.300	4.870	3.835	12.078	0.004
A:B FP N- FP N0	7.769	1.632	4.000	4.760	3.238	12.301	0.009
A:B EI N0- FP N0	-0.187	1.633	5.300	-0.110	-4.309	3.934	0.913

Table 7.118: Estimate of contrast in two-way ANOVA for variable UG.S at site 23 in year 2010 .

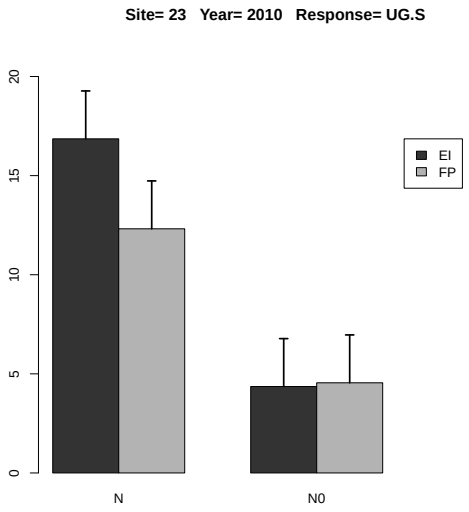

Figure 7.49: Estimated treatment means and standard error in the 2-way ANOVA.

7.2.11 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	22.272
2	2	EI	N	23.639
3	3	EI	N	22.400
4	1	FP	N	28.348
5	2	FP	N	32.235
6	3	FP	N	25.887

Table 7.119: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	22.770	1.343	3.500	16.960	18.800	26.741	0.000
A FP	28.823	1.343	3.500	21.470	24.853	32.794	0.000
A EI-FP	-6.053	1.475	2.000	-4.100	-12.399	0.293	0.055

Table 7.120: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 23 in year 2010 .

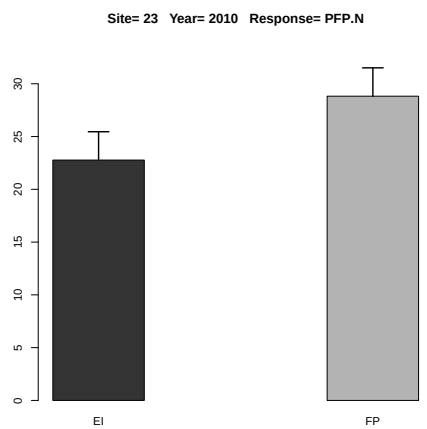

Figure 7.50: Estimated treatment means and standard error in the one-way ANOVA.

7.2.12 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	102.026
2	2	EI	N	108.286
3	3	EI	N	102.611
4	1	FP	N	143.592
5	2	FP	N	163.281
6	3	FP	N	131.127

Table 7.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	104.308	6.767	3.500	15.410	84.506	124.109	0.000
A FP	146.000	6.767	3.500	21.570	126.198	165.802	0.000
A EI-FP	-41.692	7.644	2.000	-5.450	-74.582	-8.802	0.032

Table 7.122: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 23 in year 2010 .

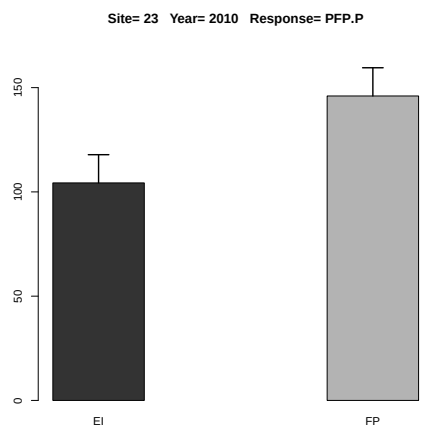

Figure 7.51: Estimated treatment means and standard error in the one-way ANOVA.

7.2.13 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	44.544
2	2	EI	N	47.278
3	3	EI	N	44.800
4	1	FP	N	62.692
5	2	FP	N	71.288
6	3	FP	N	57.250

Table 7.123: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	45.541	2.955	3.500	15.410	36.895	54.186	0.000
A FP	63.744	2.955	3.500	21.570	55.098	72.389	0.000
A EI-FP	-18.203	3.337	2.000	-5.450	-32.563	-3.843	0.032

Table 7.124: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 23 in year 2010 .

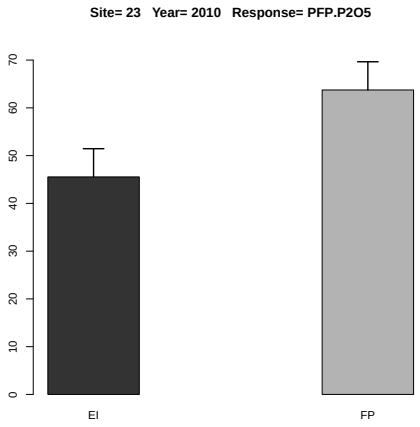

Figure 7.52: Estimated treatment means and standard error in the one-way ANOVA.

7.2.14 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	48.313
2	2	EI	N	51.277
3	3	EI	N	48.590
4	1	FP	N	87.304
5	2	FP	N	99.274
6	3	FP	N	79.725

Table 7.125: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	49.393	4.079	3.700	12.110	37.690	61.096	0.000
A FP	88.767	4.079	3.700	21.760	77.064	100.471	0.000
A EI-FP	-39.374	4.872	2.000	-8.080	-60.335	-18.413	0.015

Table 7.126: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 23 in year 2010 .

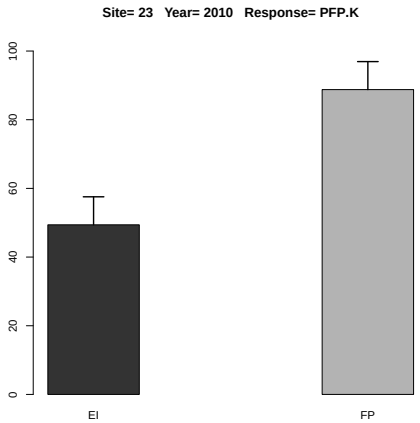

Figure 7.53: Estimated treatment means and standard error in the one-way ANOVA.

7.2.15 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	40.090
2	2	EI	N	42.550
3	3	EI	N	40.320
4	1	FP	N	72.444
5	2	FP	N	82.378
6	3	FP	N	66.156

Table 7.127: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	40.987	3.385	3.700	12.110	31.276	50.698	0.000
A FP	73.659	3.385	3.700	21.760	63.948	83.370	0.000
A EI-FP	-32.673	4.042	2.000	-8.080	-50.066	-15.279	0.015

Table 7.128: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 23 in year 2010 .

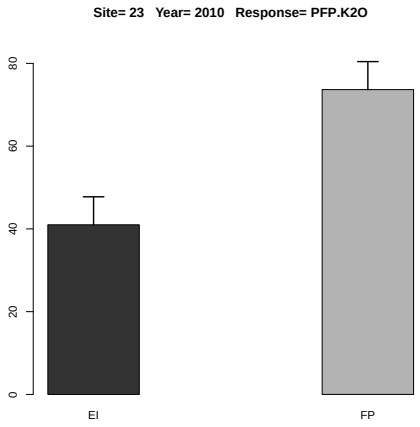

Figure 7.54: Estimated treatment means and standard error in the one-way ANOVA.

7.2.16 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.334
2	2	EI	N	0.295
3	3	EI	N	0.293
4	1	FP	N	0.335
5	2	FP	N	0.455
6	3	FP	N	0.311

Table 7.129: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.308	0.033	4.000	9.370	0.216	0.399	0.001
A FP	0.367	0.033	4.000	11.160	0.275	0.458	0.000
A EI-FP	-0.059	0.046	4.000	-1.270	-0.188	0.070	0.274

Table 7.130: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 23 in year 2010 .

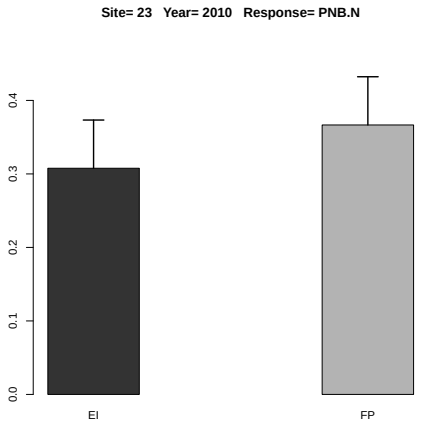

Figure 7.55: Estimated treatment means and standard error in the one-way ANOVA.

7.2.17 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.837
2	2	EI	N	0.985
3	3	EI	N	0.667
4	1	FP	N	1.321
5	2	FP	N	1.339
6	3	FP	N	0.852

Table 7.131: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.830	0.130	2.500	6.380	0.363	1.296	0.013
A FP	1.171	0.130	2.500	9.000	0.704	1.637	0.006
A EI-FP	-0.341	0.087	2.000	-3.940	-0.714	0.032	0.059

Table 7.132: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 23 in year 2010 .

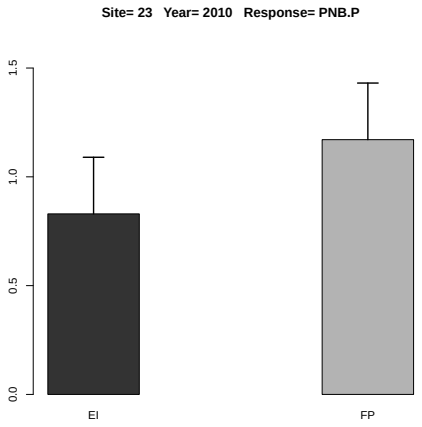

Figure 7.56: Estimated treatment means and standard error in the one-way ANOVA.

7.2.18 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.208
2	2	EI	N	0.205
3	3	EI	N	0.253
4	1	FP	N	0.454
5	2	FP	N	0.387
6	3	FP	N	0.327

Table 7.133: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.222	0.028	4.000	7.880	0.144	0.300	0.001
A FP	0.389	0.028	4.000	13.830	0.311	0.468	0.000
A EI-FP	-0.168	0.040	4.000	-4.210	-0.278	-0.057	0.014

Table 7.134: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 23 in year 2010 .

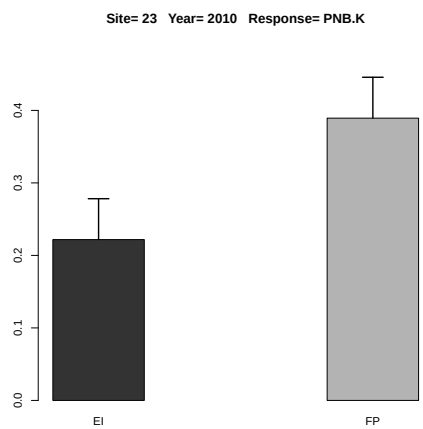

Figure 7.57: Estimated treatment means and standard error in the one-way ANOVA.

7.2.19 Response Variable AE

	rep	A	B	y
1	1	EI	N	15.117
2	2	EI	N	17.061
3	3	EI	N	15.322
4	1	FP	N	15.670
5	2	FP	N	23.530
6	3	FP	N	14.774

Table 7.135: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	15.833	1.541	10.276	0.017
A FP	17.991	1.541	11.677	0.013
A EI-FP	-2.158	2.179	-0.990	0.640

Table 7.136: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 23 in year 2010 .

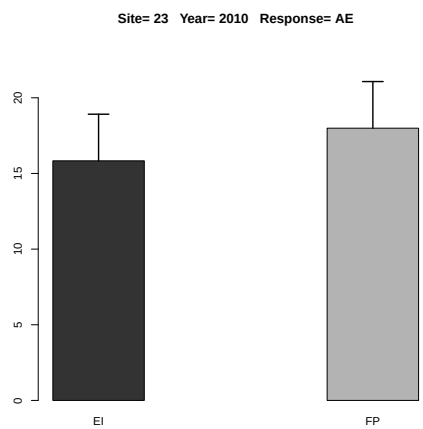

Figure 7.58: Estimated treatment means and standard error in the one-way ANOVA.

7.3 Year 2011

There are 73 variables not observed: UG.Ca UG.Mg UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

7.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	1123.000
2	2	EI	N0	1193.000
3	3	EI	N0	1253.000
4	1	EI	N	4011.000
5	2	EI	N	4287.000
6	3	EI	N	3472.000
7	1	FP	N0	1069.000
8	2	FP	N0	1255.000
9	3	FP	N0	1359.000
10	1	FP	N	2554.000
11	2	FP	N	2974.000
12	3	FP	N	3044.000

Table 7.137: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	3923.333	227.474	17.247	0.006
A FP	2857.333	227.474	12.561	0.011
A EI-FP	1066.000	321.697	3.314	0.138

Table 7.138: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 23 in year 2011 .

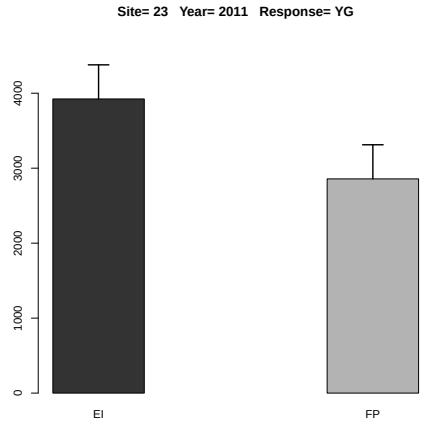

Figure 7.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	575014.965	575014.965	10.211	3.999	0.033
B	1.000	14279008.333	14279008.333	253.560	4.003	0.000
A:B	1.000	914112.000	914112.000	16.232	4.003	0.016

Table 7.139: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2556.500	113.741	4.000	22.480	2240.676	2872.324	0.000
2	FP		2042.500	113.741	4.000	17.960	1726.676	2358.324	0.000
3		N	3390.333	105.647	7.800	32.090	3145.641	3635.025	0.000
4		N0	1208.667	105.647	7.800	11.440	963.975	1453.359	0.000
5	EI	N	3923.333	149.408	7.800	26.260	3577.287	4269.380	0.000
6	FP	N	2857.333	149.408	7.800	19.120	2511.287	3203.380	0.000
7	EI	N0	1189.667	149.408	7.800	7.960	843.620	1535.714	0.000
8	FP	N0	1227.667	149.408	7.800	8.220	881.620	1573.714	0.000

Table 7.140: Estimate of treatment means in tow-way ANOVA for variable YG at site 23 in year 2011 .

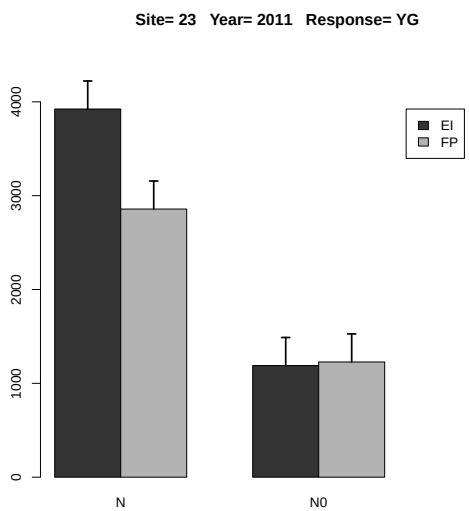

Figure 7.60: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	514.000	160.854	4.000	3.200	67.357	960.643	0.033
B N-N0	2181.667	137.009	4.000	15.920	1801.370	2561.963	0.000
A:B EI N- FP N	1066.000	211.294	7.800	5.050	576.616	1555.384	0.001
A:B EI N- EI N0	2733.667	193.759	4.000	14.110	2195.846	3271.487	0.000
A:B EI N- FP N0	2695.667	211.294	7.800	12.760	2206.283	3185.051	0.000
A:B FP N- EI N0	1667.667	211.294	7.800	7.890	1178.283	2157.051	0.000
A:B FP N- FP N0	1629.667	193.759	4.000	8.410	1091.846	2167.487	0.001
A:B EI N0- FP N0	-38.000	211.294	7.800	-0.180	-527.384	451.384	0.862

Table 7.141: Estimate of contrast in two-way ANOVA for variable YG at site 23 in year 2011 .

7.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	2174.000
2	2	EI	N0	2053.000
3	3	EI	N0	2381.000
4	1	EI	N	7313.000
5	2	EI	N	7910.000
6	3	EI	N	6280.000
7	1	FP	N0	2234.000
8	2	FP	N0	3200.000
9	3	FP	N0	2596.000
10	1	FP	N	4468.000
11	2	FP	N	4770.000
12	3	FP	N	5702.000

Table 7.142: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	7167.667	572.280	12.525	0.011
A FP	4980.000	572.280	8.702	0.023
A EI-FP	2187.667	809.326	2.703	0.194

Table 7.143: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 23 in year 2011 .

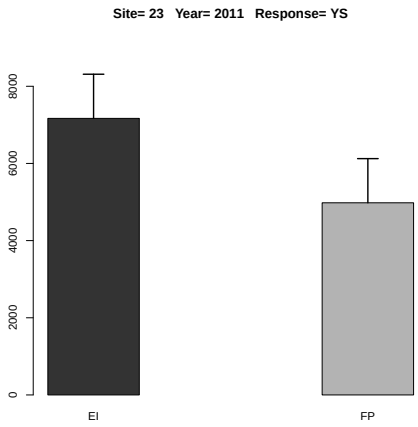

Figure 7.61: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2202490.083	2202490.083	6.480	7.728	0.035
B	1.000	39621502.083	39621502.083	116.576	7.728	0.000
A:B	1.000	5313352.083	5313352.083	15.633	7.728	0.005

Table 7.144: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4685.167	238.005	7.700	19.690	4132.945	5237.389	0.000
2	FP		3828.333	238.005	7.700	16.090	3276.111	4380.555	0.000
3		N	6073.833	238.005	7.700	25.520	5521.611	6626.055	0.000
4		N0	2439.667	238.005	7.700	10.250	1887.445	2991.889	0.000
5	EI	N	7167.667	336.590	7.700	21.290	6386.707	7948.626	0.000
6	FP	N	4980.000	336.590	7.700	14.800	4199.040	5760.960	0.000
7	EI	N0	2202.667	336.590	7.700	6.540	1421.707	2983.626	0.000
8	FP	N0	2676.667	336.590	7.700	7.950	1895.707	3457.626	0.000

Table 7.145: Estimate of treatment means in tow-way ANOVA for variable YS at site 23 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	856.833	336.590	7.700	2.550	75.874	1637.793	0.035
B N-N0	3634.167	336.590	7.700	10.800	2853.207	4415.126	0.000
A:B EI N- FP N	2187.667	476.010	7.700	4.600	1083.223	3292.110	0.002
A:B EI N- EI N0	4965.000	476.010	7.700	10.430	3860.556	6069.444	0.000
A:B EI N- FP N0	4491.000	476.010	7.700	9.430	3386.556	5595.444	0.000
A:B FP N- EI N0	2777.333	476.010	7.700	5.830	1672.889	3881.777	0.000
A:B FP N- FP N0	2303.333	476.010	7.700	4.840	1198.889	3407.777	0.001
A:B EI N0- FP N0	-474.000	476.010	7.700	-1.000	-1578.444	630.444	0.349

Table 7.146: Estimate of contrast in two-way ANOVA for variable YS at site 23 in year 2011 .

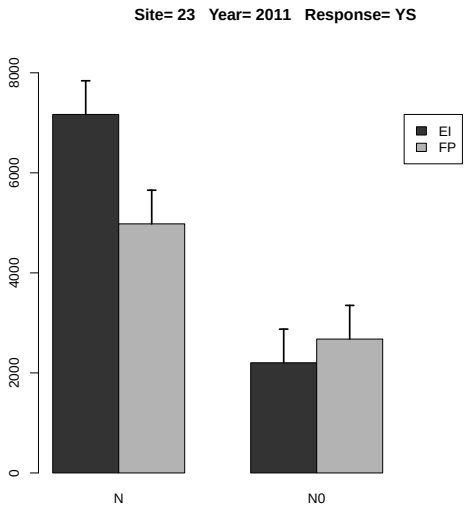

Figure 7.62: Estimated treatment means and standard error in the 2-way ANOVA.

7.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	3297.000
2	2	EI	N0	3246.000
3	3	EI	N0	3634.000
4	1	EI	N	11324.000
5	2	EI	N	12197.000
6	3	EI	N	9752.000
7	1	FP	N0	3303.000
8	2	FP	N0	4455.000
9	3	FP	N0	3955.000
10	1	FP	N	7022.000
11	2	FP	N	7744.000
12	3	FP	N	8746.000

Table 7.147: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	11091.000	795.268	13.946	0.009
A FP	7837.333	795.268	9.855	0.018
A EI-FP	3253.667	1124.678	2.893	0.174

Table 7.148: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 23 in year 2011 .

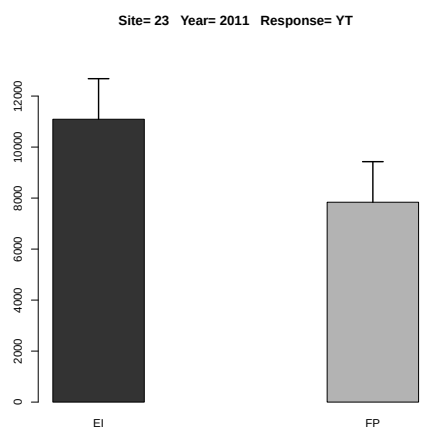

Figure 7.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5637552.083	5637552.083	8.468	7.569	0.021
B	1.000	101471752.083	101471752.083	152.420	7.569	0.000
A:B	1.000	10635184.083	10635184.083	15.975	7.569	0.004

Table 7.149: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7241.667	333.101	7.600	21.740	6465.845	8017.488	0.000
2	FP		5870.833	333.101	7.600	17.620	5095.012	6646.655	0.000
3		N	9464.167	333.101	7.600	28.410	8688.345	10239.988	0.000
4		N0	3648.333	333.101	7.600	10.950	2872.512	4424.155	0.000
5	EI	N	11091.000	471.076	7.600	23.540	9993.823	12188.177	0.000
6	FP	N	7837.333	471.076	7.600	16.640	6740.156	8934.511	0.000
7	EI	N0	3392.333	471.076	7.600	7.200	2295.156	4489.511	0.000
8	FP	N0	3904.333	471.076	7.600	8.290	2807.156	5001.511	0.000

Table 7.150: Estimate of treatment means in tow-way ANOVA for variable YT at site 23 in year 2011 .

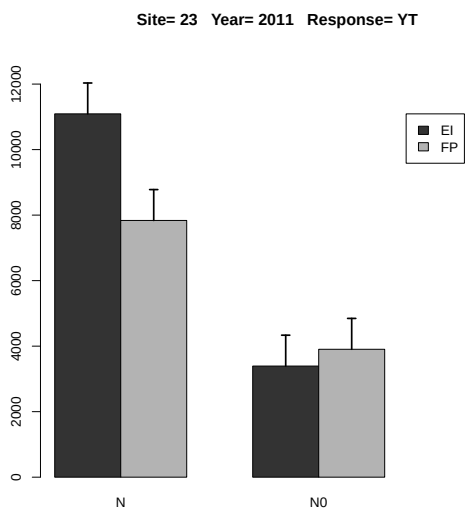

Figure 7.64: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1370.833	471.076	7.600	2.910	273.656	2468.011	0.021
B N-N0	5815.833	471.076	7.600	12.350	4718.656	6913.011	0.000
A:B EI N- FP N	3253.667	666.202	7.600	4.880	1702.024	4805.310	0.001
A:B EI N- EI N0	7698.667	666.202	7.600	11.560	6147.024	9250.309	0.000
A:B EI N- FP N0	7186.667	666.202	7.600	10.790	5635.024	8738.310	0.000
A:B FP N- EI N0	4445.000	666.202	7.600	6.670	2893.357	5996.643	0.000
A:B FP N- FP N0	3933.000	666.202	7.600	5.900	2381.357	5484.643	0.000
A:B EI N0- FP N0	-512.000	666.202	7.600	-0.770	-2063.643	1039.643	0.466

Table 7.151: Estimate of contrast in two-way ANOVA for variable YT at site 23 in year 2011 .

7.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.341
2	2	EI	N0	0.368
3	3	EI	N0	0.345
4	1	EI	N	0.354
5	2	EI	N	0.351
6	3	EI	N	0.356
7	1	FP	N0	0.324
8	2	FP	N0	0.282
9	3	FP	N0	0.344
10	1	FP	N	0.364
11	2	FP	N	0.384
12	3	FP	N	0.348

Table 7.152: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.354	0.008	42.629	0.001
A FP	0.365	0.008	43.998	0.000
A EI-FP	-0.011	0.012	-0.968	0.650

Table 7.153: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 23 in year 2011 .

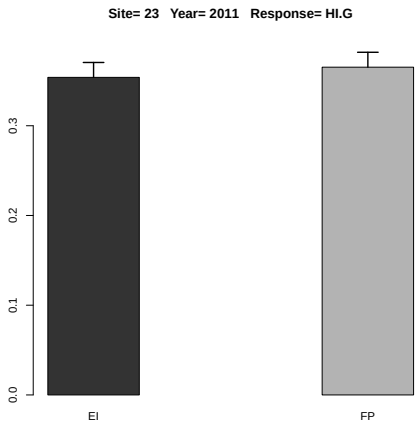

Figure 7.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	1.058	7.960	0.334
B	1.000	0.002	0.002	5.244	7.960	0.051
A:B	1.000	0.002	0.002	4.128	7.960	0.077

Table 7.154: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.352	0.008	8.000	44.010	0.334	0.371	0.000
2	FP		0.341	0.008	8.000	42.560	0.322	0.359	0.000
3		N	0.360	0.008	8.000	44.900	0.341	0.378	0.000
4		N0	0.334	0.008	8.000	41.660	0.315	0.352	0.000
5	EI	N	0.354	0.011	8.000	31.250	0.328	0.380	0.000
6	FP	N	0.365	0.011	8.000	32.250	0.339	0.391	0.000
7	EI	N0	0.351	0.011	8.000	30.990	0.325	0.377	0.000
8	FP	N0	0.316	0.011	8.000	27.930	0.290	0.343	0.000

Table 7.155: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 23 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.012	0.011	8.000	1.030	-0.014	0.038	0.334
B N-N0	0.026	0.011	8.000	2.290	-0.000	0.052	0.051
A:B EI N- FP N	-0.011	0.016	8.000	-0.710	-0.048	0.026	0.498
A:B EI N- EI N0	0.003	0.016	8.000	0.180	-0.034	0.040	0.860
A:B EI N- FP N0	0.038	0.016	8.000	2.350	0.001	0.074	0.047
A:B FP N- EI N0	0.014	0.016	8.000	0.890	-0.023	0.051	0.399
A:B FP N- FP N0	0.049	0.016	8.000	3.060	0.012	0.086	0.016
A:B EI N0- FP N0	0.035	0.016	8.000	2.160	-0.002	0.072	0.063

Table 7.156: Estimate of contrast in two-way ANOVA for variable HI.G at site 23 in year 2011 .

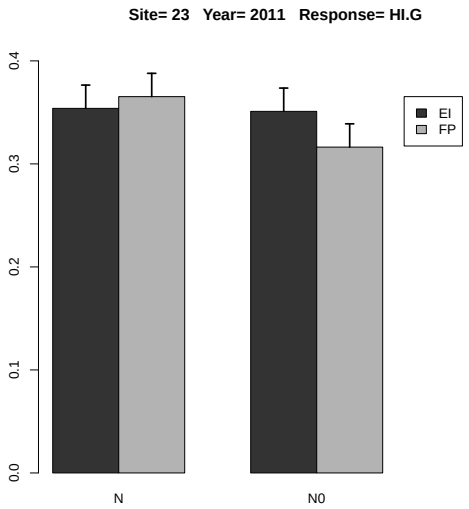

Figure 7.66: Estimated treatment means and standard error in the 2-way ANOVA.

7.3.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	10.466
2	2	EI	N0	10.904
3	3	EI	N0	10.275
4	1	EI	N	34.134
5	2	EI	N	46.085
6	3	EI	N	52.427
7	1	FP	N0	9.482
8	2	FP	N0	13.039
9	3	FP	N0	9.513
10	1	FP	N	37.518
11	2	FP	N	30.097
12	3	FP	N	39.572

Table 7.157: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	44.215	4.245	10.415	0.016
A FP	35.729	4.245	8.416	0.024
A EI-FP	8.486	6.004	1.413	0.467

Table 7.158: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 23 in year 2011 .

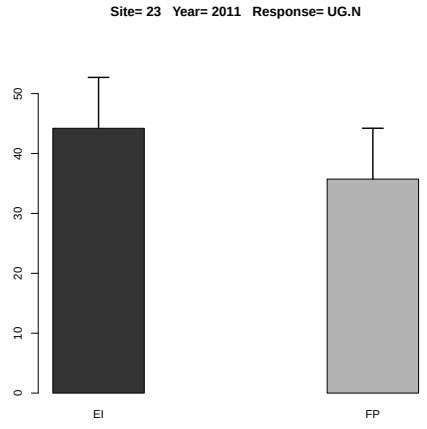

Figure 7.67: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	52.373	52.373	1.815	8.000	0.215
B	1.000	2585.845	2585.845	89.617	8.000	0.000
A:B	1.000	55.678	55.678	1.930	8.000	0.202

Table 7.159: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		27.382	2.193	8.000	12.490	22.325	32.439	0.000
2	FP		23.204	2.193	8.000	10.580	18.147	28.261	0.000
3		N	39.972	2.193	8.000	18.230	34.915	45.029	0.000
4		N0	10.613	2.193	8.000	4.840	5.556	15.670	0.001
5	EI	N	44.215	3.101	8.000	14.260	37.064	51.367	0.000
6	FP	N	35.729	3.101	8.000	11.520	28.577	42.881	0.000
7	EI	N0	10.548	3.101	8.000	3.400	3.397	17.700	0.009
8	FP	N0	10.678	3.101	8.000	3.440	3.526	17.830	0.009

Table 7.160: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 23 in year 2011 .

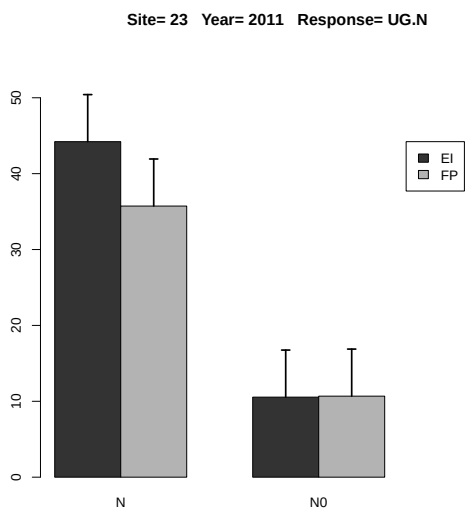

Figure 7.68: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.178	3.101	8.000	1.350	-2.973	11.330	0.215
B N-N0	29.359	3.101	8.000	9.470	22.207	36.511	0.000
A:B EI N- FP N	8.486	4.386	8.000	1.930	-1.628	18.600	0.089
A:B EI N- EI N0	33.667	4.386	8.000	7.680	23.553	43.781	0.000
A:B EI N- FP N0	33.537	4.386	8.000	7.650	23.423	43.651	0.000
A:B FP N- EI N0	25.181	4.386	8.000	5.740	15.067	35.295	0.000
A:B FP N- FP N0	25.051	4.386	8.000	5.710	14.937	35.165	0.000
A:B EI N0- FP N0	-0.130	4.386	8.000	-0.030	-10.244	9.984	0.977

Table 7.161: Estimate of contrast in two-way ANOVA for variable UG.N at site 23 in year 2011 .

7.3.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	2.325
2	2	EI	N0	2.493
3	3	EI	N0	2.318
4	1	EI	N	6.859
5	2	EI	N	10.717
6	3	EI	N	16.735
7	1	FP	N0	1.272
8	2	FP	N0	5.108
9	3	FP	N0	4.349
10	1	FP	N	6.181
11	2	FP	N	12.283
12	3	FP	N	11.598

Table 7.162: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	11.437	1.393	8.211	0.026
A FP	10.020	1.393	7.194	0.033
A EI-FP	1.417	1.970	0.719	0.770

Table 7.163: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 23 in year 2011 .

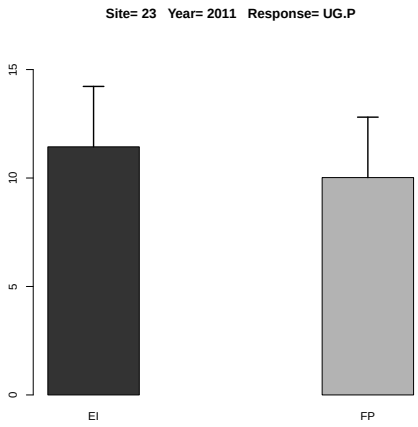

Figure 7.69: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.036	0.036	0.006	6.000	0.939
B	1.000	180.246	180.246	31.620	6.000	0.001
A:B	1.000	5.126	5.126	0.899	6.000	0.380

Table 7.164: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.908	1.546	3.100	4.470	2.035	11.781	0.020
2	FP		6.798	1.546	3.100	4.400	1.925	11.671	0.021
3		N	10.729	1.546	3.100	6.940	5.856	15.602	0.006
4		N0	2.978	1.546	3.100	1.930	-1.895	7.850	0.148
5	EI	N	11.437	1.828	5.100	6.260	6.776	16.098	0.001
6	FP	N	10.020	1.828	5.100	5.480	5.359	14.681	0.002
7	EI	N0	2.379	1.828	5.100	1.300	-2.282	7.040	0.248
8	FP	N0	3.576	1.828	5.100	1.960	-1.085	8.237	0.106

Table 7.165: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 23 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.110	1.378	6.000	0.080	-3.263	3.483	0.939
B N-N0	7.751	1.378	6.000	5.620	4.378	11.124	0.001
A:B EI N- FP N	1.417	1.949	6.000	0.730	-3.353	6.187	0.495
A:B EI N- EI N0	9.058	1.949	6.000	4.650	4.288	13.829	0.004
A:B EI N- FP N0	7.861	1.949	6.000	4.030	3.091	12.631	0.007
A:B FP N- EI N0	7.642	1.949	6.000	3.920	2.872	12.412	0.008
A:B FP N- FP N0	6.444	1.949	6.000	3.310	1.674	11.214	0.016
A:B EI N0- FP N0	-1.198	1.949	6.000	-0.610	-5.968	3.572	0.562

Table 7.166: Estimate of contrast in two-way ANOVA for variable UG.P at site 23 in year 2011 .

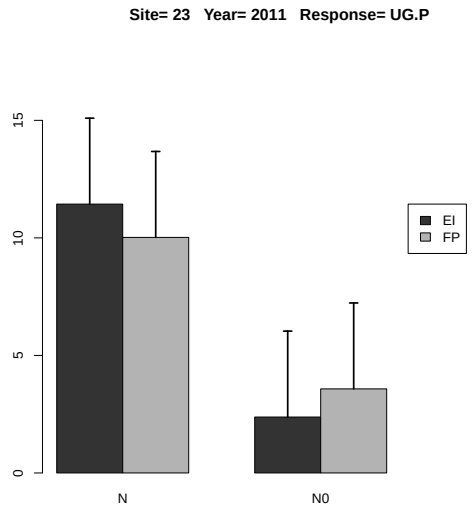

Figure 7.70: Estimated treatment means and standard error in the 2-way ANOVA.

7.3.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	5.323
2	2	EI	N0	5.710
3	3	EI	N0	5.308
4	1	EI	N	15.707
5	2	EI	N	24.543
6	3	EI	N	38.323
7	1	FP	N0	2.913
8	2	FP	N0	11.697
9	3	FP	N0	9.959
10	1	FP	N	14.154
11	2	FP	N	28.127
12	3	FP	N	26.559

Table 7.167: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	26.191	3.190	8.211	0.026
A FP	22.947	3.190	7.194	0.033
A EI-FP	3.244	4.511	0.719	0.770

Table 7.168: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 23 in year 2011 .

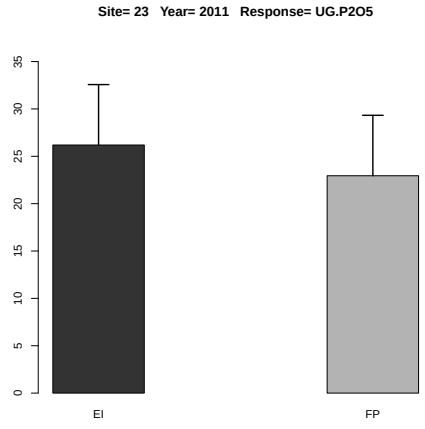

Figure 7.71: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.189	0.189	0.006	6.000	0.939
B	1.000	945.226	945.226	31.620	6.000	0.001
A:B	1.000	26.882	26.882	0.899	6.000	0.380

Table 7.169: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.819	3.540	3.100	4.470	4.660	26.978	0.020
2	FP		15.568	3.540	3.100	4.400	4.409	26.727	0.021
3		N	24.569	3.540	3.100	6.940	13.410	35.728	0.006
4		N0	6.818	3.540	3.100	1.930	-4.340	17.977	0.148
5	EI	N	26.191	4.185	5.100	6.260	15.517	36.865	0.001
6	FP	N	22.947	4.185	5.100	5.480	12.273	33.620	0.002
7	EI	N0	5.447	4.185	5.100	1.300	-5.227	16.121	0.248
8	FP	N0	8.190	4.185	5.100	1.960	-2.484	18.863	0.106

Table 7.170: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 23 in year 2011 .

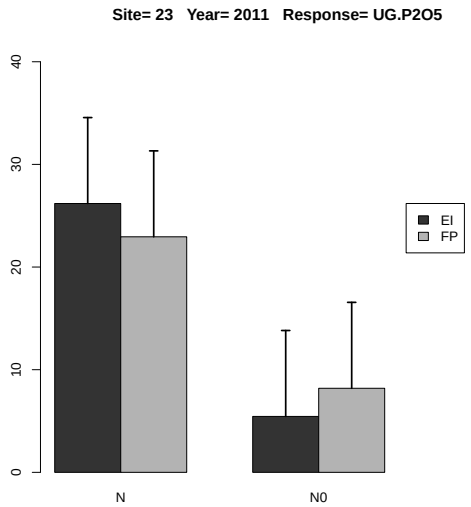

Figure 7.72: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.251	3.157	6.000	0.080	-7.473	7.975	0.939
B N-N0	17.750	3.157	6.000	5.620	10.026	25.474	0.001
A:B EI N- FP N	3.244	4.464	6.000	0.730	-7.679	14.168	0.495
A:B EI N- EI N0	20.744	4.464	6.000	4.650	9.820	31.667	0.004
A:B EI N- FP N0	18.001	4.464	6.000	4.030	7.078	28.925	0.007
A:B FP N- EI N0	17.499	4.464	6.000	3.920	6.576	28.423	0.008
A:B FP N- FP N0	14.757	4.464	6.000	3.310	3.833	25.680	0.016
A:B EI N0- FP N0	-2.743	4.464	6.000	-0.610	-13.666	8.181	0.562

Table 7.171: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 23 in year 2011 .

7.3.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	3.728
2	2	EI	N0	3.973
3	3	EI	N0	4.035
4	1	EI	N	12.996
5	2	EI	N	15.562
6	3	EI	N	13.228
7	1	FP	N0	3.303
8	2	FP	N0	4.618
9	3	FP	N0	4.553
10	1	FP	N	10.599
11	2	FP	N	12.193
12	3	FP	N	11.689

Table 7.172: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	13.929	0.374	37.282	0.000
A FP	11.494	0.374	30.765	0.001
A EI-FP	2.435	0.528	4.608	0.077

Table 7.173: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 23 in year 2011 .

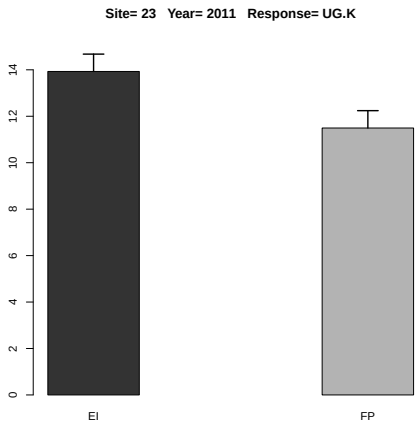

Figure 7.73: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.592	3.592	8.917	5.999	0.024
B	1.000	225.830	225.830	560.560	5.999	0.000
A:B	1.000	5.391	5.391	13.381	5.999	0.011

Table 7.174: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.920	0.452	2.800	19.750	7.432	10.408	0.000
2	FP		7.826	0.452	2.800	17.330	6.338	9.314	0.001
3		N	12.711	0.452	2.800	28.140	11.223	14.199	0.000
4		N0	4.035	0.452	2.800	8.930	2.547	5.523	0.004
5	EI	N	13.929	0.521	4.500	26.750	12.548	15.309	0.000
6	FP	N	11.494	0.521	4.500	22.070	10.113	12.875	0.000
7	EI	N0	3.912	0.521	4.500	7.510	2.531	5.293	0.001
8	FP	N0	4.158	0.521	4.500	7.990	2.777	5.539	0.001

Table 7.175: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 23 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.094	0.366	6.000	2.990	0.198	1.991	0.024
B N-N0	8.676	0.366	6.000	23.680	7.779	9.573	0.000
A:B EI N- FP N	2.435	0.518	6.000	4.700	1.167	3.703	0.003
A:B EI N- EI N0	10.017	0.518	6.000	19.330	8.748	11.285	0.000
A:B EI N- FP N0	9.771	0.518	6.000	18.850	8.502	11.039	0.000
A:B FP N- EI N0	7.582	0.518	6.000	14.630	6.314	8.850	0.000
A:B FP N- FP N0	7.336	0.518	6.000	14.150	6.068	8.604	0.000
A:B EI N0- FP N0	-0.246	0.518	6.000	-0.480	-1.514	1.022	0.652

Table 7.176: Estimate of contrast in two-way ANOVA for variable UG.K at site 23 in year 2011 .

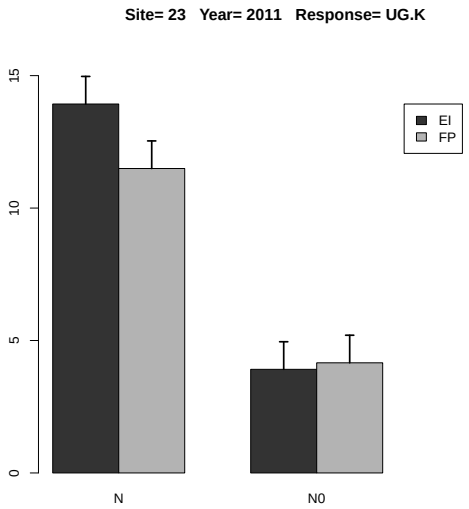

Figure 7.74: Estimated treatment means and standard error in the 2-way ANOVA.

7.3.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	4.493
2	2	EI	N0	4.787
3	3	EI	N0	4.862
4	1	EI	N	15.660
5	2	EI	N	18.752
6	3	EI	N	15.940
7	1	FP	N0	3.980
8	2	FP	N0	5.565
9	3	FP	N0	5.486
10	1	FP	N	12.772
11	2	FP	N	14.693
12	3	FP	N	14.085

Table 7.177: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	16.784	0.450	37.282	0.002
A FP	13.850	0.450	30.765	0.002
A EI-FP	2.934	0.637	4.608	0.077

Table 7.178: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 23 in year 2011 .

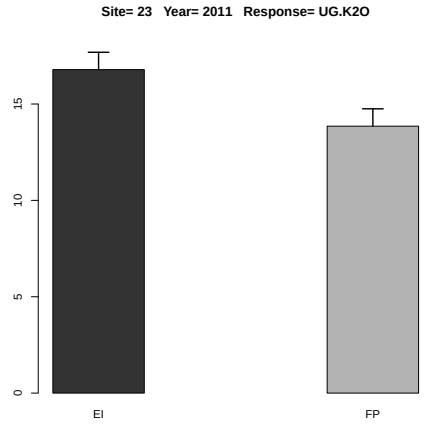

Figure 7.75: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.216	5.216	8.917	5.999	0.024
B	1.000	327.911	327.911	560.560	5.999	0.000
A:B	1.000	7.827	7.827	13.381	5.999	0.011

Table 7.179: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.749	0.544	2.800	19.750	8.956	12.542	0.000
2	FP		9.430	0.544	2.800	17.330	7.637	11.223	0.001
3		N	15.317	0.544	2.800	28.140	13.524	17.110	0.000
4		N0	4.862	0.544	2.800	8.930	3.069	6.655	0.004
5	EI	N	16.784	0.627	4.500	26.750	15.120	18.448	0.000
6	FP	N	13.850	0.627	4.500	22.070	12.186	15.514	0.000
7	EI	N0	4.714	0.627	4.500	7.510	3.050	6.378	0.001
8	FP	N0	5.011	0.627	4.500	7.990	3.346	6.675	0.001

Table 7.180: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 23 in year 2011 .

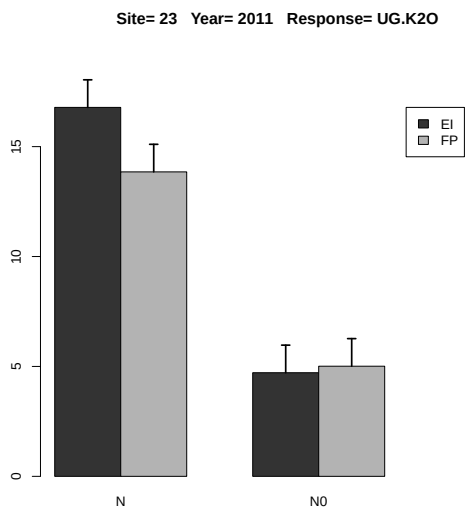

Figure 7.76: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.319	0.442	6.000	2.990	0.238	2.399	0.024
B N-N0	10.455	0.442	6.000	23.680	9.374	11.535	0.000
A:B EI N- FP N	2.934	0.625	6.000	4.700	1.406	4.462	0.003
A:B EI N- EI N0	12.070	0.625	6.000	19.330	10.542	13.598	0.000
A:B EI N- FP N0	11.774	0.625	6.000	18.850	10.245	13.302	0.000
A:B FP N- EI N0	9.136	0.625	6.000	14.630	7.608	10.664	0.000
A:B FP N- FP N0	8.840	0.625	6.000	14.150	7.311	10.368	0.000
A:B EI N0- FP N0	-0.297	0.625	6.000	-0.480	-1.825	1.232	0.652

Table 7.181: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 23 in year 2011 .

7.3.10 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	3.347
2	2	EI	N0	3.651
3	3	EI	N0	3.020
4	1	EI	N	12.956
5	2	EI	N	12.775
6	3	EI	N	16.839
7	1	FP	N0	2.844
8	2	FP	N0	5.773
9	3	FP	N0	4.349
10	1	FP	N	7.815
11	2	FP	N	11.985
12	3	FP	N	10.776

Table 7.182: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	14.190	1.150	12.342	0.012
A FP	10.192	1.150	8.865	0.022
A EI-FP	3.998	1.626	2.459	0.226

Table 7.183: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 23 in year 2011 .

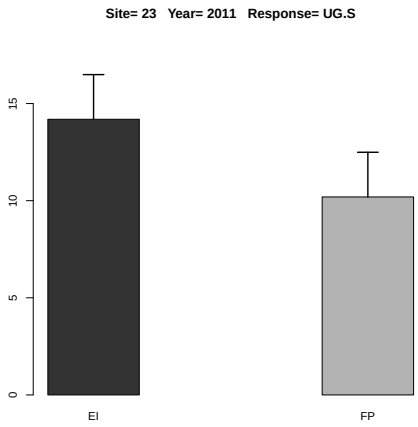

Figure 7.77: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.453	3.453	1.896	-0.000	
B	1.000	209.702	209.702	115.151	4.000	0.000
A:B	1.000	18.606	18.606	10.217	4.000	0.033

Table 7.184: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.764	0.841	3.900	10.430	6.409	11.120	0.000
2	FP		7.257	0.841	3.900	8.630	4.902	9.612	0.001
3		N	12.191	0.747	3.500	16.310	10.001	14.382	0.000
4		N0	3.830	0.747	3.500	5.120	1.640	6.021	0.010
5	EI	N	14.190	1.005	6.800	14.120	11.797	16.583	0.000
6	FP	N	10.192	1.005	6.800	10.140	7.799	12.585	0.000
7	EI	N0	3.339	1.005	6.800	3.320	0.946	5.732	0.013
8	FP	N0	4.322	1.005	6.800	4.300	1.929	6.715	0.004

Table 7.185: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 23 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.508	1.095	2.000	1.380	-3.203	6.218	0.302
B N-N0	8.361	0.779	4.000	10.730	6.197	10.524	0.000
A:B EI N- FP N	3.998	1.344	4.000	2.980	0.276	7.720	0.041
A:B EI N- EI N0	10.851	1.102	4.000	9.850	7.792	13.910	0.001
A:B EI N- FP N0	9.868	1.344	4.000	7.340	6.146	13.591	0.002
A:B FP N- EI N0	6.853	1.344	4.000	5.100	3.131	10.576	0.007
A:B FP N- FP N0	5.870	1.102	4.000	5.330	2.811	8.930	0.006
A:B EI N0- FP N0	-0.983	1.344	4.000	-0.730	-4.705	2.740	0.505

Table 7.186: Estimate of contrast in two-way ANOVA for variable UG.S at site 23 in year 2011 .

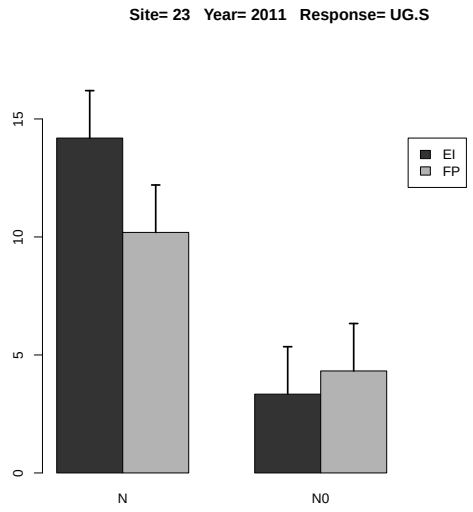

Figure 7.78: Estimated treatment means and standard error in the 2-way ANOVA.

7.3.11 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	22.283
2	2	EI	N	23.817
3	3	EI	N	19.289
4	1	FP	N	22.209
5	2	FP	N	25.861
6	3	FP	N	26.470

Table 7.187: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	21.796	1.330	4.000	16.390	18.104	25.489	0.000
A FP	24.846	1.330	4.000	18.680	21.154	28.539	0.000
A EI-FP	-3.050	1.881	4.000	-1.620	-8.273	2.172	0.180

Table 7.188: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 23 in year 2011 .

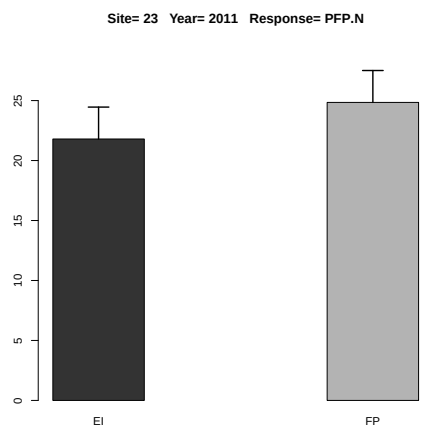

Figure 7.79: Estimated treatment means and standard error in the one-way ANOVA.

7.3.12 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	102.077
2	2	EI	N	109.101
3	3	EI	N	88.360
4	1	FP	N	112.495
5	2	FP	N	130.995
6	3	FP	N	134.078

Table 7.189: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	99.846	6.423	4.000	15.540	82.012	117.679	0.000
A FP	125.856	6.423	4.000	19.590	108.022	143.690	0.000
A EI-FP	-26.010	9.084	4.000	-2.860	-51.231	-0.790	0.046

Table 7.190: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 23 in year 2011 .

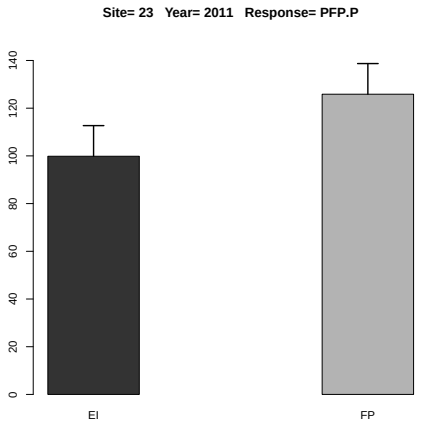

Figure 7.80: Estimated treatment means and standard error in the one-way ANOVA.

7.3.13 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	44.567
2	2	EI	N	47.633
3	3	EI	N	38.578
4	1	FP	N	49.115
5	2	FP	N	57.192
6	3	FP	N	58.538

Table 7.191: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	43.593	2.804	4.000	15.540	35.806	51.379	0.000
A FP	54.949	2.804	4.000	19.590	47.163	62.735	0.000
A EI-FP	-11.356	3.966	4.000	-2.860	-22.367	-0.345	0.046

Table 7.192: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 23 in year 2011 .

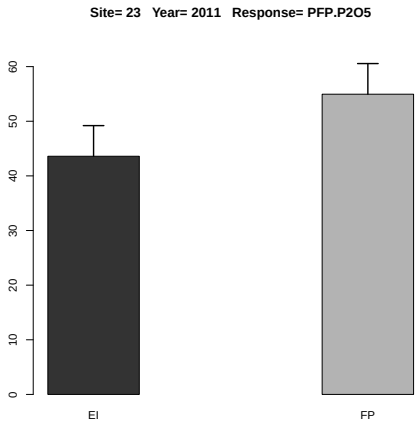

Figure 7.81: Estimated treatment means and standard error in the one-way ANOVA.

7.3.14 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	48.337
2	2	EI	N	51.663
3	3	EI	N	41.841
4	1	FP	N	68.397
5	2	FP	N	79.644
6	3	FP	N	81.519

Table 7.193: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	47.281	3.543	4.000	13.340	37.443	57.118	0.000
A FP	76.520	3.543	4.000	21.600	66.683	86.357	0.000
A EI-FP	-29.239	5.011	4.000	-5.840	-43.152	-15.327	0.004

Table 7.194: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 23 in year 2011 .

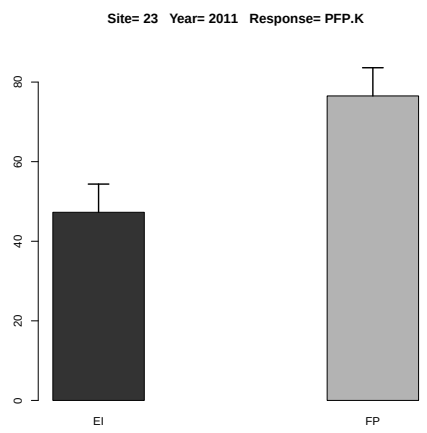

Figure 7.82: Estimated treatment means and standard error in the one-way ANOVA.

7.3.15 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	40.110
2	2	EI	N	42.870
3	3	EI	N	34.720
4	1	FP	N	56.756
5	2	FP	N	66.089
6	3	FP	N	67.644

Table 7.195: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	39.233	2.940	4.000	13.340	31.070	47.396	0.000
A FP	63.496	2.940	4.000	21.600	55.333	71.659	0.000
A EI-FP	-24.263	4.158	4.000	-5.840	-35.807	-12.719	0.004

Table 7.196: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 23 in year 2011 .

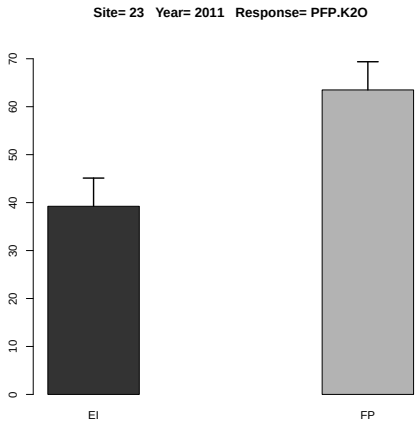

Figure 7.83: Estimated treatment means and standard error in the one-way ANOVA.

7.3.16 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.190
2	2	EI	N	0.256
3	3	EI	N	0.291
4	1	FP	N	0.326
5	2	FP	N	0.262
6	3	FP	N	0.344

Table 7.197: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.246	0.028	4.000	8.930	0.169	0.322	0.001
A FP	0.311	0.028	4.000	11.290	0.234	0.387	0.000
A EI-FP	-0.065	0.038	2.000	-1.700	-0.230	0.100	0.232

Table 7.198: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 23 in year 2011 .

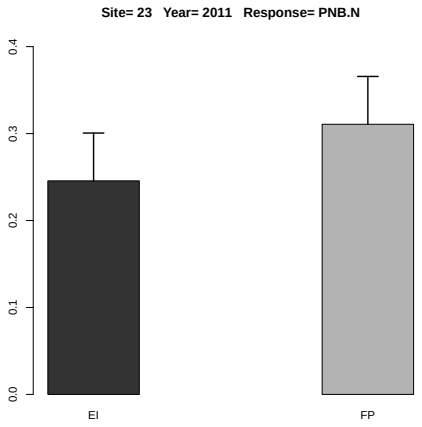

Figure 7.84: Estimated treatment means and standard error in the one-way ANOVA.

7.3.17 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.175
2	2	EI	N	0.273
3	3	EI	N	0.426
4	1	FP	N	0.272
5	2	FP	N	0.541
6	3	FP	N	0.511

Table 7.199: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.291	0.079	2.600	3.670	0.017	0.565	0.043
A FP	0.441	0.079	2.600	5.570	0.168	0.715	0.016
A EI-FP	-0.150	0.059	2.000	-2.540	-0.405	0.104	0.126

Table 7.200: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 23 in year 2011 .

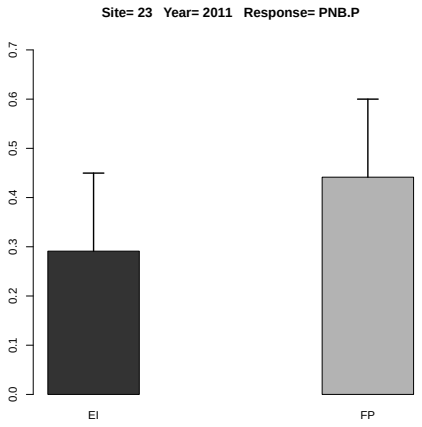

Figure 7.85: Estimated treatment means and standard error in the one-way ANOVA.

7.3.18 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.157
2	2	EI	N	0.188
3	3	EI	N	0.159
4	1	FP	N	0.284
5	2	FP	N	0.327
6	3	FP	N	0.313

Table 7.201: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.168	0.011	2.500	14.830	0.127	0.208	0.002
A FP	0.308	0.011	2.500	27.190	0.267	0.348	0.000
A EI-FP	-0.140	0.008	2.000	-18.340	-0.173	-0.107	0.003

Table 7.202: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 23 in year 2011 .

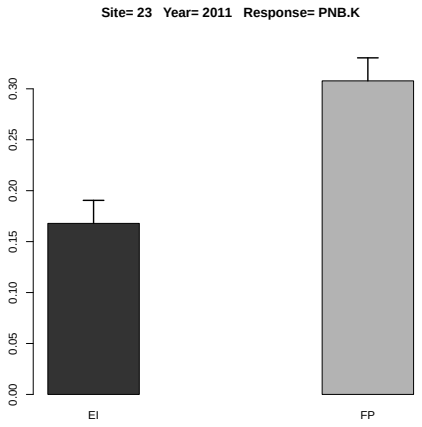

Figure 7.86: Estimated treatment means and standard error in the one-way ANOVA.

7.3.19 Response Variable AE

	rep	A	B	y
1	1	EI	N	16.044
2	2	EI	N	17.189
3	3	EI	N	12.328
4	1	FP	N	12.913
5	2	FP	N	14.948
6	3	FP	N	14.652

Table 7.203: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	15.187	1.195	12.710	0.011
A FP	14.171	1.195	11.859	0.012
A EI-FP	1.016	1.690	0.601	0.827

Table 7.204: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 23 in year 2011 .

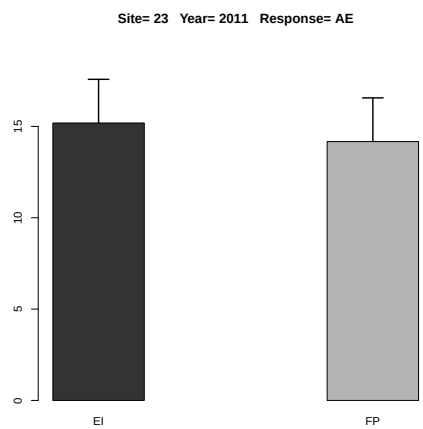

Figure 7.87: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 8

Analysis of Variance for Site 24

8.1 Year 2009

There are 82 variables not observed: UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.K2O PFP.Ca PFP.Mg PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.K PNB.P PNB.K

8.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	10926.000
2	2	EI	N	10418.000
3	3	EI	N	10684.000
4	4	EI	N	12108.000
5	1	FP	N	8978.000
6	2	FP	N	9006.000
7	3	FP	N	9268.000
8	4	FP	N	10073.000

Table 8.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	11034.000	118.550	93.075	0.000
A FP	9331.250	118.550	78.711	0.000
A EI-FP	1702.750	167.655	10.156	0.004

Table 8.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 24 in year 2009 .

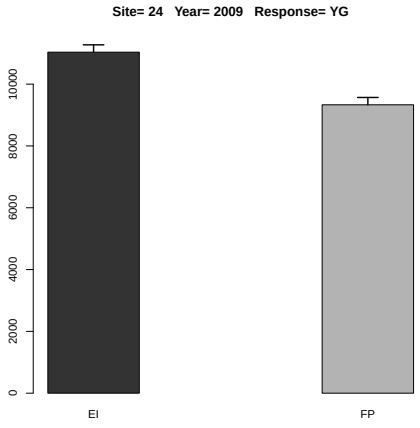

Figure 8.1: Estimated treatment means and standard error in the one-way ANOVA.

8.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	11691.000
2	2	EI	N	10248.000
3	3	EI	N	11520.000
4	4	EI	N	10536.000
5	1	FP	N	9877.000
6	2	FP	N	10399.000
7	3	FP	N	11068.000
8	4	FP	N	11573.000

Table 8.3: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	10998.750	423.406	25.977	0.000
A FP	10729.250	423.406	25.340	0.000
A EI-FP	269.500	598.787	0.450	0.893

Table 8.4: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 24 in year 2009 .

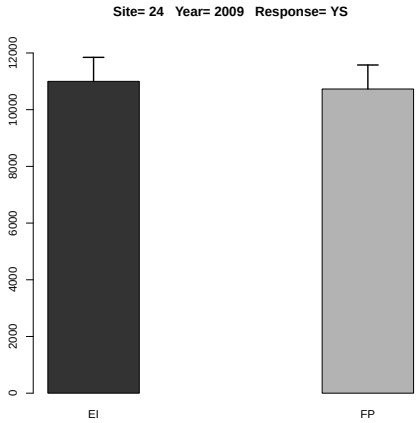

Figure 8.2: Estimated treatment means and standard error in the one-way ANOVA.

8.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	22617.000
2	2	EI	N	20666.000
3	3	EI	N	22204.000
4	4	EI	N	22644.000
5	1	FP	N	18855.000
6	2	FP	N	19405.000
7	3	FP	N	20336.000
8	4	FP	N	21646.000

Table 8.5: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	22032.750	441.074	49.952	0.000
A FP	20060.500	441.074	45.481	0.000
A EI-FP	1972.250	623.773	3.162	0.096

Table 8.6: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 24 in year 2009 .

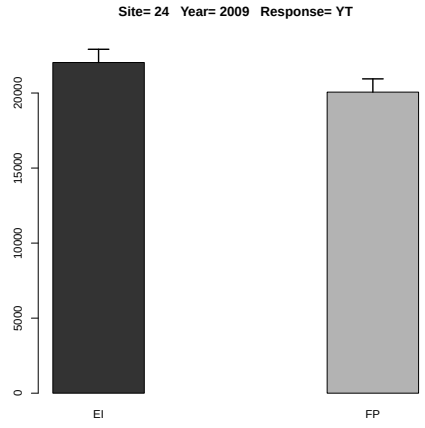

Figure 8.3: Estimated treatment means and standard error in the one-way ANOVA.

8.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.483
2	2	EI	N	0.504
3	3	EI	N	0.481
4	4	EI	N	0.535
5	1	FP	N	0.476
6	2	FP	N	0.464
7	3	FP	N	0.456
8	4	FP	N	0.465

Table 8.7: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.501	0.009	53.733	0.000
A FP	0.465	0.009	49.931	0.000
A EI-FP	0.035	0.013	2.688	0.139

Table 8.8: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 24 in year 2009 .

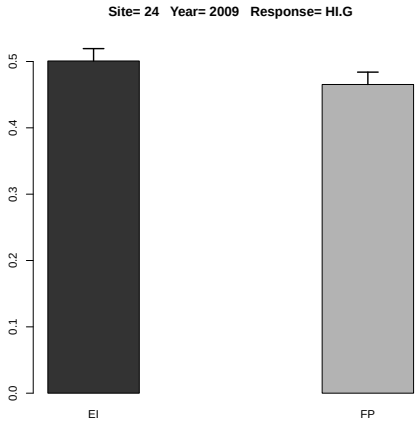

Figure 8.4: Estimated treatment means and standard error in the one-way ANOVA.

8.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	124.556
2	2	EI	N	187.524
3	3	EI	N	110.045
4	4	EI	N	134.399
5	1	FP	N	103.247
6	2	FP	N	100.867
7	3	FP	N	127.898
8	4	FP	N	130.949

Table 8.9: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	139.131	15.950	8.723	0.006
A FP	115.740	15.950	7.256	0.011
A EI-FP	23.391	22.557	1.037	0.596

Table 8.10: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 24 in year 2009 .

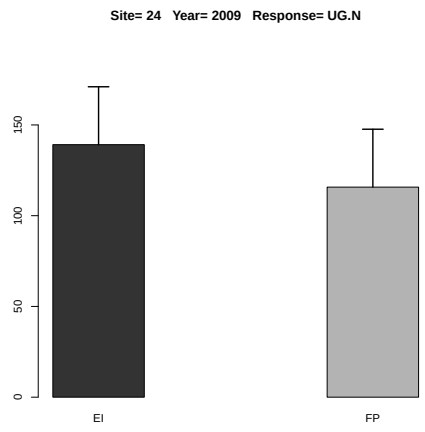

Figure 8.5: Estimated treatment means and standard error in the one-way ANOVA.

8.1.6 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	206.151
2	2	EI	N	196.566
3	3	EI	N	201.585
4	4	EI	N	228.453
5	1	FP	N	213.762
6	2	FP	N	214.429
7	3	FP	N	220.667
8	4	FP	N	239.833

Table 8.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	208.189	6.578	3.300	31.650	188.189	228.189	0.000
A FP	222.173	6.578	3.300	33.780	202.173	242.173	0.000
A EI-FP	-13.984	2.715	3.000	-5.150	-22.623	-5.345	0.014

Table 8.12: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 24 in year 2009 .

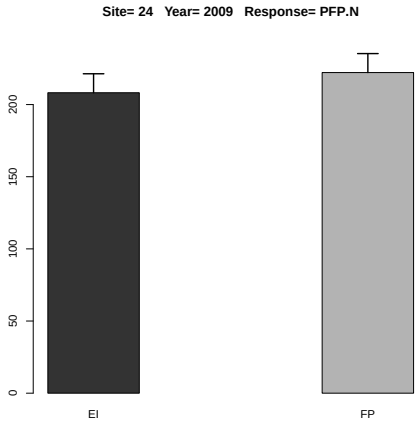

Figure 8.6: Estimated treatment means and standard error in the one-way ANOVA.

8.1.7 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	568.754
2	2	EI	N	542.310
3	3	EI	N	556.157
4	4	EI	N	630.284
5	1	FP	N	642.608
6	2	FP	N	644.612
7	3	FP	N	663.365
8	4	FP	N	720.983

Table 8.13: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	574.376	18.861	3.200	30.450	516.795	631.958	0.000
A FP	667.892	18.861	3.200	35.410	610.310	725.474	0.000
A EI-FP	-93.515	7.412	3.000	-12.620	-117.103	-69.928	0.001

Table 8.14: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 24 in year 2009 .

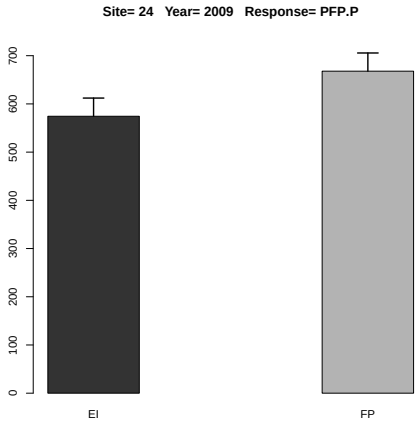

Figure 8.7: Estimated treatment means and standard error in the one-way ANOVA.

8.1.8 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	248.318
2	2	EI	N	236.773
3	3	EI	N	242.818
4	4	EI	N	275.182
5	1	FP	N	280.562
6	2	FP	N	281.438
7	3	FP	N	289.625
8	4	FP	N	314.781

Table 8.15: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	250.773	8.235	3.200	30.450	225.632	275.913	0.000
A FP	291.602	8.235	3.200	35.410	266.461	316.742	0.000
A EI-FP	-40.829	3.236	3.000	-12.620	-51.127	-30.530	0.001

Table 8.16: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 24 in year 2009 .

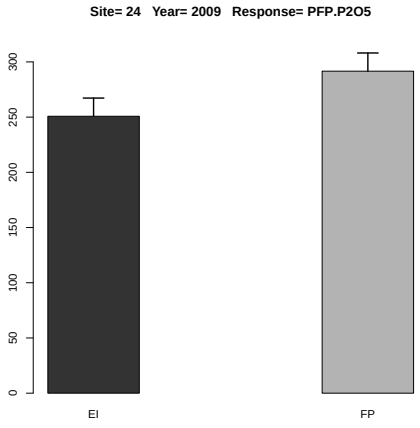

Figure 8.8: Estimated treatment means and standard error in the one-way ANOVA.

8.1.9 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	3642.000
2	2	EI	N	3472.667
3	3	EI	N	3561.333
4	4	EI	N	4036.000

Table 8.17: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

8.1.10 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	2.350
2	2	EI	N	3.538
3	3	EI	N	2.076
4	4	EI	N	2.536
5	1	FP	N	2.458
6	2	FP	N	2.402
7	3	FP	N	3.045
8	4	FP	N	3.118

Table 8.18: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.625	0.262	6.000	10.020	1.984	3.266	0.000
A FP	2.756	0.262	6.000	10.520	2.115	3.397	0.000
A EI-FP	-0.131	0.370	6.000	-0.350	-1.037	0.776	0.737

Table 8.19: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 24 in year 2009 .

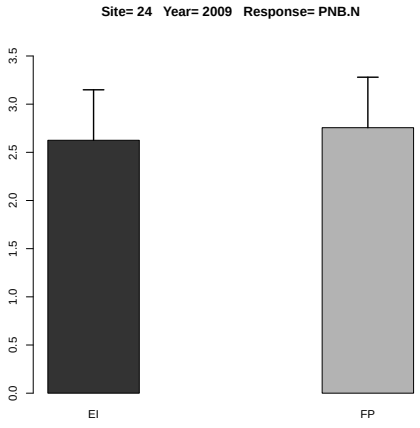

Figure 8.9: Estimated treatment means and standard error in the one-way ANOVA.

8.2 Year 2010

There are 82 variables not observed: UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.K2O PFP.Ca PFP.Mg PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.K PNB.P PNB.K

8.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	10956.000
2	2	EI	N	11556.000
3	3	EI	N	9721.000
4	4	EI	N	11521.000
5	1	FP	N	8853.000
6	2	FP	N	8896.000
7	3	FP	N	8027.000
8	4	FP	N	9321.000

Table 8.20: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	10938.500	140.228	78.005	0.000
A FP	8774.250	140.228	62.571	0.000
A EI-FP	2164.250	198.312	10.913	0.003

Table 8.21: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 24 in year 2010 .

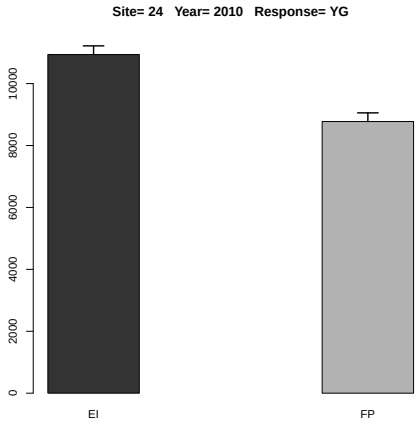

Figure 8.10: Estimated treatment means and standard error in the one-way ANOVA.

8.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	11215.000
2	2	EI	N	11245.000
3	3	EI	N	11062.000
4	4	EI	N	13323.000
5	1	FP	N	10419.000
6	2	FP	N	8373.000
7	3	FP	N	9979.000
8	4	FP	N	10341.000

Table 8.22: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	11711.250	408.115	28.696	0.000
A FP	9778.000	408.115	23.959	0.000
A EI-FP	1933.250	577.162	3.350	0.083

Table 8.23: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 24 in year 2010 .

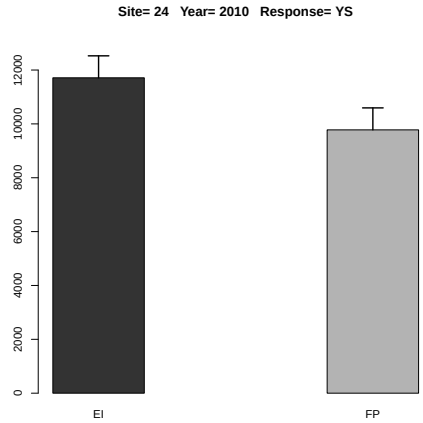

Figure 8.11: Estimated treatment means and standard error in the one-way ANOVA.

8.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	22171.000
2	2	EI	N	22801.000
3	3	EI	N	20783.000
4	4	EI	N	24844.000
5	1	FP	N	19272.000
6	2	FP	N	17269.000
7	3	FP	N	18006.000
8	4	FP	N	19662.000

Table 8.24: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	22649.750	516.964	43.813	0.000
A FP	18552.250	516.964	35.887	0.000
A EI-FP	4097.500	731.098	5.605	0.022

Table 8.25: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 24 in year 2010 .

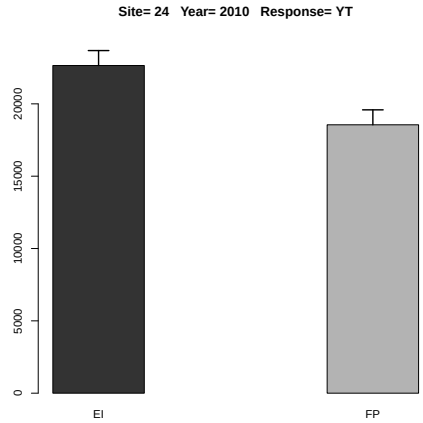

Figure 8.12: Estimated treatment means and standard error in the one-way ANOVA.

8.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.494
2	2	EI	N	0.507
3	3	EI	N	0.468
4	4	EI	N	0.464
5	1	FP	N	0.459
6	2	FP	N	0.515
7	3	FP	N	0.446
8	4	FP	N	0.474

Table 8.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.483	0.008	61.006	0.000
A FP	0.474	0.008	59.804	0.000
A EI-FP	0.010	0.011	0.850	0.692

Table 8.27: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 24 in year 2010 .

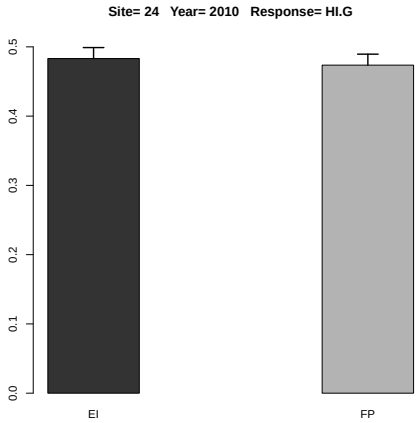

Figure 8.13: Estimated treatment means and standard error in the one-way ANOVA.

8.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	109.560
2	2	EI	N	117.871
3	3	EI	N	92.349
4	4	EI	N	118.666
5	1	FP	N	96.498
6	2	FP	N	83.622
7	3	FP	N	78.665
8	4	FP	N	96.006

Table 8.28: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	109.612	3.505	31.276	0.000
A FP	88.698	3.505	25.309	0.000
A EI-FP	20.914	4.956	4.220	0.047

Table 8.29: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 24 in year 2010 .

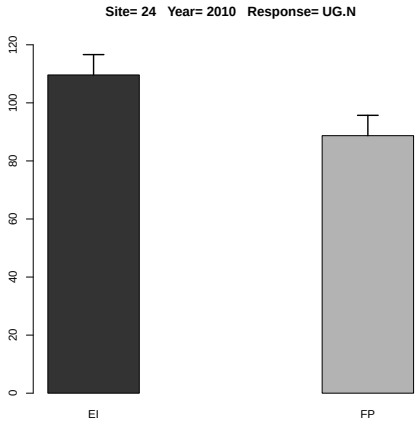

Figure 8.14: Estimated treatment means and standard error in the one-way ANOVA.

8.2.6 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	163.522
2	2	EI	N	172.478
3	3	EI	N	145.090
4	4	EI	N	171.955
5	1	FP	N	205.884
6	2	FP	N	206.884
7	3	FP	N	186.674
8	4	FP	N	216.767

Table 8.30: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	163.261	6.344	3.200	25.740	143.743	182.779	0.000
A FP	204.052	6.344	3.200	32.170	184.534	223.571	0.000
A EI-FP	-40.791	2.237	3.000	-18.240	-47.909	-33.673	0.000

Table 8.31: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 24 in year 2010 .

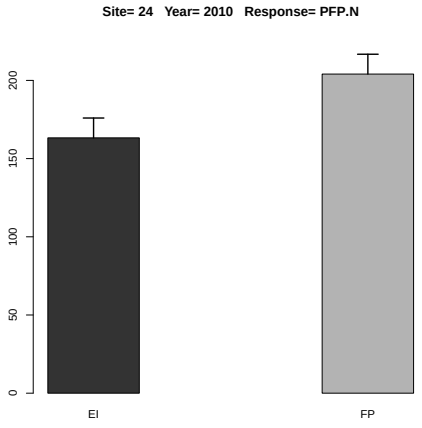

Figure 8.15: Estimated treatment means and standard error in the one-way ANOVA.

8.2.7 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	570.316
2	2	EI	N	601.549
3	3	EI	N	506.028
4	4	EI	N	599.727
5	1	FP	N	633.661
6	2	FP	N	636.738
7	3	FP	N	574.539
8	4	FP	N	667.158

Table 8.32: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	569.405	20.887	3.200	27.260	505.447	633.363	0.000
A FP	628.024	20.887	3.200	30.070	564.066	691.982	0.000
A EI-FP	-58.619	7.889	3.000	-7.430	-83.724	-33.514	0.005

Table 8.33: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 24 in year 2010 .

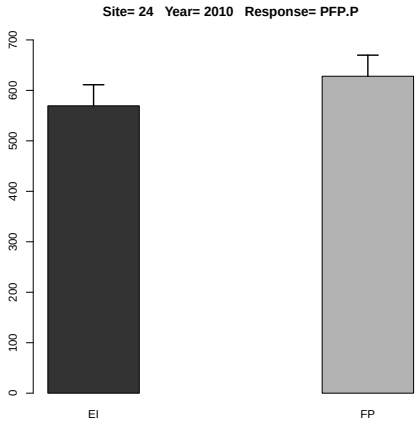

Figure 8.16: Estimated treatment means and standard error in the one-way ANOVA.

8.2.8 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	249.000
2	2	EI	N	262.636
3	3	EI	N	220.932
4	4	EI	N	261.841
5	1	FP	N	276.656
6	2	FP	N	278.000
7	3	FP	N	250.844
8	4	FP	N	291.281

Table 8.34: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	248.602	9.119	3.200	27.260	220.678	276.526	0.000
A FP	274.195	9.119	3.200	30.070	246.271	302.120	0.000
A EI-FP	-25.593	3.444	3.000	-7.430	-36.554	-14.632	0.005

Table 8.35: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 24 in year 2010 .

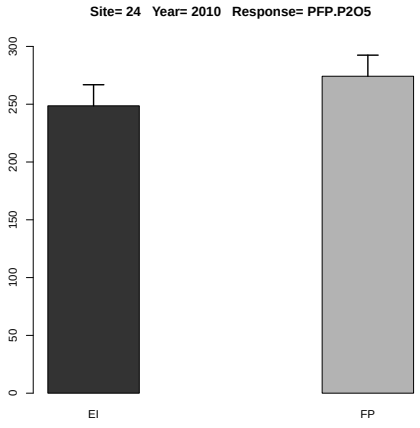

Figure 8.17: Estimated treatment means and standard error in the one-way ANOVA.

8.2.9 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	3652.000
2	2	EI	N	3852.000
3	3	EI	N	3240.333
4	4	EI	N	3840.333

Table 8.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

8.2.10 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	1.635
2	2	EI	N	1.759
3	3	EI	N	1.378
4	4	EI	N	1.771
5	1	FP	N	2.244
6	2	FP	N	1.945
7	3	FP	N	1.829
8	4	FP	N	2.233

Table 8.37: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.636	0.098	4.400	16.710	1.374	1.898	0.000
A FP	2.063	0.098	4.400	21.070	1.801	2.324	0.000
A EI-FP	-0.427	0.088	3.000	-4.840	-0.707	-0.146	0.017

Table 8.38: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 24 in year 2010 .

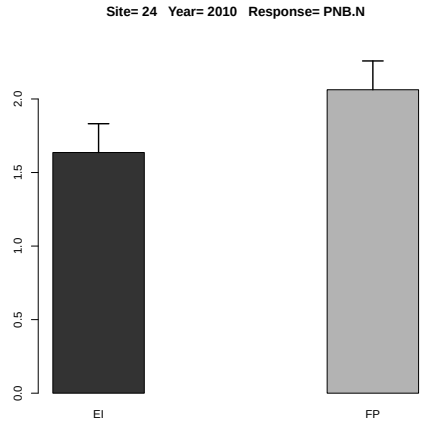

Figure 8.18: Estimated treatment means and standard error in the one-way ANOVA.

8.3 Year 2011

There are 82 variables not observed: UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.K2O PFP.Ca PFP.Mg PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.K PNB.P PNB.K

8.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	6076.000
2	2	EI	N	6599.000
3	3	EI	N	6987.000
4	4	EI	N	6631.000
5	1	FP	N	4377.000
6	2	FP	N	3870.000
7	3	FP	N	5465.000
8	4	FP	N	6229.000

Table 8.39: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	6573.250	336.969	19.507	0.000
A FP	4985.250	336.969	14.794	0.001
A EI-FP	1588.000	476.546	3.332	0.085

Table 8.40: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 24 in year 2011 .

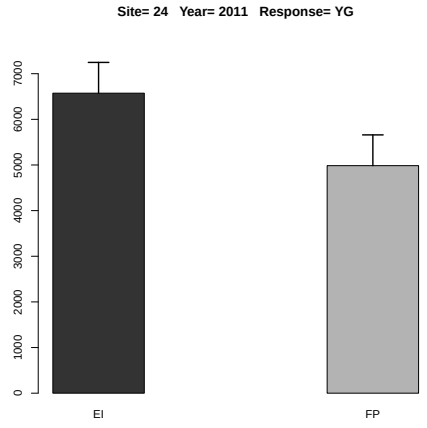

Figure 8.19: Estimated treatment means and standard error in the one-way ANOVA.

8.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	12890.000
2	2	EI	N	14300.000
3	3	EI	N	14500.000
4	4	EI	N	14010.000
5	1	FP	N	9860.000
6	2	FP	N	9600.000
7	3	FP	N	12550.000
8	4	FP	N	13640.000

Table 8.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	13925.000	644.194	21.616	0.000
A FP	11412.500	644.194	17.716	0.000
A EI-FP	2512.500	911.028	2.758	0.131

Table 8.42: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 24 in year 2011 .

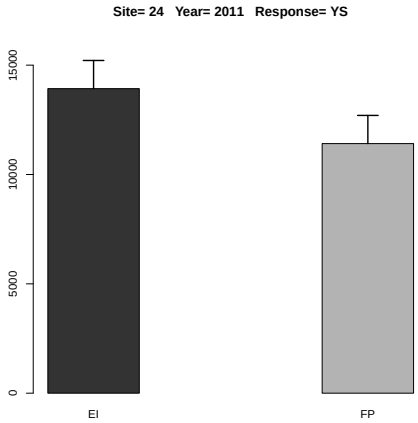

Figure 8.20: Estimated treatment means and standard error in the one-way ANOVA.

8.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	18966.000
2	2	EI	N	20899.000
3	3	EI	N	21487.000
4	4	EI	N	20641.000
5	1	FP	N	14237.000
6	2	FP	N	13470.000
7	3	FP	N	18015.000
8	4	FP	N	19869.000

Table 8.43: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	20498.250	977.835	20.963	0.000
A FP	16397.750	977.835	16.769	0.001
A EI-FP	4100.500	1382.867	2.965	0.112

Table 8.44: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 24 in year 2011 .

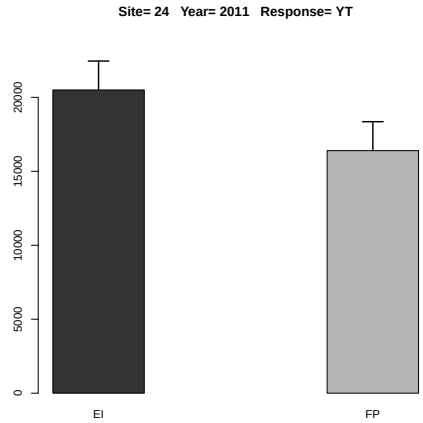

Figure 8.21: Estimated treatment means and standard error in the one-way ANOVA.

8.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.320
2	2	EI	N	0.316
3	3	EI	N	0.325
4	4	EI	N	0.321
5	1	FP	N	0.307
6	2	FP	N	0.287
7	3	FP	N	0.303
8	4	FP	N	0.314

Table 8.45: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.321	0.003	98.497	0.000
A FP	0.303	0.003	93.049	0.000
A EI-FP	0.018	0.005	3.852	0.059

Table 8.46: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 24 in year 2011 .

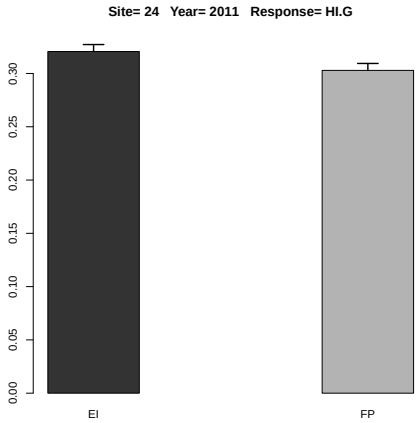

Figure 8.22: Estimated treatment means and standard error in the one-way ANOVA.

8.3.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	73.520
2	2	EI	N	77.208
3	3	EI	N	85.940
4	4	EI	N	80.235
5	1	FP	N	51.649
6	2	FP	N	44.892
7	3	FP	N	73.778
8	4	FP	N	80.354

Table 8.47: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	79.226	4.890	16.200	0.001
A FP	62.668	4.890	12.814	0.001
A EI-FP	16.558	6.916	2.394	0.178

Table 8.48: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 24 in year 2011 .

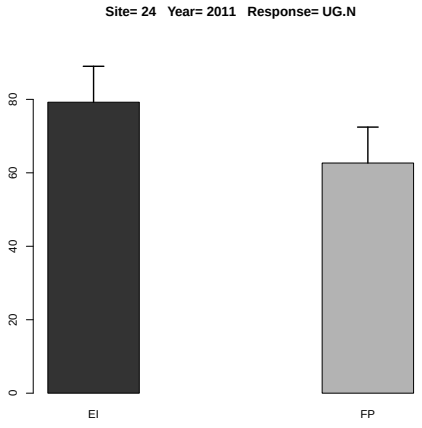

Figure 8.23: Estimated treatment means and standard error in the one-way ANOVA.

8.3.6 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	101.267
2	2	EI	N	109.983
3	3	EI	N	116.450
4	4	EI	N	110.517
5	1	FP	N	87.540
6	2	FP	N	77.400
7	3	FP	N	109.300
8	4	FP	N	124.580

Table 8.49: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	109.554	7.836	5.700	13.980	90.095	129.014	0.000
A FP	99.705	7.836	5.700	12.720	80.246	119.164	0.000
A EI-FP	9.849	9.622	3.000	1.020	-20.772	40.470	0.381

Table 8.50: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 24 in year 2011 .

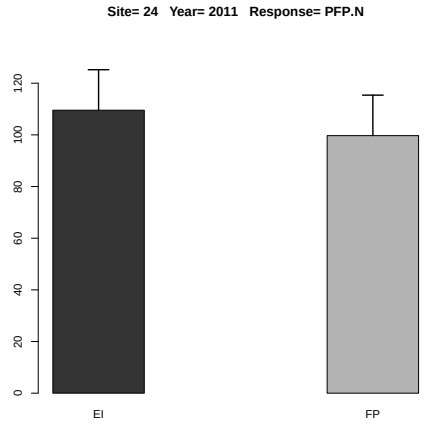

Figure 8.24: Estimated treatment means and standard error in the one-way ANOVA.

8.3.7 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	376.125
2	2	EI	N	408.501
3	3	EI	N	432.519
4	4	EI	N	410.481
5	1	FP	N	294.859
6	2	FP	N	260.704
7	3	FP	N	368.152
8	4	FP	N	419.620

Table 8.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	406.907	26.620	5.600	15.290	340.629	473.184	0.000
A FP	335.834	26.620	5.600	12.620	269.556	402.111	0.000
A EI-FP	71.073	32.235	3.000	2.200	-31.507	173.653	0.115

Table 8.52: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 24 in year 2011 .

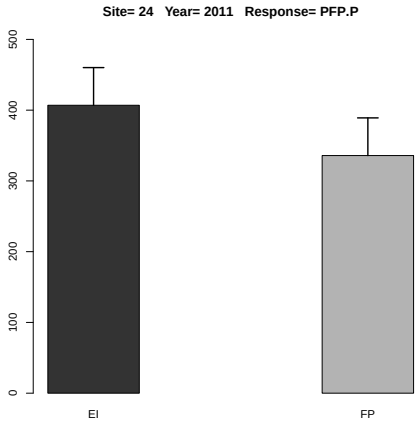

Figure 8.25: Estimated treatment means and standard error in the one-way ANOVA.

8.3.8 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	164.216
2	2	EI	N	178.351
3	3	EI	N	188.838
4	4	EI	N	179.216
5	1	FP	N	128.735
6	2	FP	N	113.824
7	3	FP	N	160.735
8	4	FP	N	183.206

Table 8.53: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	177.655	11.622	5.600	15.290	148.718	206.593	0.000
A FP	146.625	11.622	5.600	12.620	117.688	175.562	0.000
A EI-FP	31.030	14.074	3.000	2.200	-13.760	75.821	0.115

Table 8.54: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 24 in year 2011 .

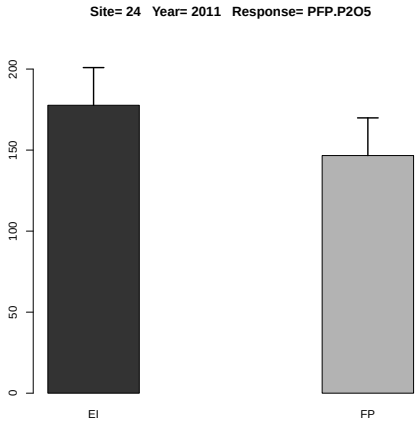

Figure 8.26: Estimated treatment means and standard error in the one-way ANOVA.

8.3.9 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	1519.000
2	2	EI	N	1649.750
3	3	EI	N	1746.750
4	4	EI	N	1657.750

Table 8.55: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

8.3.10 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	1.225
2	2	EI	N	1.287
3	3	EI	N	1.432
4	4	EI	N	1.337
5	1	FP	N	1.033
6	2	FP	N	0.898
7	3	FP	N	1.476
8	4	FP	N	1.607

Table 8.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.320	0.125	5.400	10.600	1.007	1.634	0.000
A FP	1.253	0.125	5.400	10.060	0.940	1.567	0.000
A EI-FP	0.067	0.143	3.000	0.470	-0.388	0.522	0.671

Table 8.57: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 24 in year 2011 .

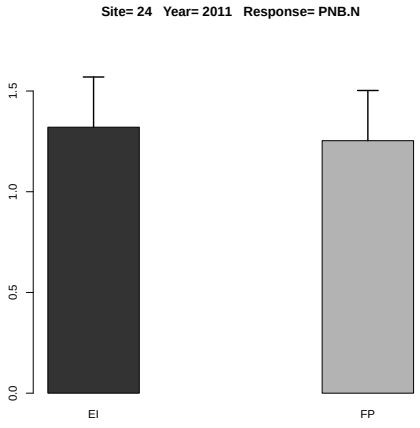

Figure 8.27: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 9

Analysis of Variance for Site 25

9.1 Year 2009

There are 83 variables not observed: UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.K2O PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.K PNB.P PNB.K

9.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	11791.000
2	2	EI	N	10335.000
3	3	EI	N	11387.000
4	4	EI	N	12023.000
5	1	FP	N	6194.000
6	2	FP	N	6538.000
7	3	FP	N	5344.000
8	4	FP	N	5637.000

Table 9.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	11384.000	407.310	27.949	0.000
A FP	5928.250	407.310	14.555	0.001
A EI-FP	5455.750	576.023	9.471	0.005

Table 9.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 25 in year 2009 .

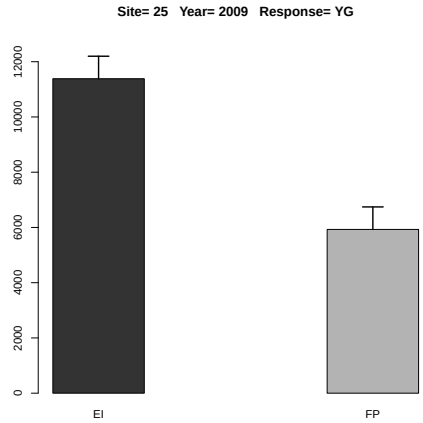

Figure 9.1: Estimated treatment means and standard error in the one-way ANOVA.

9.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	26062.000
2	2	EI	N	22928.000
3	3	EI	N	24702.000
4	4	EI	N	26201.000
5	1	FP	N	21891.000
6	2	FP	N	22325.000
7	3	FP	N	22475.000
8	4	FP	N	16553.000

Table 9.3: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	24973.250	1392.046	17.940	0.000
A FP	20811.000	1392.046	14.950	0.001
A EI-FP	4162.250	1968.650	2.114	0.226

Table 9.4: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 25 in year 2009 .

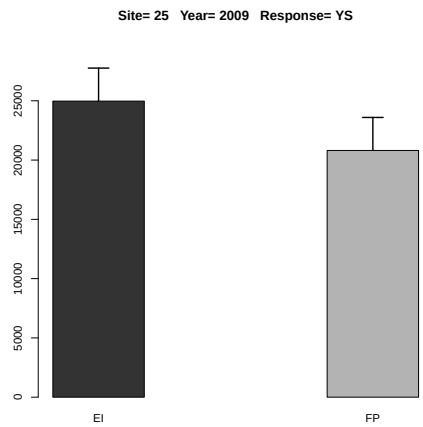

Figure 9.2: Estimated treatment means and standard error in the one-way ANOVA.

9.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	37853.000
2	2	EI	N	33263.000
3	3	EI	N	36089.000
4	4	EI	N	38224.000
5	1	FP	N	28085.000
6	2	FP	N	28863.000
7	3	FP	N	27819.000
8	4	FP	N	22190.000

Table 9.5: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	36357.250	1710.655	21.253	0.000
A FP	26739.250	1710.655	15.631	0.001
A EI-FP	9618.000	2419.232	3.976	0.055

Table 9.6: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 25 in year 2009 .

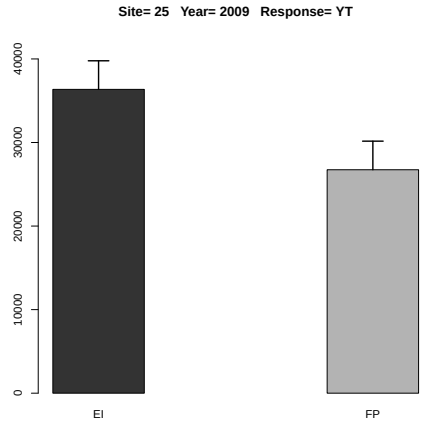

Figure 9.3: Estimated treatment means and standard error in the one-way ANOVA.

9.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.311
2	2	EI	N	0.311
3	3	EI	N	0.316
4	4	EI	N	0.315
5	1	FP	N	0.221
6	2	FP	N	0.227
7	3	FP	N	0.192
8	4	FP	N	0.254

Table 9.7: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.313	0.009	34.111	0.000
A FP	0.223	0.009	24.330	0.000
A EI-FP	0.090	0.013	6.916	0.012

Table 9.8: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 25 in year 2009 .

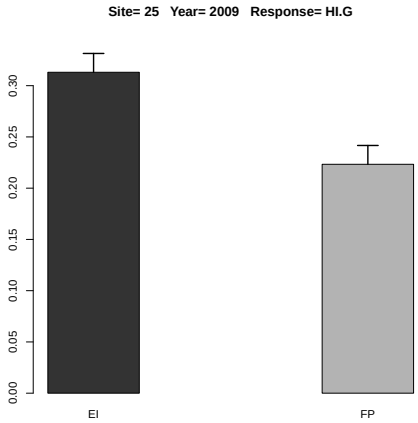

Figure 9.4: Estimated treatment means and standard error in the one-way ANOVA.

9.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	129.701
2	2	EI	N	103.350
3	3	EI	N	113.870
4	4	EI	N	132.253
5	1	FP	N	74.328
6	2	FP	N	84.994
7	3	FP	N	64.128
8	4	FP	N	90.192

Table 9.9: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	119.793	5.760	20.797	0.000
A FP	78.410	5.760	13.613	0.002
A EI-FP	41.383	8.146	5.080	0.028

Table 9.10: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 25 in year 2009 .

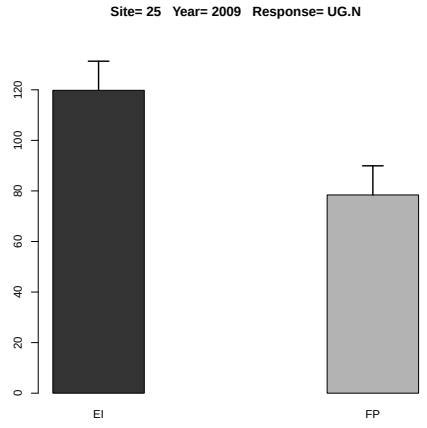

Figure 9.5: Estimated treatment means and standard error in the one-way ANOVA.

9.1.6 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	107.191
2	2	EI	N	93.955
3	3	EI	N	103.518
4	4	EI	N	109.300
5	1	FP	N	80.442
6	2	FP	N	84.909
7	3	FP	N	69.403
8	4	FP	N	73.208

Table 9.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	103.491	3.445	6.000	30.040	95.061	111.921	0.000
A FP	76.990	3.445	6.000	22.350	68.560	85.421	0.000
A EI-FP	26.501	4.872	6.000	5.440	14.578	38.423	0.002

Table 9.12: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 25 in year 2009 .

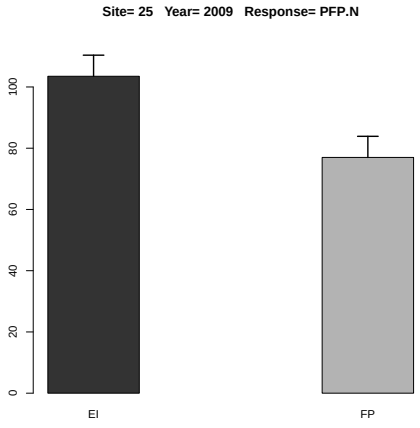

Figure 9.6: Estimated treatment means and standard error in the one-way ANOVA.

9.1.7 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	257.944
2	2	FP	N	272.269
3	3	FP	N	222.546
4	4	FP	N	234.748

Table 9.13: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

There is no or sufficient data for this response variable at this site and year.

9.1.8 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	112.618
2	2	FP	N	118.873
3	3	FP	N	97.164
4	4	FP	N	102.491

Table 9.14: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

There is no or sufficient data for this response variable at this site and year.

9.1.9 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	1.179
2	2	EI	N	0.940
3	3	EI	N	1.035
4	4	EI	N	1.202
5	1	FP	N	0.965
6	2	FP	N	1.104
7	3	FP	N	0.833
8	4	FP	N	1.171

Table 9.15: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.089	0.069	5.800	15.790	0.919	1.259	0.000
A FP	1.018	0.069	5.800	14.770	0.848	1.188	0.000
A EI-FP	0.071	0.089	3.000	0.800	-0.212	0.353	0.484

Table 9.16: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 25 in year 2009 .

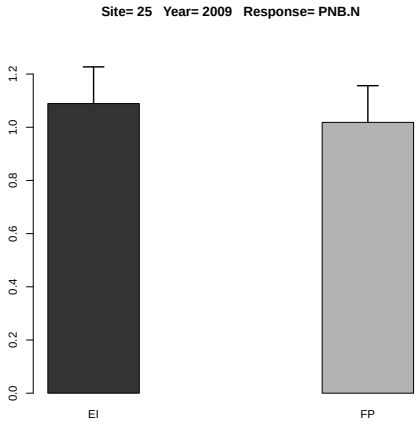

Figure 9.7: Estimated treatment means and standard error in the one-way ANOVA.

9.2 Year 2010

There are 83 variables not observed: UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.K2O PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.K PNB.P PNB.K

9.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	8690.000
2	2	EI	N	7526.000
3	3	EI	N	8399.000
4	4	EI	N	7145.000
5	1	FP	N	5815.000
6	2	FP	N	4096.000
7	3	FP	N	5159.000
8	4	FP	N	4721.000

Table 9.17: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	7940.000	156.746	50.655	0.000
A FP	4947.750	156.746	31.565	0.000
A EI-FP	2992.250	221.672	13.499	0.002

Table 9.18: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 25 in year 2010 .

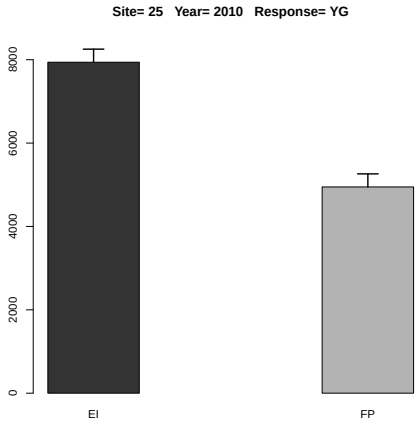

Figure 9.8: Estimated treatment means and standard error in the one-way ANOVA.

9.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	20294.000
2	2	EI	N	21220.000
3	3	EI	N	16380.000
4	4	EI	N	20895.000
5	1	FP	N	17952.000
6	2	FP	N	18594.000
7	3	FP	N	17440.000
8	4	FP	N	13942.000

Table 9.19: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	19697.250	1161.147	16.964	0.001
A FP	16982.000	1161.147	14.625	0.001
A EI-FP	2715.250	1642.110	1.654	0.343

Table 9.20: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 25 in year 2010 .

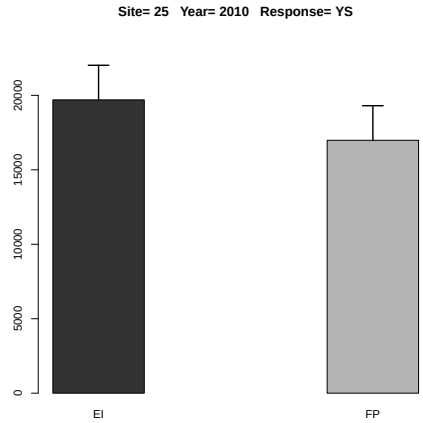

Figure 9.9: Estimated treatment means and standard error in the one-way ANOVA.

9.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	28984.000
2	2	EI	N	28746.000
3	3	EI	N	24779.000
4	4	EI	N	28040.000
5	1	FP	N	23767.000
6	2	FP	N	22690.000
7	3	FP	N	22599.000
8	4	FP	N	18663.000

Table 9.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	27637.250	1046.234	26.416	0.000
A FP	21929.750	1046.234	20.961	0.000
A EI-FP	5707.500	1479.598	3.857	0.059

Table 9.22: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 25 in year 2010 .

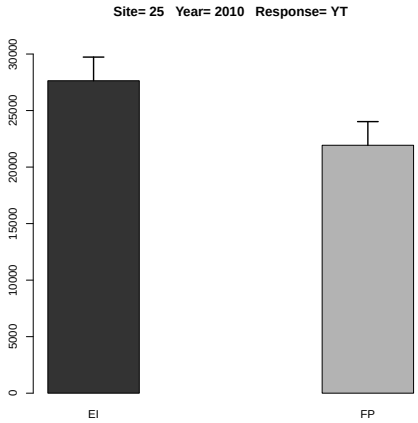

Figure 9.10: Estimated treatment means and standard error in the one-way ANOVA.

9.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.300
2	2	EI	N	0.262
3	3	EI	N	0.339
4	4	EI	N	0.255
5	1	FP	N	0.245
6	2	FP	N	0.181
7	3	FP	N	0.228
8	4	FP	N	0.253

Table 9.23: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.289	0.016	17.681	0.001
A FP	0.227	0.016	13.871	0.002
A EI-FP	0.062	0.023	2.694	0.138

Table 9.24: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 25 in year 2010 .

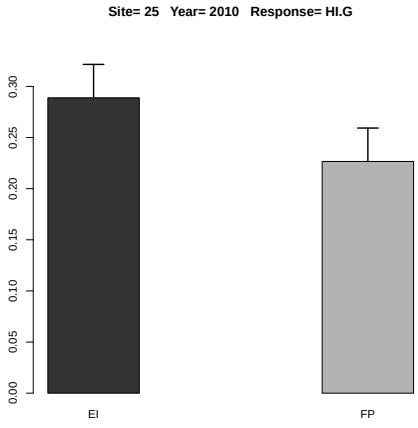

Figure 9.11: Estimated treatment means and standard error in the one-way ANOVA.

9.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	86.900
2	2	EI	N	60.208
3	3	EI	N	83.990
4	4	EI	N	71.450
5	1	FP	N	81.410
6	2	FP	N	57.344
7	3	FP	N	77.385
8	4	FP	N	70.815

Table 9.25: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	75.637	0.948	79.768	0.000
A FP	71.738	0.948	75.656	0.000
A EI-FP	3.898	1.341	2.907	0.116

Table 9.26: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 25 in year 2010 .

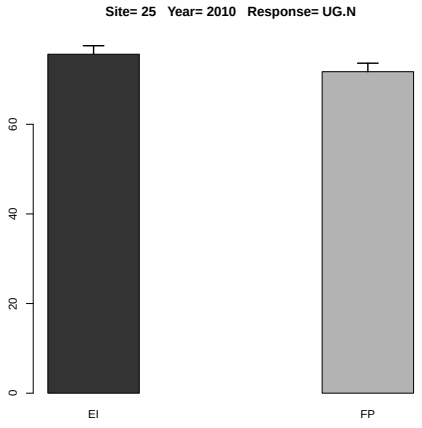

Figure 9.12: Estimated treatment means and standard error in the one-way ANOVA.

9.2.6 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	158.000
2	2	EI	N	136.836
3	3	EI	N	152.709
4	4	EI	N	129.909
5	1	FP	N	166.143
6	2	FP	N	117.029
7	3	FP	N	147.400
8	4	FP	N	134.886

Table 9.27: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	144.364	8.674	3.900	16.640	120.007	168.720	0.000
A FP	141.364	8.674	3.900	16.300	117.008	165.720	0.000
A EI-FP	2.999	6.296	3.000	0.480	-17.036	23.035	0.666

Table 9.28: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 25 in year 2010 .

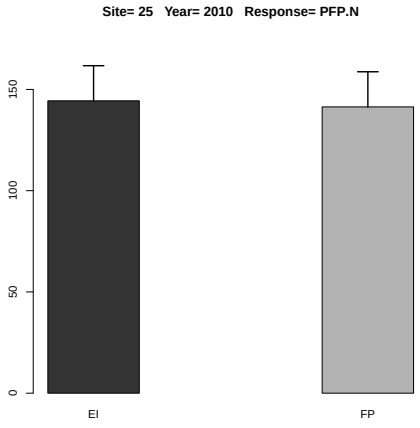

Figure 9.13: Estimated treatment means and standard error in the one-way ANOVA.

9.2.7 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	242.160
2	2	FP	N	170.574
3	3	FP	N	214.842
4	4	FP	N	196.602

Table 9.29: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

There is no or sufficient data for this response variable at this site and year.

9.2.8 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	105.727
2	2	FP	N	74.473
3	3	FP	N	93.800
4	4	FP	N	85.836

Table 9.30: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

There is no or sufficient data for this response variable at this site and year.

9.2.9 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	1.580
2	2	EI	N	1.095
3	3	EI	N	1.527
4	4	EI	N	1.299
5	1	FP	N	2.326
6	2	FP	N	1.638
7	3	FP	N	2.211
8	4	FP	N	2.023

Table 9.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.375	0.133	3.200	10.370	0.967	1.784	0.002
A FP	2.050	0.133	3.200	15.460	1.641	2.458	0.000
A EI-FP	-0.674	0.045	3.000	-14.840	-0.819	-0.530	0.001

Table 9.32: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 25 in year 2010 .

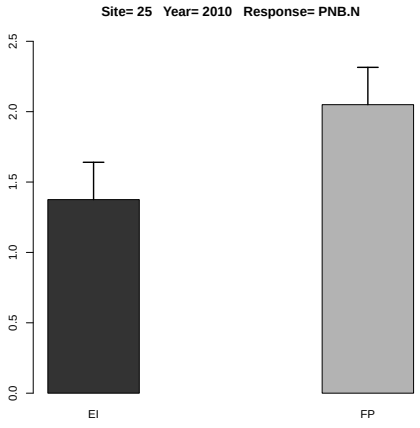

Figure 9.14: Estimated treatment means and standard error in the one-way ANOVA.

9.3 Year 2011

There are 85 variables not observed: UG.N UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.K2O PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.N PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.K PNB.P PNB.K

9.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	4130.000
2	2	EI	N	4359.000
3	3	EI	N	4700.000
4	4	EI	N	4409.000
5	1	FP	N	3298.000
6	2	FP	N	4581.000
7	3	FP	N	3156.000
8	4	FP	N	3173.000

Table 9.33: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	4399.500	272.344	16.154	0.001
A FP	3552.000	272.344	13.042	0.002
A EI-FP	847.500	385.153	2.200	0.210

Table 9.34: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 25 in year 2011 .

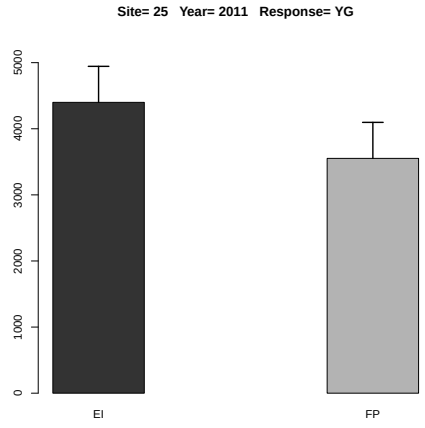

Figure 9.15: Estimated treatment means and standard error in the one-way ANOVA.

9.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	12578.000
2	2	EI	N	19155.000
3	3	EI	N	17737.000
4	4	EI	N	14223.000
5	1	FP	N	10619.000
6	2	FP	N	14040.000
7	3	FP	N	14688.000
8	4	FP	N	15786.000

Table 9.35: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	15923.250	987.882	16.119	0.001
A FP	13783.250	987.882	13.952	0.002
A EI-FP	2140.000	1397.077	1.532	0.384

Table 9.36: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 25 in year 2011 .

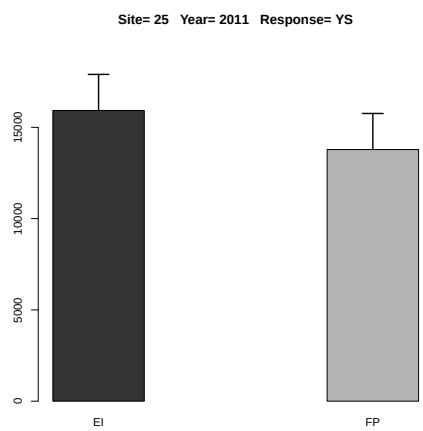

Figure 9.16: Estimated treatment means and standard error in the one-way ANOVA.

9.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	16708.000
2	2	EI	N	23514.000
3	3	EI	N	22437.000
4	4	EI	N	18632.000
5	1	FP	N	13917.000
6	2	FP	N	18621.000
7	3	FP	N	17844.000
8	4	FP	N	18959.000

Table 9.37: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	20322.750	847.375	23.983	0.000
A FP	17335.250	847.375	20.458	0.000
A EI-FP	2987.500	1198.370	2.493	0.163

Table 9.38: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 25 in year 2011 .

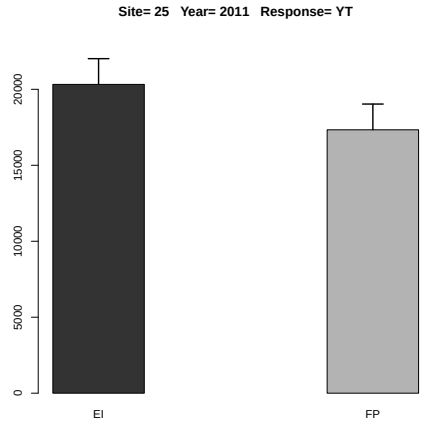

Figure 9.17: Estimated treatment means and standard error in the one-way ANOVA.

9.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.247
2	2	EI	N	0.185
3	3	EI	N	0.209
4	4	EI	N	0.237
5	1	FP	N	0.237
6	2	FP	N	0.246
7	3	FP	N	0.177
8	4	FP	N	0.167

Table 9.39: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.220	0.019	11.356	0.003
A FP	0.207	0.019	10.691	0.003
A EI-FP	0.013	0.027	0.470	0.884

Table 9.40: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 25 in year 2011 .

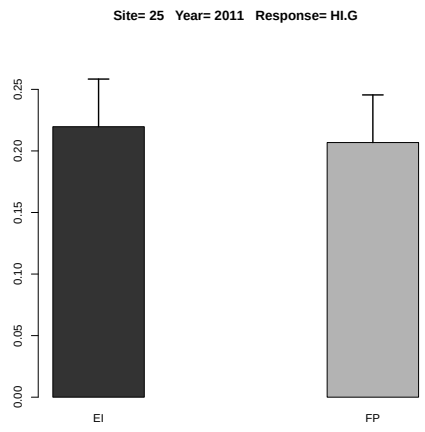

Figure 9.18: Estimated treatment means and standard error in the one-way ANOVA.

9.3.5 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	75.091
2	2	EI	N	79.255
3	3	EI	N	85.455
4	4	EI	N	80.164
5	1	FP	N	94.229
6	2	FP	N	130.886
7	3	FP	N	90.171
8	4	FP	N	90.657

Table 9.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	79.991	7.120	6.000	11.230	62.568	97.413	0.000
A FP	101.486	7.120	6.000	14.250	84.063	118.908	0.000
A EI-FP	-21.495	10.069	6.000	-2.130	-46.134	3.144	0.077

Table 9.42: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 25 in year 2011 .

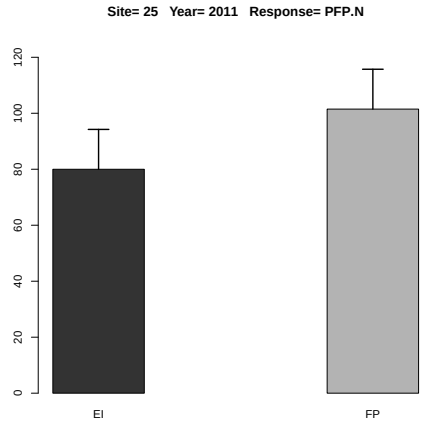

Figure 9.19: Estimated treatment means and standard error in the one-way ANOVA.

9.3.6 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	137.342
2	2	FP	N	190.772
3	3	FP	N	131.429
4	4	FP	N	132.137

Table 9.43: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

There is no or sufficient data for this response variable at this site and year.

9.3.7 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	59.964
2	2	FP	N	83.291
3	3	FP	N	57.382
4	4	FP	N	57.691

Table 9.44: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

There is no or sufficient data for this response variable at this site and year.

Chapter 10

Analysis of Variance for Site 26

10.1 Year 2011

There are 59 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

10.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	12044.000
2	2	EI	N	11913.000
3	3	EI	N	13233.000
4	4	EI	N	10370.000
5	1	EI	N0	6494.000
6	2	EI	N0	5959.000
7	3	EI	N0	8173.000
8	4	EI	N0	6806.000
9	1	FP	N0	8101.000
10	2	FP	N0	7991.000
11	3	FP	N0	7766.000
12	4	FP	N0	7117.000
13	1	FP	N	12309.000
14	2	FP	N	11956.000
15	3	FP	N	11443.000
16	4	FP	N	11062.000

Table 10.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	11890.000	387.245	30.704	0.000
A FP	11692.500	387.245	30.194	0.000
A EI-FP	197.500	547.647	0.361	0.929

Table 10.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 26 in year 2011 .

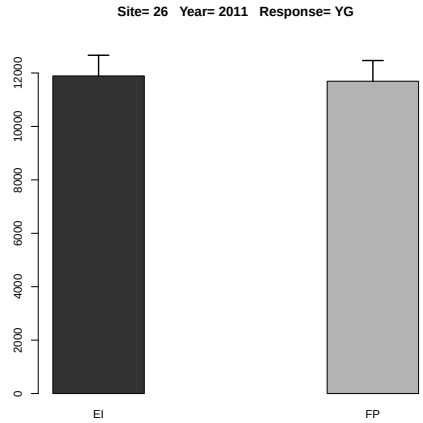

Figure 10.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	137716.799	137716.799	0.484	3.000	0.537
B	1.000	80653870.563	80653870.563	283.364	6.135	0.000
A:B	1.000	1173430.563	1173430.563	4.123	6.135	0.088

Table 10.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9374.000	370.655	5.900	25.290	8464.383	10283.617	0.000
2	FP		9718.125	370.655	5.900	26.220	8808.508	10627.742	0.000
3		N	11791.250	306.572	4.400	38.460	10972.634	12609.866	0.000
4		N0	7300.875	306.572	4.400	23.810	6482.259	8119.491	0.000
5	EI	N	11890.000	415.889	8.800	28.590	10946.342	12833.658	0.000
6	FP	N	11692.500	415.889	8.800	28.110	10748.842	12636.158	0.000
7	EI	N0	6858.000	415.889	8.800	16.490	5914.342	7801.658	0.000
8	FP	N0	7743.750	415.889	8.800	18.620	6800.092	8687.408	0.000

Table 10.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 26 in year 2011 .

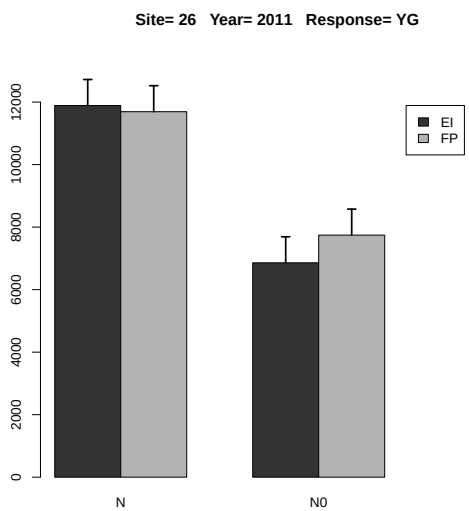

Figure 10.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-344.125	494.724	3.000	-0.700	-1918.639	1230.389	0.537
B N-N0	4490.375	266.753	6.100	16.830	3841.099	5139.651	0.000
A:B EI N- FP N	197.500	562.058	4.800	0.350	-1265.673	1660.673	0.740
A:B EI N- EI N0	5032.000	377.246	6.100	13.340	4113.785	5950.215	0.000
A:B EI N- FP N0	4146.250	562.058	4.800	7.380	2683.077	5609.423	0.001
A:B FP N- EI N0	4834.500	562.058	4.800	8.600	3371.327	6297.673	0.000
A:B FP N- FP N0	3948.750	377.246	6.100	10.470	3030.535	4866.965	0.000
A:B EI N0- FP N0	-885.750	562.058	4.800	-1.580	-2348.923	577.423	0.178

Table 10.5: Estimate of contrast in two-way ANOVA for variable YG at site 26 in year 2011 .

10.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	11499.000
2	2	EI	N	10658.000
3	3	EI	N	13185.000
4	4	EI	N	10802.000
5	1	EI	N0	7461.000
6	2	EI	N0	7551.000
7	3	EI	N0	9554.000
8	4	EI	N0	8419.000
9	1	FP	N0	9041.000
10	2	FP	N0	10512.000
11	3	FP	N0	8623.000
12	4	FP	N0	8675.000
13	1	FP	N	11960.000
14	2	FP	N	12033.000
15	3	FP	N	10496.000
16	4	FP	N	9843.000

Table 10.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	11536.000	626.921	18.401	0.000
A FP	11083.000	626.921	17.678	0.000
A EI-FP	453.000	886.600	0.511	0.866

Table 10.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 26 in year 2011 .

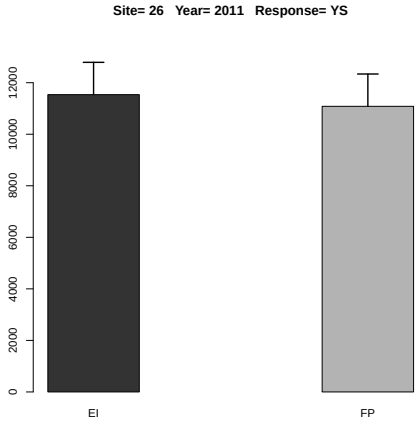

Figure 10.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	38375.131	38375.131	0.142	6.000	0.719
B	1.000	26625600.000	26625600.000	98.403	6.112	0.000
A:B	1.000	2014980.250	2014980.250	7.447	6.112	0.034

Table 10.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9891.125	482.077	6.000	20.520	8711.507	11070.743	0.000
2	FP		10147.875	482.077	6.000	21.050	8968.257	11327.493	0.000
3		N	11309.500	364.843	7.700	31.000	10462.474	12156.526	0.000
4		N0	8729.500	364.843	7.700	23.930	7882.474	9576.526	0.000
5	EI	N	11536.000	515.966	7.700	22.360	10338.124	12733.876	0.000
6	FP	N	11083.000	515.966	7.700	21.480	9885.124	12280.876	0.000
7	EI	N0	8246.250	515.966	7.700	15.980	7048.374	9444.126	0.000
8	FP	N0	9212.750	515.966	7.700	17.860	8014.874	10410.626	0.000

Table 10.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-256.750	681.760	6.000	-0.380	-1924.982	1411.482	0.719
B N-N0	2580.000	260.086	5.700	9.920	1936.200	3223.800	0.000
A:B EI N- FP N	453.000	729.686	7.700	0.620	-1241.053	2147.053	0.553
A:B EI N- EI N0	3289.750	367.816	5.700	8.940	2379.280	4200.220	0.000
A:B EI N- FP N0	2323.250	729.686	7.700	3.180	629.197	4017.303	0.014
A:B FP N- EI N0	2836.750	729.686	7.700	3.890	1142.697	4530.803	0.005
A:B FP N- FP N0	1870.250	367.816	5.700	5.080	959.780	2780.720	0.003
A:B EI N0- FP N0	-966.500	729.686	7.700	-1.320	-2660.553	727.553	0.223

Table 10.10: Estimate of contrast in two-way ANOVA for variable YS at site 26 in year 2011 .

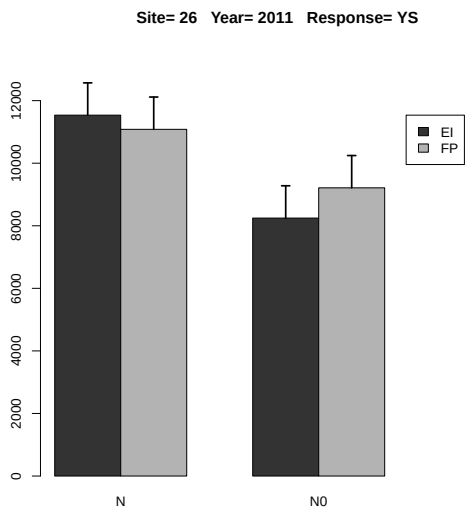

Figure 10.4: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	23543.000
2	2	EI	N	22571.000
3	3	EI	N	26418.000
4	4	EI	N	21172.000
5	1	EI	N0	13955.000
6	2	EI	N0	13510.000
7	3	EI	N0	17727.000
8	4	EI	N0	15225.000
9	1	FP	N0	17142.000
10	2	FP	N0	18503.000
11	3	FP	N0	16389.000
12	4	FP	N0	15792.000
13	1	FP	N	24269.000
14	2	FP	N	23989.000
15	3	FP	N	21939.000
16	4	FP	N	20905.000

Table 10.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	23426.000	934.923	25.057	0.000
A FP	22775.500	934.923	24.361	0.000
A EI-FP	650.500	1322.180	0.492	0.874

Table 10.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 26 in year 2011 .

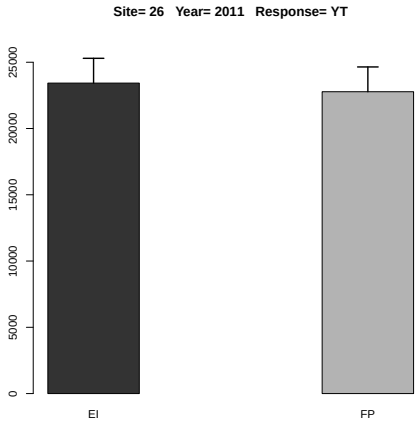

Figure 10.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	230105.517	230105.517	0.268	6.000	0.623
B	1.000	199960810.563	199960810.563	232.553	6.220	0.000
A:B	1.000	6263757.563	6263757.563	7.285	6.220	0.034

Table 10.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19265.125	821.328	6.000	23.460	17255.375	21274.875	0.000
2	FP		19866.000	821.328	6.000	24.190	17856.250	21875.750	0.000
3		N	23100.750	625.325	7.800	36.940	21653.123	24548.377	0.000
4		N0	16030.375	625.325	7.800	25.640	14582.748	17478.002	0.000
5	EI	N	23426.000	884.342	7.800	26.490	21378.746	25473.254	0.000
6	FP	N	22775.500	884.342	7.800	25.750	20728.246	24822.754	0.000
7	EI	N0	15104.250	884.342	7.800	17.080	13056.996	17151.504	0.000
8	FP	N0	16956.500	884.342	7.800	19.170	14909.246	19003.754	0.000

Table 10.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 26 in year 2011 .

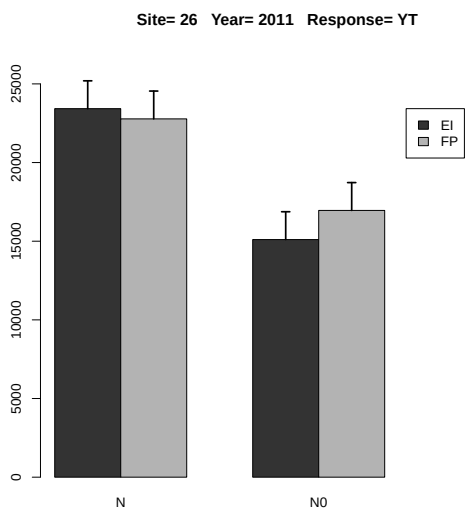

Figure 10.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-600.875	1161.534	6.000	-0.520	-3443.090	2241.340	0.624
B N-N0	7070.375	463.640	5.000	15.250	5878.411	8262.339	0.000
A:B EI N- FP N	650.500	1250.649	7.800	0.520	-2244.754	3545.754	0.617
A:B EI N- EI N0	8321.750	655.687	5.000	12.690	6636.059	10007.441	0.000
A:B EI N- FP N0	6469.500	1250.649	7.800	5.170	3574.246	9364.754	0.001
A:B FP N- EI N0	7671.250	1250.649	7.800	6.130	4775.996	10566.504	0.000
A:B FP N- FP N0	5819.000	655.687	5.000	8.870	4133.309	7504.691	0.000
A:B EI N0- FP N0	-1852.250	1250.649	7.800	-1.480	-4747.504	1043.004	0.178

Table 10.15: Estimate of contrast in two-way ANOVA for variable YT at site 26 in year 2011 .

10.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.512
2	2	EI	N	0.528
3	3	EI	N	0.501
4	4	EI	N	0.490
5	1	EI	N0	0.465
6	2	EI	N0	0.441
7	3	EI	N0	0.461
8	4	EI	N0	0.447
9	1	FP	N0	0.473
10	2	FP	N0	0.432
11	3	FP	N0	0.474
12	4	FP	N0	0.451
13	1	FP	N	0.507
14	2	FP	N	0.498
15	3	FP	N	0.522
16	4	FP	N	0.529

Table 10.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.508	0.011	47.954	0.000
A FP	0.514	0.011	48.574	0.000
A EI-FP	-0.007	0.015	-0.438	0.898

Table 10.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 26 in year 2011 .

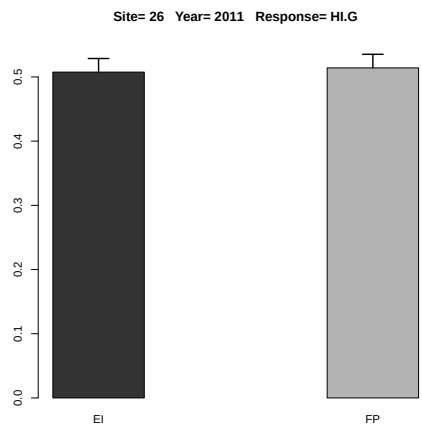

Figure 10.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.375	5.998	0.563
B	1.000	0.012	0.012	56.662	5.960	0.000
A:B	1.000	0.000	0.000	0.040	5.960	0.848

Table 10.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.481	0.006	6.000	81.820	0.466	0.495	0.000
2	FP		0.486	0.006	6.000	82.690	0.471	0.500	0.000
3		N	0.511	0.005	11.800	92.080	0.499	0.523	0.000
4		N0	0.455	0.005	11.800	82.100	0.443	0.468	0.000
5	EI	N	0.507	0.008	11.800	64.690	0.490	0.525	0.000
6	FP	N	0.514	0.008	11.800	65.530	0.497	0.531	0.000
7	EI	N0	0.454	0.008	11.800	57.820	0.436	0.471	0.000
8	FP	N0	0.457	0.008	11.800	58.290	0.440	0.474	0.000

Table 10.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.005	0.008	6.000	-0.610	-0.025	0.015	0.562
B N-N0	0.055	0.007	6.000	7.530	0.037	0.073	0.000
A:B EI N- FP N	-0.007	0.011	11.800	-0.590	-0.031	0.018	0.566
A:B EI N- EI N0	0.054	0.010	6.000	5.180	0.028	0.079	0.002
A:B EI N- FP N0	0.050	0.011	11.800	4.530	0.026	0.074	0.001
A:B FP N- EI N0	0.060	0.011	11.800	5.450	0.036	0.085	0.000
A:B FP N- FP N0	0.057	0.010	6.000	5.460	0.031	0.082	0.002
A:B EI N0- FP N0	-0.004	0.011	11.800	-0.330	-0.028	0.021	0.750

Table 10.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 26 in year 2011 .

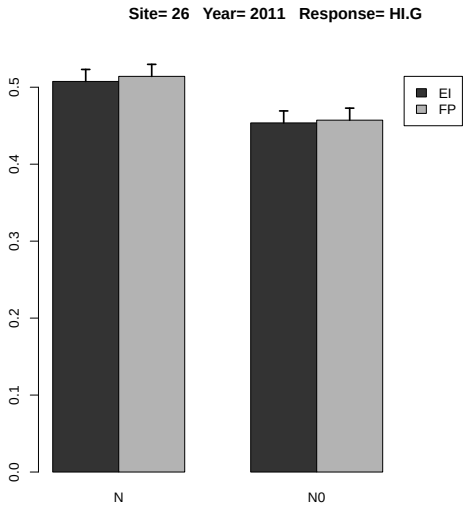

Figure 10.8: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	144.528
2	2	EI	N	154.869
3	3	EI	N	185.262
4	4	EI	N	134.810
5	1	EI	N0	58.446
6	2	EI	N0	53.631
7	3	EI	N0	89.903
8	4	EI	N0	61.254
9	1	FP	N0	81.010
10	2	FP	N0	71.919
11	3	FP	N0	93.192
12	4	FP	N0	78.287
13	1	FP	N	160.017
14	2	FP	N	143.472
15	3	FP	N	148.759
16	4	FP	N	154.868

Table 10.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	154.867	9.279	16.690	0.001
A FP	151.779	9.279	16.357	0.001
A EI-FP	3.088	13.123	0.235	0.969

Table 10.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 26 in year 2011 .

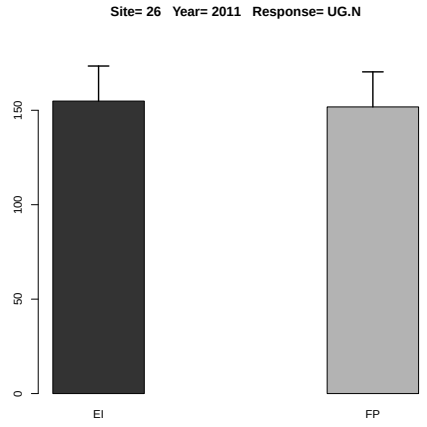

Figure 10.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	33.976	33.976	0.529	3.000	0.520
B	1.000	25515.510	25515.510	397.360	6.000	0.000
A:B	1.000	337.889	337.889	5.262	6.000	0.062

Table 10.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		110.338	6.840	5.700	16.130	93.349	127.326	0.000
2	FP		116.441	6.840	5.700	17.020	99.452	133.429	0.000
3		N	153.323	5.762	3.800	26.610	137.068	169.578	0.000
4		N0	73.455	5.762	3.800	12.750	57.200	89.710	0.000
5	EI	N	154.867	7.403	7.500	20.920	137.616	172.118	0.000
6	FP	N	151.779	7.403	7.500	20.500	134.528	169.030	0.000
7	EI	N0	65.808	7.403	7.500	8.890	48.558	83.059	0.000
8	FP	N0	81.102	7.403	7.500	10.950	63.851	98.353	0.000

Table 10.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 26 in year 2011 .

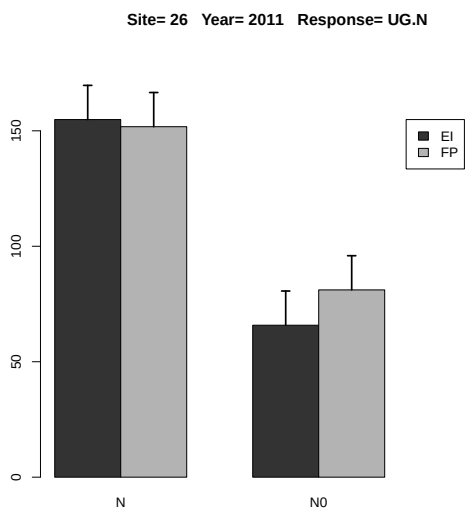

Figure 10.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.103	8.390	3.000	-0.730	-32.803	20.598	0.520
B N-N0	79.868	4.007	6.000	19.930	70.064	89.672	0.000
A:B EI N- FP N	3.088	9.297	4.400	0.330	-21.807	27.983	0.755
A:B EI N- EI N0	89.059	5.666	6.000	15.720	75.194	102.924	0.000
A:B EI N- FP N0	73.765	9.297	4.400	7.930	48.870	98.660	0.001
A:B FP N- EI N0	85.971	9.297	4.400	9.250	61.076	110.865	0.000
A:B FP N- FP N0	70.677	5.666	6.000	12.470	56.812	84.542	0.000
A:B EI N0- FP N0	-15.293	9.297	4.400	-1.640	-40.188	9.601	0.169

Table 10.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 26 in year 2011 .

10.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N	28.906
2	2	EI	N	27.400
3	3	EI	N	34.406
4	4	EI	N	27.999
5	1	EI	N0	14.287
6	2	EI	N0	13.110
7	3	EI	N0	24.519
8	4	EI	N0	16.334
9	1	FP	N0	22.683
10	2	FP	N0	18.379
11	3	FP	N0	18.638
12	4	FP	N0	14.946
13	1	FP	N	29.542
14	2	FP	N	28.694
15	3	FP	N	26.319
16	4	FP	N	24.336

Table 10.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	29.678	1.538	19.293	0.000
A FP	27.223	1.538	17.697	0.001
A EI-FP	2.455	2.175	1.128	0.552

Table 10.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 26 in year 2011 .

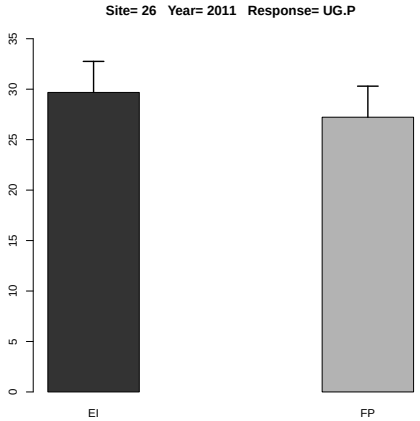

Figure 10.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.057	0.057	0.030	6.000	0.868
B	1.000	448.438	448.438	238.050	6.000	0.000
A:B	1.000	16.433	16.433	8.724	6.000	0.025

Table 10.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.370	1.743	6.000	13.410	19.105	27.636	0.000
2	FP		22.942	1.743	6.000	13.160	18.677	27.208	0.000
3		N	28.450	1.280	6.900	22.240	25.418	31.483	0.000
4		N0	17.862	1.280	6.900	13.960	14.830	20.894	0.000
5	EI	N	29.678	1.810	6.900	16.400	25.389	33.966	0.000
6	FP	N	27.223	1.810	6.900	15.040	22.934	31.511	0.000
7	EI	N0	17.062	1.810	6.900	9.430	12.774	21.351	0.000
8	FP	N0	18.662	1.810	6.900	10.310	14.373	22.950	0.000

Table 10.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.428	2.465	6.000	0.170	-5.604	6.460	0.868
B N-N0	10.588	0.686	6.000	15.430	8.909	12.267	0.000
A:B EI N- FP N	2.455	2.559	6.900	0.960	-3.610	8.519	0.370
A:B EI N- EI N0	12.615	0.971	6.000	13.000	10.240	14.990	0.000
A:B EI N- FP N0	11.016	2.559	6.900	4.300	4.952	17.081	0.004
A:B FP N- EI N0	10.160	2.559	6.900	3.970	4.096	16.225	0.005
A:B FP N- FP N0	8.561	0.971	6.000	8.820	6.186	10.936	0.000
A:B EI N0- FP N0	-1.599	2.559	6.900	-0.620	-7.664	4.465	0.552

Table 10.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 26 in year 2011 .

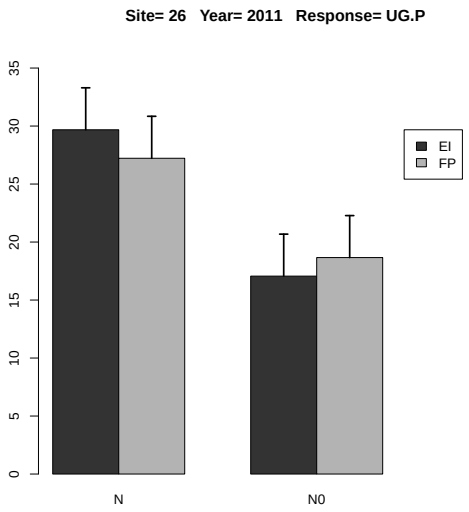

Figure 10.12: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N	66.194
2	2	EI	N	62.746
3	3	EI	N	78.789
4	4	EI	N	64.118
5	1	EI	N0	32.717
6	2	EI	N0	30.021
7	3	EI	N0	56.149
8	4	EI	N0	37.406
9	1	FP	N0	51.944
10	2	FP	N0	42.089
11	3	FP	N0	42.682
12	4	FP	N0	34.226
13	1	FP	N	67.650
14	2	FP	N	65.710
15	3	FP	N	60.270
16	4	FP	N	55.730

Table 10.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	67.962	3.523	19.293	0.001
A FP	62.340	3.523	17.697	0.001
A EI-FP	5.621	4.982	1.128	0.551

Table 10.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 26 in year 2011 .

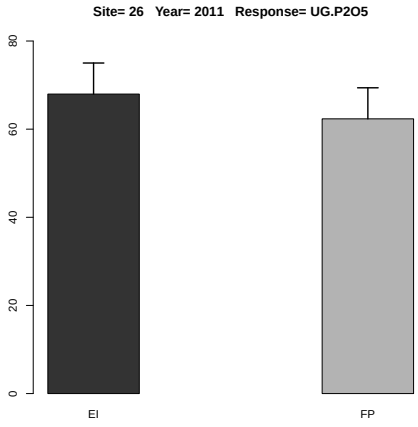

Figure 10.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.298	0.298	0.030	6.000	0.868
B	1.000	2351.653	2351.653	238.050	6.000	0.000
A:B	1.000	86.178	86.178	8.724	6.000	0.025

Table 10.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		53.517	3.992	6.000	13.410	43.749	63.285	0.000
2	FP		52.538	3.992	6.000	13.160	42.770	62.306	0.000
3		N	65.151	2.930	6.900	22.240	58.207	72.095	0.000
4		N0	40.904	2.930	6.900	13.960	33.960	47.848	0.000
5	EI	N	67.962	4.144	6.900	16.400	58.141	77.782	0.000
6	FP	N	62.340	4.144	6.900	15.040	52.520	72.160	0.000
7	EI	N0	39.073	4.144	6.900	9.430	29.253	48.893	0.000
8	FP	N0	42.735	4.144	6.900	10.310	32.915	52.555	0.000

Table 10.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 26 in year 2011 .

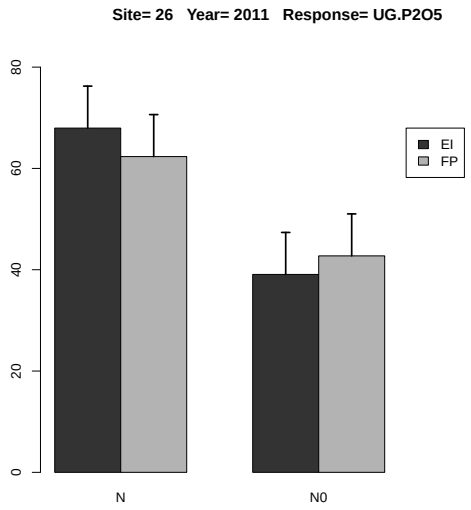

Figure 10.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.980	5.646	6.000	0.170	-12.834	14.794	0.868
B N-N0	24.247	1.571	6.000	15.430	20.401	28.092	0.000
A:B EI N- FP N	5.621	5.860	6.900	0.960	-8.267	19.509	0.370
A:B EI N- EI N0	28.889	2.223	6.000	13.000	23.450	34.327	0.000
A:B EI N- FP N0	25.227	5.860	6.900	4.300	11.339	39.115	0.004
A:B FP N- EI N0	23.267	5.860	6.900	3.970	9.379	37.155	0.005
A:B FP N- FP N0	19.605	2.223	6.000	8.820	14.167	25.044	0.000
A:B EI N0- FP N0	-3.662	5.860	6.900	-0.620	-17.550	10.226	0.552

Table 10.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 26 in year 2011 .

10.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N	25.292
2	2	EI	N	23.826
3	3	EI	N	29.113
4	4	EI	N	22.814
5	1	EI	N0	12.988
6	2	EI	N0	12.514
7	3	EI	N0	21.250
8	4	EI	N0	14.973
9	1	FP	N0	19.442
10	2	FP	N0	15.982
11	3	FP	N0	17.085
12	4	FP	N0	12.099
13	1	FP	N	24.618
14	2	FP	N	22.716
15	3	FP	N	21.742
16	4	FP	N	19.912

Table 10.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	25.261	1.082	23.348	0.000
A FP	22.247	1.082	20.562	0.000
A EI-FP	3.014	1.530	1.970	0.257

Table 10.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 26 in year 2011 .

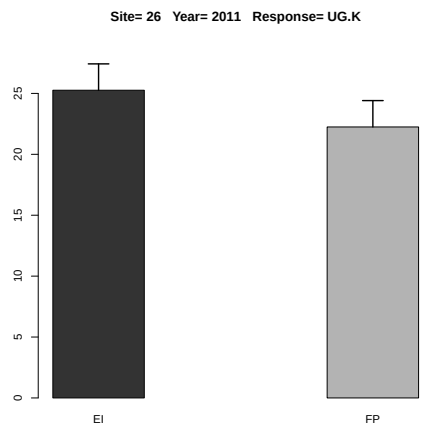

Figure 10.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.640	0.640	0.342	3.000	0.600
B	1.000	253.600	253.600	135.736	6.000	0.000
A:B	1.000	13.952	13.952	7.468	6.000	0.034

Table 10.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		20.346	1.443	6.000	14.100	16.811	23.882	0.000
2	FP		19.200	1.443	6.000	13.310	15.664	22.735	0.000
3		N	23.754	1.113	3.600	21.350	20.539	26.969	0.000
4		N0	15.792	1.113	3.600	14.190	12.577	19.007	0.000
5	EI	N	25.261	1.522	7.300	16.600	21.692	28.831	0.000
6	FP	N	22.247	1.522	7.300	14.620	18.677	25.817	0.000
7	EI	N0	15.431	1.522	7.300	10.140	11.862	19.001	0.000
8	FP	N0	16.152	1.522	7.300	10.620	12.582	19.722	0.000

Table 10.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.147	1.960	3.000	0.590	-5.091	7.384	0.600
B N-N0	7.962	0.683	6.000	11.650	6.290	9.635	0.000
A:B EI N- FP N	3.014	2.076	3.700	1.450	-2.906	8.934	0.225
A:B EI N- EI N0	9.830	0.967	6.000	10.170	7.465	12.195	0.000
A:B EI N- FP N0	9.109	2.076	3.700	4.390	3.189	15.029	0.014
A:B FP N- EI N0	6.816	2.076	3.700	3.280	0.895	12.736	0.034
A:B FP N- FP N0	6.095	0.967	6.000	6.310	3.730	8.460	0.001
A:B EI N0- FP N0	-0.721	2.076	3.700	-0.350	-6.641	5.199	0.747

Table 10.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 26 in year 2011 .

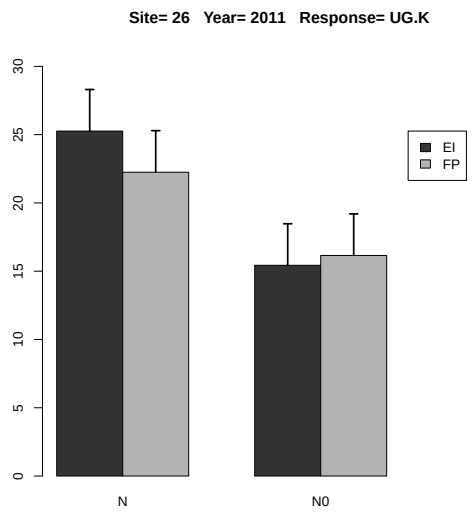

Figure 10.16: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N	30.477
2	2	EI	N	28.710
3	3	EI	N	35.081
4	4	EI	N	27.491
5	1	EI	N0	15.651
6	2	EI	N0	15.079
7	3	EI	N0	25.606
8	4	EI	N0	18.043
9	1	FP	N0	23.428
10	2	FP	N0	19.258
11	3	FP	N0	20.588
12	4	FP	N0	14.579
13	1	FP	N	29.665
14	2	FP	N	27.373
15	3	FP	N	26.199
16	4	FP	N	23.993

Table 10.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	30.440	1.304	23.348	0.000
A FP	26.808	1.304	20.562	0.001
A EI-FP	3.632	1.844	1.970	0.257

Table 10.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 26 in year 2011 .

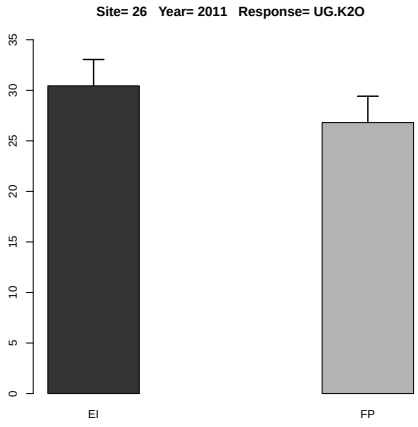

Figure 10.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.929	0.929	0.342	3.000	0.600
B	1.000	368.234	368.234	135.736	6.000	0.000
A:B	1.000	20.259	20.259	7.468	6.000	0.034

Table 10.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.517	1.739	6.000	14.100	20.257	28.778	0.000
2	FP		23.135	1.739	6.000	13.310	18.875	27.396	0.000
3		N	28.624	1.341	3.600	21.350	24.750	32.498	0.000
4		N0	19.029	1.341	3.600	14.190	15.155	22.903	0.000
5	EI	N	30.440	1.833	7.300	16.600	26.138	34.741	0.000
6	FP	N	26.808	1.833	7.300	14.620	22.506	31.109	0.000
7	EI	N0	18.595	1.833	7.300	10.140	14.293	22.896	0.000
8	FP	N0	19.463	1.833	7.300	10.620	15.162	23.765	0.000

Table 10.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 26 in year 2011 .

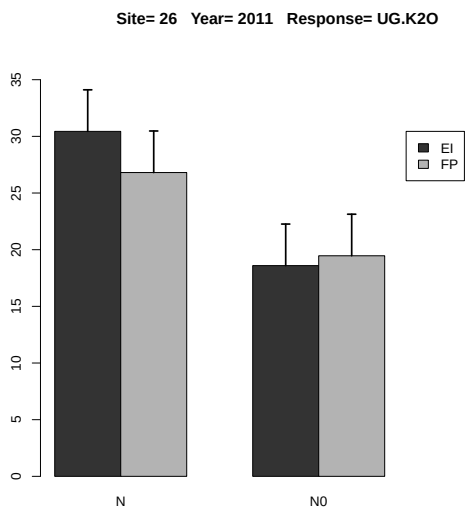

Figure 10.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.382	2.362	3.000	0.590	-6.134	8.898	0.600
B N-N0	9.595	0.824	6.000	11.650	7.580	11.610	0.000
A:B EI N- FP N	3.632	2.501	3.700	1.450	-3.502	10.766	0.225
A:B EI N- EI N0	11.845	1.165	6.000	10.170	8.995	14.695	0.000
A:B EI N- FP N0	10.976	2.501	3.700	4.390	3.843	18.110	0.014
A:B FP N- EI N0	8.213	2.501	3.700	3.280	1.079	15.347	0.034
A:B FP N- FP N0	7.344	1.165	6.000	6.310	4.494	10.194	0.001
A:B EI N0- FP N0	-0.869	2.501	3.700	-0.350	-8.002	6.265	0.747

Table 10.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 26 in year 2011 .

10.1.10 Response Variable US.N

	rep	A	B	y
1	1	EI	N	88.524
2	2	EI	N	70.418
3	3	EI	N	79.401
4	4	EI	N	76.024
5	1	EI	N0	28.614
6	2	EI	N0	37.734
7	3	EI	N0	42.023
8	4	EI	N0	43.702
9	1	FP	N0	42.294
10	2	FP	N0	58.071
11	3	FP	N0	46.680
12	4	FP	N0	36.989
13	1	FP	N	97.860
14	2	FP	N	115.525
15	3	FP	N	84.635
16	4	FP	N	58.051

Table 10.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	78.592	9.214	8.530	0.007
A FP	89.018	9.214	9.661	0.004
A EI-FP	-10.426	13.030	-0.800	0.719

Table 10.47: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 26 in year 2011 .

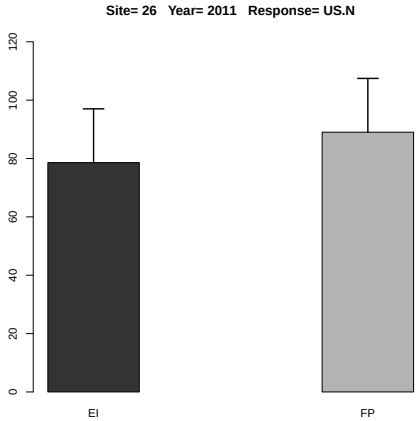

Figure 10.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	145.695	145.695	1.260	5.999	0.305
B	1.000	6986.076	6986.076	60.398	6.000	0.000
A:B	1.000	5.933	5.933	0.051	6.000	0.828

Table 10.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		58.305	5.802	6.000	10.050	44.108	72.501	0.000
2	FP		67.513	5.802	6.000	11.640	53.317	81.710	0.000
3		N	83.805	4.905	10.400	17.090	72.926	94.684	0.000
4		N0	42.013	4.905	10.400	8.570	31.134	52.892	0.000
5	EI	N	78.591	6.937	10.400	11.330	63.206	93.977	0.000
6	FP	N	89.018	6.937	10.400	12.830	73.633	104.403	0.000
7	EI	N0	38.018	6.937	10.400	5.480	22.633	53.403	0.000
8	FP	N0	46.008	6.937	10.400	6.630	30.623	61.394	0.000

Table 10.49: Estimate of treatment means in tow-way ANOVA for variable US.N at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-9.208	8.205	6.000	-1.120	-29.285	10.869	0.305
B N-N0	41.791	5.378	6.000	7.770	28.633	54.950	0.000
A:B EI N- FP N	-10.426	9.810	10.400	-1.060	-32.184	11.332	0.312
A:B EI N- EI N0	40.574	7.605	6.000	5.340	21.965	59.182	0.002
A:B EI N- FP N0	32.583	9.810	10.400	3.320	10.825	54.341	0.007
A:B FP N- EI N0	51.000	9.810	10.400	5.200	29.242	72.758	0.000
A:B FP N- FP N0	43.009	7.605	6.000	5.660	24.401	61.618	0.001
A:B EI N0- FP N0	-7.990	9.810	10.400	-0.810	-29.748	13.767	0.434

Table 10.50: Estimate of contrast in two-way ANOVA for variable US.N at site 26 in year 2011 .

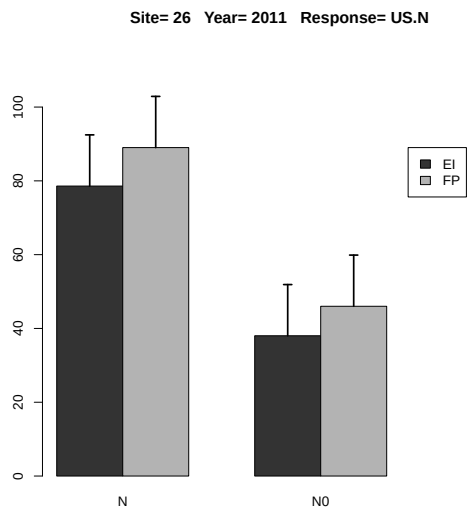

Figure 10.20: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.11 Response Variable US.P

	rep	A	B	y
1	1	EI	N	9.990
2	2	EI	N	8.992
3	3	EI	N	12.311
4	4	EI	N	9.312
5	1	EI	N0	7.101
6	2	EI	N0	11.305
7	3	EI	N0	11.698
8	4	EI	N0	11.095
9	1	FP	N0	15.039
10	2	FP	N0	14.795
11	3	FP	N0	9.005
12	4	FP	N0	8.279
13	1	FP	N	10.221
14	2	FP	N	10.244
15	3	FP	N	7.918
16	4	FP	N	8.411

Table 10.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	10.151	0.869	11.688	0.003
A FP	9.198	0.869	10.590	0.004
A EI-FP	0.953	1.228	0.776	0.731

Table 10.52: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 26 in year 2011 .

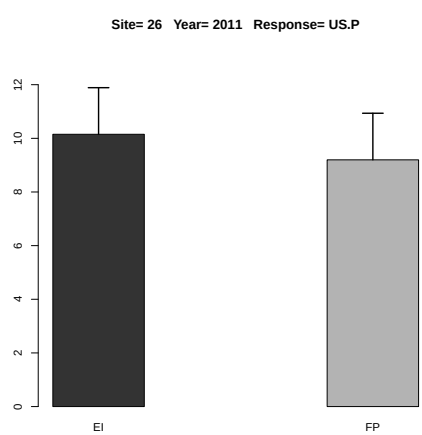

Figure 10.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.106	0.106	0.036	5.999	0.857
B	1.000	7.449	7.449	2.508	6.000	0.164
A:B	1.000	5.919	5.919	1.993	6.000	0.208

Table 10.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.226	0.988	6.000	10.350	7.809	12.642	0.000
2	FP		10.489	0.988	6.000	10.620	8.072	12.905	0.000
3		N	9.675	0.821	10.000	11.790	7.846	11.503	0.000
4		N0	11.040	0.821	10.000	13.450	9.211	12.868	0.000
5	EI	N	10.151	1.160	10.000	8.750	7.566	12.737	0.000
6	FP	N	9.198	1.160	10.000	7.930	6.612	11.784	0.000
7	EI	N0	10.300	1.160	10.000	8.880	7.714	12.886	0.000
8	FP	N0	11.780	1.160	10.000	10.150	9.194	14.365	0.000

Table 10.54: Estimate of treatment means in tow-way ANOVA for variable US.P at site 26 in year 2011 .

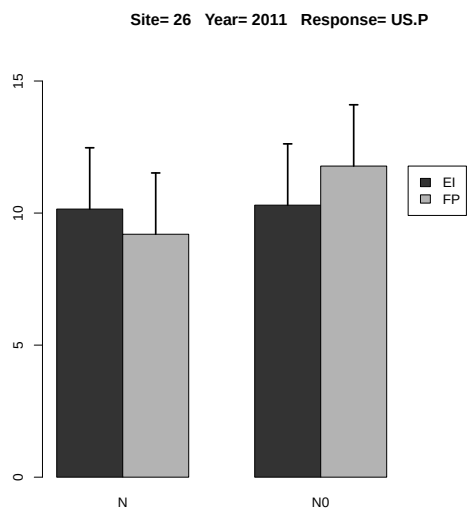

Figure 10.22: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.263	1.397	6.000	-0.190	-3.681	3.154	0.857
B N-N0	-1.365	0.862	6.000	-1.580	-3.473	0.744	0.164
A:B EI N- FP N	0.953	1.641	10.000	0.580	-2.704	4.610	0.574
A:B EI N- EI N0	-0.148	1.219	6.000	-0.120	-3.130	2.834	0.907
A:B EI N- FP N0	-1.628	1.641	10.000	-0.990	-5.285	2.029	0.345
A:B FP N- EI N0	-1.101	1.641	10.000	-0.670	-4.758	2.556	0.517
A:B FP N- FP N0	-2.581	1.219	6.000	-2.120	-5.563	0.401	0.078
A:B EI N0- FP N0	-1.480	1.641	10.000	-0.900	-5.137	2.177	0.388

Table 10.55: Estimate of contrast in two-way ANOVA for variable US.P at site 26 in year 2011 .

10.1.12 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N	10.916
2	2	EI	N	9.611
3	3	EI	N	13.063
4	4	EI	N	9.973
5	1	EI	N0	7.565
6	2	EI	N0	11.760
7	3	EI	N0	12.280
8	4	EI	N0	11.591
9	1	FP	N0	15.494
10	2	FP	N0	15.251
11	3	FP	N0	9.521
12	4	FP	N0	8.790
13	1	FP	N	11.096
14	2	FP	N	10.848
15	3	FP	N	8.536
16	4	FP	N	9.133

Table 10.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	10.891	0.887	12.285	0.002
A FP	9.903	0.887	11.171	0.003
A EI-FP	0.987	1.254	0.788	0.726

Table 10.57: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 26 in year 2011 .

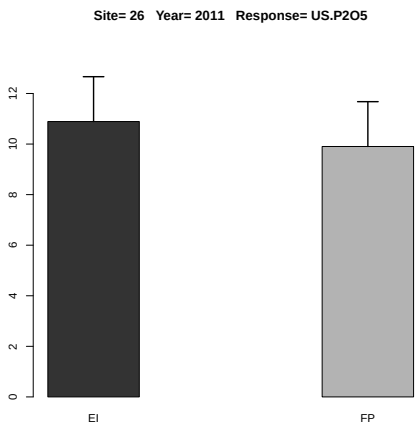

Figure 10.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.089	0.089	0.029	5.999	0.870
B	1.000	5.149	5.149	1.690	6.000	0.241
A:B	1.000	6.014	6.014	1.974	6.000	0.210

Table 10.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.845	0.988	6.000	10.980	8.428	13.262	0.000
2	FP		11.084	0.988	6.000	11.220	8.666	13.501	0.000
3		N	10.397	0.824	10.100	12.620	8.563	12.231	0.000
4		N0	11.532	0.824	10.100	14.000	9.698	13.365	0.000
5	EI	N	10.891	1.165	10.100	9.350	8.297	13.484	0.000
6	FP	N	9.903	1.165	10.100	8.500	7.310	12.497	0.000
7	EI	N0	10.799	1.165	10.100	9.270	8.206	13.392	0.000
8	FP	N0	12.264	1.165	10.100	10.530	9.671	14.857	0.000

Table 10.59: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.239	1.397	6.000	-0.170	-3.658	3.180	0.870
B N-N0	-1.135	0.873	6.000	-1.300	-3.270	1.001	0.241
A:B EI N- FP N	0.987	1.647	10.100	0.600	-2.680	4.655	0.562
A:B EI N- EI N0	0.092	1.234	6.000	0.070	-2.929	3.112	0.943
A:B EI N- FP N0	-1.373	1.647	10.100	-0.830	-5.041	2.294	0.424
A:B FP N- EI N0	-0.896	1.647	10.100	-0.540	-4.563	2.772	0.598
A:B FP N- FP N0	-2.361	1.234	6.000	-1.910	-5.381	0.659	0.104
A:B EI N0- FP N0	-1.465	1.647	10.100	-0.890	-5.132	2.202	0.395

Table 10.60: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 26 in year 2011
.

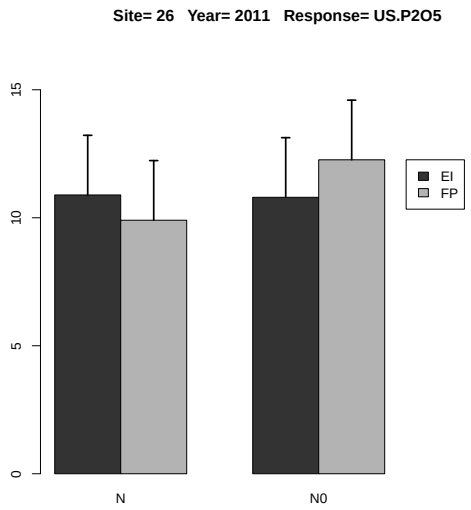

Figure 10.24: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.13 Response Variable US.K

	rep	A	B	y
1	1	EI	N	84.237
2	2	EI	N	93.204
3	3	EI	N	107.882
4	4	EI	N	98.943
5	1	EI	N0	50.911
6	2	EI	N0	50.386
7	3	EI	N0	87.579
8	4	EI	N0	50.814
9	1	FP	N0	94.203
10	2	FP	N0	70.044
11	3	FP	N0	88.933
12	4	FP	N0	79.162
13	1	FP	N	73.508
14	2	FP	N	131.910
15	3	FP	N	58.093
16	4	FP	N	120.841

Table 10.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	96.067	13.802	6.960	0.012
A FP	96.088	13.802	6.962	0.012
A EI-FP	-0.021	19.519	-0.001	1.000

Table 10.62: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 26 in year 2011 .

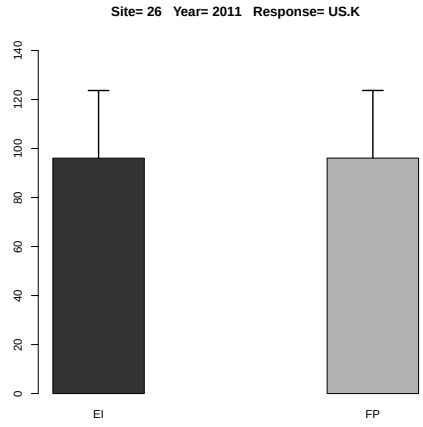

Figure 10.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	537.518	537.518	1.171	12.000	0.300
B	1.000	2415.386	2415.386	5.262	12.000	0.041
A:B	1.000	535.530	535.530	1.167	12.000	0.301

Table 10.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		77.995	7.575	12.000	10.300	61.490	94.499	0.000
2	FP		89.587	7.575	12.000	11.830	73.082	106.092	0.000
3		N	96.077	7.575	12.000	12.680	79.572	112.582	0.000
4		N0	71.504	7.575	12.000	9.440	54.999	88.009	0.000
5	EI	N	96.067	10.713	12.000	8.970	72.725	119.408	0.000
6	FP	N	96.088	10.713	12.000	8.970	72.747	119.429	0.000
7	EI	N0	59.922	10.713	12.000	5.590	36.581	83.264	0.000
8	FP	N0	83.085	10.713	12.000	7.760	59.744	106.427	0.000

Table 10.64: Estimate of treatment means in tow-way ANOVA for variable US.K at site 26 in year 2011 .

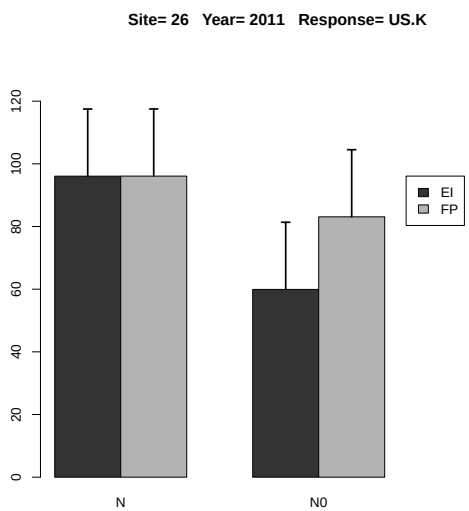

Figure 10.26: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-11.592	10.713	12.000	-1.080	-34.934	11.749	0.300
B N-N0	24.573	10.713	12.000	2.290	1.232	47.915	0.041
A:B EI N- FP N	-0.021	15.150	12.000	-0.000	-33.031	32.988	0.999
A:B EI N- EI N0	36.144	15.150	12.000	2.390	3.134	69.154	0.034
A:B EI N- FP N0	12.981	15.150	12.000	0.860	-20.029	45.991	0.408
A:B FP N- EI N0	36.166	15.150	12.000	2.390	3.156	69.175	0.034
A:B FP N- FP N0	13.002	15.150	12.000	0.860	-20.007	46.012	0.408
A:B EI N0- FP N0	-23.163	15.150	12.000	-1.530	-56.173	9.847	0.152

Table 10.65: Estimate of contrast in two-way ANOVA for variable US.K at site 26 in year 2011 .

10.1.14 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N	85.242
2	2	EI	N	93.894
3	3	EI	N	108.599
4	4	EI	N	99.782
5	1	EI	N0	51.398
6	2	EI	N0	50.893
7	3	EI	N0	88.153
8	4	EI	N0	51.507
9	1	FP	N0	94.782
10	2	FP	N0	70.588
11	3	FP	N0	89.523
12	4	FP	N0	79.876
13	1	FP	N	74.231
14	2	FP	N	132.679
15	3	FP	N	58.756
16	4	FP	N	121.827

Table 10.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	96.879	13.838	7.001	0.011
A FP	96.873	13.838	7.000	0.011
A EI-FP	0.006	19.570	0.000	1.000

Table 10.67: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 26 in year 2011 .

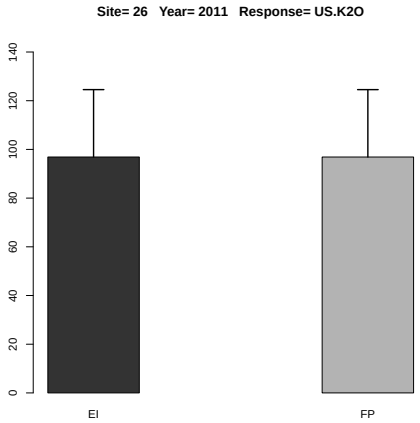

Figure 10.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	538.184	538.184	1.169	12.000	0.301
B	1.000	2457.427	2457.427	5.338	12.000	0.039
A:B	1.000	538.723	538.723	1.170	12.000	0.301

Table 10.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		78.683	7.586	12.000	10.370	62.155	95.212	0.000
2	FP		90.283	7.586	12.000	11.900	73.755	106.811	0.000
3		N	96.876	7.586	12.000	12.770	80.348	113.405	0.000
4		N0	72.090	7.586	12.000	9.500	55.562	88.618	0.000
5	EI	N	96.879	10.728	12.000	9.030	73.505	120.254	0.000
6	FP	N	96.873	10.728	12.000	9.030	73.499	120.248	0.000
7	EI	N0	60.488	10.728	12.000	5.640	37.113	83.862	0.000
8	FP	N0	83.692	10.728	12.000	7.800	60.318	107.067	0.000

Table 10.69: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-11.599	10.728	12.000	-1.080	-34.974	11.775	0.301
B N-N0	24.786	10.728	12.000	2.310	1.412	48.161	0.039
A:B EI N- FP N	0.006	15.172	12.000	0.000	-33.051	33.062	1.000
A:B EI N- EI N0	36.391	15.172	12.000	2.400	3.335	69.448	0.034
A:B EI N- FP N0	13.187	15.172	12.000	0.870	-19.870	46.243	0.402
A:B FP N- EI N0	36.386	15.172	12.000	2.400	3.329	69.442	0.034
A:B FP N- FP N0	13.181	15.172	12.000	0.870	-19.876	46.238	0.402
A:B EI N0- FP N0	-23.205	15.172	12.000	-1.530	-56.261	9.852	0.152

Table 10.70: Estimate of contrast in two-way ANOVA for variable US.K2O at site 26 in year 2011 .

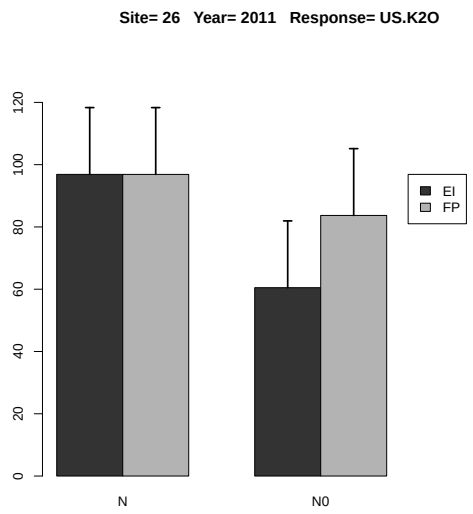

Figure 10.28: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.15 Response Variable UT.N

	rep	A	B	y
1	1	EI	N	233.052
2	2	EI	N	225.287
3	3	EI	N	264.663
4	4	EI	N	210.834
5	1	EI	N0	87.060
6	2	EI	N0	91.365
7	3	EI	N0	131.926
8	4	EI	N0	104.956
9	1	FP	N0	123.304
10	2	FP	N0	129.990
11	3	FP	N0	139.872
12	4	FP	N0	115.276
13	1	FP	N	257.877
14	2	FP	N	258.997
15	3	FP	N	233.394
16	4	FP	N	212.919

Table 10.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	233.459	10.246	22.786	0.000
A FP	240.797	10.246	23.502	0.000
A EI-FP	-7.338	14.490	-0.506	0.868

Table 10.72: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 26 in year 2011 .

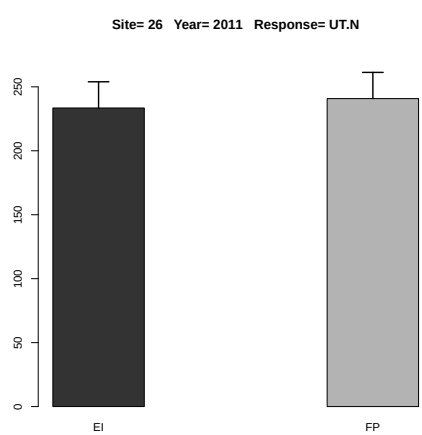

Figure 10.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	348.308	348.308	1.904	3.000	0.261
B	1.000	59203.892	59203.892	323.676	6.000	0.000
A:B	1.000	254.272	254.272	1.390	6.000	0.283

Table 10.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		168.643	8.494	5.900	19.850	147.749	189.536	0.000
2	FP		183.954	8.494	5.900	21.660	163.060	204.847	0.000
3		N	237.128	7.266	4.700	32.630	218.093	256.163	0.000
4		N0	115.469	7.266	4.700	15.890	96.434	134.504	0.000
5	EI	N	233.459	9.747	9.300	23.950	211.507	255.410	0.000
6	FP	N	240.797	9.747	9.300	24.700	218.845	262.748	0.000
7	EI	N0	103.826	9.747	9.300	10.650	81.875	125.778	0.000
8	FP	N0	127.111	9.747	9.300	13.040	105.159	149.062	0.000

Table 10.74: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 26 in year 2011 .

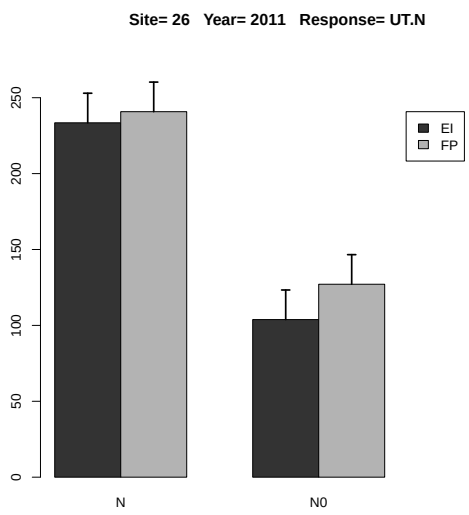

Figure 10.30: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-15.311	11.095	3.000	-1.380	-50.624	20.002	0.262
B N-N0	121.659	6.762	6.000	17.990	105.113	138.206	0.000
A:B EI N- FP N	-7.338	12.994	5.300	-0.560	-40.217	25.541	0.595
A:B EI N- EI N0	129.632	9.563	6.000	13.560	106.232	153.033	0.000
A:B EI N- FP N0	106.348	12.994	5.300	8.180	73.469	139.227	0.000
A:B FP N- EI N0	136.970	12.994	5.300	10.540	104.091	169.849	0.000
A:B FP N- FP N0	113.686	9.563	6.000	11.890	90.286	137.087	0.000
A:B EI N0- FP N0	-23.284	12.994	5.300	-1.790	-56.163	9.595	0.130

Table 10.75: Estimate of contrast in two-way ANOVA for variable UT.N at site 26 in year 2011 .

10.1.16 Response Variable UT.P

	rep	A	B	y
1	1	EI	N	38.896
2	2	EI	N	36.392
3	3	EI	N	46.717
4	4	EI	N	37.311
5	1	EI	N0	21.388
6	2	EI	N0	24.415
7	3	EI	N0	36.217
8	4	EI	N0	27.429
9	1	FP	N0	37.722
10	2	FP	N0	33.174
11	3	FP	N0	27.644
12	4	FP	N0	23.225
13	1	FP	N	39.763
14	2	FP	N	38.938
15	3	FP	N	34.237
16	4	FP	N	32.747

Table 10.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	39.829	2.393	16.647	0.001
A FP	36.421	2.393	15.223	0.001
A EI-FP	3.408	3.384	1.007	0.611

Table 10.77: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 26 in year 2011 .

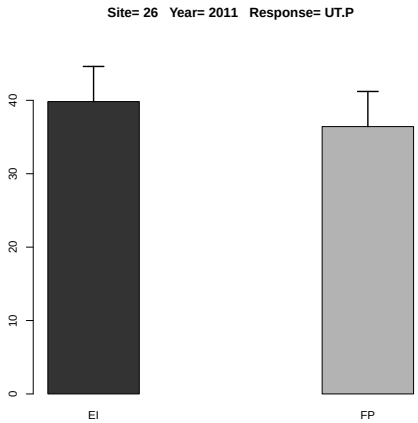

Figure 10.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.011	0.011	0.002	6.000	0.965
B	1.000	340.296	340.296	63.125	6.000	0.000
A:B	1.000	42.077	42.077	7.805	6.000	0.031

Table 10.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		33.596	2.554	6.000	13.150	27.346	39.845	0.000
2	FP		33.431	2.554	6.000	13.090	27.182	39.680	0.000
3		N	38.125	1.897	7.200	20.100	33.668	42.582	0.000
4		N0	28.901	1.897	7.200	15.240	24.445	33.358	0.000
5	EI	N	39.829	2.683	7.200	14.850	33.526	46.132	0.000
6	FP	N	36.421	2.683	7.200	13.580	30.118	42.724	0.000
7	EI	N0	27.362	2.683	7.200	10.200	21.059	33.665	0.000
8	FP	N0	30.441	2.683	7.200	11.350	24.138	36.744	0.000

Table 10.79: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.164	3.612	6.000	0.050	-8.673	9.002	0.965
B N-N0	9.224	1.161	6.000	7.950	6.383	12.064	0.000
A:B EI N- FP N	3.408	3.794	7.200	0.900	-5.506	12.322	0.398
A:B EI N- EI N0	12.467	1.642	6.000	7.590	8.450	16.484	0.000
A:B EI N- FP N0	9.388	3.794	7.200	2.470	0.474	18.302	0.042
A:B FP N- EI N0	9.059	3.794	7.200	2.390	0.145	17.973	0.047
A:B FP N- FP N0	5.980	1.642	6.000	3.640	1.963	9.998	0.011
A:B EI N0- FP N0	-3.079	3.794	7.200	-0.810	-11.993	5.835	0.443

Table 10.80: Estimate of contrast in two-way ANOVA for variable UT.P at site 26 in year 2011 .

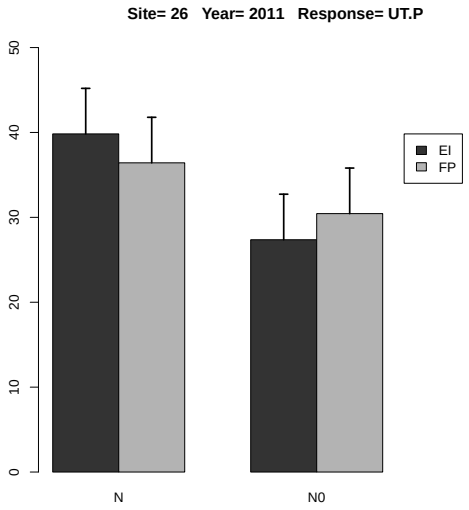

Figure 10.32: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.17 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N	39.822
2	2	EI	N	37.011
3	3	EI	N	47.468
4	4	EI	N	37.972
5	1	EI	N0	21.852
6	2	EI	N0	24.870
7	3	EI	N0	36.799
8	4	EI	N0	27.925
9	1	FP	N0	38.177
10	2	FP	N0	33.630
11	3	FP	N0	28.160
12	4	FP	N0	23.736
13	1	FP	N	40.638
14	2	FP	N	39.543
15	3	FP	N	34.855
16	4	FP	N	33.469

Table 10.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	40.568	2.407	16.853	0.001
A FP	37.126	2.407	15.423	0.000
A EI-FP	3.442	3.404	1.011	0.609

Table 10.82: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 26 in year 2011 .

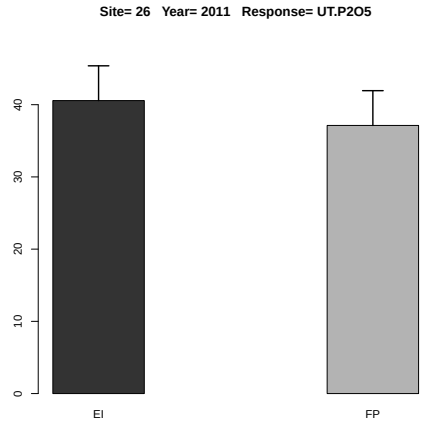

Figure 10.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.015	0.015	0.003	6.000	0.960
B	1.000	357.482	357.482	64.961	6.000	0.000
A:B	1.000	42.329	42.329	7.692	6.000	0.032

Table 10.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		34.215	2.563	6.000	13.350	27.942	40.488	0.000
2	FP		34.026	2.563	6.000	13.270	27.753	40.299	0.000
3		N	38.847	1.905	7.200	20.390	34.373	43.322	0.000
4		N0	29.394	1.905	7.200	15.430	24.919	33.868	0.000
5	EI	N	40.568	2.694	7.200	15.060	34.240	46.897	0.000
6	FP	N	37.126	2.694	7.200	13.780	30.798	43.455	0.000
7	EI	N0	27.862	2.694	7.200	10.340	21.533	34.190	0.000
8	FP	N0	30.926	2.694	7.200	11.480	24.597	37.254	0.000

Table 10.84: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 26 in year 2011 .

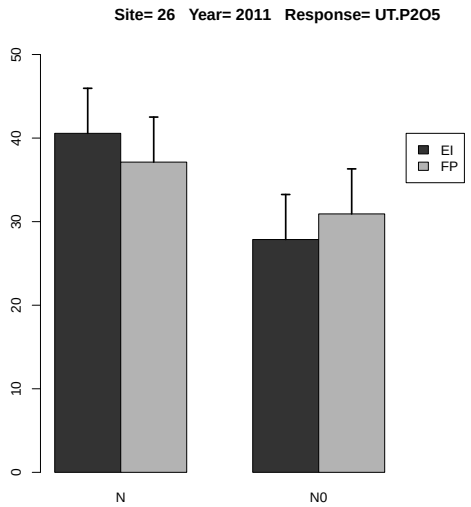

Figure 10.34: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.189	3.625	6.000	0.050	-8.682	9.060	0.960
B N-N0	9.454	1.173	6.000	8.060	6.583	12.324	0.000
A:B EI N- FP N	3.442	3.810	7.200	0.900	-5.508	12.392	0.395
A:B EI N- EI N0	12.707	1.659	6.000	7.660	8.648	16.765	0.000
A:B EI N- FP N0	9.643	3.810	7.200	2.530	0.693	18.592	0.038
A:B FP N- EI N0	9.265	3.810	7.200	2.430	0.315	18.214	0.044
A:B FP N- FP N0	6.201	1.659	6.000	3.740	2.142	10.259	0.010
A:B EI N0- FP N0	-3.064	3.810	7.200	-0.800	-12.014	5.886	0.447

Table 10.85: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 26 in year 2011 .

10.1.18 Response Variable UT.K

	rep	A	B	y
1	1	EI	N	109.529
2	2	EI	N	117.030
3	3	EI	N	136.995
4	4	EI	N	121.757
5	1	EI	N0	63.899
6	2	EI	N0	62.900
7	3	EI	N0	108.829
8	4	EI	N0	65.787
9	1	FP	N0	113.646
10	2	FP	N0	86.026
11	3	FP	N0	106.018
12	4	FP	N0	91.260
13	1	FP	N	98.126
14	2	FP	N	154.627
15	3	FP	N	79.834
16	4	FP	N	140.752

Table 10.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	121.328	14.629	8.294	0.007
A FP	118.335	14.629	8.089	0.008
A EI-FP	2.993	20.688	0.145	0.988

Table 10.87: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 26 in year 2011 .

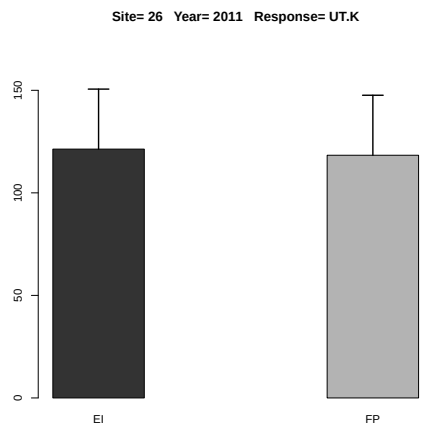

Figure 10.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	436.434	436.434	0.858	12.000	0.373
B	1.000	4234.287	4234.287	8.325	12.000	0.014
A:B	1.000	722.360	722.360	1.420	12.000	0.256

Table 10.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		98.341	7.974	12.000	12.330	80.967	115.714	0.000
2	FP		108.786	7.974	12.000	13.640	91.413	126.160	0.000
3		N	119.831	7.974	12.000	15.030	102.458	137.205	0.000
4		N0	87.296	7.974	12.000	10.950	69.922	104.669	0.000
5	EI	N	121.328	11.277	12.000	10.760	96.758	145.897	0.000
6	FP	N	118.335	11.277	12.000	10.490	93.765	142.905	0.000
7	EI	N0	75.354	11.277	12.000	6.680	50.784	99.923	0.000
8	FP	N0	99.238	11.277	12.000	8.800	74.668	123.807	0.000

Table 10.89: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-10.445	11.277	12.000	-0.930	-35.015	14.124	0.372
B N-N0	32.536	11.277	12.000	2.890	7.966	57.105	0.014
A:B EI N- FP N	2.993	15.948	12.000	0.190	-31.754	37.740	0.854
A:B EI N- EI N0	45.974	15.948	12.000	2.880	11.227	80.721	0.014
A:B EI N- FP N0	22.090	15.948	12.000	1.390	-12.656	56.837	0.191
A:B FP N- EI N0	42.981	15.948	12.000	2.700	8.235	77.728	0.019
A:B FP N- FP N0	19.097	15.948	12.000	1.200	-15.649	53.844	0.254
A:B EI N0- FP N0	-23.884	15.948	12.000	-1.500	-58.631	10.863	0.160

Table 10.90: Estimate of contrast in two-way ANOVA for variable UT.K at site 26 in year 2011 .

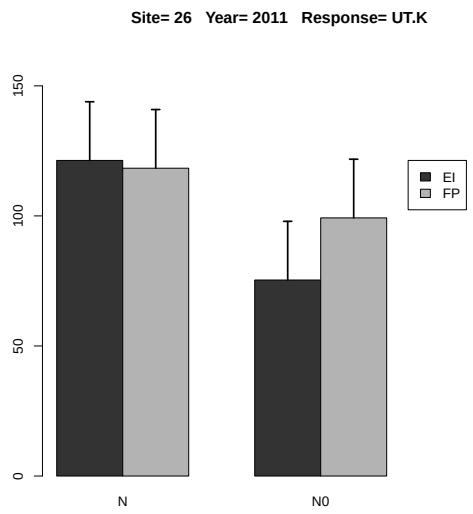

Figure 10.36: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.19 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N	110.534
2	2	EI	N	117.720
3	3	EI	N	137.711
4	4	EI	N	122.596
5	1	EI	N0	64.386
6	2	EI	N0	63.406
7	3	EI	N0	109.403
8	4	EI	N0	66.480
9	1	FP	N0	114.224
10	2	FP	N0	86.570
11	3	FP	N0	106.609
12	4	FP	N0	91.975
13	1	FP	N	98.849
14	2	FP	N	155.395
15	3	FP	N	80.498
16	4	FP	N	141.739

Table 10.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	122.140	14.662	8.330	0.007
A FP	119.120	14.662	8.124	0.007
A EI-FP	3.020	20.735	0.146	0.988

Table 10.92: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 26 in year 2011 .

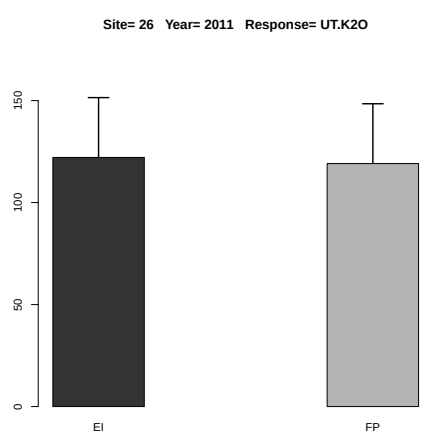

Figure 10.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	437.035	437.035	0.857	12.000	0.373
B	1.000	4289.892	4289.892	8.415	12.000	0.013
A:B	1.000	726.068	726.068	1.424	12.000	0.256

Table 10.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		99.030	7.983	12.000	12.410	81.637	116.422	0.000
2	FP		109.482	7.983	12.000	13.710	92.090	126.875	0.000
3		N	120.630	7.983	12.000	15.110	103.237	138.023	0.000
4		N0	87.882	7.983	12.000	11.010	70.489	105.275	0.000
5	EI	N	122.140	11.289	12.000	10.820	97.543	146.738	0.000
6	FP	N	119.120	11.289	12.000	10.550	94.523	143.718	0.000
7	EI	N0	75.919	11.289	12.000	6.720	51.322	100.516	0.000
8	FP	N0	99.844	11.289	12.000	8.840	75.247	124.442	0.000

Table 10.94: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 26 in year 2011 .

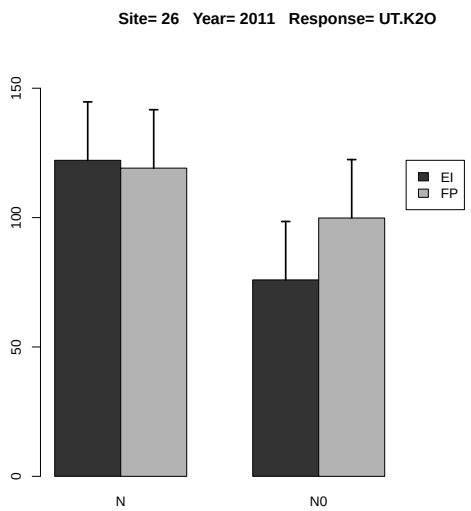

Figure 10.38: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-10.453	11.289	12.000	-0.930	-35.050	14.145	0.373
B N-N0	32.749	11.289	12.000	2.900	8.151	57.346	0.013
A:B EI N- FP N	3.020	15.966	12.000	0.190	-31.765	37.806	0.853
A:B EI N- EI N0	46.221	15.966	12.000	2.900	11.436	81.007	0.013
A:B EI N- FP N0	22.296	15.966	12.000	1.400	-12.490	57.082	0.188
A:B FP N- EI N0	43.201	15.966	12.000	2.710	8.416	77.987	0.019
A:B FP N- FP N0	19.276	15.966	12.000	1.210	-15.510	54.062	0.251
A:B EI N0- FP N0	-23.925	15.966	12.000	-1.500	-58.711	10.860	0.160

Table 10.95: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 26 in year 2011 .

10.1.20 Response Variable HI.N

	rep	A	B	y
1	1	EI	N	1.633
2	2	EI	N	2.199
3	3	EI	N	2.333
4	4	EI	N	1.773
5	1	EI	N0	2.043
6	2	EI	N0	1.421
7	3	EI	N0	2.139
8	4	EI	N0	1.402
9	1	FP	N0	1.915
10	2	FP	N0	1.238
11	3	FP	N0	1.996
12	4	FP	N0	2.116
13	1	FP	N	1.635
14	2	FP	N	1.242
15	3	FP	N	1.758
16	4	FP	N	2.668

Table 10.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.985	0.244	6.000	8.140	1.388	2.581	0.000
A FP	1.826	0.244	6.000	7.490	1.229	2.422	0.000
A EI-FP	0.159	0.345	6.000	0.460	-0.685	1.003	0.661

Table 10.97: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 26 in year 2011 .

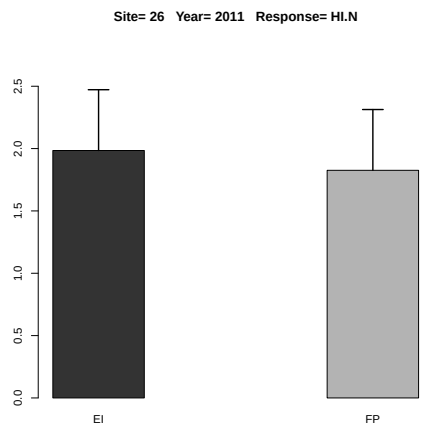

Figure 10.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.003	0.003	0.030	5.999	0.869
B	1.000	0.059	0.059	0.602	5.998	0.467
A:B	1.000	0.050	0.050	0.517	5.998	0.499

Table 10.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.868	0.192	6.000	9.710	1.397	2.338	0.000
2	FP		1.821	0.192	6.000	9.470	1.351	2.292	0.000
3		N	1.905	0.157	9.600	12.150	1.554	2.257	0.000
4		N0	1.784	0.157	9.600	11.380	1.433	2.135	0.000
5	EI	N	1.985	0.222	9.600	8.950	1.488	2.482	0.000
6	FP	N	1.826	0.222	9.600	8.230	1.329	2.323	0.000
7	EI	N0	1.751	0.222	9.600	7.900	1.254	2.248	0.000
8	FP	N0	1.817	0.222	9.600	8.190	1.320	2.314	0.000

Table 10.99: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.047	0.272	6.000	0.170	-0.619	0.712	0.869
B N-N0	0.121	0.156	6.000	0.780	-0.261	0.503	0.467
A:B EI N- FP N	0.159	0.314	9.600	0.510	-0.544	0.862	0.624
A:B EI N- EI N0	0.233	0.221	6.000	1.060	-0.307	0.774	0.331
A:B EI N- FP N0	0.168	0.314	9.600	0.540	-0.535	0.871	0.605
A:B FP N- EI N0	0.074	0.314	9.600	0.240	-0.629	0.777	0.817
A:B FP N- FP N0	0.009	0.221	6.000	0.040	-0.531	0.549	0.969
A:B EI N0- FP N0	-0.066	0.314	9.600	-0.210	-0.768	0.637	0.839

Table 10.100: Estimate of contrast in two-way ANOVA for variable HI.N at site 26 in year 2011 .

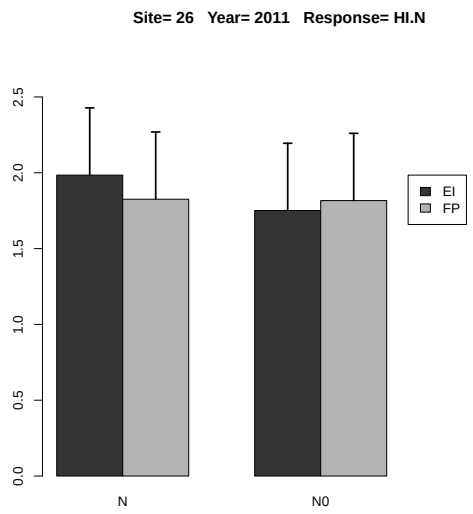

Figure 10.40: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.21 Response Variable HI.P

	rep	A	B	y
1	1	EI	N	2.893
2	2	EI	N	3.047
3	3	EI	N	2.795
4	4	EI	N	3.007
5	1	EI	N0	2.012
6	2	EI	N0	1.160
7	3	EI	N0	2.096
8	4	EI	N0	1.472
9	1	FP	N0	1.508
10	2	FP	N0	1.242
11	3	FP	N0	2.070
12	4	FP	N0	1.805
13	1	FP	N	2.890
14	2	FP	N	2.801
15	3	FP	N	3.324
16	4	FP	N	2.893

Table 10.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.936	0.092	6.000	31.750	2.709	3.162	0.000
A FP	2.977	0.092	6.000	32.210	2.751	3.203	0.000
A EI-FP	-0.042	0.131	6.000	-0.320	-0.362	0.278	0.760

Table 10.102: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 26 in year 2011 .

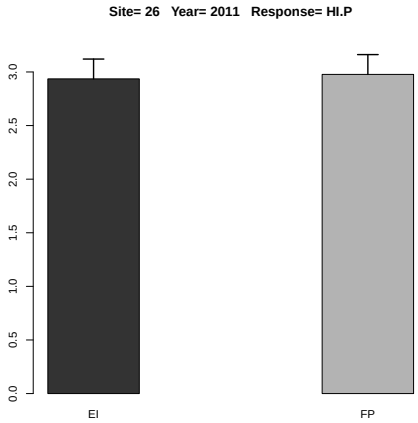

Figure 10.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.002	8.997	0.963
B	1.000	6.612	6.612	88.920	8.997	0.000
A:B	1.000	0.005	0.005	0.067	8.997	0.802

Table 10.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.310	0.124	5.800	18.580	2.003	2.618	0.000
2	FP		2.317	0.124	5.800	18.630	2.010	2.624	0.000
3		N	2.956	0.124	5.800	23.770	2.649	3.264	0.000
4		N0	1.671	0.124	5.800	13.430	1.363	1.978	0.000
5	EI	N	2.936	0.157	10.100	18.650	2.585	3.286	0.000
6	FP	N	2.977	0.157	10.100	18.920	2.627	3.327	0.000
7	EI	N0	1.685	0.157	10.100	10.710	1.335	2.035	0.000
8	FP	N0	1.656	0.157	10.100	10.530	1.306	2.006	0.000

Table 10.104: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 26 in year 2011 .

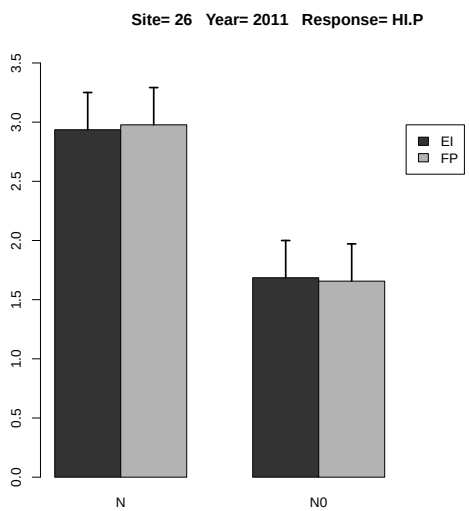

Figure 10.42: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.007	0.136	9.000	-0.050	-0.315	0.302	0.963
B N-N0	1.286	0.136	9.000	9.430	0.977	1.594	0.000
A:B EI N- FP N	-0.042	0.193	9.000	-0.220	-0.478	0.395	0.834
A:B EI N- EI N0	1.250	0.193	9.000	6.490	0.814	1.687	0.000
A:B EI N- FP N0	1.279	0.193	9.000	6.630	0.843	1.715	0.000
A:B FP N- EI N0	1.292	0.193	9.000	6.700	0.856	1.728	0.000
A:B FP N- FP N0	1.321	0.193	9.000	6.850	0.885	1.757	0.000
A:B EI N0- FP N0	0.029	0.193	9.000	0.150	-0.408	0.465	0.885

Table 10.105: Estimate of contrast in two-way ANOVA for variable HI.P at site 26 in year 2011 .

10.1.22 Response Variable HI.K

	rep	A	B	y
1	1	EI	N	0.300
2	2	EI	N	0.256
3	3	EI	N	0.270
4	4	EI	N	0.231
5	1	EI	N0	0.255
6	2	EI	N0	0.248
7	3	EI	N0	0.243
8	4	EI	N0	0.295
9	1	FP	N0	0.206
10	2	FP	N0	0.228
11	3	FP	N0	0.192
12	4	FP	N0	0.153
13	1	FP	N	0.335
14	2	FP	N	0.172
15	3	FP	N	0.374
16	4	FP	N	0.165

Table 10.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.264	0.040	5.200	6.640	0.163	0.365	0.001
A FP	0.262	0.040	5.200	6.580	0.161	0.362	0.001
A EI-FP	0.002	0.044	3.000	0.060	-0.138	0.143	0.958

Table 10.107: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 26 in year 2011 .

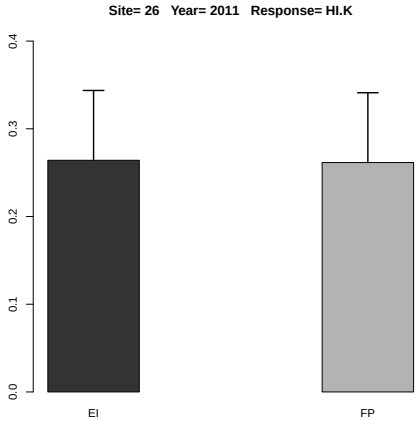

Figure 10.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	1.351	8.985	0.275
B	1.000	0.005	0.005	1.460	8.985	0.258
A:B	1.000	0.004	0.004	1.156	8.985	0.310

Table 10.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.262	0.021	8.300	12.190	0.213	0.311	0.000
2	FP		0.228	0.021	8.300	10.610	0.179	0.278	0.000
3		N	0.263	0.021	8.300	12.220	0.213	0.312	0.000
4		N0	0.228	0.021	8.300	10.580	0.178	0.277	0.000
5	EI	N	0.264	0.030	11.900	8.860	0.199	0.329	0.000
6	FP	N	0.262	0.030	11.900	8.770	0.197	0.327	0.000
7	EI	N0	0.260	0.030	11.900	8.730	0.195	0.325	0.000
8	FP	N0	0.195	0.030	11.900	6.540	0.130	0.260	0.000

Table 10.109: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 26 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.034	0.029	9.000	1.160	-0.032	0.100	0.275
B N-N0	0.035	0.029	9.000	1.210	-0.031	0.101	0.258
A:B EI N- FP N	0.002	0.041	9.000	0.060	-0.091	0.096	0.952
A:B EI N- EI N0	0.004	0.041	9.000	0.090	-0.089	0.097	0.927
A:B EI N- FP N0	0.069	0.041	9.000	1.680	-0.024	0.163	0.128
A:B FP N- EI N0	0.001	0.041	9.000	0.030	-0.092	0.095	0.975
A:B FP N- FP N0	0.067	0.041	9.000	1.610	-0.027	0.160	0.141
A:B EI N0- FP N0	0.065	0.041	9.000	1.580	-0.028	0.159	0.148

Table 10.110: Estimate of contrast in two-way ANOVA for variable HI.K at site 26 in year 2011 .

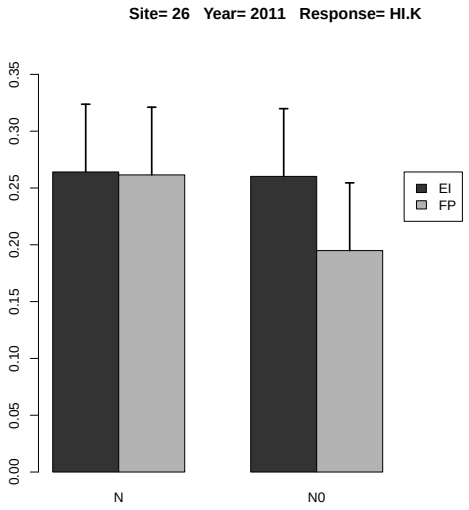

Figure 10.44: Estimated treatment means and standard error in the 2-way ANOVA.

10.1.23 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	89.215
2	2	EI	N	88.244
3	3	EI	N	98.022
4	4	EI	N	76.815
5	1	FP	N	75.981
6	2	FP	N	73.802
7	3	FP	N	70.636
8	4	FP	N	68.284

Table 10.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	88.074	3.302	5.600	26.670	79.867	96.282	0.000
A FP	72.176	3.302	5.600	21.860	63.968	80.383	0.000
A EI-FP	15.898	4.036	3.000	3.940	3.054	28.743	0.029

Table 10.112: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 26 in year 2011 .

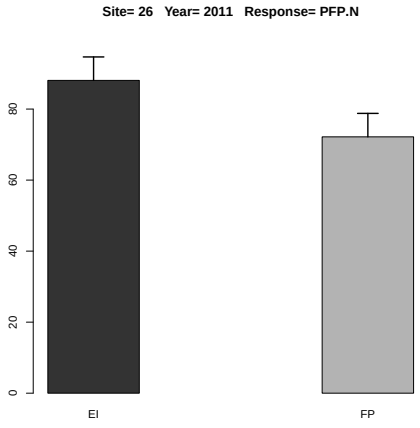

Figure 10.45: Estimated treatment means and standard error in the one-way ANOVA.

10.1.24 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	164.202
2	2	EI	N	162.416
3	3	EI	N	180.412
4	4	EI	N	141.379
5	1	FP	N	167.815
6	2	FP	N	163.002
7	3	FP	N	156.008
8	4	FP	N	150.814

Table 10.113: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	162.102	6.252	5.500	25.930	146.492	177.712	0.000
A FP	159.410	6.252	5.500	25.500	143.800	175.019	0.000
A EI-FP	2.693	7.466	3.000	0.360	-21.069	26.454	0.742

Table 10.114: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 26 in year 2011 .

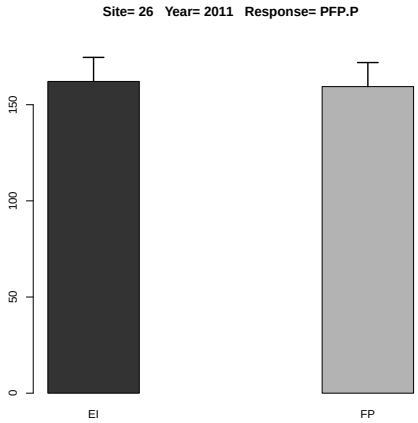

Figure 10.46: Estimated treatment means and standard error in the one-way ANOVA.

10.1.25 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	71.690
2	2	EI	N	70.911
3	3	EI	N	78.768
4	4	EI	N	61.726
5	1	FP	N	73.268
6	2	FP	N	71.167
7	3	FP	N	68.113
8	4	FP	N	65.845

Table 10.115: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	70.774	2.730	5.500	25.930	63.959	77.589	0.000
A FP	69.598	2.730	5.500	25.500	62.783	76.413	0.000
A EI-FP	1.176	3.260	3.000	0.360	-9.199	11.550	0.742

Table 10.116: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 26 in year 2011 .

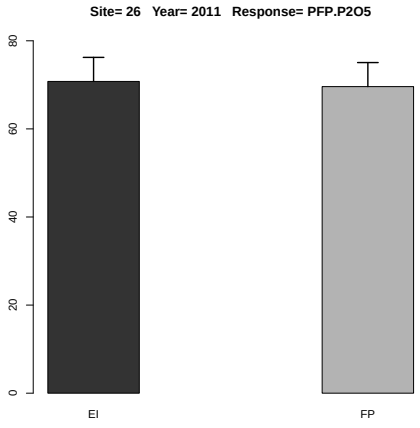

Figure 10.47: Estimated treatment means and standard error in the one-way ANOVA.

10.1.26 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	71.853
2	2	EI	N	71.072
3	3	EI	N	78.947
4	4	EI	N	61.866
5	1	FP	N	73.434
6	2	FP	N	71.328
7	3	FP	N	68.268
8	4	FP	N	65.995

Table 10.117: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	70.934	2.736	5.500	25.930	64.104	77.765	0.000
A FP	69.756	2.736	5.500	25.500	62.925	76.587	0.000
A EI-FP	1.178	3.267	3.000	0.360	-9.220	11.576	0.742

Table 10.118: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 26 in year 2011 .

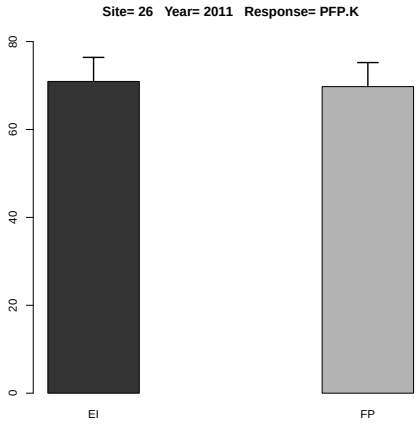

Figure 10.48: Estimated treatment means and standard error in the one-way ANOVA.

10.1.27 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	59.624
2	2	EI	N	58.975
3	3	EI	N	65.510
4	4	EI	N	51.337
5	1	FP	N	60.936
6	2	FP	N	59.188
7	3	FP	N	56.649
8	4	FP	N	54.762

Table 10.119: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	58.861	2.270	5.500	25.930	53.193	64.530	0.000
A FP	57.884	2.270	5.500	25.500	52.215	63.552	0.000
A EI-FP	0.978	2.711	3.000	0.360	-7.650	9.606	0.742

Table 10.120: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 26 in year 2011 .

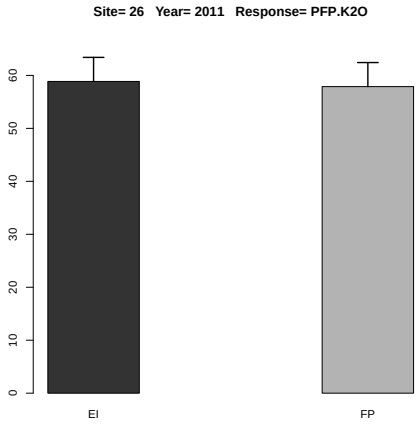

Figure 10.49: Estimated treatment means and standard error in the one-way ANOVA.

10.1.28 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	708.471
2	2	EI	N	700.765
3	3	EI	N	778.412
4	4	EI	N	610.000

Table 10.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

10.1.29 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	1.071
2	2	EI	N	1.147
3	3	EI	N	1.372
4	4	EI	N	0.999
5	1	FP	N	0.988
6	2	FP	N	0.886
7	3	FP	N	0.918
8	4	FP	N	0.956

Table 10.122: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.147	0.059	6.000	19.330	1.002	1.292	0.000
A FP	0.937	0.059	6.000	15.780	0.792	1.082	0.000
A EI-FP	0.210	0.084	6.000	2.500	0.005	0.416	0.046

Table 10.123: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 26 in year 2011 .

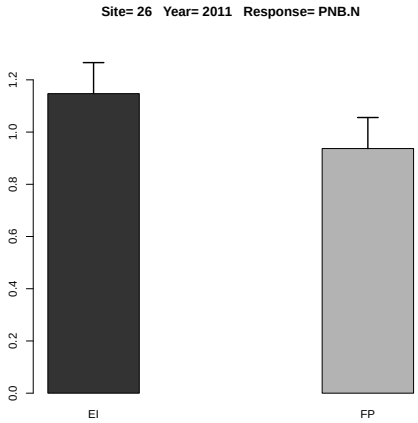

Figure 10.50: Estimated treatment means and standard error in the one-way ANOVA.

10.1.30 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.394
2	2	EI	N	0.374
3	3	EI	N	0.469
4	4	EI	N	0.382
5	1	FP	N	0.403
6	2	FP	N	0.391
7	3	FP	N	0.359
8	4	FP	N	0.332

Table 10.124: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.405	0.019	6.000	21.060	0.358	0.452	0.000
A FP	0.371	0.019	6.000	19.320	0.324	0.418	0.000
A EI-FP	0.034	0.027	6.000	1.230	-0.033	0.100	0.264

Table 10.125: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 26 in year 2011 .

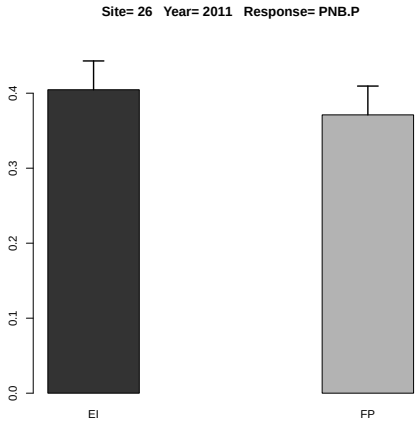

Figure 10.51: Estimated treatment means and standard error in the one-way ANOVA.

10.1.31 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.151
2	2	EI	N	0.142
3	3	EI	N	0.174
4	4	EI	N	0.136
5	1	FP	N	0.147
6	2	FP	N	0.136
7	3	FP	N	0.130
8	4	FP	N	0.119

Table 10.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.151	0.007	5.800	21.090	0.133	0.168	0.000
A FP	0.133	0.007	5.800	18.570	0.115	0.150	0.000
A EI-FP	0.018	0.009	3.000	1.970	-0.011	0.047	0.144

Table 10.127: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 26 in year 2011 .

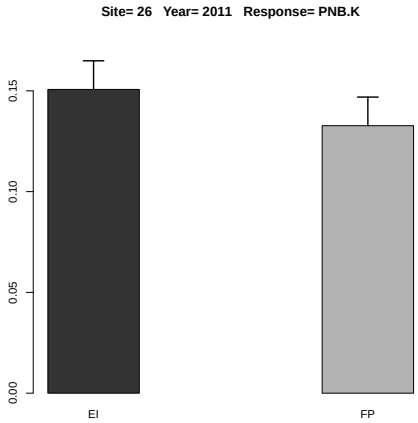

Figure 10.52: Estimated treatment means and standard error in the one-way ANOVA.

10.1.32 Response Variable AE

	rep	A	B	y
1	1	EI	N	41.111
2	2	EI	N	44.104
3	3	EI	N	37.481
4	4	EI	N	26.400
5	1	FP	N	25.975
6	2	FP	N	24.475
7	3	FP	N	22.698
8	4	FP	N	24.352

Table 10.128: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	37.274	2.674	13.940	0.001
A FP	24.375	2.674	9.116	0.006
A EI-FP	12.899	3.781	3.411	0.080

Table 10.129: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 26 in year 2011 .

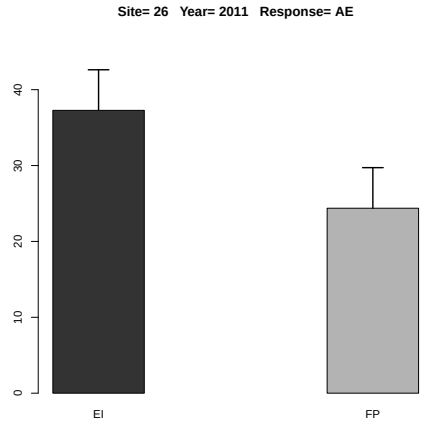

Figure 10.53: Estimated treatment means and standard error in the one-way ANOVA.

10.1.33 Response Variable RE

	rep	A	B	y
1	1	EI	N	1.081
2	2	EI	N	0.992
3	3	EI	N	0.983
4	4	EI	N	0.784
5	1	FP	N	0.831
6	2	FP	N	0.796
7	3	FP	N	0.577
8	4	FP	N	0.603

Table 10.130: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.960	0.036	26.435	0.000
A FP	0.702	0.036	19.319	0.001
A EI-FP	0.258	0.051	5.031	0.029

Table 10.131: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 26 in year 2011 .

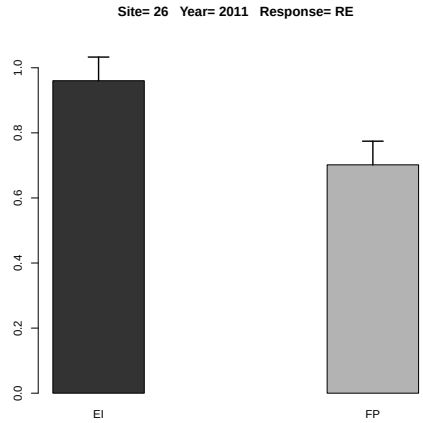

Figure 10.54: Estimated treatment means and standard error in the one-way ANOVA.

10.2 Year 2012

There are 65 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.P2O5 PFP.K2O PFP.Ca PFP.Mg PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.P PFP.K PNB.P PNB.K

10.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	9551.000
2	2	EI	N	10821.000
3	3	EI	N	9766.000
4	4	EI	N	11029.000
5	1	EI	N0	5353.000
6	2	EI	N0	5431.000
7	3	EI	N0	5563.000
8	4	EI	N0	5869.000
9	1	FP	N0	6570.000
10	2	FP	N0	7087.000
11	3	FP	N0	6678.000
12	4	FP	N0	7920.000
13	1	FP	N	10708.000
14	2	FP	N	11018.000
15	3	FP	N	10593.000
16	4	FP	N	10905.000

Table 10.132: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	10291.750	206.049	49.948	0.000
A FP	10806.000	206.049	52.444	0.000
A EI-FP	-514.250	291.398	-1.765	0.310

Table 10.133: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 26 in year 2012 .

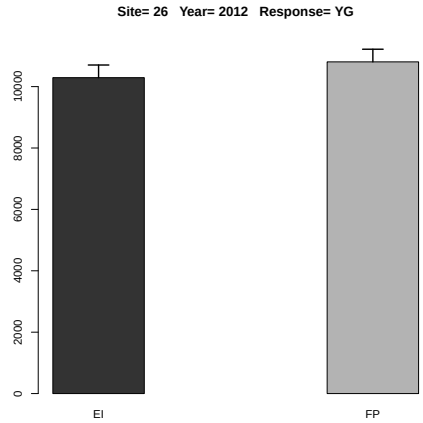

Figure 10.55: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4096576.000	4096576.000	35.787	9.200	0.000
B	1.000	71910400.000	71910400.000	628.200	9.200	0.000
A:B	1.000	991020.250	991020.250	8.657	9.200	0.016

Table 10.134: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7922.875	221.396	4.100	35.790	7312.515	8533.235	0.000
2	FP		8934.875	221.396	4.100	40.360	8324.515	9545.235	0.000
3		N	10548.875	221.396	4.100	47.650	9938.515	11159.235	0.000
4		N0	6308.875	221.396	4.100	28.500	5698.515	6919.235	0.000
5	EI	N	10291.750	251.645	6.300	40.900	9683.334	10900.166	0.000
6	FP	N	10806.000	251.645	6.300	42.940	10197.584	11414.416	0.000
7	EI	N0	5554.000	251.645	6.300	22.070	4945.584	6162.416	0.000
8	FP	N0	7063.750	251.645	6.300	28.070	6455.334	7672.166	0.000

Table 10.135: Estimate of treatment means in tow-way ANOVA for variable YG at site 26 in year 2012 .

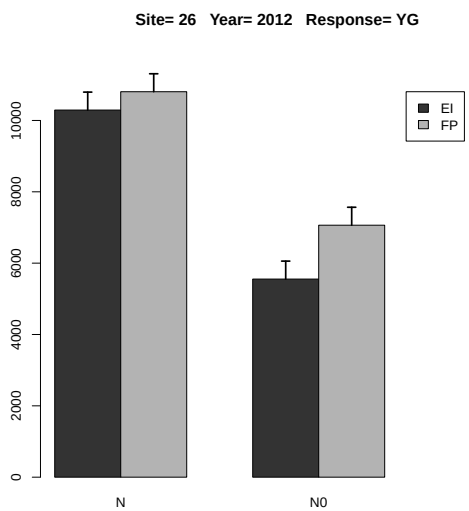

Figure 10.56: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1012.000	169.167	9.000	-5.980	-1394.439	-629.561	0.000
B N-N0	4240.000	169.167	9.000	25.060	3857.561	4622.439	0.000
A:B EI N- FP N	-514.250	239.239	9.000	-2.150	-1055.100	26.600	0.060
A:B EI N- EI N0	4737.750	239.239	9.000	19.800	4196.900	5278.600	0.000
A:B EI N- FP N0	3228.000	239.239	9.000	13.490	2687.150	3768.850	0.000
A:B FP N- EI N0	5252.000	239.239	9.000	21.950	4711.150	5792.850	0.000
A:B FP N- FP N0	3742.250	239.239	9.000	15.640	3201.400	4283.100	0.000
A:B EI N0- FP N0	-1509.750	239.239	9.000	-6.310	-2050.600	-968.900	0.000

Table 10.136: Estimate of contrast in two-way ANOVA for variable YG at site 26 in year 2012 .

10.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	9866.000
2	2	EI	N	10635.000
3	3	EI	N	8971.000
4	4	EI	N	11395.000
5	1	EI	N0	7818.000
6	2	EI	N0	8594.000
7	3	EI	N0	7009.000
8	4	EI	N0	6506.000
9	1	FP	N0	8640.000
10	2	FP	N0	10067.000
11	3	FP	N0	8104.000
12	4	FP	N0	8916.000
13	1	FP	N	10357.000
14	2	FP	N	9856.000
15	3	FP	N	9922.000
16	4	FP	N	10582.000

Table 10.137: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	10216.750	316.732	32.257	0.000
A FP	10179.250	316.732	32.138	0.000
A EI-FP	37.500	447.927	0.084	0.996

Table 10.138: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 26 in year 2012 .

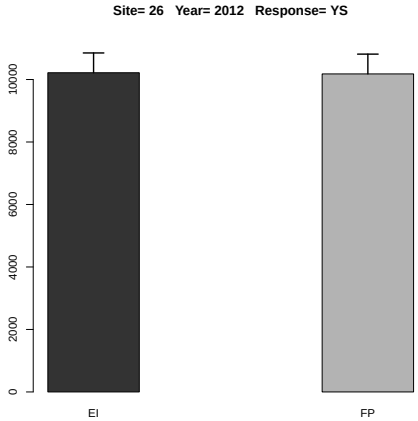

Figure 10.57: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1995156.250	1995156.250	3.772	8.650	0.085
B	1.000	15860306.250	15860306.250	29.988	8.650	0.000
A:B	1.000	2212656.250	2212656.250	4.184	8.650	0.072

Table 10.139: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8849.250	323.213	6.000	27.380	8057.577	9640.923	0.000
2	FP		9555.500	323.213	6.000	29.560	8763.827	10347.173	0.000
3		N	10198.000	323.213	6.000	31.550	9406.327	10989.673	0.000
4		N0	8206.750	323.213	6.000	25.390	7415.077	8998.423	0.000
5	EI	N	10216.750	413.009	10.300	24.740	9299.616	11133.884	0.000
6	FP	N	10179.250	413.009	10.300	24.650	9262.116	11096.384	0.000
7	EI	N0	7481.750	413.009	10.300	18.120	6564.616	8398.884	0.000
8	FP	N0	8931.750	413.009	10.300	21.630	8014.616	9848.884	0.000

Table 10.140: Estimate of treatment means in tow-way ANOVA for variable YS at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-706.250	363.621	8.600	-1.940	-1533.928	121.428	0.085
B N-N0	1991.250	363.621	8.600	5.480	1163.572	2818.928	0.000
A:B EI N- FP N	37.500	514.237	8.600	0.070	-1133.013	1208.013	0.944
A:B EI N- EI N0	2735.000	514.237	8.600	5.320	1564.487	3905.513	0.001
A:B EI N- FP N0	1285.000	514.237	8.600	2.500	114.487	2455.513	0.035
A:B FP N- EI N0	2697.500	514.237	8.600	5.250	1526.987	3868.013	0.001
A:B FP N- FP N0	1247.500	514.237	8.600	2.430	76.987	2418.013	0.039
A:B EI N0- FP N0	-1450.000	514.237	8.600	-2.820	-2620.513	-279.487	0.021

Table 10.141: Estimate of contrast in two-way ANOVA for variable YS at site 26 in year 2012 .

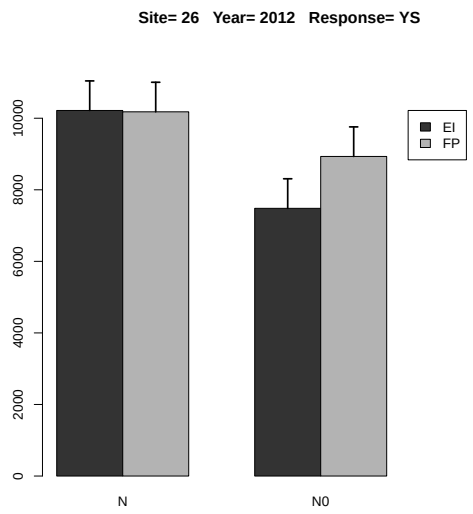

Figure 10.58: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	19417.000
2	2	EI	N	21456.000
3	3	EI	N	18737.000
4	4	EI	N	22424.000
5	1	EI	N0	13171.000
6	2	EI	N0	14025.000
7	3	EI	N0	12572.000
8	4	EI	N0	12375.000
9	1	FP	N0	15210.000
10	2	FP	N0	17154.000
11	3	FP	N0	14782.000
12	4	FP	N0	16836.000
13	1	FP	N	21065.000
14	2	FP	N	20874.000
15	3	FP	N	20515.000
16	4	FP	N	21487.000

Table 10.142: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	20508.500	507.638	40.400	0.000
A FP	20985.250	507.638	41.339	0.000
A EI-FP	-476.750	717.909	-0.664	0.790

Table 10.143: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 26 in year 2012 .

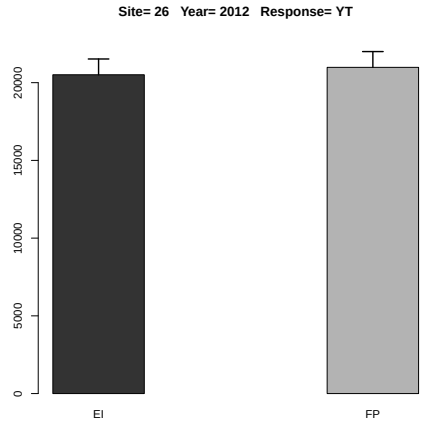

Figure 10.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11809532.250	11809532.250	15.787	9.224	0.003
B	1.000	155313906.250	155313906.250	207.624	9.224	0.000
A:B	1.000	6165289.000	6165289.000	8.242	9.224	0.018

Table 10.144: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16772.125	471.842	4.700	35.550	15534.255	18009.995	0.000
2	FP		18490.375	471.842	4.700	39.190	17252.505	19728.245	0.000
3		N	20746.875	471.842	4.700	43.970	19509.005	21984.745	0.000
4		N0	14515.625	471.842	4.700	30.760	13277.755	15753.495	0.000
5	EI	N	20508.500	562.264	7.900	36.470	19207.762	21809.238	0.000
6	FP	N	20985.250	562.264	7.900	37.320	19684.512	22285.988	0.000
7	EI	N0	13035.750	562.264	7.900	23.180	11735.012	14336.488	0.000
8	FP	N0	15995.500	562.264	7.900	28.450	14694.762	17296.238	0.000

Table 10.145: Estimate of treatment means in tow-way ANOVA for variable YT at site 26 in year 2012 .

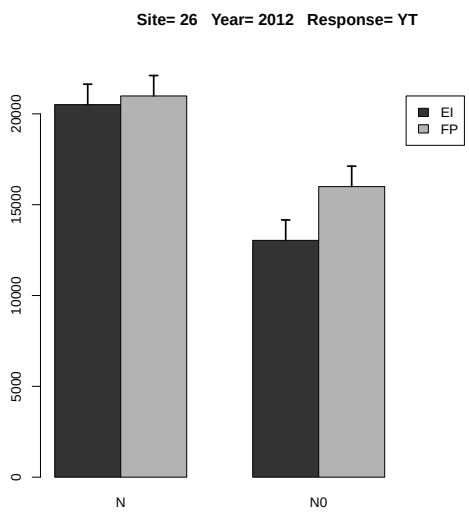

Figure 10.60: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1718.250	432.450	8.200	-3.970	-2712.050	-724.449	0.004
B N-N0	6231.250	432.450	8.200	14.410	5237.449	7225.051	0.000
A:B EI N- FP N	-476.750	611.577	8.200	-0.780	-1882.196	928.696	0.458
A:B EI N- EI N0	7472.750	611.577	8.200	12.220	6067.304	8878.196	0.000
A:B EI N- FP N0	4513.000	611.577	8.200	7.380	3107.554	5918.446	0.000
A:B FP N- EI N0	7949.500	611.577	8.200	13.000	6544.054	9354.946	0.000
A:B FP N- FP N0	4989.750	611.577	8.200	8.160	3584.304	6395.196	0.000
A:B EI N0- FP N0	-2959.750	611.577	8.200	-4.840	-4365.196	-1554.304	0.001

Table 10.146: Estimate of contrast in two-way ANOVA for variable YT at site 26 in year 2012 .

10.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.492
2	2	EI	N	0.504
3	3	EI	N	0.521
4	4	EI	N	0.492
5	1	EI	N0	0.406
6	2	EI	N0	0.387
7	3	EI	N0	0.442
8	4	EI	N0	0.474
9	1	FP	N0	0.432
10	2	FP	N0	0.413
11	3	FP	N0	0.452
12	4	FP	N0	0.470
13	1	FP	N	0.508
14	2	FP	N	0.528
15	3	FP	N	0.516
16	4	FP	N	0.508

Table 10.147: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.502	0.004	116.280	0.000
A FP	0.515	0.004	119.218	0.000
A EI-FP	-0.013	0.006	-2.077	0.234

Table 10.148: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 26 in year 2012 .

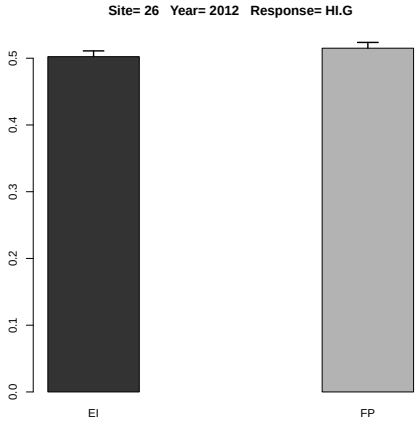

Figure 10.61: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	1.442	8.960	0.261
B	1.000	0.022	0.022	43.581	8.960	0.000
A:B	1.000	0.000	0.000	0.005	8.960	0.947

Table 10.149: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.465	0.009	6.700	50.010	0.443	0.487	0.000
2	FP		0.478	0.009	6.700	51.460	0.456	0.501	0.000
3		N	0.509	0.009	6.700	54.710	0.486	0.531	0.000
4		N0	0.435	0.009	6.700	46.760	0.412	0.457	0.000
5	EI	N	0.502	0.012	11.100	41.130	0.475	0.529	0.000
6	FP	N	0.515	0.012	11.100	42.170	0.488	0.542	0.000
7	EI	N0	0.428	0.012	11.100	35.010	0.401	0.455	0.000
8	FP	N0	0.442	0.012	11.100	36.170	0.415	0.469	0.000

Table 10.150: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.013	0.011	9.000	-1.200	-0.039	0.012	0.261
B N-N0	0.074	0.011	9.000	6.600	0.049	0.099	0.000
A:B EI N- FP N	-0.013	0.016	9.000	-0.800	-0.049	0.023	0.444
A:B EI N- EI N0	0.075	0.016	9.000	4.720	0.039	0.111	0.001
A:B EI N- FP N0	0.060	0.016	9.000	3.820	0.025	0.096	0.004
A:B FP N- EI N0	0.087	0.016	9.000	5.520	0.051	0.123	0.000
A:B FP N- FP N0	0.073	0.016	9.000	4.620	0.037	0.109	0.001
A:B EI N0- FP N0	-0.014	0.016	9.000	-0.900	-0.050	0.022	0.393

Table 10.151: Estimate of contrast in two-way ANOVA for variable HI.G at site 26 in year 2012 .

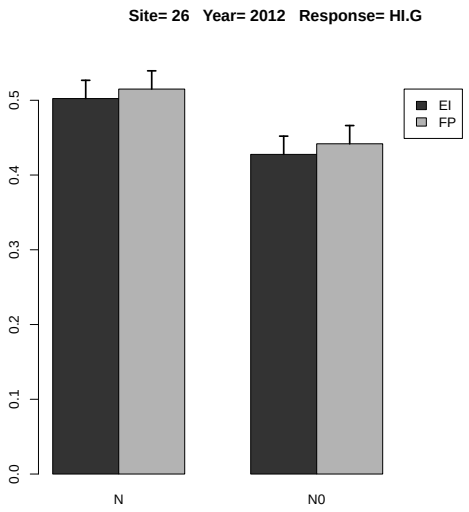

Figure 10.62: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	133.714
2	2	EI	N	140.673
3	3	EI	N	126.958
4	4	EI	N	154.406
5	1	EI	N0	48.177
6	2	EI	N0	48.879
7	3	EI	N0	50.067
8	4	EI	N0	52.821
9	1	FP	N0	59.130
10	2	FP	N0	63.783
11	3	FP	N0	60.102
12	4	FP	N0	79.200
13	1	FP	N	128.496
14	2	FP	N	165.270
15	3	FP	N	127.116
16	4	FP	N	130.860

Table 10.152: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	138.938	7.020	19.792	0.001
A FP	137.935	7.020	19.650	0.001
A EI-FP	1.002	9.927	0.101	0.994

Table 10.153: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 26 in year 2012 .

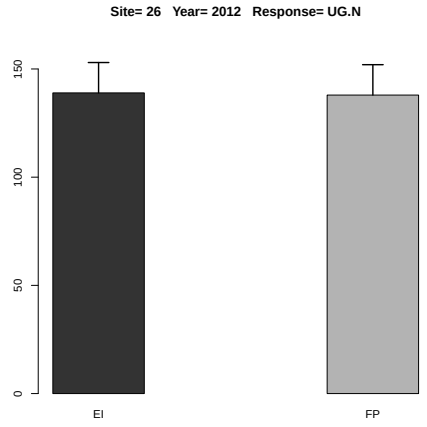

Figure 10.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	212.154	212.154	1.847	9.000	0.207
B	1.000	26028.498	26028.498	226.611	9.000	0.000
A:B	1.000	274.565	274.565	2.390	9.000	0.156

Table 10.154: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		94.462	4.565	6.400	20.690	83.456	105.468	0.000
2	FP		101.745	4.565	6.400	22.290	90.739	112.750	0.000
3		N	138.437	4.565	6.400	30.330	127.431	149.442	0.000
4		N0	57.770	4.565	6.400	12.660	46.764	68.775	0.000
5	EI	N	138.938	5.933	10.900	23.420	125.864	152.011	0.000
6	FP	N	137.935	5.933	10.900	23.250	124.862	151.009	0.000
7	EI	N0	49.986	5.933	10.900	8.430	36.913	63.059	0.000
8	FP	N0	65.554	5.933	10.900	11.050	52.480	78.627	0.000

Table 10.155: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 26 in year 2012 .

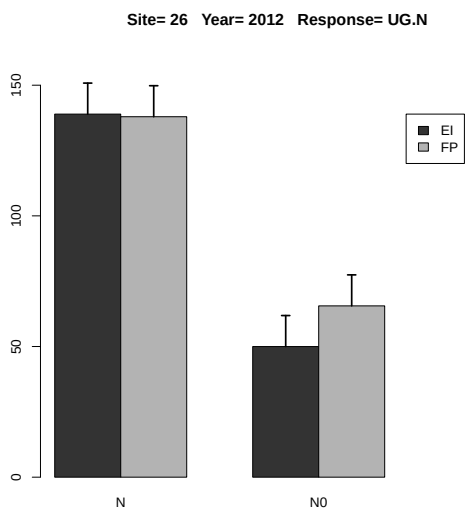

Figure 10.64: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-7.283	5.359	9.000	-1.360	-19.405	4.839	0.207
B N-N0	80.667	5.359	9.000	15.050	68.545	92.789	0.000
A:B EI N- FP N	1.002	7.578	9.000	0.130	-16.141	18.145	0.898
A:B EI N- EI N0	88.952	7.578	9.000	11.740	71.808	106.095	0.000
A:B EI N- FP N0	73.384	7.578	9.000	9.680	56.241	90.527	0.000
A:B FP N- EI N0	87.950	7.578	9.000	11.610	70.806	105.093	0.000
A:B FP N- FP N0	72.382	7.578	9.000	9.550	55.239	89.525	0.000
A:B EI N0- FP N0	-15.568	7.578	9.000	-2.050	-32.711	1.575	0.070

Table 10.156: Estimate of contrast in two-way ANOVA for variable UG.N at site 26 in year 2012 .

10.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N	26.743
2	2	EI	N	27.052
3	3	EI	N	22.462
4	4	EI	N	28.675
5	1	EI	N0	17.130
6	2	EI	N0	15.750
7	3	EI	N0	16.689
8	4	EI	N0	17.607
9	1	FP	N0	17.739
10	2	FP	N0	19.844
11	3	FP	N0	18.698
12	4	FP	N0	22.176
13	1	FP	N	26.770
14	2	FP	N	28.647
15	3	FP	N	28.601
16	4	FP	N	28.353

Table 10.157: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	26.233	1.051	24.963	0.000
A FP	28.093	1.051	26.732	0.000
A EI-FP	-1.860	1.486	-1.251	0.495

Table 10.158: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 26 in year 2012 .

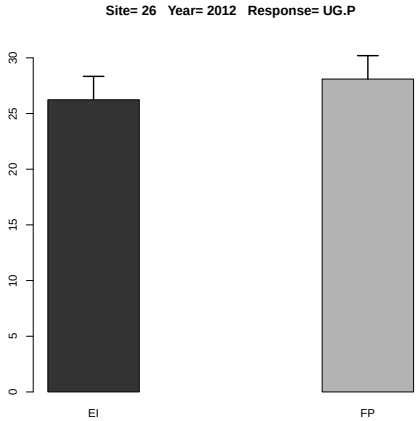

Figure 10.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	20.237	20.237	8.884	2.998	0.059
B	1.000	321.045	321.045	140.936	6.000	0.000
A:B	1.000	0.923	0.923	0.405	6.000	0.548

Table 10.159: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.514	0.687	5.400	31.300	19.781	23.246	0.000
2	FP		23.854	0.687	5.400	34.700	22.121	25.586	0.000
3		N	27.163	0.679	5.700	40.020	25.481	28.845	0.000
4		N0	18.204	0.679	5.700	26.820	16.523	19.886	0.000
5	EI	N	26.233	0.870	10.400	30.150	24.304	28.162	0.000
6	FP	N	28.093	0.870	10.400	32.280	26.163	30.022	0.000
7	EI	N0	16.794	0.870	10.400	19.300	14.865	18.723	0.000
8	FP	N0	19.614	0.870	10.400	22.540	17.685	21.544	0.000

Table 10.160: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.340	0.785	3.000	-2.980	-4.839	0.159	0.059
B N-N0	8.959	0.755	6.000	11.870	7.112	10.805	0.000
A:B EI N- FP N	-1.860	1.089	7.800	-1.710	-4.383	0.664	0.127
A:B EI N- EI N0	9.439	1.067	6.000	8.840	6.828	12.051	0.000
A:B EI N- FP N0	6.619	1.089	7.800	6.080	4.095	9.142	0.000
A:B FP N- EI N0	11.299	1.089	7.800	10.380	8.775	13.822	0.000
A:B FP N- FP N0	8.479	1.067	6.000	7.940	5.867	11.090	0.000
A:B EI N0- FP N0	-2.820	1.089	7.800	-2.590	-5.344	-0.297	0.033

Table 10.161: Estimate of contrast in two-way ANOVA for variable UG.P at site 26 in year 2012 .

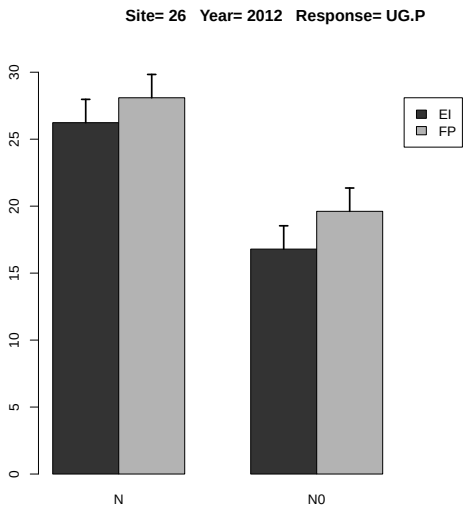

Figure 10.66: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N	61.241
2	2	EI	N	61.950
3	3	EI	N	51.438
4	4	EI	N	65.667
5	1	EI	N0	39.227
6	2	EI	N0	36.067
7	3	EI	N0	38.218
8	4	EI	N0	40.320
9	1	FP	N0	40.622
10	2	FP	N0	45.442
11	3	FP	N0	42.819
12	4	FP	N0	50.783
13	1	FP	N	61.303
14	2	FP	N	65.601
15	3	FP	N	65.497
16	4	FP	N	64.928

Table 10.162: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	60.074	2.407	24.963	0.000
A FP	64.332	2.407	26.732	0.000
A EI-FP	-4.258	3.403	-1.251	0.495

Table 10.163: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 26 in year 2012 .

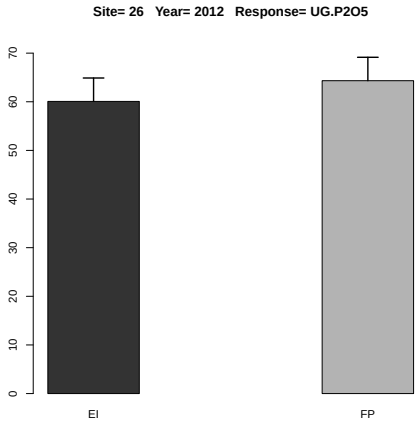

Figure 10.67: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	106.124	106.124	8.884	2.998	0.059
B	1.000	1683.591	1683.591	140.936	6.000	0.000
A:B	1.000	4.841	4.841	0.405	6.000	0.548

Table 10.164: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		49.266	1.574	5.400	31.300	45.298	53.234	0.000
2	FP		54.624	1.574	5.400	34.700	50.657	58.592	0.000
3		N	62.203	1.554	5.700	40.020	58.352	66.054	0.000
4		N0	41.687	1.554	5.700	26.820	37.837	45.538	0.000
5	EI	N	60.074	1.993	10.400	30.150	55.656	64.492	0.000
6	FP	N	64.332	1.993	10.400	32.280	59.914	68.750	0.000
7	EI	N0	38.458	1.993	10.400	19.300	34.040	42.876	0.000
8	FP	N0	44.917	1.993	10.400	22.540	40.499	49.335	0.000

Table 10.165: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 26 in year 2012 .

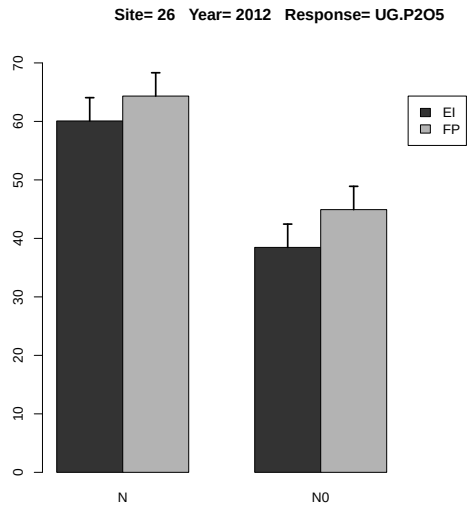

Figure 10.68: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.359	1.798	3.000	-2.980	-11.082	0.365	0.059
B N-N0	20.516	1.728	6.000	11.870	16.287	24.744	0.000
A:B EI N- FP N	-4.258	2.494	7.800	-1.710	-10.037	1.520	0.127
A:B EI N- EI N0	21.616	2.444	6.000	8.840	15.636	27.596	0.000
A:B EI N- FP N0	15.157	2.494	7.800	6.080	9.378	20.936	0.000
A:B FP N- EI N0	25.874	2.494	7.800	10.380	20.096	31.653	0.000
A:B FP N- FP N0	19.416	2.444	6.000	7.940	13.435	25.396	0.000
A:B EI N0- FP N0	-6.459	2.494	7.800	-2.590	-12.238	-0.680	0.033

Table 10.166: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 26 in year 2012 .

10.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N	23.878
2	2	EI	N	21.642
3	3	EI	N	19.532
4	4	EI	N	22.058
5	1	EI	N0	16.059
6	2	EI	N0	14.121
7	3	EI	N0	14.464
8	4	EI	N0	14.672
9	1	FP	N0	16.425
10	2	FP	N0	17.718
11	3	FP	N0	16.027
12	4	FP	N0	19.800
13	1	FP	N	23.558
14	2	FP	N	25.341
15	3	FP	N	24.364
16	4	FP	N	22.900

Table 10.167: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	21.777	0.850	25.612	0.000
A FP	24.041	0.850	28.274	0.000
A EI-FP	-2.263	1.202	-1.882	0.279

Table 10.168: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 26 in year 2012 .

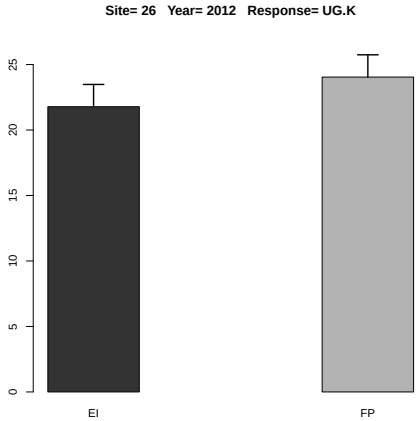

Figure 10.69: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	19.952	19.952	11.190	5.998	0.016
B	1.000	182.164	182.164	102.169	6.000	0.000
A:B	1.000	0.160	0.160	0.090	6.000	0.775

Table 10.169: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.303	0.521	6.000	35.150	17.029	19.577	0.000
2	FP		20.767	0.521	6.000	39.880	19.492	22.041	0.000
3		N	22.909	0.497	11.900	46.090	21.825	23.993	0.000
4		N0	16.161	0.497	11.900	32.520	15.077	17.245	0.000
5	EI	N	21.777	0.703	11.900	30.980	20.244	23.310	0.000
6	FP	N	24.041	0.703	11.900	34.200	22.508	25.574	0.000
7	EI	N0	14.829	0.703	11.900	21.100	13.296	16.362	0.000
8	FP	N0	17.492	0.703	11.900	24.890	15.959	19.026	0.000

Table 10.170: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.463	0.736	6.000	-3.350	-4.266	-0.661	0.015
B N-N0	6.748	0.668	6.000	10.110	5.115	8.382	0.000
A:B EI N- FP N	-2.264	0.994	11.900	-2.280	-4.432	-0.095	0.042
A:B EI N- EI N0	6.948	0.944	6.000	7.360	4.638	9.259	0.000
A:B EI N- FP N0	4.285	0.994	11.900	4.310	2.117	6.453	0.001
A:B FP N- EI N0	9.212	0.994	11.900	9.270	7.044	11.380	0.000
A:B FP N- FP N0	6.548	0.944	6.000	6.940	4.238	8.859	0.000
A:B EI N0- FP N0	-2.663	0.994	11.900	-2.680	-4.832	-0.495	0.020

Table 10.171: Estimate of contrast in two-way ANOVA for variable UG.K at site 26 in year 2012 .

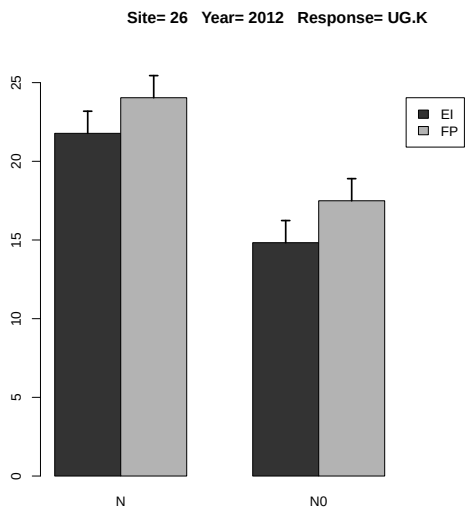

Figure 10.70: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N	28.772
2	2	EI	N	26.079
3	3	EI	N	23.536
4	4	EI	N	26.580
5	1	EI	N0	19.351
6	2	EI	N0	17.015
7	3	EI	N0	17.429
8	4	EI	N0	17.680
9	1	FP	N0	19.792
10	2	FP	N0	21.350
11	3	FP	N0	19.313
12	4	FP	N0	23.859
13	1	FP	N	28.387
14	2	FP	N	30.536
15	3	FP	N	29.358
16	4	FP	N	27.595

Table 10.172: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	26.242	1.025	25.612	0.000
A FP	28.969	1.025	28.274	0.000
A EI-FP	-2.727	1.449	-1.882	0.278

Table 10.173: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 26 in year 2012 .

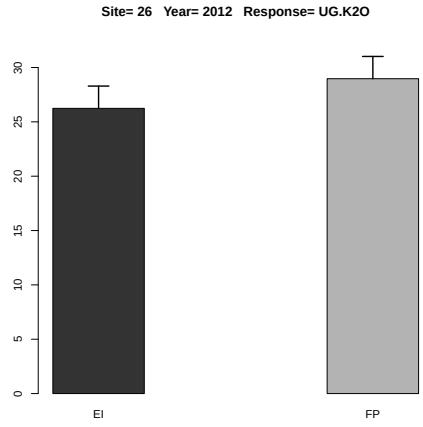

Figure 10.71: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	28.970	28.970	11.190	5.998	0.016
B	1.000	264.507	264.507	102.169	6.000	0.000
A:B	1.000	0.232	0.232	0.090	6.000	0.775

Table 10.174: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.055	0.627	6.000	35.150	20.520	23.591	0.000
2	FP		25.024	0.627	6.000	39.880	23.488	26.559	0.000
3		N	27.605	0.599	11.900	46.090	26.299	28.912	0.000
4		N0	19.474	0.599	11.900	32.520	18.167	20.780	0.000
5	EI	N	26.242	0.847	11.900	30.980	24.394	28.089	0.000
6	FP	N	28.969	0.847	11.900	34.200	27.122	30.817	0.000
7	EI	N0	17.869	0.847	11.900	21.100	16.022	19.716	0.000
8	FP	N0	21.078	0.847	11.900	24.890	19.231	22.926	0.000

Table 10.175: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 26 in year 2012 .

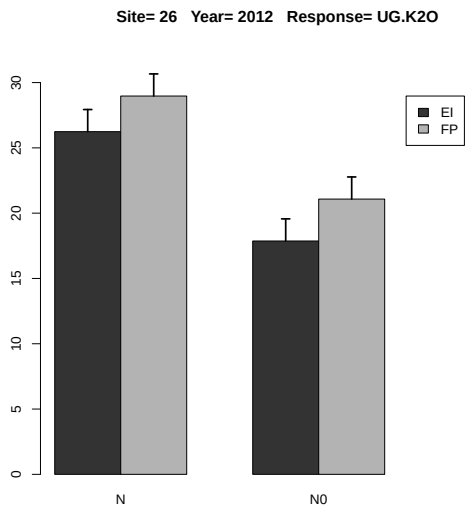

Figure 10.72: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.969	0.887	6.000	-3.350	-5.140	-0.797	0.015
B N-N0	8.132	0.804	6.000	10.110	6.163	10.100	0.000
A:B EI N- FP N	-2.728	1.198	11.900	-2.280	-5.340	-0.115	0.042
A:B EI N- EI N0	8.373	1.138	6.000	7.360	5.589	11.157	0.000
A:B EI N- FP N0	5.163	1.198	11.900	4.310	2.551	7.776	0.001
A:B FP N- EI N0	11.100	1.198	11.900	9.270	8.488	13.713	0.000
A:B FP N- FP N0	7.891	1.138	6.000	6.940	5.107	10.675	0.000
A:B EI N0- FP N0	-3.209	1.198	11.900	-2.680	-5.822	-0.597	0.020

Table 10.176: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 26 in year 2012
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10.2.10 Response Variable US.N

	rep	A	B	y
1	1	EI	N	54.460
2	2	EI	N	49.431
3	3	EI	N	57.816
4	4	EI	N	71.332
5	1	EI	N0	31.958
6	2	EI	N0	29.945
7	3	EI	N0	29.261
8	4	EI	N0	27.483
9	1	FP	N0	33.925
10	2	FP	N0	44.152
11	3	FP	N0	35.037
12	4	FP	N0	42.582
13	1	FP	N	64.874
14	2	FP	N	60.950
15	3	FP	N	57.375
16	4	FP	N	70.386

Table 10.177: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	58.260	2.386	24.413	0.000
A FP	63.396	2.386	26.565	0.000
A EI-FP	-5.136	3.375	-1.522	0.387

Table 10.178: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 26 in year 2012 .

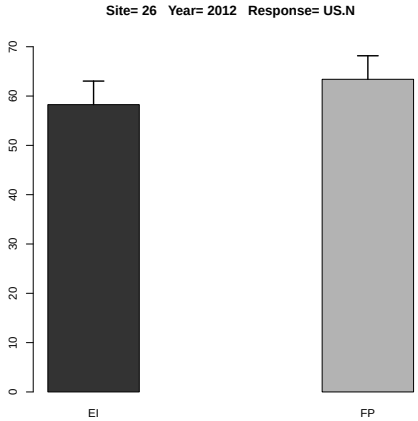

Figure 10.73: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	207.323	207.323	6.473	9.000	0.031
B	1.000	2816.486	2816.486	87.929	9.000	0.000
A:B	1.000	17.022	17.022	0.531	9.000	0.485

Table 10.179: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		43.961	2.308	6.900	19.050	38.483	49.438	0.000
2	FP		51.160	2.308	6.900	22.170	45.682	56.638	0.000
3		N	60.828	2.308	6.900	26.360	55.350	66.306	0.000
4		N0	34.293	2.308	6.900	14.860	28.815	39.770	0.000
5	EI	N	58.260	3.054	11.300	19.070	51.560	64.960	0.000
6	FP	N	63.396	3.054	11.300	20.760	56.697	70.096	0.000
7	EI	N0	29.662	3.054	11.300	9.710	22.962	36.361	0.000
8	FP	N0	38.924	3.054	11.300	12.740	32.224	45.624	0.000

Table 10.180: Estimate of treatment means in tow-way ANOVA for variable US.N at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-7.199	2.830	9.000	-2.540	-13.601	-0.798	0.032
B N-N0	26.535	2.830	9.000	9.380	20.134	32.937	0.000
A:B EI N- FP N	-5.136	4.002	9.000	-1.280	-14.190	3.917	0.231
A:B EI N- EI N0	28.598	4.002	9.000	7.150	19.545	37.651	0.000
A:B EI N- FP N0	19.336	4.002	9.000	4.830	10.283	28.389	0.001
A:B FP N- EI N0	33.735	4.002	9.000	8.430	24.682	42.788	0.000
A:B FP N- FP N0	24.472	4.002	9.000	6.120	15.419	33.525	0.000
A:B EI N0- FP N0	-9.262	4.002	9.000	-2.310	-18.315	-0.209	0.046

Table 10.181: Estimate of contrast in two-way ANOVA for variable US.N at site 26 in year 2012 .

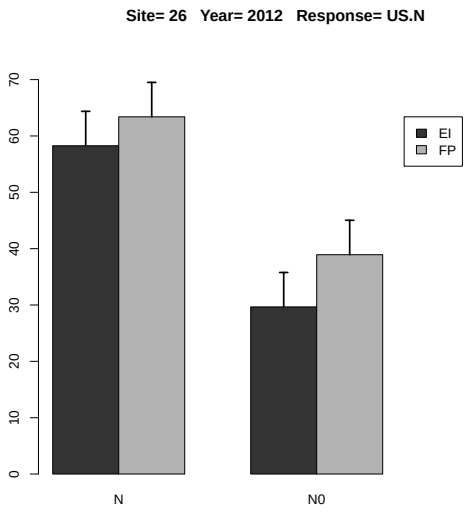

Figure 10.74: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.11 Response Variable US.P

	rep	A	B	y
1	1	EI	N	6.314
2	2	EI	N	5.169
3	3	EI	N	5.733
4	4	EI	N	6.537
5	1	EI	N0	8.767
6	2	EI	N0	11.309
7	3	EI	N0	10.249
8	4	EI	N0	8.772
9	1	FP	N0	11.280
10	2	FP	N0	13.153
11	3	FP	N0	6.827
12	4	FP	N0	10.666
13	1	FP	N	6.762
14	2	FP	N	6.378
15	3	FP	N	6.660
16	4	FP	N	7.775

Table 10.182: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	5.938	0.130	45.823	0.000
A FP	6.893	0.130	53.194	0.000
A EI-FP	-0.955	0.183	-5.212	0.027

Table 10.183: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 26 in year 2012 .

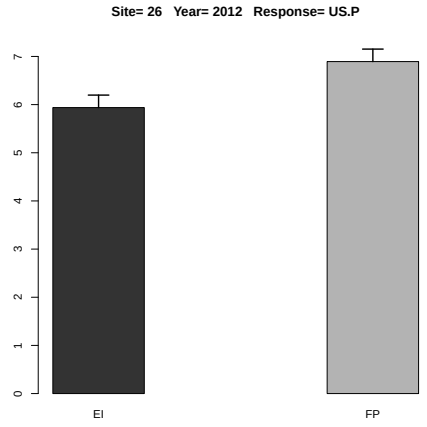

Figure 10.75: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.763	2.763	1.184	11.999	0.298
B	1.000	55.118	55.118	23.609	11.999	0.000
A:B	1.000	0.062	0.062	0.026	11.999	0.874

Table 10.184: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.856	0.540	12.000	14.540	6.679	9.033	0.000
2	FP		8.687	0.540	12.000	16.080	7.510	9.864	0.000
3		N	6.416	0.540	12.000	11.880	5.239	7.593	0.000
4		N0	10.128	0.540	12.000	18.750	8.951	11.305	0.000
5	EI	N	5.938	0.764	12.000	7.770	4.274	7.603	0.000
6	FP	N	6.893	0.764	12.000	9.020	5.229	8.558	0.000
7	EI	N0	9.774	0.764	12.000	12.790	8.110	11.439	0.000
8	FP	N0	10.481	0.764	12.000	13.720	8.817	12.146	0.000

Table 10.185: Estimate of treatment means in tow-way ANOVA for variable US.P at site 26 in year 2012 .

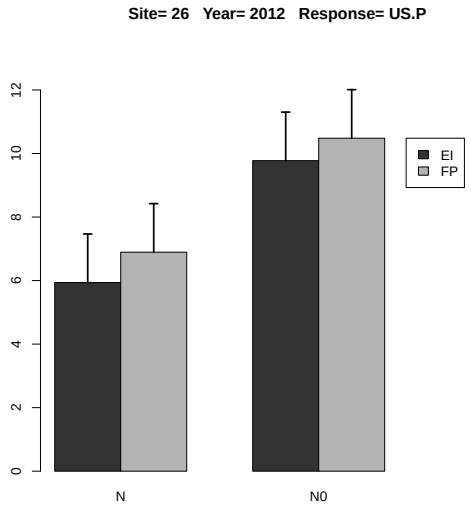

Figure 10.76: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.831	0.764	12.000	-1.090	-2.496	0.833	0.298
B N-N0	-3.712	0.764	12.000	-4.860	-5.377	-2.047	0.000
A:B EI N- FP N	-0.955	1.080	12.000	-0.880	-3.309	1.399	0.394
A:B EI N- EI N0	-3.836	1.080	12.000	-3.550	-6.190	-1.482	0.004
A:B EI N- FP N0	-4.543	1.080	12.000	-4.210	-6.897	-2.189	0.001
A:B FP N- EI N0	-2.881	1.080	12.000	-2.670	-5.235	-0.527	0.020
A:B FP N- FP N0	-3.588	1.080	12.000	-3.320	-5.942	-1.234	0.006
A:B EI N0- FP N0	-0.707	1.080	12.000	-0.650	-3.061	1.647	0.525

Table 10.186: Estimate of contrast in two-way ANOVA for variable US.P at site 26 in year 2012 .

10.2.12 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N	6.887
2	2	EI	N	5.937
3	3	EI	N	6.262
4	4	EI	N	7.311
5	1	EI	N0	9.333
6	2	EI	N0	12.008
7	3	EI	N0	10.815
8	4	EI	N0	9.235
9	1	FP	N0	11.865
10	2	FP	N0	13.827
11	3	FP	N0	7.309
12	4	FP	N0	11.412
13	1	FP	N	7.234
14	2	FP	N	6.882
15	3	FP	N	7.581
16	4	FP	N	8.309

Table 10.187: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	6.599	0.143	46.049	0.000
A FP	7.502	0.143	52.346	0.000
A EI-FP	-0.902	0.203	-4.452	0.041

Table 10.188: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 26 in year 2012 .

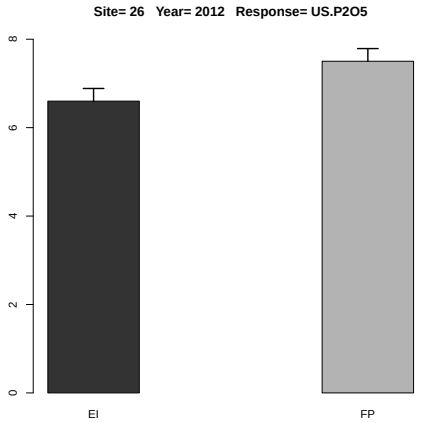

Figure 10.77: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.747	2.747	1.099	11.999	0.315
B	1.000	54.022	54.022	21.614	11.999	0.001
A:B	1.000	0.022	0.022	0.009	11.999	0.927

Table 10.189: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.474	0.559	12.000	15.160	7.256	9.691	0.000
2	FP		9.302	0.559	12.000	16.640	8.085	10.520	0.000
3		N	7.051	0.559	12.000	12.610	5.833	8.268	0.000
4		N0	10.726	0.559	12.000	19.190	9.508	11.943	0.000
5	EI	N	6.599	0.790	12.000	8.350	4.877	8.322	0.000
6	FP	N	7.502	0.790	12.000	9.490	5.779	9.224	0.000
7	EI	N0	10.348	0.790	12.000	13.090	8.626	12.070	0.000
8	FP	N0	11.103	0.790	12.000	14.050	9.381	12.825	0.000

Table 10.190: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.829	0.790	12.000	-1.050	-2.551	0.894	0.315
B N-N0	-3.675	0.790	12.000	-4.650	-5.397	-1.953	0.001
A:B EI N- FP N	-0.902	1.118	12.000	-0.810	-3.338	1.533	0.435
A:B EI N- EI N0	-3.749	1.118	12.000	-3.350	-6.184	-1.313	0.006
A:B EI N- FP N0	-4.504	1.118	12.000	-4.030	-6.939	-2.068	0.002
A:B FP N- EI N0	-2.846	1.118	12.000	-2.550	-5.282	-0.410	0.026
A:B FP N- FP N0	-3.601	1.118	12.000	-3.220	-6.037	-1.166	0.007
A:B EI N0- FP N0	-0.755	1.118	12.000	-0.680	-3.191	1.681	0.512

Table 10.191: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 26 in year 2012 .

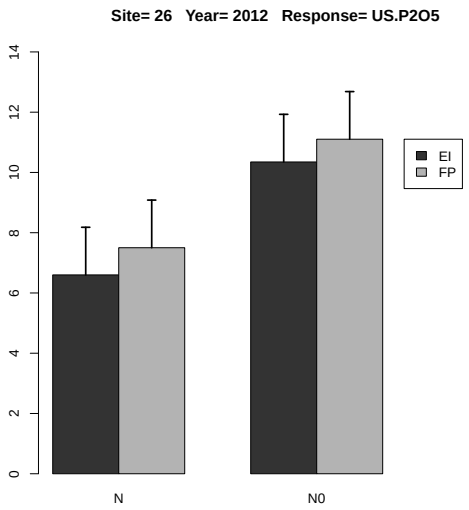

Figure 10.78: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.13 Response Variable US.K

	rep	A	B	y
1	1	EI	N	62.451
2	2	EI	N	83.527
3	3	EI	N	62.148
4	4	EI	N	81.048
5	1	EI	N0	49.492
6	2	EI	N0	65.498
7	3	EI	N0	40.386
8	4	EI	N0	41.079
9	1	FP	N0	69.989
10	2	FP	N0	79.205
11	3	FP	N0	54.143
12	4	FP	N0	73.837
13	1	FP	N	93.870
14	2	FP	N	89.808
15	3	FP	N	72.108
16	4	FP	N	99.554

Table 10.192: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	72.294	3.946	18.319	0.000
A FP	88.835	3.946	22.511	0.000
A EI-FP	-16.541	5.581	-2.964	0.111

Table 10.193: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 26 in year 2012 .

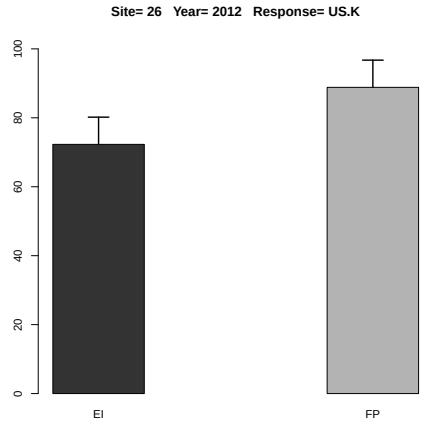

Figure 10.79: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	838.399	838.399	18.152	2.999	0.024
B	1.000	1825.114	1825.114	39.516	6.000	0.001
A:B	1.000	13.241	13.241	0.287	6.000	0.612

Table 10.194: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		60.704	5.214	4.200	11.640	46.477	74.930	0.000
2	FP		79.064	5.214	4.200	15.160	64.838	93.290	0.000
3		N	80.564	5.042	3.800	15.980	66.247	94.881	0.000
4		N0	59.203	5.042	3.800	11.740	44.886	73.521	0.000
5	EI	N	72.294	5.741	6.000	12.590	58.226	86.361	0.000
6	FP	N	88.835	5.741	6.000	15.470	74.767	102.902	0.000
7	EI	N0	49.114	5.741	6.000	8.560	35.046	63.181	0.000
8	FP	N0	69.293	5.741	6.000	12.070	55.226	83.361	0.000

Table 10.195: Estimate of treatment means in tow-way ANOVA for variable US.K at site 26 in year 2012 .

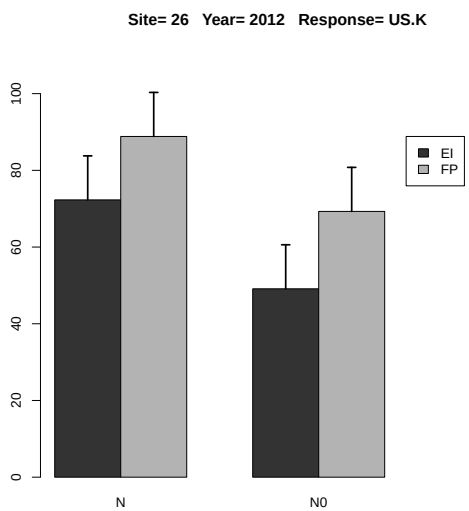

Figure 10.80: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-18.361	4.309	3.000	-4.260	-32.077	-4.645	0.024
B N-N0	21.361	3.398	6.000	6.290	13.046	29.675	0.001
A:B EI N- FP N	-16.541	5.488	6.600	-3.010	-29.674	-3.408	0.021
A:B EI N- EI N0	23.180	4.806	6.000	4.820	11.421	34.939	0.003
A:B EI N- FP N0	3.000	5.488	6.600	0.550	-10.133	16.133	0.603
A:B FP N- EI N0	39.721	5.488	6.600	7.240	26.588	52.855	0.000
A:B FP N- FP N0	19.541	4.806	6.000	4.070	7.782	31.300	0.007
A:B EI N0- FP N0	-20.180	5.488	6.600	-3.680	-33.313	-7.047	0.009

Table 10.196: Estimate of contrast in two-way ANOVA for variable US.K at site 26 in year 2012 .

10.2.14 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N	63.392
2	2	EI	N	84.901
3	3	EI	N	63.353
4	4	EI	N	82.248
5	1	EI	N0	50.248
6	2	EI	N0	66.627
7	3	EI	N0	41.124
8	4	EI	N0	41.796
9	1	FP	N0	71.179
10	2	FP	N0	80.277
11	3	FP	N0	55.100
12	4	FP	N0	74.974
13	1	FP	N	94.946
14	2	FP	N	91.038
15	3	FP	N	73.308
16	4	FP	N	100.913

Table 10.197: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	73.473	3.987	18.428	0.001
A FP	90.051	3.987	22.586	0.000
A EI-FP	-16.578	5.638	-2.940	0.114

Table 10.198: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 26 in year 2012 .

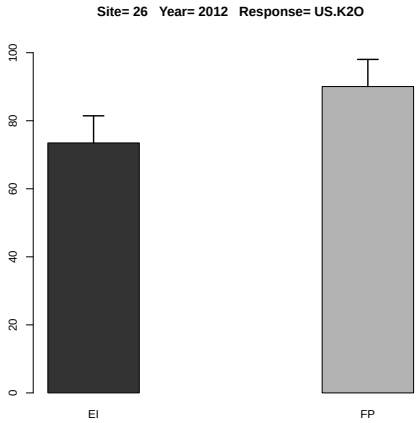

Figure 10.81: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	829.073	829.073	17.729	2.999	0.024
B	1.000	1865.689	1865.689	39.897	6.000	0.001
A:B	1.000	14.868	14.868	0.318	6.000	0.593

Table 10.199: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		61.711	5.264	4.200	11.720	47.381	76.041	0.000
2	FP		80.217	5.264	4.200	15.240	65.887	94.547	0.000
3		N	81.762	5.080	3.800	16.100	67.336	96.189	0.000
4		N0	60.166	5.080	3.800	11.840	45.739	74.592	0.000
5	EI	N	73.473	5.793	6.000	12.680	59.293	87.654	0.000
6	FP	N	90.051	5.793	6.000	15.550	75.871	104.232	0.000
7	EI	N0	49.949	5.793	6.000	8.620	35.768	64.129	0.000
8	FP	N0	70.382	5.793	6.000	12.150	56.202	84.563	0.000

Table 10.200: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-18.506	4.395	3.000	-4.210	-32.494	-4.518	0.024
B N-N0	21.597	3.419	6.000	6.320	13.230	29.963	0.001
A:B EI N- FP N	-16.578	5.568	6.500	-2.980	-29.938	-3.217	0.022
A:B EI N- EI N0	23.525	4.835	6.000	4.870	11.693	35.357	0.003
A:B EI N- FP N0	3.091	5.568	6.500	0.560	-10.270	16.451	0.597
A:B FP N- EI N0	40.103	5.568	6.500	7.200	26.742	53.463	0.000
A:B FP N- FP N0	19.669	4.835	6.000	4.070	7.837	31.501	0.007
A:B EI N0- FP N0	-20.434	5.568	6.500	-3.670	-33.794	-7.073	0.009

Table 10.201: Estimate of contrast in two-way ANOVA for variable US.K2O at site 26 in year 2012
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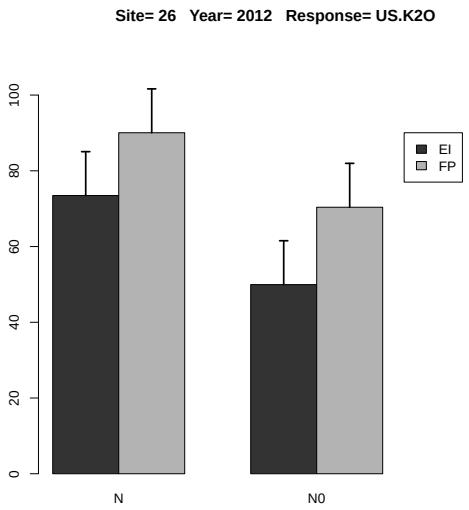

Figure 10.82: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.15 Response Variable UT.N

	rep	A	B	y
1	1	EI	N	188.174
2	2	EI	N	190.104
3	3	EI	N	184.774
4	4	EI	N	225.738
5	1	EI	N0	80.135
6	2	EI	N0	78.824
7	3	EI	N0	79.328
8	4	EI	N0	80.304
9	1	FP	N0	93.055
10	2	FP	N0	107.935
11	3	FP	N0	95.139
12	4	FP	N0	121.782
13	1	FP	N	193.370
14	2	FP	N	226.220
15	3	FP	N	184.491
16	4	FP	N	201.246

Table 10.202: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	197.198	8.810	22.383	0.000
A FP	201.332	8.810	22.852	0.000
A EI-FP	-4.134	12.460	-0.332	0.939

Table 10.203: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 26 in year 2012 .

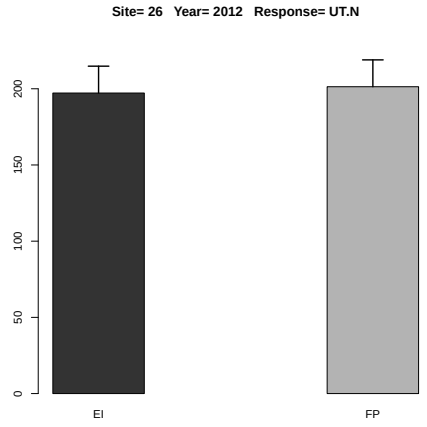

Figure 10.83: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	838.926	838.926	5.467	9.000	0.044
B	1.000	45969.107	45969.107	299.582	9.000	0.000
A:B	1.000	428.317	428.317	2.791	9.000	0.129

Table 10.204: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		138.423	5.911	5.400	23.420	123.591	153.254	0.000
2	FP		152.905	5.911	5.400	25.870	138.073	167.736	0.000
3		N	199.265	5.911	5.400	33.710	184.433	214.096	0.000
4		N0	92.063	5.911	5.400	15.580	77.231	106.894	0.000
5	EI	N	197.198	7.356	9.600	26.810	180.705	213.690	0.000
6	FP	N	201.332	7.356	9.600	27.370	184.840	217.824	0.000
7	EI	N0	79.648	7.356	9.600	10.830	63.156	96.140	0.000
8	FP	N0	104.478	7.356	9.600	14.200	87.986	120.970	0.000

Table 10.205: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 26 in year 2012 .

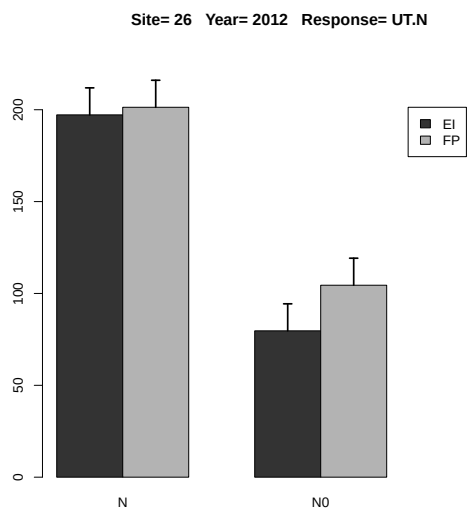

Figure 10.84: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-14.482	6.194	9.000	-2.340	-28.493	-0.471	0.044
B N-N0	107.202	6.194	9.000	17.310	93.191	121.213	0.000
A:B EI N- FP N	-4.134	8.759	9.000	-0.470	-23.949	15.680	0.648
A:B EI N- EI N0	117.550	8.759	9.000	13.420	97.736	137.364	0.000
A:B EI N- FP N0	92.720	8.759	9.000	10.590	72.905	112.534	0.000
A:B FP N- EI N0	121.684	8.759	9.000	13.890	101.870	141.499	0.000
A:B FP N- FP N0	96.854	8.759	9.000	11.060	77.040	116.669	0.000
A:B EI N0- FP N0	-24.830	8.759	9.000	-2.830	-44.645	-5.016	0.020

Table 10.206: Estimate of contrast in two-way ANOVA for variable UT.N at site 26 in year 2012 .

10.2.16 Response Variable UT.P

	rep	A	B	y
1	1	EI	N	33.057
2	2	EI	N	32.221
3	3	EI	N	28.195
4	4	EI	N	35.212
5	1	EI	N0	25.897
6	2	EI	N0	27.059
7	3	EI	N0	26.938
8	4	EI	N0	26.379
9	1	FP	N0	29.019
10	2	FP	N0	32.997
11	3	FP	N0	25.525
12	4	FP	N0	32.842
13	1	FP	N	33.532
14	2	FP	N	35.024
15	3	FP	N	35.261
16	4	FP	N	36.128

Table 10.207: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	32.171	1.064	30.242	0.000
A FP	34.986	1.064	32.888	0.000
A EI-FP	-2.815	1.504	-1.871	0.281

Table 10.208: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 26 in year 2012 .

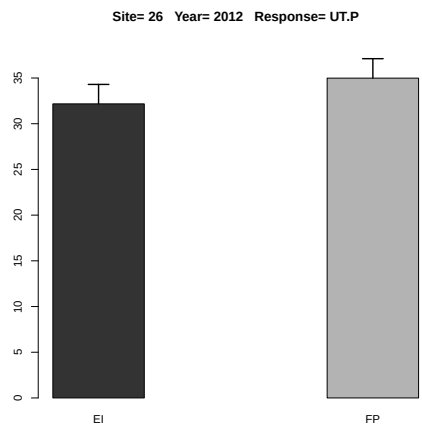

Figure 10.85: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	40.225	40.225	9.817	9.000	0.012
B	1.000	110.115	110.115	26.875	9.000	0.001
A:B	1.000	0.508	0.508	0.124	9.000	0.733

Table 10.209: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.370	0.953	5.500	30.800	26.988	31.752	0.000
2	FP		32.541	0.953	5.500	34.130	30.159	34.923	0.000
3		N	33.579	0.953	5.500	35.220	31.197	35.961	0.000
4		N0	28.332	0.953	5.500	29.720	25.950	30.714	0.000
5	EI	N	32.171	1.192	9.700	26.990	29.505	34.838	0.000
6	FP	N	34.986	1.192	9.700	29.350	32.320	37.653	0.000
7	EI	N0	26.568	1.192	9.700	22.290	23.902	29.235	0.000
8	FP	N0	30.096	1.192	9.700	25.250	27.429	32.762	0.000

Table 10.210: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.171	1.012	9.000	-3.130	-5.461	-0.882	0.012
B N-N0	5.247	1.012	9.000	5.180	2.957	7.536	0.001
A:B EI N- FP N	-2.815	1.431	9.000	-1.970	-6.053	0.423	0.081
A:B EI N- EI N0	5.603	1.431	9.000	3.910	2.365	8.841	0.004
A:B EI N- FP N0	2.076	1.431	9.000	1.450	-1.162	5.314	0.181
A:B FP N- EI N0	8.418	1.431	9.000	5.880	5.180	11.656	0.000
A:B FP N- FP N0	4.890	1.431	9.000	3.420	1.653	8.128	0.008
A:B EI N0- FP N0	-3.527	1.431	9.000	-2.460	-6.765	-0.290	0.036

Table 10.211: Estimate of contrast in two-way ANOVA for variable UT.P at site 26 in year 2012 .

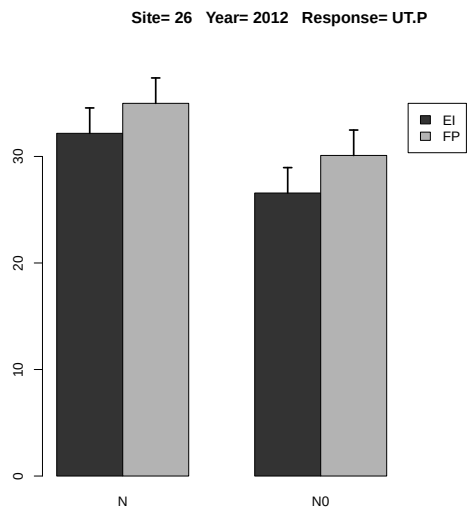

Figure 10.86: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.17 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N	33.630
2	2	EI	N	32.989
3	3	EI	N	28.724
4	4	EI	N	35.987
5	1	EI	N0	26.463
6	2	EI	N0	27.758
7	3	EI	N0	27.504
8	4	EI	N0	26.842
9	1	FP	N0	29.604
10	2	FP	N0	33.671
11	3	FP	N0	26.007
12	4	FP	N0	33.588
13	1	FP	N	34.004
14	2	FP	N	35.529
15	3	FP	N	36.182
16	4	FP	N	36.662

Table 10.212: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	32.832	1.158	28.364	0.000
A FP	35.594	1.158	30.750	0.000
A EI-FP	-2.762	1.637	-1.687	0.333

Table 10.213: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 26 in year 2012 .

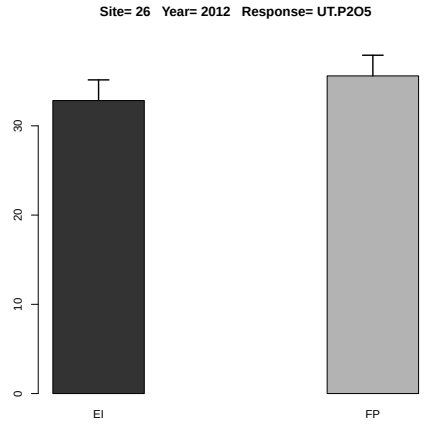

Figure 10.87: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	40.164	40.164	8.833	9.000	0.016
B	1.000	111.677	111.677	24.562	9.000	0.001
A:B	1.000	0.662	0.662	0.146	9.000	0.712

Table 10.214: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.987	0.976	5.700	30.740	27.575	32.400	0.000
2	FP		33.156	0.976	5.700	33.990	30.743	35.568	0.000
3		N	34.213	0.976	5.700	35.070	31.801	36.626	0.000
4		N0	28.930	0.976	5.700	29.650	26.517	31.342	0.000
5	EI	N	32.832	1.233	10.100	26.630	30.088	35.577	0.000
6	FP	N	35.594	1.233	10.100	28.870	32.850	38.339	0.000
7	EI	N0	27.142	1.233	10.100	22.010	24.398	29.886	0.000
8	FP	N0	30.717	1.233	10.100	24.910	27.973	33.462	0.000

Table 10.215: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 26 in year 2012 .

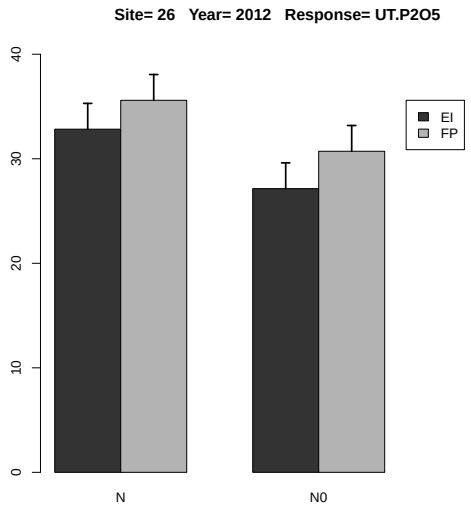

Figure 10.88: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.169	1.066	9.000	-2.970	-5.581	-0.757	0.016
B N-N0	5.284	1.066	9.000	4.960	2.872	7.696	0.001
A:B EI N- FP N	-2.762	1.508	9.000	-1.830	-6.173	0.649	0.100
A:B EI N- EI N0	5.691	1.508	9.000	3.770	2.280	9.101	0.004
A:B EI N- FP N0	2.115	1.508	9.000	1.400	-1.296	5.526	0.194
A:B FP N- EI N0	8.453	1.508	9.000	5.610	5.042	11.864	0.000
A:B FP N- FP N0	4.877	1.508	9.000	3.230	1.466	8.288	0.010
A:B EI N0- FP N0	-3.576	1.508	9.000	-2.370	-6.986	-0.165	0.042

Table 10.216: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 26 in year 2012
.

10.2.18 Response Variable UT.K

	rep	A	B	y
1	1	EI	N	86.329
2	2	EI	N	105.169
3	3	EI	N	81.680
4	4	EI	N	103.106
5	1	EI	N0	65.551
6	2	EI	N0	79.619
7	3	EI	N0	54.850
8	4	EI	N0	55.751
9	1	FP	N0	86.414
10	2	FP	N0	96.923
11	3	FP	N0	70.170
12	4	FP	N0	93.637
13	1	FP	N	117.427
14	2	FP	N	115.149
15	3	FP	N	96.472
16	4	FP	N	122.454

Table 10.217: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	94.071	3.198	29.419	0.000
A FP	112.876	3.198	35.300	0.000
A EI-FP	-18.805	4.522	-4.158	0.048

Table 10.218: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 26 in year 2012 .

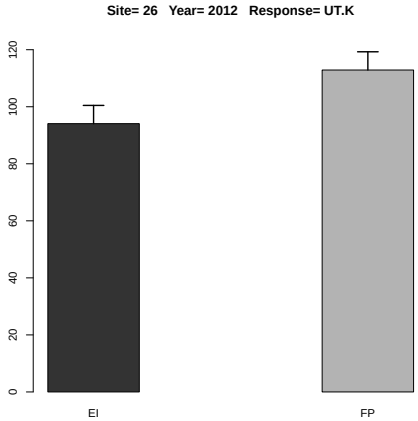

Figure 10.89: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1283.550	1283.550	30.226	2.999	0.012
B	1.000	3160.483	3160.483	74.425	6.000	0.000
A:B	1.000	16.311	16.311	0.384	6.000	0.558

Table 10.219: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		79.007	5.351	3.800	14.770	63.906	94.107	0.000
2	FP		99.831	5.351	3.800	18.660	84.730	114.931	0.000
3		N	103.473	5.263	3.600	19.660	88.290	118.657	0.000
4		N0	75.364	5.263	3.600	14.320	60.181	90.548	0.000
5	EI	N	94.071	5.826	5.300	16.150	79.333	108.809	0.000
6	FP	N	112.876	5.826	5.300	19.380	98.138	127.613	0.000
7	EI	N0	63.943	5.826	5.300	10.980	49.205	78.680	0.000
8	FP	N0	86.786	5.826	5.300	14.900	72.048	101.524	0.000

Table 10.220: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-20.824	3.788	3.000	-5.500	-32.880	-8.768	0.012
B N-N0	28.109	3.258	6.000	8.630	20.136	36.082	0.000
A:B EI N- FP N	-18.805	4.996	7.100	-3.760	-30.576	-7.034	0.007
A:B EI N- EI N0	30.128	4.608	6.000	6.540	18.853	41.404	0.001
A:B EI N- FP N0	7.285	4.996	7.100	1.460	-4.486	19.056	0.187
A:B FP N- EI N0	48.933	4.996	7.100	9.790	37.162	60.704	0.000
A:B FP N- FP N0	26.090	4.608	6.000	5.660	14.815	37.365	0.001
A:B EI N0- FP N0	-22.843	4.996	7.100	-4.570	-34.614	-11.072	0.002

Table 10.221: Estimate of contrast in two-way ANOVA for variable UT.K at site 26 in year 2012 .

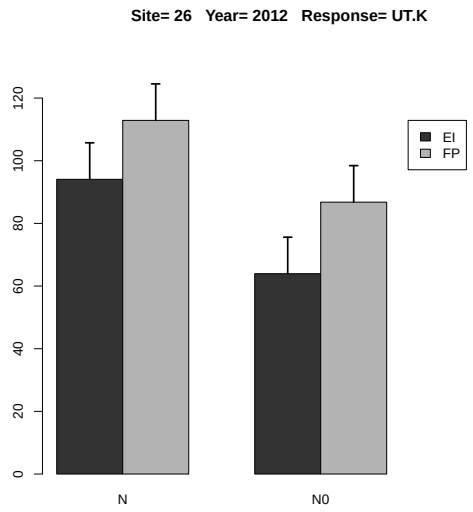

Figure 10.90: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.19 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N	87.269
2	2	EI	N	106.543
3	3	EI	N	82.885
4	4	EI	N	104.306
5	1	EI	N0	66.307
6	2	EI	N0	80.748
7	3	EI	N0	55.588
8	4	EI	N0	56.468
9	1	FP	N0	87.604
10	2	FP	N0	97.994
11	3	FP	N0	71.128
12	4	FP	N0	94.774
13	1	FP	N	118.503
14	2	FP	N	116.379
15	3	FP	N	97.672
16	4	FP	N	123.814

Table 10.222: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	95.251	3.237	29.422	0.000
A FP	114.092	3.237	35.242	0.000
A EI-FP	-18.841	4.578	-4.115	0.050

Table 10.223: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 26 in year 2012 .

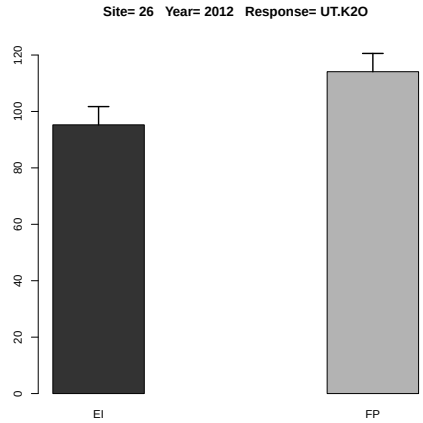

Figure 10.91: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1259.280	1259.280	29.325	2.999	0.012
B	1.000	3213.806	3213.806	74.840	6.000	0.000
A:B	1.000	18.113	18.113	0.422	6.000	0.540

Table 10.224: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		80.014	5.398	3.900	14.820	64.820	95.208	0.000
2	FP		100.984	5.398	3.900	18.710	85.790	116.177	0.000
3		N	104.671	5.299	3.600	19.750	89.381	119.962	0.000
4		N0	76.326	5.299	3.600	14.400	61.036	91.616	0.000
5	EI	N	95.251	5.874	5.300	16.210	80.409	110.093	0.000
6	FP	N	114.092	5.874	5.300	19.420	99.250	128.934	0.000
7	EI	N0	64.778	5.874	5.300	11.030	49.936	79.620	0.000
8	FP	N0	87.875	5.874	5.300	14.960	73.033	102.717	0.000

Table 10.225: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 26 in year 2012 .

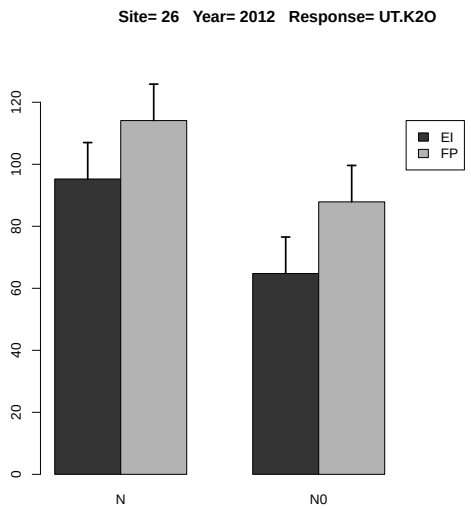

Figure 10.92: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-20.969	3.872	3.000	-5.420	-33.294	-8.645	0.012
B N-N0	28.345	3.276	6.000	8.650	20.328	36.363	0.000
A:B EI N- FP N	-18.841	5.072	7.000	-3.710	-30.825	-6.857	0.007
A:B EI N- EI N0	30.473	4.634	6.000	6.580	19.135	41.812	0.001
A:B EI N- FP N0	7.376	5.072	7.000	1.450	-4.608	19.360	0.189
A:B FP N- EI N0	49.315	5.072	7.000	9.720	37.331	61.298	0.000
A:B FP N- FP N0	26.217	4.634	6.000	5.660	14.879	37.556	0.001
A:B EI N0- FP N0	-23.097	5.072	7.000	-4.550	-35.081	-11.113	0.003

Table 10.226: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 26 in year 2012 .

10.2.20 Response Variable HI.N

	rep	A	B	y
1	1	EI	N	2.455
2	2	EI	N	2.846
3	3	EI	N	2.196
4	4	EI	N	2.165
5	1	EI	N0	1.508
6	2	EI	N0	1.632
7	3	EI	N0	1.711
8	4	EI	N0	1.922
9	1	FP	N0	1.743
10	2	FP	N0	1.445
11	3	FP	N0	1.715
12	4	FP	N0	1.860
13	1	FP	N	1.981
14	2	FP	N	2.712
15	3	FP	N	2.216
16	4	FP	N	1.859

Table 10.227: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.415	0.174	3.600	13.910	1.913	2.918	0.000
A FP	2.192	0.174	3.600	12.620	1.689	2.695	0.000
A EI-FP	0.224	0.107	3.000	2.090	-0.116	0.564	0.127

Table 10.228: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 26 in year 2012 .

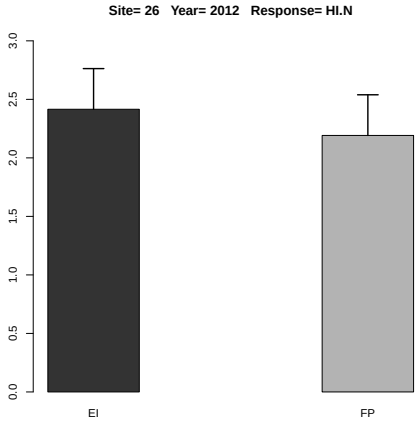

Figure 10.93: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.051	0.051	0.676	11.996	0.427
B	1.000	1.496	1.496	19.790	11.996	0.001
A:B	1.000	0.049	0.049	0.647	11.996	0.437

Table 10.229: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.054	0.097	12.000	21.130	1.843	2.266	0.000
2	FP		1.941	0.097	12.000	19.970	1.729	2.153	0.000
3		N	2.304	0.097	12.000	23.700	2.092	2.515	0.000
4		N0	1.692	0.097	12.000	17.400	1.480	1.904	0.000
5	EI	N	2.415	0.138	12.000	17.570	2.116	2.715	0.000
6	FP	N	2.192	0.138	12.000	15.940	1.892	2.491	0.000
7	EI	N0	1.693	0.138	12.000	12.320	1.394	1.993	0.000
8	FP	N0	1.691	0.138	12.000	12.300	1.391	1.990	0.000

Table 10.230: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.113	0.138	12.000	0.820	-0.186	0.413	0.427
B N-N0	0.612	0.138	12.000	4.450	0.312	0.911	0.001
A:B EI N- FP N	0.224	0.194	12.000	1.150	-0.200	0.647	0.272
A:B EI N- EI N0	0.722	0.194	12.000	3.710	0.299	1.146	0.003
A:B EI N- FP N0	0.725	0.194	12.000	3.730	0.301	1.148	0.003
A:B FP N- EI N0	0.498	0.194	12.000	2.560	0.075	0.922	0.025
A:B FP N- FP N0	0.501	0.194	12.000	2.580	0.077	0.925	0.024
A:B EI N0- FP N0	0.002	0.194	12.000	0.010	-0.421	0.426	0.990

Table 10.231: Estimate of contrast in two-way ANOVA for variable HI.N at site 26 in year 2012 .

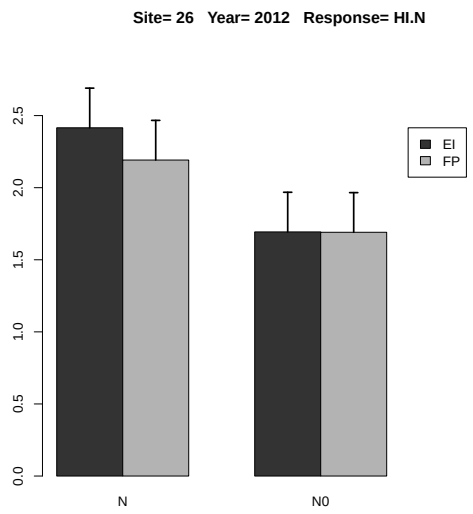

Figure 10.94: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.21 Response Variable HI.P

	rep	A	B	y
1	1	EI	N	4.235
2	2	EI	N	5.234
3	3	EI	N	3.918
4	4	EI	N	4.387
5	1	EI	N0	1.954
6	2	EI	N0	1.393
7	3	EI	N0	1.628
8	4	EI	N0	2.007
9	1	FP	N0	1.573
10	2	FP	N0	1.509
11	3	FP	N0	2.739
12	4	FP	N0	2.079
13	1	FP	N	3.959
14	2	FP	N	4.492
15	3	FP	N	4.295
16	4	FP	N	3.647

Table 10.232: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4.444	0.238	5.200	18.640	3.839	5.048	0.000
A FP	4.098	0.238	5.200	17.190	3.493	4.703	0.000
A EI-FP	0.345	0.264	3.000	1.310	-0.496	1.187	0.283

Table 10.233: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 26 in year 2012 .

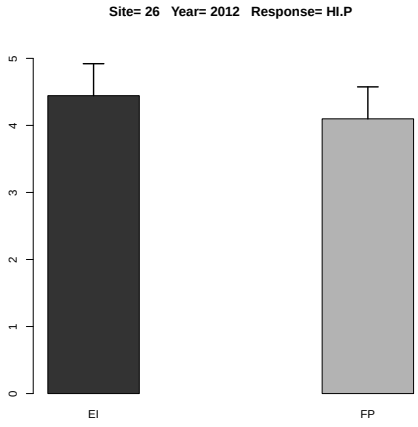

Figure 10.95: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.013	0.013	0.062	11.997	0.807
B	1.000	23.245	23.245	107.776	11.997	0.000
A:B	1.000	0.330	0.330	1.532	11.997	0.240

Table 10.234: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.095	0.164	12.000	18.850	2.737	3.452	0.000
2	FP		3.037	0.164	12.000	18.490	2.679	3.394	0.000
3		N	4.271	0.164	12.000	26.010	3.913	4.629	0.000
4		N0	1.860	0.164	12.000	11.330	1.502	2.218	0.000
5	EI	N	4.444	0.232	12.000	19.140	3.938	4.949	0.000
6	FP	N	4.098	0.232	12.000	17.650	3.592	4.604	0.000
7	EI	N0	1.746	0.232	12.000	7.520	1.240	2.252	0.000
8	FP	N0	1.975	0.232	12.000	8.500	1.469	2.481	0.000

Table 10.235: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 26 in year 2012 .

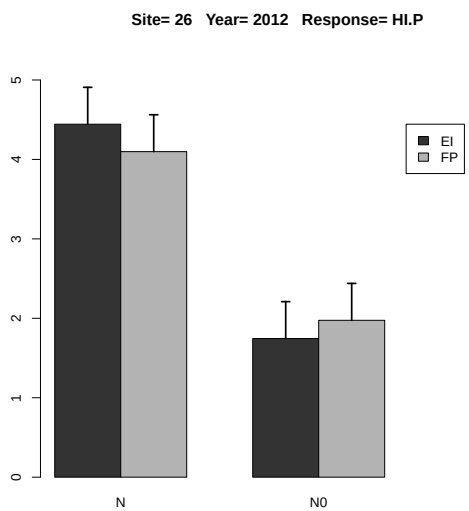

Figure 10.96: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.058	0.232	12.000	0.250	-0.448	0.564	0.807
B N-N0	2.411	0.232	12.000	10.380	1.905	2.917	0.000
A:B EI N- FP N	0.345	0.328	12.000	1.050	-0.370	1.061	0.314
A:B EI N- EI N0	2.698	0.328	12.000	8.220	1.982	3.413	0.000
A:B EI N- FP N0	2.469	0.328	12.000	7.520	1.753	3.184	0.000
A:B FP N- EI N0	2.353	0.328	12.000	7.160	1.637	3.068	0.000
A:B FP N- FP N0	2.123	0.328	12.000	6.470	1.408	2.839	0.000
A:B EI N0- FP N0	-0.229	0.328	12.000	-0.700	-0.945	0.486	0.498

Table 10.236: Estimate of contrast in two-way ANOVA for variable HI.P at site 26 in year 2012 .

10.2.22 Response Variable HI.K

	rep	A	B	y
1	1	EI	N	0.382
2	2	EI	N	0.259
3	3	EI	N	0.314
4	4	EI	N	0.272
5	1	EI	N0	0.324
6	2	EI	N0	0.216
7	3	EI	N0	0.358
8	4	EI	N0	0.357
9	1	FP	N0	0.235
10	2	FP	N0	0.224
11	3	FP	N0	0.296
12	4	FP	N0	0.268
13	1	FP	N	0.251
14	2	FP	N	0.282
15	3	FP	N	0.338
16	4	FP	N	0.230

Table 10.237: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.307	0.026	6.000	11.950	0.244	0.370	0.000
A FP	0.275	0.026	6.000	10.710	0.212	0.338	0.000
A EI-FP	0.032	0.036	6.000	0.870	-0.057	0.121	0.416

Table 10.238: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 26 in year 2012 .

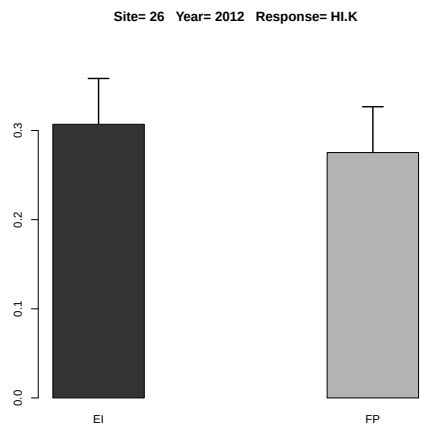

Figure 10.97: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.004	0.004	2.678	3.000	0.200
B	1.000	0.000	0.000	0.100	5.985	0.763
A:B	1.000	0.001	0.001	0.431	5.985	0.536

Table 10.239: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.310	0.022	5.700	14.210	0.256	0.364	0.000
2	FP		0.265	0.022	5.700	12.150	0.211	0.320	0.000
3		N	0.291	0.020	5.200	14.730	0.241	0.341	0.000
4		N0	0.285	0.020	5.200	14.410	0.234	0.335	0.000
5	EI	N	0.307	0.026	9.900	11.760	0.249	0.365	0.000
6	FP	N	0.275	0.026	9.900	10.550	0.217	0.334	0.000
7	EI	N0	0.314	0.026	9.900	12.030	0.256	0.372	0.000
8	FP	N0	0.256	0.026	9.900	9.790	0.197	0.314	0.000

Table 10.240: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 26 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.045	0.028	3.000	1.640	-0.042	0.132	0.200
B N-N0	0.006	0.020	6.000	0.320	-0.043	0.056	0.763
A:B EI N- FP N	0.032	0.034	6.200	0.930	-0.051	0.114	0.387
A:B EI N- EI N0	-0.007	0.028	6.000	-0.240	-0.077	0.063	0.818
A:B EI N- FP N0	0.051	0.034	6.200	1.510	-0.031	0.134	0.181
A:B FP N- EI N0	-0.039	0.034	6.200	-1.130	-0.121	0.044	0.300
A:B FP N- FP N0	0.020	0.028	6.000	0.690	-0.050	0.089	0.517
A:B EI N0- FP N0	0.058	0.034	6.200	1.710	-0.025	0.141	0.137

Table 10.241: Estimate of contrast in two-way ANOVA for variable HI.K at site 26 in year 2012 .

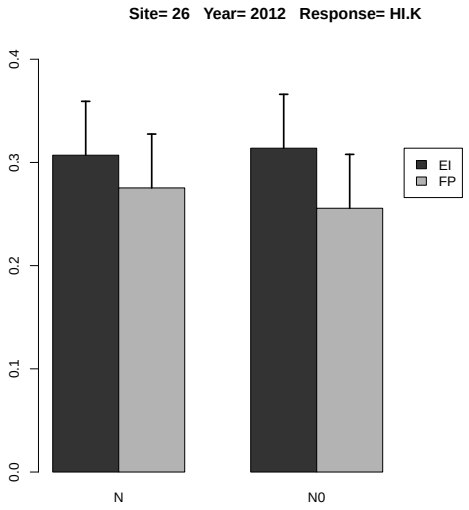

Figure 10.98: Estimated treatment means and standard error in the 2-way ANOVA.

10.2.23 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	70.748
2	2	EI	N	80.156
3	3	EI	N	72.341
4	4	EI	N	81.696
5	1	FP	N	68.204
6	2	FP	N	70.178
7	3	FP	N	67.471
8	4	FP	N	69.459

Table 10.242: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	76.235	1.989	5.300	38.330	71.205	81.265	0.000
A FP	68.828	1.989	5.300	34.610	63.798	73.858	0.000
A EI-FP	7.407	2.237	3.000	3.310	0.289	14.525	0.045

Table 10.243: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 26 in year 2012 .

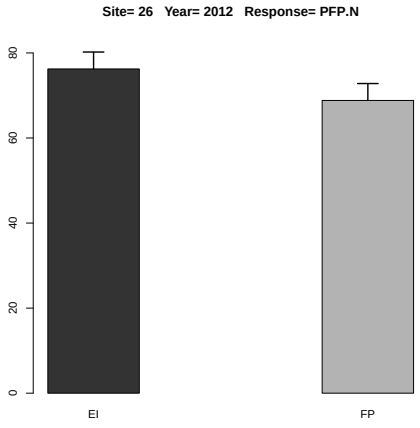

Figure 10.99: Estimated treatment means and standard error in the one-way ANOVA.

10.2.24 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	561.824
2	2	EI	N	636.529
3	3	EI	N	574.471
4	4	EI	N	648.765

Table 10.244: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

10.2.25 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.990
2	2	EI	N	1.042
3	3	EI	N	0.940
4	4	EI	N	1.144
5	1	FP	N	0.818
6	2	FP	N	1.053
7	3	FP	N	0.810
8	4	FP	N	0.834

Table 10.245: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.029	0.051	5.800	20.030	0.902	1.156	0.000
A FP	0.879	0.051	5.800	17.100	0.752	1.005	0.000
A EI-FP	0.151	0.066	3.000	2.280	-0.060	0.361	0.107

Table 10.246: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 26 in year 2012 .

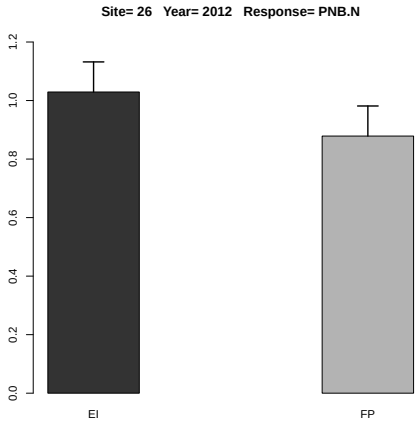

Figure 10.100: Estimated treatment means and standard error in the one-way ANOVA.

10.2.26 Response Variable AE

	rep	A	B	y
1	1	EI	N	31.096
2	2	EI	N	39.926
3	3	EI	N	31.133
4	4	EI	N	38.222
5	1	FP	N	26.357
6	2	FP	N	25.038
7	3	FP	N	24.936
8	4	FP	N	19.013

Table 10.247: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	35.094	2.454	14.302	0.001
A FP	23.836	2.454	9.714	0.004
A EI-FP	11.258	3.470	3.244	0.090

Table 10.248: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 26 in year 2012 .

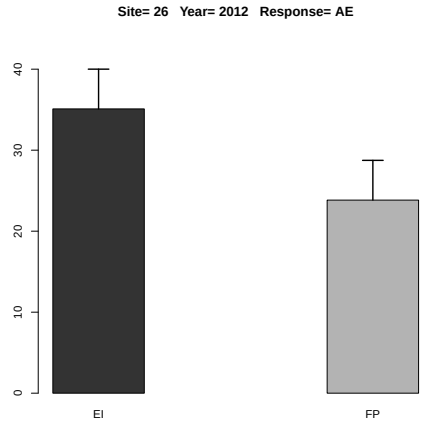

Figure 10.101: Estimated treatment means and standard error in the one-way ANOVA.

10.2.27 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.800
2	2	EI	N	0.824
3	3	EI	N	0.781
4	4	EI	N	1.077
5	1	FP	N	0.639
6	2	FP	N	0.753
7	3	FP	N	0.569
8	4	FP	N	0.506

Table 10.249: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.871	0.078	11.223	0.003
A FP	0.617	0.078	7.951	0.008
A EI-FP	0.254	0.110	2.313	0.190

Table 10.250: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 26 in year 2012 .

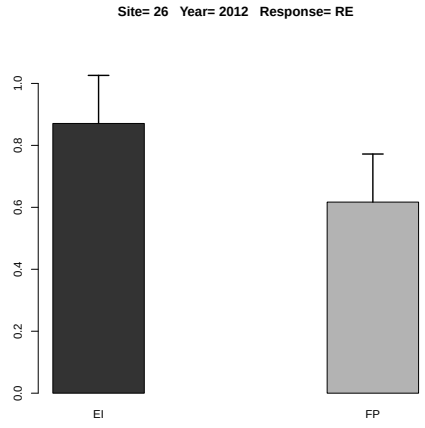

Figure 10.102: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 11

Analysis of Variance for Site 27

11.1 Year 2012

There are 31 variables not observed: UG.Cl UG.Mo US.Cl US.Mo UT.Cl UT.Mo PFP.K2O PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Cl HI.Mo PFP.K PNB.K

11.1.1 Response Variable YG

	rep	A	B	y
1	1	FP	N0	5864.000
2	2	FP	N0	5085.000
3	3	FP	N0	3772.000
4	4	FP	N0	7855.000
5	5	FP	N0	5645.000
6	6	FP	N0	3064.000
7	1	FP	N	6924.000
8	2	FP	N	8408.000
9	3	FP	N	9157.000
10	4	FP	N	8647.000
11	5	FP	N	10356.000
12	6	FP	N	6819.000
13	1	EI	N0	3510.000
14	2	EI	N0	4092.000
15	3	EI	N0	6392.000
16	4	EI	N0	3425.000
17	5	EI	N0	5278.000
18	6	EI	N0	996.000
19	1	EI	N	7405.000
20	2	EI	N	7859.000
21	3	EI	N	11646.000
22	4	EI	N	7924.000
23	5	EI	N	7293.000
24	6	EI	N	6546.000

Table 11.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	8112.167	520.576	15.583	0.000
A FP	8385.167	520.576	16.107	0.000
A EI-FP	-273.000	736.205	-0.371	0.924

Table 11.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 27 in year 2012 .

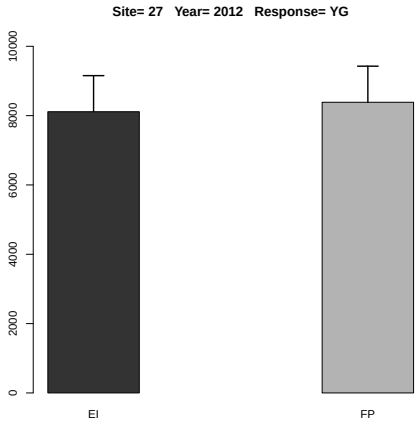

Figure 11.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1488356.756	1488356.756	1.153	4.999	0.332
B	1.000	80688668.167	80688668.167	62.494	10.183	0.000
A:B	1.000	1477088.167	1477088.167	1.144	10.183	0.310

Table 11.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6030.500	603.330	9.200	10.000	4670.141	7390.859	0.000
2	FP		6799.667	603.330	9.200	11.270	5439.307	8160.026	0.000
3		N	8248.667	538.050	7.400	15.330	6988.688	9508.646	0.000
4		N0	4581.500	538.050	7.400	8.520	3321.521	5841.479	0.000
5	EI	N	8112.167	686.734	14.300	11.810	6642.259	9582.074	0.000
6	FP	N	8385.167	686.734	14.300	12.210	6915.259	9855.074	0.000
7	EI	N0	3948.833	686.734	14.300	5.750	2478.926	5418.741	0.000
8	FP	N0	5214.167	686.734	14.300	7.590	3744.259	6684.074	0.000

Table 11.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-769.167	716.400	5.000	-1.070	-2610.800	1072.466	0.332
B N-N0	3667.167	463.888	10.200	7.910	2636.098	4698.235	0.000
A:B EI N- FP N	-273.000	853.476	9.300	-0.320	-2195.144	1649.144	0.756
A:B EI N- EI N0	4163.333	656.037	10.200	6.350	2705.182	5621.485	0.000
A:B EI N- FP N0	2898.000	853.476	9.300	3.400	975.856	4820.144	0.008
A:B FP N- EI N0	4436.333	853.476	9.300	5.200	2514.189	6358.477	0.000
A:B FP N- FP N0	3171.000	656.037	10.200	4.830	1712.848	4629.152	0.001
A:B EI N0- FP N0	-1265.333	853.476	9.300	-1.480	-3187.477	656.811	0.171

Table 11.5: Estimate of contrast in two-way ANOVA for variable YG at site 27 in year 2012 .

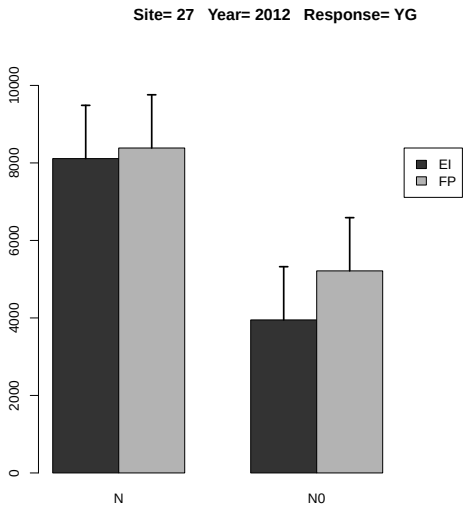

Figure 11.2: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.2 Response Variable YS

	rep	A	B	y
1	1	FP	N0	7506.000
2	2	FP	N0	8425.000
3	3	FP	N0	7224.000
4	4	FP	N0	9031.000
5	5	FP	N0	8056.000
6	6	FP	N0	6361.000
7	1	FP	N	9867.000
8	2	FP	N	9644.000
9	3	FP	N	9796.000
10	4	FP	N	9120.000
11	5	FP	N	10732.000
12	6	FP	N	8319.000
13	1	EI	N0	6966.000
14	2	EI	N0	8662.000
15	3	EI	N0	8825.000
16	4	EI	N0	8022.000
17	5	EI	N0	7298.000
18	6	EI	N0	6151.000
19	1	EI	N	8887.000
20	2	EI	N	9204.000
21	3	EI	N	10166.000
22	4	EI	N	9792.000
23	5	EI	N	9682.000
24	6	EI	N	10535.000

Table 11.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	9711.000	357.122	27.192	0.000
A FP	9579.667	357.122	26.825	0.000
A EI-FP	131.333	505.046	0.260	0.962

Table 11.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 27 in year 2012 .

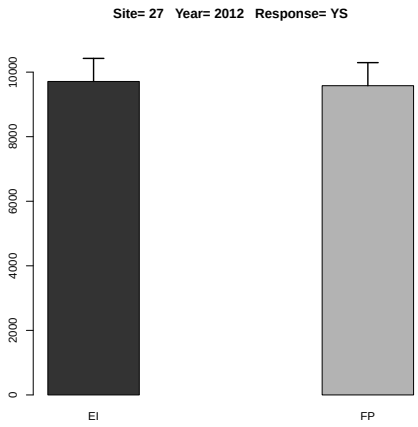

Figure 11.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	486.215	486.215	0.001	4.995	0.980
B	1.000	22459545.375	22459545.375	33.527	10.947	0.000
A:B	1.000	89670.375	89670.375	0.134	10.947	0.721

Table 11.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8682.500	261.857	9.700	33.160	8096.660	9268.340	0.000
2	FP		8673.417	261.857	9.700	33.120	8087.577	9259.257	0.000
3		N	9645.333	260.888	11.800	36.970	9075.667	10215.000	0.000
4		N0	7710.583	260.888	11.800	29.560	7140.917	8280.250	0.000
5	EI	N	9711.000	352.694	20.100	27.530	8975.592	10446.408	0.000
6	FP	N	9579.667	352.694	20.100	27.160	8844.259	10315.075	0.000
7	EI	N0	7654.000	352.694	20.100	21.700	6918.592	8389.408	0.000
8	FP	N0	7767.167	352.694	20.100	22.020	7031.759	8502.575	0.000

Table 11.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	9.083	337.157	5.000	0.030	-857.851	876.018	0.980
B N-N0	1934.750	334.138	10.900	5.790	1198.855	2670.645	0.000
A:B EI N- FP N	131.333	474.682	13.600	0.280	-889.353	1152.019	0.786
A:B EI N- EI N0	2057.000	472.542	10.900	4.350	1016.287	3097.713	0.001
A:B EI N- FP N0	1943.833	474.682	13.600	4.100	923.147	2964.519	0.001
A:B FP N- EI N0	1925.667	474.682	13.600	4.060	904.981	2946.353	0.001
A:B FP N- FP N0	1812.500	472.542	10.900	3.840	771.787	2853.213	0.003
A:B EI N0- FP N0	-113.167	474.682	13.600	-0.240	-1133.853	907.519	0.815

Table 11.10: Estimate of contrast in two-way ANOVA for variable YS at site 27 in year 2012 .

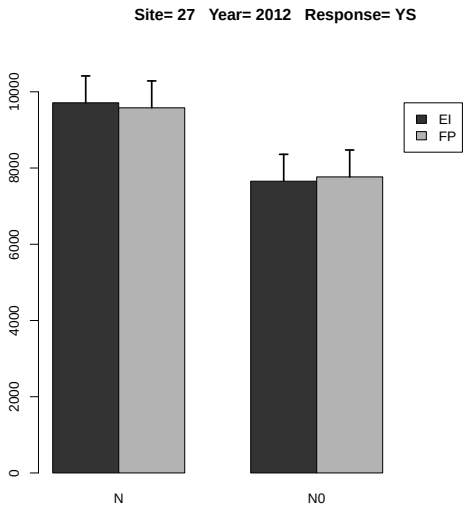

Figure 11.4: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.3 Response Variable YT

	rep	A	B	y
1	1	FP	N0	13370.000
2	2	FP	N0	13510.000
3	3	FP	N0	10996.000
4	4	FP	N0	16886.000
5	5	FP	N0	13701.000
6	6	FP	N0	9425.000
7	1	FP	N	16791.000
8	2	FP	N	18052.000
9	3	FP	N	18953.000
10	4	FP	N	17767.000
11	5	FP	N	21088.000
12	6	FP	N	15138.000
13	1	EI	N0	10476.000
14	2	EI	N0	12754.000
15	3	EI	N0	15217.000
16	4	EI	N0	11447.000
17	5	EI	N0	12576.000
18	6	EI	N0	7147.000
19	1	EI	N	16292.000
20	2	EI	N	17063.000
21	3	EI	N	21812.000
22	4	EI	N	17716.000
23	5	EI	N	16975.000
24	6	EI	N	17081.000

Table 11.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	17823.167	706.815	25.216	0.000
A FP	17964.833	706.815	25.417	0.000
A EI-FP	-141.667	999.587	-0.142	0.988

Table 11.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 27 in year 2012 .

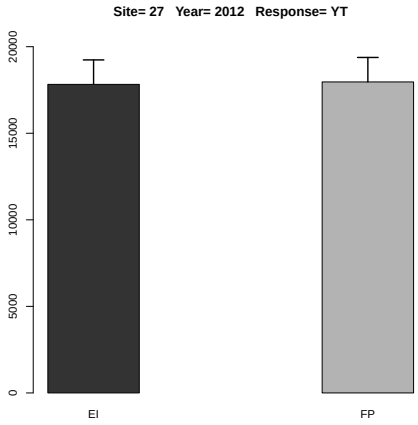

Figure 11.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1778926.164	1778926.164	0.639	4.999	0.460
B	1.000	188288822.042	188288822.042	67.626	13.740	0.000
A:B	1.000	2294635.042	2294635.042	0.824	13.740	0.380

Table 11.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14713.000	825.049	9.000	17.830	12846.145	16579.855	0.000
2	FP		15473.083	825.049	9.000	18.750	13606.228	17339.938	0.000
3		N	17894.000	755.421	7.700	23.690	16139.852	19648.148	0.000
4		N0	12292.083	755.421	7.700	16.270	10537.935	14046.232	0.000
5	EI	N	17823.167	955.369	15.000	18.660	15787.012	19859.321	0.000
6	FP	N	17964.833	955.369	15.000	18.800	15928.679	20000.988	0.000
7	EI	N0	11602.833	955.369	15.000	12.140	9566.679	13638.988	0.000
8	FP	N0	12981.333	955.369	15.000	13.590	10945.179	15017.488	0.000

Table 11.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-760.083	950.909	5.000	-0.800	-3204.586	1684.419	0.460
B N-N0	5601.917	681.211	13.700	8.220	4138.267	7065.566	0.000
A:B EI N- FP N	-141.667	1169.734	10.400	-0.120	-2732.955	2449.621	0.906
A:B EI N- EI N0	6220.333	963.377	13.700	6.460	4150.421	8290.246	0.000
A:B EI N- FP N0	4841.833	1169.734	10.400	4.140	2250.545	7433.121	0.002
A:B FP N- EI N0	6362.000	1169.734	10.400	5.440	3770.712	8953.288	0.000
A:B FP N- FP N0	4983.500	963.377	13.700	5.170	2913.587	7053.413	0.000
A:B EI N0- FP N0	-1378.500	1169.734	10.400	-1.180	-3969.788	1212.788	0.265

Table 11.15: Estimate of contrast in two-way ANOVA for variable YT at site 27 in year 2012 .

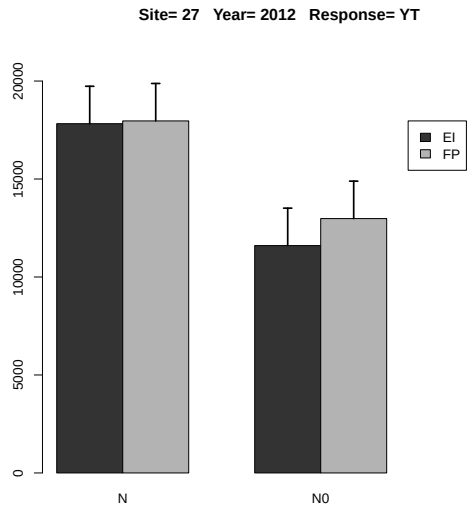

Figure 11.6: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.4 Response Variable HI.G

	rep	A	B	y
1	1	FP	N0	0.439
2	2	FP	N0	0.376
3	3	FP	N0	0.343
4	4	FP	N0	0.465
5	5	FP	N0	0.412
6	6	FP	N0	0.325
7	1	FP	N	0.412
8	2	FP	N	0.466
9	3	FP	N	0.483
10	4	FP	N	0.487
11	5	FP	N	0.491
12	6	FP	N	0.450
13	1	EI	N0	0.335
14	2	EI	N0	0.321
15	3	EI	N0	0.420
16	4	EI	N0	0.299
17	5	EI	N0	0.420
18	6	EI	N0	0.139
19	1	EI	N	0.455
20	2	EI	N	0.461
21	3	EI	N	0.534
22	4	EI	N	0.447
23	5	EI	N	0.430
24	6	EI	N	0.383

Table 11.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.452	0.015	30.493	0.000
A FP	0.465	0.015	31.397	0.000
A EI-FP	-0.013	0.021	-0.639	0.798

Table 11.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 27 in year 2012 .

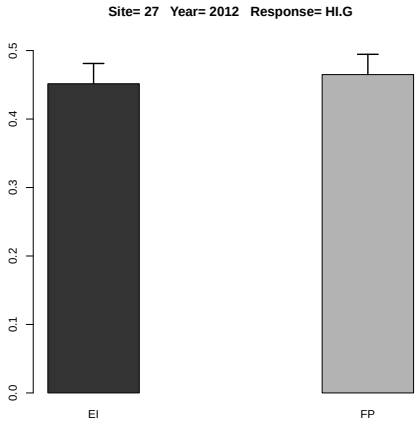

Figure 11.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.006	0.006	2.372	4.999	0.184
B	1.000	0.060	0.060	25.067	9.980	0.001
A:B	1.000	0.005	0.005	2.067	9.980	0.181

Table 11.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.387	0.022	9.400	17.210	0.336	0.438	0.000
2	FP		0.429	0.022	9.400	19.090	0.379	0.480	0.000
3		N	0.458	0.020	8.200	22.410	0.411	0.505	0.000
4		N0	0.358	0.020	8.200	17.500	0.311	0.405	0.000
5	EI	N	0.452	0.027	15.900	16.990	0.395	0.508	0.000
6	FP	N	0.465	0.027	15.900	17.490	0.409	0.521	0.000
7	EI	N0	0.322	0.027	15.900	12.130	0.266	0.379	0.000
8	FP	N0	0.393	0.027	15.900	14.800	0.337	0.450	0.000

Table 11.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.042	0.027	5.000	-1.540	-0.113	0.028	0.184
B N-N0	0.100	0.020	10.000	5.010	0.056	0.145	0.000
A:B EI N- FP N	-0.013	0.034	10.300	-0.390	-0.089	0.062	0.701
A:B EI N- EI N0	0.129	0.028	10.000	4.560	0.066	0.192	0.001
A:B EI N- FP N0	0.058	0.034	10.300	1.710	-0.017	0.134	0.117
A:B FP N- EI N0	0.143	0.034	10.300	4.200	0.067	0.218	0.002
A:B FP N- FP N0	0.071	0.028	10.000	2.520	0.008	0.135	0.030
A:B EI N0- FP N0	-0.071	0.034	10.300	-2.090	-0.146	0.004	0.062

Table 11.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 27 in year 2012 .

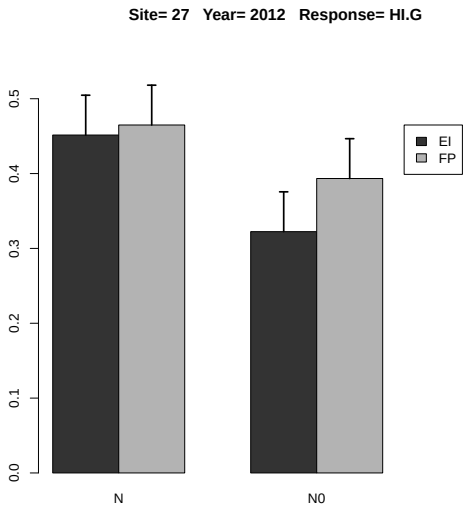

Figure 11.8: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.5 Response Variable UG.N

	rep	A	B	y
1	1	FP	N0	61.982
2	2	FP	N0	54.562
3	3	FP	N0	41.153
4	4	FP	N0	81.299
5	5	FP	N0	60.176
6	6	FP	N0	44.980
7	1	FP	N	90.012
8	2	FP	N	91.311
9	3	FP	N	100.635
10	4	FP	N	110.249
11	5	FP	N	136.596
12	6	FP	N	94.784
13	1	EI	N0	43.454
14	2	EI	N0	45.135
15	3	EI	N0	76.384
16	4	EI	N0	48.018
17	5	EI	N0	51.936
18	6	EI	N0	14.631
19	1	EI	N	77.012
20	2	EI	N	99.023
21	3	EI	N	138.471
22	4	EI	N	98.733
23	5	EI	N	97.434
24	6	EI	N	115.144

Table 11.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	104.303	7.895	13.211	0.000
A FP	103.931	7.895	13.164	0.000
A EI-FP	0.372	11.165	0.033	0.999

Table 11.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 27 in year 2012 .

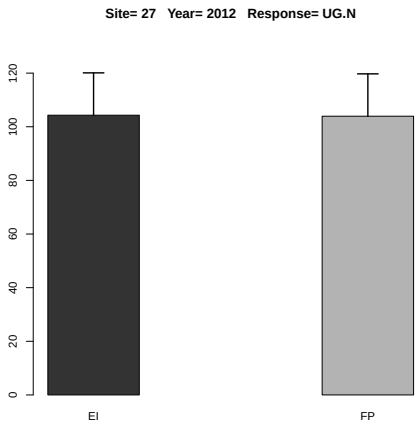

Figure 11.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	81.590	81.590	0.365	9.999	0.559
B	1.000	16312.289	16312.289	73.050	10.000	0.000
A:B	1.000	186.060	186.060	0.833	10.000	0.383

Table 11.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		75.448	6.079	10.000	12.410	61.902	88.994	0.000
2	FP		80.645	6.079	10.000	13.270	67.099	94.191	0.000
3		N	104.117	5.271	18.000	19.750	93.044	115.190	0.000
4		N0	51.976	5.271	18.000	9.860	40.903	63.048	0.000
5	EI	N	104.303	7.454	18.000	13.990	88.644	119.962	0.000
6	FP	N	103.931	7.454	18.000	13.940	88.272	119.590	0.000
7	EI	N0	46.593	7.454	18.000	6.250	30.934	62.252	0.000
8	FP	N0	57.359	7.454	18.000	7.690	41.700	73.018	0.000

Table 11.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.197	8.598	10.000	-0.600	-24.354	13.960	0.559
B N-N0	52.141	6.101	10.000	8.550	38.548	65.734	0.000
A:B EI N- FP N	0.372	10.542	18.000	0.040	-21.773	22.517	0.972
A:B EI N- EI N0	57.710	8.628	10.000	6.690	38.486	76.933	0.000
A:B EI N- FP N0	46.944	10.542	18.000	4.450	24.799	69.090	0.000
A:B FP N- EI N0	57.338	10.542	18.000	5.440	35.193	79.483	0.000
A:B FP N- FP N0	46.573	8.628	10.000	5.400	27.349	65.796	0.000
A:B EI N0- FP N0	-10.766	10.542	18.000	-1.020	-32.911	11.380	0.321

Table 11.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 27 in year 2012 .

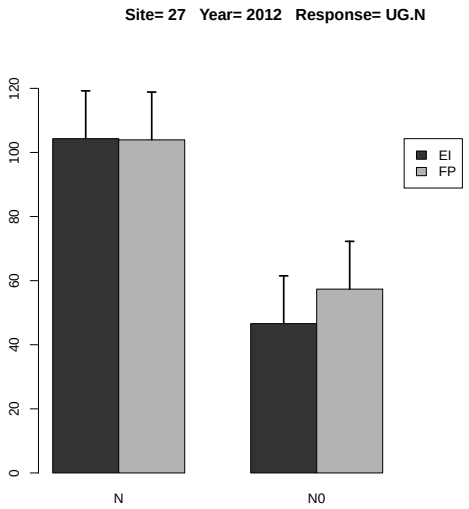

Figure 11.10: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.6 Response Variable UG.P

	rep	A	B	y
1	1	FP	N0	10.438
2	2	FP	N0	10.323
3	3	FP	N0	14.409
4	4	FP	N0	17.281
5	5	FP	N0	12.363
6	6	FP	N0	9.529
7	1	FP	N	11.563
8	2	FP	N	16.984
9	3	FP	N	13.736
10	4	FP	N	15.305
11	5	FP	N	37.385
12	6	FP	N	13.297
13	1	EI	N0	9.056
14	2	EI	N0	8.839
15	3	EI	N0	15.213
16	4	EI	N0	7.535
17	5	EI	N0	17.101
18	6	EI	N0	1.514
19	1	EI	N	12.589
20	2	EI	N	10.452
21	3	EI	N	19.099
22	4	EI	N	12.599
23	5	EI	N	14.586
24	6	EI	N	25.398

Table 11.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	15.787	3.453	4.572	0.013
A FP	18.045	3.453	5.226	0.007
A EI-FP	-2.258	4.884	-0.462	0.886

Table 11.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 27 in year 2012 .

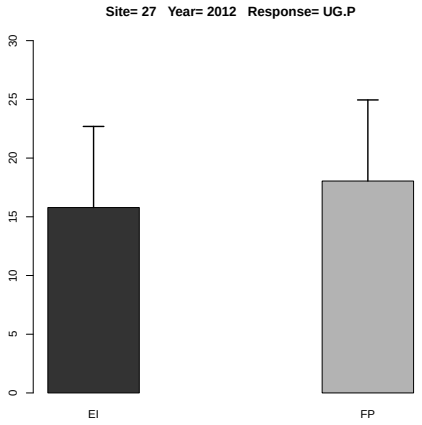

Figure 11.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	34.156	34.156	0.888	14.999	0.361
B	1.000	200.653	200.653	5.219	14.999	0.037
A:B	1.000	0.099	0.099	0.003	14.999	0.960

Table 11.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.832	1.909	13.200	6.720	8.715	16.948	0.000
2	FP		15.218	1.909	13.200	7.970	11.101	19.334	0.000
3		N	16.916	1.909	13.200	8.860	12.800	21.032	0.000
4		N0	11.133	1.909	13.200	5.830	7.017	15.250	0.000
5	EI	N	15.787	2.616	19.800	6.030	10.325	21.250	0.000
6	FP	N	18.045	2.616	19.800	6.900	12.583	23.507	0.000
7	EI	N0	9.876	2.616	19.800	3.770	4.414	15.338	0.001
8	FP	N0	12.390	2.616	19.800	4.740	6.928	17.853	0.000

Table 11.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.386	2.531	15.000	-0.940	-7.781	3.010	0.361
B N-N0	5.783	2.531	15.000	2.280	0.388	11.178	0.037
A:B EI N- FP N	-2.258	3.580	15.000	-0.630	-9.888	5.373	0.538
A:B EI N- EI N0	5.911	3.580	15.000	1.650	-1.719	13.541	0.119
A:B EI N- FP N0	3.397	3.580	15.000	0.950	-4.233	11.027	0.358
A:B FP N- EI N0	8.169	3.580	15.000	2.280	0.539	15.799	0.037
A:B FP N- FP N0	5.655	3.580	15.000	1.580	-1.976	13.285	0.135
A:B EI N0- FP N0	-2.514	3.580	15.000	-0.700	-10.144	5.116	0.493

Table 11.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 27 in year 2012 .

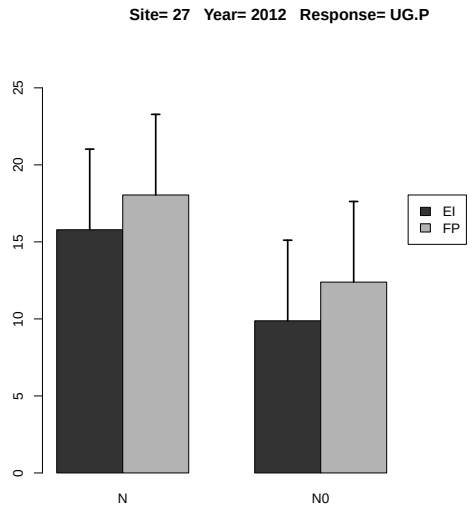

Figure 11.12: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	FP	N0	23.903
2	2	FP	N0	23.639
3	3	FP	N0	32.997
4	4	FP	N0	39.573
5	5	FP	N0	28.310
6	6	FP	N0	21.822
7	1	FP	N	26.479
8	2	FP	N	38.894
9	3	FP	N	31.454
10	4	FP	N	35.049
11	5	FP	N	85.612
12	6	FP	N	30.450
13	1	EI	N0	20.738
14	2	EI	N0	20.241
15	3	EI	N0	34.838
16	4	EI	N0	17.255
17	5	EI	N0	39.161
18	6	EI	N0	3.467
19	1	EI	N	28.828
20	2	EI	N	23.936
21	3	EI	N	43.738
22	4	EI	N	28.852
23	5	EI	N	33.402
24	6	EI	N	58.163

Table 11.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	36.153	7.908	4.572	0.013
A FP	41.323	7.908	5.226	0.007
A EI-FP	-5.170	11.183	-0.462	0.886

Table 11.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 27 in year 2012 .

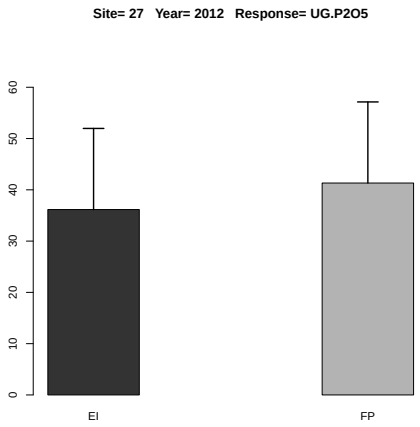

Figure 11.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	179.116	179.116	0.888	14.999	0.361
B	1.000	1052.242	1052.242	5.219	14.999	0.037
A:B	1.000	0.517	0.517	0.003	14.999	0.960

Table 11.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.385	4.370	13.200	6.720	19.958	38.811	0.000
2	FP		34.849	4.370	13.200	7.970	25.422	44.275	0.000
3		N	38.738	4.370	13.200	8.860	29.312	48.164	0.000
4		N0	25.495	4.370	13.200	5.830	16.069	34.922	0.000
5	EI	N	36.153	5.992	19.800	6.030	23.644	48.662	0.000
6	FP	N	41.323	5.992	19.800	6.900	28.814	53.832	0.000
7	EI	N0	22.616	5.992	19.800	3.770	10.108	35.125	0.001
8	FP	N0	28.374	5.992	19.800	4.740	15.865	40.883	0.000

Table 11.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.464	5.797	15.000	-0.940	-17.819	6.892	0.361
B N-N0	13.243	5.797	15.000	2.280	0.887	25.598	0.037
A:B EI N- FP N	-5.170	8.198	15.000	-0.630	-22.643	12.303	0.538
A:B EI N- EI N0	13.537	8.198	15.000	1.650	-3.937	31.010	0.119
A:B EI N- FP N0	7.779	8.198	15.000	0.950	-9.694	25.252	0.358
A:B FP N- EI N0	18.707	8.198	15.000	2.280	1.233	36.180	0.037
A:B FP N- FP N0	12.949	8.198	15.000	1.580	-4.524	30.422	0.135
A:B EI N0- FP N0	-5.757	8.198	15.000	-0.700	-23.231	11.716	0.493

Table 11.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 27 in year 2012 .

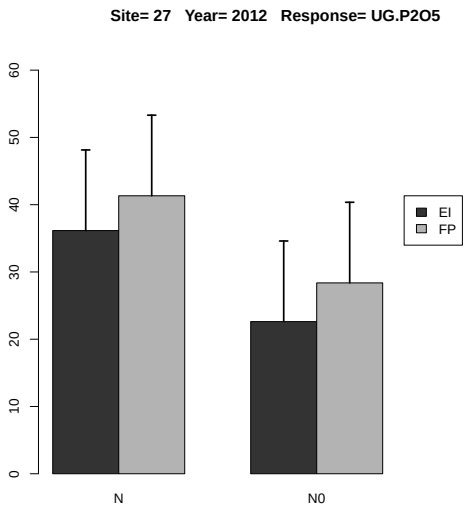

Figure 11.14: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.8 Response Variable UG.K

	rep	A	B	y
1	1	FP	N0	16.067
2	2	FP	N0	17.645
3	3	FP	N0	18.483
4	4	FP	N0	30.949
5	5	FP	N0	18.008
6	6	FP	N0	11.704
7	1	FP	N	20.010
8	2	FP	N	30.857
9	3	FP	N	24.541
10	4	FP	N	23.693
11	5	FP	N	57.372
12	6	FP	N	23.866
13	1	EI	N0	14.777
14	2	EI	N0	12.685
15	3	EI	N0	23.650
16	4	EI	N0	11.303
17	5	EI	N0	23.540
18	6	EI	N0	2.739
19	1	EI	N	18.142
20	2	EI	N	18.704
21	3	EI	N	33.540
22	4	EI	N	21.633
23	5	EI	N	25.525
24	6	EI	N	32.599

Table 11.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	25.024	4.425	5.655	0.005
A FP	30.057	4.425	6.792	0.002
A EI-FP	-5.033	6.258	-0.804	0.706

Table 11.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 27 in year 2012 .

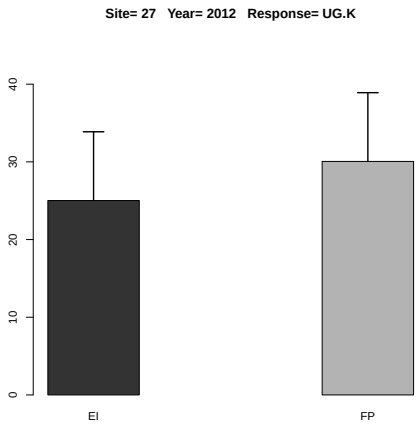

Figure 11.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	123.114	123.114	1.590	15.000	0.227
B	1.000	692.669	692.669	8.943	15.000	0.009
A:B	1.000	1.517	1.517	0.020	15.000	0.891

Table 11.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.903	2.792	12.500	7.130	13.845	25.962	0.000
2	FP		24.433	2.792	12.500	8.750	18.375	30.491	0.000
3		N	27.540	2.792	12.500	9.860	21.482	33.599	0.000
4		N0	16.796	2.792	12.500	6.010	10.737	22.854	0.000
5	EI	N	25.024	3.775	19.500	6.630	17.136	32.913	0.000
6	FP	N	30.057	3.775	19.500	7.960	22.168	37.945	0.000
7	EI	N0	14.782	3.775	19.500	3.920	6.894	22.671	0.001
8	FP	N0	18.809	3.775	19.500	4.980	10.921	26.698	0.000

Table 11.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-4.530	3.593	15.000	-1.260	-12.188	3.128	0.227
B N-N0	10.745	3.593	15.000	2.990	3.086	18.403	0.009
A:B EI N- FP N	-5.033	5.081	15.000	-0.990	-15.863	5.798	0.338
A:B EI N- EI N0	10.242	5.081	15.000	2.020	-0.589	21.072	0.062
A:B EI N- FP N0	6.215	5.081	15.000	1.220	-4.615	17.045	0.240
A:B FP N- EI N0	15.274	5.081	15.000	3.010	4.444	26.105	0.009
A:B FP N- FP N0	11.247	5.081	15.000	2.210	0.417	22.078	0.043
A:B EI N0- FP N0	-4.027	5.081	15.000	-0.790	-14.857	6.803	0.440

Table 11.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 27 in year 2012 .

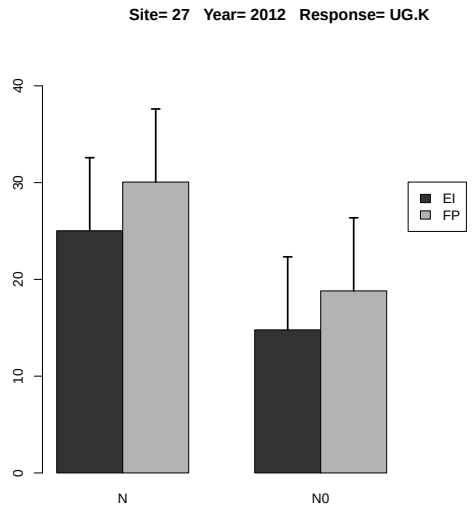

Figure 11.16: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	FP	N0	19.361
2	2	FP	N0	21.262
3	3	FP	N0	22.272
4	4	FP	N0	37.293
5	5	FP	N0	21.699
6	6	FP	N0	14.104
7	1	FP	N	24.112
8	2	FP	N	37.183
9	3	FP	N	29.572
10	4	FP	N	28.550
11	5	FP	N	69.134
12	6	FP	N	28.759
13	1	EI	N0	17.806
14	2	EI	N0	15.286
15	3	EI	N0	28.499
16	4	EI	N0	13.620
17	5	EI	N0	28.366
18	6	EI	N0	3.300
19	1	EI	N	21.861
20	2	EI	N	22.539
21	3	EI	N	40.416
22	4	EI	N	26.067
23	5	EI	N	30.758
24	6	EI	N	39.282

Table 11.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	30.154	5.332	5.655	0.005
A FP	36.218	5.332	6.792	0.002
A EI-FP	-6.064	7.541	-0.804	0.706

Table 11.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 27 in year 2012 .

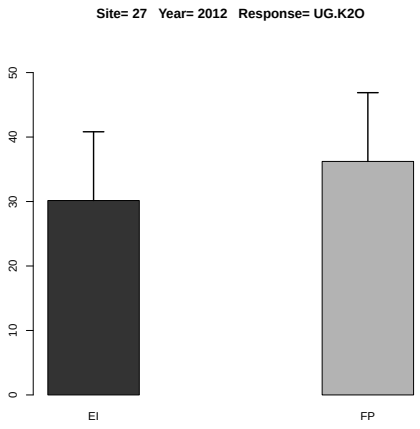

Figure 11.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	178.765	178.765	1.590	15.000	0.227
B	1.000	1005.773	1005.773	8.943	15.000	0.009
A:B	1.000	2.203	2.203	0.020	15.000	0.891

Table 11.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.983	3.365	12.500	7.130	16.683	31.284	0.000
2	FP		29.442	3.365	12.500	8.750	22.141	36.742	0.000
3		N	33.186	3.365	12.500	9.860	25.886	40.487	0.000
4		N0	20.239	3.365	12.500	6.010	12.938	27.540	0.000
5	EI	N	30.154	4.549	19.500	6.630	20.648	39.660	0.000
6	FP	N	36.218	4.549	19.500	7.960	26.713	45.724	0.000
7	EI	N0	17.813	4.549	19.500	3.920	8.307	27.318	0.001
8	FP	N0	22.665	4.549	19.500	4.980	13.160	32.171	0.000

Table 11.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.458	4.329	15.000	-1.260	-14.686	3.770	0.227
B N-N0	12.947	4.329	15.000	2.990	3.719	22.175	0.009
A:B EI N- FP N	-6.064	6.123	15.000	-0.990	-19.115	6.986	0.338
A:B EI N- EI N0	12.341	6.123	15.000	2.020	-0.709	25.392	0.062
A:B EI N- FP N0	7.489	6.123	15.000	1.220	-5.562	20.539	0.240
A:B FP N- EI N0	18.406	6.123	15.000	3.010	5.355	31.456	0.009
A:B FP N- FP N0	13.553	6.123	15.000	2.210	0.503	26.603	0.043
A:B EI N0- FP N0	-4.853	6.123	15.000	-0.790	-17.903	8.198	0.440

Table 11.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 27 in year 2012 .

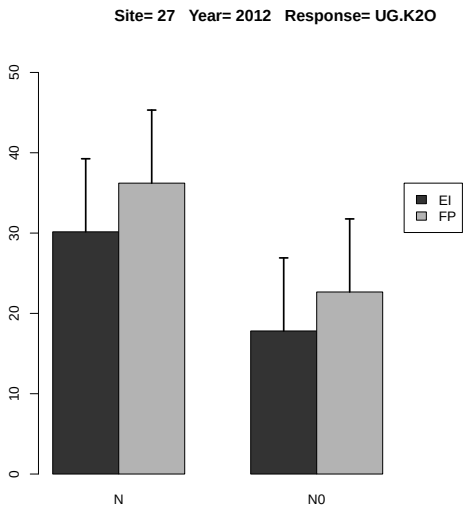

Figure 11.18: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.10 Response Variable UG.Ca

	rep	A	B	y
1	1	FP	N0	0.586
2	2	FP	N0	0.509
3	3	FP	N0	0.377
4	4	FP	N0	0.785
5	5	FP	N0	0.564
6	6	FP	N0	0.306
7	1	FP	N	0.692
8	2	FP	N	0.841
9	3	FP	N	0.916
10	4	FP	N	0.865
11	5	FP	N	1.036
12	6	FP	N	0.682
13	1	EI	N0	0.351
14	2	EI	N0	0.409
15	3	EI	N0	0.639
16	4	EI	N0	0.343
17	5	EI	N0	0.528
18	6	EI	N0	0.100
19	1	EI	N	0.740
20	2	EI	N	0.786
21	3	EI	N	1.165
22	4	EI	N	0.792
23	5	EI	N	0.729
24	6	EI	N	0.655

Table 11.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Ca

	Estimate	S.E.	t-value	p-value
A EI	0.811	0.052	15.583	0.000
A FP	0.839	0.052	16.107	0.000
A EI-FP	-0.027	0.074	-0.371	0.924

Table 11.47: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Ca at site 27 in year 2012 .

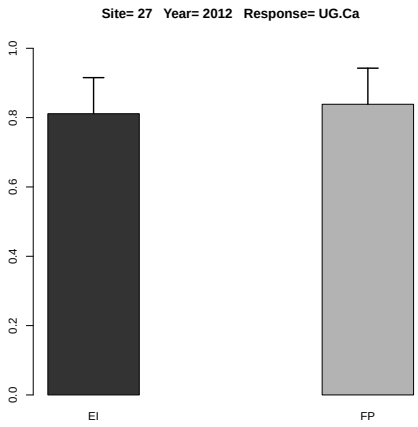

Figure 11.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.015	0.015	1.153	4.999	0.332
B	1.000	0.807	0.807	62.494	9.991	0.000
A:B	1.000	0.015	0.015	1.144	9.991	0.310

Table 11.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.603	0.060	9.200	10.000	0.467	0.739	0.000
2	FP		0.680	0.060	9.200	11.270	0.544	0.816	0.000
3		N	0.825	0.054	7.300	15.330	0.699	0.951	0.000
4		N0	0.458	0.054	7.300	8.520	0.332	0.584	0.000
5	EI	N	0.811	0.069	14.300	11.810	0.664	0.958	0.000
6	FP	N	0.839	0.069	14.300	12.210	0.692	0.986	0.000
7	EI	N0	0.395	0.069	14.300	5.750	0.248	0.542	0.000
8	FP	N0	0.521	0.069	14.300	7.590	0.374	0.668	0.000

Table 11.49: Estimate of treatment means in tow-way ANOVA for variable UG.Ca at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.077	0.072	5.000	-1.070	-0.261	0.107	0.332
B N-N0	0.367	0.046	10.000	7.910	0.263	0.470	0.000
A:B EI N- FP N	-0.027	0.085	9.300	-0.320	-0.220	0.165	0.756
A:B EI N- EI N0	0.416	0.066	10.000	6.350	0.270	0.562	0.000
A:B EI N- FP N0	0.290	0.085	9.300	3.400	0.098	0.482	0.008
A:B FP N- EI N0	0.444	0.085	9.300	5.200	0.251	0.636	0.000
A:B FP N- FP N0	0.317	0.066	10.000	4.830	0.171	0.463	0.001
A:B EI N0- FP N0	-0.126	0.085	9.300	-1.480	-0.319	0.066	0.171

Table 11.50: Estimate of contrast in two-way ANOVA for variable UG.Ca at site 27 in year 2012 .

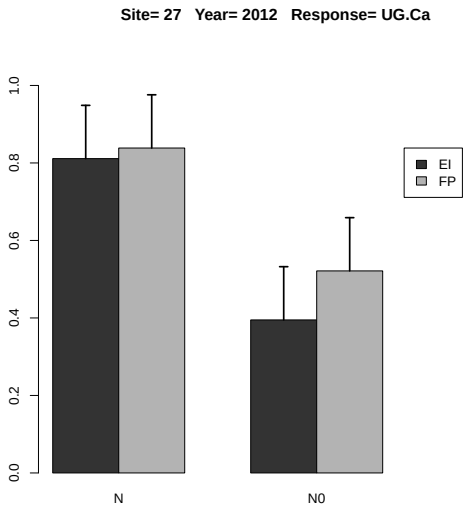

Figure 11.20: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.11 Response Variable UG.Mg

	rep	A	B	y
1	1	FP	N0	4.046
2	2	FP	N0	4.271
3	3	FP	N0	5.658
4	4	FP	N0	7.069
5	5	FP	N0	4.685
6	6	FP	N0	3.738
7	1	FP	N	5.055
8	2	FP	N	7.231
9	3	FP	N	6.044
10	4	FP	N	6.831
11	5	FP	N	16.155
12	6	FP	N	5.660
13	1	EI	N0	4.317
14	2	EI	N0	3.274
15	3	EI	N0	5.497
16	4	EI	N0	3.083
17	5	EI	N0	7.284
18	6	EI	N0	0.608
19	1	EI	N	5.628
20	2	EI	N	4.322
21	3	EI	N	8.036
22	4	EI	N	5.071
23	5	EI	N	7.074
24	6	EI	N	10.932

Table 11.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	6.844	1.416	4.834	0.010
A FP	7.829	1.416	5.529	0.006
A EI-FP	-0.985	2.002	-0.492	0.872

Table 11.52: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 27 in year 2012 .

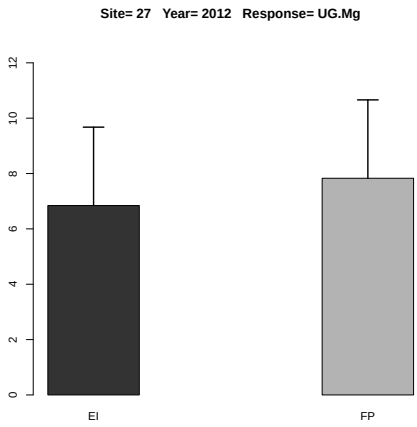

Figure 11.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.338	5.338	0.783	14.999	0.390
B	1.000	49.618	49.618	7.274	14.999	0.017
A:B	1.000	0.011	0.011	0.002	14.999	0.969

Table 11.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5.427	0.822	12.700	6.600	3.647	7.207	0.000
2	FP		6.370	0.822	12.700	7.750	4.590	8.150	0.000
3		N	7.337	0.822	12.700	8.930	5.557	9.116	0.000
4		N0	4.461	0.822	12.700	5.430	2.681	6.241	0.000
5	EI	N	6.844	1.115	19.600	6.140	4.514	9.174	0.000
6	FP	N	7.829	1.115	19.600	7.020	5.500	10.159	0.000
7	EI	N0	4.010	1.115	19.600	3.600	1.681	6.340	0.002
8	FP	N0	4.911	1.115	19.600	4.400	2.582	7.241	0.000

Table 11.54: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.943	1.066	15.000	-0.880	-3.216	1.329	0.390
B N-N0	2.876	1.066	15.000	2.700	0.603	5.148	0.017
A:B EI N- FP N	-0.985	1.508	15.000	-0.650	-4.199	2.229	0.523
A:B EI N- EI N0	2.834	1.508	15.000	1.880	-0.380	6.048	0.080
A:B EI N- FP N0	1.933	1.508	15.000	1.280	-1.282	5.146	0.219
A:B FP N- EI N0	3.819	1.508	15.000	2.530	0.605	7.033	0.023
A:B FP N- FP N0	2.918	1.508	15.000	1.940	-0.296	6.132	0.072
A:B EI N0- FP N0	-0.901	1.508	15.000	-0.600	-4.115	2.313	0.559

Table 11.55: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 27 in year 2012 .

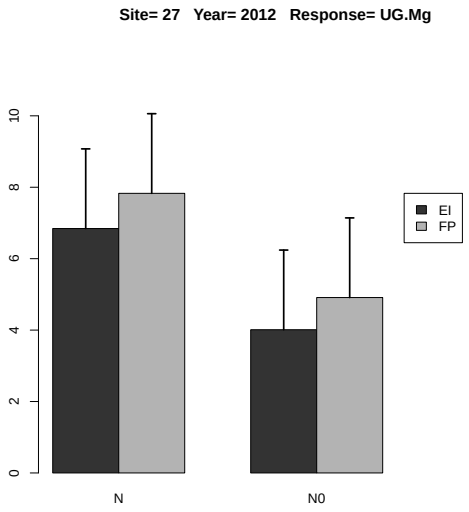

Figure 11.22: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.12 Response Variable UG.S

	rep	A	B	y
1	1	FP	N0	4.984
2	2	FP	N0	4.373
3	3	FP	N0	3.847
4	4	FP	N0	6.520
5	5	FP	N0	4.798
6	6	FP	N0	3.646
7	1	FP	N	7.201
8	2	FP	N	7.904
9	3	FP	N	8.333
10	4	FP	N	8.042
11	5	FP	N	11.599
12	6	FP	N	6.410
13	1	EI	N0	3.931
14	2	EI	N0	3.806
15	3	EI	N0	5.625
16	4	EI	N0	3.151
17	5	EI	N0	5.225
18	6	EI	N0	0.797
19	1	EI	N	8.146
20	2	EI	N	7.387
21	3	EI	N	12.694
22	4	EI	N	7.845
23	5	EI	N	7.147
24	6	EI	N	7.724

Table 11.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	8.491	0.831	10.220	0.001
A FP	8.248	0.831	9.928	0.000
A EI-FP	0.243	1.175	0.206	0.976

Table 11.57: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 27 in year 2012 .

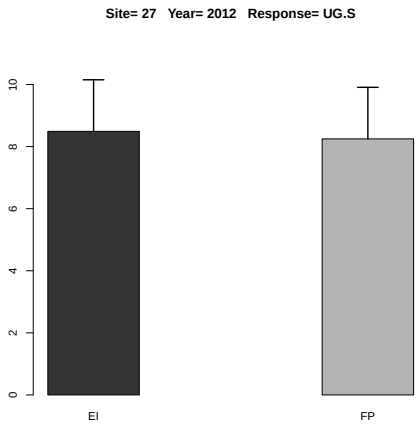

Figure 11.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.408	0.408	0.216	4.999	0.661
B	1.000	103.033	103.033	54.629	9.999	0.000
A:B	1.000	2.094	2.094	1.110	9.999	0.317

Table 11.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.123	0.570	9.800	10.740	4.850	7.396	0.000
2	FP		6.471	0.570	9.800	11.350	5.198	7.745	0.000
3		N	8.369	0.513	9.300	16.310	7.214	9.524	0.000
4		N0	4.225	0.513	9.300	8.230	3.070	5.380	0.000
5	EI	N	8.491	0.694	17.600	12.230	7.029	9.952	0.000
6	FP	N	8.248	0.694	17.600	11.880	6.787	9.709	0.000
7	EI	N0	3.756	0.694	17.600	5.410	2.295	5.217	0.000
8	FP	N0	4.695	0.694	17.600	6.760	3.234	6.156	0.000

Table 11.59: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.348	0.749	5.000	-0.470	-2.272	1.576	0.661
B N-N0	4.144	0.561	10.000	7.390	2.895	5.393	0.000
A:B EI N- FP N	0.243	0.935	10.500	0.260	-1.827	2.312	0.800
A:B EI N- EI N0	4.735	0.793	10.000	5.970	2.968	6.502	0.000
A:B EI N- FP N0	3.796	0.935	10.500	4.060	1.726	5.865	0.002
A:B FP N- EI N0	4.492	0.935	10.500	4.800	2.422	6.562	0.001
A:B FP N- FP N0	3.553	0.793	10.000	4.480	1.786	5.320	0.001
A:B EI N0- FP N0	-0.939	0.935	10.500	-1.000	-3.009	1.131	0.338

Table 11.60: Estimate of contrast in two-way ANOVA for variable UG.S at site 27 in year 2012 .

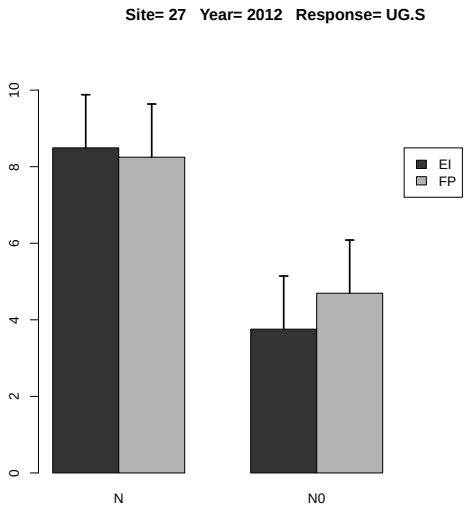

Figure 11.24: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.13 Response Variable UG.B

	rep	A	B	y
1	1	FP	N0	107.780
2	2	FP	N0	80.190
3	3	FP	N0	52.167
4	4	FP	N0	78.550
5	5	FP	N0	68.643
6	6	FP	N0	30.640
7	1	FP	N	69.240
8	2	FP	N	162.779
9	3	FP	N	155.211
10	4	FP	N	94.252
11	5	FP	N	122.822
12	6	FP	N	94.170
13	1	EI	N0	40.505
14	2	EI	N0	71.978
15	3	EI	N0	63.920
16	4	EI	N0	34.250
17	5	EI	N0	96.693
18	6	EI	N0	9.960
19	1	EI	N	74.050
20	2	EI	N	78.590
21	3	EI	N	116.460
22	4	EI	N	79.240
23	5	EI	N	167.666
24	6	EI	N	74.428

Table 11.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.B

	Estimate	S.E.	t-value	p-value
A EI	98.406	12.445	7.907	0.001
A FP	116.412	12.445	9.354	0.001
A EI-FP	-18.007	17.600	-1.023	0.583

Table 11.62: Estimate of treatment means and contrast in one-way ANOVA for variable UG.B at site 27 in year 2012 .

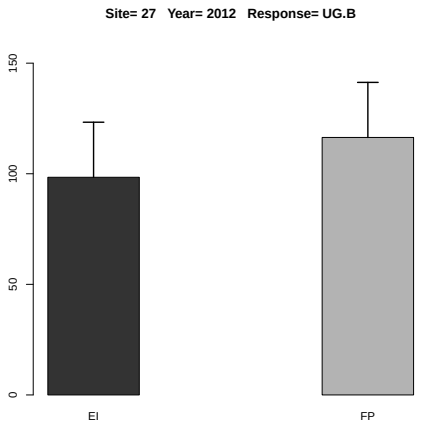

Figure 11.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1744.834	1744.834	2.217	4.997	0.197
B	1.000	12771.165	12771.165	16.225	10.000	0.002
A:B	1.000	2.267	2.267	0.003	10.000	0.958

Table 11.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		75.645	10.920	8.500	6.930	50.696	100.594	0.000
2	FP		93.037	10.920	8.500	8.520	68.088	117.986	0.000
3		N	107.409	10.859	8.900	9.890	82.815	132.003	0.000
4		N0	61.273	10.859	8.900	5.640	36.679	85.867	0.000
5	EI	N	98.406	13.595	16.200	7.240	69.610	127.201	0.000
6	FP	N	116.412	13.595	16.200	8.560	87.617	145.208	0.000
7	EI	N0	52.884	13.595	16.200	3.890	24.089	81.680	0.001
8	FP	N0	69.662	13.595	16.200	5.120	40.866	98.457	0.000

Table 11.64: Estimate of treatment means in tow-way ANOVA for variable UG.B at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-17.392	11.681	5.000	-1.490	-47.426	12.642	0.197
B N-N0	46.136	11.454	10.000	4.030	20.616	71.656	0.002
A:B EI N- FP N	-18.007	16.360	13.200	-1.100	-53.308	17.295	0.291
A:B EI N- EI N0	45.521	16.198	10.000	2.810	9.430	81.612	0.018
A:B EI N- FP N0	28.744	16.360	13.200	1.760	-6.558	64.045	0.102
A:B FP N- EI N0	63.528	16.360	13.200	3.880	28.227	98.829	0.002
A:B FP N- FP N0	46.751	16.198	10.000	2.890	10.660	82.842	0.016
A:B EI N0- FP N0	-16.777	16.360	13.200	-1.030	-52.079	18.524	0.324

Table 11.65: Estimate of contrast in two-way ANOVA for variable UG.B at site 27 in year 2012 .

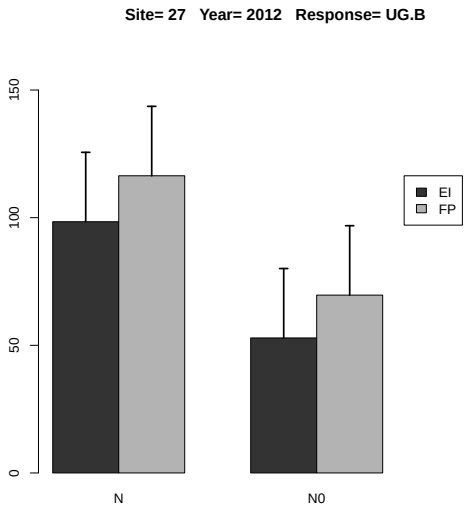

Figure 11.26: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.14 Response Variable UG.Cu

	rep	A	B	y
1	1	FP	N0	58.640
2	2	FP	N0	50.850
3	3	FP	N0	37.720
4	4	FP	N0	98.345
5	5	FP	N0	66.329
6	6	FP	N0	32.295
7	1	FP	N	69.240
8	2	FP	N	84.080
9	3	FP	N	91.570
10	4	FP	N	86.470
11	5	FP	N	151.923
12	6	FP	N	127.379
13	1	EI	N0	35.100
14	2	EI	N0	40.920
15	3	EI	N0	63.920
16	4	EI	N0	34.250
17	5	EI	N0	52.780
18	6	EI	N0	9.960
19	1	EI	N	74.050
20	2	EI	N	78.590
21	3	EI	N	151.282
22	4	EI	N	79.240
23	5	EI	N	72.930
24	6	EI	N	70.959

Table 11.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Cu

	Estimate	S.E.	t-value	p-value
A EI	87.842	14.100	6.230	0.003
A FP	101.777	14.100	7.218	0.002
A EI-FP	-13.935	19.941	-0.699	0.765

Table 11.67: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Cu at site 27 in year 2012 .

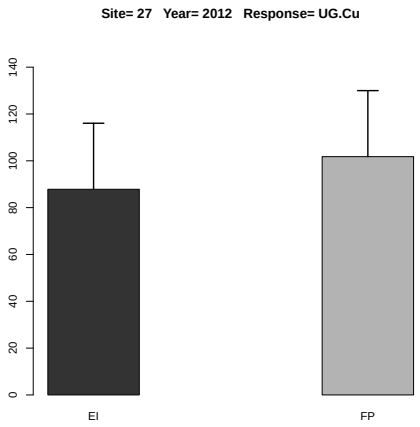

Figure 11.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1020.811	1020.811	1.778	9.998	0.212
B	1.000	12908.654	12908.654	22.489	10.001	0.001
A:B	1.000	23.279	23.279	0.041	10.001	0.844

Table 11.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		63.665	8.433	10.000	7.550	44.874	82.456	0.000
2	FP		79.570	8.433	10.000	9.440	60.779	98.361	0.000
3		N	94.809	7.712	19.300	12.290	78.682	110.936	0.000
4		N0	48.426	7.712	19.300	6.280	32.299	64.553	0.000
5	EI	N	87.842	10.907	19.300	8.050	65.035	110.649	0.000
6	FP	N	101.777	10.907	19.300	9.330	78.970	124.584	0.000
7	EI	N0	39.488	10.907	19.300	3.620	16.681	62.295	0.002
8	FP	N0	57.363	10.907	19.300	5.260	34.556	80.170	0.000

Table 11.69: Estimate of treatment means in tow-way ANOVA for variable UG.Cu at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-15.905	11.927	10.000	-1.330	-42.480	10.670	0.212
B N-N0	46.384	9.781	10.000	4.740	24.590	68.177	0.001
A:B EI N- FP N	-13.935	15.424	19.300	-0.900	-46.189	18.319	0.377
A:B EI N- EI N0	48.353	13.832	10.000	3.500	17.532	79.174	0.006
A:B EI N- FP N0	30.479	15.424	19.300	1.980	-1.775	62.733	0.063
A:B FP N- EI N0	62.289	15.424	19.300	4.040	30.035	94.543	0.001
A:B FP N- FP N0	44.414	13.832	10.000	3.210	13.593	75.235	0.009
A:B EI N0- FP N0	-17.875	15.424	19.300	-1.160	-50.129	14.379	0.261

Table 11.70: Estimate of contrast in two-way ANOVA for variable UG.Cu at site 27 in year 2012 .

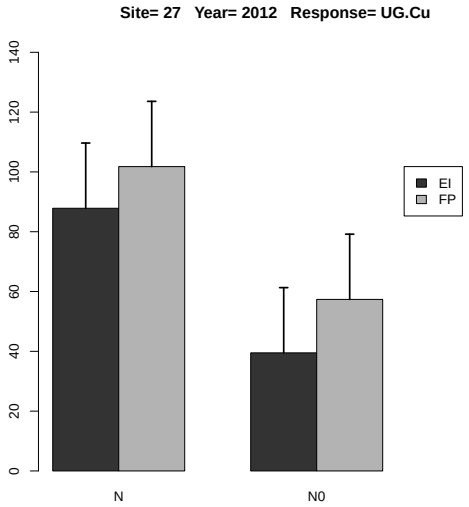

Figure 11.28: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.15 Response Variable UG.Fe

	rep	A	B	y
1	1	FP	N0	567.401
2	2	FP	N0	572.571
3	3	FP	N0	660.477
4	4	FP	N0	943.385
5	5	FP	N0	553.944
6	6	FP	N0	508.930
7	1	FP	N	893.888
8	2	FP	N	1190.573
9	3	FP	N	1071.369
10	4	FP	N	825.270
11	5	FP	N	2153.012
12	6	FP	N	994.210
13	1	EI	N0	611.793
14	2	EI	N0	442.345
15	3	EI	N0	719.100
16	4	EI	N0	790.832
17	5	EI	N0	1246.664
18	6	EI	N0	53.704
19	1	EI	N	842.689
20	2	EI	N	661.256
21	3	EI	N	1360.253
22	4	EI	N	866.886
23	5	EI	N	975.074
24	6	EI	N	1444.702

Table 11.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Fe

	Estimate	S.E.	t-value	p-value
A EI	1025.143	173.168	5.920	0.005
A FP	1188.054	173.168	6.861	0.002
A EI-FP	-162.910	244.896	-0.665	0.784

Table 11.72: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Fe at site 27 in year 2012 .

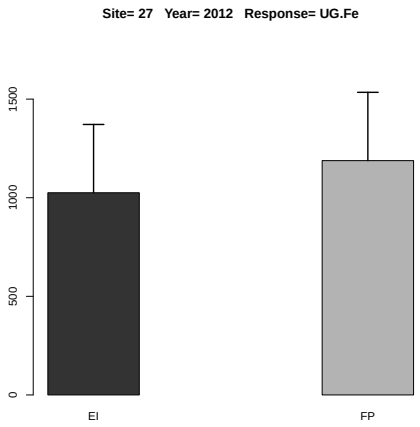

Figure 11.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	35246.161	35246.161	0.293	15.017	0.596
B	1.000	1310419.131	1310419.131	10.885	15.017	0.005
A:B	1.000	44650.984	44650.984	0.371	15.017	0.552

Table 11.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		834.608	107.448	13.100	7.770	602.597	1066.619	0.000
2	FP		911.253	107.448	13.100	8.480	679.241	1143.264	0.000
3		N	1106.599	107.448	13.100	10.300	874.587	1338.610	0.000
4		N0	639.262	107.448	13.100	5.950	407.251	871.273	0.000
5	EI	N	1025.143	146.893	19.700	6.980	718.454	1331.832	0.000
6	FP	N	1188.054	146.893	19.700	8.090	881.365	1494.743	0.000
7	EI	N0	644.073	146.893	19.700	4.380	337.384	950.762	0.000
8	FP	N0	634.451	146.893	19.700	4.320	327.762	941.141	0.000

Table 11.74: Estimate of treatment means in tow-way ANOVA for variable UG.Fe at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-76.644	141.651	15.000	-0.540	-378.538	225.249	0.596
B N-N0	467.336	141.651	15.000	3.300	165.443	769.230	0.005
A:B EI N- FP N	-162.910	200.325	15.000	-0.810	-589.852	264.031	0.429
A:B EI N- EI N0	381.070	200.325	15.000	1.900	-45.871	808.012	0.076
A:B EI N- FP N0	390.692	200.325	15.000	1.950	-36.250	817.634	0.070
A:B FP N- EI N0	543.981	200.325	15.000	2.720	117.039	970.922	0.016
A:B FP N- FP N0	553.602	200.325	15.000	2.760	126.661	980.544	0.014
A:B EI N0- FP N0	9.622	200.325	15.000	0.050	-417.320	436.563	0.962

Table 11.75: Estimate of contrast in two-way ANOVA for variable UG.Fe at site 27 in year 2012 .

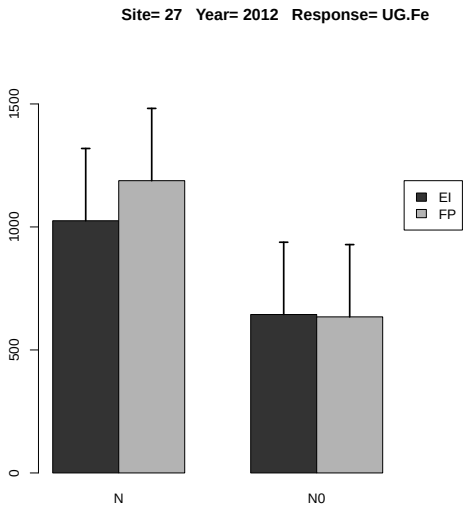

Figure 11.30: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.16 Response Variable UG.Mn

	rep	A	B	y
1	1	FP	N0	58.640
2	2	FP	N0	50.850
3	3	FP	N0	220.964
4	4	FP	N0	154.194
5	5	FP	N0	214.792
6	6	FP	N0	131.599
7	1	FP	N	135.503
8	2	FP	N	531.722
9	3	FP	N	148.252
10	4	FP	N	209.949
11	5	FP	N	324.764
12	6	FP	N	427.688
13	1	EI	N0	155.317
14	2	EI	N0	97.308
15	3	EI	N0	159.033
16	4	EI	N0	46.922
17	5	EI	N0	95.321
18	6	EI	N0	9.960
19	1	EI	N	362.327
20	2	EI	N	78.590
21	3	EI	N	116.460
22	4	EI	N	280.351
23	5	EI	N	72.930
24	6	EI	N	493.241

Table 11.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mn

	Estimate	S.E.	t-value	p-value
A EI	233.983	71.549	3.270	0.047
A FP	296.313	71.549	4.141	0.019
A EI-FP	-62.330	101.185	-0.616	0.810

Table 11.77: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mn at site 27 in year 2012 .

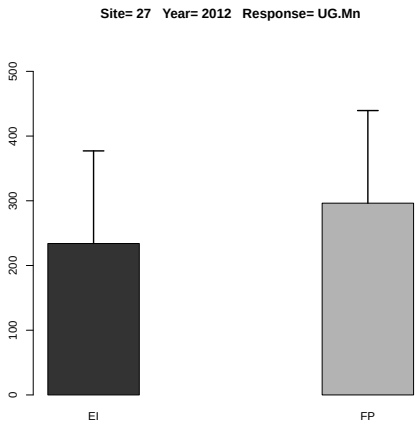

Figure 11.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	17128.355	17128.355	1.062	19.972	0.315
B	1.000	133038.642	133038.642	8.245	19.972	0.009
A:B	1.000	475.273	475.273	0.029	19.972	0.865

Table 11.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		163.980	36.669	20.000	4.470	87.488	240.472	0.000
2	FP		217.410	36.669	20.000	5.930	140.917	293.902	0.000
3		N	265.148	36.669	20.000	7.230	188.656	341.640	0.000
4		N0	116.242	36.669	20.000	3.170	39.749	192.734	0.005
5	EI	N	233.983	51.858	20.000	4.510	125.807	342.160	0.000
6	FP	N	296.313	51.858	20.000	5.710	188.136	404.489	0.000
7	EI	N0	93.977	51.858	20.000	1.810	-14.200	202.153	0.085
8	FP	N0	138.506	51.858	20.000	2.670	30.330	246.683	0.015

Table 11.79: Estimate of treatment means in tow-way ANOVA for variable UG.Mn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-53.430	51.858	20.000	-1.030	-161.606	54.747	0.315
B N-N0	148.906	51.858	20.000	2.870	40.730	257.083	0.009
A:B EI N- FP N	-62.330	73.339	20.000	-0.850	-215.315	90.655	0.406
A:B EI N- EI N0	140.006	73.339	20.000	1.910	-12.979	292.991	0.071
A:B EI N- FP N0	95.477	73.339	20.000	1.300	-57.508	248.461	0.208
A:B FP N- EI N0	202.336	73.339	20.000	2.760	49.351	355.321	0.012
A:B FP N- FP N0	157.806	73.339	20.000	2.150	4.822	310.791	0.044
A:B EI N0- FP N0	-44.529	73.339	20.000	-0.610	-197.514	108.455	0.551

Table 11.80: Estimate of contrast in two-way ANOVA for variable UG.Mn at site 27 in year 2012 .

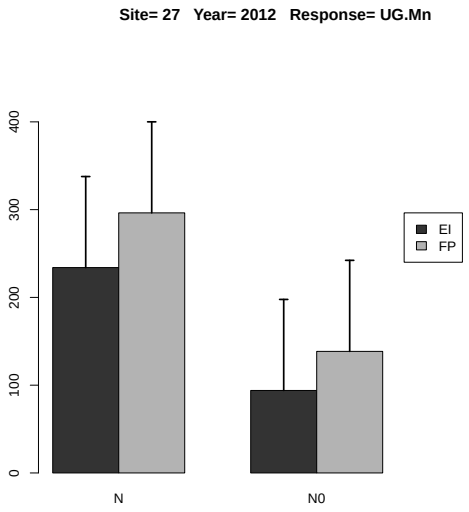

Figure 11.32: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.17 Response Variable UG.Zn

	rep	A	B	y
1	1	FP	N0	833.274
2	2	FP	N0	849.195
3	3	FP	N0	975.439
4	4	FP	N0	1362.842
5	5	FP	N0	864.814
6	6	FP	N0	607.285
7	1	FP	N	949.280
8	2	FP	N	1373.867
9	3	FP	N	1098.840
10	4	FP	N	1195.880
11	5	FP	N	3066.412
12	6	FP	N	1087.630
13	1	EI	N0	664.092
14	2	EI	N0	793.848
15	3	EI	N0	1016.967
16	4	EI	N0	602.800
17	5	EI	N0	1089.379
18	6	EI	N0	118.524
19	1	EI	N	876.752
20	2	EI	N	894.354
21	3	EI	N	1551.247
22	4	EI	N	1048.345
23	5	EI	N	1183.654
24	6	EI	N	1732.072

Table 11.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Zn

	Estimate	S.E.	t-value	p-value
A EI	1214.404	259.934	4.672	0.011
A FP	1461.985	259.934	5.624	0.005
A EI-FP	-247.581	367.602	-0.674	0.779

Table 11.82: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Zn at site 27 in year 2012 .

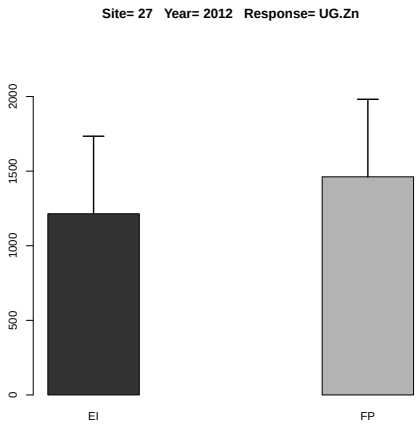

Figure 11.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	302115.375	302115.375	1.341	15.165	0.265
B	1.000	1643200.518	1643200.518	7.295	15.165	0.016
A:B	1.000	3225.873	3225.873	0.014	15.165	0.906

Table 11.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		964.336	143.834	13.600	6.700	655.087	1273.586	0.000
2	FP		1188.730	143.834	13.600	8.260	879.481	1497.979	0.000
3		N	1338.195	143.834	13.600	9.300	1028.945	1647.444	0.000
4		N0	814.872	143.834	13.600	5.670	505.622	1124.121	0.000
5	EI	N	1214.404	198.641	20.000	6.110	800.053	1628.755	0.000
6	FP	N	1461.985	198.641	20.000	7.360	1047.634	1876.336	0.000
7	EI	N0	714.268	198.641	20.000	3.600	299.918	1128.619	0.002
8	FP	N0	915.475	198.641	20.000	4.610	501.124	1329.826	0.000

Table 11.84: Estimate of treatment means in tow-way ANOVA for variable UG.Zn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-224.394	193.753	15.200	-1.160	-636.976	188.189	0.265
B N-N0	523.323	193.753	15.200	2.700	110.740	935.905	0.016
A:B EI N- FP N	-247.581	274.008	15.200	-0.900	-831.061	335.899	0.380
A:B EI N- EI N0	500.136	274.008	15.200	1.830	-83.344	1083.616	0.088
A:B EI N- FP N0	298.929	274.008	15.200	1.090	-284.551	882.409	0.292
A:B FP N- EI N0	747.717	274.008	15.200	2.730	164.237	1331.197	0.015
A:B FP N- FP N0	546.510	274.008	15.200	1.990	-36.970	1129.990	0.064
A:B EI N0- FP N0	-201.207	274.008	15.200	-0.730	-784.687	382.274	0.474

Table 11.85: Estimate of contrast in two-way ANOVA for variable UG.Zn at site 27 in year 2012 .

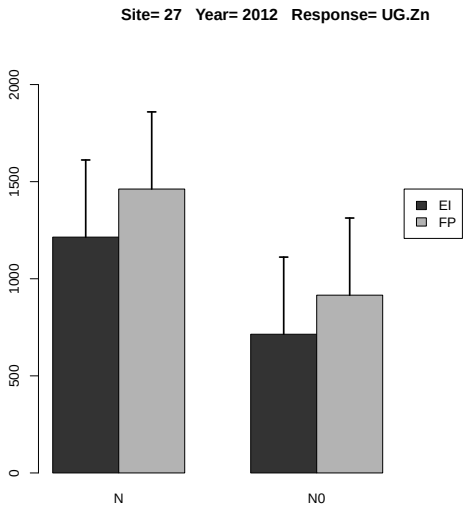

Figure 11.34: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.18 Response Variable US.N

	rep	A	B	y
1	1	FP	N0	41.676
2	2	FP	N0	56.885
3	3	FP	N0	42.502
4	4	FP	N0	53.074
5	5	FP	N0	54.338
6	6	FP	N0	51.365
7	1	FP	N	81.040
8	2	FP	N	75.237
9	3	FP	N	78.410
10	4	FP	N	72.125
11	5	FP	N	81.850
12	6	FP	N	81.416
13	1	EI	N0	44.422
14	2	EI	N0	60.296
15	3	EI	N0	59.649
16	4	EI	N0	56.274
17	5	EI	N0	44.410
18	6	EI	N0	47.787
19	1	EI	N	72.729
20	2	EI	N	77.432
21	3	EI	N	86.529
22	4	EI	N	86.008
23	5	EI	N	76.965
24	6	EI	N	106.511

Table 11.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	84.362	3.580	23.564	0.000
A FP	78.346	3.580	21.884	0.000
A EI-FP	6.016	5.063	1.188	0.496

Table 11.87: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 27 in year 2012 .

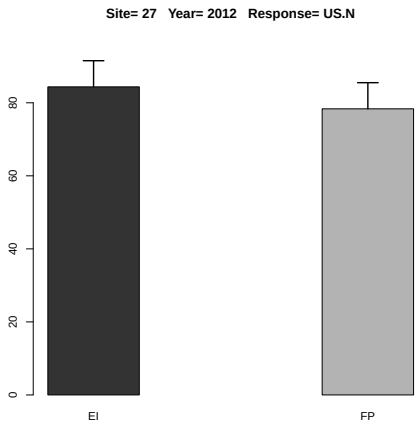

Figure 11.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	100.433	100.433	1.551	20.000	0.227
B	1.000	5507.704	5507.704	85.081	20.000	0.000
A:B	1.000	22.233	22.233	0.343	20.000	0.564

Table 11.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		68.251	2.323	20.000	29.390	63.406	73.096	0.000
2	FP		64.160	2.323	20.000	27.620	59.315	69.005	0.000
3		N	81.354	2.323	20.000	35.030	76.509	86.199	0.000
4		N0	51.057	2.323	20.000	21.980	46.212	55.901	0.000
5	EI	N	84.362	3.285	20.000	25.680	77.511	91.214	0.000
6	FP	N	78.346	3.285	20.000	23.850	71.494	85.198	0.000
7	EI	N0	52.140	3.285	20.000	15.870	45.288	58.992	0.000
8	FP	N0	49.973	3.285	20.000	15.210	43.122	56.825	0.000

Table 11.89: Estimate of treatment means in tow-way ANOVA for variable US.N at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.091	3.285	20.000	1.250	-2.760	10.943	0.227
B N-N0	30.298	3.285	20.000	9.220	23.446	37.149	0.000
A:B EI N- FP N	6.016	4.645	20.000	1.300	-3.674	15.706	0.210
A:B EI N- EI N0	32.223	4.645	20.000	6.940	22.533	41.913	0.000
A:B EI N- FP N0	34.389	4.645	20.000	7.400	24.699	44.079	0.000
A:B FP N- EI N0	26.206	4.645	20.000	5.640	16.517	35.896	0.000
A:B FP N- FP N0	28.373	4.645	20.000	6.110	18.683	38.062	0.000
A:B EI N0- FP N0	2.166	4.645	20.000	0.470	-7.524	11.856	0.646

Table 11.90: Estimate of contrast in two-way ANOVA for variable US.N at site 27 in year 2012 .

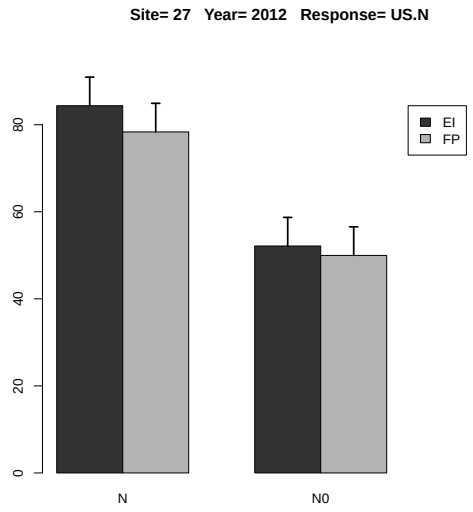

Figure 11.36: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.19 Response Variable US.P

	rep	A	B	y
1	1	FP	N0	5.574
2	2	FP	N0	5.924
3	3	FP	N0	9.095
4	4	FP	N0	5.116
5	5	FP	N0	6.772
6	6	FP	N0	8.358
7	1	FP	N	8.348
8	2	FP	N	8.119
9	3	FP	N	7.092
10	4	FP	N	7.209
11	5	FP	N	6.535
12	6	FP	N	8.073
13	1	EI	N0	8.922
14	2	EI	N0	10.845
15	3	EI	N0	6.872
16	4	EI	N0	8.486
17	5	EI	N0	4.517
18	6	EI	N0	10.143
19	1	EI	N	5.793
20	2	EI	N	6.732
21	3	EI	N	8.588
22	4	EI	N	7.677
23	5	EI	N	9.466
24	6	EI	N	16.244

Table 11.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	9.084	1.098	8.269	0.001
A FP	7.563	1.098	6.885	0.002
A EI-FP	1.521	1.553	0.979	0.607

Table 11.92: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 27 in year 2012 .

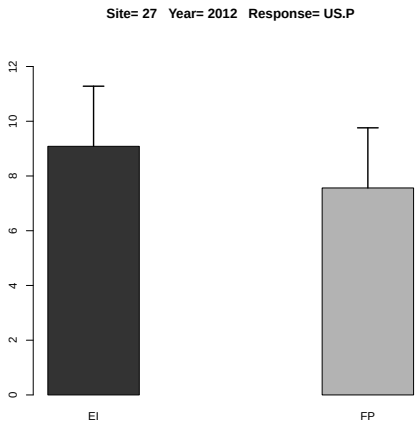

Figure 11.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13.604	13.604	2.860	14.999	0.111
B	1.000	3.568	3.568	0.750	14.999	0.400
A:B	1.000	0.001	0.001	0.000	14.999	0.987

Table 11.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.690	0.733	11.300	11.860	7.082	10.299	0.000
2	FP		7.185	0.733	11.300	9.800	5.576	8.793	0.000
3		N	8.323	0.733	11.300	11.360	6.715	9.932	0.000
4		N0	7.552	0.733	11.300	10.300	5.943	9.161	0.000
5	EI	N	9.084	0.966	18.700	9.400	7.059	11.108	0.000
6	FP	N	7.563	0.966	18.700	7.830	5.538	9.587	0.000
7	EI	N0	8.297	0.966	18.700	8.590	6.273	10.322	0.000
8	FP	N0	6.807	0.966	18.700	7.040	4.782	8.831	0.000

Table 11.94: Estimate of treatment means in tow-way ANOVA for variable US.P at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.506	0.890	15.000	1.690	-0.392	3.404	0.112
B N-N0	0.771	0.890	15.000	0.870	-1.127	2.669	0.400
A:B EI N- FP N	1.521	1.259	15.000	1.210	-1.163	4.205	0.246
A:B EI N- EI N0	0.786	1.259	15.000	0.620	-1.898	3.470	0.542
A:B EI N- FP N0	2.277	1.259	15.000	1.810	-0.407	4.961	0.091
A:B FP N- EI N0	-0.735	1.259	15.000	-0.580	-3.418	1.949	0.568
A:B FP N- FP N0	0.756	1.259	15.000	0.600	-1.928	3.440	0.557
A:B EI N0- FP N0	1.491	1.259	15.000	1.180	-1.193	4.175	0.255

Table 11.95: Estimate of contrast in two-way ANOVA for variable US.P at site 27 in year 2012 .

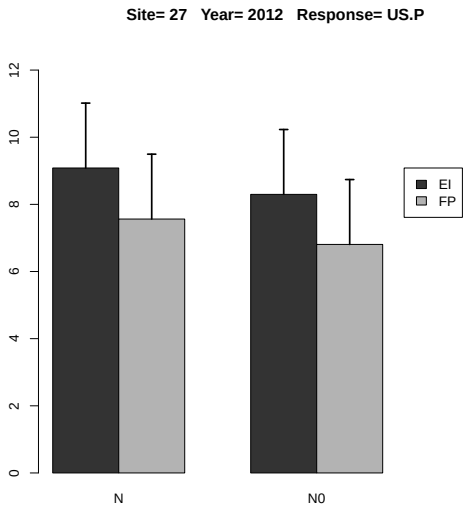

Figure 11.38: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.20 Response Variable US.P2O5

	rep	A	B	y
1	1	FP	N0	5.926
2	2	FP	N0	6.621
3	3	FP	N0	9.737
4	4	FP	N0	5.593
5	5	FP	N0	7.274
6	6	FP	N0	8.839
7	1	FP	N	8.739
8	2	FP	N	8.674
9	3	FP	N	7.501
10	4	FP	N	7.950
11	5	FP	N	7.025
12	6	FP	N	8.778
13	1	EI	N0	9.706
14	2	EI	N0	11.452
15	3	EI	N0	7.504
16	4	EI	N0	9.287
17	5	EI	N0	5.069
18	6	EI	N0	10.747
19	1	EI	N	6.315
20	2	EI	N	7.376
21	3	EI	N	9.049
22	4	EI	N	8.387
23	5	EI	N	10.159
24	6	EI	N	24.617

Table 11.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	10.984	1.921	5.719	0.005
A FP	8.111	1.921	4.223	0.018
A EI-FP	2.873	2.716	1.058	0.564

Table 11.97: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 27 in year 2012 .

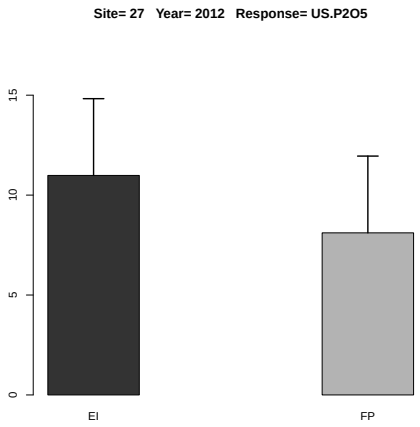

Figure 11.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	30.403	30.403	2.554	15.000	0.131
B	1.000	11.783	11.783	0.990	15.000	0.336
A:B	1.000	2.319	2.319	0.195	15.000	0.665

Table 11.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.972	1.142	11.600	8.730	7.474	12.470	0.000
2	FP		7.721	1.142	11.600	6.760	5.223	10.219	0.000
3		N	9.547	1.142	11.600	8.360	7.050	12.045	0.000
4		N0	8.146	1.142	11.600	7.140	5.648	10.644	0.000
5	EI	N	10.984	1.515	19.000	7.250	7.812	14.155	0.000
6	FP	N	8.111	1.515	19.000	5.350	4.939	11.283	0.000
7	EI	N0	8.961	1.515	19.000	5.910	5.789	12.132	0.000
8	FP	N0	7.331	1.515	19.000	4.840	4.160	10.503	0.000

Table 11.99: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.251	1.409	15.000	1.600	-0.751	5.254	0.131
B N-N0	1.401	1.409	15.000	0.990	-1.601	4.404	0.336
A:B EI N- FP N	2.873	1.992	15.000	1.440	-1.373	7.119	0.170
A:B EI N- EI N0	2.023	1.992	15.000	1.020	-2.223	6.269	0.326
A:B EI N- FP N0	3.652	1.992	15.000	1.830	-0.594	7.899	0.087
A:B FP N- EI N0	-0.850	1.992	15.000	-0.430	-5.096	3.397	0.676
A:B FP N- FP N0	0.780	1.992	15.000	0.390	-3.467	5.026	0.701
A:B EI N0- FP N0	1.629	1.992	15.000	0.820	-2.617	5.875	0.426

Table 11.100: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 27 in year 2012
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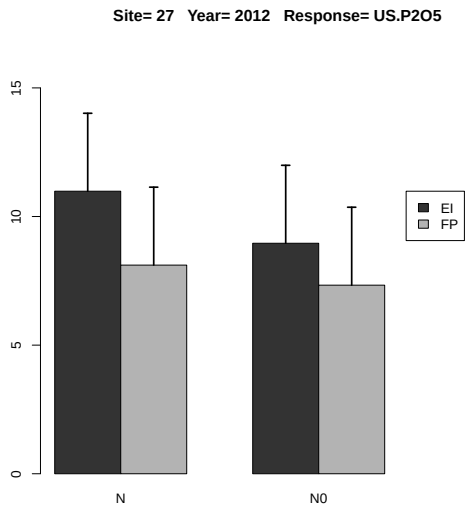

Figure 11.40: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.21 Response Variable US.K

	rep	A	B	y
1	1	FP	N0	61.202
2	2	FP	N0	56.687
3	3	FP	N0	61.165
4	4	FP	N0	51.152
5	5	FP	N0	64.420
6	6	FP	N0	62.303
7	1	FP	N	69.663
8	2	FP	N	78.920
9	3	FP	N	79.339
10	4	FP	N	81.211
11	5	FP	N	82.091
12	6	FP	N	85.732
13	1	EI	N0	52.636
14	2	EI	N0	73.522
15	3	EI	N0	66.330
16	4	EI	N0	55.239
17	5	EI	N0	51.692
18	6	EI	N0	51.252
19	1	EI	N	68.300
20	2	EI	N	66.318
21	3	EI	N	93.253
22	4	EI	N	79.934
23	5	EI	N	93.494
24	6	EI	N	89.005

Table 11.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	81.717	2.790	29.292	0.000
A FP	79.493	2.790	28.495	0.000
A EI-FP	2.224	3.945	0.564	0.837

Table 11.102: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 27 in year 2012 .

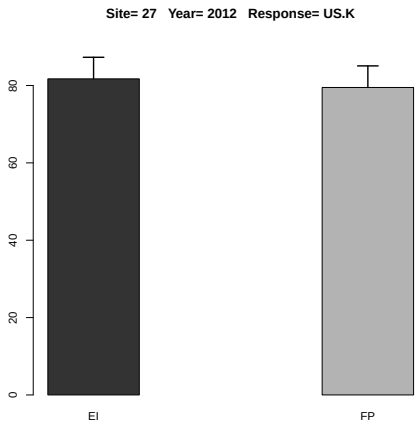

Figure 11.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.094	2.094	0.030	15.000	0.865
B	1.000	2809.300	2809.300	40.400	15.000	0.000
A:B	1.000	16.012	16.012	0.230	15.000	0.638

Table 11.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		70.081	2.486	14.100	28.190	64.751	75.411	0.000
2	FP		69.490	2.486	14.100	27.950	64.161	74.820	0.000
3		N	80.605	2.486	14.100	32.420	75.275	85.935	0.000
4		N0	58.967	2.486	14.100	23.720	53.637	64.297	0.000
5	EI	N	81.717	3.461	19.900	23.610	74.497	88.937	0.000
6	FP	N	79.493	3.461	19.900	22.970	72.273	86.713	0.000
7	EI	N0	58.445	3.461	19.900	16.890	51.225	65.665	0.000
8	FP	N0	59.488	3.461	19.900	17.190	52.268	66.708	0.000

Table 11.104: Estimate of treatment means in tow-way ANOVA for variable US.K at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.591	3.404	15.000	0.170	-6.665	7.847	0.865
B N-N0	21.638	3.404	15.000	6.360	14.382	28.895	0.000
A:B EI N- FP N	2.224	4.814	15.000	0.460	-8.037	12.486	0.651
A:B EI N- EI N0	23.272	4.814	15.000	4.830	13.010	33.534	0.000
A:B EI N- FP N0	22.229	4.814	15.000	4.620	11.967	32.491	0.000
A:B FP N- EI N0	21.047	4.814	15.000	4.370	10.786	31.309	0.000
A:B FP N- FP N0	20.005	4.814	15.000	4.160	9.743	30.267	0.001
A:B EI N0- FP N0	-1.043	4.814	15.000	-0.220	-11.305	9.219	0.831

Table 11.105: Estimate of contrast in two-way ANOVA for variable US.K at site 27 in year 2012 .

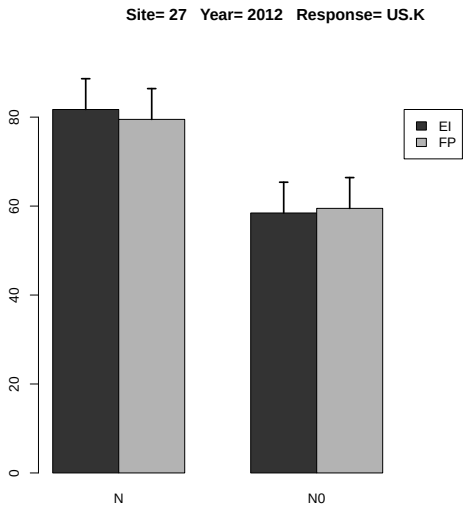

Figure 11.42: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.22 Response Variable US.K2O

	rep	A	B	y
1	1	FP	N0	62.570
2	2	FP	N0	58.068
3	3	FP	N0	62.406
4	4	FP	N0	53.317
5	5	FP	N0	65.878
6	6	FP	N0	63.197
7	1	FP	N	71.216
8	2	FP	N	80.548
9	3	FP	N	81.153
10	4	FP	N	83.256
11	5	FP	N	83.892
12	6	FP	N	87.429
13	1	EI	N0	53.803
14	2	EI	N0	74.722
15	3	EI	N0	68.312
16	4	EI	N0	56.373
17	5	EI	N0	53.241
18	6	EI	N0	51.962
19	1	EI	N	69.972
20	2	EI	N	68.164
21	3	EI	N	94.633
22	4	EI	N	82.119
23	5	EI	N	95.322
24	6	EI	N	89.064

Table 11.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	83.213	2.733	30.449	0.000
A FP	81.249	2.733	29.730	0.000
A EI-FP	1.964	3.865	0.508	0.865

Table 11.107: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 27 in year 2012 .

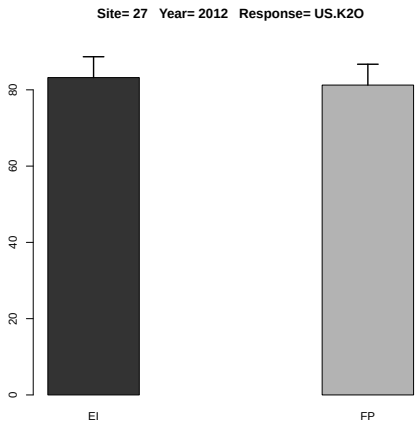

Figure 11.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.943	0.943	0.014	15.000	0.908
B	1.000	2880.284	2880.284	42.131	15.000	0.000
A:B	1.000	14.736	14.736	0.216	15.000	0.649

Table 11.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		71.474	2.465	14.100	29.000	66.190	76.758	0.000
2	FP		71.078	2.465	14.100	28.840	65.794	76.361	0.000
3		N	82.231	2.465	14.100	33.360	76.947	87.514	0.000
4		N0	60.321	2.465	14.100	24.470	55.037	65.604	0.000
5	EI	N	83.213	3.431	19.900	24.250	76.054	90.371	0.000
6	FP	N	81.249	3.431	19.900	23.680	74.091	88.407	0.000
7	EI	N0	59.735	3.431	19.900	17.410	52.577	66.894	0.000
8	FP	N0	60.906	3.431	19.900	17.750	53.748	68.064	0.000

Table 11.109: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.396	3.376	15.000	0.120	-6.798	7.591	0.908
B N-N0	21.910	3.376	15.000	6.490	14.715	29.105	0.000
A:B EI N- FP N	1.964	4.774	15.000	0.410	-8.211	12.139	0.687
A:B EI N- EI N0	23.477	4.774	15.000	4.920	13.302	33.652	0.000
A:B EI N- FP N0	22.306	4.774	15.000	4.670	12.132	32.481	0.000
A:B FP N- EI N0	21.514	4.774	15.000	4.510	11.339	31.689	0.000
A:B FP N- FP N0	20.343	4.774	15.000	4.260	10.168	30.518	0.001
A:B EI N0- FP N0	-1.171	4.774	15.000	-0.250	-11.346	9.004	0.810

Table 11.110: Estimate of contrast in two-way ANOVA for variable US.K2O at site 27 in year 2012
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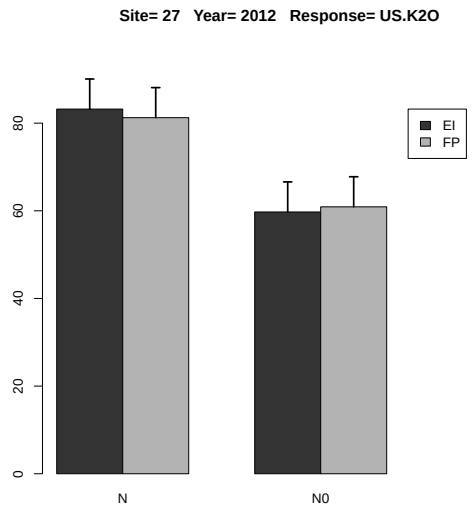

Figure 11.44: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.23 Response Variable US.Ca

	rep	A	B	y
1	1	FP	N0	25.942
2	2	FP	N0	28.940
3	3	FP	N0	22.352
4	4	FP	N0	32.810
5	5	FP	N0	24.690
6	6	FP	N0	17.255
7	1	FP	N	36.855
8	2	FP	N	34.522
9	3	FP	N	38.305
10	4	FP	N	34.492
11	5	FP	N	40.938
12	6	FP	N	28.072
13	1	EI	N0	19.532
14	2	EI	N0	28.602
15	3	EI	N0	29.457
16	4	EI	N0	28.213
17	5	EI	N0	24.640
18	6	EI	N0	15.955
19	1	EI	N	30.750
20	2	EI	N	34.184
21	3	EI	N	44.684
22	4	EI	N	39.008
23	5	EI	N	30.208
24	6	EI	N	33.878

Table 11.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Ca

	Estimate	S.E.	t-value	p-value
A EI	35.452	2.030	17.464	0.000
A FP	35.531	2.030	17.502	0.000
A EI-FP	-0.078	2.871	-0.027	1.000

Table 11.112: Estimate of treatment means and contrast in one-way ANOVA for variable US.Ca at site 27 in year 2012 .

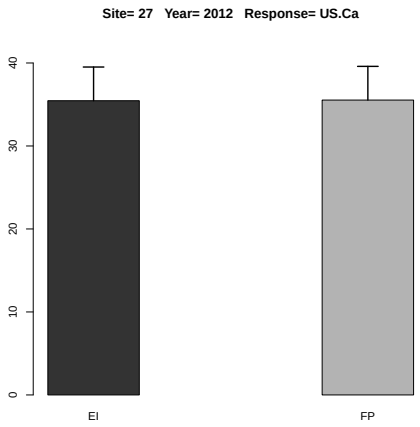

Figure 11.45: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.943	0.943	0.065	4.999	0.809
B	1.000	677.434	677.434	46.851	10.000	0.000
A:B	1.000	1.092	1.092	0.076	10.000	0.789

Table 11.113: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.926	1.826	8.500	16.390	25.761	34.091	0.000
2	FP		30.431	1.826	8.500	16.670	26.266	34.596	0.000
3		N	35.491	1.720	7.600	20.630	31.491	39.491	0.000
4		N0	24.866	1.720	7.600	14.460	20.866	28.866	0.000
5	EI	N	35.452	2.131	14.200	16.640	30.890	40.014	0.000
6	FP	N	35.531	2.131	14.200	16.680	30.968	40.093	0.000
7	EI	N0	24.400	2.131	14.200	11.450	19.838	28.962	0.000
8	FP	N0	25.331	2.131	14.200	11.890	20.769	29.894	0.000

Table 11.114: Estimate of treatment means in tow-way ANOVA for variable US.Ca at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.505	1.978	5.000	-0.260	-5.589	4.579	0.809
B N-N0	10.626	1.552	10.000	6.840	7.167	14.085	0.000
A:B EI N- FP N	-0.078	2.514	11.000	-0.030	-5.613	5.457	0.976
A:B EI N- EI N0	11.052	2.195	10.000	5.030	6.161	15.944	0.000
A:B EI N- FP N0	10.121	2.514	11.000	4.030	4.586	15.656	0.002
A:B FP N- EI N0	11.131	2.514	11.000	4.430	5.596	16.666	0.001
A:B FP N- FP N0	10.199	2.195	10.000	4.650	5.307	15.091	0.001
A:B EI N0- FP N0	-0.932	2.514	11.000	-0.370	-6.466	4.603	0.718

Table 11.115: Estimate of contrast in two-way ANOVA for variable US.Ca at site 27 in year 2012 .

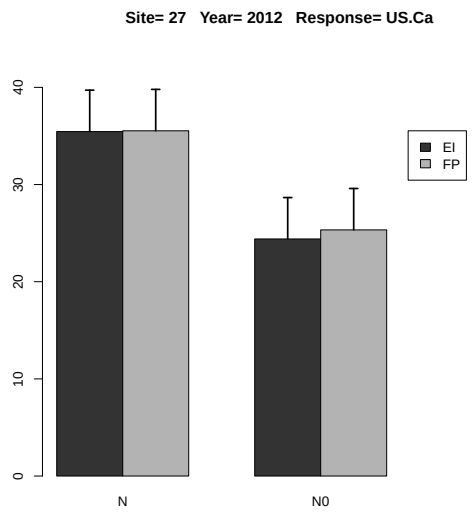

Figure 11.46: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.24 Response Variable US.Mg

	rep	A	B	y
1	1	FP	N0	18.529
2	2	FP	N0	21.085
3	3	FP	N0	16.576
4	4	FP	N0	25.461
5	5	FP	N0	19.376
6	6	FP	N0	15.661
7	1	FP	N	28.711
8	2	FP	N	25.126
9	3	FP	N	26.287
10	4	FP	N	24.566
11	5	FP	N	27.638
12	6	FP	N	22.877
13	1	EI	N0	16.234
14	2	EI	N0	20.550
15	3	EI	N0	23.175
16	4	EI	N0	23.447
17	5	EI	N0	18.902
18	6	EI	N0	15.093
19	1	EI	N	21.828
20	2	EI	N	24.998
21	3	EI	N	28.039
22	4	EI	N	28.538
23	5	EI	N	20.546
24	6	EI	N	28.035

Table 11.116: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	25.331	1.535	16.499	0.000
A FP	25.868	1.535	16.849	0.000
A EI-FP	-0.537	2.171	-0.247	0.965

Table 11.117: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 27 in year 2012 .

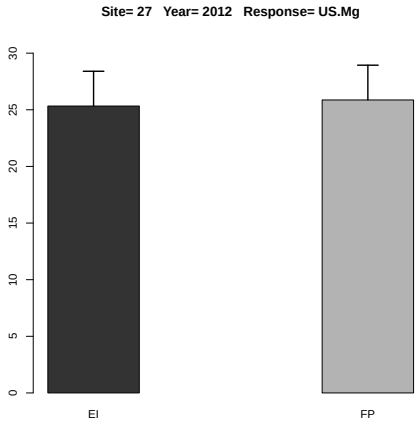

Figure 11.47: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.178	0.178	0.022	4.999	0.887
B	1.000	222.653	222.653	27.882	10.000	0.000
A:B	1.000	0.644	0.644	0.081	10.000	0.782

Table 11.118: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.449	1.024	10.000	21.920	20.166	24.732	0.000
2	FP		22.658	1.024	10.000	22.130	20.375	24.941	0.000
3		N	25.599	0.944	10.800	27.130	23.518	27.681	0.000
4		N0	19.508	0.944	10.800	20.670	17.426	21.589	0.000
5	EI	N	25.331	1.309	19.000	19.350	22.591	28.071	0.000
6	FP	N	25.868	1.309	19.000	19.760	23.127	28.608	0.000
7	EI	N0	19.567	1.309	19.000	14.950	16.827	22.307	0.000
8	FP	N0	19.448	1.309	19.000	14.850	16.708	22.189	0.000

Table 11.119: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.209	1.401	5.000	-0.150	-3.811	3.393	0.887
B N-N0	6.092	1.154	10.000	5.280	3.521	8.662	0.000
A:B EI N- FP N	-0.537	1.815	11.400	-0.300	-4.512	3.439	0.773
A:B EI N- EI N0	5.764	1.631	10.000	3.530	2.129	9.399	0.005
A:B EI N- FP N0	5.883	1.815	11.400	3.240	1.907	9.858	0.007
A:B FP N- EI N0	6.301	1.815	11.400	3.470	2.325	10.276	0.005
A:B FP N- FP N0	6.419	1.631	10.000	3.930	2.784	10.055	0.003
A:B EI N0- FP N0	0.119	1.815	11.400	0.070	-3.857	4.094	0.949

Table 11.120: Estimate of contrast in two-way ANOVA for variable US.Mg at site 27 in year 2012 .

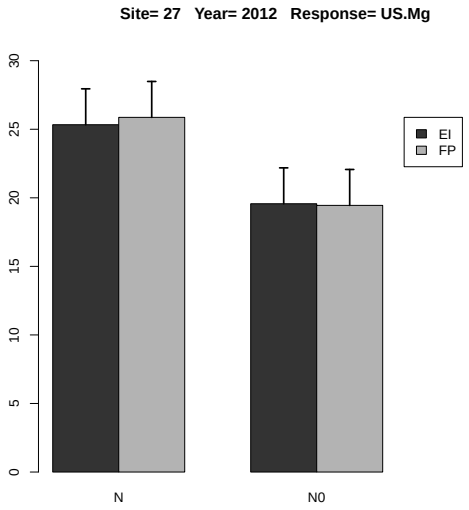

Figure 11.48: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.25 Response Variable US.S

	rep	A	B	y
1	1	FP	N0	4.377
2	2	FP	N0	4.865
3	3	FP	N0	5.053
4	4	FP	N0	5.071
5	5	FP	N0	4.810
6	6	FP	N0	5.014
7	1	FP	N	7.463
8	2	FP	N	6.840
9	3	FP	N	7.079
10	4	FP	N	6.486
11	5	FP	N	6.899
12	6	FP	N	6.906
13	1	EI	N0	4.199
14	2	EI	N0	5.567
15	3	EI	N0	5.528
16	4	EI	N0	5.743
17	5	EI	N0	3.941
18	6	EI	N0	4.989
19	1	EI	N	5.805
20	2	EI	N	6.397
21	3	EI	N	9.036
22	4	EI	N	6.895
23	5	EI	N	6.405
24	6	EI	N	394.663

Table 11.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	71.533	45.704	1.565	0.330
A FP	6.945	45.704	0.152	0.987
A EI-FP	64.588	64.636	0.999	0.596

Table 11.122: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 27 in year 2012 .

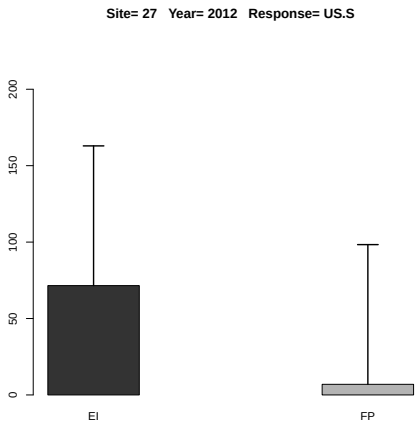

Figure 11.49: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6282.491	6282.491	1.003	15.004	0.332
B	1.000	7062.881	7062.881	1.128	15.005	0.305
A:B	1.000	6232.397	6232.397	0.995	15.005	0.334

Table 11.123: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		38.264	22.852	14.900	1.670	-10.460	86.988	0.115
2	FP		5.905	22.852	14.900	0.260	-42.819	54.630	0.800
3		N	39.239	22.852	14.900	1.720	-9.485	87.963	0.107
4		N0	4.930	22.852	14.900	0.220	-43.794	53.654	0.832
5	EI	N	71.533	32.314	20.000	2.210	4.128	138.939	0.039
6	FP	N	6.945	32.314	20.000	0.210	-60.460	74.350	0.832
7	EI	N0	4.994	32.314	20.000	0.150	-62.411	72.400	0.879
8	FP	N0	4.865	32.314	20.000	0.150	-62.540	72.270	0.882

Table 11.124: Estimate of treatment means in tow-way ANOVA for variable US.S at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	32.359	32.310	15.000	1.000	-36.508	101.225	0.333
B N-N0	34.310	32.310	15.000	1.060	-34.557	103.176	0.305
A:B EI N- FP N	64.588	45.694	15.000	1.410	-32.803	161.980	0.178
A:B EI N- EI N0	66.539	45.694	15.000	1.460	-30.852	163.930	0.166
A:B EI N- FP N0	66.668	45.694	15.000	1.460	-30.723	164.060	0.165
A:B FP N- EI N0	1.951	45.694	15.000	0.040	-95.441	99.343	0.967
A:B FP N- FP N0	2.080	45.694	15.000	0.050	-95.311	99.472	0.964
A:B EI N0- FP N0	0.129	45.694	15.000	0.000	-97.262	97.521	0.998

Table 11.125: Estimate of contrast in two-way ANOVA for variable US.S at site 27 in year 2012 .

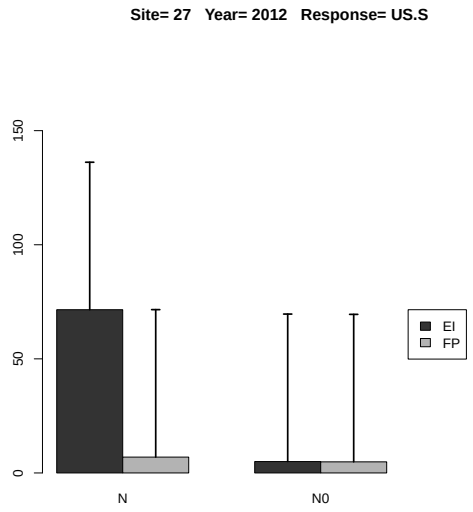

Figure 11.50: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.26 Response Variable US.B

	rep	A	B	y
1	1	FP	N0	351.033
2	2	FP	N0	344.225
3	3	FP	N0	368.290
4	4	FP	N0	482.035
5	5	FP	N0	310.526
6	6	FP	N0	207.586
7	1	FP	N	474.268
8	2	FP	N	396.372
9	3	FP	N	476.632
10	4	FP	N	341.614
11	5	FP	N	367.205
12	6	FP	N	382.632
13	1	EI	N0	222.794
14	2	EI	N0	354.246
15	3	EI	N0	370.033
16	4	EI	N0	453.091
17	5	EI	N0	265.670
18	6	EI	N0	287.412
19	1	EI	N	509.872
20	2	EI	N	474.367
21	3	EI	N	536.721
22	4	EI	N	459.160
23	5	EI	N	351.137
24	6	EI	N	600.004

Table 11.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.B

	Estimate	S.E.	t-value	p-value
A EI	488.544	23.042	21.203	0.000
A FP	406.454	23.042	17.640	0.000
A EI-FP	82.090	32.586	2.519	0.108

Table 11.127: Estimate of treatment means and contrast in one-way ANOVA for variable US.B at site 27 in year 2012 .

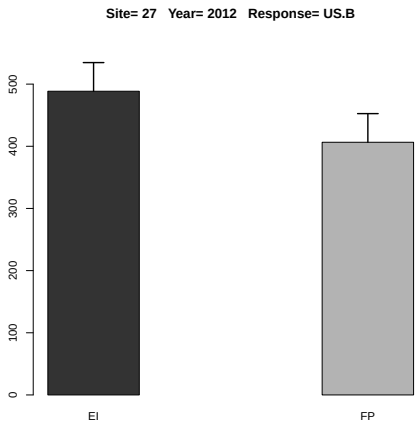

Figure 11.51: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6083.038	6083.038	1.026	15.009	0.327
B	1.000	76279.881	76279.881	12.864	15.009	0.003
A:B	1.000	15149.758	15149.758	2.555	15.009	0.131

Table 11.128: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		407.042	23.430	13.500	17.370	356.621	457.464	0.000
2	FP		375.202	23.430	13.500	16.010	324.780	425.623	0.000
3		N	447.499	23.430	13.500	19.100	397.077	497.920	0.000
4		N0	334.745	23.430	13.500	14.290	284.324	385.167	0.000
5	EI	N	488.543	32.297	19.800	15.130	421.139	555.948	0.000
6	FP	N	406.454	32.297	19.800	12.580	339.049	473.858	0.000
7	EI	N0	325.541	32.297	19.800	10.080	258.137	392.946	0.000
8	FP	N0	343.949	32.297	19.800	10.650	276.545	411.354	0.000

Table 11.129: Estimate of treatment means in tow-way ANOVA for variable US.B at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	31.841	31.437	15.000	1.010	-35.162	98.844	0.327
B N-N0	112.753	31.437	15.000	3.590	45.750	179.757	0.003
A:B EI N- FP N	82.090	44.459	15.000	1.850	-12.667	176.847	0.085
A:B EI N- EI N0	163.002	44.459	15.000	3.670	68.245	257.759	0.002
A:B EI N- FP N0	144.594	44.459	15.000	3.250	49.837	239.351	0.005
A:B FP N- EI N0	80.912	44.459	15.000	1.820	-13.844	175.669	0.089
A:B FP N- FP N0	62.504	44.459	15.000	1.410	-32.253	157.261	0.180
A:B EI N0- FP N0	-18.408	44.459	15.000	-0.410	-113.165	76.349	0.685

Table 11.130: Estimate of contrast in two-way ANOVA for variable US.B at site 27 in year 2012 .

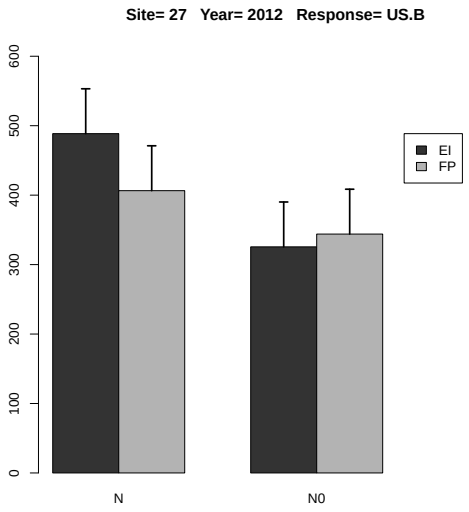

Figure 11.52: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.27 Response Variable US.Cu

	rep	A	B	y
1	1	FP	N0	256.215
2	2	FP	N0	297.072
3	3	FP	N0	212.539
4	4	FP	N0	239.975
5	5	FP	N0	164.050
6	6	FP	N0	150.828
7	1	FP	N	535.695
8	2	FP	N	451.888
9	3	FP	N	524.462
10	4	FP	N	401.297
11	5	FP	N	433.528
12	6	FP	N	416.159
13	1	EI	N0	219.684
14	2	EI	N0	302.559
15	3	EI	N0	252.585
16	4	EI	N0	200.846
17	5	EI	N0	138.695
18	6	EI	N0	144.628
19	1	EI	N	406.025
20	2	EI	N	466.072
21	3	EI	N	680.626
22	4	EI	N	493.543
23	5	EI	N	284.724
24	6	EI	N	426.171

Table 11.131: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Cu

	Estimate	S.E.	t-value	p-value
A EI	459.527	34.677	13.252	0.000
A FP	460.505	34.677	13.280	0.000
A EI-FP	-0.978	49.041	-0.020	1.000

Table 11.132: Estimate of treatment means and contrast in one-way ANOVA for variable US.Cu at site 27 in year 2012 .

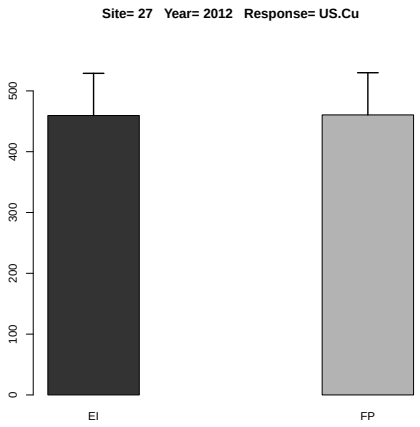

Figure 11.53: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	150.975	150.975	0.038	4.999	0.852
B	1.000	360275.946	360275.946	91.737	10.008	0.000
A:B	1.000	129.793	129.793	0.033	10.008	0.859

Table 11.133: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		334.680	28.416	8.100	11.780	269.244	400.116	0.000
2	FP		340.309	28.416	8.100	11.980	274.873	405.745	0.000
3		N	460.016	27.660	7.800	16.630	395.949	524.082	0.000
4		N0	214.973	27.660	7.800	7.770	150.906	279.039	0.000
5	EI	N	459.527	33.686	14.100	13.640	387.309	531.745	0.000
6	FP	N	460.505	33.686	14.100	13.670	388.287	532.723	0.000
7	EI	N0	209.833	33.686	14.100	6.230	137.615	282.051	0.000
8	FP	N0	220.113	33.686	14.100	6.530	147.895	292.331	0.000

Table 11.134: Estimate of treatment means in tow-way ANOVA for variable US.Cu at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.629	28.711	5.000	-0.200	-79.438	68.180	0.852
B N-N0	245.043	25.584	10.000	9.580	188.044	302.042	0.000
A:B EI N- FP N	-0.978	38.456	12.200	-0.030	-84.587	82.630	0.980
A:B EI N- EI N0	249.694	36.181	10.000	6.900	169.085	330.302	0.000
A:B EI N- FP N0	239.414	38.456	12.200	6.230	155.805	323.022	0.000
A:B FP N- EI N0	250.672	38.456	12.200	6.520	167.064	334.281	0.000
A:B FP N- FP N0	240.392	36.181	10.000	6.640	159.783	321.000	0.000
A:B EI N0- FP N0	-10.280	38.456	12.200	-0.270	-93.889	73.328	0.794

Table 11.135: Estimate of contrast in two-way ANOVA for variable US.Cu at site 27 in year 2012 .

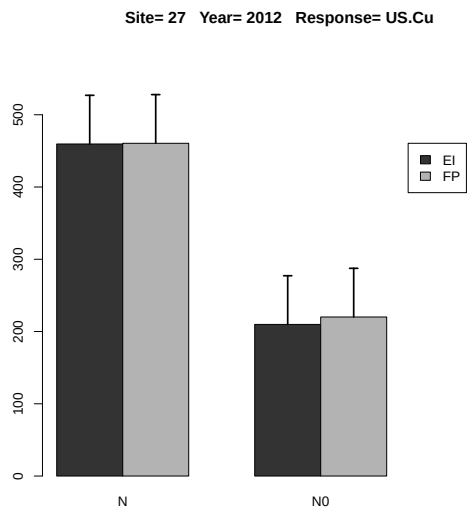

Figure 11.54: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.28 Response Variable US.Fe

	rep	A	B	y
1	1	FP	N0	24060.028
2	2	FP	N0	12913.401
3	3	FP	N0	13389.513
4	4	FP	N0	21619.316
5	5	FP	N0	18597.996
6	6	FP	N0	15293.535
7	1	FP	N	22945.232
8	2	FP	N	20481.598
9	3	FP	N	17908.805
10	4	FP	N	17540.358
11	5	FP	N	16054.501
12	6	FP	N	14342.150
13	1	EI	N0	20853.041
14	2	EI	N0	18326.371
15	3	EI	N0	18768.719
16	4	EI	N0	23762.912
17	5	EI	N0	12942.865
18	6	EI	N0	33065.039
19	1	EI	N	21056.749
20	2	EI	N	18954.115
21	3	EI	N	24774.008
22	4	EI	N	23384.986
23	5	EI	N	11514.951
24	6	EI	N	15129.437

Table 11.136: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Fe

	Estimate	S.E.	t-value	p-value
A EI	19135.708	1312.119	14.584	0.000
A FP	18212.107	1312.119	13.880	0.000
A EI-FP	923.601	1855.616	0.498	0.870

Table 11.137: Estimate of treatment means and contrast in one-way ANOVA for variable US.Fe at site 27 in year 2012 .

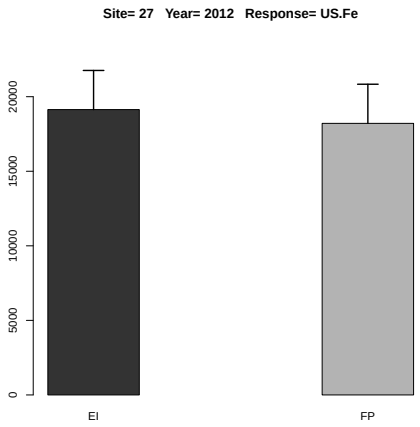

Figure 11.55: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	23440171.110	23440171.110	1.081	4.999	0.346
B	1.000	3765046.618	3765046.618	0.174	-0.000	
A:B	1.000	11075247.481	11075247.481	0.511	-0.000	

Table 11.138: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		20211.100	1560.603	10.000	12.950	16733.678	23688.521	0.000
2	FP		17928.869	1560.603	10.000	11.490	14451.448	21406.291	0.000
3		N	18673.908	1460.966	16.100	12.780	15578.020	21769.795	0.000
4		N0	19466.061	1460.966	16.100	13.320	16370.174	22561.949	0.000
5	EI	N	19135.708	2059.691	35.100	9.290	14954.537	23316.879	0.000
6	FP	N	18212.107	2059.691	35.100	8.840	14030.936	22393.279	0.000
7	EI	N0	21286.491	2059.691	35.100	10.330	17105.320	25467.663	0.000
8	FP	N0	17645.631	2059.691	35.100	8.570	13464.460	21826.803	0.000

Table 11.139: Estimate of treatment means in tow-way ANOVA for variable US.Fe at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2282.230	2194.978	5.000	1.040	-3360.499	7924.959	0.346
B N-N0	-792.154	1900.971	-40.800	-0.420			
A:B EI N- FP N	923.601	2903.725	16.400	0.320	-5218.727	7065.928	0.754
A:B EI N- EI N0	-2150.784	2688.379	-40.800	-0.800			
A:B EI N- FP N0	1490.076	2903.725	16.400	0.510	-4652.251	7632.404	0.615
A:B FP N- EI N0	-3074.384	2903.725	16.400	-1.060	-9216.712	3067.943	0.305
A:B FP N- FP N0	566.476	2688.379	-40.800	0.210			
A:B EI N0- FP N0	3640.860	2903.725	16.400	1.250	-2501.468	9783.187	0.227

Table 11.140: Estimate of contrast in two-way ANOVA for variable US.Fe at site 27 in year 2012 .

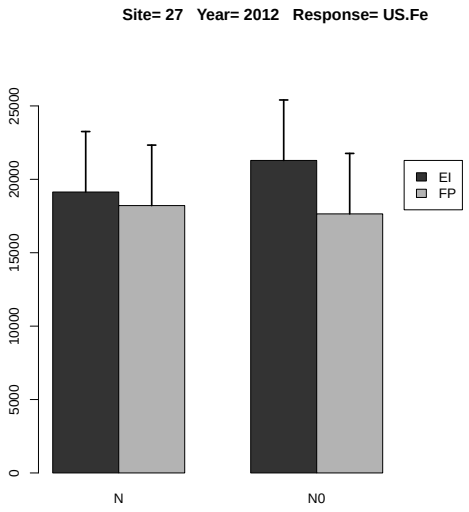

Figure 11.56: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.29 Response Variable US.Mn

	rep	A	B	y
1	1	FP	N0	2424.986
2	2	FP	N0	1554.300
3	3	FP	N0	1951.610
4	4	FP	N0	1606.394
5	5	FP	N0	1700.639
6	6	FP	N0	2736.585
7	1	FP	N	2690.616
8	2	FP	N	3552.256
9	3	FP	N	3030.161
10	4	FP	N	3991.549
11	5	FP	N	2931.152
12	6	FP	N	5237.326
13	1	EI	N0	1055.496
14	2	EI	N0	1509.765
15	3	EI	N0	1581.366
16	4	EI	N0	2243.964
17	5	EI	N0	1569.502
18	6	EI	N0	2484.433
19	1	EI	N	1384.199
20	2	EI	N	1639.328
21	3	EI	N	3402.366
22	4	EI	N	2809.108
23	5	EI	N	1515.375
24	6	EI	N	5143.970

Table 11.141: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mn

	Estimate	S.E.	t-value	p-value
A EI	2649.058	251.759	10.522	0.000
A FP	3572.177	251.759	14.189	0.000
A EI-FP	-923.119	356.042	-2.593	0.100

Table 11.142: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mn at site 27 in year 2012 .

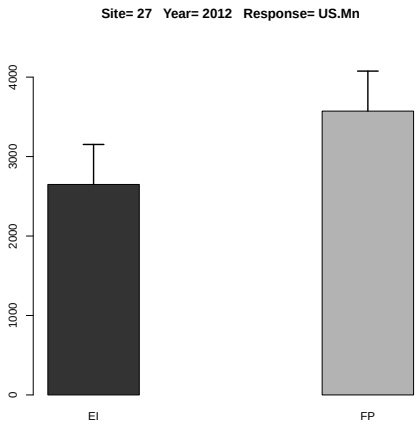

Figure 11.57: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2081937.926	2081937.926	5.039	13.789	0.042
B	1.000	9260810.162	9260810.162	22.415	13.789	0.000
A:B	1.000	669577.781	669577.781	1.621	13.789	0.224

Table 11.143: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2194.906	336.329	6.900	6.530	1396.755	2993.057	0.000
2	FP		2783.965	336.329	6.900	8.280	1985.813	3582.116	0.000
3		N	3110.617	336.329	6.900	9.250	2312.466	3908.769	0.000
4		N0	1868.253	336.329	6.900	5.550	1070.102	2666.405	0.001
5	EI	N	2649.058	384.119	10.700	6.900	1801.211	3496.905	0.000
6	FP	N	3572.177	384.119	10.700	9.300	2724.330	4420.024	0.000
7	EI	N0	1740.754	384.119	10.700	4.530	892.908	2588.601	0.001
8	FP	N0	1995.752	384.119	10.700	5.200	1147.905	2843.599	0.000

Table 11.144: Estimate of treatment means in tow-way ANOVA for variable US.Mn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-589.058	262.412	14.400	-2.240	-1150.499	-27.618	0.041
B N-N0	1242.364	262.412	14.400	4.730	680.923	1803.805	0.000
A:B EI N- FP N	-923.119	371.107	14.400	-2.490	-1717.116	-129.122	0.026
A:B EI N- EI N0	908.304	371.107	14.400	2.450	114.307	1702.301	0.028
A:B EI N- FP N0	653.306	371.107	14.400	1.760	-140.691	1447.303	0.100
A:B FP N- EI N0	1831.422	371.107	14.400	4.940	1037.425	2625.419	0.000
A:B FP N- FP N0	1576.424	371.107	14.400	4.250	782.427	2370.421	0.001
A:B EI N0- FP N0	-254.998	371.107	14.400	-0.690	-1048.995	538.999	0.503

Table 11.145: Estimate of contrast in two-way ANOVA for variable US.Mn at site 27 in year 2012 .

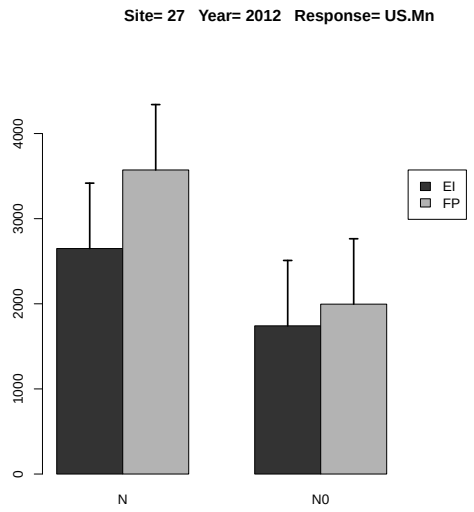

Figure 11.58: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.30 Response Variable US.Zn

	rep	A	B	y
1	1	FP	N0	2089.333
2	2	FP	N0	2078.387
3	3	FP	N0	1758.171
4	4	FP	N0	1765.938
5	5	FP	N0	1958.174
6	6	FP	N0	1404.907
7	1	FP	N	2543.660
8	2	FP	N	1759.607
9	3	FP	N	1425.781
10	4	FP	N	1364.020
11	5	FP	N	1793.068
12	6	FP	N	1928.085
13	1	EI	N0	2420.163
14	2	EI	N0	2179.021
15	3	EI	N0	1969.193
16	4	EI	N0	2111.120
17	5	EI	N0	1293.667
18	6	EI	N0	1877.364
19	1	EI	N	1419.127
20	2	EI	N	1669.110
21	3	EI	N	1884.746
22	4	EI	N	1689.724
23	5	EI	N	2082.078
24	6	EI	N	2691.282

Table 11.146: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Zn

	Estimate	S.E.	t-value	p-value
A EI	1906.011	191.095	9.974	0.000
A FP	1802.370	191.095	9.432	0.001
A EI-FP	103.641	270.249	0.384	0.919

Table 11.147: Estimate of treatment means and contrast in one-way ANOVA for variable US.Zn at site 27 in year 2012 .

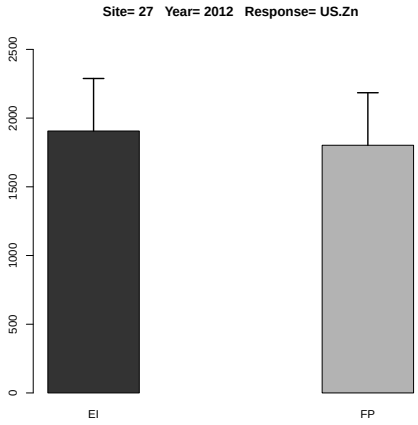

Figure 11.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	83716.652	83716.652	0.566	19.742	0.461
B	1.000	17884.285	17884.285	0.121	19.742	0.732
A:B	1.000	1258.190	1258.190	0.009	19.742	0.927

Table 11.148: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1940.550	110.976	20.000	17.490	1709.021	2172.078	0.000
2	FP		1822.428	110.976	20.000	16.420	1590.899	2053.956	0.000
3		N	1854.191	110.976	20.000	16.710	1622.662	2085.719	0.000
4		N0	1908.786	110.976	20.000	17.200	1677.258	2140.315	0.000
5	EI	N	1906.011	156.944	20.000	12.140	1578.581	2233.441	0.000
6	FP	N	1802.370	156.944	20.000	11.480	1474.940	2129.800	0.000
7	EI	N0	1975.088	156.944	20.000	12.580	1647.658	2302.518	0.000
8	FP	N0	1842.485	156.944	20.000	11.740	1515.055	2169.915	0.000

Table 11.149: Estimate of treatment means in tow-way ANOVA for variable US.Zn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	118.122	156.944	20.000	0.750	-209.308	445.552	0.461
B N-N0	-54.596	156.944	20.000	-0.350	-382.026	272.834	0.732
A:B EI N- FP N	103.641	221.952	20.000	0.470	-359.416	566.697	0.646
A:B EI N- EI N0	-69.077	221.952	20.000	-0.310	-532.133	393.979	0.759
A:B EI N- FP N0	63.526	221.952	20.000	0.290	-399.530	526.582	0.778
A:B FP N- EI N0	-172.718	221.952	20.000	-0.780	-635.774	290.339	0.446
A:B FP N- FP N0	-40.115	221.952	20.000	-0.180	-503.171	422.941	0.858
A:B EI N0- FP N0	132.603	221.952	20.000	0.600	-330.454	595.659	0.557

Table 11.150: Estimate of contrast in two-way ANOVA for variable US.Zn at site 27 in year 2012 .

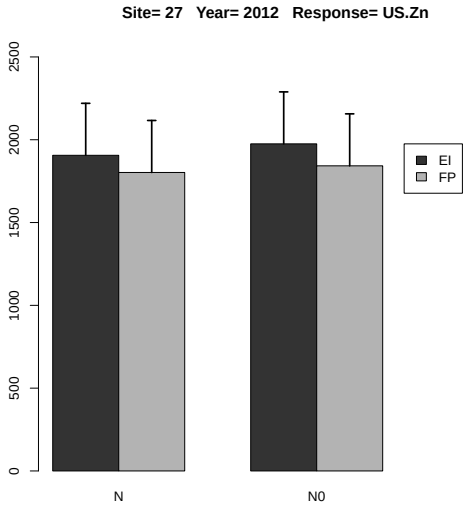

Figure 11.60: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.31 Response Variable UT.N

	rep	A	B	y
1	1	FP	N0	103.658
2	2	FP	N0	111.447
3	3	FP	N0	83.655
4	4	FP	N0	134.373
5	5	FP	N0	114.514
6	6	FP	N0	96.344
7	1	FP	N	171.052
8	2	FP	N	166.548
9	3	FP	N	179.046
10	4	FP	N	182.374
11	5	FP	N	218.445
12	6	FP	N	176.200
13	1	EI	N0	87.876
14	2	EI	N0	105.431
15	3	EI	N0	136.033
16	4	EI	N0	104.292
17	5	EI	N0	96.346
18	6	EI	N0	62.418
19	1	EI	N	149.741
20	2	EI	N	176.456
21	3	EI	N	225.000
22	4	EI	N	184.741
23	5	EI	N	174.399
24	6	EI	N	221.656

Table 11.151: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	188.665	10.353	18.223	0.000
A FP	182.277	10.353	17.606	0.000
A EI-FP	6.388	14.641	0.436	0.898

Table 11.152: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 27 in year 2012 .

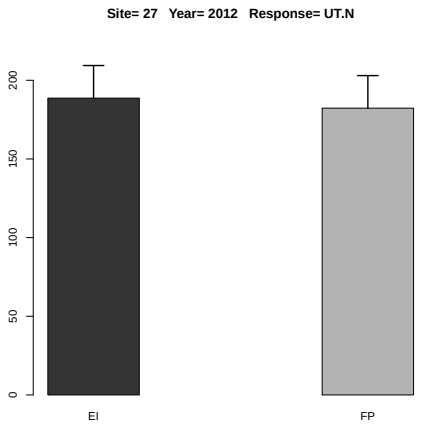

Figure 11.61: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.189	5.189	0.012	9.998	0.915
B	1.000	40777.131	40777.131	94.396	10.000	0.000
A:B	1.000	336.929	336.929	0.780	10.000	0.398

Table 11.153: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		143.699	7.133	10.000	20.150	127.806	159.592	0.000
2	FP		144.805	7.133	10.000	20.300	128.912	160.697	0.000
3		N	185.471	6.591	19.400	28.140	171.698	199.245	0.000
4		N0	103.032	6.591	19.400	15.630	89.259	116.806	0.000
5	EI	N	188.665	9.320	19.400	20.240	169.187	208.144	0.000
6	FP	N	182.277	9.320	19.400	19.560	162.798	201.756	0.000
7	EI	N0	98.733	9.320	19.400	10.590	79.254	118.212	0.000
8	FP	N0	107.332	9.320	19.400	11.520	87.853	126.811	0.000

Table 11.154: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.106	10.087	10.000	-0.110	-23.581	21.370	0.915
B N-N0	82.439	8.485	10.000	9.720	63.533	101.345	0.000
A:B EI N- FP N	6.388	13.181	19.400	0.480	-21.159	33.935	0.633
A:B EI N- EI N0	89.933	12.000	10.000	7.490	63.196	116.669	0.000
A:B EI N- FP N0	81.333	13.181	19.400	6.170	53.786	108.881	0.000
A:B FP N- EI N0	83.545	13.181	19.400	6.340	55.997	111.092	0.000
A:B FP N- FP N0	74.945	12.000	10.000	6.250	48.209	101.682	0.000
A:B EI N0- FP N0	-8.599	13.181	19.400	-0.650	-36.146	18.948	0.522

Table 11.155: Estimate of contrast in two-way ANOVA for variable UT.N at site 27 in year 2012 .

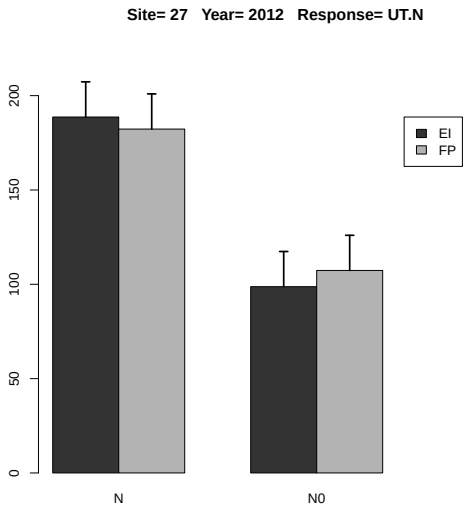

Figure 11.62: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.32 Response Variable UT.P

	rep	A	B	y
1	1	FP	N0	16.012
2	2	FP	N0	16.246
3	3	FP	N0	23.505
4	4	FP	N0	22.397
5	5	FP	N0	19.135
6	6	FP	N0	17.887
7	1	FP	N	19.911
8	2	FP	N	25.104
9	3	FP	N	20.827
10	4	FP	N	22.514
11	5	FP	N	43.920
12	6	FP	N	21.370
13	1	EI	N0	17.977
14	2	EI	N0	19.683
15	3	EI	N0	22.085
16	4	EI	N0	16.021
17	5	EI	N0	21.618
18	6	EI	N0	11.657
19	1	EI	N	18.381
20	2	EI	N	17.185
21	3	EI	N	27.688
22	4	EI	N	20.277
23	5	EI	N	24.052
24	6	EI	N	41.642

Table 11.156: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	24.871	3.915	6.353	0.003
A FP	25.608	3.915	6.541	0.003
A EI-FP	-0.737	5.536	-0.133	0.990

Table 11.157: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 27 in year 2012 .

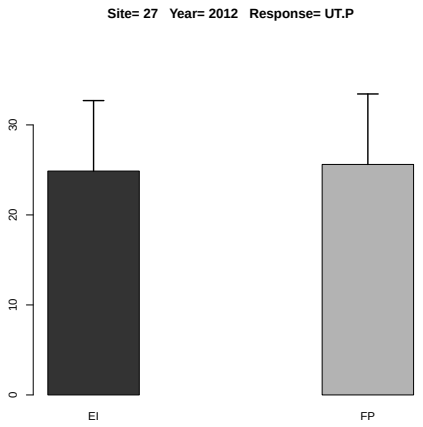

Figure 11.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4.648	4.648	0.097	20.000	0.758
B	1.000	257.733	257.733	5.389	20.000	0.031
A:B	1.000	0.123	0.123	0.003	20.000	0.960

Table 11.158: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.522	1.996	20.000	10.780	17.358	25.687	0.000
2	FP		22.402	1.996	20.000	11.220	18.238	26.567	0.000
3		N	25.239	1.996	20.000	12.640	21.075	29.404	0.000
4		N0	18.685	1.996	20.000	9.360	14.521	22.850	0.000
5	EI	N	24.871	2.823	20.000	8.810	18.981	30.760	0.000
6	FP	N	25.608	2.823	20.000	9.070	19.718	31.497	0.000
7	EI	N0	18.173	2.823	20.000	6.440	12.284	24.063	0.000
8	FP	N0	19.197	2.823	20.000	6.800	13.307	25.087	0.000

Table 11.159: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.880	2.823	20.000	-0.310	-6.770	5.009	0.758
B N-N0	6.554	2.823	20.000	2.320	0.665	12.444	0.031
A:B EI N- FP N	-0.737	3.993	20.000	-0.180	-9.066	7.592	0.856
A:B EI N- EI N0	6.697	3.993	20.000	1.680	-1.632	15.026	0.109
A:B EI N- FP N0	5.674	3.993	20.000	1.420	-2.655	14.003	0.171
A:B FP N- EI N0	7.434	3.993	20.000	1.860	-0.895	15.763	0.077
A:B FP N- FP N0	6.411	3.993	20.000	1.610	-1.918	14.740	0.124
A:B EI N0- FP N0	-1.024	3.993	20.000	-0.260	-9.352	7.305	0.800

Table 11.160: Estimate of contrast in two-way ANOVA for variable UT.P at site 27 in year 2012 .

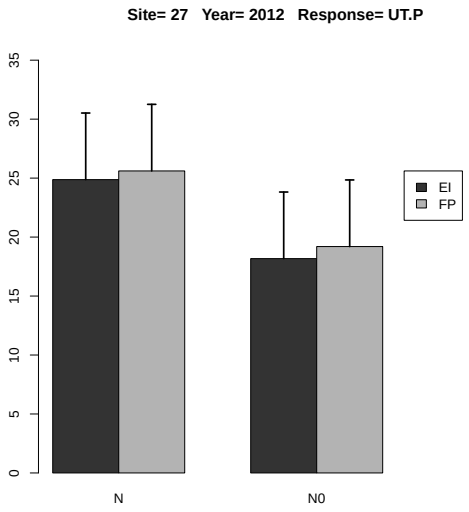

Figure 11.64: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.33 Response Variable UT.P2O5

	rep	A	B	y
1	1	FP	N0	16.363
2	2	FP	N0	16.943
3	3	FP	N0	24.146
4	4	FP	N0	22.874
5	5	FP	N0	19.636
6	6	FP	N0	18.368
7	1	FP	N	20.302
8	2	FP	N	25.658
9	3	FP	N	21.237
10	4	FP	N	23.255
11	5	FP	N	44.410
12	6	FP	N	22.075
13	1	EI	N0	18.761
14	2	EI	N0	20.290
15	3	EI	N0	22.717
16	4	EI	N0	16.822
17	5	EI	N0	22.170
18	6	EI	N0	12.261
19	1	EI	N	18.903
20	2	EI	N	17.828
21	3	EI	N	28.148
22	4	EI	N	20.986
23	5	EI	N	24.745
24	6	EI	N	50.015

Table 11.161: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	26.771	4.621	5.793	0.005
A FP	26.156	4.621	5.660	0.005
A EI-FP	0.615	6.535	0.094	0.995

Table 11.162: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 27 in year 2012 .

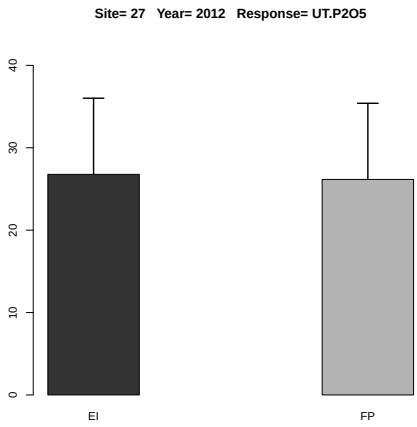

Figure 11.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.109	0.109	0.002	20.000	0.967
B	1.000	309.685	309.685	4.898	20.000	0.039
A:B	1.000	3.375	3.375	0.053	20.000	0.820

Table 11.163: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.804	2.295	20.000	9.930	18.016	27.592	0.000
2	FP		22.939	2.295	20.000	9.990	18.151	27.727	0.000
3		N	26.464	2.295	20.000	11.530	21.675	31.252	0.000
4		N0	19.279	2.295	20.000	8.400	14.491	24.067	0.000
5	EI	N	26.771	3.246	20.000	8.250	20.000	33.543	0.000
6	FP	N	26.156	3.246	20.000	8.060	19.384	32.928	0.000
7	EI	N0	18.837	3.246	20.000	5.800	12.065	25.608	0.000
8	FP	N0	19.722	3.246	20.000	6.080	12.950	26.493	0.000

Table 11.164: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.135	3.246	20.000	-0.040	-6.906	6.637	0.967
B N-N0	7.184	3.246	20.000	2.210	0.413	13.956	0.039
A:B EI N- FP N	0.615	4.591	20.000	0.130	-8.961	10.191	0.895
A:B EI N- EI N0	7.934	4.591	20.000	1.730	-1.642	17.511	0.099
A:B EI N- FP N0	7.049	4.591	20.000	1.540	-2.527	16.626	0.140
A:B FP N- EI N0	7.319	4.591	20.000	1.590	-2.257	16.895	0.127
A:B FP N- FP N0	6.434	4.591	20.000	1.400	-3.142	16.011	0.176
A:B EI N0- FP N0	-0.885	4.591	20.000	-0.190	-10.461	8.691	0.849

Table 11.165: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 27 in year 2012 .

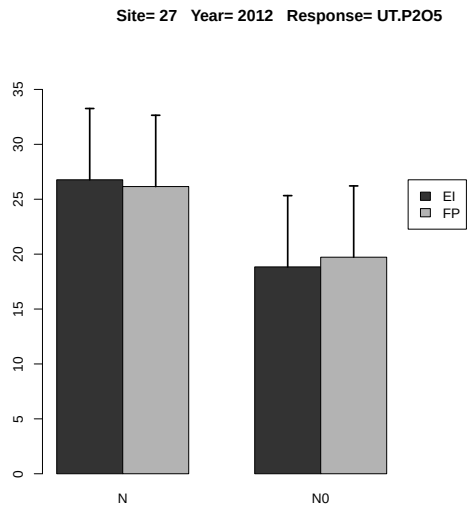

Figure 11.66: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.34 Response Variable UT.K

	rep	A	B	y
1	1	FP	N0	77.270
2	2	FP	N0	74.332
3	3	FP	N0	79.648
4	4	FP	N0	82.101
5	5	FP	N0	82.428
6	6	FP	N0	74.007
7	1	FP	N	89.673
8	2	FP	N	109.777
9	3	FP	N	103.880
10	4	FP	N	104.904
11	5	FP	N	139.464
12	6	FP	N	109.599
13	1	EI	N0	67.414
14	2	EI	N0	86.207
15	3	EI	N0	89.980
16	4	EI	N0	66.542
17	5	EI	N0	75.232
18	6	EI	N0	53.991
19	1	EI	N	86.442
20	2	EI	N	85.022
21	3	EI	N	126.794
22	4	EI	N	101.567
23	5	EI	N	119.019
24	6	EI	N	121.604

Table 11.166: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	106.741	5.282	20.207	0.000
A FP	109.550	5.282	20.738	0.000
A EI-FP	-2.808	7.471	-0.376	0.922

Table 11.167: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 27 in year 2012 .

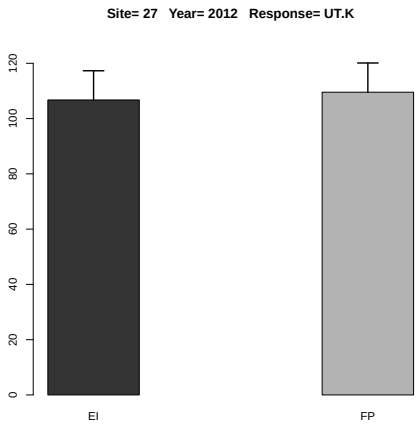

Figure 11.67: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	93.093	93.093	0.559	15.000	0.466
B	1.000	6291.891	6291.891	37.750	15.000	0.000
A:B	1.000	7.672	7.672	0.046	15.000	0.833

Table 11.168: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		89.984	4.408	11.000	20.410	80.280	99.689	0.000
2	FP		93.924	4.408	11.000	21.310	84.219	103.628	0.000
3		N	108.145	4.408	11.000	24.530	98.441	117.850	0.000
4		N0	75.763	4.408	11.000	17.190	66.058	85.467	0.000
5	EI	N	106.741	5.772	18.500	18.490	94.636	118.846	0.000
6	FP	N	109.549	5.772	18.500	18.980	97.445	121.655	0.000
7	EI	N0	73.228	5.772	18.500	12.690	61.123	85.333	0.000
8	FP	N0	78.297	5.772	18.500	13.560	66.192	90.403	0.000

Table 11.169: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.939	5.271	15.000	-0.750	-15.173	7.295	0.466
B N-N0	32.383	5.271	15.000	6.140	21.149	43.617	0.000
A:B EI N- FP N	-2.808	7.454	15.000	-0.380	-18.695	13.079	0.712
A:B EI N- EI N0	33.514	7.454	15.000	4.500	17.627	49.401	0.000
A:B EI N- FP N0	28.444	7.454	15.000	3.820	12.557	44.331	0.002
A:B FP N- EI N0	36.322	7.454	15.000	4.870	20.435	52.209	0.000
A:B FP N- FP N0	31.252	7.454	15.000	4.190	15.365	47.139	0.001
A:B EI N0- FP N0	-5.070	7.454	15.000	-0.680	-20.957	10.817	0.507

Table 11.170: Estimate of contrast in two-way ANOVA for variable UT.K at site 27 in year 2012 .

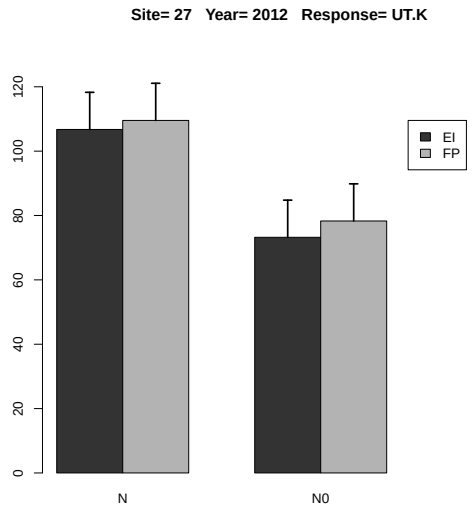

Figure 11.68: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.35 Response Variable UT.K2O

	rep	A	B	y
1	1	FP	N0	78.637
2	2	FP	N0	75.713
3	3	FP	N0	80.889
4	4	FP	N0	84.266
5	5	FP	N0	83.885
6	6	FP	N0	74.901
7	1	FP	N	91.226
8	2	FP	N	111.405
9	3	FP	N	105.694
10	4	FP	N	106.948
11	5	FP	N	141.264
12	6	FP	N	111.296
13	1	EI	N0	68.580
14	2	EI	N0	87.407
15	3	EI	N0	91.963
16	4	EI	N0	67.675
17	5	EI	N0	76.781
18	6	EI	N0	54.701
19	1	EI	N	88.114
20	2	EI	N	86.868
21	3	EI	N	128.174
22	4	EI	N	103.752
23	5	EI	N	120.848
24	6	EI	N	121.664

Table 11.171: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	108.237	5.156	20.992	0.000
A FP	111.306	5.156	21.587	0.000
A EI-FP	-3.069	7.292	-0.421	0.904

Table 11.172: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 27 in year 2012 .

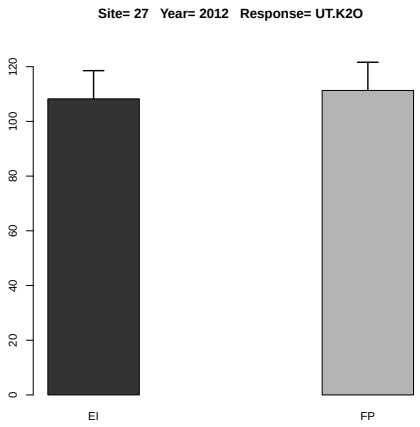

Figure 11.69: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	102.507	102.507	0.623	15.000	0.442
B	1.000	6397.902	6397.902	38.853	15.000	0.000
A:B	1.000	6.796	6.796	0.041	15.000	0.842

Table 11.173: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		91.377	4.428	10.800	20.640	81.607	101.147	0.000
2	FP		95.510	4.428	10.800	21.570	85.740	105.281	0.000
3		N	109.771	4.428	10.800	24.790	100.001	119.541	0.000
4		N0	77.117	4.428	10.800	17.410	67.347	86.886	0.000
5	EI	N	108.237	5.773	18.300	18.750	96.121	120.352	0.000
6	FP	N	111.306	5.773	18.300	19.280	99.190	123.421	0.000
7	EI	N0	74.518	5.773	18.300	12.910	62.402	86.633	0.000
8	FP	N0	79.715	5.773	18.300	13.810	67.600	91.831	0.000

Table 11.174: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-4.133	5.239	15.000	-0.790	-15.300	7.033	0.442
B N-N0	32.654	5.239	15.000	6.230	21.488	43.821	0.000
A:B EI N- FP N	-3.069	7.409	15.000	-0.410	-18.860	12.722	0.685
A:B EI N- EI N0	33.719	7.409	15.000	4.550	17.927	49.510	0.000
A:B EI N- FP N0	28.521	7.409	15.000	3.850	12.730	44.313	0.002
A:B FP N- EI N0	36.788	7.409	15.000	4.970	20.996	52.579	0.000
A:B FP N- FP N0	31.590	7.409	15.000	4.260	15.799	47.382	0.001
A:B EI N0- FP N0	-5.198	7.409	15.000	-0.700	-20.989	10.594	0.494

Table 11.175: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 27 in year 2012 .

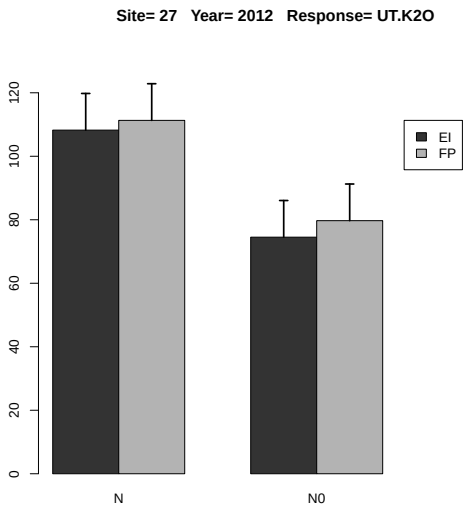

Figure 11.70: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.36 Response Variable UT.Ca

	rep	A	B	y
1	1	FP	N0	26.529
2	2	FP	N0	29.449
3	3	FP	N0	22.729
4	4	FP	N0	33.596
5	5	FP	N0	25.254
6	6	FP	N0	17.561
7	1	FP	N	37.547
8	2	FP	N	35.363
9	3	FP	N	39.221
10	4	FP	N	35.356
11	5	FP	N	41.973
12	6	FP	N	28.754
13	1	EI	N0	19.883
14	2	EI	N0	29.011
15	3	EI	N0	30.096
16	4	EI	N0	28.556
17	5	EI	N0	25.168
18	6	EI	N0	16.055
19	1	EI	N	31.491
20	2	EI	N	34.970
21	3	EI	N	45.849
22	4	EI	N	39.801
23	5	EI	N	30.937
24	6	EI	N	34.533

Table 11.176: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Ca

	Estimate	S.E.	t-value	p-value
A EI	36.263	2.064	17.569	0.000
A FP	36.369	2.064	17.620	0.000
A EI-FP	-0.106	2.919	-0.036	0.999

Table 11.177: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Ca at site 27 in year 2012 .

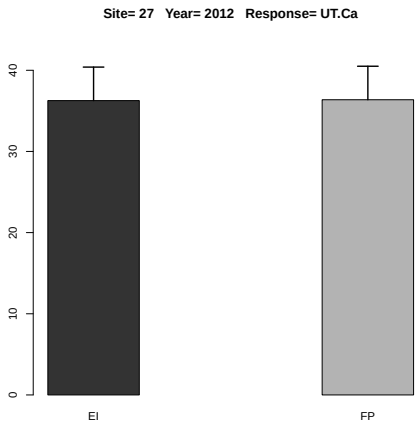

Figure 11.71: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.251	1.251	0.083	4.999	0.785
B	1.000	725.001	725.001	47.836	10.000	0.000
A:B	1.000	1.361	1.361	0.090	10.000	0.771

Table 11.178: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		30.529	1.876	8.500	16.270	26.247	34.811	0.000
2	FP		31.111	1.876	8.500	16.580	26.829	35.393	0.000
3		N	36.316	1.768	7.600	20.540	32.202	40.431	0.000
4		N0	25.324	1.768	7.600	14.320	21.209	29.439	0.000
5	EI	N	36.264	2.187	14.200	16.580	31.578	40.949	0.000
6	FP	N	36.369	2.187	14.200	16.630	31.683	41.055	0.000
7	EI	N0	24.795	2.187	14.200	11.340	20.109	29.481	0.000
8	FP	N0	25.853	2.187	14.200	11.820	21.167	30.539	0.000

Table 11.179: Estimate of treatment means in tow-way ANOVA for variable UT.Ca at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.582	2.025	5.000	-0.290	-5.788	4.624	0.785
B N-N0	10.992	1.589	10.000	6.920	7.451	14.534	0.000
A:B EI N- FP N	-0.106	2.574	11.000	-0.040	-5.773	5.562	0.968
A:B EI N- EI N0	11.469	2.248	10.000	5.100	6.461	16.477	0.000
A:B EI N- FP N0	10.411	2.574	11.000	4.040	4.743	16.078	0.002
A:B FP N- EI N0	11.574	2.574	11.000	4.500	5.907	17.242	0.001
A:B FP N- FP N0	10.516	2.248	10.000	4.680	5.508	15.524	0.001
A:B EI N0- FP N0	-1.058	2.574	11.000	-0.410	-6.726	4.609	0.689

Table 11.180: Estimate of contrast in two-way ANOVA for variable UT.Ca at site 27 in year 2012 .

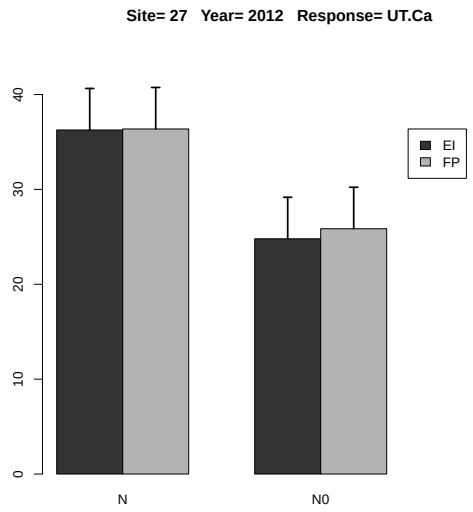

Figure 11.72: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.37 Response Variable UT.Mg

	rep	A	B	y
1	1	FP	N0	22.575
2	2	FP	N0	25.357
3	3	FP	N0	22.234
4	4	FP	N0	32.531
5	5	FP	N0	24.061
6	6	FP	N0	19.400
7	1	FP	N	33.766
8	2	FP	N	32.357
9	3	FP	N	32.331
10	4	FP	N	31.398
11	5	FP	N	43.794
12	6	FP	N	28.537
13	1	EI	N0	20.551
14	2	EI	N0	23.824
15	3	EI	N0	28.672
16	4	EI	N0	26.529
17	5	EI	N0	26.186
18	6	EI	N0	15.701
19	1	EI	N	27.456
20	2	EI	N	29.321
21	3	EI	N	36.075
22	4	EI	N	33.610
23	5	EI	N	27.620
24	6	EI	N	38.967

Table 11.181: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	32.175	2.660	12.097	0.000
A FP	33.697	2.660	12.670	0.000
A EI-FP	-1.522	3.761	-0.405	0.911

Table 11.182: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 27 in year 2012 .

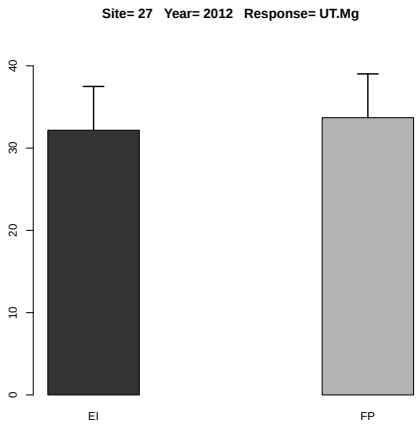

Figure 11.73: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	7.965	7.965	0.343	20.000	0.565
B	1.000	482.486	482.486	20.752	20.000	0.000
A:B	1.000	0.820	0.820	0.035	20.000	0.853

Table 11.183: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		27.876	1.392	20.000	20.030	24.972	30.779	0.000
2	FP		29.028	1.392	20.000	20.850	26.125	31.932	0.000
3		N	32.936	1.392	20.000	23.660	30.032	35.839	0.000
4		N0	23.968	1.392	20.000	17.220	21.065	26.872	0.000
5	EI	N	32.175	1.968	20.000	16.340	28.069	36.281	0.000
6	FP	N	33.697	1.968	20.000	17.120	29.590	37.803	0.000
7	EI	N0	23.577	1.968	20.000	11.980	19.471	27.683	0.000
8	FP	N0	24.360	1.968	20.000	12.370	20.253	28.466	0.000

Table 11.184: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.152	1.968	20.000	-0.590	-5.258	2.954	0.565
B N-N0	8.967	1.968	20.000	4.560	4.861	13.074	0.000
A:B EI N- FP N	-1.522	2.784	20.000	-0.550	-7.329	4.285	0.591
A:B EI N- EI N0	8.598	2.784	20.000	3.090	2.791	14.405	0.006
A:B EI N- FP N0	7.815	2.784	20.000	2.810	2.008	13.622	0.011
A:B FP N- EI N0	10.120	2.784	20.000	3.640	4.312	15.927	0.002
A:B FP N- FP N0	9.337	2.784	20.000	3.350	3.530	15.144	0.003
A:B EI N0- FP N0	-0.782	2.784	20.000	-0.280	-6.590	5.025	0.782

Table 11.185: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 27 in year 2012 .

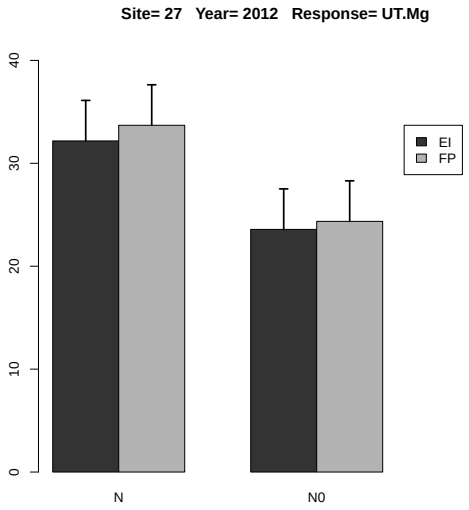

Figure 11.74: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.38 Response Variable UT.S

	rep	A	B	y
1	1	FP	N0	9.361
2	2	FP	N0	9.238
3	3	FP	N0	8.901
4	4	FP	N0	11.591
5	5	FP	N0	9.609
6	6	FP	N0	8.660
7	1	FP	N	14.664
8	2	FP	N	14.743
9	3	FP	N	15.412
10	4	FP	N	14.527
11	5	FP	N	18.498
12	6	FP	N	13.316
13	1	EI	N0	8.130
14	2	EI	N0	9.372
15	3	EI	N0	11.153
16	4	EI	N0	8.894
17	5	EI	N0	9.166
18	6	EI	N0	5.786
19	1	EI	N	13.950
20	2	EI	N	13.785
21	3	EI	N	21.730
22	4	EI	N	14.740
23	5	EI	N	13.552
24	6	EI	N	402.387

Table 11.186: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	80.024	45.867	1.745	0.268
A FP	15.193	45.867	0.331	0.939
A EI-FP	64.831	64.865	0.999	0.596

Table 11.187: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 27 in year 2012 .

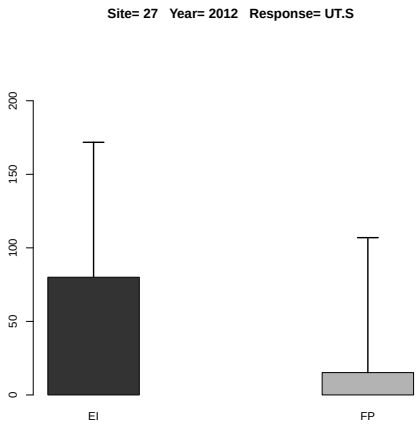

Figure 11.75: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6148.004	6148.004	0.985	19.994	0.333
B	1.000	8872.033	8872.033	1.422	19.994	0.247
A:B	1.000	6462.995	6462.995	1.036	19.994	0.321

Table 11.188: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		44.387	22.802	20.000	1.950	-3.179	91.953	0.066
2	FP		12.377	22.802	20.000	0.540	-35.189	59.942	0.593
3		N	47.609	22.802	20.000	2.090	0.043	95.174	0.050
4		N0	9.155	22.802	20.000	0.400	-38.410	56.721	0.692
5	EI	N	80.024	32.247	20.000	2.480	12.756	147.292	0.022
6	FP	N	15.193	32.247	20.000	0.470	-52.075	82.461	0.643
7	EI	N0	8.750	32.247	20.000	0.270	-58.518	76.018	0.789
8	FP	N0	9.560	32.247	20.000	0.300	-57.708	76.828	0.770

Table 11.189: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	32.010	32.247	20.000	0.990	-35.258	99.278	0.333
B N-N0	38.453	32.247	20.000	1.190	-28.814	105.721	0.247
A:B EI N- FP N	64.831	45.605	20.000	1.420	-30.300	159.962	0.171
A:B EI N- EI N0	71.274	45.605	20.000	1.560	-23.858	166.405	0.134
A:B EI N- FP N0	70.464	45.605	20.000	1.550	-24.667	165.595	0.138
A:B FP N- EI N0	6.443	45.605	20.000	0.140	-88.688	101.574	0.889
A:B FP N- FP N0	5.633	45.605	20.000	0.120	-89.498	100.764	0.903
A:B EI N0- FP N0	-0.810	45.605	20.000	-0.020	-95.941	94.321	0.986

Table 11.190: Estimate of contrast in two-way ANOVA for variable UT.S at site 27 in year 2012 .

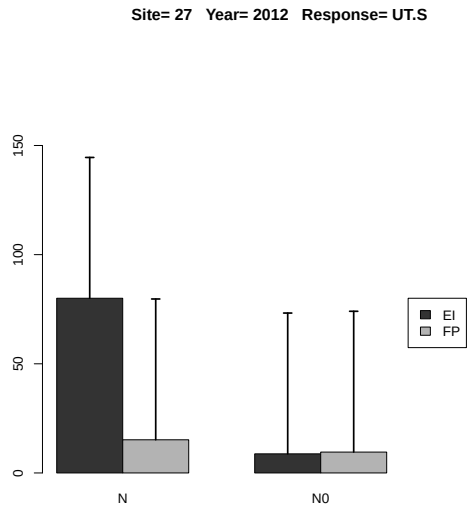

Figure 11.76: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.39 Response Variable UT.B

	rep	A	B	y
1	1	FP	N0	458.813
2	2	FP	N0	424.416
3	3	FP	N0	420.457
4	4	FP	N0	560.585
5	5	FP	N0	379.170
6	6	FP	N0	238.226
7	1	FP	N	543.508
8	2	FP	N	559.151
9	3	FP	N	631.843
10	4	FP	N	435.866
11	5	FP	N	490.027
12	6	FP	N	476.802
13	1	EI	N0	263.300
14	2	EI	N0	426.225
15	3	EI	N0	433.953
16	4	EI	N0	487.341
17	5	EI	N0	362.363
18	6	EI	N0	297.372
19	1	EI	N	583.922
20	2	EI	N	552.957
21	3	EI	N	653.181
22	4	EI	N	538.400
23	5	EI	N	518.803
24	6	EI	N	674.432

Table 11.191: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.B

	Estimate	S.E.	t-value	p-value
A EI	586.949	21.558	27.226	0.000
A FP	522.866	21.558	24.253	0.000
A EI-FP	64.083	30.488	2.102	0.176

Table 11.192: Estimate of treatment means and contrast in one-way ANOVA for variable UT.B at site 27 in year 2012 .

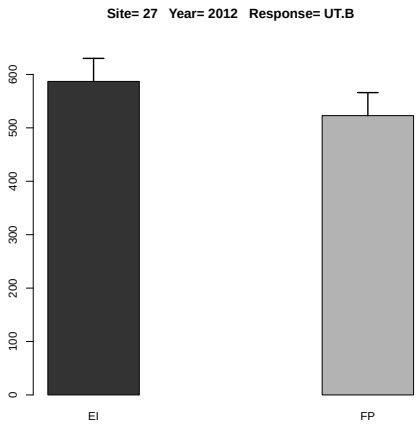

Figure 11.77: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1252.603	1252.603	0.186	14.983	0.672
B	1.000	151474.852	151474.852	22.491	14.983	0.000
A:B	1.000	14781.354	14781.354	2.195	14.983	0.159

Table 11.193: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		482.687	24.206	14.400	19.940	430.893	534.481	0.000
2	FP		468.239	24.206	14.400	19.340	416.445	520.033	0.000
3		N	554.908	24.206	14.400	22.920	503.114	606.702	0.000
4		N0	396.018	24.206	14.400	16.360	344.224	447.812	0.000
5	EI	N	586.949	33.870	20.000	17.330	516.291	657.607	0.000
6	FP	N	522.866	33.870	20.000	15.440	452.208	593.524	0.000
7	EI	N0	378.426	33.870	20.000	11.170	307.768	449.084	0.000
8	FP	N0	413.611	33.870	20.000	12.210	342.953	484.269	0.000

Table 11.194: Estimate of treatment means in tow-way ANOVA for variable UT.B at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	14.449	33.503	15.000	0.430	-56.962	85.860	0.672
B N-N0	158.889	33.503	15.000	4.740	87.478	230.301	0.000
A:B EI N- FP N	64.083	47.381	15.000	1.350	-36.908	165.074	0.196
A:B EI N- EI N0	208.524	47.381	15.000	4.400	107.533	309.514	0.000
A:B EI N- FP N0	173.338	47.381	15.000	3.660	72.347	274.329	0.002
A:B FP N- EI N0	144.440	47.381	15.000	3.050	43.450	245.431	0.008
A:B FP N- FP N0	109.255	47.381	15.000	2.310	8.264	210.246	0.036
A:B EI N0- FP N0	-35.185	47.381	15.000	-0.740	-136.176	65.805	0.469

Table 11.195: Estimate of contrast in two-way ANOVA for variable UT.B at site 27 in year 2012 .

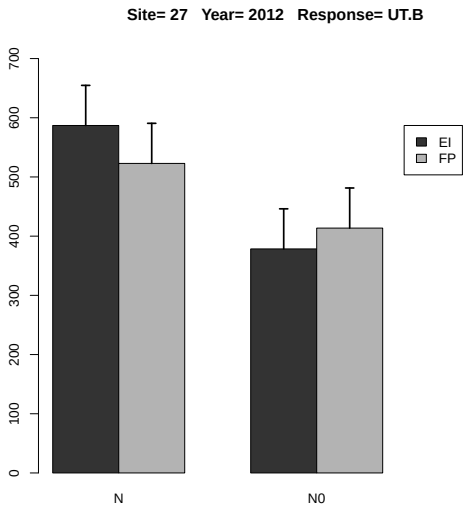

Figure 11.78: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.40 Response Variable UT.Cu

	rep	A	B	y
1	1	FP	N0	314.855
2	2	FP	N0	347.922
3	3	FP	N0	250.259
4	4	FP	N0	338.320
5	5	FP	N0	230.379
6	6	FP	N0	183.123
7	1	FP	N	604.935
8	2	FP	N	535.968
9	3	FP	N	616.032
10	4	FP	N	487.767
11	5	FP	N	585.451
12	6	FP	N	543.538
13	1	EI	N0	254.784
14	2	EI	N0	343.479
15	3	EI	N0	316.505
16	4	EI	N0	235.096
17	5	EI	N0	191.475
18	6	EI	N0	154.588
19	1	EI	N	480.075
20	2	EI	N	544.662
21	3	EI	N	831.907
22	4	EI	N	572.783
23	5	EI	N	357.654
24	6	EI	N	497.130

Table 11.196: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Cu

	Estimate	S.E.	t-value	p-value
A EI	547.368	45.131	12.129	0.000
A FP	562.282	45.131	12.459	0.000
A EI-FP	-14.913	63.824	-0.234	0.969

Table 11.197: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Cu at site 27 in year 2012 .

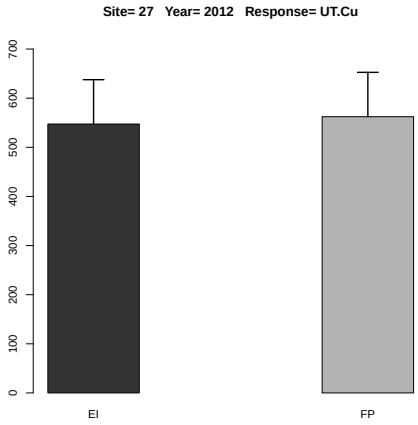

Figure 11.79: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1977.795	1977.795	0.310	4.999	0.602
B	1.000	509576.351	509576.351	79.758	10.011	0.000
A:B	1.000	263.007	263.007	0.041	10.011	0.843

Table 11.198: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		398.345	31.684	9.400	12.570	327.125	469.565	0.000
2	FP		419.879	31.684	9.400	13.250	348.659	491.099	0.000
3		N	554.825	29.926	9.300	18.540	487.450	622.200	0.000
4		N0	263.399	29.926	9.300	8.800	196.024	330.773	0.000
5	EI	N	547.369	39.196	17.400	13.970	464.820	629.918	0.000
6	FP	N	562.282	39.196	17.400	14.350	479.733	644.831	0.000
7	EI	N0	249.321	39.196	17.400	6.360	166.772	331.870	0.000
8	FP	N0	277.476	39.196	17.400	7.080	194.927	360.025	0.000

Table 11.199: Estimate of treatment means in tow-way ANOVA for variable UT.Cu at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-21.534	38.704	5.000	-0.560	-121.033	77.965	0.602
B N-N0	291.426	32.632	10.000	8.930	218.729	364.124	0.000
A:B EI N- FP N	-14.913	50.624	11.700	-0.290	-125.546	95.719	0.773
A:B EI N- EI N0	298.047	46.148	10.000	6.460	195.237	400.857	0.000
A:B EI N- FP N0	269.892	50.624	11.700	5.330	159.260	380.525	0.000
A:B FP N- EI N0	312.961	50.624	11.700	6.180	202.328	423.593	0.000
A:B FP N- FP N0	284.806	46.148	10.000	6.170	181.996	387.616	0.000
A:B EI N0- FP N0	-28.155	50.624	11.700	-0.560	-138.788	82.478	0.589

Table 11.200: Estimate of contrast in two-way ANOVA for variable UT.Cu at site 27 in year 2012 .

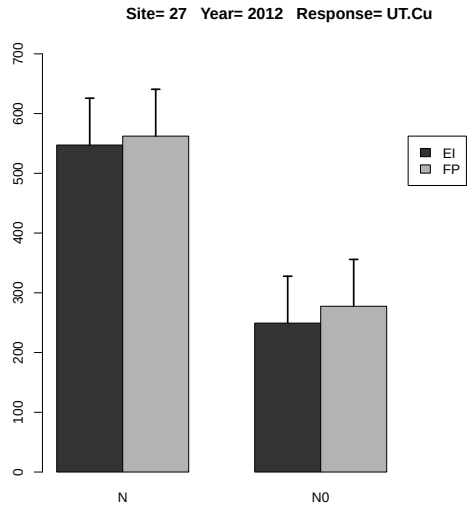

Figure 11.80: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.41 Response Variable UT.Fe

	rep	A	B	y
1	1	FP	N0	24627.429
2	2	FP	N0	13485.972
3	3	FP	N0	14049.991
4	4	FP	N0	22562.702
5	5	FP	N0	19151.940
6	6	FP	N0	15802.465
7	1	FP	N	23839.120
8	2	FP	N	21672.171
9	3	FP	N	18980.174
10	4	FP	N	18365.627
11	5	FP	N	18207.513
12	6	FP	N	15336.360
13	1	EI	N0	21464.835
14	2	EI	N0	18768.716
15	3	EI	N0	19487.819
16	4	EI	N0	24553.745
17	5	EI	N0	14189.529
18	6	EI	N0	33118.743
19	1	EI	N	21899.438
20	2	EI	N	19615.371
21	3	EI	N	26134.261
22	4	EI	N	24251.872
23	5	EI	N	12490.025
24	6	EI	N	16574.139

Table 11.201: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Fe

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	20160.851	1690.633	8.700	11.930	16313.969	24007.733	0.000
A FP	19400.161	1690.633	8.700	11.480	15553.279	23247.043	0.000
A EI-FP	760.690	2037.738	3.900	0.370	-4984.054	6505.435	0.729

Table 11.202: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Fe at site 27 in year 2012 .

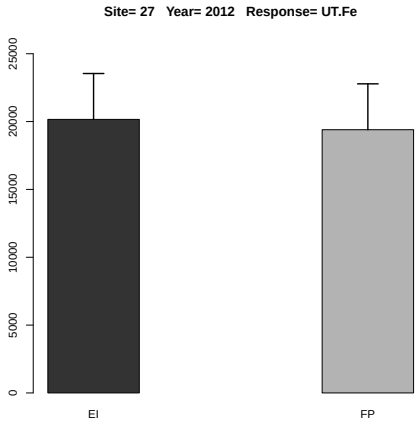

Figure 11.81: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	20943945.491	20943945.491	1.031	9.998	0.334
B	1.000	633038.882	633038.882	0.031	-0.000	
A:B	1.000	12526341.778	12526341.778	0.617	-0.000	

Table 11.203: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21045.708	1535.672	10.000	13.700	17623.912	24467.504	0.000
2	FP		18840.122	1535.672	10.000	12.270	15418.326	22261.918	0.000
3		N	19780.506	1423.114	60.800	13.900	16934.644	22626.368	0.000
4		N0	20105.324	1423.114	60.800	14.130	17259.461	22951.186	0.000
5	EI	N	20160.851	2012.588	60.800	10.020	16136.194	24185.508	0.000
6	FP	N	19400.161	2012.588	60.800	9.640	15375.504	23424.818	0.000
7	EI	N0	21930.564	2012.588	60.800	10.900	17905.907	25955.221	0.000
8	FP	N0	18280.083	2012.588	60.800	9.080	14255.426	22304.740	0.000

Table 11.204: Estimate of treatment means in tow-way ANOVA for variable UT.Fe at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2205.586	2171.769	10.000	1.020	-2633.564	7044.736	0.334
B N-N0	-324.818	1839.684	-10.000	-0.180			
A:B EI N- FP N	760.690	2846.229	60.800	0.270	-4931.034	6452.415	0.790
A:B EI N- EI N0	-1769.713	2601.706	-10.000	-0.680			
A:B EI N- FP N0	1880.768	2846.229	60.800	0.660	-3810.956	7572.493	0.511
A:B FP N- EI N0	-2530.403	2846.229	60.800	-0.890	-8222.128	3161.321	0.378
A:B FP N- FP N0	1120.078	2601.706	-10.000	0.430			
A:B EI N0- FP N0	3650.481	2846.229	60.800	1.280	-2041.243	9342.206	0.204

Table 11.205: Estimate of contrast in two-way ANOVA for variable UT.Fe at site 27 in year 2012 .

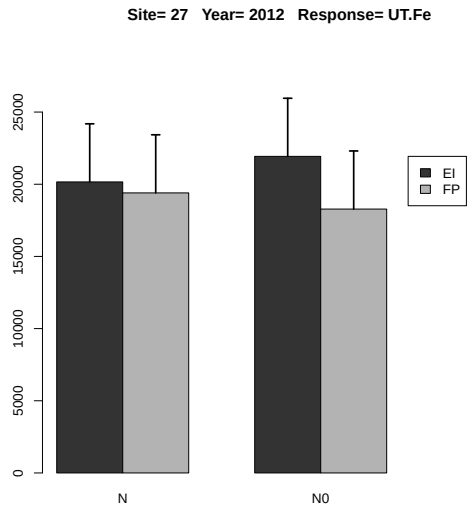

Figure 11.82: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.42 Response Variable UT.Mn

	rep	A	B	y
1	1	FP	N0	2483.626
2	2	FP	N0	1605.150
3	3	FP	N0	2172.574
4	4	FP	N0	1760.588
5	5	FP	N0	1915.431
6	6	FP	N0	2868.183
7	1	FP	N	2826.119
8	2	FP	N	4083.978
9	3	FP	N	3178.413
10	4	FP	N	4201.498
11	5	FP	N	3255.916
12	6	FP	N	5665.013
13	1	EI	N0	1210.813
14	2	EI	N0	1607.073
15	3	EI	N0	1740.399
16	4	EI	N0	2290.886
17	5	EI	N0	1664.823
18	6	EI	N0	2494.393
19	1	EI	N	1746.526
20	2	EI	N	1717.918
21	3	EI	N	3518.826
22	4	EI	N	3089.460
23	5	EI	N	1588.305
24	6	EI	N	5637.211

Table 11.206: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2883.041	542.841	6.600	5.310	1583.584	4182.498	0.001
A FP	3868.490	542.841	6.600	7.130	2569.033	5167.946	0.000
A EI-FP	-985.448	411.150	4.400	-2.400	-2089.972	119.075	0.069

Table 11.207: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mn at site 27 in year 2012 .

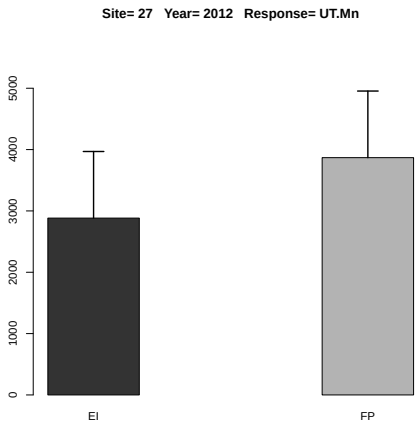

Figure 11.83: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2476744.306	2476744.306	4.988	15.463	0.041
B	1.000	11613799.802	11613799.802	23.389	15.463	0.000
A:B	1.000	705731.198	705731.198	1.421	15.463	0.251

Table 11.208: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2358.886	353.162	7.100	6.680	1525.955	3191.818	0.000
2	FP		3001.374	353.162	7.100	8.500	2168.443	3834.305	0.000
3		N	3375.765	353.162	7.100	9.560	2542.834	4208.697	0.000
4		N0	1984.495	353.162	7.100	5.620	1151.564	2817.426	0.001
5	EI	N	2883.041	407.557	11.400	7.070	1989.597	3776.486	0.000
6	FP	N	3868.490	407.557	11.400	9.490	2975.045	4761.934	0.000
7	EI	N0	1834.731	407.557	11.400	4.500	941.287	2728.176	0.001
8	FP	N0	2134.259	407.557	11.400	5.240	1240.814	3027.703	0.000

Table 11.209: Estimate of treatment means in tow-way ANOVA for variable UT.Mn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-642.488	287.678	14.800	-2.230	-1256.538	-28.438	0.042
B N-N0	1391.270	287.678	14.800	4.840	777.220	2005.321	0.000
A:B EI N- FP N	-985.448	406.838	14.800	-2.420	-1853.846	-117.050	0.029
A:B EI N- EI N0	1048.310	406.838	14.800	2.580	179.912	1916.708	0.021
A:B EI N- FP N0	748.783	406.838	14.800	1.840	-119.615	1617.180	0.086
A:B FP N- EI N0	2033.758	406.838	14.800	5.000	1165.360	2902.156	0.000
A:B FP N- FP N0	1734.231	406.838	14.800	4.260	865.833	2602.629	0.001
A:B EI N0- FP N0	-299.527	406.838	14.800	-0.740	-1167.926	568.871	0.473

Table 11.210: Estimate of contrast in two-way ANOVA for variable UT.Mn at site 27 in year 2012 .

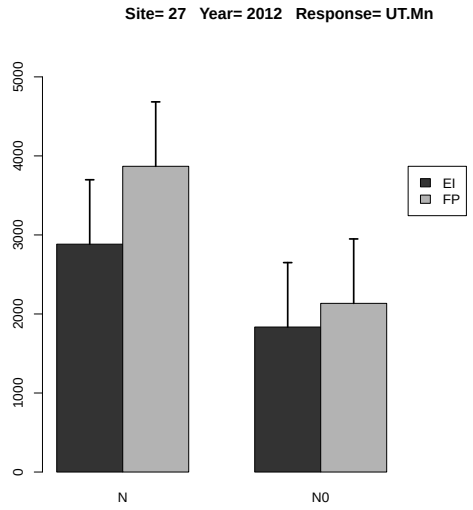

Figure 11.84: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.43 Response Variable UT.Zn

	rep	A	B	y
1	1	FP	N0	2922.607
2	2	FP	N0	2927.582
3	3	FP	N0	2733.610
4	4	FP	N0	3128.781
5	5	FP	N0	2822.988
6	6	FP	N0	2012.192
7	1	FP	N	3492.940
8	2	FP	N	3133.474
9	3	FP	N	2524.621
10	4	FP	N	2559.900
11	5	FP	N	4859.479
12	6	FP	N	3015.716
13	1	EI	N0	3084.255
14	2	EI	N0	2972.869
15	3	EI	N0	2986.160
16	4	EI	N0	2713.920
17	5	EI	N0	2383.046
18	6	EI	N0	1995.888
19	1	EI	N	2295.879
20	2	EI	N	2563.464
21	3	EI	N	3435.993
22	4	EI	N	2738.069
23	5	EI	N	3265.732
24	6	EI	N	4423.353

Table 11.211: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3120.415	333.509	9.500	9.360	2371.793	3869.037	0.000
A FP	3264.355	333.509	9.500	9.790	2515.733	4012.977	0.000
A EI-FP	-143.940	471.652	9.500	-0.310	-1202.651	914.771	0.767

Table 11.212: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Zn at site 27 in year 2012 .

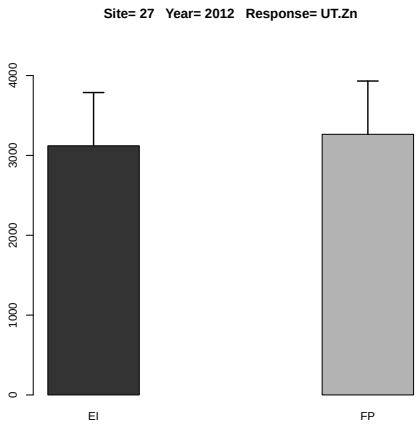

Figure 11.85: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	67762.300	67762.300	0.163	19.527	0.691
B	1.000	1318229.347	1318229.347	3.166	19.527	0.091
A:B	1.000	8513.337	8513.337	0.020	19.527	0.888

Table 11.213: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2904.886	186.277	19.500	15.590	2515.714	3294.057	0.000
2	FP		3011.158	186.277	19.500	16.160	2621.986	3400.329	0.000
3		N	3192.385	186.277	19.500	17.140	2803.213	3581.557	0.000
4		N0	2723.658	186.277	19.500	14.620	2334.486	3112.830	0.000
5	EI	N	3120.415	263.436	19.500	11.850	2570.043	3670.787	0.000
6	FP	N	3264.355	263.436	19.500	12.390	2713.983	3814.727	0.000
7	EI	N0	2689.356	263.436	19.500	10.210	2138.984	3239.728	0.000
8	FP	N0	2757.960	263.436	19.500	10.470	2207.588	3308.332	0.000

Table 11.214: Estimate of treatment means in tow-way ANOVA for variable UT.Zn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-106.272	263.436	19.500	-0.400	-656.644	444.100	0.691
B N-N0	468.727	263.436	19.500	1.780	-81.645	1019.099	0.091
A:B EI N- FP N	-143.940	372.555	19.500	-0.390	-922.284	634.404	0.703
A:B EI N- EI N0	431.059	372.555	19.500	1.160	-347.285	1209.402	0.261
A:B EI N- FP N0	362.455	372.555	19.500	0.970	-415.889	1140.799	0.343
A:B FP N- EI N0	574.999	372.555	19.500	1.540	-203.345	1353.342	0.139
A:B FP N- FP N0	506.395	372.555	19.500	1.360	-271.949	1284.739	0.190
A:B EI N0- FP N0	-68.604	372.555	19.500	-0.180	-846.947	709.740	0.856

Table 11.215: Estimate of contrast in two-way ANOVA for variable UT.Zn at site 27 in year 2012 .

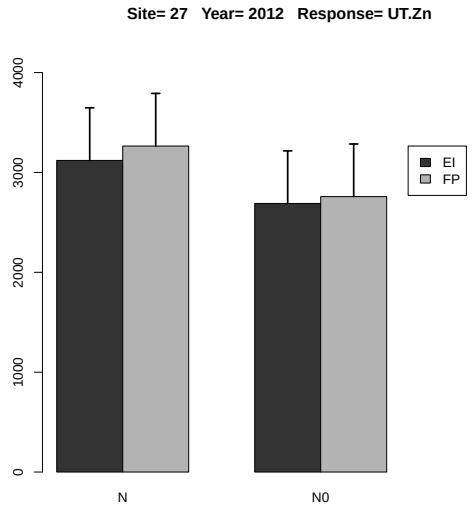

Figure 11.86: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.44 Response Variable HI.N

	rep	A	B	y
1	1	FP	N0	1.487
2	2	FP	N0	0.959
3	3	FP	N0	0.968
4	4	FP	N0	1.532
5	5	FP	N0	1.107
6	6	FP	N0	0.876
7	1	FP	N	1.111
8	2	FP	N	1.214
9	3	FP	N	1.283
10	4	FP	N	1.529
11	5	FP	N	1.669
12	6	FP	N	1.164
13	1	EI	N0	0.978
14	2	EI	N0	0.749
15	3	EI	N0	1.281
16	4	EI	N0	0.853
17	5	EI	N0	1.169
18	6	EI	N0	0.306
19	1	EI	N	1.059
20	2	EI	N	1.279
21	3	EI	N	1.600
22	4	EI	N	1.148
23	5	EI	N	1.266
24	6	EI	N	1.081

Table 11.216: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.239	0.086	9.700	14.400	1.046	1.431	0.000
A FP	1.328	0.086	9.700	15.440	1.136	1.521	0.000
A EI-FP	-0.089	0.112	5.000	-0.800	-0.376	0.197	0.459

Table 11.217: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 27 in year 2012 .

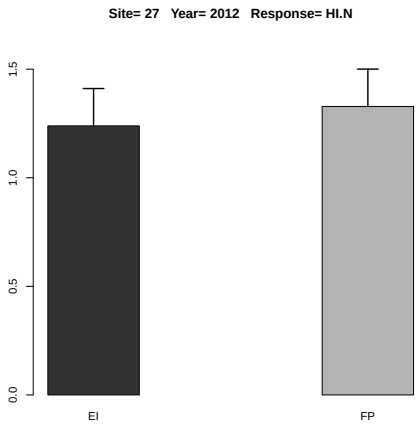

Figure 11.87: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.101	0.101	2.306	4.999	0.189
B	1.000	0.410	0.410	9.339	9.995	0.012
A:B	1.000	0.047	0.047	1.060	9.995	0.327

Table 11.218: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.064	0.092	9.700	11.590	0.859	1.270	0.000
2	FP		1.242	0.092	9.700	13.520	1.036	1.447	0.000
3		N	1.284	0.083	8.700	15.520	1.095	1.472	0.000
4		N0	1.022	0.083	8.700	12.360	0.834	1.210	0.000
5	EI	N	1.239	0.110	16.800	11.270	1.007	1.471	0.000
6	FP	N	1.328	0.110	16.800	12.080	1.096	1.560	0.000
7	EI	N0	0.889	0.110	16.800	8.090	0.657	1.122	0.000
8	FP	N0	1.155	0.110	16.800	10.500	0.923	1.387	0.000

Table 11.219: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.177	0.117	5.000	-1.520	-0.478	0.123	0.189
B N-N0	0.261	0.086	10.000	3.060	0.071	0.452	0.012
A:B EI N- FP N	-0.089	0.145	10.300	-0.620	-0.411	0.232	0.550
A:B EI N- EI N0	0.349	0.121	10.000	2.890	0.080	0.619	0.016
A:B EI N- FP N0	0.084	0.145	10.300	0.580	-0.237	0.405	0.575
A:B FP N- EI N0	0.439	0.145	10.300	3.030	0.117	0.760	0.012
A:B FP N- FP N0	0.173	0.121	10.000	1.430	-0.096	0.443	0.182
A:B EI N0- FP N0	-0.266	0.145	10.300	-1.830	-0.587	0.056	0.096

Table 11.220: Estimate of contrast in two-way ANOVA for variable HI.N at site 27 in year 2012 .

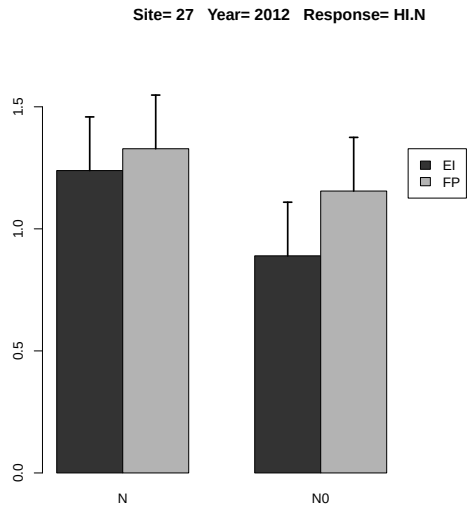

Figure 11.88: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.45 Response Variable HI.P

	rep	A	B	y
1	1	FP	N0	1.873
2	2	FP	N0	1.743
3	3	FP	N0	1.584
4	4	FP	N0	3.378
5	5	FP	N0	1.825
6	6	FP	N0	1.140
7	1	FP	N	1.385
8	2	FP	N	2.092
9	3	FP	N	1.937
10	4	FP	N	2.123
11	5	FP	N	5.721
12	6	FP	N	1.647
13	1	EI	N0	1.015
14	2	EI	N0	0.815
15	3	EI	N0	2.214
16	4	EI	N0	0.888
17	5	EI	N0	3.786
18	6	EI	N0	0.149
19	1	EI	N	2.173
20	2	EI	N	1.553
21	3	EI	N	2.224
22	4	EI	N	1.641
23	5	EI	N	1.541
24	6	EI	N	1.564

Table 11.221: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.782	0.474	10.000	3.760	0.726	2.839	0.004
A FP	2.484	0.474	10.000	5.240	1.427	3.541	0.000
A EI-FP	-0.702	0.671	10.000	-1.050	-2.196	0.793	0.320

Table 11.222: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 27 in year 2012 .

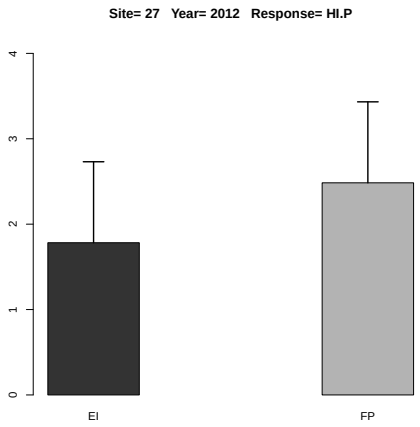

Figure 11.89: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.975	1.975	2.006	14.998	0.177
B	1.000	1.122	1.122	1.140	14.998	0.303
A:B	1.000	0.098	0.098	0.100	14.998	0.757

Table 11.223: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.630	0.355	10.200	4.590	0.840	2.421	0.001
2	FP		2.204	0.355	10.200	6.200	1.414	2.994	0.000
3		N	2.133	0.355	10.200	6.000	1.343	2.924	0.000
4		N0	1.701	0.355	10.200	4.780	0.910	2.491	0.001
5	EI	N	1.782	0.457	17.600	3.900	0.822	2.743	0.001
6	FP	N	2.484	0.457	17.600	5.440	1.523	3.445	0.000
7	EI	N0	1.478	0.457	17.600	3.240	0.517	2.439	0.005
8	FP	N0	1.924	0.457	17.600	4.210	0.963	2.885	0.000

Table 11.224: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.574	0.405	15.000	-1.420	-1.437	0.290	0.177
B N-N0	0.432	0.405	15.000	1.070	-0.431	1.296	0.303
A:B EI N- FP N	-0.702	0.573	15.000	-1.220	-1.923	0.520	0.240
A:B EI N- EI N0	0.305	0.573	15.000	0.530	-0.916	1.526	0.603
A:B EI N- FP N0	-0.141	0.573	15.000	-0.250	-1.362	1.080	0.809
A:B FP N- EI N0	1.006	0.573	15.000	1.760	-0.215	2.228	0.099
A:B FP N- FP N0	0.560	0.573	15.000	0.980	-0.661	1.782	0.344
A:B EI N0- FP N0	-0.446	0.573	15.000	-0.780	-1.667	0.775	0.449

Table 11.225: Estimate of contrast in two-way ANOVA for variable HI.P at site 27 in year 2012 .

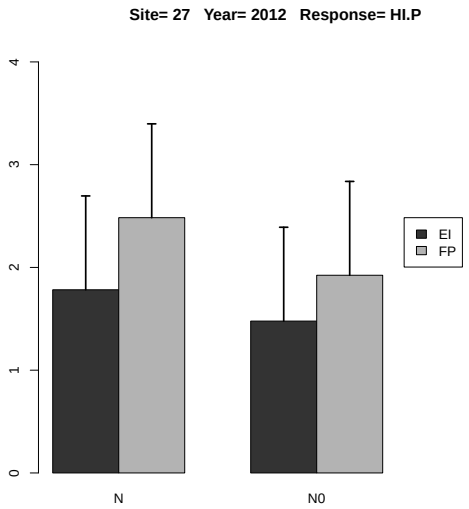

Figure 11.90: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.46 Response Variable HI.K

	rep	A	B	y
1	1	FP	N0	0.263
2	2	FP	N0	0.311
3	3	FP	N0	0.302
4	4	FP	N0	0.605
5	5	FP	N0	0.280
6	6	FP	N0	0.188
7	1	FP	N	0.287
8	2	FP	N	0.391
9	3	FP	N	0.309
10	4	FP	N	0.292
11	5	FP	N	0.699
12	6	FP	N	0.278
13	1	EI	N0	0.281
14	2	EI	N0	0.173
15	3	EI	N0	0.357
16	4	EI	N0	0.205
17	5	EI	N0	0.455
18	6	EI	N0	0.053
19	1	EI	N	0.266
20	2	EI	N	0.282
21	3	EI	N	0.360
22	4	EI	N	0.271
23	5	EI	N	0.273
24	6	EI	N	0.366

Table 11.226: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.303	0.049	10.000	6.170	0.194	0.412	0.000
A FP	0.376	0.049	10.000	7.670	0.267	0.485	0.000
A EI-FP	-0.073	0.069	10.000	-1.060	-0.228	0.081	0.316

Table 11.227: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 27 in year 2012 .

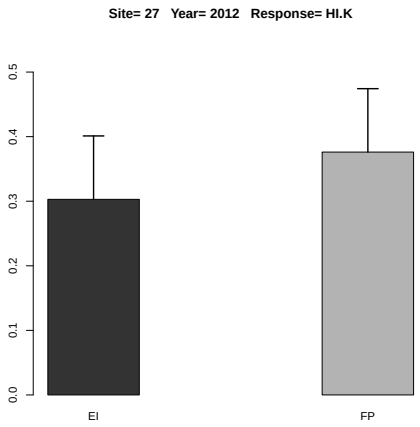

Figure 11.91: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.031	0.031	1.862	14.988	0.193
B	1.000	0.015	0.015	0.903	14.988	0.357
A:B	1.000	0.000	0.000	0.001	14.988	0.982

Table 11.228: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.278	0.039	13.800	7.140	0.195	0.362	0.000
2	FP		0.350	0.039	13.800	8.990	0.267	0.434	0.000
3		N	0.340	0.039	13.800	8.710	0.256	0.423	0.000
4		N0	0.289	0.039	13.800	7.430	0.206	0.373	0.000
5	EI	N	0.303	0.054	19.900	5.610	0.190	0.415	0.000
6	FP	N	0.376	0.054	19.900	6.970	0.264	0.489	0.000
7	EI	N0	0.254	0.054	19.900	4.700	0.141	0.366	0.000
8	FP	N0	0.325	0.054	19.900	6.020	0.212	0.437	0.000

Table 11.229: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.072	0.053	15.000	-1.360	-0.185	0.040	0.193
B N-N0	0.050	0.053	15.000	0.950	-0.062	0.163	0.357
A:B EI N- FP N	-0.073	0.075	15.000	-0.980	-0.232	0.086	0.342
A:B EI N- EI N0	0.049	0.075	15.000	0.660	-0.110	0.208	0.522
A:B EI N- FP N0	-0.022	0.075	15.000	-0.290	-0.181	0.137	0.774
A:B FP N- EI N0	0.122	0.075	15.000	1.640	-0.037	0.281	0.122
A:B FP N- FP N0	0.051	0.075	15.000	0.690	-0.108	0.210	0.502
A:B EI N0- FP N0	-0.071	0.075	15.000	-0.950	-0.230	0.088	0.358

Table 11.230: Estimate of contrast in two-way ANOVA for variable HI.K at site 27 in year 2012 .

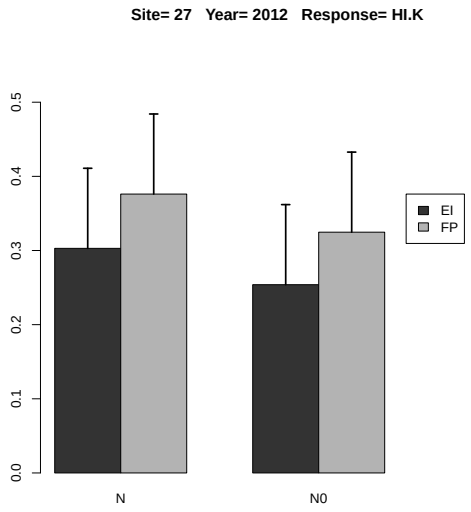

Figure 11.92: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.47 Response Variable HI.Ca

	rep	A	B	y
1	1	FP	N0	0.023
2	2	FP	N0	0.018
3	3	FP	N0	0.017
4	4	FP	N0	0.024
5	5	FP	N0	0.023
6	6	FP	N0	0.018
7	1	FP	N	0.019
8	2	FP	N	0.024
9	3	FP	N	0.024
10	4	FP	N	0.025
11	5	FP	N	0.025
12	6	FP	N	0.024
13	1	EI	N0	0.018
14	2	EI	N0	0.014
15	3	EI	N0	0.022
16	4	EI	N0	0.012
17	5	EI	N0	0.021
18	6	EI	N0	0.006
19	1	EI	N	0.024
20	2	EI	N	0.023
21	3	EI	N	0.026
22	4	EI	N	0.020
23	5	EI	N	0.024
24	6	EI	N	0.019

Table 11.231: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Ca

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.023	0.001	9.600	22.490	0.020	0.025	0.000
A FP	0.024	0.001	9.600	23.280	0.021	0.026	0.000
A EI-FP	-0.001	0.001	9.600	-0.560	-0.004	0.002	0.590

Table 11.232: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Ca at site 27 in year 2012 .

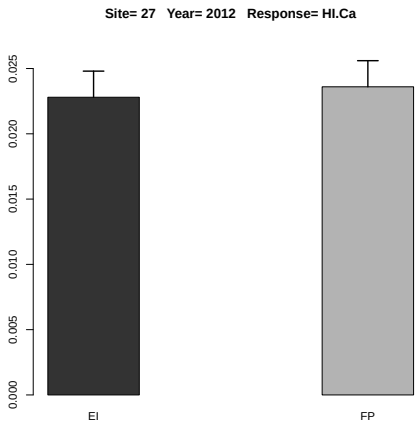

Figure 11.93: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	2.106	9.997	0.177
B	1.000	0.000	0.000	20.872	9.661	0.001
A:B	1.000	0.000	0.000	2.771	9.661	0.128

Table 11.233: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.019	0.001	10.000	14.510	0.016	0.022	0.000
2	FP		0.022	0.001	10.000	16.560	0.019	0.025	0.000
3		N	0.023	0.001	16.400	21.110	0.021	0.025	0.000
4		N0	0.018	0.001	16.400	16.320	0.016	0.020	0.000
5	EI	N	0.023	0.002	16.400	14.670	0.019	0.026	0.000
6	FP	N	0.024	0.002	16.400	15.180	0.020	0.027	0.000
7	EI	N0	0.016	0.002	16.400	10.050	0.012	0.019	0.000
8	FP	N0	0.020	0.002	16.400	13.030	0.017	0.024	0.000

Table 11.234: Estimate of treatment means in tow-way ANOVA for variable HI.Ca at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.003	0.002	10.000	-1.450	-0.007	0.002	0.177
B N-N0	0.005	0.001	9.700	4.570	0.003	0.008	0.001
A:B EI N- FP N	-0.001	0.002	16.400	-0.360	-0.005	0.004	0.721
A:B EI N- EI N0	0.007	0.002	9.700	4.410	0.004	0.011	0.001
A:B EI N- FP N0	0.003	0.002	16.400	1.160	-0.002	0.007	0.263
A:B FP N- EI N0	0.008	0.002	16.400	3.630	0.003	0.013	0.002
A:B FP N- FP N0	0.003	0.002	9.700	2.050	-0.000	0.007	0.068
A:B EI N0- FP N0	-0.005	0.002	16.400	-2.110	-0.009	0.000	0.051

Table 11.235: Estimate of contrast in two-way ANOVA for variable HI.Ca at site 27 in year 2012 .

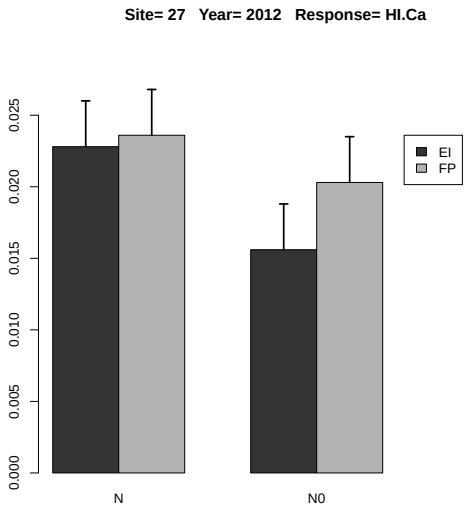

Figure 11.94: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.48 Response Variable HI.Mg

	rep	A	B	y
1	1	FP	N0	0.218
2	2	FP	N0	0.203
3	3	FP	N0	0.341
4	4	FP	N0	0.278
5	5	FP	N0	0.242
6	6	FP	N0	0.239
7	1	FP	N	0.176
8	2	FP	N	0.288
9	3	FP	N	0.230
10	4	FP	N	0.278
11	5	FP	N	0.585
12	6	FP	N	0.247
13	1	EI	N0	0.266
14	2	EI	N0	0.159
15	3	EI	N0	0.237
16	4	EI	N0	0.131
17	5	EI	N0	0.385
18	6	EI	N0	0.040
19	1	EI	N	0.258
20	2	EI	N	0.173
21	3	EI	N	0.287
22	4	EI	N	0.178
23	5	EI	N	0.344
24	6	EI	N	0.390

Table 11.236: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.272	0.049	9.400	5.560	0.162	0.381	0.000
A FP	0.301	0.049	9.400	6.160	0.191	0.410	0.000
A EI-FP	-0.029	0.059	5.000	-0.490	-0.182	0.124	0.646

Table 11.237: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 27 in year 2012 .

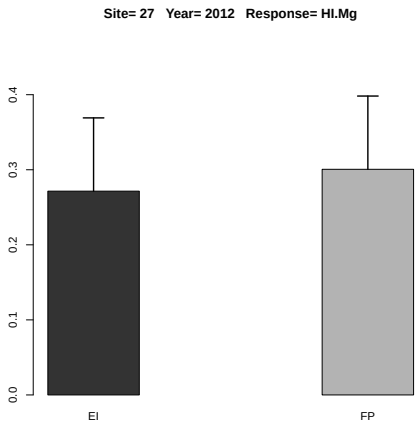

Figure 11.95: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.009	0.009	1.061	14.984	0.319
B	1.000	0.020	0.020	2.255	14.984	0.154
A:B	1.000	0.001	0.001	0.075	14.984	0.788

Table 11.238: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.237	0.034	10.100	6.990	0.162	0.313	0.000
2	FP		0.277	0.034	10.100	8.150	0.201	0.353	0.000
3		N	0.286	0.034	10.100	8.420	0.210	0.362	0.000
4		N0	0.228	0.034	10.100	6.720	0.153	0.304	0.000
5	EI	N	0.272	0.043	17.500	6.240	0.180	0.363	0.000
6	FP	N	0.301	0.043	17.500	6.910	0.209	0.392	0.000
7	EI	N0	0.203	0.043	17.500	4.670	0.112	0.295	0.000
8	FP	N0	0.253	0.043	17.500	5.820	0.162	0.345	0.000

Table 11.239: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.040	0.038	15.000	-1.030	-0.122	0.042	0.319
B N-N0	0.058	0.038	15.000	1.500	-0.024	0.140	0.154
A:B EI N- FP N	-0.029	0.054	15.000	-0.530	-0.145	0.087	0.601
A:B EI N- EI N0	0.068	0.054	15.000	1.260	-0.048	0.184	0.228
A:B EI N- FP N0	0.018	0.054	15.000	0.330	-0.098	0.134	0.743
A:B FP N- EI N0	0.097	0.054	15.000	1.790	-0.019	0.213	0.094
A:B FP N- FP N0	0.047	0.054	15.000	0.870	-0.069	0.163	0.399
A:B EI N0- FP N0	-0.050	0.054	15.000	-0.920	-0.166	0.066	0.371

Table 11.240: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 27 in year 2012 .

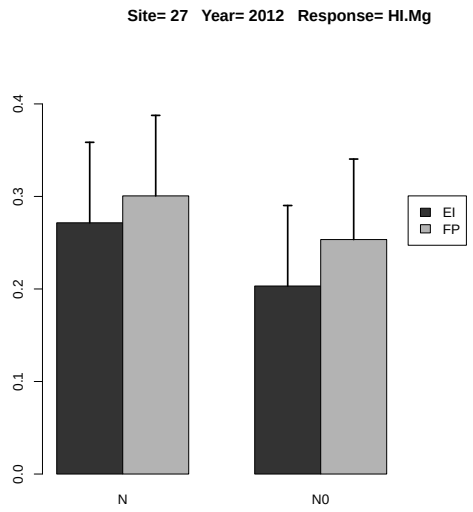

Figure 11.96: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.49 Response Variable HI.S

	rep	A	B	y
1	1	FP	N0	1.139
2	2	FP	N0	0.899
3	3	FP	N0	0.761
4	4	FP	N0	1.286
5	5	FP	N0	0.997
6	6	FP	N0	0.727
7	1	FP	N	0.965
8	2	FP	N	1.156
9	3	FP	N	1.177
10	4	FP	N	1.240
11	5	FP	N	1.681
12	6	FP	N	0.928
13	1	EI	N0	0.936
14	2	EI	N0	0.684
15	3	EI	N0	1.018
16	4	EI	N0	0.549
17	5	EI	N0	1.326
18	6	EI	N0	0.160
19	1	EI	N	1.403
20	2	EI	N	1.155
21	3	EI	N	1.405
22	4	EI	N	1.138
23	5	EI	N	1.116
24	6	EI	N	0.020

Table 11.241: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.039	0.168	9.400	6.180	0.661	1.418	0.000
A FP	1.191	0.168	9.400	7.080	0.813	1.569	0.000
A EI-FP	-0.152	0.205	5.000	-0.740	-0.679	0.375	0.492

Table 11.242: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 27 in year 2012 .

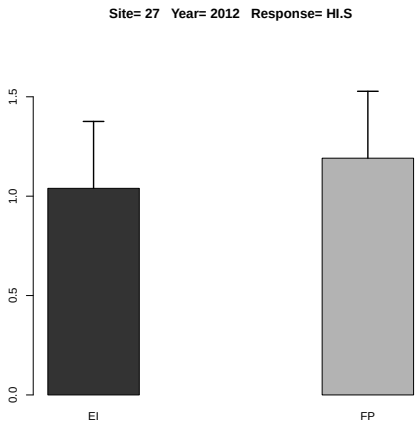

Figure 11.97: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.073	0.073	1.357	4.999	0.297
B	1.000	0.351	0.351	6.537	9.996	0.029
A:B	1.000	0.002	0.002	0.040	9.996	0.845

Table 11.243: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.909	0.136	8.500	6.680	0.598	1.220	0.000
2	FP		1.080	0.136	8.500	7.930	0.769	1.391	0.000
3		N	1.115	0.124	6.700	8.980	0.819	1.411	0.000
4		N0	0.873	0.124	6.700	7.040	0.578	1.169	0.000
5	EI	N	1.039	0.152	12.500	6.850	0.710	1.369	0.000
6	FP	N	1.191	0.152	12.500	7.850	0.862	1.520	0.000
7	EI	N0	0.779	0.152	12.500	5.130	0.449	1.108	0.000
8	FP	N0	0.968	0.152	12.500	6.380	0.639	1.297	0.000

Table 11.244: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.171	0.146	5.000	-1.170	-0.547	0.206	0.296
B N-N0	0.242	0.095	10.000	2.560	0.031	0.453	0.028
A:B EI N- FP N	-0.152	0.174	9.200	-0.870	-0.545	0.241	0.406
A:B EI N- EI N0	0.261	0.134	10.000	1.950	-0.037	0.559	0.080
A:B EI N- FP N0	0.071	0.174	9.200	0.410	-0.322	0.464	0.693
A:B FP N- EI N0	0.412	0.174	9.200	2.370	0.019	0.806	0.042
A:B FP N- FP N0	0.223	0.134	10.000	1.670	-0.075	0.521	0.127
A:B EI N0- FP N0	-0.190	0.174	9.200	-1.090	-0.583	0.203	0.304

Table 11.245: Estimate of contrast in two-way ANOVA for variable HI.S at site 27 in year 2012 .

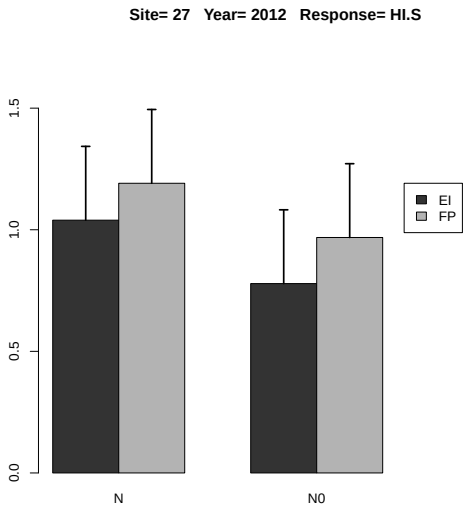

Figure 11.98: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.50 Response Variable HI.B

	rep	A	B	y
1	1	FP	N0	0.307
2	2	FP	N0	0.233
3	3	FP	N0	0.142
4	4	FP	N0	0.163
5	5	FP	N0	0.221
6	6	FP	N0	0.148
7	1	FP	N	0.146
8	2	FP	N	0.411
9	3	FP	N	0.326
10	4	FP	N	0.276
11	5	FP	N	0.334
12	6	FP	N	0.246
13	1	EI	N0	0.182
14	2	EI	N0	0.203
15	3	EI	N0	0.173
16	4	EI	N0	0.076
17	5	EI	N0	0.364
18	6	EI	N0	0.035
19	1	EI	N	0.145
20	2	EI	N	0.166
21	3	EI	N	0.217
22	4	EI	N	0.173
23	5	EI	N	0.477
24	6	EI	N	0.124

Table 11.246: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.B

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.217	0.046	9.100	4.720	0.113	0.321	0.001
A FP	0.290	0.046	9.100	6.300	0.186	0.394	0.000
A EI-FP	-0.073	0.054	5.000	-1.360	-0.210	0.065	0.232

Table 11.247: Estimate of treatment means and contrast in one-way ANOVA for variable HI.B at site 27 in year 2012 .

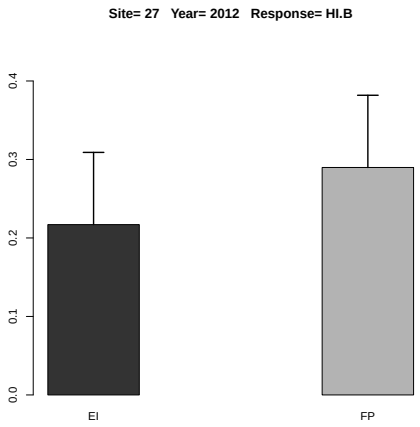

Figure 11.99: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.008	0.008	1.538	4.999	0.270
B	1.000	0.026	0.026	5.097	9.986	0.048
A:B	1.000	0.003	0.003	0.526	9.986	0.485

Table 11.248: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.195	0.037	8.900	5.300	0.111	0.278	0.000
2	FP		0.246	0.037	8.900	6.700	0.163	0.329	0.000
3		N	0.253	0.034	7.400	7.530	0.175	0.332	0.000
4		N0	0.187	0.034	7.400	5.560	0.108	0.266	0.001
5	EI	N	0.217	0.042	14.100	5.140	0.127	0.307	0.000
6	FP	N	0.290	0.042	14.100	6.870	0.199	0.380	0.000
7	EI	N0	0.172	0.042	14.100	4.080	0.082	0.262	0.001
8	FP	N0	0.202	0.042	14.100	4.790	0.112	0.293	0.000

Table 11.249: Estimate of treatment means in tow-way ANOVA for variable HI.B at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.051	0.042	5.000	-1.240	-0.158	0.055	0.270
B N-N0	0.066	0.029	10.000	2.260	0.001	0.132	0.048
A:B EI N- FP N	-0.073	0.051	10.000	-1.430	-0.186	0.041	0.183
A:B EI N- EI N0	0.045	0.042	10.000	1.080	-0.048	0.138	0.304
A:B EI N- FP N0	0.015	0.051	10.000	0.290	-0.099	0.128	0.777
A:B FP N- EI N0	0.118	0.051	10.000	2.320	0.004	0.231	0.043
A:B FP N- FP N0	0.088	0.042	10.000	2.110	-0.005	0.180	0.061
A:B EI N0- FP N0	-0.030	0.051	10.000	-0.590	-0.144	0.083	0.566

Table 11.250: Estimate of contrast in two-way ANOVA for variable HI.B at site 27 in year 2012 .

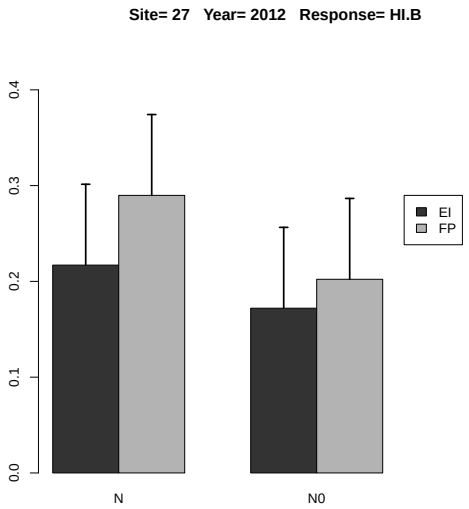

Figure 11.100: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.51 Response Variable HI.Cu

	rep	A	B	y
1	1	FP	N0	0.229
2	2	FP	N0	0.171
3	3	FP	N0	0.177
4	4	FP	N0	0.410
5	5	FP	N0	0.404
6	6	FP	N0	0.214
7	1	FP	N	0.129
8	2	FP	N	0.186
9	3	FP	N	0.175
10	4	FP	N	0.215
11	5	FP	N	0.350
12	6	FP	N	0.306
13	1	EI	N0	0.160
14	2	EI	N0	0.135
15	3	EI	N0	0.253
16	4	EI	N0	0.171
17	5	EI	N0	0.381
18	6	EI	N0	0.069
19	1	EI	N	0.182
20	2	EI	N	0.169
21	3	EI	N	0.222
22	4	EI	N	0.161
23	5	EI	N	0.256
24	6	EI	N	0.167

Table 11.251: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Cu

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.193	0.027	9.100	7.210	0.132	0.253	0.000
A FP	0.227	0.027	9.100	8.490	0.167	0.287	0.000
A EI-FP	-0.034	0.032	5.000	-1.090	-0.115	0.047	0.327

Table 11.252: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Cu at site 27 in year 2012 .

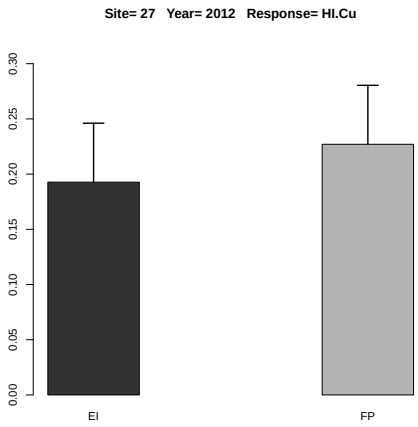

Figure 11.101: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.010	0.010	2.632	4.999	0.166
B	1.000	0.003	0.003	0.706	9.984	0.421
A:B	1.000	0.002	0.002	0.584	9.984	0.463

Table 11.253: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.194	0.032	8.200	6.020	0.120	0.268	0.000
2	FP		0.247	0.032	8.200	7.690	0.173	0.321	0.000
3		N	0.210	0.030	7.200	6.910	0.138	0.281	0.000
4		N0	0.231	0.030	7.200	7.610	0.160	0.303	0.000
5	EI	N	0.193	0.037	13.000	5.230	0.113	0.272	0.000
6	FP	N	0.227	0.037	13.000	6.160	0.147	0.306	0.000
7	EI	N0	0.195	0.037	13.000	5.290	0.115	0.274	0.000
8	FP	N0	0.268	0.037	13.000	7.270	0.188	0.347	0.000

Table 11.254: Estimate of treatment means in tow-way ANOVA for variable HI.Cu at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.054	0.033	5.000	-1.620	-0.139	0.031	0.166
B N-N0	-0.021	0.025	10.000	-0.840	-0.078	0.035	0.420
A:B EI N- FP N	-0.034	0.042	10.700	-0.820	-0.126	0.058	0.429
A:B EI N- EI N0	-0.002	0.036	10.000	-0.050	-0.082	0.078	0.958
A:B EI N- FP N0	-0.075	0.042	10.700	-1.800	-0.167	0.017	0.100
A:B FP N- EI N0	0.032	0.042	10.700	0.780	-0.060	0.124	0.454
A:B FP N- FP N0	-0.041	0.036	10.000	-1.130	-0.120	0.039	0.283
A:B EI N0- FP N0	-0.073	0.042	10.700	-1.750	-0.165	0.019	0.108

Table 11.255: Estimate of contrast in two-way ANOVA for variable HI.Cu at site 27 in year 2012 .

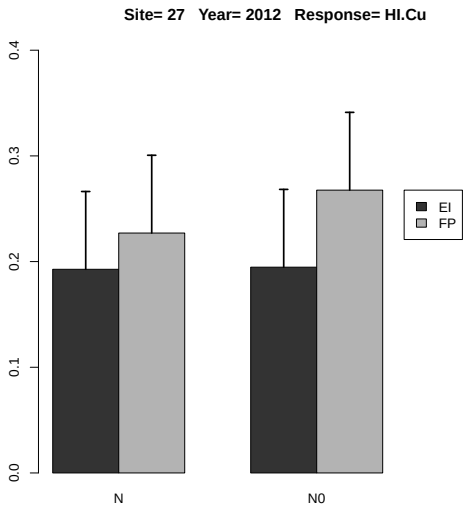

Figure 11.102: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.52 Response Variable HI.Fe

	rep	A	B	y
1	1	FP	N0	0.024
2	2	FP	N0	0.044
3	3	FP	N0	0.049
4	4	FP	N0	0.044
5	5	FP	N0	0.030
6	6	FP	N0	0.033
7	1	FP	N	0.039
8	2	FP	N	0.058
9	3	FP	N	0.060
10	4	FP	N	0.047
11	5	FP	N	0.134
12	6	FP	N	0.069
13	1	EI	N0	0.029
14	2	EI	N0	0.024
15	3	EI	N0	0.038
16	4	EI	N0	0.033
17	5	EI	N0	0.096
18	6	EI	N0	0.002
19	1	EI	N	0.040
20	2	EI	N	0.035
21	3	EI	N	0.055
22	4	EI	N	0.037
23	5	EI	N	0.085
24	6	EI	N	0.095

Table 11.256: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Fe

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.058	0.012	7.000	4.660	0.028	0.087	0.002
A FP	0.068	0.012	7.000	5.470	0.038	0.097	0.001
A EI-FP	-0.010	0.010	5.000	-0.980	-0.037	0.016	0.374

Table 11.257: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Fe at site 27 in year 2012 .

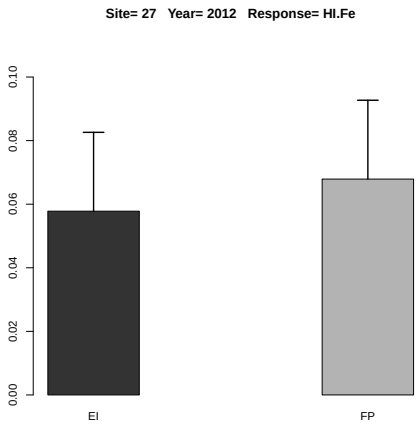

Figure 11.103: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.309	14.934	0.586
B	1.000	0.004	0.004	7.789	14.934	0.014
A:B	1.000	0.000	0.000	0.291	14.934	0.598

Table 11.258: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.048	0.009	8.800	5.290	0.027	0.068	0.000
2	FP		0.053	0.009	8.800	5.860	0.032	0.073	0.000
3		N	0.063	0.009	8.800	7.000	0.042	0.083	0.000
4		N0	0.037	0.009	8.800	4.150	0.017	0.058	0.003
5	EI	N	0.058	0.011	15.400	5.220	0.034	0.081	0.000
6	FP	N	0.068	0.011	15.400	6.130	0.044	0.091	0.000
7	EI	N0	0.037	0.011	15.400	3.350	0.014	0.061	0.004
8	FP	N0	0.037	0.011	15.400	3.370	0.014	0.061	0.004

Table 11.259: Estimate of treatment means in tow-way ANOVA for variable HI.Fe at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.005	0.009	14.900	-0.560	-0.025	0.014	0.586
B N-N0	0.026	0.009	14.900	2.790	0.006	0.045	0.014
A:B EI N- FP N	-0.010	0.013	14.900	-0.770	-0.038	0.018	0.451
A:B EI N- EI N0	0.021	0.013	14.900	1.590	-0.007	0.048	0.132
A:B EI N- FP N0	0.020	0.013	14.900	1.580	-0.007	0.048	0.135
A:B FP N- EI N0	0.031	0.013	14.900	2.370	0.003	0.058	0.032
A:B FP N- FP N0	0.031	0.013	14.900	2.350	0.003	0.058	0.033
A:B EI N0- FP N0	-0.000	0.013	14.900	-0.010	-0.028	0.028	0.991

Table 11.260: Estimate of contrast in two-way ANOVA for variable HI.Fe at site 27 in year 2012 .

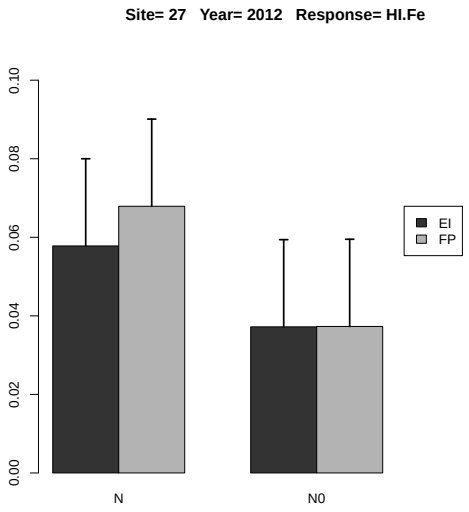

Figure 11.104: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.53 Response Variable HI.Mn

	rep	A	B	y
1	1	FP	N0	0.024
2	2	FP	N0	0.033
3	3	FP	N0	0.113
4	4	FP	N0	0.096
5	5	FP	N0	0.126
6	6	FP	N0	0.048
7	1	FP	N	0.050
8	2	FP	N	0.150
9	3	FP	N	0.049
10	4	FP	N	0.053
11	5	FP	N	0.111
12	6	FP	N	0.082
13	1	EI	N0	0.147
14	2	EI	N0	0.064
15	3	EI	N0	0.101
16	4	EI	N0	0.021
17	5	EI	N0	0.061
18	6	EI	N0	0.004
19	1	EI	N	0.262
20	2	EI	N	0.048
21	3	EI	N	0.034
22	4	EI	N	0.100
23	5	EI	N	0.048
24	6	EI	N	0.096

Table 11.261: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.098	0.027	10.000	3.610	0.037	0.158	0.005
A FP	0.082	0.027	10.000	3.030	0.022	0.143	0.013
A EI-FP	0.016	0.038	10.000	0.410	-0.070	0.101	0.693

Table 11.262: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mn at site 27 in year 2012 .

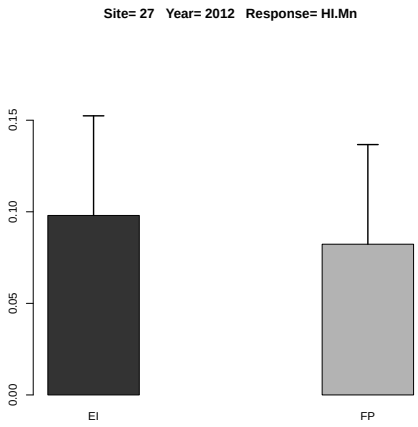

Figure 11.105: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.025	9.998	0.878
B	1.000	0.002	0.002	1.031	9.980	0.334
A:B	1.000	0.001	0.001	0.324	9.980	0.582

Table 11.263: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.082	0.019	10.000	4.310	0.040	0.125	0.002
2	FP		0.078	0.019	10.000	4.090	0.035	0.120	0.002
3		N	0.090	0.017	18.400	5.370	0.055	0.125	0.000
4		N0	0.070	0.017	18.400	4.160	0.035	0.105	0.001
5	EI	N	0.098	0.024	18.400	4.130	0.048	0.148	0.001
6	FP	N	0.082	0.024	18.400	3.470	0.033	0.132	0.003
7	EI	N0	0.066	0.024	18.400	2.790	0.016	0.116	0.012
8	FP	N0	0.073	0.024	18.400	3.090	0.024	0.123	0.006

Table 11.264: Estimate of treatment means in tow-way ANOVA for variable HI.Mn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.004	0.027	10.000	0.160	-0.056	0.064	0.878
B N-N0	0.020	0.020	10.000	1.020	-0.024	0.065	0.334
A:B EI N- FP N	0.016	0.034	18.400	0.470	-0.055	0.086	0.647
A:B EI N- EI N0	0.032	0.028	10.000	1.120	-0.031	0.095	0.289
A:B EI N- FP N0	0.024	0.034	18.400	0.730	-0.046	0.095	0.474
A:B FP N- EI N0	0.016	0.034	18.400	0.480	-0.054	0.086	0.638
A:B FP N- FP N0	0.009	0.028	10.000	0.320	-0.054	0.072	0.759
A:B EI N0- FP N0	-0.007	0.034	18.400	-0.210	-0.077	0.063	0.835

Table 11.265: Estimate of contrast in two-way ANOVA for variable HI.Mn at site 27 in year 2012 .

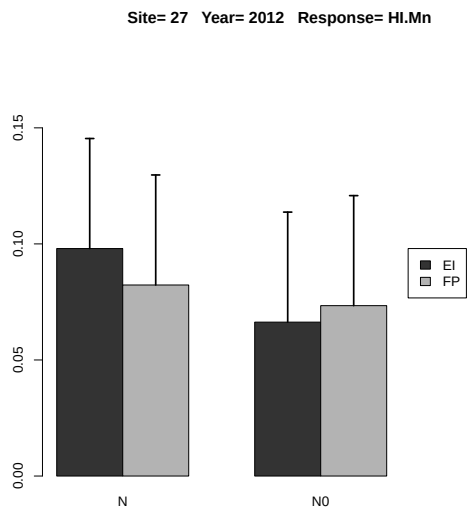

Figure 11.106: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.54 Response Variable HI.Zn

	rep	A	B	y
1	1	FP	N0	0.399
2	2	FP	N0	0.409
3	3	FP	N0	0.555
4	4	FP	N0	0.772
5	5	FP	N0	0.442
6	6	FP	N0	0.432
7	1	FP	N	0.373
8	2	FP	N	0.781
9	3	FP	N	0.771
10	4	FP	N	0.877
11	5	FP	N	1.710
12	6	FP	N	0.564
13	1	EI	N0	0.274
14	2	EI	N0	0.364
15	3	EI	N0	0.516
16	4	EI	N0	0.286
17	5	EI	N0	0.842
18	6	EI	N0	0.063
19	1	EI	N	0.618
20	2	EI	N	0.536
21	3	EI	N	0.823
22	4	EI	N	0.620
23	5	EI	N	0.568
24	6	EI	N	0.644

Table 11.266: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.635	0.136	10.000	4.670	0.332	0.938	0.001
A FP	0.846	0.136	10.000	6.220	0.543	1.149	0.000
A EI-FP	-0.211	0.192	10.000	-1.100	-0.640	0.218	0.298

Table 11.267: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Zn at site 27 in year 2012 .

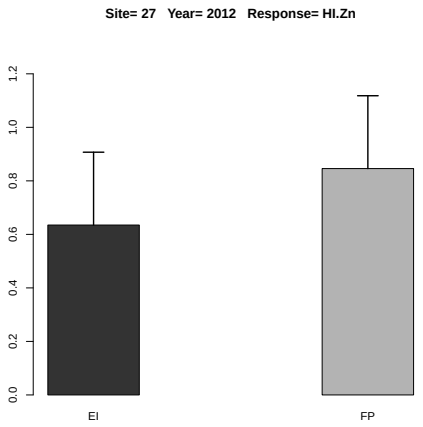

Figure 11.107: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.155	0.155	2.512	14.994	0.134
B	1.000	0.520	0.520	8.422	14.994	0.011
A:B	1.000	0.015	0.015	0.247	14.994	0.627

Table 11.268: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.513	0.089	10.200	5.770	0.315	0.711	0.000
2	FP		0.674	0.089	10.200	7.570	0.476	0.871	0.000
3		N	0.740	0.089	10.200	8.320	0.543	0.938	0.000
4		N0	0.446	0.089	10.200	5.020	0.248	0.644	0.000
5	EI	N	0.635	0.114	17.600	5.560	0.395	0.875	0.000
6	FP	N	0.846	0.114	17.600	7.400	0.606	1.086	0.000
7	EI	N0	0.391	0.114	17.600	3.420	0.151	0.631	0.003
8	FP	N0	0.501	0.114	17.600	4.390	0.261	0.742	0.000

Table 11.269: Estimate of treatment means in tow-way ANOVA for variable HI.Zn at site 27 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.161	0.101	15.000	-1.580	-0.377	0.055	0.134
B N-N0	0.294	0.101	15.000	2.900	0.078	0.510	0.011
A:B EI N- FP N	-0.211	0.143	15.000	-1.470	-0.517	0.095	0.162
A:B EI N- EI N0	0.244	0.143	15.000	1.700	-0.062	0.549	0.110
A:B EI N- FP N0	0.134	0.143	15.000	0.930	-0.172	0.439	0.366
A:B FP N- EI N0	0.455	0.143	15.000	3.170	0.149	0.761	0.006
A:B FP N- FP N0	0.345	0.143	15.000	2.400	0.039	0.650	0.030
A:B EI N0- FP N0	-0.110	0.143	15.000	-0.770	-0.416	0.195	0.454

Table 11.270: Estimate of contrast in two-way ANOVA for variable HI.Zn at site 27 in year 2012 .

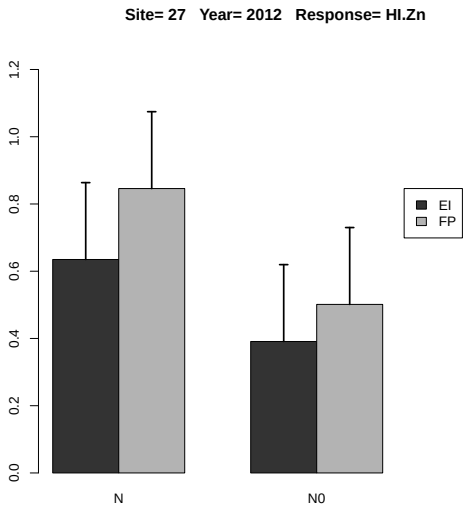

Figure 11.108: Estimated treatment means and standard error in the 2-way ANOVA.

11.1.55 Response Variable PFP.N

	rep	A	B	y
1	1	FP	N	33.612
2	2	FP	N	40.816
3	3	FP	N	44.451
4	4	FP	N	41.976
5	5	FP	N	50.272
6	6	FP	N	33.102
7	1	EI	N	27.125
8	2	EI	N	28.788
9	3	EI	N	42.659
10	4	EI	N	29.026
11	5	EI	N	26.714
12	6	EI	N	23.978

Table 11.271: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	29.715	2.686	8.800	11.060	23.615	35.814	0.000
A FP	40.705	2.686	8.800	15.160	34.605	46.804	0.000
A EI-FP	-10.990	3.007	5.000	-3.650	-18.719	-3.260	0.015

Table 11.272: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 27 in year 2012 .

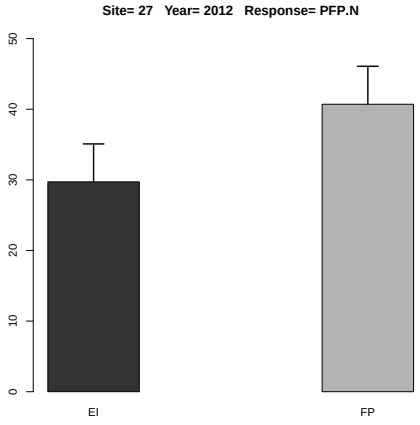

Figure 11.109: Estimated treatment means and standard error in the one-way ANOVA.

11.1.56 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	178.190
2	2	FP	N	216.381
3	3	FP	N	235.657
4	4	FP	N	222.532
5	5	FP	N	266.513
6	6	FP	N	175.488
7	1	EI	N	190.569
8	2	EI	N	202.252
9	3	EI	N	299.711
10	4	EI	N	203.925
11	5	EI	N	187.686
12	6	EI	N	168.462

Table 11.273: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	208.768	16.727	8.900	12.480	170.837	246.698	0.000
A FP	215.793	16.727	8.900	12.900	177.863	253.724	0.000
A EI-FP	-7.026	18.946	5.000	-0.370	-55.728	41.677	0.726

Table 11.274: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 27 in year 2012 .

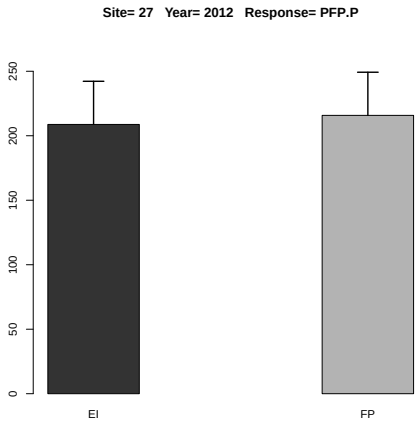

Figure 11.110: Estimated treatment means and standard error in the one-way ANOVA.

11.1.57 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	77.798
2	2	FP	N	94.472
3	3	FP	N	102.888
4	4	FP	N	97.157
5	5	FP	N	116.360
6	6	FP	N	76.618
7	1	EI	N	83.202
8	2	EI	N	88.303
9	3	EI	N	130.854
10	4	EI	N	89.034
11	5	EI	N	81.944
12	6	EI	N	73.551

Table 11.275: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	91.148	7.303	8.900	12.480	74.587	107.709	0.000
A FP	94.215	7.303	8.900	12.900	77.655	110.776	0.000
A EI-FP	-3.067	8.272	5.000	-0.370	-24.331	18.197	0.726

Table 11.276: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 27 in year 2012 .

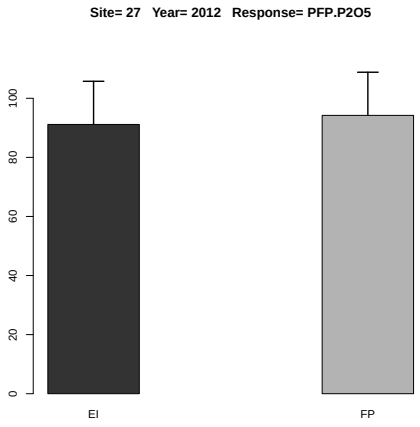

Figure 11.111: Estimated treatment means and standard error in the one-way ANOVA.

11.1.58 Response Variable PNB.N

	rep	A	B	y
1	1	FP	N	0.437
2	2	FP	N	0.443
3	3	FP	N	0.489
4	4	FP	N	0.535
5	5	FP	N	0.663
6	6	FP	N	0.460
7	1	EI	N	0.282
8	2	EI	N	0.363
9	3	EI	N	0.507
10	4	EI	N	0.362
11	5	EI	N	0.357
12	6	EI	N	0.422

Table 11.277: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.382	0.033	10.000	11.580	0.309	0.456	0.000
A FP	0.504	0.033	10.000	15.290	0.431	0.578	0.000
A EI-FP	-0.122	0.047	10.000	-2.630	-0.226	-0.018	0.025

Table 11.278: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 27 in year 2012 .

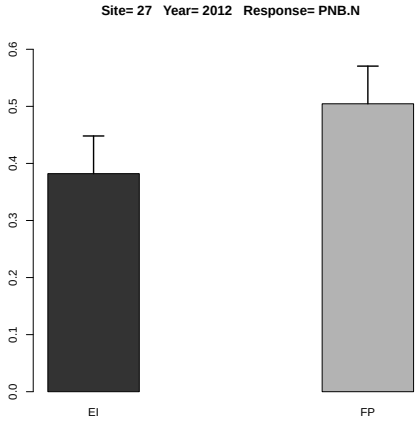

Figure 11.112: Estimated treatment means and standard error in the one-way ANOVA.

11.1.59 Response Variable PNB.P

	rep	A	B	y
1	1	FP	N	0.298
2	2	FP	N	0.437
3	3	FP	N	0.353
4	4	FP	N	0.394
5	5	FP	N	0.962
6	6	FP	N	0.342
7	1	EI	N	0.324
8	2	EI	N	0.269
9	3	EI	N	0.492
10	4	EI	N	0.324
11	5	EI	N	0.375
12	6	EI	N	0.654

Table 11.279: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.406	0.083	10.000	4.910	0.222	0.591	0.001
A FP	0.464	0.083	10.000	5.620	0.280	0.649	0.000
A EI-FP	-0.058	0.117	10.000	-0.500	-0.319	0.203	0.630

Table 11.280: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 27 in year 2012 .

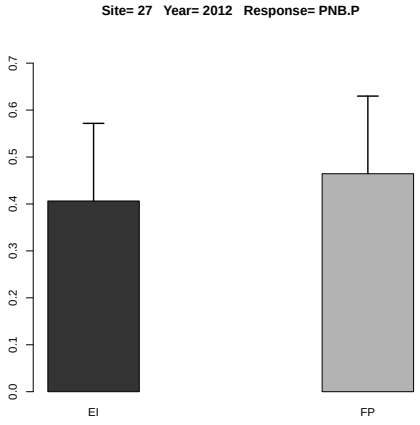

Figure 11.113: Estimated treatment means and standard error in the one-way ANOVA.

11.1.60 Response Variable AE

	rep	A	B	y
1	1	FP	N	5.889
2	2	FP	N	18.461
3	3	FP	N	29.917
4	4	FP	N	4.400
5	5	FP	N	26.172
6	6	FP	N	20.861
7	1	EI	N	15.769
8	2	EI	N	15.251
9	3	EI	N	21.271
10	4	EI	N	18.215
11	5	EI	N	8.158
12	6	EI	N	22.470

Table 11.281: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	16.856	3.409	4.945	0.009
A FP	17.617	3.409	5.168	0.008
A EI-FP	-0.761	4.821	-0.158	0.986

Table 11.282: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 27 in year 2012 .

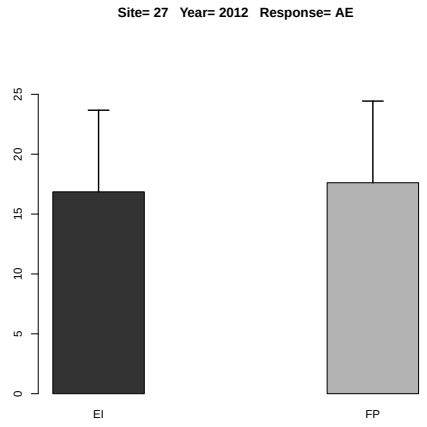

Figure 11.114: Estimated treatment means and standard error in the one-way ANOVA.

11.1.61 Response Variable RE

	rep	A	B	y
1	1	FP	N	0.374
2	2	FP	N	0.306
3	3	FP	N	0.530
4	4	FP	N	0.267
5	5	FP	N	0.577
6	6	FP	N	0.444
7	1	EI	N	0.250
8	2	EI	N	0.288
9	3	EI	N	0.360
10	4	EI	N	0.326
11	5	EI	N	0.316
12	6	EI	N	0.645

Table 11.283: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.364	0.048	7.528	0.001
A FP	0.416	0.048	8.608	0.000
A EI-FP	-0.052	0.068	-0.764	0.729

Table 11.284: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 27 in year 2012 .

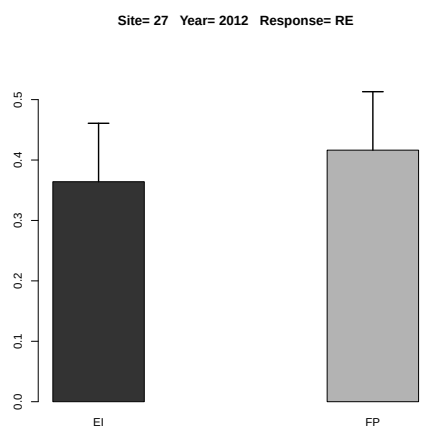

Figure 11.115: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 12

Analysis of Variance for Site 28

12.1 Year 2009

There are 49 variables not observed: UG.Ca UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

12.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	6259.000
2	2	EI	N0	2443.000
3	3	EI	N0	3920.000
4	4	EI	N0	2622.000
5	1	EI	N	10242.000
6	2	EI	N	14187.000
7	3	EI	N	9119.000
8	4	EI	N	8844.000
9	1	FP	N0	2832.000
10	2	FP	N0	5302.000
11	3	FP	N0	3038.000
12	4	FP	N0	1250.000
13	1	FP	N	11706.000
14	2	FP	N	12724.000
15	3	FP	N	8507.000
16	4	FP	N	7757.000

Table 12.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	10598.000	461.834	22.948	0.000
A FP	10173.500	461.834	22.028	0.000
A EI-FP	424.500	653.132	0.650	0.798

Table 12.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 28 in year 2009 .

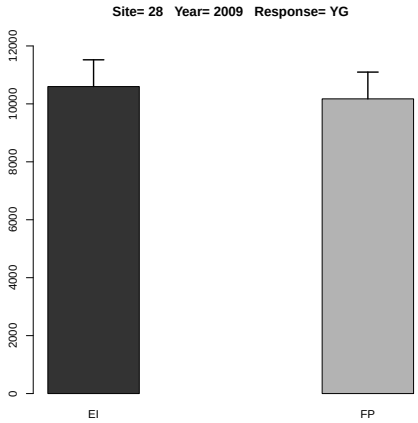

Figure 12.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1276900.000	1276900.000	0.499	9.715	0.496
B	1.000	191961025.000	191961025.000	75.082	9.715	0.000
A:B	1.000	78961.000	78961.000	0.031	9.715	0.864

Table 12.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7204.500	890.205	4.600	8.090	4857.618	9551.382	0.001
2	FP		6639.500	890.205	4.600	7.460	4292.618	8986.382	0.001
3		N	10385.750	890.205	4.600	11.670	8038.868	12732.632	0.000
4		N0	3458.250	890.205	4.600	3.880	1111.368	5805.132	0.013
5	EI	N	10598.000	1054.538	7.900	10.050	8159.381	13036.619	0.000
6	FP	N	10173.500	1054.538	7.900	9.650	7734.881	12612.119	0.000
7	EI	N0	3811.000	1054.538	7.900	3.610	1372.381	6249.619	0.007
8	FP	N0	3105.500	1054.538	7.900	2.940	666.881	5544.119	0.019

Table 12.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 28 in year 2009 .

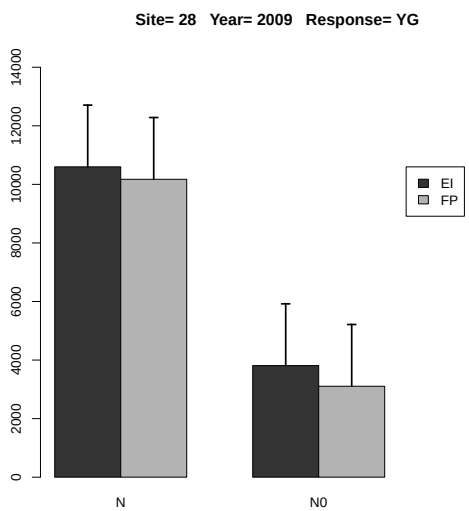

Figure 12.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	565.000	799.483	9.700	0.710	-1223.459	2353.459	0.496
B N-N0	6927.500	799.483	9.700	8.660	5139.041	8715.960	0.000
A:B EI N- FP N	424.500	1130.639	9.700	0.380	-2104.764	2953.764	0.715
A:B EI N- EI N0	6787.000	1130.639	9.700	6.000	4257.736	9316.264	0.000
A:B EI N- FP N0	7492.500	1130.639	9.700	6.630	4963.236	10021.764	0.000
A:B FP N- EI N0	6362.500	1130.639	9.700	5.630	3833.236	8891.764	0.000
A:B FP N- FP N0	7068.000	1130.639	9.700	6.250	4538.736	9597.264	0.000
A:B EI N0- FP N0	705.500	1130.639	9.700	0.620	-1823.764	3234.764	0.547

Table 12.5: Estimate of contrast in two-way ANOVA for variable YG at site 28 in year 2009 .

12.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	5334.000
2	2	EI	N0	3727.000
3	3	EI	N0	5704.000
4	4	EI	N0	4926.000
5	1	EI	N	11629.000
6	2	EI	N	12805.000
7	3	EI	N	7783.000
8	4	EI	N	10184.000
9	1	FP	N0	3525.000
10	2	FP	N0	6012.000
11	3	FP	N0	4602.000
12	4	FP	N0	2924.000
13	1	FP	N	9451.000
14	2	FP	N	15028.000
15	3	FP	N	9214.000
16	4	FP	N	18729.000

Table 12.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	10600.250	1576.456	6.724	0.013
A FP	13105.500	1576.456	8.313	0.007
A EI-FP	-2505.250	2229.445	-1.124	0.553

Table 12.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 28 in year 2009 .

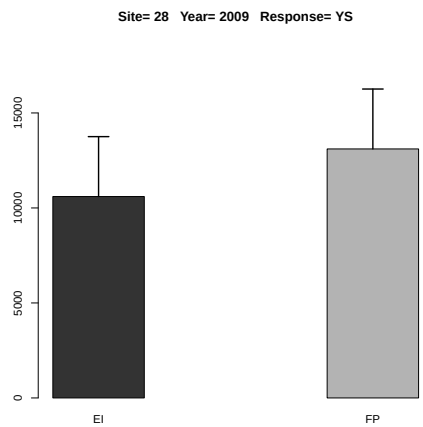

Figure 12.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3416028.062	3416028.062	0.479	5.067	0.519
B	1.000	210750547.562	210750547.562	29.555	5.067	0.003
A:B	1.000	9999825.062	9999825.062	1.402	5.067	0.289

Table 12.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7761.500	944.110	5.100	8.220	5344.166	10178.834	0.000
2	FP		8685.625	944.110	5.100	9.200	6268.291	11102.959	0.000
3		N	11852.875	944.110	5.100	12.550	9435.541	14270.209	0.000
4		N0	4594.250	944.110	5.100	4.870	2176.916	7011.584	0.004
5	EI	N	10600.250	1335.174	5.100	7.940	7181.623	14018.877	0.000
6	FP	N	13105.500	1335.174	5.100	9.820	9686.873	16524.127	0.000
7	EI	N0	4922.750	1335.174	5.100	3.690	1504.123	8341.377	0.014
8	FP	N0	4265.750	1335.174	5.100	3.190	847.123	7684.377	0.024

Table 12.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-924.125	1335.174	5.100	-0.690	-4342.752	2494.502	0.519
B N-N0	7258.625	1335.174	5.100	5.440	3839.998	10677.252	0.003
A:B EI N- FP N	-2505.250	1888.221	5.100	-1.330	-7339.918	2329.418	0.241
A:B EI N- EI N0	5677.500	1888.221	5.100	3.010	842.832	10512.168	0.029
A:B EI N- FP N0	6334.500	1888.221	5.100	3.350	1499.832	11169.168	0.020
A:B FP N- EI N0	8182.750	1888.221	5.100	4.330	3348.082	13017.418	0.007
A:B FP N- FP N0	8839.750	1888.221	5.100	4.680	4005.082	13674.418	0.005
A:B EI N0- FP N0	657.000	1888.221	5.100	0.350	-4177.668	5491.668	0.742

Table 12.10: Estimate of contrast in two-way ANOVA for variable YS at site 28 in year 2009 .

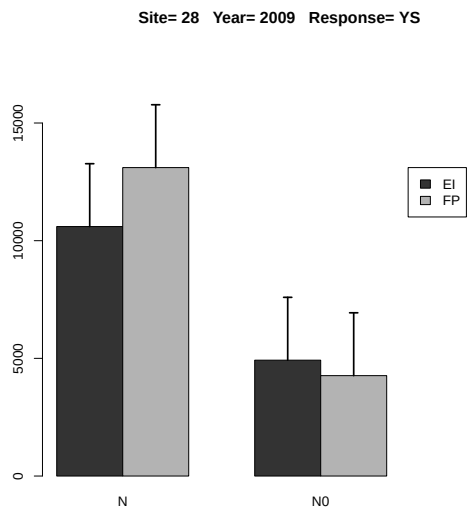

Figure 12.4: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	11593.000
2	2	EI	N0	6170.000
3	3	EI	N0	9624.000
4	4	EI	N0	7548.000
5	1	EI	N	21871.000
6	2	EI	N	26992.000
7	3	EI	N	16902.000
8	4	EI	N	19028.000
9	1	FP	N0	6357.000
10	2	FP	N0	11314.000
11	3	FP	N0	7640.000
12	4	FP	N0	4174.000
13	1	FP	N	21157.000
14	2	FP	N	27752.000
15	3	FP	N	17721.000
16	4	FP	N	26486.000

Table 12.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	21198.250	1291.992	16.407	0.001
A FP	23279.000	1291.992	18.018	0.001
A EI-FP	-2080.750	1827.153	-1.139	0.547

Table 12.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 28 in year 2009 .

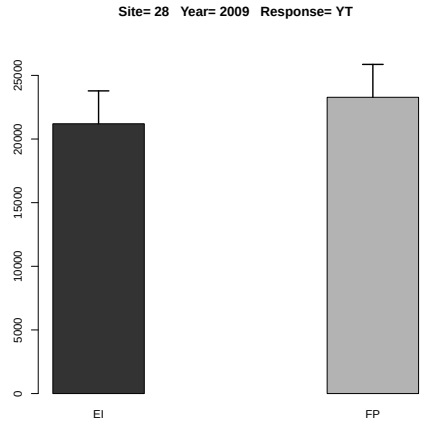

Figure 12.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	515883.062	515883.062	0.042	14.538	0.841
B	1.000	804984570.063	804984570.063	65.243	14.538	0.000
A:B	1.000	11855970.562	11855970.562	0.961	14.538	0.343

Table 12.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14966.000	1389.398	7.600	10.770	11734.068	18197.932	0.000
2	FP		15325.125	1389.398	7.600	11.030	12093.193	18557.057	0.000
3		N	22238.625	1389.398	7.600	16.010	19006.693	25470.557	0.000
4		N0	8052.500	1389.398	7.600	5.800	4820.568	11284.432	0.000
5	EI	N	21198.250	1863.520	14.800	11.380	17220.944	25175.556	0.000
6	FP	N	23279.000	1863.520	14.800	12.490	19301.694	27256.306	0.000
7	EI	N0	8733.750	1863.520	14.800	4.690	4756.444	12711.056	0.000
8	FP	N0	7371.250	1863.520	14.800	3.960	3393.944	11348.556	0.001

Table 12.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 28 in year 2009 .

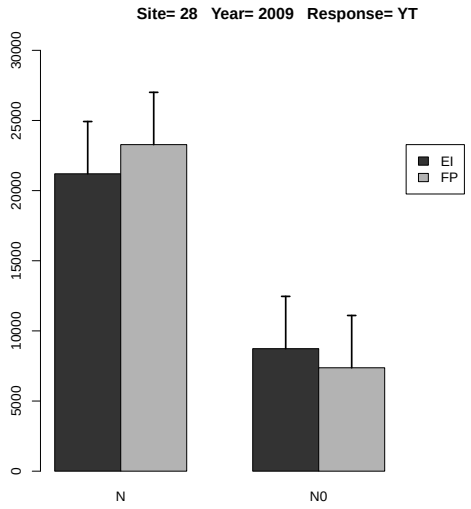

Figure 12.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-359.125	1756.291	14.500	-0.200	-4113.057	3394.807	0.841
B N-N0	14186.125	1756.291	14.500	8.080	10432.193	17940.057	0.000
A:B EI N- FP N	-2080.750	2483.770	14.500	-0.840	-7389.612	3228.112	0.416
A:B EI N- EI N0	12464.500	2483.770	14.500	5.020	7155.638	17773.362	0.000
A:B EI N- FP N0	13827.000	2483.770	14.500	5.570	8518.138	19135.862	0.000
A:B FP N- EI N0	14545.250	2483.770	14.500	5.860	9236.388	19854.112	0.000
A:B FP N- FP N0	15907.750	2483.770	14.500	6.400	10598.888	21216.612	0.000
A:B EI N0- FP N0	1362.500	2483.770	14.500	0.550	-3946.362	6671.362	0.592

Table 12.15: Estimate of contrast in two-way ANOVA for variable YT at site 28 in year 2009 .

12.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.540
2	2	EI	N0	0.396
3	3	EI	N0	0.407
4	4	EI	N0	0.347
5	1	EI	N	0.468
6	2	EI	N	0.526
7	3	EI	N	0.540
8	4	EI	N	0.465
9	1	FP	N0	0.445
10	2	FP	N0	0.469
11	3	FP	N0	0.398
12	4	FP	N0	0.299
13	1	FP	N	0.553
14	2	FP	N	0.458
15	3	FP	N	0.480
16	4	FP	N	0.293

Table 12.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.500	0.037	13.386	0.002
A FP	0.446	0.037	11.956	0.003
A EI-FP	0.053	0.053	1.011	0.609

Table 12.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 28 in year 2009 .

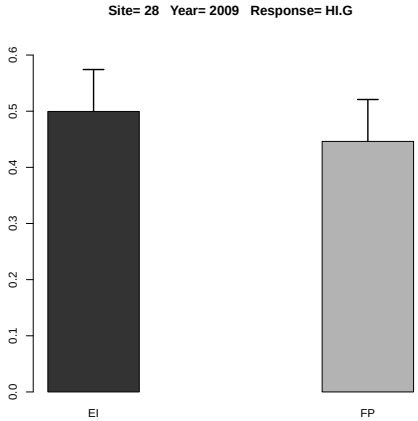

Figure 12.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	1.708	8.984	0.224
B	1.000	0.014	0.014	4.612	8.984	0.060
A:B	1.000	0.001	0.001	0.359	8.984	0.564

Table 12.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.461	0.035	4.200	13.140	0.365	0.557	0.000
2	FP		0.424	0.035	4.200	12.090	0.329	0.520	0.000
3		N	0.473	0.035	4.200	13.470	0.377	0.569	0.000
4		N0	0.413	0.035	4.200	11.760	0.317	0.508	0.000
5	EI	N	0.500	0.040	6.700	12.400	0.403	0.596	0.000
6	FP	N	0.446	0.040	6.700	11.070	0.350	0.542	0.000
7	EI	N0	0.423	0.040	6.700	10.490	0.326	0.519	0.000
8	FP	N0	0.403	0.040	6.700	10.000	0.306	0.499	0.000

Table 12.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.037	0.028	9.000	1.310	-0.027	0.100	0.224
B N-N0	0.060	0.028	9.000	2.150	-0.003	0.123	0.060
A:B EI N- FP N	0.053	0.040	9.000	1.350	-0.036	0.143	0.211
A:B EI N- EI N0	0.077	0.040	9.000	1.940	-0.013	0.167	0.084
A:B EI N- FP N0	0.097	0.040	9.000	2.440	0.007	0.186	0.037
A:B FP N- EI N0	0.024	0.040	9.000	0.590	-0.066	0.113	0.567
A:B FP N- FP N0	0.043	0.040	9.000	1.100	-0.046	0.133	0.302
A:B EI N0- FP N0	0.020	0.040	9.000	0.500	-0.070	0.109	0.629

Table 12.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 28 in year 2009 .

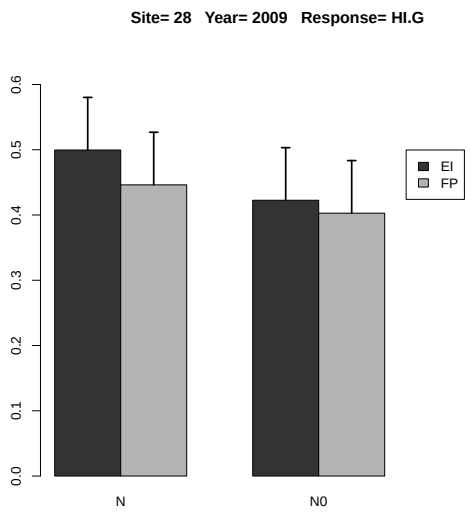

Figure 12.8: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	67.597
2	2	EI	N0	20.033
3	3	EI	N0	34.104
4	4	EI	N0	20.452
5	1	EI	N	141.340
6	2	EI	N	194.362
7	3	EI	N	127.666
8	4	EI	N	122.932
9	1	FP	N0	23.789
10	2	FP	N0	49.309
11	3	FP	N0	24.912
12	4	FP	N0	10.250
13	1	FP	N	172.078
14	2	FP	N	175.591
15	3	FP	N	107.188
16	4	FP	N	124.112

Table 12.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	146.575	8.427	17.393	0.000
A FP	144.742	8.427	17.175	0.000
A EI-FP	1.832	11.918	0.154	0.986

Table 12.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 28 in year 2009 .

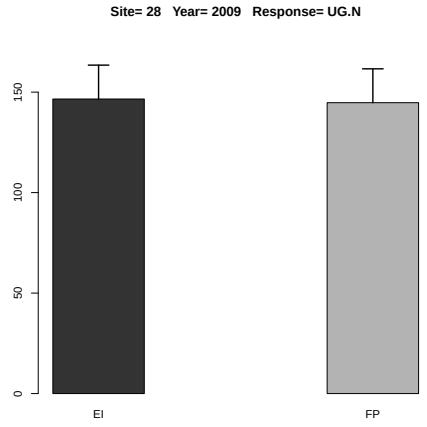

Figure 12.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	106.378	106.378	0.226	9.001	0.646
B	1.000	52306.469	52306.469	111.251	9.001	0.000
A:B	1.000	44.212	44.212	0.094	9.001	0.766

Table 12.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		91.061	11.395	4.900	7.990	61.538	120.584	0.001
2	FP		85.904	11.395	4.900	7.540	56.381	115.427	0.001
3		N	145.659	11.395	4.900	12.780	116.136	175.182	0.000
4		N0	31.306	11.395	4.900	2.750	1.783	60.828	0.042
5	EI	N	146.575	13.733	8.400	10.670	115.175	177.974	0.000
6	FP	N	144.742	13.733	8.400	10.540	113.343	176.142	0.000
7	EI	N0	35.546	13.733	8.400	2.590	4.147	66.946	0.031
8	FP	N0	27.065	13.733	8.400	1.970	-4.335	58.464	0.082

Table 12.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 28 in year 2009 .

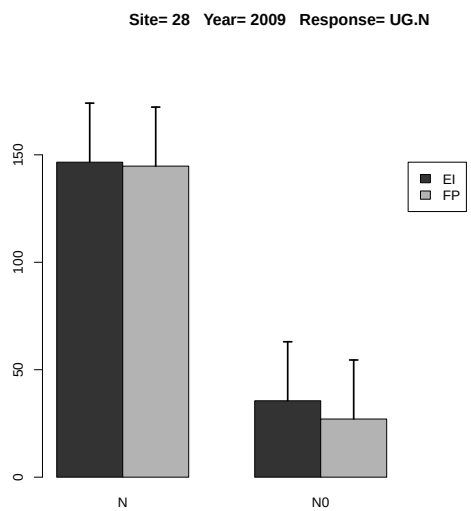

Figure 12.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.157	10.842	9.000	0.480	-19.369	29.682	0.646
B N-N0	114.353	10.842	9.000	10.550	89.828	138.879	0.000
A:B EI N- FP N	1.832	15.332	9.000	0.120	-32.852	36.517	0.907
A:B EI N- EI N0	111.028	15.332	9.000	7.240	76.344	145.713	0.000
A:B EI N- FP N0	119.510	15.332	9.000	7.790	84.826	154.194	0.000
A:B FP N- EI N0	109.196	15.332	9.000	7.120	74.512	143.880	0.000
A:B FP N- FP N0	117.678	15.332	9.000	7.680	82.993	152.362	0.000
A:B EI N0- FP N0	8.482	15.332	9.000	0.550	-26.203	43.166	0.594

Table 12.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 28 in year 2009 .

12.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	21.906
2	2	EI	N0	7.818
3	3	EI	N0	13.720
4	4	EI	N0	11.799
5	1	EI	N	29.702
6	2	EI	N	43.980
7	3	EI	N	33.740
8	4	EI	N	30.954
9	1	FP	N0	11.611
10	2	FP	N0	19.087
11	3	FP	N0	13.063
12	4	FP	N0	6.125
13	1	FP	N	31.606
14	2	FP	N	38.172
15	3	FP	N	27.222
16	4	FP	N	28.701

Table 12.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	34.594	1.366	25.333	0.000
A FP	31.425	1.366	23.012	0.000
A EI-FP	3.169	1.931	1.641	0.347

Table 12.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 28 in year 2009 .

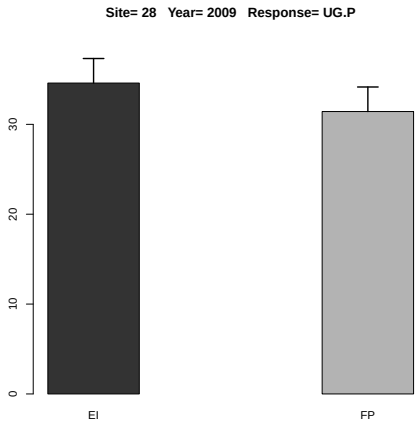

Figure 12.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	20.319	20.319	0.714	9.000	0.420
B	1.000	1579.017	1579.017	55.482	9.000	0.000
A:B	1.000	3.347	3.347	0.118	9.000	0.740

Table 12.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.202	2.124	7.200	11.400	19.203	29.201	0.000
2	FP		21.948	2.124	7.200	10.330	16.949	26.948	0.000
3		N	33.010	2.124	7.200	15.540	28.011	38.009	0.000
4		N0	13.141	2.124	7.200	6.190	8.142	18.140	0.000
5	EI	N	34.594	2.841	11.500	12.180	28.376	40.812	0.000
6	FP	N	31.425	2.841	11.500	11.060	25.207	37.643	0.000
7	EI	N0	13.811	2.841	11.500	4.860	7.593	20.029	0.000
8	FP	N0	12.472	2.841	11.500	4.390	6.254	18.690	0.001

Table 12.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.254	2.667	9.000	0.840	-3.780	8.288	0.420
B N-N0	19.868	2.667	9.000	7.450	13.834	25.902	0.000
A:B EI N- FP N	3.169	3.772	9.000	0.840	-5.365	11.702	0.423
A:B EI N- EI N0	20.783	3.772	9.000	5.510	12.250	29.317	0.000
A:B EI N- FP N0	22.122	3.772	9.000	5.860	13.589	30.656	0.000
A:B FP N- EI N0	17.615	3.772	9.000	4.670	9.081	26.148	0.001
A:B FP N- FP N0	18.954	3.772	9.000	5.020	10.420	27.487	0.001
A:B EI N0- FP N0	1.339	3.772	9.000	0.350	-7.194	9.873	0.731

Table 12.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 28 in year 2009 .

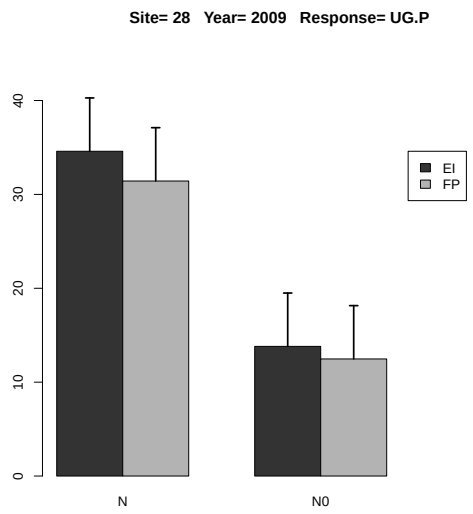

Figure 12.12: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	50.166
2	2	EI	N0	17.902
3	3	EI	N0	31.419
4	4	EI	N0	27.020
5	1	EI	N	68.017
6	2	EI	N	100.714
7	3	EI	N	77.265
8	4	EI	N	70.885
9	1	FP	N0	26.590
10	2	FP	N0	43.710
11	3	FP	N0	29.915
12	4	FP	N0	14.026
13	1	FP	N	72.378
14	2	FP	N	87.414
15	3	FP	N	62.339
16	4	FP	N	65.725

Table 12.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	79.220	3.127	25.333	0.000
A FP	71.964	3.127	23.012	0.001
A EI-FP	7.256	4.423	1.641	0.347

Table 12.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 28 in year 2009 .

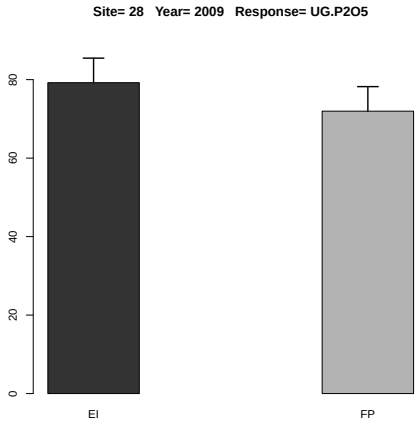

Figure 12.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	106.554	106.554	0.714	9.000	0.420
B	1.000	8280.524	8280.524	55.482	9.000	0.000
A:B	1.000	17.552	17.552	0.118	9.000	0.740

Table 12.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		55.423	4.864	7.200	11.400	43.975	66.871	0.000
2	FP		50.262	4.864	7.200	10.330	38.814	61.710	0.000
3		N	75.592	4.864	7.200	15.540	64.144	87.040	0.000
4		N0	30.093	4.864	7.200	6.190	18.645	41.541	0.000
5	EI	N	79.220	6.505	11.500	12.180	64.981	93.459	0.000
6	FP	N	71.964	6.505	11.500	11.060	57.725	86.203	0.000
7	EI	N0	31.627	6.505	11.500	4.860	17.388	45.866	0.000
8	FP	N0	28.560	6.505	11.500	4.390	14.321	42.799	0.001

Table 12.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 28 in year 2009 .

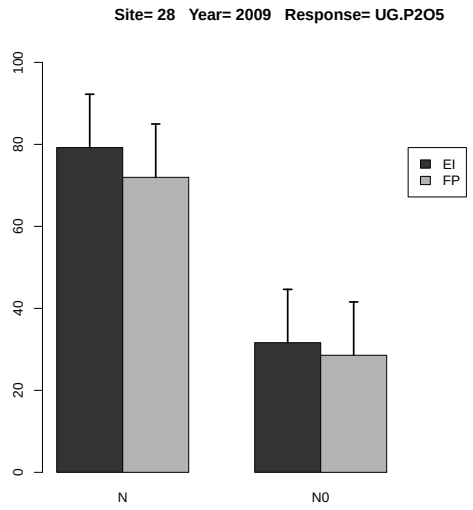

Figure 12.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.161	6.108	9.000	0.840	-8.657	18.979	0.420
B N-N0	45.499	6.108	9.000	7.450	31.681	59.317	0.000
A:B EI N- FP N	7.256	8.639	9.000	0.840	-12.286	26.798	0.423
A:B EI N- EI N0	47.593	8.639	9.000	5.510	28.052	67.135	0.000
A:B EI N- FP N0	50.660	8.639	9.000	5.860	31.118	70.202	0.000
A:B FP N- EI N0	40.337	8.639	9.000	4.670	20.796	59.879	0.001
A:B FP N- FP N0	43.404	8.639	9.000	5.020	23.862	62.946	0.001
A:B EI N0- FP N0	3.066	8.639	9.000	0.350	-16.475	22.608	0.731

Table 12.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 28 in year 2009 .

12.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	18.151
2	2	EI	N0	7.818
3	3	EI	N0	14.112
4	4	EI	N0	9.701
5	1	EI	N	25.605
6	2	EI	N	42.561
7	3	EI	N	28.269
8	4	EI	N	30.070
9	1	FP	N0	9.629
10	2	FP	N0	15.376
11	3	FP	N0	10.633
12	4	FP	N0	5.000
13	1	FP	N	29.265
14	2	FP	N	27.993
15	3	FP	N	24.670
16	4	FP	N	27.149

Table 12.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	31.626	2.671	11.842	0.003
A FP	27.269	2.671	10.211	0.004
A EI-FP	4.357	3.777	1.154	0.540

Table 12.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 28 in year 2009 .

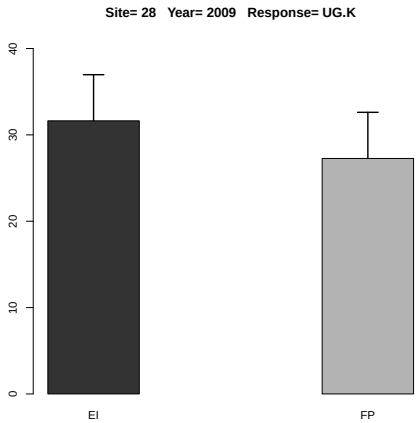

Figure 12.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	44.127	44.127	1.769	12.000	0.208
B	1.000	1317.008	1317.008	52.784	12.000	0.000
A:B	1.000	4.287	4.287	0.172	12.000	0.686

Table 12.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.036	1.766	12.000	12.480	18.188	25.884	0.000
2	FP		18.714	1.766	12.000	10.600	14.867	22.562	0.000
3		N	29.448	1.766	12.000	16.670	25.600	33.296	0.000
4		N0	11.303	1.766	12.000	6.400	7.455	15.150	0.000
5	EI	N	31.626	2.498	12.000	12.660	26.184	37.068	0.000
6	FP	N	27.269	2.498	12.000	10.920	21.828	32.711	0.000
7	EI	N0	12.445	2.498	12.000	4.980	7.004	17.887	0.000
8	FP	N0	10.159	2.498	12.000	4.070	4.718	15.601	0.002

Table 12.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3.321	2.498	12.000	1.330	-2.120	8.763	0.208
B N-N0	18.145	2.498	12.000	7.270	12.704	23.587	0.000
A:B EI N- FP N	4.357	3.532	12.000	1.230	-3.339	12.052	0.241
A:B EI N- EI N0	19.181	3.532	12.000	5.430	11.485	26.876	0.000
A:B EI N- FP N0	21.467	3.532	12.000	6.080	13.771	29.162	0.000
A:B FP N- EI N0	14.824	3.532	12.000	4.200	7.128	22.520	0.001
A:B FP N- FP N0	17.110	3.532	12.000	4.840	9.414	24.806	0.000
A:B EI N0- FP N0	2.286	3.532	12.000	0.650	-5.410	9.982	0.530

Table 12.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 28 in year 2009 .

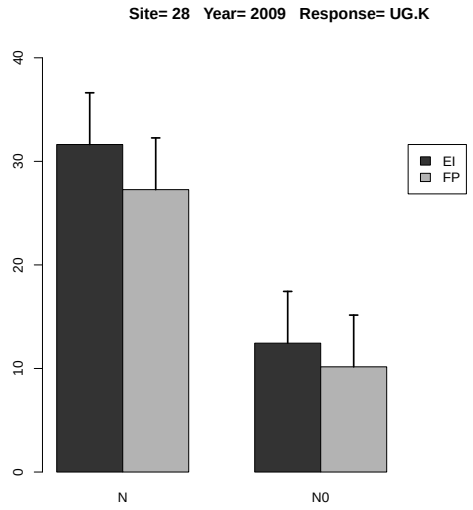

Figure 12.16: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	21.872
2	2	EI	N0	9.420
3	3	EI	N0	17.005
4	4	EI	N0	11.690
5	1	EI	N	30.854
6	2	EI	N	51.286
7	3	EI	N	34.064
8	4	EI	N	36.234
9	1	FP	N0	11.603
10	2	FP	N0	18.528
11	3	FP	N0	12.813
12	4	FP	N0	6.025
13	1	FP	N	35.264
14	2	FP	N	33.731
15	3	FP	N	29.728
16	4	FP	N	32.715

Table 12.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	38.109	3.218	11.842	0.003
A FP	32.860	3.218	10.211	0.004
A EI-FP	5.250	4.551	1.154	0.539

Table 12.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 28 in year 2009 .

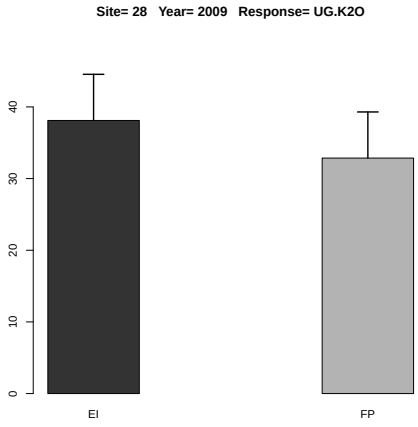

Figure 12.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	64.074	64.074	1.769	12.000	0.208
B	1.000	1912.328	1912.328	52.784	12.000	0.000
A:B	1.000	6.225	6.225	0.172	12.000	0.686

Table 12.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		26.553	2.128	12.000	12.480	21.916	31.190	0.000
2	FP		22.551	2.128	12.000	10.600	17.914	27.188	0.000
3		N	35.485	2.128	12.000	16.670	30.848	40.121	0.000
4		N0	13.620	2.128	12.000	6.400	8.983	18.256	0.000
5	EI	N	38.109	3.010	12.000	12.660	31.552	44.667	0.000
6	FP	N	32.860	3.010	12.000	10.920	26.302	39.417	0.000
7	EI	N0	14.997	3.010	12.000	4.980	8.440	21.554	0.000
8	FP	N0	12.242	3.010	12.000	4.070	5.685	18.799	0.002

Table 12.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 28 in year 2009 .

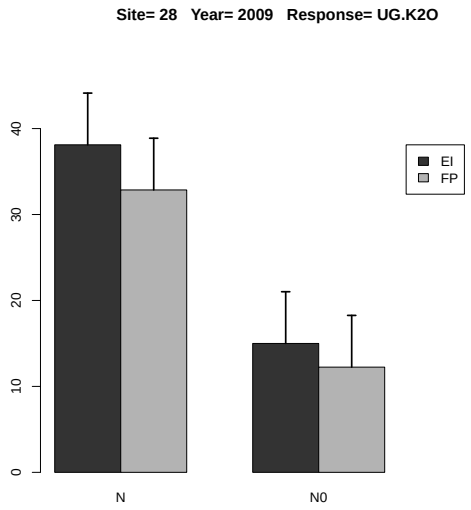

Figure 12.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.002	3.010	12.000	1.330	-2.555	10.559	0.208
B N-N0	21.865	3.010	12.000	7.270	15.308	28.422	0.000
A:B EI N- FP N	5.250	4.256	12.000	1.230	-4.024	14.523	0.241
A:B EI N- EI N0	23.113	4.256	12.000	5.430	13.839	32.386	0.000
A:B EI N- FP N0	25.867	4.256	12.000	6.080	16.594	35.141	0.000
A:B FP N- EI N0	17.863	4.256	12.000	4.200	8.589	27.136	0.001
A:B FP N- FP N0	20.618	4.256	12.000	4.840	11.344	29.891	0.000
A:B EI N0- FP N0	2.755	4.256	12.000	0.650	-6.519	12.028	0.530

Table 12.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 28 in year 2009 .

12.1.10 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	10.014
2	2	EI	N0	3.176
3	3	EI	N0	5.096
4	4	EI	N0	4.195
5	1	EI	N	13.315
6	2	EI	N	22.699
7	3	EI	N	13.678
8	4	EI	N	13.266
9	1	FP	N0	4.248
10	2	FP	N0	6.893
11	3	FP	N0	4.861
12	4	FP	N0	2.000
13	1	FP	N	12.877
14	2	FP	N	16.541
15	3	FP	N	11.910
16	4	FP	N	13.187

Table 12.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	15.740	0.988	15.932	0.001
A FP	13.629	0.988	13.795	0.002
A EI-FP	2.111	1.397	1.511	0.391

Table 12.47: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 28 in year 2009 .

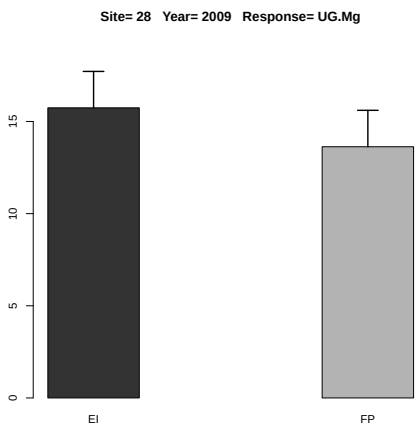

Figure 12.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10.439	10.439	1.225	9.000	0.297
B	1.000	370.465	370.465	43.464	9.000	0.000
A:B	1.000	0.982	0.982	0.115	9.000	0.742

Table 12.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.680	1.168	7.100	9.140	7.926	13.434	0.000
2	FP		9.065	1.168	7.100	7.760	6.310	11.819	0.000
3		N	14.684	1.168	7.100	12.570	11.930	17.438	0.000
4		N0	5.060	1.168	7.100	4.330	2.306	7.815	0.003
5	EI	N	15.740	1.559	11.500	10.100	12.326	19.153	0.000
6	FP	N	13.629	1.559	11.500	8.740	10.215	17.042	0.000
7	EI	N0	5.620	1.559	11.500	3.610	2.207	9.034	0.004
8	FP	N0	4.500	1.559	11.500	2.890	1.087	7.914	0.014

Table 12.49: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.615	1.460	9.000	1.110	-1.687	4.918	0.297
B N-N0	9.624	1.460	9.000	6.590	6.322	12.926	0.000
A:B EI N- FP N	2.111	2.064	9.000	1.020	-2.559	6.781	0.333
A:B EI N- EI N0	10.119	2.064	9.000	4.900	5.449	14.789	0.001
A:B EI N- FP N0	11.239	2.064	9.000	5.440	6.569	15.909	0.000
A:B FP N- EI N0	8.008	2.064	9.000	3.880	3.338	12.678	0.004
A:B FP N- FP N0	9.128	2.064	9.000	4.420	4.458	13.798	0.002
A:B EI N0- FP N0	1.120	2.064	9.000	0.540	-3.550	5.790	0.601

Table 12.50: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 28 in year 2009 .

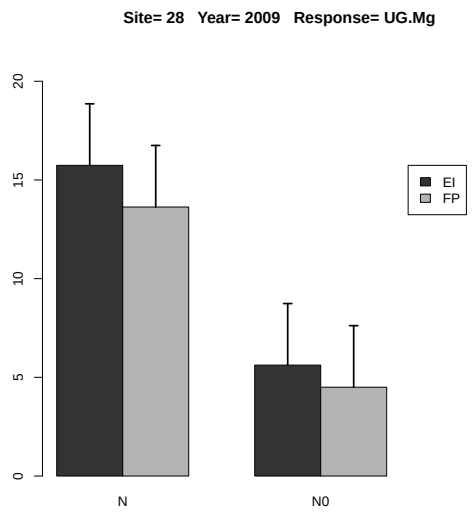

Figure 12.20: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.11 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	11.266
2	2	EI	N0	4.397
3	3	EI	N0	7.056
4	4	EI	N0	4.720
5	1	EI	N	21.508
6	2	EI	N	26.955
7	3	EI	N	16.414
8	4	EI	N	16.804
9	1	FP	N0	5.098
10	2	FP	N0	10.074
11	3	FP	N0	5.468
12	4	FP	N0	2.375
13	1	FP	N	24.583
14	2	FP	N	27.993
15	3	FP	N	15.313
16	4	FP	N	17.841

Table 12.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	20.420	0.603	33.873	0.000
A FP	21.432	0.603	35.552	0.000
A EI-FP	-1.012	0.853	-1.187	0.524

Table 12.52: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 28 in year 2009 .

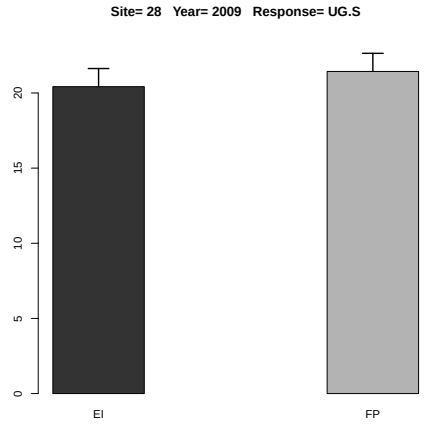

Figure 12.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.009	0.009	0.001	9.000	0.978
B	1.000	854.925	854.925	78.045	9.000	0.000
A:B	1.000	4.486	4.486	0.410	9.000	0.538

Table 12.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13.640	1.889	4.500	7.220	8.620	18.660	0.001
2	FP		13.593	1.889	4.500	7.200	8.573	18.613	0.001
3		N	20.926	1.889	4.500	11.080	15.906	25.946	0.000
4		N0	6.307	1.889	4.500	3.340	1.287	11.327	0.024
5	EI	N	20.420	2.222	7.500	9.190	15.239	25.602	0.000
6	FP	N	21.432	2.222	7.500	9.640	16.251	26.614	0.000
7	EI	N0	6.860	2.222	7.500	3.090	1.678	12.041	0.016
8	FP	N0	5.754	2.222	7.500	2.590	0.572	10.935	0.034

Table 12.54: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 28 in year 2009 .

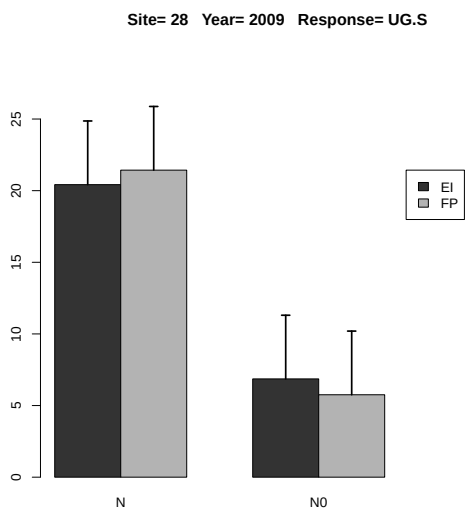

Figure 12.22: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.047	1.655	9.000	0.030	-3.696	3.791	0.978
B N-N0	14.620	1.655	9.000	8.830	10.876	18.363	0.000
A:B EI N- FP N	-1.012	2.340	9.000	-0.430	-6.306	4.282	0.676
A:B EI N- EI N0	13.560	2.340	9.000	5.790	8.266	18.855	0.000
A:B EI N- FP N0	14.667	2.340	9.000	6.270	9.372	19.961	0.000
A:B FP N- EI N0	14.572	2.340	9.000	6.230	9.278	19.867	0.000
A:B FP N- FP N0	15.679	2.340	9.000	6.700	10.384	20.973	0.000
A:B EI N0- FP N0	1.106	2.340	9.000	0.470	-4.188	6.400	0.648

Table 12.55: Estimate of contrast in two-way ANOVA for variable UG.S at site 28 in year 2009 .

12.1.12 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	23.186
2	2	EI	N0	15.072
3	3	EI	N0	21.420
4	4	EI	N0	16.989
5	1	EI	N	104.464
6	2	EI	N	90.055
7	3	EI	N	60.776
8	4	EI	N	81.029
9	1	FP	N0	18.286
10	2	FP	N0	25.338
11	3	FP	N0	17.679
12	4	FP	N0	11.584
13	1	FP	N	83.534
14	2	FP	N	104.420
15	3	FP	N	86.162
16	4	FP	N	187.082

Table 12.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	84.081	18.971	4.432	0.041
A FP	115.299	18.971	6.078	0.017
A EI-FP	-31.218	26.829	-1.164	0.535

Table 12.57: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 28 in year 2009 .

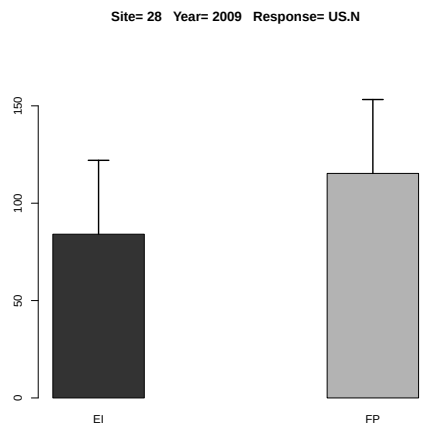

Figure 12.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	916.462	916.462	1.330	12.000	0.271
B	1.000	26241.189	26241.189	38.075	12.000	0.000
A:B	1.000	1034.492	1034.492	1.501	12.000	0.244

Table 12.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		51.624	9.282	12.000	5.560	31.401	71.847	0.000
2	FP		66.760	9.282	12.000	7.190	46.537	86.984	0.000
3		N	99.690	9.282	12.000	10.740	79.467	119.913	0.000
4		N0	18.694	9.282	12.000	2.010	-1.529	38.917	0.067
5	EI	N	84.081	13.126	12.000	6.410	55.481	112.681	0.000
6	FP	N	115.299	13.126	12.000	8.780	86.699	143.899	0.000
7	EI	N0	19.167	13.126	12.000	1.460	-9.433	47.767	0.170
8	FP	N0	18.222	13.126	12.000	1.390	-10.378	46.822	0.190

Table 12.59: Estimate of treatment means in tow-way ANOVA for variable US.N at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-15.137	13.126	12.000	-1.150	-43.736	13.463	0.271
B N-N0	80.996	13.126	12.000	6.170	52.396	109.596	0.000
A:B EI N- FP N	-31.218	18.564	12.000	-1.680	-71.665	9.228	0.118
A:B EI N- EI N0	64.914	18.564	12.000	3.500	24.468	105.360	0.004
A:B EI N- FP N0	65.859	18.564	12.000	3.550	25.413	106.305	0.004
A:B FP N- EI N0	96.132	18.564	12.000	5.180	55.686	136.578	0.000
A:B FP N- FP N0	97.077	18.564	12.000	5.230	56.631	137.524	0.000
A:B EI N0- FP N0	0.945	18.564	12.000	0.050	-39.501	41.392	0.960

Table 12.60: Estimate of contrast in two-way ANOVA for variable US.N at site 28 in year 2009 .

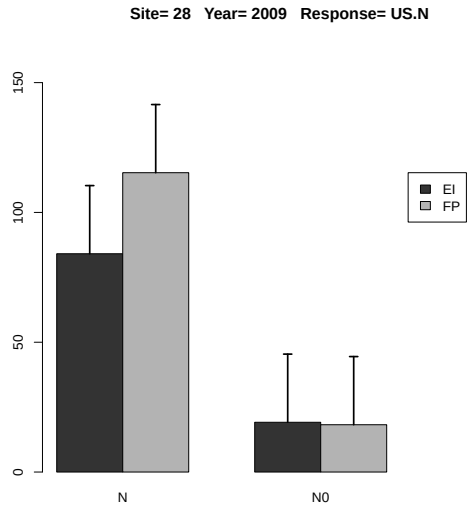

Figure 12.24: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.13 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	12.769
2	2	EI	N0	7.373
3	3	EI	N0	8.962
4	4	EI	N0	10.762
5	1	EI	N	28.801
6	2	EI	N	32.769
7	3	EI	N	17.935
8	4	EI	N	25.297
9	1	FP	N0	6.802
10	2	FP	N0	13.605
11	3	FP	N0	11.571
12	4	FP	N0	5.758
13	1	FP	N	24.145
14	2	FP	N	35.669
15	3	FP	N	21.935
16	4	FP	N	42.475

Table 12.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	26.200	3.207	8.169	0.008
A FP	31.056	3.207	9.683	0.004
A EI-FP	-4.856	4.536	-1.071	0.579

Table 12.62: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 28 in year 2009 .

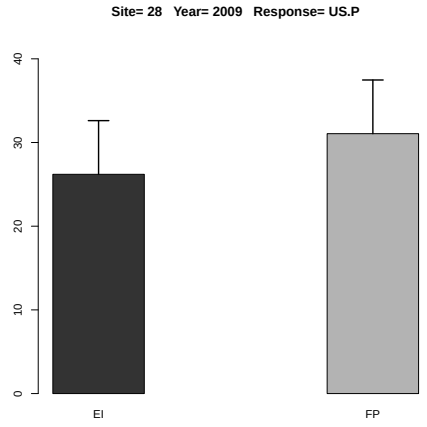

Figure 12.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	18.687	18.687	0.503	9.000	0.496
B	1.000	1433.050	1433.050	38.537	9.000	0.000
A:B	1.000	29.036	29.036	0.781	9.000	0.400

Table 12.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.083	2.223	8.500	8.140	13.006	23.161	0.000
2	FP		20.245	2.223	8.500	9.110	15.168	25.322	0.000
3		N	28.628	2.223	8.500	12.880	23.551	33.705	0.000
4		N0	9.700	2.223	8.500	4.360	4.623	14.777	0.002
5	EI	N	26.200	3.097	12.000	8.460	19.451	32.949	0.000
6	FP	N	31.056	3.097	12.000	10.030	24.307	37.805	0.000
7	EI	N0	9.967	3.097	12.000	3.220	3.217	16.716	0.007
8	FP	N0	9.434	3.097	12.000	3.050	2.685	16.183	0.010

Table 12.64: Estimate of treatment means in tow-way ANOVA for variable US.P at site 28 in year 2009 .

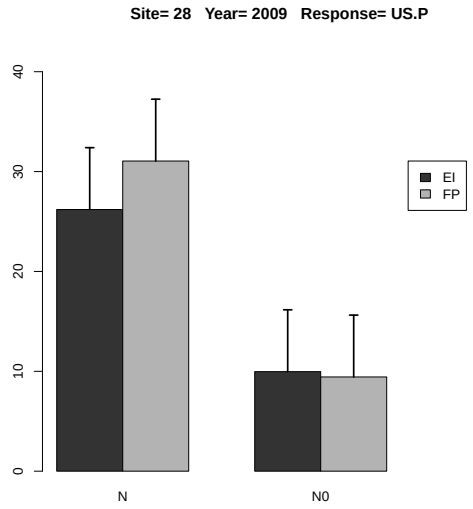

Figure 12.26: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.161	3.049	9.000	-0.710	-9.059	4.736	0.496
B N-N0	18.928	3.049	9.000	6.210	12.030	25.825	0.000
A:B EI N- FP N	-4.856	4.312	9.000	-1.130	-14.610	4.899	0.289
A:B EI N- EI N0	16.234	4.312	9.000	3.760	6.479	25.988	0.004
A:B EI N- FP N0	16.766	4.312	9.000	3.890	7.012	26.521	0.004
A:B FP N- EI N0	21.089	4.312	9.000	4.890	11.335	30.844	0.001
A:B FP N- FP N0	21.622	4.312	9.000	5.010	11.868	31.377	0.001
A:B EI N0- FP N0	0.533	4.312	9.000	0.120	-9.222	10.287	0.904

Table 12.65: Estimate of contrast in two-way ANOVA for variable US.P at site 28 in year 2009 .

12.1.14 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	12.938
2	2	EI	N0	7.480
3	3	EI	N0	9.165
4	4	EI	N0	10.886
5	1	EI	N	29.758
6	2	EI	N	33.186
7	3	EI	N	19.244
8	4	EI	N	26.492
9	1	FP	N0	7.549
10	2	FP	N0	13.946
11	3	FP	N0	11.886
12	4	FP	N0	5.874
13	1	FP	N	24.287
14	2	FP	N	37.621
15	3	FP	N	23.472
16	4	FP	N	43.539

Table 12.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	27.170	3.264	8.324	0.007
A FP	32.230	3.264	9.874	0.005
A EI-FP	-5.060	4.616	-1.096	0.567

Table 12.67: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 28 in year 2009 .

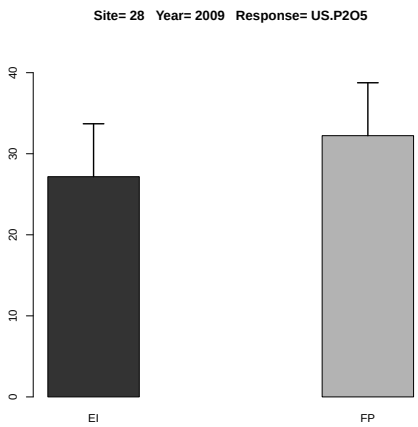

Figure 12.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	22.621	22.621	0.600	9.000	0.459
B	1.000	1557.773	1557.773	41.297	9.000	0.000
A:B	1.000	28.764	28.764	0.763	9.000	0.405

Table 12.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.644	2.213	8.700	8.430	13.609	23.679	0.000
2	FP		21.022	2.213	8.700	9.500	15.987	26.057	0.000
3		N	29.700	2.213	8.700	13.420	24.665	34.735	0.000
4		N0	9.966	2.213	8.700	4.500	4.931	15.001	0.002
5	EI	N	27.170	3.100	12.000	8.760	20.415	33.925	0.000
6	FP	N	32.230	3.100	12.000	10.400	25.474	38.985	0.000
7	EI	N0	10.117	3.100	12.000	3.260	3.362	16.873	0.007
8	FP	N0	9.814	3.100	12.000	3.170	3.058	16.569	0.008

Table 12.69: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.378	3.071	9.000	-0.770	-9.325	4.569	0.459
B N-N0	19.734	3.071	9.000	6.430	12.787	26.681	0.000
A:B EI N- FP N	-5.060	4.343	9.000	-1.170	-14.884	4.765	0.274
A:B EI N- EI N0	17.053	4.343	9.000	3.930	7.228	26.877	0.004
A:B EI N- FP N0	17.356	4.343	9.000	4.000	7.532	27.180	0.003
A:B FP N- EI N0	22.112	4.343	9.000	5.090	12.288	31.937	0.001
A:B FP N- FP N0	22.416	4.343	9.000	5.160	12.592	32.240	0.001
A:B EI N0- FP N0	0.304	4.343	9.000	0.070	-9.521	10.128	0.946

Table 12.70: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 28 in year 2009 .

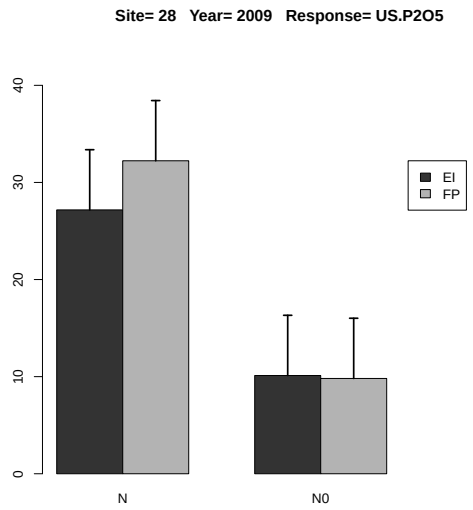

Figure 12.28: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.15 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	47.059
2	2	EI	N0	17.392
3	3	EI	N0	62.821
4	4	EI	N0	39.949
5	1	EI	N	203.633
6	2	EI	N	142.839
7	3	EI	N	93.092
8	4	EI	N	134.449
9	1	FP	N0	23.450
10	2	FP	N0	40.426
11	3	FP	N0	44.530
12	4	FP	N0	20.738
13	1	FP	N	114.910
14	2	FP	N	170.533
15	3	FP	N	123.677
16	4	FP	N	193.957

Table 12.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	143.503	23.188	6.189	0.017
A FP	150.769	23.188	6.502	0.014
A EI-FP	-7.266	32.792	-0.222	0.972

Table 12.72: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 28 in year 2009 .

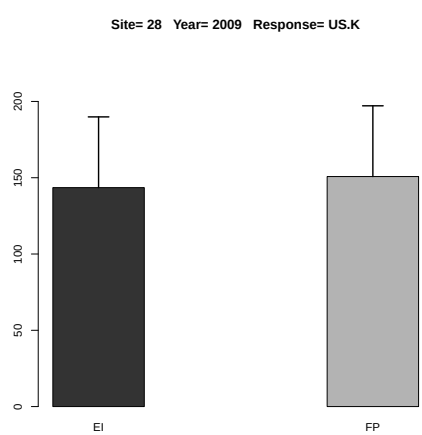

Figure 12.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.078	5.078	0.005	12.000	0.944
B	1.000	48479.937	48479.937	48.435	12.000	0.000
A:B	1.000	281.746	281.746	0.281	12.000	0.605

Table 12.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		92.654	11.186	12.000	8.280	68.283	117.025	0.000
2	FP		91.528	11.186	12.000	8.180	67.156	115.899	0.000
3		N	147.136	11.186	12.000	13.150	122.765	171.507	0.000
4		N0	37.045	11.186	12.000	3.310	12.674	61.417	0.006
5	EI	N	143.503	15.819	12.000	9.070	109.037	177.969	0.000
6	FP	N	150.769	15.819	12.000	9.530	116.303	185.235	0.000
7	EI	N0	41.805	15.819	12.000	2.640	7.339	76.271	0.021
8	FP	N0	32.286	15.819	12.000	2.040	-2.180	66.752	0.064

Table 12.74: Estimate of treatment means in tow-way ANOVA for variable US.K at site 28 in year 2009 .

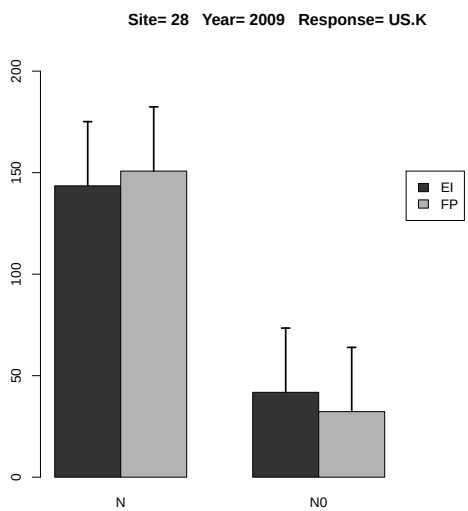

Figure 12.30: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.127	15.819	12.000	0.070	-33.339	35.593	0.944
B N-N0	110.091	15.819	12.000	6.960	75.625	144.557	0.000
A:B EI N- FP N	-7.266	22.371	12.000	-0.320	-56.008	41.476	0.751
A:B EI N- EI N0	101.698	22.371	12.000	4.550	52.956	150.440	0.001
A:B EI N- FP N0	111.218	22.371	12.000	4.970	62.475	159.960	0.000
A:B FP N- EI N0	108.964	22.371	12.000	4.870	60.222	157.706	0.000
A:B FP N- FP N0	118.483	22.371	12.000	5.300	69.741	167.226	0.000
A:B EI N0- FP N0	9.519	22.371	12.000	0.430	-39.223	58.262	0.678

Table 12.75: Estimate of contrast in two-way ANOVA for variable US.K at site 28 in year 2009 .

12.1.16 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	47.782
2	2	EI	N0	17.832
3	3	EI	N0	63.595
4	4	EI	N0	40.759
5	1	EI	N	204.901
6	2	EI	N	144.828
7	3	EI	N	95.110
8	4	EI	N	136.847
9	1	FP	N0	24.239
10	2	FP	N0	41.455
11	3	FP	N0	45.231
12	4	FP	N0	21.283
13	1	FP	N	115.473
14	2	FP	N	173.983
15	3	FP	N	125.219
16	4	FP	N	196.719

Table 12.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	145.422	23.379	6.220	0.016
A FP	152.848	23.379	6.538	0.014
A EI-FP	-7.427	33.063	-0.225	0.971

Table 12.77: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 28 in year 2009 .

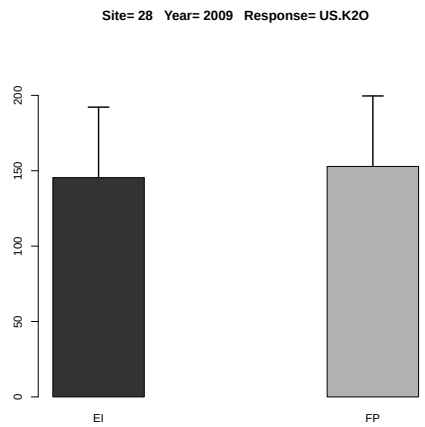

Figure 12.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4.055	4.055	0.004	12.000	0.951
B	1.000	49606.845	49606.845	48.817	12.000	0.000
A:B	1.000	284.508	284.508	0.280	12.000	0.606

Table 12.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		93.957	11.270	12.000	8.340	69.401	118.513	0.000
2	FP		92.950	11.270	12.000	8.250	68.394	117.506	0.000
3		N	149.135	11.270	12.000	13.230	124.579	173.691	0.000
4		N0	37.772	11.270	12.000	3.350	13.216	62.328	0.006
5	EI	N	145.422	15.939	12.000	9.120	110.694	180.149	0.000
6	FP	N	152.848	15.939	12.000	9.590	118.121	187.576	0.000
7	EI	N0	42.492	15.939	12.000	2.670	7.765	77.220	0.021
8	FP	N0	33.052	15.939	12.000	2.070	-1.676	67.779	0.060

Table 12.79: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.007	15.939	12.000	0.060	-33.721	35.734	0.951
B N-N0	111.363	15.939	12.000	6.990	76.635	146.090	0.000
A:B EI N- FP N	-7.427	22.541	12.000	-0.330	-56.539	41.685	0.748
A:B EI N- EI N0	102.929	22.541	12.000	4.570	53.817	152.041	0.001
A:B EI N- FP N0	112.370	22.541	12.000	4.990	63.258	161.482	0.000
A:B FP N- EI N0	110.356	22.541	12.000	4.900	61.244	159.468	0.000
A:B FP N- FP N0	119.797	22.541	12.000	5.310	70.685	168.909	0.000
A:B EI N0- FP N0	9.441	22.541	12.000	0.420	-39.672	58.553	0.683

Table 12.80: Estimate of contrast in two-way ANOVA for variable US.K2O at site 28 in year 2009 .

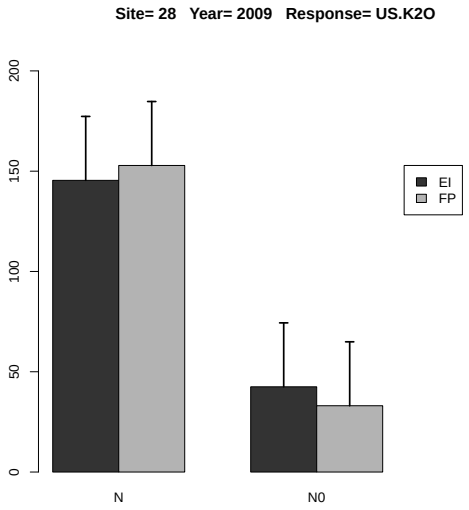

Figure 12.32: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.17 Response Variable US.Mg

	rep	A	B	y
1	1	EI	N0	11.365
2	2	EI	N0	9.030
3	3	EI	N0	8.962
4	4	EI	N0	12.047
5	1	EI	N	21.031
6	2	EI	N	24.775
7	3	EI	N	15.194
8	4	EI	N	18.168
9	1	FP	N0	9.540
10	2	FP	N0	11.977
11	3	FP	N0	11.868
12	4	FP	N0	7.332
13	1	FP	N	18.749
14	2	FP	N	27.030
15	3	FP	N	17.052
16	4	FP	N	45.533

Table 12.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	19.792	4.785	4.136	0.049
A FP	27.091	4.785	5.662	0.021
A EI-FP	-7.299	6.767	-1.079	0.576

Table 12.82: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 28 in year 2009 .

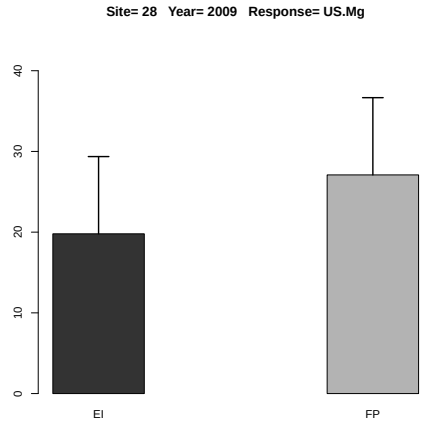

Figure 12.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	50.801	50.801	1.046	12.000	0.327
B	1.000	694.473	694.473	14.300	12.000	0.003
A:B	1.000	55.811	55.811	1.149	12.000	0.305

Table 12.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.072	2.464	12.000	6.120	9.703	20.440	0.000
2	FP		18.635	2.464	12.000	7.560	13.267	24.004	0.000
3		N	23.442	2.464	12.000	9.510	18.073	28.810	0.000
4		N0	10.265	2.464	12.000	4.170	4.897	15.634	0.001
5	EI	N	19.792	3.485	12.000	5.680	12.200	27.384	0.000
6	FP	N	27.091	3.485	12.000	7.770	19.499	34.683	0.000
7	EI	N0	10.351	3.485	12.000	2.970	2.759	17.943	0.012
8	FP	N0	10.180	3.485	12.000	2.920	2.587	17.771	0.013

Table 12.84: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 28 in year 2009 .

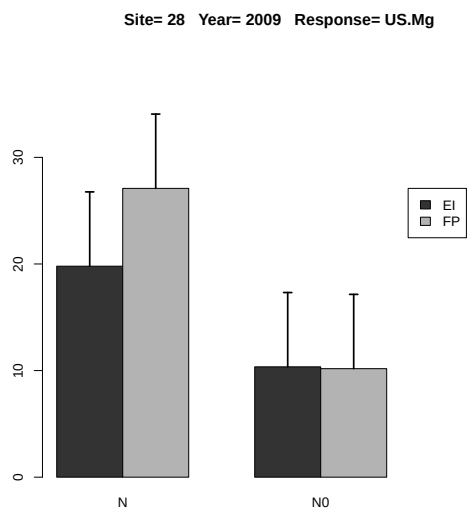

Figure 12.34: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.564	3.485	12.000	-1.020	-11.156	4.028	0.327
B N-N0	13.176	3.485	12.000	3.780	5.584	20.768	0.003
A:B EI N- FP N	-7.299	4.928	12.000	-1.480	-18.036	3.438	0.164
A:B EI N- EI N0	9.441	4.928	12.000	1.920	-1.296	20.178	0.080
A:B EI N- FP N0	9.613	4.928	12.000	1.950	-1.124	20.349	0.075
A:B FP N- EI N0	16.740	4.928	12.000	3.400	6.003	27.477	0.005
A:B FP N- FP N0	16.912	4.928	12.000	3.430	6.175	27.648	0.005
A:B EI N0- FP N0	0.172	4.928	12.000	0.030	-10.565	10.908	0.973

Table 12.85: Estimate of contrast in two-way ANOVA for variable US.Mg at site 28 in year 2009 .

12.1.18 Response Variable US.S

	rep	A	B	y
1	1	EI	N0	10.200
2	2	EI	N0	7.413
3	3	EI	N0	11.408
4	4	EI	N0	8.915
5	1	EI	N	23.258
6	2	EI	N	24.329
7	3	EI	N	15.465
8	4	EI	N	19.465
9	1	FP	N0	7.009
10	2	FP	N0	12.449
11	3	FP	N0	8.703
12	4	FP	N0	5.556
13	1	FP	N	20.628
14	2	FP	N	29.867
15	3	FP	N	17.507
16	4	FP	N	46.135

Table 12.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	20.629	4.578	4.506	0.039
A FP	28.534	4.578	6.232	0.016
A EI-FP	-7.905	6.475	-1.221	0.509

Table 12.87: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 28 in year 2009 .

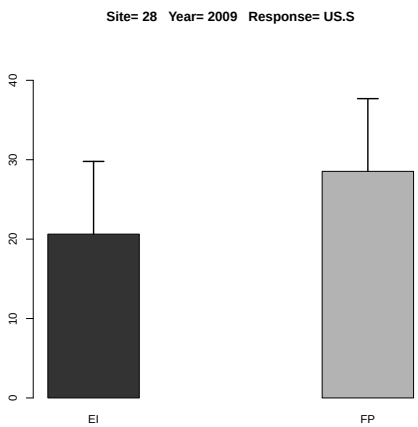

Figure 12.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	46.920	46.920	0.971	12.000	0.344
B	1.000	976.586	976.586	20.217	12.000	0.001
A:B	1.000	80.272	80.272	1.662	12.000	0.222

Table 12.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.057	2.457	12.000	6.130	9.703	20.410	0.000
2	FP		18.482	2.457	12.000	7.520	13.128	23.835	0.000
3		N	24.582	2.457	12.000	10.000	19.228	29.936	0.000
4		N0	8.957	2.457	12.000	3.640	3.603	14.310	0.003
5	EI	N	20.629	3.475	12.000	5.940	13.058	28.201	0.000
6	FP	N	28.534	3.475	12.000	8.210	20.962	36.106	0.000
7	EI	N0	9.484	3.475	12.000	2.730	1.912	17.055	0.018
8	FP	N0	8.429	3.475	12.000	2.430	0.858	16.001	0.032

Table 12.89: Estimate of treatment means in tow-way ANOVA for variable US.S at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.425	3.475	12.000	-0.990	-10.996	4.147	0.344
B N-N0	15.625	3.475	12.000	4.500	8.054	23.197	0.001
A:B EI N- FP N	-7.905	4.915	12.000	-1.610	-18.613	2.803	0.134
A:B EI N- EI N0	11.145	4.915	12.000	2.270	0.438	21.853	0.043
A:B EI N- FP N0	12.200	4.915	12.000	2.480	1.492	22.908	0.029
A:B FP N- EI N0	19.050	4.915	12.000	3.880	8.342	29.758	0.002
A:B FP N- FP N0	20.105	4.915	12.000	4.090	9.397	30.813	0.002
A:B EI N0- FP N0	1.055	4.915	12.000	0.210	-9.653	11.763	0.834

Table 12.90: Estimate of contrast in two-way ANOVA for variable US.S at site 28 in year 2009 .

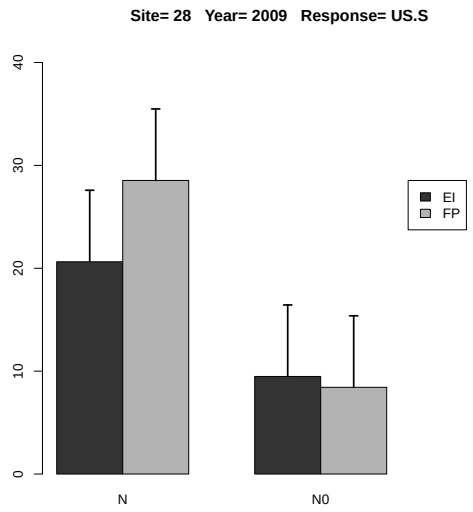

Figure 12.36: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.19 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	90.784
2	2	EI	N0	35.105
3	3	EI	N0	55.524
4	4	EI	N0	37.441
5	1	EI	N	245.803
6	2	EI	N	284.417
7	3	EI	N	188.442
8	4	EI	N	203.961
9	1	FP	N0	42.075
10	2	FP	N0	74.647
11	3	FP	N0	42.590
12	4	FP	N0	21.834
13	1	FP	N	255.612
14	2	FP	N	280.011
15	3	FP	N	193.350
16	4	FP	N	311.194

Table 12.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	230.656	18.467	12.490	0.002
A FP	260.042	18.467	14.082	0.001
A EI-FP	-29.386	26.116	-1.125	0.553

Table 12.92: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 28 in year 2009 .

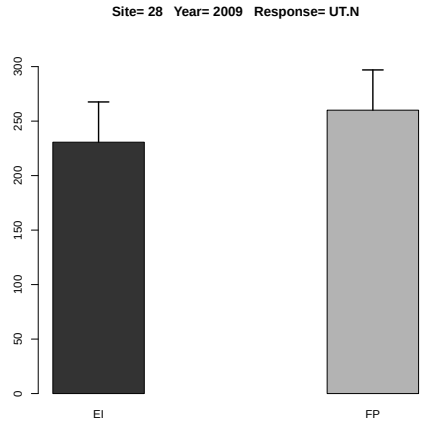

Figure 12.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	398.368	398.368	0.321	9.000	0.585
B	1.000	152644.458	152644.458	123.108	9.000	0.000
A:B	1.000	1506.430	1506.430	1.215	9.000	0.299

Table 12.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		142.685	13.748	7.400	10.380	110.548	174.821	0.000
2	FP		152.664	13.748	7.400	11.100	120.528	184.800	0.000
3		N	245.349	13.748	7.400	17.850	213.212	277.485	0.000
4		N0	50.000	13.748	7.400	3.640	17.863	82.136	0.007
5	EI	N	230.656	18.547	11.700	12.440	190.114	271.198	0.000
6	FP	N	260.042	18.547	11.700	14.020	219.500	300.584	0.000
7	EI	N0	54.713	18.547	11.700	2.950	14.171	95.255	0.012
8	FP	N0	45.286	18.547	11.700	2.440	4.745	85.829	0.032

Table 12.94: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 28 in year 2009 .

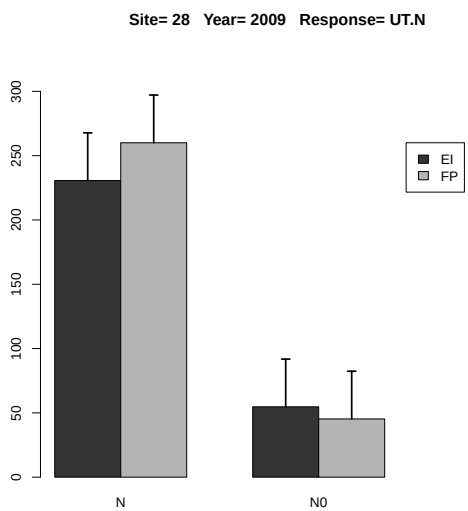

Figure 12.38: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-9.980	17.606	9.000	-0.570	-49.808	29.849	0.585
B N-N0	195.349	17.606	9.000	11.100	155.520	235.177	0.000
A:B EI N- FP N	-29.386	24.899	9.000	-1.180	-85.712	26.940	0.268
A:B EI N- EI N0	175.942	24.899	9.000	7.070	119.617	232.268	0.000
A:B EI N- FP N0	185.369	24.899	9.000	7.440	129.044	241.695	0.000
A:B FP N- EI N0	205.328	24.899	9.000	8.250	149.003	261.654	0.000
A:B FP N- FP N0	214.755	24.899	9.000	8.630	158.430	271.081	0.000
A:B EI N0- FP N0	9.427	24.899	9.000	0.380	-46.899	65.752	0.714

Table 12.95: Estimate of contrast in two-way ANOVA for variable UT.N at site 28 in year 2009 .

12.1.20 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	34.676
2	2	EI	N0	15.191
3	3	EI	N0	22.682
4	4	EI	N0	22.561
5	1	EI	N	58.502
6	2	EI	N	76.748
7	3	EI	N	51.675
8	4	EI	N	56.251
9	1	FP	N0	18.413
10	2	FP	N0	32.692
11	3	FP	N0	24.634
12	4	FP	N0	11.883
13	1	FP	N	55.751
14	2	FP	N	73.841
15	3	FP	N	49.157
16	4	FP	N	71.175

Table 12.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	60.794	3.121	19.481	0.000
A FP	62.481	3.121	20.022	0.000
A EI-FP	-1.687	4.413	-0.382	0.921

Table 12.97: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 28 in year 2009 .

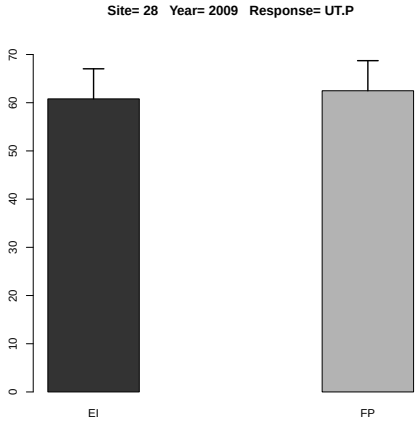

Figure 12.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.034	0.034	0.000	9.000	0.986
B	1.000	6020.596	6020.596	61.336	9.000	0.000
A:B	1.000	12.666	12.666	0.129	9.000	0.728

Table 12.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		42.286	3.634	8.400	11.640	33.970	50.602	0.000
2	FP		42.193	3.634	8.400	11.610	33.877	50.509	0.000
3		N	61.638	3.634	8.400	16.960	53.322	69.954	0.000
4		N0	22.841	3.634	8.400	6.290	14.526	31.157	0.000
5	EI	N	60.794	5.047	12.000	12.050	49.793	71.796	0.000
6	FP	N	62.481	5.047	12.000	12.380	51.480	73.483	0.000
7	EI	N0	23.777	5.047	12.000	4.710	12.776	34.779	0.000
8	FP	N0	21.905	5.047	12.000	4.340	10.904	32.907	0.001

Table 12.99: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.092	4.954	9.000	0.020	-11.114	11.299	0.986
B N-N0	38.796	4.954	9.000	7.830	27.590	50.002	0.000
A:B EI N- FP N	-1.687	7.006	9.000	-0.240	-17.535	14.161	0.815
A:B EI N- EI N0	37.017	7.006	9.000	5.280	21.169	52.865	0.000
A:B EI N- FP N0	38.889	7.006	9.000	5.550	23.041	54.737	0.000
A:B FP N- EI N0	38.704	7.006	9.000	5.520	22.856	54.552	0.000
A:B FP N- FP N0	40.576	7.006	9.000	5.790	24.728	56.424	0.000
A:B EI N0- FP N0	1.872	7.006	9.000	0.270	-13.976	17.720	0.795

Table 12.100: Estimate of contrast in two-way ANOVA for variable UT.P at site 28 in year 2009 .

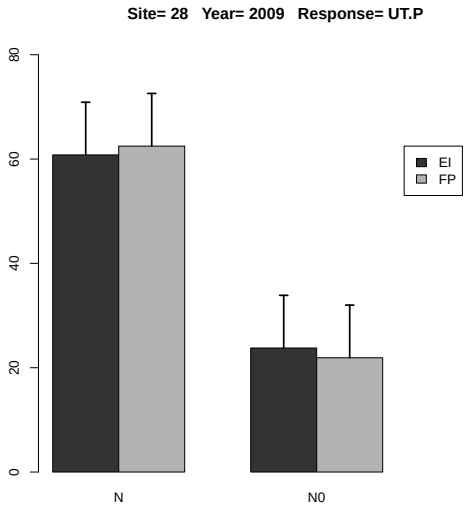

Figure 12.40: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.21 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	34.844
2	2	EI	N0	15.298
3	3	EI	N0	22.885
4	4	EI	N0	22.685
5	1	EI	N	59.460
6	2	EI	N	77.165
7	3	EI	N	52.985
8	4	EI	N	57.446
9	1	FP	N0	19.160
10	2	FP	N0	33.033
11	3	FP	N0	24.949
12	4	FP	N0	11.999
13	1	FP	N	55.893
14	2	FP	N	75.793
15	3	FP	N	50.695
16	4	FP	N	72.240

Table 12.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	61.764	3.058	20.198	0.000
A FP	63.655	3.058	20.817	0.001
A EI-FP	-1.891	4.324	-0.437	0.898

Table 12.102: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 28 in year 2009 .

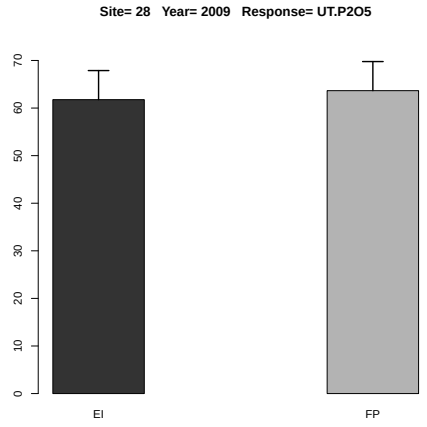

Figure 12.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.062	0.062	0.001	9.000	0.981
B	1.000	6273.509	6273.509	63.698	9.000	0.000
A:B	1.000	12.487	12.487	0.127	9.000	0.730

Table 12.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		42.846	3.626	8.400	11.820	34.558	51.134	0.000
2	FP		42.970	3.626	8.400	11.850	34.683	51.258	0.000
3		N	62.709	3.626	8.400	17.300	54.422	70.997	0.000
4		N0	23.107	3.626	8.400	6.370	14.819	31.394	0.000
5	EI	N	61.764	5.045	12.000	12.240	50.767	72.761	0.000
6	FP	N	63.655	5.045	12.000	12.620	52.658	74.652	0.000
7	EI	N0	23.928	5.045	12.000	4.740	12.931	34.925	0.000
8	FP	N0	22.285	5.045	12.000	4.420	11.288	33.283	0.001

Table 12.104: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 28 in year 2009 .

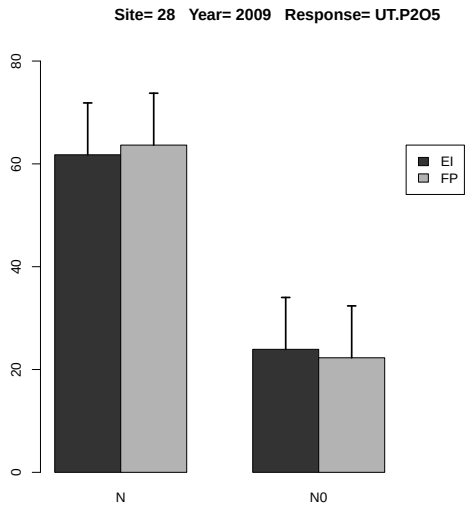

Figure 12.42: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.124	4.962	9.000	-0.030	-11.349	11.101	0.981
B N-N0	39.603	4.962	9.000	7.980	28.378	50.828	0.000
A:B EI N- FP N	-1.891	7.017	9.000	-0.270	-17.766	13.983	0.794
A:B EI N- EI N0	37.836	7.017	9.000	5.390	21.961	53.710	0.000
A:B EI N- FP N0	39.478	7.017	9.000	5.630	23.604	55.353	0.000
A:B FP N- EI N0	39.727	7.017	9.000	5.660	23.852	55.602	0.000
A:B FP N- FP N0	41.370	7.017	9.000	5.900	25.495	57.244	0.000
A:B EI N0- FP N0	1.643	7.017	9.000	0.230	-14.232	17.517	0.820

Table 12.105: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 28 in year 2009 .

12.1.22 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	65.211
2	2	EI	N0	25.210
3	3	EI	N0	76.933
4	4	EI	N0	49.650
5	1	EI	N	229.238
6	2	EI	N	185.400
7	3	EI	N	121.361
8	4	EI	N	164.519
9	1	FP	N0	33.078
10	2	FP	N0	55.801
11	3	FP	N0	55.163
12	4	FP	N0	25.738
13	1	FP	N	144.175
14	2	FP	N	198.526
15	3	FP	N	148.348
16	4	FP	N	221.106

Table 12.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	175.129	21.703	8.069	0.007
A FP	178.039	21.703	8.203	0.007
A EI-FP	-2.909	30.693	-0.095	0.995

Table 12.107: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 28 in year 2009 .

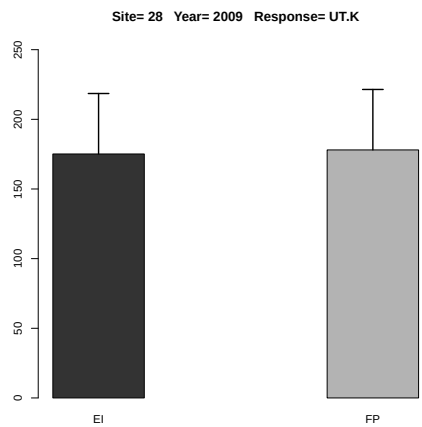

Figure 12.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	79.146	79.146	0.076	12.000	0.788
B	1.000	65777.989	65777.989	62.916	12.000	0.000
A:B	1.000	216.522	216.522	0.207	12.000	0.657

Table 12.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		114.690	11.432	12.000	10.030	89.782	139.598	0.000
2	FP		110.242	11.432	12.000	9.640	85.334	135.150	0.000
3		N	176.584	11.432	12.000	15.450	151.676	201.492	0.000
4		N0	48.348	11.432	12.000	4.230	23.440	73.256	0.001
5	EI	N	175.130	16.167	12.000	10.830	139.905	210.354	0.000
6	FP	N	178.039	16.167	12.000	11.010	142.814	213.263	0.000
7	EI	N0	54.251	16.167	12.000	3.360	19.026	89.475	0.006
8	FP	N0	42.445	16.167	12.000	2.630	7.220	77.670	0.022

Table 12.109: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.448	16.167	12.000	0.280	-30.777	39.673	0.788
B N-N0	128.236	16.167	12.000	7.930	93.011	163.461	0.000
A:B EI N- FP N	-2.909	22.863	12.000	-0.130	-52.724	46.906	0.901
A:B EI N- EI N0	120.879	22.863	12.000	5.290	71.063	170.694	0.000
A:B EI N- FP N0	132.684	22.863	12.000	5.800	82.869	182.500	0.000
A:B FP N- EI N0	123.788	22.863	12.000	5.410	73.973	173.603	0.000
A:B FP N- FP N0	135.593	22.863	12.000	5.930	85.778	185.409	0.000
A:B EI N0- FP N0	11.806	22.863	12.000	0.520	-38.010	61.621	0.615

Table 12.110: Estimate of contrast in two-way ANOVA for variable UT.K at site 28 in year 2009 .

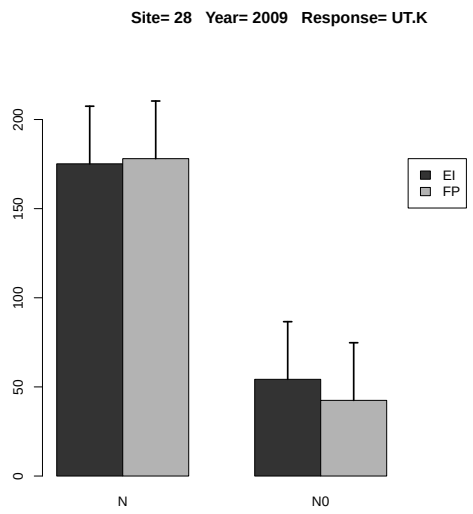

Figure 12.44: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.23 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	65.933
2	2	EI	N0	25.650
3	3	EI	N0	77.707
4	4	EI	N0	50.460
5	1	EI	N	230.506
6	2	EI	N	187.389
7	3	EI	N	123.379
8	4	EI	N	166.917
9	1	FP	N0	33.868
10	2	FP	N0	56.831
11	3	FP	N0	55.864
12	4	FP	N0	26.283
13	1	FP	N	144.738
14	2	FP	N	201.976
15	3	FP	N	149.889
16	4	FP	N	223.868

Table 12.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	177.048	21.868	8.096	0.008
A FP	180.118	21.868	8.236	0.007
A EI-FP	-3.070	30.927	-0.099	0.994

Table 12.112: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 28 in year 2009 .

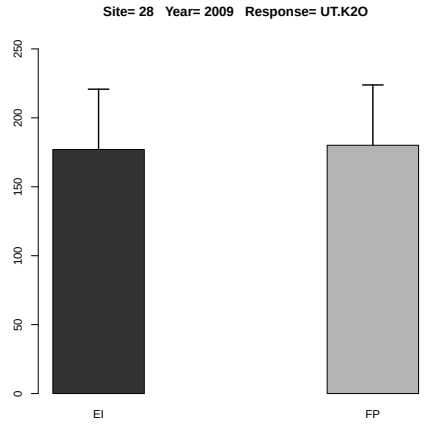

Figure 12.45: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	74.935	74.935	0.071	12.000	0.795
B	1.000	67089.569	67089.569	63.184	12.000	0.000
A:B	1.000	218.945	218.945	0.206	12.000	0.658

Table 12.113: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		115.993	11.521	12.000	10.070	90.891	141.094	0.000
2	FP		111.665	11.521	12.000	9.690	86.563	136.766	0.000
3		N	178.583	11.521	12.000	15.500	153.481	203.684	0.000
4		N0	49.075	11.521	12.000	4.260	23.973	74.176	0.001
5	EI	N	177.048	16.293	12.000	10.870	141.549	212.546	0.000
6	FP	N	180.118	16.293	12.000	11.060	144.619	215.617	0.000
7	EI	N0	54.938	16.293	12.000	3.370	19.439	90.436	0.006
8	FP	N0	43.211	16.293	12.000	2.650	7.713	78.710	0.021

Table 12.114: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 28 in year 2009 .

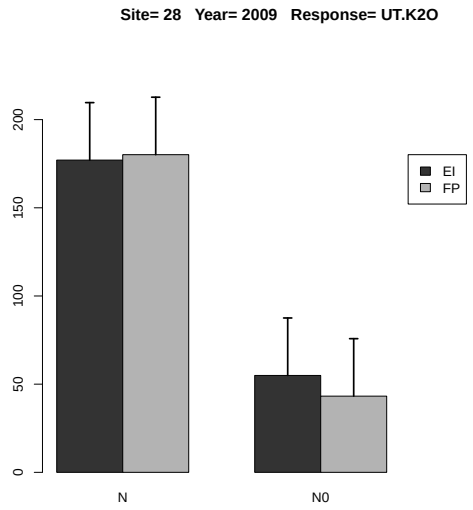

Figure 12.46: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.328	16.293	12.000	0.270	-31.170	39.827	0.795
B N-N0	129.508	16.293	12.000	7.950	94.010	165.007	0.000
A:B EI N- FP N	-3.070	23.041	12.000	-0.130	-53.273	47.133	0.896
A:B EI N- EI N0	122.110	23.041	12.000	5.300	71.907	172.312	0.000
A:B EI N- FP N0	133.837	23.041	12.000	5.810	83.634	184.039	0.000
A:B FP N- EI N0	125.180	23.041	12.000	5.430	74.977	175.383	0.000
A:B FP N- FP N0	136.907	23.041	12.000	5.940	86.704	187.109	0.000
A:B EI N0- FP N0	11.727	23.041	12.000	0.510	-38.476	61.929	0.620

Table 12.115: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 28 in year 2009
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12.1.24 Response Variable UT.Mg

	rep	A	B	y
1	1	EI	N0	21.379
2	2	EI	N0	12.206
3	3	EI	N0	14.058
4	4	EI	N0	16.242
5	1	EI	N	34.346
6	2	EI	N	47.475
7	3	EI	N	28.873
8	4	EI	N	31.434
9	1	FP	N0	13.788
10	2	FP	N0	18.870
11	3	FP	N0	16.729
12	4	FP	N0	9.332
13	1	FP	N	31.626
14	2	FP	N	43.572
15	3	FP	N	28.962
16	4	FP	N	58.720

Table 12.116: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	35.532	5.242	6.778	0.013
A FP	40.720	5.242	7.768	0.009
A EI-FP	-5.188	7.413	-0.700	0.772

Table 12.117: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 28 in year 2009 .

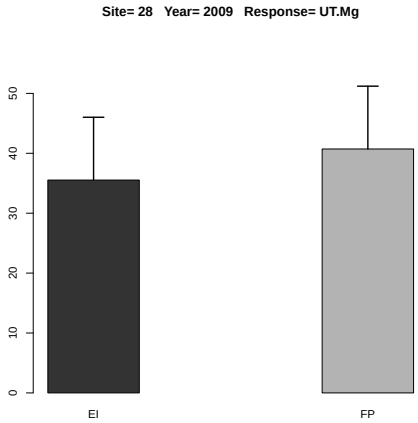

Figure 12.47: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	15.183	15.183	0.213	12.000	0.653
B	1.000	2079.390	2079.390	29.131	12.000	0.000
A:B	1.000	41.987	41.987	0.588	12.000	0.458

Table 12.118: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.752	2.987	12.000	8.620	19.243	32.260	0.000
2	FP		27.700	2.987	12.000	9.270	21.192	34.208	0.000
3		N	38.126	2.987	12.000	12.760	31.618	44.634	0.000
4		N0	15.326	2.987	12.000	5.130	8.817	21.834	0.000
5	EI	N	35.532	4.224	12.000	8.410	26.328	44.736	0.000
6	FP	N	40.720	4.224	12.000	9.640	31.516	49.924	0.000
7	EI	N0	15.971	4.224	12.000	3.780	6.767	25.175	0.003
8	FP	N0	14.680	4.224	12.000	3.480	5.476	23.884	0.005

Table 12.119: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.948	4.224	12.000	-0.460	-11.152	7.256	0.653
B N-N0	22.800	4.224	12.000	5.400	13.596	32.004	0.000
A:B EI N- FP N	-5.188	5.974	12.000	-0.870	-18.205	7.828	0.402
A:B EI N- EI N0	19.560	5.974	12.000	3.270	6.544	32.577	0.007
A:B EI N- FP N0	20.852	5.974	12.000	3.490	7.835	33.868	0.004
A:B FP N- EI N0	24.748	5.974	12.000	4.140	11.732	37.765	0.001
A:B FP N- FP N0	26.040	5.974	12.000	4.360	13.024	39.056	0.001
A:B EI N0- FP N0	1.292	5.974	12.000	0.220	-11.725	14.308	0.833

Table 12.120: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 28 in year 2009 .

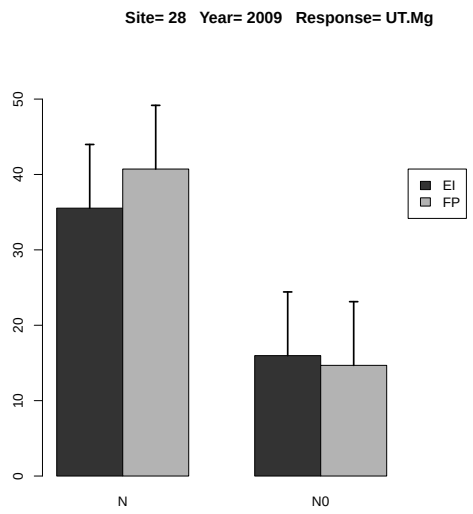

Figure 12.48: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.25 Response Variable UT.S

	rep	A	B	y
1	1	EI	N0	21.466
2	2	EI	N0	11.810
3	3	EI	N0	18.464
4	4	EI	N0	13.635
5	1	EI	N	44.766
6	2	EI	N	51.285
7	3	EI	N	31.879
8	4	EI	N	36.269
9	1	FP	N0	12.106
10	2	FP	N0	22.523
11	3	FP	N0	14.171
12	4	FP	N0	7.931
13	1	FP	N	45.210
14	2	FP	N	57.860
15	3	FP	N	32.819
16	4	FP	N	63.976

Table 12.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	41.050	4.537	9.048	0.006
A FP	49.966	4.537	11.014	0.003
A EI-FP	-8.917	6.416	-1.390	0.437

Table 12.122: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 28 in year 2009 .

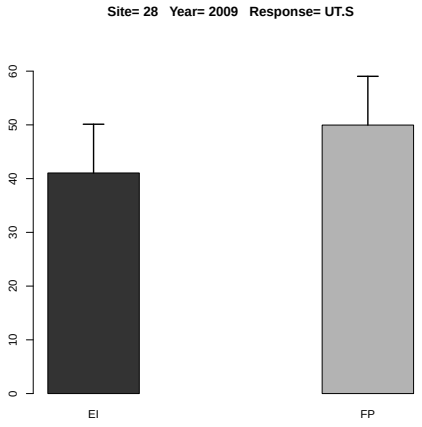

Figure 12.49: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	45.639	45.639	0.583	9.000	0.465
B	1.000	3658.977	3658.977	46.743	9.000	0.000
A:B	1.000	122.712	122.712	1.568	9.000	0.242

Table 12.123: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		28.697	3.236	8.400	8.870	21.297	36.096	0.000
2	FP		32.075	3.236	8.400	9.910	24.675	39.474	0.000
3		N	45.508	3.236	8.400	14.060	38.108	52.908	0.000
4		N0	15.263	3.236	8.400	4.720	7.864	22.663	0.001
5	EI	N	41.050	4.501	12.000	9.120	31.239	50.860	0.000
6	FP	N	49.966	4.501	12.000	11.100	40.156	59.776	0.000
7	EI	N0	16.344	4.501	12.000	3.630	6.534	26.154	0.004
8	FP	N0	14.183	4.501	12.000	3.150	4.373	23.993	0.008

Table 12.124: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 28 in year 2009 .

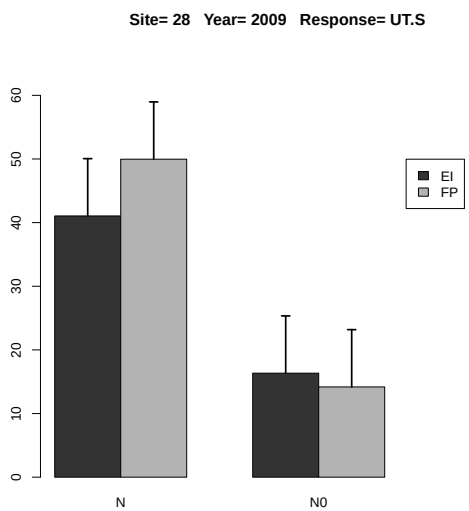

Figure 12.50: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.378	4.424	9.000	-0.760	-13.385	6.630	0.465
B N-N0	30.245	4.424	9.000	6.840	20.237	40.252	0.000
A:B EI N- FP N	-8.917	6.256	9.000	-1.430	-23.069	5.236	0.188
A:B EI N- EI N0	24.706	6.256	9.000	3.950	10.553	38.858	0.003
A:B EI N- FP N0	26.867	6.256	9.000	4.290	12.714	41.019	0.002
A:B FP N- EI N0	33.623	6.256	9.000	5.370	19.470	47.775	0.000
A:B FP N- FP N0	35.783	6.256	9.000	5.720	21.631	49.936	0.000
A:B EI N0- FP N0	2.161	6.256	9.000	0.350	-11.992	16.313	0.738

Table 12.125: Estimate of contrast in two-way ANOVA for variable UT.S at site 28 in year 2009 .

12.1.26 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	2.915
2	2	EI	N0	1.329
3	3	EI	N0	1.592
4	4	EI	N0	1.204
5	1	EI	N	1.353
6	2	EI	N	2.158
7	3	EI	N	2.101
8	4	EI	N	1.517
9	1	FP	N0	1.301
10	2	FP	N0	1.946
11	3	FP	N0	1.409
12	4	FP	N0	0.885
13	1	FP	N	2.060
14	2	FP	N	1.682
15	3	FP	N	1.244
16	4	FP	N	0.663

Table 12.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.782	0.257	6.000	6.950	1.155	2.410	0.000
A FP	1.412	0.257	6.000	5.510	0.785	2.040	0.002
A EI-FP	0.370	0.363	6.000	1.020	-0.517	1.258	0.347

Table 12.127: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 28 in year 2009 .

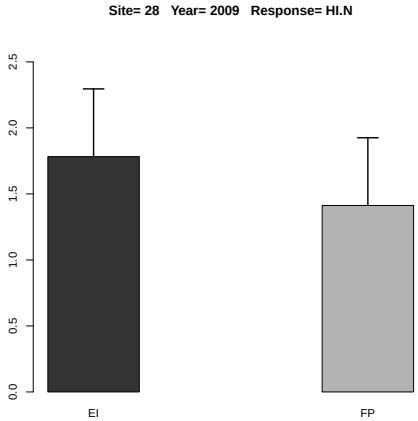

Figure 12.51: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.555	0.555	2.106	8.998	0.181
B	1.000	0.002	0.002	0.009	8.998	0.926
A:B	1.000	0.000	0.000	0.000	8.998	0.993

Table 12.128: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.771	0.225	6.100	7.870	1.223	2.319	0.000
2	FP		1.399	0.225	6.100	6.220	0.851	1.946	0.001
3		N	1.597	0.225	6.100	7.100	1.050	2.145	0.000
4		N0	1.573	0.225	6.100	6.990	1.025	2.120	0.000
5	EI	N	1.782	0.289	10.600	6.170	1.143	2.421	0.000
6	FP	N	1.412	0.289	10.600	4.890	0.773	2.051	0.000
7	EI	N0	1.760	0.289	10.600	6.090	1.121	2.399	0.000
8	FP	N0	1.385	0.289	10.600	4.790	0.746	2.024	0.001

Table 12.129: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.372	0.257	9.000	1.450	-0.208	0.953	0.181
B N-N0	0.025	0.257	9.000	0.100	-0.556	0.605	0.926
A:B EI N- FP N	0.370	0.363	9.000	1.020	-0.451	1.191	0.335
A:B EI N- EI N0	0.022	0.363	9.000	0.060	-0.799	0.843	0.953
A:B EI N- FP N0	0.397	0.363	9.000	1.090	-0.424	1.218	0.302
A:B FP N- EI N0	-0.348	0.363	9.000	-0.960	-1.169	0.473	0.363
A:B FP N- FP N0	0.027	0.363	9.000	0.070	-0.794	0.848	0.942
A:B EI N0- FP N0	0.375	0.363	9.000	1.030	-0.446	1.196	0.329

Table 12.130: Estimate of contrast in two-way ANOVA for variable HI.N at site 28 in year 2009 .

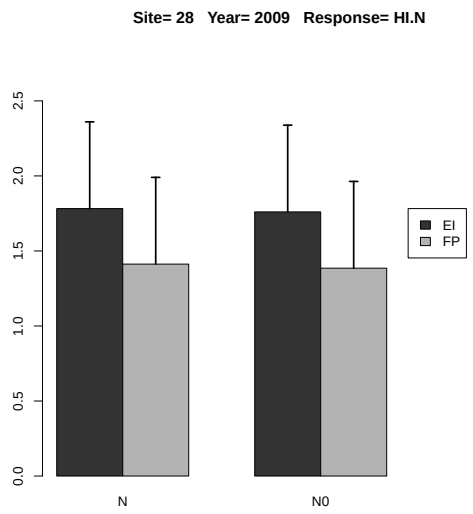

Figure 12.52: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.27 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	1.716
2	2	EI	N0	1.060
3	3	EI	N0	1.531
4	4	EI	N0	1.096
5	1	EI	N	1.031
6	2	EI	N	1.342
7	3	EI	N	1.881
8	4	EI	N	1.224
9	1	FP	N0	1.707
10	2	FP	N0	1.403
11	3	FP	N0	1.129
12	4	FP	N0	1.064
13	1	FP	N	1.309
14	2	FP	N	1.070
15	3	FP	N	1.241
16	4	FP	N	0.676

Table 12.131: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.370	0.163	5.800	8.390	0.966	1.773	0.000
A FP	1.074	0.163	5.800	6.580	0.670	1.478	0.001
A EI-FP	0.296	0.206	3.000	1.430	-0.362	0.953	0.248

Table 12.132: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 28 in year 2009 .

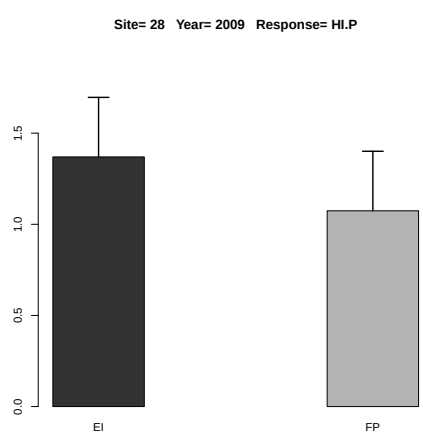

Figure 12.53: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.082	0.082	1.133	2.999	0.365
B	1.000	0.054	0.054	0.753	5.998	0.419
A:B	1.000	0.073	0.073	1.016	5.998	0.352

Table 12.133: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.360	0.128	5.500	10.660	1.041	1.679	0.000
2	FP		1.200	0.128	5.500	9.400	0.880	1.519	0.000
3		N	1.222	0.123	5.600	9.940	0.915	1.528	0.000
4		N0	1.338	0.123	5.600	10.890	1.032	1.645	0.000
5	EI	N	1.370	0.159	10.400	8.610	1.017	1.722	0.000
6	FP	N	1.074	0.159	10.400	6.750	0.721	1.427	0.000
7	EI	N0	1.351	0.159	10.400	8.500	0.998	1.703	0.000
8	FP	N0	1.326	0.159	10.400	8.340	0.973	1.678	0.000

Table 12.134: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 28 in year 2009 .

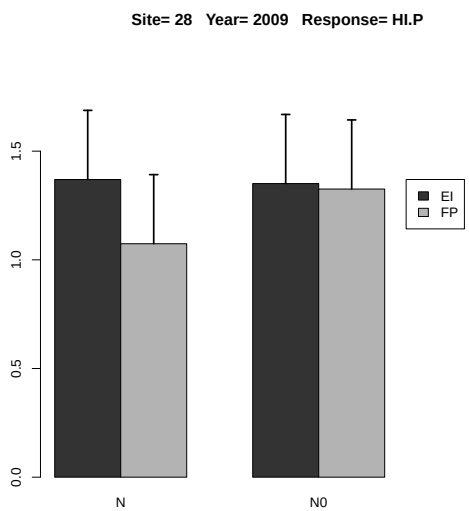

Figure 12.54: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.160	0.151	3.000	1.060	-0.319	0.640	0.365
B N-N0	-0.117	0.134	6.000	-0.870	-0.445	0.212	0.419
A:B EI N- FP N	0.296	0.202	7.300	1.470	-0.177	0.768	0.184
A:B EI N- EI N0	0.019	0.190	6.000	0.100	-0.446	0.483	0.924
A:B EI N- FP N0	0.044	0.202	7.300	0.220	-0.429	0.516	0.834
A:B FP N- EI N0	-0.277	0.202	7.300	-1.370	-0.749	0.196	0.210
A:B FP N- FP N0	-0.252	0.190	6.000	-1.330	-0.716	0.213	0.233
A:B EI N0- FP N0	0.025	0.202	7.300	0.120	-0.448	0.498	0.904

Table 12.135: Estimate of contrast in two-way ANOVA for variable HI.P at site 28 in year 2009 .

12.1.28 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.386
2	2	EI	N0	0.449
3	3	EI	N0	0.225
4	4	EI	N0	0.243
5	1	EI	N	0.126
6	2	EI	N	0.298
7	3	EI	N	0.304
8	4	EI	N	0.224
9	1	FP	N0	0.411
10	2	FP	N0	0.380
11	3	FP	N0	0.239
12	4	FP	N0	0.241
13	1	FP	N	0.255
14	2	FP	N	0.164
15	3	FP	N	0.199
16	4	FP	N	0.140

Table 12.136: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.238	0.034	6.000	6.940	0.154	0.322	0.000
A FP	0.190	0.034	6.000	5.530	0.106	0.273	0.002
A EI-FP	0.048	0.048	6.000	0.990	-0.070	0.167	0.358

Table 12.137: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 28 in year 2009 .

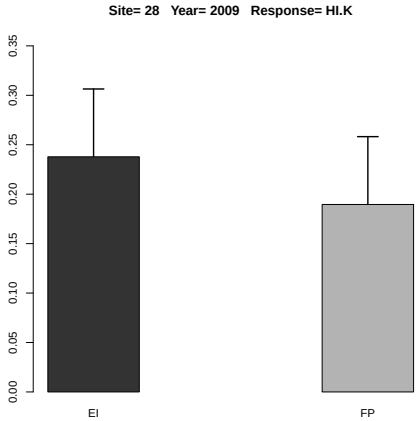

Figure 12.55: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.003	0.003	0.484	8.989	0.504
B	1.000	0.047	0.047	7.168	8.989	0.025
A:B	1.000	0.002	0.002	0.249	8.989	0.630

Table 12.138: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.282	0.032	7.100	8.750	0.206	0.357	0.000
2	FP		0.254	0.032	7.100	7.880	0.178	0.330	0.000
3		N	0.214	0.032	7.100	6.640	0.138	0.289	0.000
4		N0	0.322	0.032	7.100	9.990	0.246	0.398	0.000
5	EI	N	0.238	0.043	11.500	5.530	0.144	0.332	0.000
6	FP	N	0.190	0.043	11.500	4.410	0.095	0.284	0.001
7	EI	N0	0.326	0.043	11.500	7.570	0.232	0.420	0.000
8	FP	N0	0.318	0.043	11.500	7.390	0.224	0.412	0.000

Table 12.139: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.028	0.040	9.000	0.700	-0.063	0.119	0.504
B N-N0	-0.108	0.040	9.000	-2.680	-0.199	-0.017	0.025
A:B EI N- FP N	0.048	0.057	9.000	0.840	-0.081	0.177	0.420
A:B EI N- EI N0	-0.088	0.057	9.000	-1.540	-0.217	0.041	0.158
A:B EI N- FP N0	-0.080	0.057	9.000	-1.400	-0.209	0.049	0.195
A:B FP N- EI N0	-0.136	0.057	9.000	-2.390	-0.265	-0.007	0.041
A:B FP N- FP N0	-0.128	0.057	9.000	-2.250	-0.257	0.001	0.051
A:B EI N0- FP N0	0.008	0.057	9.000	0.140	-0.121	0.137	0.892

Table 12.140: Estimate of contrast in two-way ANOVA for variable HI.K at site 28 in year 2009 .

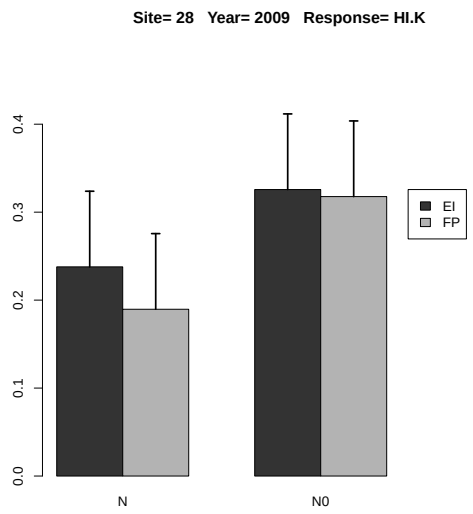

Figure 12.56: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.29 Response Variable HI.Mg

	rep	A	B	y
1	1	EI	N0	0.881
2	2	EI	N0	0.352
3	3	EI	N0	0.569
4	4	EI	N0	0.348
5	1	EI	N	0.633
6	2	EI	N	0.916
7	3	EI	N	0.900
8	4	EI	N	0.730
9	1	FP	N0	0.445
10	2	FP	N0	0.575
11	3	FP	N0	0.410
12	4	FP	N0	0.273
13	1	FP	N	0.687
14	2	FP	N	0.612
15	3	FP	N	0.698
16	4	FP	N	0.290

Table 12.141: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.795	0.083	5.700	9.540	0.589	1.001	0.000
A FP	0.572	0.083	5.700	6.860	0.365	0.778	0.001
A EI-FP	0.223	0.104	3.000	2.140	-0.109	0.556	0.122

Table 12.142: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 28 in year 2009 .

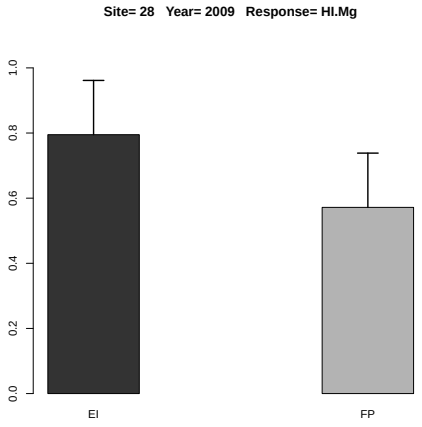

Figure 12.57: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.112	0.112	4.212	8.994	0.070
B	1.000	0.163	0.163	6.112	8.995	0.035
A:B	1.000	0.012	0.012	0.468	8.995	0.511

Table 12.143: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.666	0.071	6.200	9.370	0.493	0.839	0.000
2	FP		0.499	0.071	6.200	7.010	0.326	0.672	0.000
3		N	0.683	0.071	6.200	9.610	0.510	0.856	0.000
4		N0	0.482	0.071	6.200	6.770	0.309	0.654	0.000
5	EI	N	0.795	0.092	10.600	8.680	0.593	0.997	0.000
6	FP	N	0.572	0.092	10.600	6.240	0.369	0.774	0.000
7	EI	N0	0.537	0.092	10.600	5.870	0.335	0.740	0.000
8	FP	N0	0.426	0.092	10.600	4.650	0.223	0.628	0.001

Table 12.144: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 28 in year 2009 .

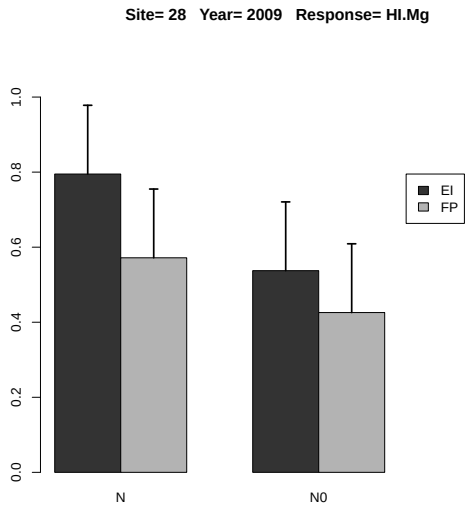

Figure 12.58: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.168	0.082	9.000	2.050	-0.017	0.352	0.070
B N-N0	0.202	0.082	9.000	2.470	0.017	0.386	0.035
A:B EI N- FP N	0.223	0.115	9.000	1.930	-0.038	0.484	0.085
A:B EI N- EI N0	0.258	0.115	9.000	2.230	-0.004	0.518	0.053
A:B EI N- FP N0	0.369	0.115	9.000	3.200	0.108	0.630	0.011
A:B FP N- EI N0	0.034	0.115	9.000	0.300	-0.227	0.295	0.773
A:B FP N- FP N0	0.146	0.115	9.000	1.260	-0.115	0.407	0.238
A:B EI N0- FP N0	0.112	0.115	9.000	0.970	-0.149	0.373	0.358

Table 12.145: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 28 in year 2009 .

12.1.30 Response Variable HI.S

	rep	A	B	y
1	1	EI	N0	1.105
2	2	EI	N0	0.593
3	3	EI	N0	0.619
4	4	EI	N0	0.529
5	1	EI	N	0.925
6	2	EI	N	1.108
7	3	EI	N	1.061
8	4	EI	N	0.863
9	1	FP	N0	0.727
10	2	FP	N0	0.809
11	3	FP	N0	0.628
12	4	FP	N0	0.427
13	1	FP	N	1.192
14	2	FP	N	0.937
15	3	FP	N	0.875
16	4	FP	N	0.387

Table 12.146: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.989	0.126	5.600	7.870	0.677	1.302	0.000
A FP	0.848	0.126	5.600	6.750	0.535	1.160	0.001
A EI-FP	0.142	0.153	3.000	0.920	-0.346	0.630	0.423

Table 12.147: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 28 in year 2009 .

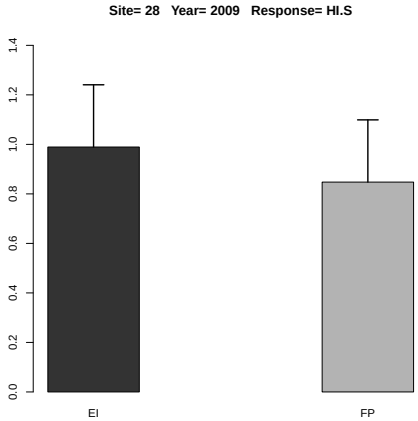

Figure 12.59: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.042	0.042	1.410	8.995	0.266
B	1.000	0.228	0.228	7.640	8.995	0.022
A:B	1.000	0.006	0.006	0.206	8.995	0.661

Table 12.148: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.850	0.101	4.400	8.400	0.580	1.121	0.001
2	FP		0.748	0.101	4.400	7.390	0.477	1.019	0.001
3		N	0.918	0.101	4.400	9.080	0.647	1.189	0.000
4		N0	0.680	0.101	4.400	6.720	0.409	0.951	0.002
5	EI	N	0.989	0.118	7.300	8.370	0.712	1.267	0.000
6	FP	N	0.848	0.118	7.300	7.170	0.570	1.125	0.000
7	EI	N0	0.711	0.118	7.300	6.020	0.434	0.989	0.000
8	FP	N0	0.648	0.118	7.300	5.480	0.371	0.925	0.001

Table 12.149: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 28 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.102	0.086	9.000	1.190	-0.093	0.298	0.266
B N-N0	0.239	0.086	9.000	2.760	0.043	0.434	0.022
A:B EI N- FP N	0.142	0.122	9.000	1.160	-0.135	0.418	0.276
A:B EI N- EI N0	0.278	0.122	9.000	2.280	0.002	0.554	0.049
A:B EI N- FP N0	0.341	0.122	9.000	2.790	0.065	0.618	0.021
A:B FP N- EI N0	0.136	0.122	9.000	1.110	-0.140	0.412	0.294
A:B FP N- FP N0	0.200	0.122	9.000	1.630	-0.077	0.476	0.137
A:B EI N0- FP N0	0.063	0.122	9.000	0.520	-0.213	0.340	0.617

Table 12.150: Estimate of contrast in two-way ANOVA for variable HI.S at site 28 in year 2009 .

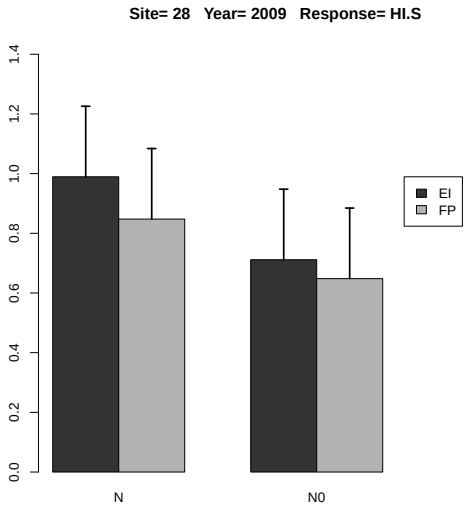

Figure 12.60: Estimated treatment means and standard error in the 2-way ANOVA.

12.1.31 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	34.140
2	2	EI	N	47.290
3	3	EI	N	30.397
4	4	EI	N	29.480
5	1	FP	N	39.020
6	2	FP	N	42.413
7	3	FP	N	28.357
8	4	FP	N	25.857

Table 12.151: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	35.327	4.068	3.500	8.680	23.302	47.351	0.002
A FP	33.912	4.068	3.500	8.340	21.887	45.936	0.002
A EI-FP	1.415	2.177	3.000	0.650	-5.514	8.344	0.562

Table 12.152: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 28 in year 2009 .

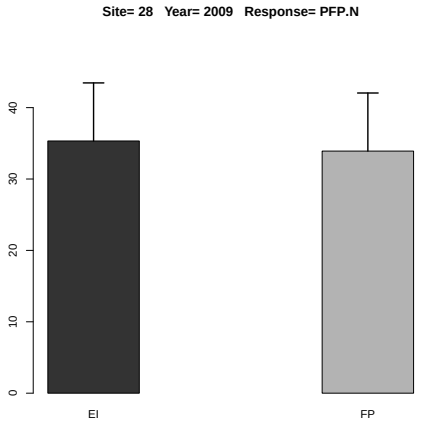

Figure 12.61: Estimated treatment means and standard error in the one-way ANOVA.

12.1.32 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	260.650
2	2	EI	N	361.047
3	3	EI	N	232.071
4	4	EI	N	225.073
5	1	FP	N	297.908
6	2	FP	N	323.815
7	3	FP	N	216.496
8	4	FP	N	197.409

Table 12.153: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	269.710	31.057	3.500	8.680	177.906	361.515	0.002
A FP	258.907	31.057	3.500	8.340	167.103	350.712	0.002
A EI-FP	10.803	16.622	3.000	0.650	-42.089	63.695	0.562

Table 12.154: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 28 in year 2009 .

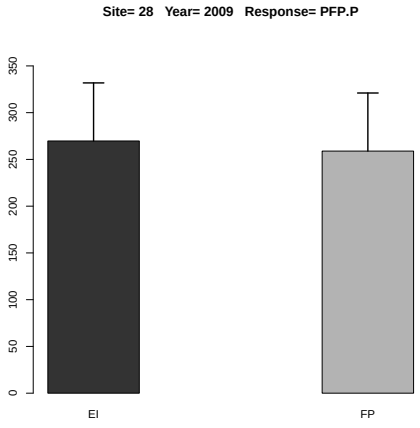

Figure 12.62: Estimated treatment means and standard error in the one-way ANOVA.

12.1.33 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	113.800
2	2	EI	N	157.633
3	3	EI	N	101.322
4	4	EI	N	98.267
5	1	FP	N	130.067
6	2	FP	N	141.378
7	3	FP	N	94.522
8	4	FP	N	86.189

Table 12.155: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	117.756	13.559	3.500	8.680	77.674	157.837	0.002
A FP	113.039	13.559	3.500	8.340	72.957	153.121	0.002
A EI-FP	4.717	7.257	3.000	0.650	-18.378	27.812	0.562

Table 12.156: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 28 in year 2009 .

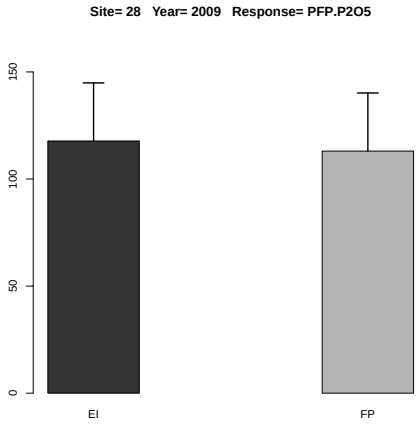

Figure 12.63: Estimated treatment means and standard error in the one-way ANOVA.

12.1.34 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	246.855
2	2	EI	N	341.938
3	3	EI	N	219.788
4	4	EI	N	213.160
5	1	FP	N	282.140
6	2	FP	N	306.676
7	3	FP	N	205.037
8	4	FP	N	186.961

Table 12.157: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	255.435	29.413	3.500	8.680	168.490	342.380	0.002
A FP	245.204	29.413	3.500	8.340	158.258	332.149	0.002
A EI-FP	10.231	15.742	3.000	0.650	-39.868	60.331	0.562

Table 12.158: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 28 in year 2009 .

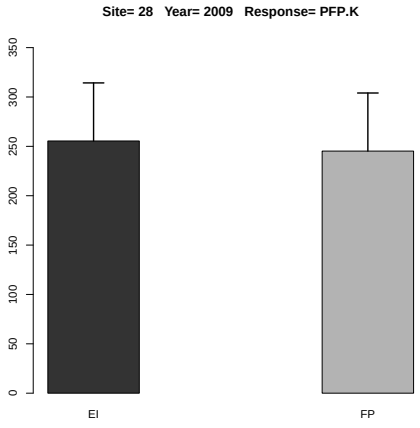

Figure 12.64: Estimated treatment means and standard error in the one-way ANOVA.

12.1.35 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	204.840
2	2	EI	N	283.740
3	3	EI	N	182.380
4	4	EI	N	176.880
5	1	FP	N	234.120
6	2	FP	N	254.480
7	3	FP	N	170.140
8	4	FP	N	155.140

Table 12.159: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	211.960	24.407	3.500	8.680	139.813	284.107	0.002
A FP	203.470	24.407	3.500	8.340	131.323	275.617	0.002
A EI-FP	8.490	13.063	3.000	0.650	-33.083	50.063	0.562

Table 12.160: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 28 in year 2009 .

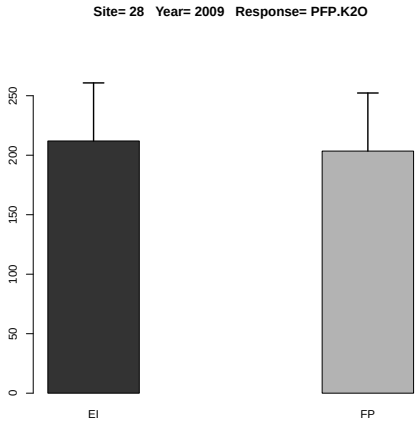

Figure 12.65: Estimated treatment means and standard error in the one-way ANOVA.

12.1.36 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	682.800
2	2	EI	N	945.800
3	3	EI	N	607.933
4	4	EI	N	589.600
5	1	FP	N	780.400
6	2	FP	N	848.267
7	3	FP	N	567.133
8	4	FP	N	517.133

Table 12.161: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	706.533	81.357	3.500	8.680	466.042	947.024	0.002
A FP	678.233	81.357	3.500	8.340	437.742	918.724	0.002
A EI-FP	28.300	43.542	3.000	0.650	-110.268	166.868	0.562

Table 12.162: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Mg at site 28 in year 2009 .

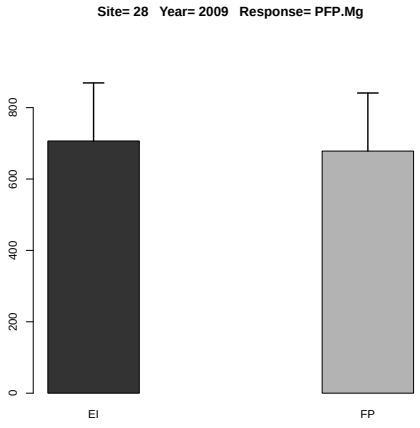

Figure 12.66: Estimated treatment means and standard error in the one-way ANOVA.

12.1.37 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	1024.200
2	2	EI	N	1418.700
3	3	EI	N	911.900
4	4	EI	N	884.400
5	1	FP	N	1170.600
6	2	FP	N	1272.400
7	3	FP	N	850.700
8	4	FP	N	775.700

Table 12.163: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1059.800	122.035	3.500	8.680	699.065	1420.535	0.002
A FP	1017.350	122.035	3.500	8.340	656.615	1378.085	0.002
A EI-FP	42.450	65.313	3.000	0.650	-165.230	250.130	0.562

Table 12.164: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 28 in year 2009 .

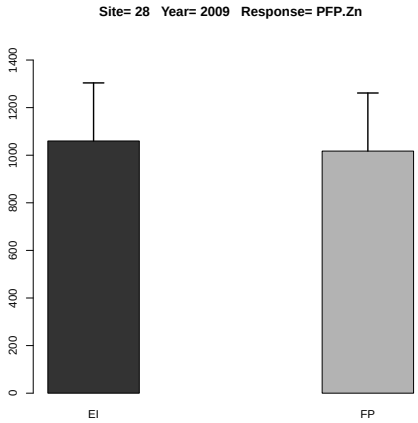

Figure 12.67: Estimated treatment means and standard error in the one-way ANOVA.

12.1.38 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.471
2	2	EI	N	0.648
3	3	EI	N	0.426
4	4	EI	N	0.410
5	1	FP	N	0.574
6	2	FP	N	0.585
7	3	FP	N	0.357
8	4	FP	N	0.414

Table 12.165: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.489	0.056	3.800	8.730	0.331	0.646	0.001
A FP	0.482	0.056	3.800	8.620	0.325	0.640	0.001
A EI-FP	0.006	0.040	3.000	0.150	-0.120	0.133	0.888

Table 12.166: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 28 in year 2009 .

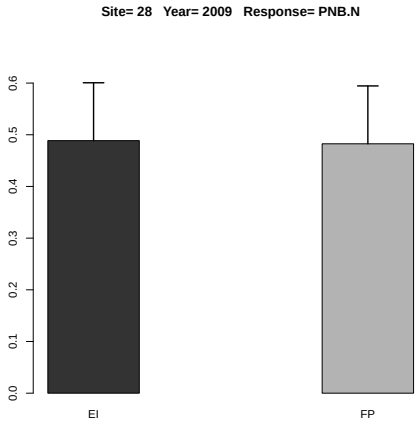

Figure 12.68: Estimated treatment means and standard error in the one-way ANOVA.

12.1.39 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.756
2	2	EI	N	1.119
3	3	EI	N	0.859
4	4	EI	N	0.788
5	1	FP	N	0.804
6	2	FP	N	0.971
7	3	FP	N	0.693
8	4	FP	N	0.730

Table 12.167: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.880	0.073	3.800	12.090	0.673	1.088	0.000
A FP	0.800	0.073	3.800	10.980	0.592	1.007	0.000
A EI-FP	0.081	0.049	3.000	1.640	-0.076	0.237	0.200

Table 12.168: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 28 in year 2009 .

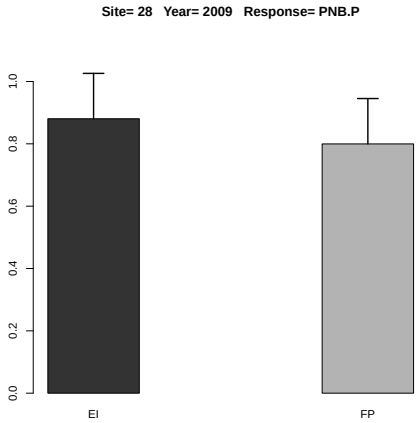

Figure 12.69: Estimated treatment means and standard error in the one-way ANOVA.

12.1.40 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.617
2	2	EI	N	1.026
3	3	EI	N	0.681
4	4	EI	N	0.725
5	1	FP	N	0.705
6	2	FP	N	0.675
7	3	FP	N	0.595
8	4	FP	N	0.654

Table 12.169: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.762	0.066	6.000	11.520	0.600	0.924	0.000
A FP	0.657	0.066	6.000	9.940	0.495	0.819	0.000
A EI-FP	0.105	0.091	3.000	1.150	-0.185	0.395	0.332

Table 12.170: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 28 in year 2009 .

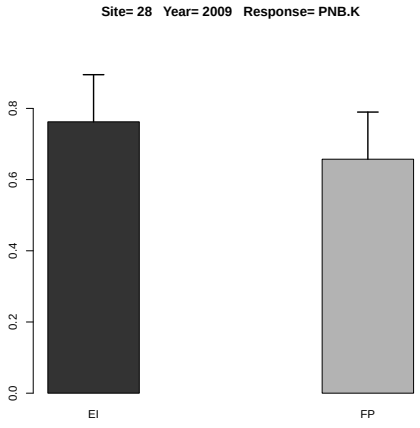

Figure 12.70: Estimated treatment means and standard error in the one-way ANOVA.

12.1.41 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.888
2	2	EI	N	1.513
3	3	EI	N	0.912
4	4	EI	N	0.884
5	1	FP	N	0.858
6	2	FP	N	1.103
7	3	FP	N	0.794
8	4	FP	N	0.879

Table 12.171: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.049	0.119	4.000	8.790	0.719	1.379	0.001
A FP	0.909	0.119	4.000	7.610	0.579	1.238	0.002
A EI-FP	0.141	0.093	3.000	1.510	-0.156	0.437	0.228

Table 12.172: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.Mg at site 28 in year 2009 .

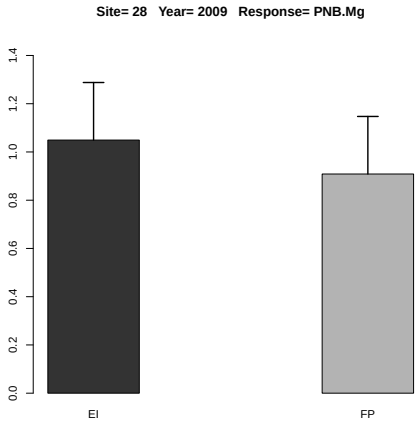

Figure 12.71: Estimated treatment means and standard error in the one-way ANOVA.

12.1.42 Response Variable AE

	rep	A	B	y
1	1	EI	N	13.277
2	2	EI	N	39.147
3	3	EI	N	17.330
4	4	EI	N	20.740
5	1	FP	N	29.580
6	2	FP	N	24.740
7	3	FP	N	18.230
8	4	FP	N	21.690

Table 12.173: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	22.623	4.433	5.104	0.028
A FP	23.560	4.433	5.315	0.025
A EI-FP	-0.937	6.269	-0.149	0.987

Table 12.174: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 28 in year 2009 .

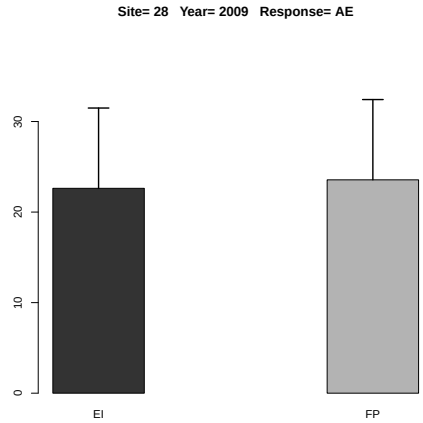

Figure 12.72: Estimated treatment means and standard error in the one-way ANOVA.

12.1.43 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.517
2	2	EI	N	0.831
3	3	EI	N	0.443
4	4	EI	N	0.555
5	1	FP	N	0.712
6	2	FP	N	0.685
7	3	FP	N	0.503
8	4	FP	N	0.965

Table 12.175: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.586	0.083	7.100	0.011
A FP	0.716	0.083	8.666	0.006
A EI-FP	-0.129	0.117	-1.108	0.561

Table 12.176: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 28 in year 2009 .

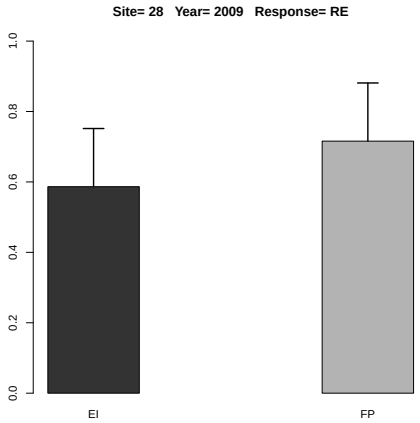

Figure 12.73: Estimated treatment means and standard error in the one-way ANOVA.

12.2 Year 2010

There are 49 variables not observed: UG.Ca UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

12.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	4725.000
2	2	EI	N0	2725.000
3	3	EI	N0	3365.000
4	4	EI	N0	3252.000
5	1	EI	N	14796.000
6	2	EI	N	10640.000
7	3	EI	N	13197.000
8	4	EI	N	11553.000
9	1	FP	N0	3493.000
10	2	FP	N0	4447.000
11	3	FP	N0	3529.000
12	4	FP	N0	2951.000
13	1	FP	N	16983.000
14	2	FP	N	14407.000
15	3	FP	N	15019.000
16	4	FP	N	14327.000

Table 12.177: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	12546.500	300.166	41.799	0.000
A FP	15184.000	300.166	50.585	0.000
A EI-FP	-2637.500	424.499	-6.213	0.016

Table 12.178: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 28 in year 2010 .

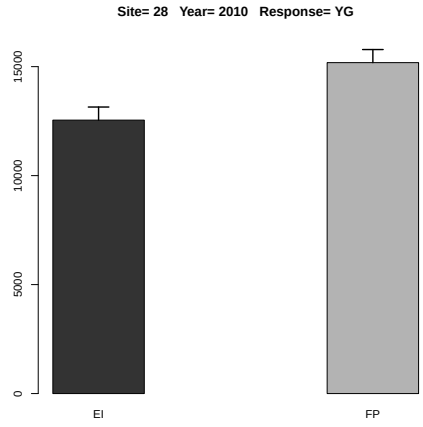

Figure 12.74: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6412451.910	6412451.910	7.833	2.999	0.068
B	1.000	424720576.562	424720576.562	518.808	6.798	0.000
A:B	1.000	6498675.562	6498675.562	7.938	6.798	0.027

Table 12.179: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8031.625	523.012	4.500	15.360	6645.298	9417.952	0.000
2	FP		9394.500	523.012	4.500	17.960	8008.173	10780.827	0.000
3		N	13865.250	515.193	4.500	26.910	12494.408	15236.092	0.000
4		N0	3560.875	515.193	4.500	6.910	2190.033	4931.717	0.002
5	EI	N	12546.500	613.084	7.800	20.460	11127.759	13965.241	0.000
6	FP	N	15184.000	613.084	7.800	24.770	13765.259	16602.741	0.000
7	EI	N0	3516.750	613.084	7.800	5.740	2098.009	4935.491	0.000
8	FP	N0	3605.000	613.084	7.800	5.880	2186.259	5023.741	0.000

Table 12.180: Estimate of treatment means in tow-way ANOVA for variable YG at site 28 in year 2010 .

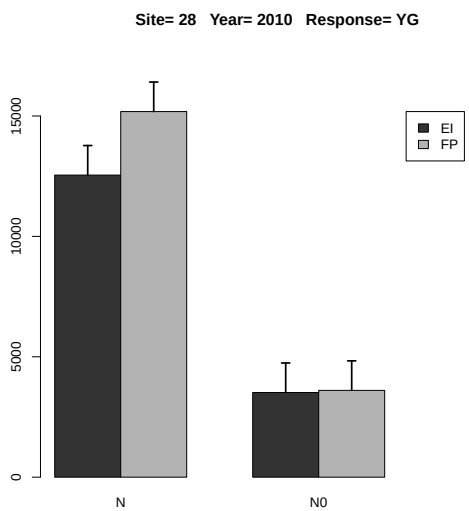

Figure 12.75: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1362.875	486.959	3.000	-2.800	-2912.907	187.157	0.068
B N-N0	10304.375	452.396	6.800	22.780	9228.081	11380.669	0.000
A:B EI N- FP N	-2637.500	664.673	7.800	-3.970	-4175.863	-1099.137	0.004
A:B EI N- EI N0	9029.750	639.784	6.800	14.110	7507.641	10551.859	0.000
A:B EI N- FP N0	8941.500	664.673	7.800	13.450	7403.137	10479.863	0.000
A:B FP N- EI N0	11667.250	664.673	7.800	17.550	10128.887	13205.613	0.000
A:B FP N- FP N0	11579.000	639.784	6.800	18.100	10056.891	13101.109	0.000
A:B EI N0- FP N0	-88.250	664.673	7.800	-0.130	-1626.613	1450.113	0.898

Table 12.181: Estimate of contrast in two-way ANOVA for variable YG at site 28 in year 2010 .

12.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	7959.000
2	2	EI	N0	3912.000
3	3	EI	N0	4446.000
4	4	EI	N0	5181.000
5	1	EI	N	10378.000
6	2	EI	N	7207.000
7	3	EI	N	11043.000
8	4	EI	N	7975.000
9	1	FP	N0	4070.000
10	2	FP	N0	6198.000
11	3	FP	N0	5353.000
12	4	FP	N0	4275.000
13	1	FP	N	12316.000
14	2	FP	N	10516.000
15	3	FP	N	10641.000
16	4	FP	N	10783.000

Table 12.182: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	9150.750	581.295	15.742	0.001
A FP	11064.000	581.295	19.033	0.000
A EI-FP	-1913.250	822.075	-2.327	0.188

Table 12.183: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 28 in year 2010 .

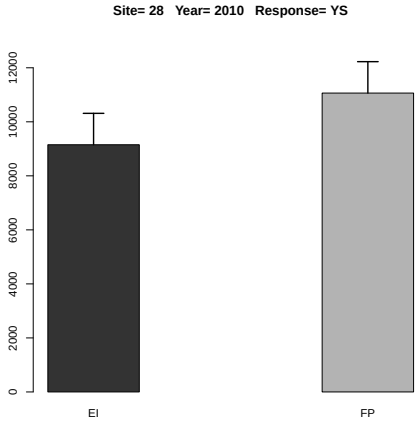

Figure 12.76: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1503750.179	1503750.179	0.921	2.999	0.408
B	1.000	97342889.062	97342889.062	59.593	5.607	0.000
A:B	1.000	5353439.063	5353439.063	3.277	5.607	0.124

Table 12.184: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7262.625	563.435	6.000	12.890	5883.725	8641.525	0.000
2	FP		8019.000	563.435	6.000	14.230	6640.100	9397.900	0.000
3		N	10107.375	513.992	6.600	19.660	8875.645	11339.105	0.000
4		N0	5174.250	513.992	6.600	10.070	3942.520	6405.980	0.000
5	EI	N	9150.750	722.247	11.200	12.670	7564.969	10736.531	0.000
6	FP	N	11064.000	722.247	11.200	15.320	9478.219	12649.781	0.000
7	EI	N0	5374.500	722.247	11.200	7.440	3788.719	6960.281	0.000
8	FP	N0	4974.000	722.247	11.200	6.890	3388.219	6559.781	0.000

Table 12.185: Estimate of treatment means in tow-way ANOVA for variable YS at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-756.375	788.320	3.000	-0.960	-3265.466	1752.716	0.408
B N-N0	4933.125	639.033	5.600	7.720	3342.488	6523.762	0.000
A:B EI N- FP N	-1913.250	1014.796	6.700	-1.890	-4335.496	508.996	0.103
A:B EI N- EI N0	3776.250	903.729	5.600	4.180	1526.750	6025.750	0.007
A:B EI N- FP N0	4176.750	1014.796	6.700	4.120	1754.504	6598.996	0.005
A:B FP N- EI N0	5689.500	1014.796	6.700	5.610	3267.254	8111.746	0.001
A:B FP N- FP N0	6090.000	903.729	5.600	6.740	3840.500	8339.500	0.001
A:B EI N0- FP N0	400.500	1014.796	6.700	0.390	-2021.746	2822.746	0.705

Table 12.186: Estimate of contrast in two-way ANOVA for variable YS at site 28 in year 2010 .

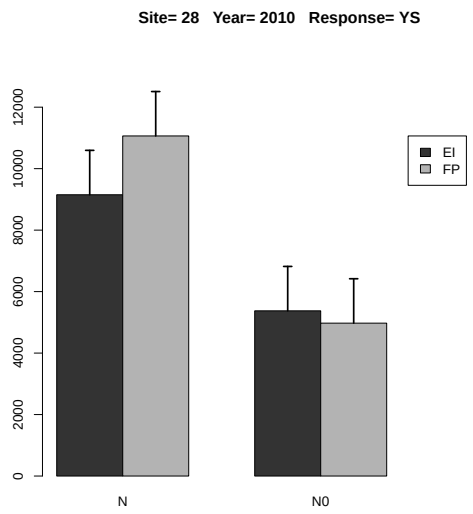

Figure 12.77: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	12684.000
2	2	EI	N0	6637.000
3	3	EI	N0	7811.000
4	4	EI	N0	8433.000
5	1	EI	N	25174.000
6	2	EI	N	17847.000
7	3	EI	N	24240.000
8	4	EI	N	19528.000
9	1	FP	N0	7563.000
10	2	FP	N0	10645.000
11	3	FP	N0	8882.000
12	4	FP	N0	7226.000
13	1	FP	N	29299.000
14	2	FP	N	24923.000
15	3	FP	N	25660.000
16	4	FP	N	25110.000

Table 12.187: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	21697.250	852.037	25.465	0.000
A FP	26248.000	852.037	30.806	0.000
A EI-FP	-4550.750	1204.963	-3.777	0.062

Table 12.188: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 28 in year 2010 .

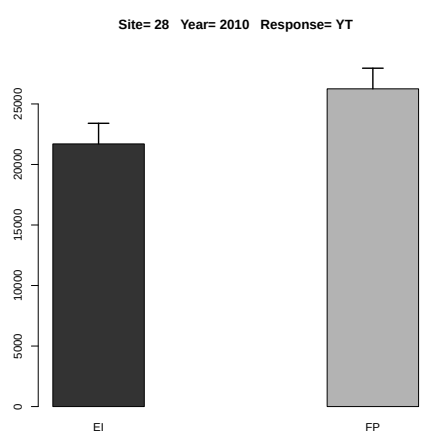

Figure 12.78: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11052960.826	11052960.826	2.788	2.999	0.194
B	1.000	928725625.000	928725625.000	234.231	8.088	0.000
A:B	1.000	23648769.000	23648769.000	5.964	8.088	0.040

Table 12.189: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15294.250	1071.069	5.500	14.280	12615.929	17972.571	0.000
2	FP		17413.500	1071.069	5.500	16.260	14735.179	20091.821	0.000
3		N	23972.625	996.103	5.000	24.070	21413.951	26531.299	0.000
4		N0	8735.125	996.103	5.000	8.770	6176.451	11293.799	0.000
5	EI	N	21697.250	1281.723	9.500	16.930	18818.899	24575.601	0.000
6	FP	N	26248.000	1281.723	9.500	20.480	23369.649	29126.351	0.000
7	EI	N0	8891.250	1281.723	9.500	6.940	6012.899	11769.601	0.000
8	FP	N0	8579.000	1281.723	9.500	6.690	5700.649	11457.351	0.000

Table 12.190: Estimate of treatment means in tow-way ANOVA for variable YT at site 28 in year 2010 .

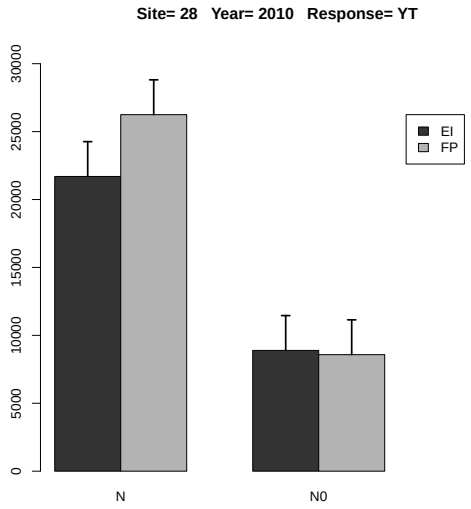

Figure 12.79: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2119.250	1269.301	3.000	-1.670	-6159.157	1920.657	0.194
B N-N0	15237.500	995.615	5.300	15.300	12717.056	17757.944	0.000
A:B EI N- FP N	-4550.750	1613.188	6.400	-2.820	-8433.639	-667.861	0.028
A:B EI N- EI N0	12806.000	1408.013	5.300	9.100	9241.554	16370.446	0.000
A:B EI N- FP N0	13118.250	1613.188	6.400	8.130	9235.361	17001.139	0.000
A:B FP N- EI N0	17356.750	1613.188	6.400	10.760	13473.861	21239.639	0.000
A:B FP N- FP N0	17669.000	1408.013	5.300	12.550	14104.554	21233.446	0.000
A:B EI N0- FP N0	312.250	1613.188	6.400	0.190	-3570.639	4195.139	0.853

Table 12.191: Estimate of contrast in two-way ANOVA for variable YT at site 28 in year 2010 .

12.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.373
2	2	EI	N0	0.411
3	3	EI	N0	0.431
4	4	EI	N0	0.386
5	1	EI	N	0.588
6	2	EI	N	0.596
7	3	EI	N	0.544
8	4	EI	N	0.592
9	1	FP	N0	0.462
10	2	FP	N0	0.418
11	3	FP	N0	0.397
12	4	FP	N0	0.408
13	1	FP	N	0.580
14	2	FP	N	0.578
15	3	FP	N	0.585
16	4	FP	N	0.571

Table 12.192: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.580	0.010	56.856	0.000
A FP	0.578	0.010	56.699	0.000
A EI-FP	0.002	0.014	0.111	0.993

Table 12.193: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 28 in year 2010 .

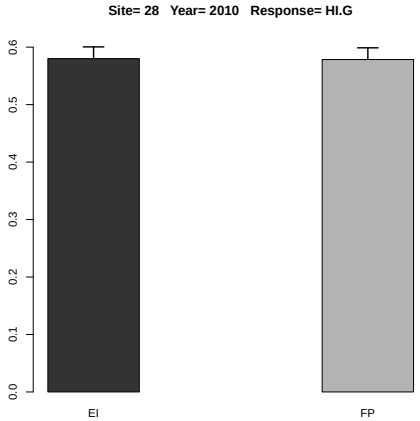

Figure 12.80: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.756	11.948	0.402
B	1.000	0.114	0.114	218.144	11.948	0.000
A:B	1.000	0.001	0.001	1.019	11.948	0.333

Table 12.194: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.490	0.008	11.900	60.700	0.472	0.507	0.000
2	FP		0.500	0.008	11.900	61.930	0.482	0.517	0.000
3		N	0.579	0.008	11.900	71.760	0.562	0.597	0.000
4		N0	0.411	0.008	11.900	50.870	0.393	0.428	0.000
5	EI	N	0.580	0.011	11.900	50.810	0.555	0.605	0.000
6	FP	N	0.578	0.011	11.900	50.670	0.553	0.603	0.000
7	EI	N0	0.400	0.011	11.900	35.030	0.375	0.425	0.000
8	FP	N0	0.421	0.011	11.900	36.910	0.396	0.446	0.000

Table 12.195: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.010	0.011	11.900	-0.870	-0.035	0.015	0.402
B N-N0	0.169	0.011	11.900	14.770	0.144	0.194	0.000
A:B EI N- FP N	0.002	0.016	11.900	0.100	-0.034	0.037	0.923
A:B EI N- EI N0	0.180	0.016	11.900	11.160	0.145	0.215	0.000
A:B EI N- FP N0	0.159	0.016	11.900	9.830	0.123	0.194	0.000
A:B FP N- EI N0	0.178	0.016	11.900	11.060	0.143	0.214	0.000
A:B FP N- FP N0	0.157	0.016	11.900	9.730	0.122	0.192	0.000
A:B EI N0- FP N0	-0.021	0.016	11.900	-1.330	-0.057	0.014	0.209

Table 12.196: Estimate of contrast in two-way ANOVA for variable HI.G at site 28 in year 2010 .

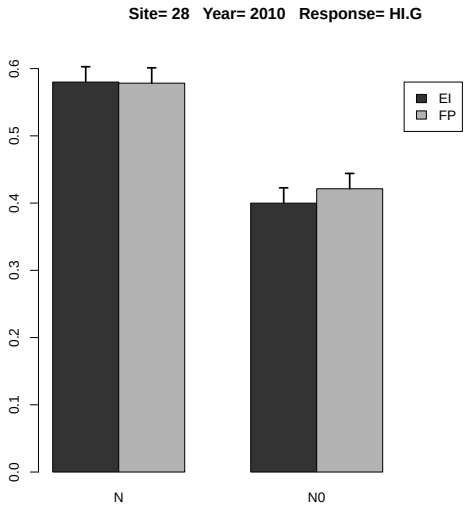

Figure 12.81: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	37.328
2	2	EI	N0	20.165
3	3	EI	N0	28.939
4	4	EI	N0	29.593
5	1	EI	N	145.001
6	2	EI	N	126.616
7	3	EI	N	163.643
8	4	EI	N	118.996
9	1	FP	N0	30.040
10	2	FP	N0	39.578
11	3	FP	N0	24.350
12	4	FP	N0	23.608
13	1	FP	N	190.210
14	2	FP	N	185.850
15	3	FP	N	189.239
16	4	FP	N	157.597

Table 12.197: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	138.564	4.949	27.998	0.000
A FP	180.724	4.949	36.517	0.000
A EI-FP	-42.160	6.999	-6.024	0.018

Table 12.198: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 28 in year 2010 .

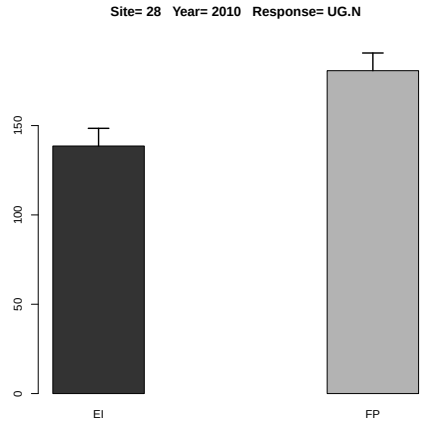

Figure 12.82: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1573.241	1573.241	11.511	2.999	0.043
B	1.000	68062.405	68062.405	498.004	6.000	0.000
A:B	1.000	1744.927	1744.927	12.767	6.000	0.012

Table 12.199: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		83.785	5.421	5.400	15.460	70.159	97.410	0.000
2	FP		105.059	5.421	5.400	19.380	91.434	118.684	0.000
3		N	159.644	5.301	5.700	30.120	146.478	172.810	0.000
4		N0	29.200	5.301	5.700	5.510	16.034	42.366	0.002
5	EI	N	138.564	6.817	10.400	20.330	123.447	153.680	0.000
6	FP	N	180.724	6.817	10.400	26.510	165.607	195.841	0.000
7	EI	N0	29.006	6.817	10.400	4.260	13.889	44.123	0.002
8	FP	N0	29.394	6.817	10.400	4.310	14.277	44.511	0.001

Table 12.200: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 28 in year 2010 .

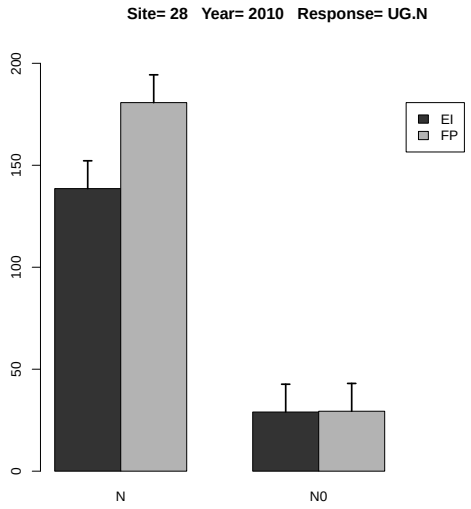

Figure 12.83: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-21.274	6.270	3.000	-3.390	-41.233	-1.315	0.043
B N-N0	130.444	5.845	6.000	22.320	116.141	144.747	0.000
A:B EI N- FP N	-42.160	8.572	7.600	-4.920	-62.108	-22.213	0.001
A:B EI N- EI N0	109.558	8.267	6.000	13.250	89.330	129.785	0.000
A:B EI N- FP N0	109.170	8.572	7.600	12.740	89.222	129.117	0.000
A:B FP N- EI N0	151.718	8.572	7.600	17.700	131.770	171.665	0.000
A:B FP N- FP N0	151.330	8.267	6.000	18.310	131.102	171.558	0.000
A:B EI N0- FP N0	-0.388	8.572	7.600	-0.050	-20.335	19.559	0.965

Table 12.201: Estimate of contrast in two-way ANOVA for variable UG.N at site 28 in year 2010 .

12.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	4.725
2	2	EI	N0	2.180
3	3	EI	N0	7.066
4	4	EI	N0	4.553
5	1	EI	N	14.796
6	2	EI	N	20.216
7	3	EI	N	27.714
8	4	EI	N	2.311
9	1	FP	N0	7.335
10	2	FP	N0	7.560
11	3	FP	N0	7.411
12	4	FP	N0	2.951
13	1	FP	N	13.586
14	2	FP	N	20.170
15	3	FP	N	25.532
16	4	FP	N	27.221

Table 12.202: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	16.259	4.616	3.522	0.074
A FP	21.627	4.616	4.685	0.036
A EI-FP	-5.368	6.529	-0.822	0.707

Table 12.203: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 28 in year 2010 .

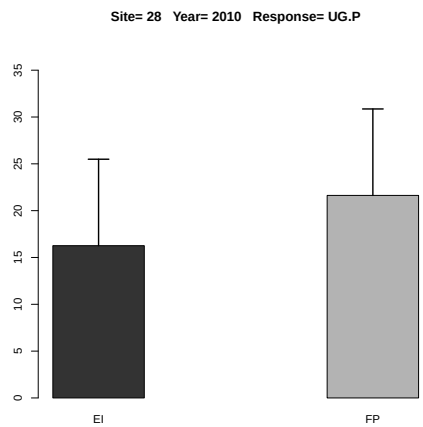

Figure 12.84: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	49.725	49.725	1.309	9.000	0.282
B	1.000	725.827	725.827	19.105	9.000	0.002
A:B	1.000	13.581	13.581	0.357	9.000	0.565

Table 12.204: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.445	2.309	8.000	4.520	5.122	15.768	0.002
2	FP		13.971	2.309	8.000	6.050	8.648	19.294	0.000
3		N	18.943	2.309	8.000	8.200	13.620	24.266	0.000
4		N0	5.473	2.309	8.000	2.370	0.150	10.796	0.045
5	EI	N	16.259	3.175	11.900	5.120	9.333	23.185	0.000
6	FP	N	21.627	3.175	11.900	6.810	14.701	28.553	0.000
7	EI	N0	4.631	3.175	11.900	1.460	-2.295	11.557	0.171
8	FP	N0	6.314	3.175	11.900	1.990	-0.612	13.240	0.070

Table 12.205: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.526	3.082	9.000	-1.140	-10.498	3.446	0.282
B N-N0	13.471	3.082	9.000	4.370	6.499	20.442	0.002
A:B EI N- FP N	-5.368	4.358	9.000	-1.230	-15.228	4.491	0.249
A:B EI N- EI N0	11.628	4.358	9.000	2.670	1.768	21.488	0.026
A:B EI N- FP N0	9.945	4.358	9.000	2.280	0.085	19.804	0.048
A:B FP N- EI N0	16.996	4.358	9.000	3.900	7.137	26.856	0.004
A:B FP N- FP N0	15.313	4.358	9.000	3.510	5.454	25.173	0.007
A:B EI N0- FP N0	-1.683	4.358	9.000	-0.390	-11.543	8.176	0.708

Table 12.206: Estimate of contrast in two-way ANOVA for variable UG.P at site 28 in year 2010 .

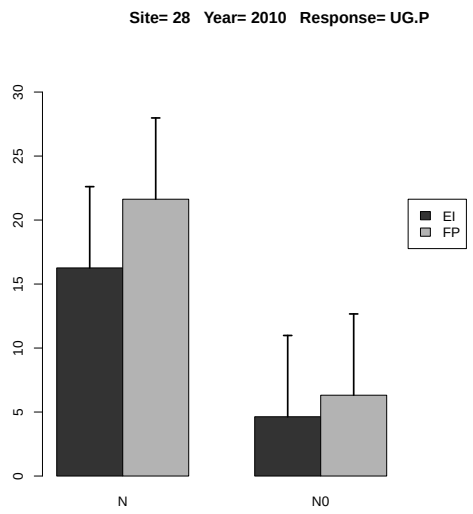

Figure 12.85: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	10.820
2	2	EI	N0	4.992
3	3	EI	N0	16.182
4	4	EI	N0	10.426
5	1	EI	N	33.883
6	2	EI	N	46.295
7	3	EI	N	63.464
8	4	EI	N	5.291
9	1	FP	N0	16.798
10	2	FP	N0	17.312
11	3	FP	N0	16.971
12	4	FP	N0	6.758
13	1	FP	N	31.113
14	2	FP	N	46.189
15	3	FP	N	58.469
16	4	FP	N	62.337

Table 12.207: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	37.233	10.572	3.522	0.074
A FP	49.527	10.572	4.685	0.036
A EI-FP	-12.294	14.951	-0.822	0.707

Table 12.208: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 28 in year 2010 .

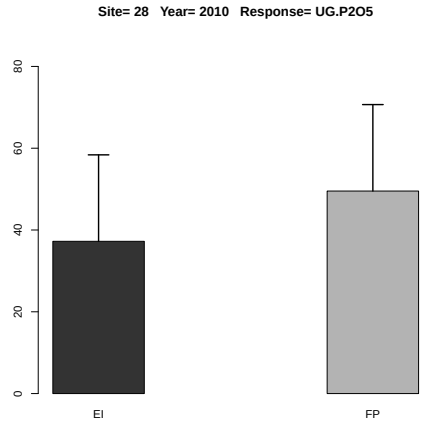

Figure 12.86: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	260.761	260.761	1.309	9.000	0.282
B	1.000	3806.309	3806.309	19.105	9.000	0.002
A:B	1.000	71.218	71.218	0.357	9.000	0.565

Table 12.209: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.919	5.288	8.000	4.520	11.730	36.109	0.002
2	FP		31.993	5.288	8.000	6.050	19.804	44.183	0.000
3		N	43.380	5.288	8.000	8.200	31.191	55.569	0.000
4		N0	12.532	5.288	8.000	2.370	0.343	24.722	0.045
5	EI	N	37.233	7.271	11.900	5.120	21.373	53.094	0.000
6	FP	N	49.527	7.271	11.900	6.810	33.666	65.388	0.000
7	EI	N0	10.605	7.271	11.900	1.460	-5.256	26.466	0.171
8	FP	N0	14.460	7.271	11.900	1.990	-1.401	30.320	0.070

Table 12.210: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 28 in year 2010 .

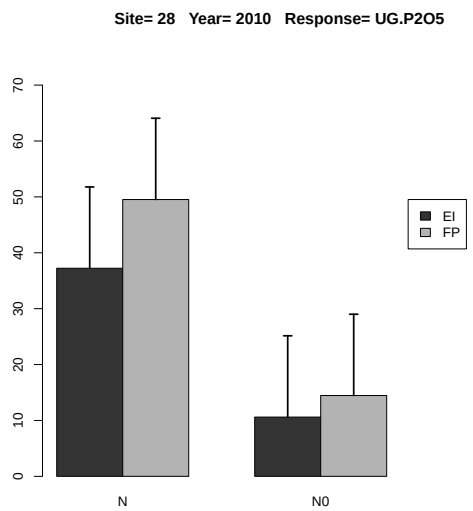

Figure 12.87: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-8.074	7.058	9.000	-1.140	-24.039	7.891	0.282
B N-N0	30.848	7.058	9.000	4.370	14.882	46.813	0.002
A:B EI N- FP N	-12.294	9.981	9.000	-1.230	-34.872	10.285	0.249
A:B EI N- EI N0	26.628	9.981	9.000	2.670	4.050	49.206	0.026
A:B EI N- FP N0	22.774	9.981	9.000	2.280	0.195	45.352	0.048
A:B FP N- EI N0	38.922	9.981	9.000	3.900	16.343	61.500	0.004
A:B FP N- FP N0	35.067	9.981	9.000	3.510	12.489	57.645	0.007
A:B EI N0- FP N0	-3.854	9.981	9.000	-0.390	-26.433	18.724	0.708

Table 12.211: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 28 in year 2010 .

12.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	21.262
2	2	EI	N0	11.717
3	3	EI	N0	13.124
4	4	EI	N0	12.032
5	1	EI	N	65.102
6	2	EI	N	39.368
7	3	EI	N	51.468
8	4	EI	N	47.367
9	1	FP	N0	12.575
10	2	FP	N0	16.454
11	3	FP	N0	13.410
12	4	FP	N0	11.214
13	1	FP	N	61.139
14	2	FP	N	51.865
15	3	FP	N	55.570
16	4	FP	N	53.010

Table 12.212: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	50.826	2.389	21.271	0.000
A FP	55.396	2.389	23.183	0.000
A EI-FP	-4.570	3.379	-1.352	0.452

Table 12.213: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 28 in year 2010 .

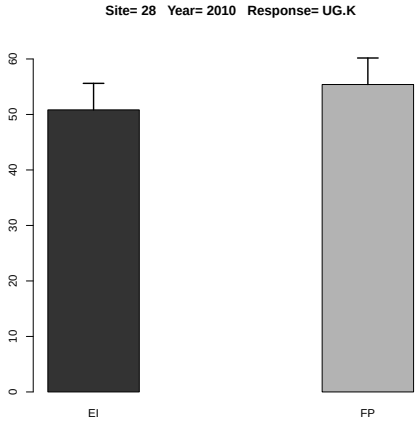

Figure 12.88: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.877	5.877	0.316	3.000	0.613
B	1.000	6127.038	6127.038	329.205	6.000	0.000
A:B	1.000	32.380	32.380	1.740	6.000	0.235

Table 12.214: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		32.680	2.751	5.300	11.880	25.709	39.651	0.000
2	FP		34.405	2.751	5.300	12.510	27.433	41.376	0.000
3		N	53.111	2.525	4.400	21.030	46.333	59.889	0.000
4		N0	13.974	2.525	4.400	5.530	7.196	20.752	0.004
5	EI	N	50.827	3.145	8.300	16.160	43.617	58.036	0.000
6	FP	N	55.396	3.145	8.300	17.610	48.187	62.605	0.000
7	EI	N0	14.534	3.145	8.300	4.620	7.324	21.743	0.002
8	FP	N0	13.413	3.145	8.300	4.260	6.204	20.623	0.002

Table 12.215: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.724	3.069	3.000	-0.560	-11.491	8.042	0.613
B N-N0	39.138	2.157	6.000	18.140	33.859	44.416	0.000
A:B EI N- FP N	-4.570	3.751	6.000	-1.220	-13.760	4.621	0.269
A:B EI N- EI N0	36.292	3.050	6.000	11.900	28.828	43.757	0.000
A:B EI N- FP N0	37.413	3.751	6.000	9.970	28.223	46.604	0.000
A:B FP N- EI N0	40.862	3.751	6.000	10.890	31.672	50.052	0.000
A:B FP N- FP N0	41.983	3.050	6.000	13.760	34.518	49.447	0.000
A:B EI N0- FP N0	1.121	3.751	6.000	0.300	-8.069	10.311	0.775

Table 12.216: Estimate of contrast in two-way ANOVA for variable UG.K at site 28 in year 2010 .

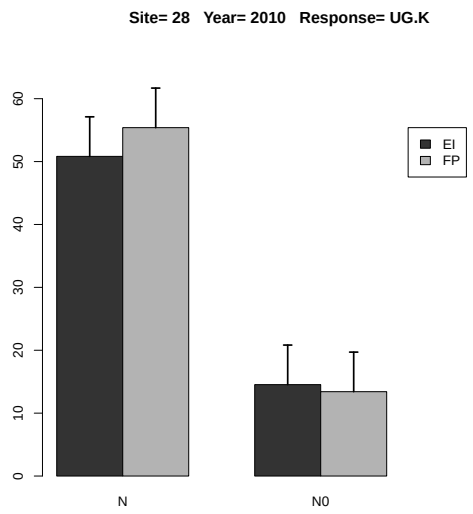

Figure 12.89: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	25.621
2	2	EI	N0	14.120
3	3	EI	N0	15.814
4	4	EI	N0	14.499
5	1	EI	N	78.448
6	2	EI	N	47.438
7	3	EI	N	62.019
8	4	EI	N	57.078
9	1	FP	N0	15.153
10	2	FP	N0	19.827
11	3	FP	N0	16.159
12	4	FP	N0	13.513
13	1	FP	N	73.672
14	2	FP	N	62.498
15	3	FP	N	66.962
16	4	FP	N	63.877

Table 12.217: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	61.246	2.879	21.271	0.000
A FP	66.752	2.879	23.183	0.000
A EI-FP	-5.506	4.072	-1.352	0.452

Table 12.218: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 28 in year 2010 .

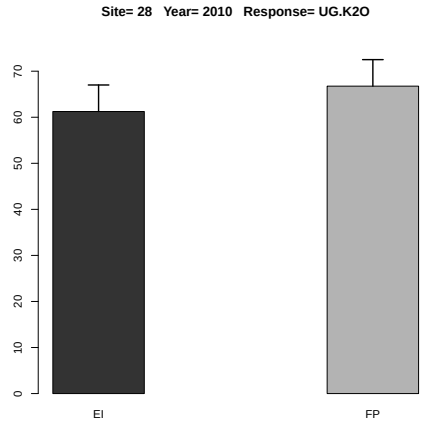

Figure 12.90: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.533	8.533	0.316	3.000	0.613
B	1.000	8896.613	8896.613	329.205	6.000	0.000
A:B	1.000	47.017	47.017	1.740	6.000	0.235

Table 12.219: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		39.380	3.315	5.300	11.880	30.980	47.780	0.000
2	FP		41.458	3.315	5.300	12.510	33.057	49.858	0.000
3		N	63.999	3.043	4.400	21.030	55.832	72.166	0.000
4		N0	16.838	3.043	4.400	5.530	8.671	25.006	0.004
5	EI	N	61.246	3.790	8.300	16.160	52.559	69.933	0.000
6	FP	N	66.752	3.790	8.300	17.610	58.065	75.440	0.000
7	EI	N0	17.513	3.790	8.300	4.620	8.826	26.201	0.002
8	FP	N0	16.163	3.790	8.300	4.260	7.476	24.850	0.002

Table 12.220: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 28 in year 2010 .

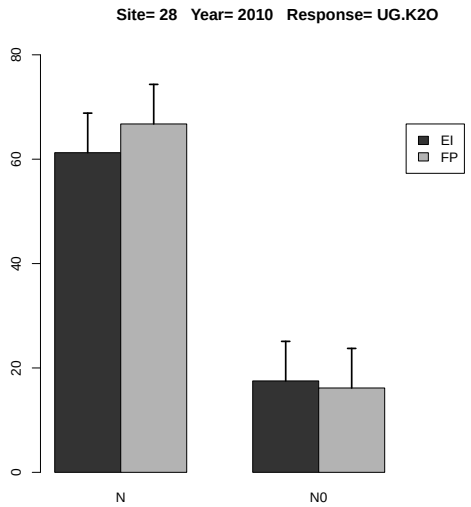

Figure 12.91: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.078	3.698	3.000	-0.560	-13.847	9.691	0.613
B N-N0	47.161	2.599	6.000	18.140	40.801	53.521	0.000
A:B EI N- FP N	-5.506	4.520	6.000	-1.220	-16.581	5.568	0.269
A:B EI N- EI N0	43.733	3.676	6.000	11.900	34.738	52.727	0.000
A:B EI N- FP N0	45.083	4.520	6.000	9.970	34.009	56.157	0.000
A:B FP N- EI N0	49.239	4.520	6.000	10.890	38.164	60.313	0.000
A:B FP N- FP N0	50.589	3.676	6.000	13.760	41.595	59.584	0.000
A:B EI N0- FP N0	1.351	4.520	6.000	0.300	-9.724	12.425	0.775

Table 12.221: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 28 in year 2010 .

12.2.10 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	16.538
2	2	EI	N0	10.627
3	3	EI	N0	9.422
4	4	EI	N0	8.780
5	1	EI	N	75.460
6	2	EI	N	25.536
7	3	EI	N	60.706
8	4	EI	N	40.435
9	1	FP	N0	8.034
10	2	FP	N0	15.120
11	3	FP	N0	14.116
12	4	FP	N0	10.033
13	1	FP	N	62.837
14	2	FP	N	30.255
15	3	FP	N	58.574
16	4	FP	N	53.010

Table 12.222: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	50.534	3.778	13.374	0.002
A FP	51.169	3.778	13.542	0.001
A EI-FP	-0.635	5.344	-0.119	0.992

Table 12.223: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 28 in year 2010 .

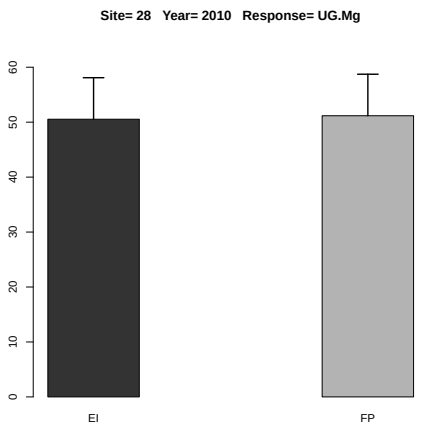

Figure 12.92: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.251	1.251	0.009	9.000	0.925
B	1.000	6167.848	6167.848	46.098	9.000	0.000
A:B	1.000	0.023	0.023	0.000	9.000	0.990

Table 12.224: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		30.938	5.307	5.700	5.830	17.800	44.076	0.001
2	FP		31.497	5.307	5.700	5.930	18.359	44.636	0.001
3		N	50.852	5.307	5.700	9.580	37.713	63.990	0.000
4		N0	11.584	5.307	5.700	2.180	-1.554	24.722	0.074
5	EI	N	50.534	6.700	10.000	7.540	35.614	65.455	0.000
6	FP	N	51.169	6.700	10.000	7.640	36.248	66.090	0.000
7	EI	N0	11.342	6.700	10.000	1.690	-3.579	26.262	0.121
8	FP	N0	11.826	6.700	10.000	1.760	-3.095	26.746	0.108

Table 12.225: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.559	5.784	9.000	-0.100	-13.643	12.524	0.925
B N-N0	39.268	5.784	9.000	6.790	26.184	52.351	0.000
A:B EI N- FP N	-0.635	8.179	9.000	-0.080	-19.137	17.868	0.940
A:B EI N- EI N0	39.193	8.179	9.000	4.790	20.690	57.695	0.001
A:B EI N- FP N0	38.709	8.179	9.000	4.730	20.206	57.211	0.001
A:B FP N- EI N0	39.827	8.179	9.000	4.870	21.325	58.330	0.001
A:B FP N- FP N0	39.343	8.179	9.000	4.810	20.841	57.846	0.001
A:B EI N0- FP N0	-0.484	8.179	9.000	-0.060	-18.986	18.019	0.954

Table 12.226: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 28 in year 2010 .

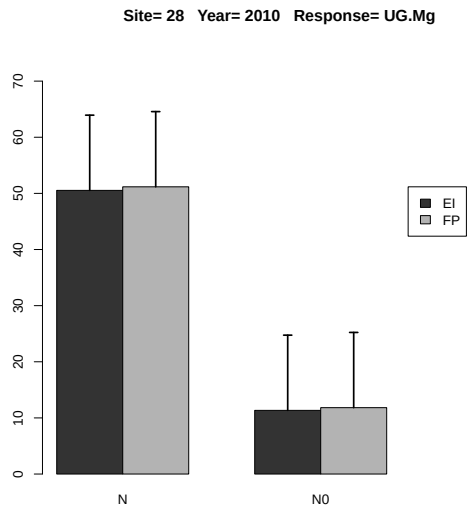

Figure 12.93: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.11 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	5.197
2	2	EI	N0	2.453
3	3	EI	N0	3.028
4	4	EI	N0	5.854
5	1	EI	N	16.276
6	2	EI	N	22.344
7	3	EI	N	17.156
8	4	EI	N	11.553
9	1	FP	N0	4.890
10	2	FP	N0	5.781
11	3	FP	N0	3.529
12	4	FP	N0	2.066
13	1	FP	N	22.078
14	2	FP	N	21.610
15	3	FP	N	16.521
16	4	FP	N	17.192

Table 12.227: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	16.832	1.308	12.871	0.002
A FP	19.350	1.308	14.797	0.001
A EI-FP	-2.518	1.849	-1.362	0.448

Table 12.228: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 28 in year 2010 .

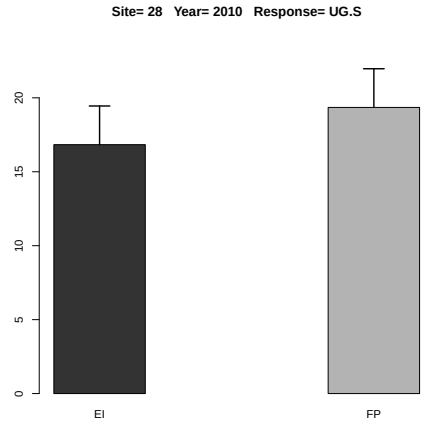

Figure 12.94: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6.011	6.011	0.881	9.000	0.372
B	1.000	783.052	783.052	114.816	9.000	0.000
A:B	1.000	6.681	6.681	0.980	9.000	0.348

Table 12.229: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10.483	1.109	6.400	9.450	7.813	13.152	0.000
2	FP		11.709	1.109	6.400	10.560	9.039	14.378	0.000
3		N	18.091	1.109	6.400	16.320	15.421	20.761	0.000
4		N0	4.100	1.109	6.400	3.700	1.430	6.770	0.009
5	EI	N	16.832	1.443	10.900	11.670	13.654	20.010	0.000
6	FP	N	19.350	1.443	10.900	13.410	16.172	22.529	0.000
7	EI	N0	4.133	1.443	10.900	2.860	0.955	7.311	0.015
8	FP	N0	4.066	1.443	10.900	2.820	0.888	7.245	0.017

Table 12.230: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 28 in year 2010 .

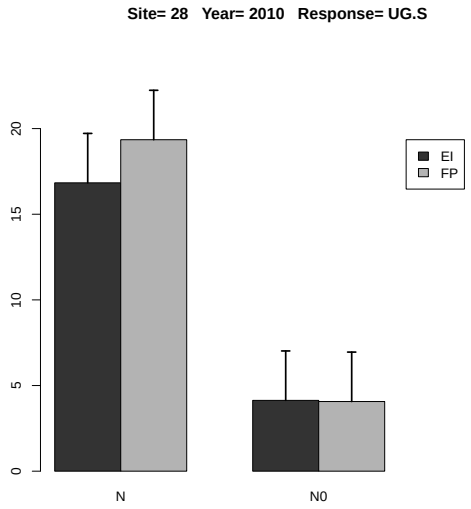

Figure 12.95: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.226	1.306	9.000	-0.940	-4.180	1.728	0.372
B N-N0	13.992	1.306	9.000	10.720	11.038	16.945	0.000
A:B EI N- FP N	-2.518	1.847	9.000	-1.360	-6.696	1.659	0.206
A:B EI N- EI N0	12.699	1.847	9.000	6.880	8.522	16.877	0.000
A:B EI N- FP N0	12.766	1.847	9.000	6.910	8.588	16.943	0.000
A:B FP N- EI N0	15.217	1.847	9.000	8.240	11.040	19.395	0.000
A:B FP N- FP N0	15.284	1.847	9.000	8.280	11.107	19.461	0.000
A:B EI N0- FP N0	0.066	1.847	9.000	0.040	-4.111	4.244	0.972

Table 12.231: Estimate of contrast in two-way ANOVA for variable UG.S at site 28 in year 2010 .

12.2.12 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	22.606
2	2	EI	N0	12.619
3	3	EI	N0	12.799
4	4	EI	N0	16.904
5	1	EI	N	71.325
6	2	EI	N	36.853
7	3	EI	N	63.097
8	4	EI	N	27.087
9	1	FP	N0	10.877
10	2	FP	N0	18.599
11	3	FP	N0	13.727
12	4	FP	N0	12.651
13	1	FP	N	53.556
14	2	FP	N	49.090
15	3	FP	N	63.973
16	4	FP	N	54.062

Table 12.232: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	49.591	6.675	7.429	0.010
A FP	55.170	6.675	8.265	0.007
A EI-FP	-5.580	9.440	-0.591	0.827

Table 12.233: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 28 in year 2010 .

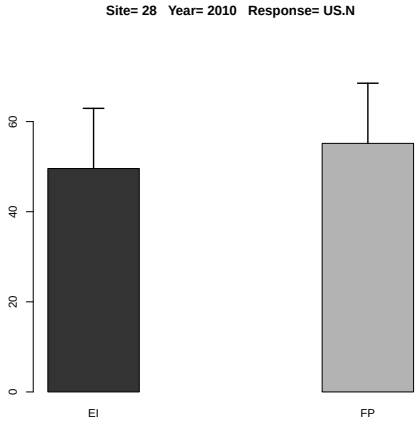

Figure 12.96: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.769	8.769	0.078	2.999	0.798
B	1.000	5560.014	5560.014	49.718	6.000	0.000
A:B	1.000	61.593	61.593	0.551	6.000	0.486

Table 12.234: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		32.911	4.256	6.000	7.730	22.494	43.329	0.000
2	FP		34.567	4.256	6.000	8.120	24.149	44.985	0.000
3		N	52.380	4.045	7.100	12.950	42.855	61.906	0.000
4		N0	15.098	4.045	7.100	3.730	5.572	24.623	0.007
5	EI	N	49.591	5.665	11.800	8.750	37.224	61.958	0.000
6	FP	N	55.170	5.665	11.800	9.740	42.803	67.537	0.000
7	EI	N0	16.232	5.665	11.800	2.870	3.865	28.599	0.014
8	FP	N0	13.963	5.665	11.800	2.460	1.597	26.330	0.030

Table 12.235: Estimate of treatment means in tow-way ANOVA for variable US.N at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.655	5.912	3.000	-0.280	-20.472	17.161	0.798
B N-N0	37.283	5.287	6.000	7.050	24.345	50.221	0.000
A:B EI N- FP N	-5.580	7.931	7.400	-0.700	-24.149	12.990	0.503
A:B EI N- EI N0	33.359	7.478	6.000	4.460	15.062	51.656	0.004
A:B EI N- FP N0	35.627	7.931	7.400	4.490	17.058	54.197	0.002
A:B FP N- EI N0	38.938	7.931	7.400	4.910	20.369	57.507	0.002
A:B FP N- FP N0	41.207	7.478	6.000	5.510	22.910	59.504	0.002
A:B EI N0- FP N0	2.269	7.931	7.400	0.290	-16.301	20.838	0.783

Table 12.236: Estimate of contrast in two-way ANOVA for variable US.N at site 28 in year 2010 .

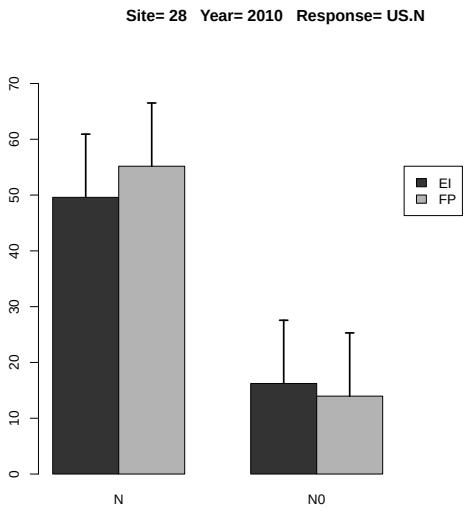

Figure 12.97: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.13 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	5.185
2	2	EI	N0	3.877
3	3	EI	N0	3.998
4	4	EI	N0	5.839
5	1	EI	N	7.254
6	2	EI	N	5.519
7	3	EI	N	10.256
8	4	EI	N	10.340
9	1	FP	N0	2.600
10	2	FP	N0	6.887
11	3	FP	N0	4.867
12	4	FP	N0	4.193
13	1	FP	N	11.275
14	2	FP	N	6.847
15	3	FP	N	10.101
16	4	FP	N	13.529

Table 12.237: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	8.342	0.663	12.578	0.002
A FP	10.438	0.663	15.738	0.001
A EI-FP	-2.096	0.938	-2.234	0.204

Table 12.238: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 28 in year 2010 .

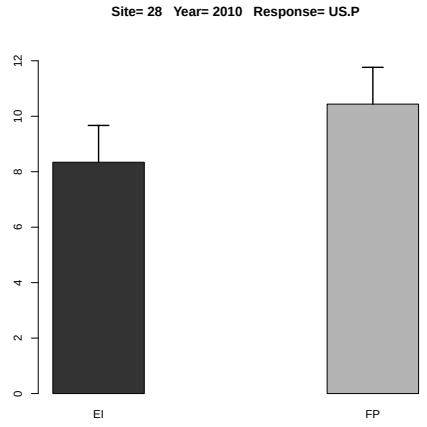

Figure 12.98: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4.032	4.032	0.993	9.000	0.345
B	1.000	88.716	88.716	21.854	9.000	0.001
A:B	1.000	4.768	4.768	1.175	9.000	0.307

Table 12.239: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.533	0.762	7.900	8.570	4.771	8.296	0.000
2	FP		7.537	0.762	7.900	9.890	5.775	9.300	0.000
3		N	9.390	0.762	7.900	12.320	7.628	11.152	0.000
4		N0	4.681	0.762	7.900	6.140	2.918	6.443	0.000
5	EI	N	8.342	1.043	11.800	8.000	6.066	10.619	0.000
6	FP	N	10.438	1.043	11.800	10.010	8.162	12.714	0.000
7	EI	N0	4.725	1.043	11.800	4.530	2.448	7.001	0.001
8	FP	N0	4.637	1.043	11.800	4.440	2.360	6.913	0.001

Table 12.240: Estimate of treatment means in tow-way ANOVA for variable US.P at site 28 in year 2010 .

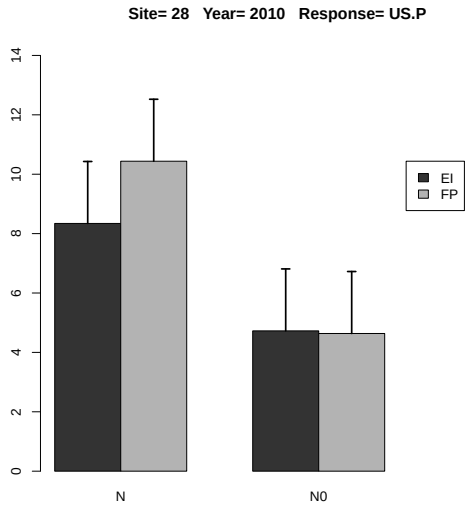

Figure 12.99: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.004	1.007	9.000	-1.000	-3.283	1.275	0.345
B N-N0	4.710	1.007	9.000	4.670	2.430	6.988	0.001
A:B EI N- FP N	-2.096	1.425	9.000	-1.470	-5.319	1.127	0.175
A:B EI N- EI N0	3.618	1.425	9.000	2.540	0.395	6.841	0.032
A:B EI N- FP N0	3.705	1.425	9.000	2.600	0.483	6.928	0.029
A:B FP N- EI N0	5.713	1.425	9.000	4.010	2.490	8.936	0.003
A:B FP N- FP N0	5.801	1.425	9.000	4.070	2.578	9.024	0.003
A:B EI N0- FP N0	0.088	1.425	9.000	0.060	-3.135	3.311	0.952

Table 12.241: Estimate of contrast in two-way ANOVA for variable US.P at site 28 in year 2010 .

12.2.14 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	6.242
2	2	EI	N0	4.288
3	3	EI	N0	4.981
4	4	EI	N0	6.514
5	1	EI	N	9.716
6	2	EI	N	7.199
7	3	EI	N	12.508
8	4	EI	N	11.759
9	1	FP	N0	3.111
10	2	FP	N0	7.955
11	3	FP	N0	5.497
12	4	FP	N0	4.615
13	1	FP	N	15.207
14	2	FP	N	8.926
15	3	FP	N	14.198
16	4	FP	N	15.631

Table 12.242: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	10.295	0.650	15.833	0.001
A FP	13.490	0.650	20.747	0.000
A EI-FP	-3.195	0.920	-3.474	0.077

Table 12.243: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 28 in year 2010 .

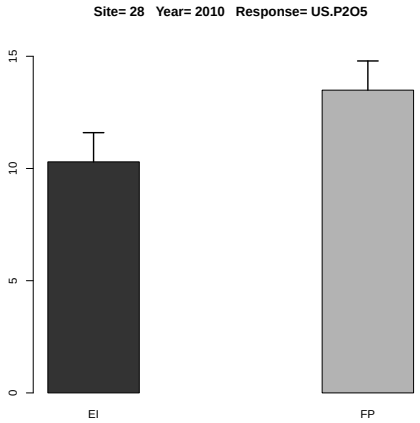

Figure 12.100: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.901	8.901	1.737	11.999	0.212
B	1.000	168.610	168.610	32.905	11.999	0.000
A:B	1.000	11.604	11.604	2.265	11.999	0.158

Table 12.244: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.901	0.800	12.000	9.870	6.157	9.645	0.000
2	FP		9.393	0.800	12.000	11.740	7.649	11.136	0.000
3		N	11.893	0.800	12.000	14.860	10.149	13.637	0.000
4		N0	5.401	0.800	12.000	6.750	3.657	7.144	0.000
5	EI	N	10.296	1.132	12.000	9.100	7.829	12.761	0.000
6	FP	N	13.491	1.132	12.000	11.920	11.024	15.957	0.000
7	EI	N0	5.506	1.132	12.000	4.860	3.040	7.972	0.000
8	FP	N0	5.295	1.132	12.000	4.680	2.829	7.761	0.000

Table 12.245: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.492	1.132	12.000	-1.320	-3.958	0.974	0.212
B N-N0	6.492	1.132	12.000	5.740	4.027	8.959	0.000
A:B EI N- FP N	-3.195	1.601	12.000	-2.000	-6.683	0.292	0.069
A:B EI N- EI N0	4.789	1.601	12.000	2.990	1.302	8.277	0.011
A:B EI N- FP N0	5.001	1.601	12.000	3.120	1.513	8.488	0.009
A:B FP N- EI N0	7.984	1.601	12.000	4.990	4.497	11.472	0.000
A:B FP N- FP N0	8.196	1.601	12.000	5.120	4.708	11.683	0.000
A:B EI N0- FP N0	0.211	1.601	12.000	0.130	-3.276	3.699	0.897

Table 12.246: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 28 in year 2010
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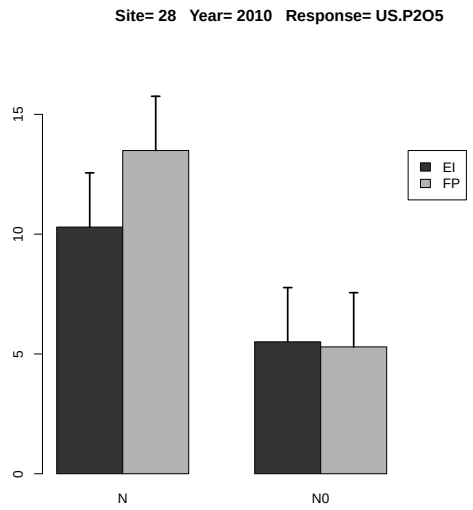

Figure 12.101: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.15 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	24.607
2	2	EI	N0	12.685
3	3	EI	N0	12.953
4	4	EI	N0	19.430
5	1	EI	N	38.904
6	2	EI	N	51.870
7	3	EI	N	28.745
8	4	EI	N	56.870
9	1	FP	N0	12.595
10	2	FP	N0	21.975
11	3	FP	N0	15.580
12	4	FP	N0	12.714
13	1	FP	N	117.711
14	2	FP	N	91.507
15	3	FP	N	111.962
16	4	FP	N	108.172

Table 12.247: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	44.097	7.475	5.899	0.019
A FP	107.338	7.475	14.360	0.001
A EI-FP	-63.241	10.571	-5.982	0.018

Table 12.248: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 28 in year 2010 .

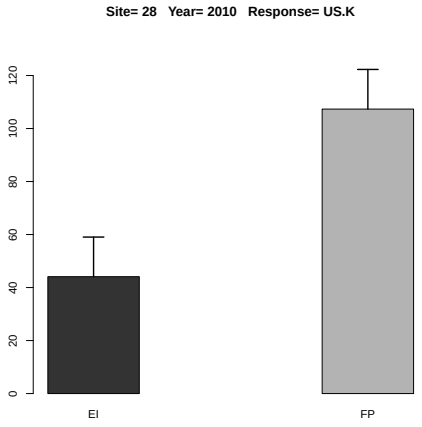

Figure 12.102: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3786.929	3786.929	44.442	12.000	0.000
B	1.000	13994.943	13994.943	164.239	12.000	0.000
A:B	1.000	4217.622	4217.622	49.496	12.000	0.000

Table 12.249: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		30.758	3.264	12.000	9.420	23.647	37.869	0.000
2	FP		61.527	3.264	12.000	18.850	54.416	68.638	0.000
3		N	75.718	3.264	12.000	23.200	68.607	82.828	0.000
4		N0	16.567	3.264	12.000	5.080	9.457	23.678	0.000
5	EI	N	44.097	4.615	12.000	9.550	34.041	54.154	0.000
6	FP	N	107.338	4.615	12.000	23.260	97.281	117.394	0.000
7	EI	N0	17.419	4.615	12.000	3.770	7.362	27.475	0.003
8	FP	N0	15.716	4.615	12.000	3.410	5.660	25.772	0.005

Table 12.250: Estimate of treatment means in tow-way ANOVA for variable US.K at site 28 in year 2010 .

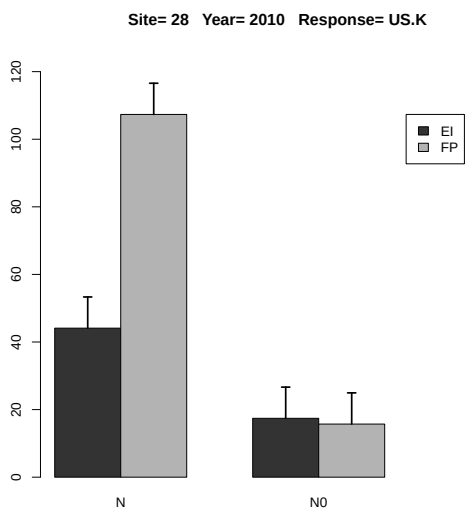

Figure 12.103: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-30.769	4.615	12.000	-6.670	-40.825	-20.713	0.000
B N-N0	59.150	4.615	12.000	12.820	49.094	69.206	0.000
A:B EI N- FP N	-63.241	6.527	12.000	-9.690	-77.462	-49.019	0.000
A:B EI N- EI N0	26.678	6.527	12.000	4.090	12.457	40.900	0.002
A:B EI N- FP N0	28.381	6.527	12.000	4.350	14.159	42.603	0.001
A:B FP N- EI N0	89.919	6.527	12.000	13.780	75.697	104.141	0.000
A:B FP N- FP N0	91.622	6.527	12.000	14.040	77.400	105.844	0.000
A:B EI N0- FP N0	1.703	6.527	12.000	0.260	-12.519	15.924	0.799

Table 12.251: Estimate of contrast in two-way ANOVA for variable US.K at site 28 in year 2010 .

12.2.16 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	25.475
2	2	EI	N0	13.389
3	3	EI	N0	13.701
4	4	EI	N0	20.045
5	1	EI	N	41.583
6	2	EI	N	53.860
7	3	EI	N	30.567
8	4	EI	N	58.787
9	1	FP	N0	12.993
10	2	FP	N0	23.092
11	3	FP	N0	16.182
12	4	FP	N0	13.418
13	1	FP	N	120.127
14	2	FP	N	93.453
15	3	FP	N	115.217
16	4	FP	N	110.643

Table 12.252: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	46.199	7.585	6.091	0.017
A FP	109.860	7.585	14.484	0.002
A EI-FP	-63.661	10.726	-5.935	0.018

Table 12.253: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 28 in year 2010 .

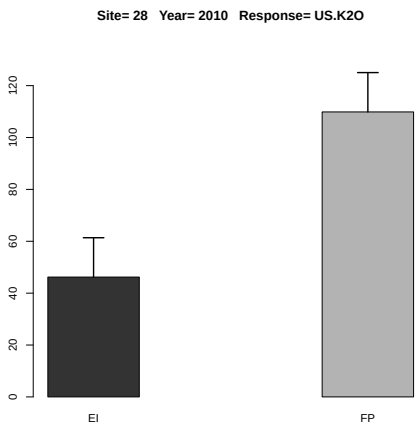

Figure 12.104: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3835.294	3835.294	43.758	12.000	0.000
B	1.000	14758.628	14758.628	168.384	12.000	0.000
A:B	1.000	4276.131	4276.131	48.787	12.000	0.000

Table 12.254: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		32.176	3.310	12.000	9.720	24.964	39.388	0.000
2	FP		63.141	3.310	12.000	19.080	55.929	70.353	0.000
3		N	78.029	3.310	12.000	23.570	70.818	85.241	0.000
4		N0	17.287	3.310	12.000	5.220	10.075	24.499	0.000
5	EI	N	46.199	4.681	12.000	9.870	36.000	56.398	0.000
6	FP	N	109.860	4.681	12.000	23.470	99.661	120.059	0.000
7	EI	N0	18.152	4.681	12.000	3.880	7.953	28.352	0.002
8	FP	N0	16.421	4.681	12.000	3.510	6.222	26.620	0.004

Table 12.255: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-30.965	4.681	12.000	-6.610	-41.164	-20.766	0.000
B N-N0	60.742	4.681	12.000	12.980	50.543	70.942	0.000
A:B EI N- FP N	-63.661	6.620	12.000	-9.620	-78.085	-49.237	0.000
A:B EI N- EI N0	28.047	6.620	12.000	4.240	13.623	42.470	0.001
A:B EI N- FP N0	29.778	6.620	12.000	4.500	15.354	44.201	0.001
A:B FP N- EI N0	91.707	6.620	12.000	13.850	77.284	106.131	0.000
A:B FP N- FP N0	93.439	6.620	12.000	14.110	79.015	107.862	0.000
A:B EI N0- FP N0	1.731	6.620	12.000	0.260	-12.693	16.155	0.798

Table 12.256: Estimate of contrast in two-way ANOVA for variable US.K2O at site 28 in year 2010 .

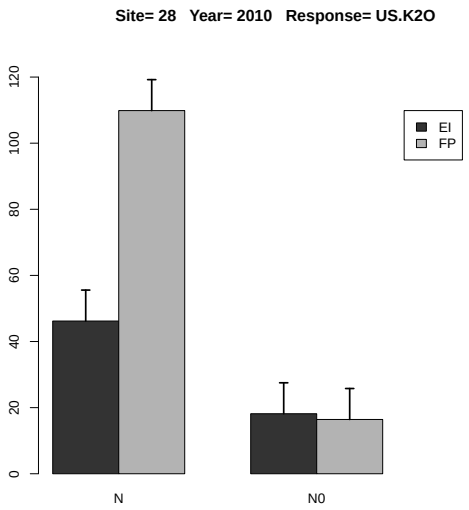

Figure 12.105: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.17 Response Variable US.Mg

	rep	A	B	y
1	1	EI	N0	32.424
2	2	EI	N0	16.935
3	3	EI	N0	13.709
4	4	EI	N0	18.501
5	1	EI	N	32.663
6	2	EI	N	20.349
7	3	EI	N	27.898
8	4	EI	N	40.672
9	1	FP	N0	12.650
10	2	FP	N0	21.964
11	3	FP	N0	17.706
12	4	FP	N0	17.256
13	1	FP	N	35.156
14	2	FP	N	27.764
15	3	FP	N	39.945
16	4	FP	N	41.092

Table 12.257: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	30.396	1.841	16.512	0.001
A FP	35.989	1.841	19.550	0.000
A EI-FP	-5.593	2.603	-2.148	0.219

Table 12.258: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 28 in year 2010 .

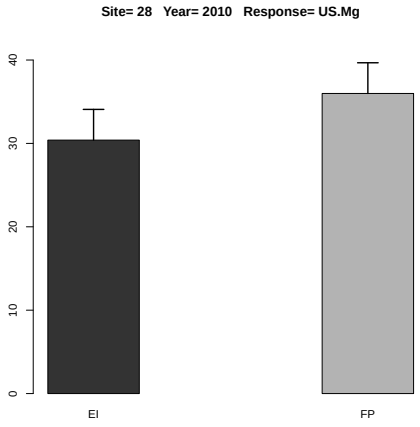

Figure 12.106: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.613	5.613	0.129	5.998	0.732
B	1.000	817.886	817.886	18.727	6.000	0.005
A:B	1.000	73.818	73.818	1.690	6.000	0.241

Table 12.259: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.394	2.559	6.000	9.920	19.132	31.657	0.000
2	FP		26.692	2.559	6.000	10.430	20.429	32.954	0.000
3		N	33.193	2.450	11.900	13.550	27.849	38.536	0.000
4		N0	18.893	2.450	11.900	7.710	13.549	24.237	0.000
5	EI	N	30.396	3.465	11.900	8.770	22.839	37.953	0.000
6	FP	N	35.989	3.465	11.900	10.390	28.432	43.547	0.000
7	EI	N0	20.392	3.465	11.900	5.880	12.835	27.950	0.000
8	FP	N0	17.394	3.465	11.900	5.020	9.837	24.951	0.000

Table 12.260: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 28 in year 2010 .

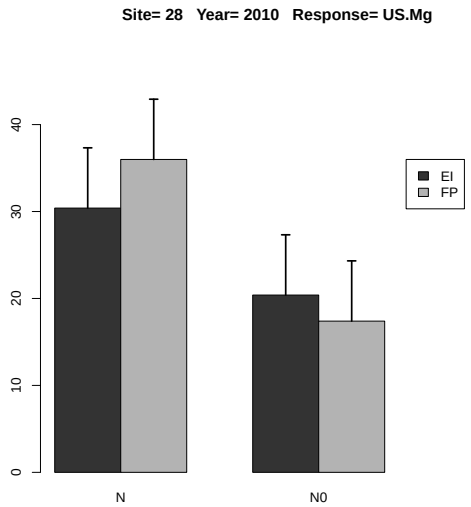

Figure 12.107: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.297	3.619	6.000	-0.360	-10.154	7.559	0.732
B N-N0	14.299	3.304	6.000	4.330	6.214	22.385	0.005
A:B EI N- FP N	-5.593	4.901	11.900	-1.140	-16.281	5.094	0.276
A:B EI N- EI N0	10.004	4.673	6.000	2.140	-1.431	21.438	0.076
A:B EI N- FP N0	13.002	4.901	11.900	2.650	2.314	23.689	0.021
A:B FP N- EI N0	15.597	4.901	11.900	3.180	4.909	26.284	0.008
A:B FP N- FP N0	18.595	4.673	6.000	3.980	7.161	30.030	0.007
A:B EI N0- FP N0	2.998	4.901	11.900	0.610	-7.689	13.686	0.552

Table 12.261: Estimate of contrast in two-way ANOVA for variable US.Mg at site 28 in year 2010 .

12.2.18 Response Variable US.S

	rep	A	B	y
1	1	EI	N0	11.621
2	2	EI	N0	5.725
3	3	EI	N0	6.826
4	4	EI	N0	9.227
5	1	EI	N	14.666
6	2	EI	N	24.514
7	3	EI	N	16.730
8	4	EI	N	6.848
9	1	FP	N0	6.343
10	2	FP	N0	9.712
11	3	FP	N0	7.399
12	4	FP	N0	6.985
13	1	FP	N	17.840
14	2	FP	N	16.849
15	3	FP	N	17.875
16	4	FP	N	15.546

Table 12.262: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	15.689	2.404	6.528	0.014
A FP	17.027	2.404	7.084	0.011
A EI-FP	-1.338	3.399	-0.394	0.916

Table 12.263: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 28 in year 2010 .

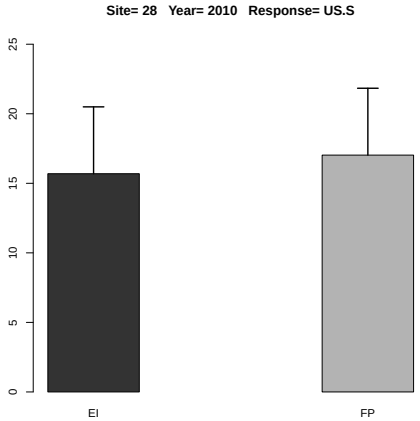

Figure 12.108: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.358	0.358	0.023	12.000	0.883
B	1.000	280.811	280.811	17.836	12.000	0.001
A:B	1.000	4.317	4.317	0.274	12.000	0.610

Table 12.264: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.019	1.403	12.000	8.570	8.963	15.076	0.000
2	FP		12.319	1.403	12.000	8.780	9.262	15.375	0.000
3		N	16.358	1.403	12.000	11.660	13.302	19.415	0.000
4		N0	7.980	1.403	12.000	5.690	4.923	11.036	0.000
5	EI	N	15.689	1.984	12.000	7.910	11.367	20.012	0.000
6	FP	N	17.027	1.984	12.000	8.580	12.705	21.350	0.000
7	EI	N0	8.349	1.984	12.000	4.210	4.027	12.672	0.001
8	FP	N0	7.610	1.984	12.000	3.840	3.287	11.932	0.002

Table 12.265: Estimate of treatment means in tow-way ANOVA for variable US.S at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.299	1.984	12.000	-0.150	-4.622	4.024	0.883
B N-N0	8.379	1.984	12.000	4.220	4.056	12.701	0.001
A:B EI N- FP N	-1.338	2.806	12.000	-0.480	-7.451	4.775	0.642
A:B EI N- EI N0	7.340	2.806	12.000	2.620	1.227	13.453	0.022
A:B EI N- FP N0	8.080	2.806	12.000	2.880	1.966	14.193	0.014
A:B FP N- EI N0	8.678	2.806	12.000	3.090	2.565	14.791	0.009
A:B FP N- FP N0	9.418	2.806	12.000	3.360	3.304	15.531	0.006
A:B EI N0- FP N0	0.740	2.806	12.000	0.260	-5.373	6.853	0.796

Table 12.266: Estimate of contrast in two-way ANOVA for variable US.S at site 28 in year 2010 .

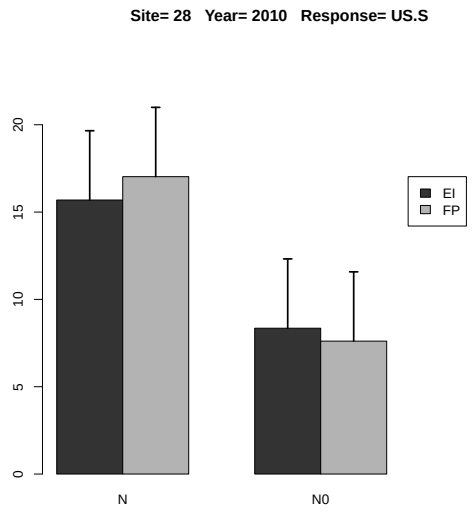

Figure 12.109: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.19 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	59.933
2	2	EI	N0	32.784
3	3	EI	N0	41.738
4	4	EI	N0	46.497
5	1	EI	N	216.326
6	2	EI	N	163.469
7	3	EI	N	226.740
8	4	EI	N	146.083
9	1	FP	N0	40.917
10	2	FP	N0	58.177
11	3	FP	N0	38.077
12	4	FP	N0	36.259
13	1	FP	N	243.766
14	2	FP	N	234.940
15	3	FP	N	253.212
16	4	FP	N	211.659

Table 12.267: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	188.155	8.529	22.062	0.001
A FP	235.894	8.529	27.659	0.000
A EI-FP	-47.740	12.061	-3.958	0.055

Table 12.268: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 28 in year 2010 .

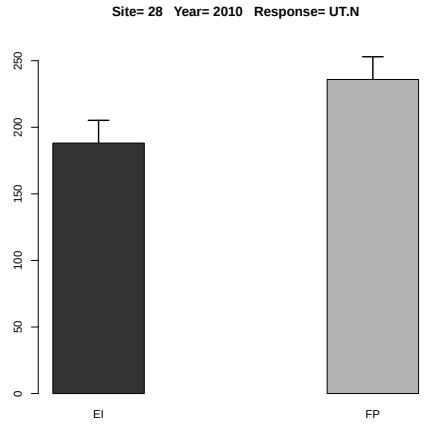

Figure 12.110: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2103.041	2103.041	5.080	9.000	0.051
B	1.000	112528.866	112528.866	271.833	9.000	0.000
A:B	1.000	2462.192	2462.192	5.948	9.000	0.037

Table 12.269: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		116.696	8.917	6.100	13.090	94.977	138.416	0.000
2	FP		139.626	8.917	6.100	15.660	117.906	161.345	0.000
3		N	212.024	8.917	6.100	23.780	190.305	233.744	0.000
4		N0	44.298	8.917	6.100	4.970	22.578	66.017	0.002
5	EI	N	188.155	11.457	10.600	16.420	162.815	213.494	0.000
6	FP	N	235.894	11.457	10.600	20.590	210.554	261.234	0.000
7	EI	N0	45.238	11.457	10.600	3.950	19.898	70.578	0.002
8	FP	N0	43.358	11.457	10.600	3.780	18.018	68.697	0.003

Table 12.270: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 28 in year 2010 .

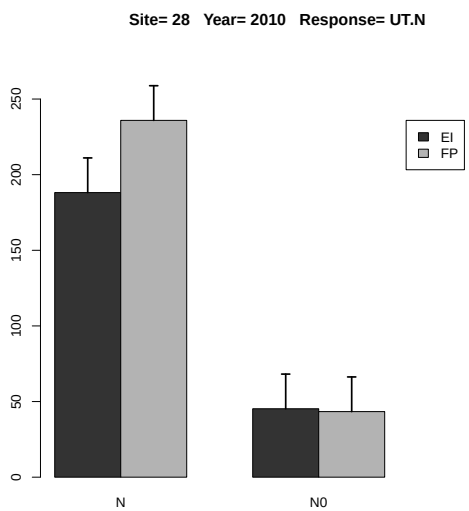

Figure 12.111: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-22.930	10.173	9.000	-2.250	-45.943	0.084	0.051
B N-N0	167.727	10.173	9.000	16.490	144.714	190.740	0.000
A:B EI N- FP N	-47.740	14.387	9.000	-3.320	-80.285	-15.194	0.009
A:B EI N- EI N0	142.916	14.387	9.000	9.930	110.371	175.462	0.000
A:B EI N- FP N0	144.797	14.387	9.000	10.060	112.252	177.343	0.000
A:B FP N- EI N0	190.656	14.387	9.000	13.250	158.111	223.202	0.000
A:B FP N- FP N0	192.537	14.387	9.000	13.380	159.991	225.082	0.000
A:B EI N0- FP N0	1.881	14.387	9.000	0.130	-30.665	34.426	0.899

Table 12.271: Estimate of contrast in two-way ANOVA for variable UT.N at site 28 in year 2010 .

12.2.20 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	9.910
2	2	EI	N0	6.057
3	3	EI	N0	11.064
4	4	EI	N0	10.392
5	1	EI	N	22.050
6	2	EI	N	25.735
7	3	EI	N	37.970
8	4	EI	N	12.651
9	1	FP	N0	9.936
10	2	FP	N0	14.447
11	3	FP	N0	12.277
12	4	FP	N0	7.144
13	1	FP	N	24.862
14	2	FP	N	27.017
15	3	FP	N	35.633
16	4	FP	N	40.751

Table 12.272: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	24.601	4.923	4.997	0.030
A FP	32.065	4.923	6.513	0.015
A EI-FP	-7.464	6.963	-1.072	0.578

Table 12.273: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 28 in year 2010 .

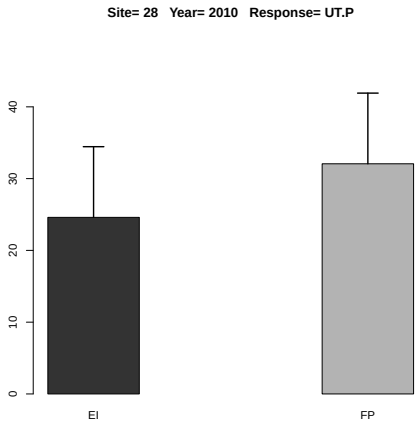

Figure 12.112: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	82.075	82.075	1.841	9.000	0.208
B	1.000	1322.057	1322.057	29.658	9.000	0.000
A:B	1.000	34.443	34.443	0.773	9.000	0.402

Table 12.274: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16.979	2.381	8.800	7.130	11.578	22.379	0.000
2	FP		21.508	2.381	8.800	9.030	16.108	26.909	0.000
3		N	28.333	2.381	8.800	11.900	22.933	33.734	0.000
4		N0	10.153	2.381	8.800	4.260	4.753	15.554	0.002
5	EI	N	24.601	3.353	12.000	7.340	17.296	31.907	0.000
6	FP	N	32.066	3.353	12.000	9.560	24.760	39.371	0.000
7	EI	N0	9.356	3.353	12.000	2.790	2.050	16.661	0.016
8	FP	N0	10.951	3.353	12.000	3.270	3.646	18.256	0.007

Table 12.275: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-4.530	3.338	9.000	-1.360	-12.082	3.022	0.208
B N-N0	18.180	3.338	9.000	5.450	10.628	25.732	0.000
A:B EI N- FP N	-7.464	4.721	9.000	-1.580	-18.144	3.216	0.148
A:B EI N- EI N0	15.246	4.721	9.000	3.230	4.566	25.925	0.010
A:B EI N- FP N0	13.650	4.721	9.000	2.890	2.970	24.330	0.018
A:B FP N- EI N0	22.710	4.721	9.000	4.810	12.030	33.390	0.001
A:B FP N- FP N0	21.114	4.721	9.000	4.470	10.435	31.794	0.002
A:B EI N0- FP N0	-1.595	4.721	9.000	-0.340	-12.275	9.084	0.743

Table 12.276: Estimate of contrast in two-way ANOVA for variable UT.P at site 28 in year 2010 .

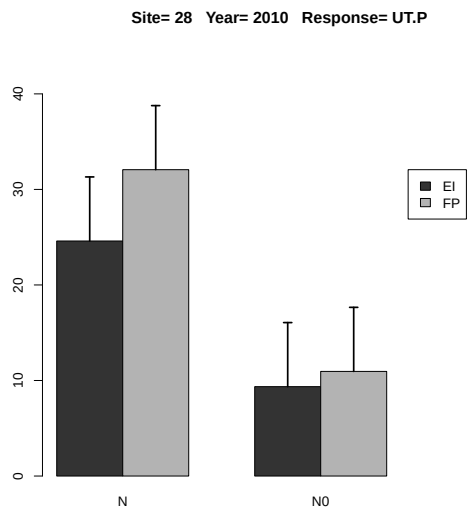

Figure 12.113: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.21 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	10.967
2	2	EI	N0	6.468
3	3	EI	N0	12.047
4	4	EI	N0	11.067
5	1	EI	N	24.512
6	2	EI	N	27.415
7	3	EI	N	40.222
8	4	EI	N	14.070
9	1	FP	N0	10.447
10	2	FP	N0	15.515
11	3	FP	N0	12.908
12	4	FP	N0	7.566
13	1	FP	N	28.794
14	2	FP	N	29.096
15	3	FP	N	39.730
16	4	FP	N	42.852

Table 12.277: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	26.555	4.815	5.515	0.023
A FP	35.118	4.815	7.293	0.010
A EI-FP	-8.563	6.810	-1.257	0.492

Table 12.278: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 28 in year 2010 .

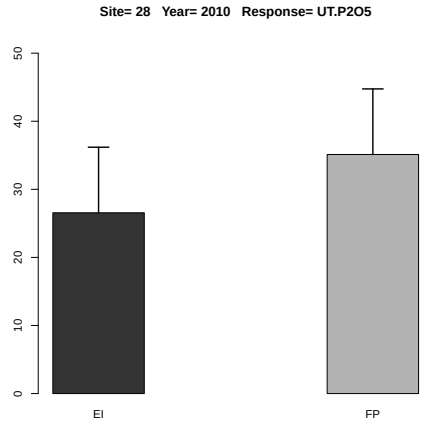

Figure 12.114: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	100.702	100.702	2.253	9.000	0.168
B	1.000	1594.100	1594.100	35.658	9.000	0.000
A:B	1.000	50.292	50.292	1.125	9.000	0.316

Table 12.279: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.346	2.458	8.300	7.460	12.716	23.976	0.000
2	FP		23.363	2.458	8.300	9.510	17.734	28.993	0.000
3		N	30.836	2.458	8.300	12.550	25.206	36.466	0.000
4		N0	10.873	2.458	8.300	4.420	5.243	16.503	0.002
5	EI	N	26.555	3.410	11.900	7.790	19.120	33.989	0.000
6	FP	N	35.118	3.410	11.900	10.300	27.684	42.552	0.000
7	EI	N0	10.137	3.410	11.900	2.970	2.703	17.571	0.012
8	FP	N0	11.609	3.410	11.900	3.400	4.175	19.043	0.005

Table 12.280: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 28 in year 2010 .

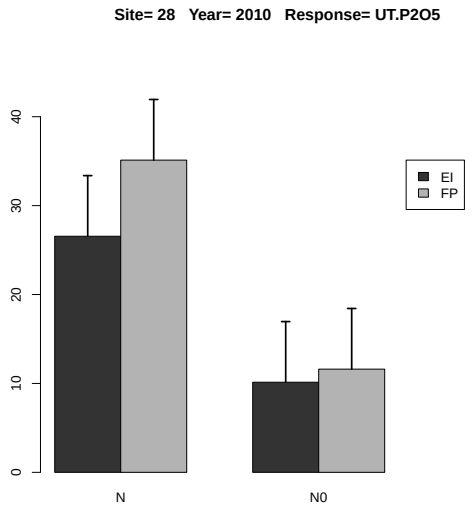

Figure 12.115: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.018	3.343	9.000	-1.500	-12.580	2.545	0.168
B N-N0	19.963	3.343	9.000	5.970	12.400	27.526	0.000
A:B EI N- FP N	-8.563	4.728	9.000	-1.810	-19.259	2.132	0.103
A:B EI N- EI N0	16.417	4.728	9.000	3.470	5.722	27.112	0.007
A:B EI N- FP N0	14.946	4.728	9.000	3.160	4.250	25.641	0.011
A:B FP N- EI N0	24.981	4.728	9.000	5.280	14.286	35.676	0.000
A:B FP N- FP N0	23.509	4.728	9.000	4.970	12.814	34.204	0.001
A:B EI N0- FP N0	-1.472	4.728	9.000	-0.310	-12.167	9.223	0.763

Table 12.281: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 28 in year 2010
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12.2.22 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	45.870
2	2	EI	N0	24.402
3	3	EI	N0	26.076
4	4	EI	N0	31.463
5	1	EI	N	104.007
6	2	EI	N	91.238
7	3	EI	N	80.213
8	4	EI	N	104.237
9	1	FP	N0	25.170
10	2	FP	N0	38.429
11	3	FP	N0	28.991
12	4	FP	N0	23.928
13	1	FP	N	178.850
14	2	FP	N	143.373
15	3	FP	N	167.532
16	4	FP	N	161.181

Table 12.282: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	94.924	5.751	16.505	0.000
A FP	162.734	5.751	28.296	0.000
A EI-FP	-67.810	8.133	-8.337	0.007

Table 12.283: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 28 in year 2010 .

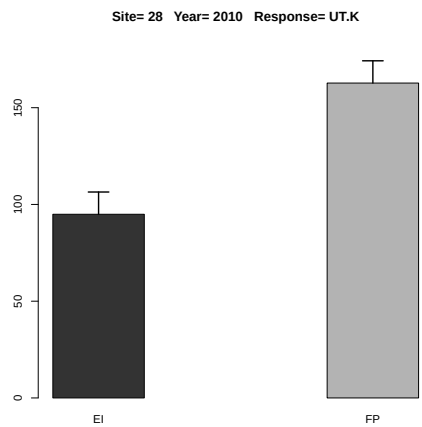

Figure 12.116: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4223.281	4223.281	38.508	9.000	0.000
B	1.000	38641.976	38641.976	352.338	9.000	0.000
A:B	1.000	4989.102	4989.102	45.491	9.000	0.000

Table 12.284: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		63.438	4.123	7.300	15.390	53.772	73.104	0.000
2	FP		95.932	4.123	7.300	23.270	86.266	105.597	0.000
3		N	128.829	4.123	7.300	31.250	119.163	138.495	0.000
4		N0	30.541	4.123	7.300	7.410	20.875	40.207	0.000
5	EI	N	94.924	5.541	11.600	17.130	82.804	107.044	0.000
6	FP	N	162.734	5.541	11.600	29.370	150.614	174.854	0.000
7	EI	N0	31.953	5.541	11.600	5.770	19.833	44.073	0.000
8	FP	N0	29.129	5.541	11.600	5.260	17.009	41.249	0.000

Table 12.285: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-32.493	5.236	9.000	-6.210	-44.339	-20.648	0.000
B N-N0	98.288	5.236	9.000	18.770	86.443	110.133	0.000
A:B EI N- FP N	-67.810	7.405	9.000	-9.160	-84.562	-51.059	0.000
A:B EI N- EI N0	62.971	7.405	9.000	8.500	46.219	79.723	0.000
A:B EI N- FP N0	65.794	7.405	9.000	8.880	49.043	82.546	0.000
A:B FP N- EI N0	130.781	7.405	9.000	17.660	114.029	147.533	0.000
A:B FP N- FP N0	133.605	7.405	9.000	18.040	116.853	150.356	0.000
A:B EI N0- FP N0	2.823	7.405	9.000	0.380	-13.928	19.575	0.712

Table 12.286: Estimate of contrast in two-way ANOVA for variable UT.K at site 28 in year 2010 .

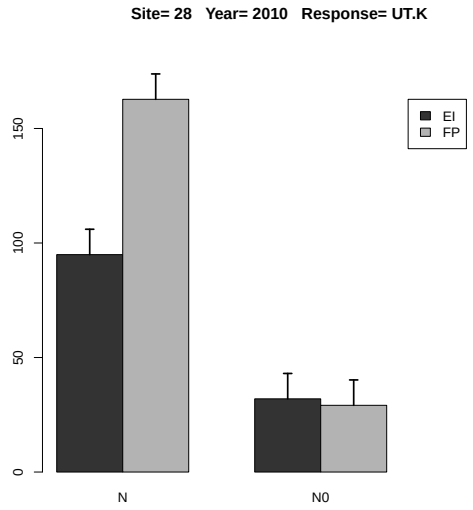

Figure 12.117: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.23 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	46.738
2	2	EI	N0	25.106
3	3	EI	N0	26.824
4	4	EI	N0	32.078
5	1	EI	N	106.685
6	2	EI	N	93.228
7	3	EI	N	82.035
8	4	EI	N	106.154
9	1	FP	N0	25.568
10	2	FP	N0	39.546
11	3	FP	N0	29.592
12	4	FP	N0	24.632
13	1	FP	N	181.266
14	2	FP	N	145.318
15	3	FP	N	170.787
16	4	FP	N	163.653

Table 12.287: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	97.026	5.906	16.428	0.001
A FP	165.256	5.906	27.981	0.000
A EI-FP	-68.230	8.352	-8.169	0.008

Table 12.288: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 28 in year 2010 .

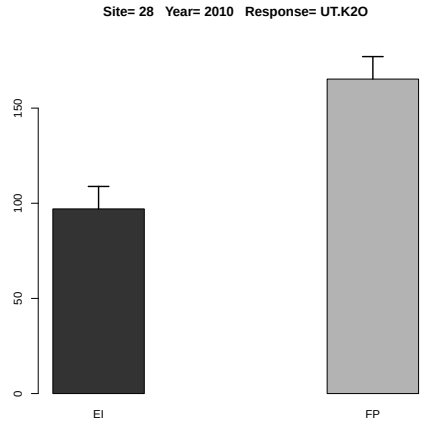

Figure 12.118: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4274.348	4274.348	36.996	9.000	0.000
B	1.000	39904.255	39904.255	345.381	9.000	0.000
A:B	1.000	5052.720	5052.720	43.733	9.000	0.000

Table 12.289: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		64.856	4.180	7.500	15.510	55.097	74.615	0.000
2	FP		97.545	4.180	7.500	23.330	87.786	107.304	0.000
3		N	131.141	4.180	7.500	31.370	121.382	140.900	0.000
4		N0	31.261	4.180	7.500	7.480	21.502	41.020	0.000
5	EI	N	97.025	5.650	11.700	17.170	84.679	109.372	0.000
6	FP	N	165.256	5.650	11.700	29.250	152.910	177.603	0.000
7	EI	N0	32.687	5.650	11.700	5.790	20.340	45.033	0.000
8	FP	N0	29.834	5.650	11.700	5.280	17.488	42.181	0.000

Table 12.290: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 28 in year 2010 .

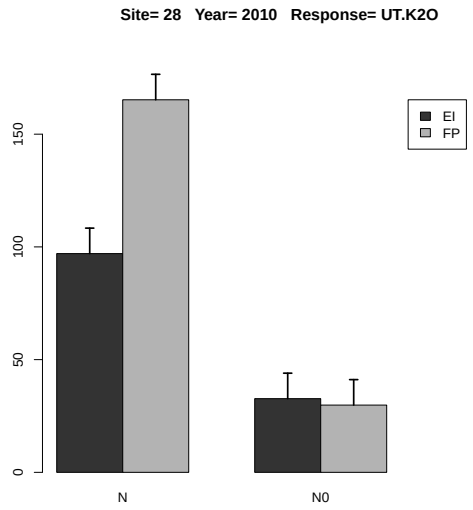

Figure 12.119: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-32.689	5.374	9.000	-6.080	-44.847	-20.532	0.000
B N-N0	99.880	5.374	9.000	18.580	87.722	112.038	0.000
A:B EI N- FP N	-68.231	7.601	9.000	-8.980	-85.424	-51.037	0.000
A:B EI N- EI N0	64.339	7.601	9.000	8.470	47.145	81.533	0.000
A:B EI N- FP N0	67.191	7.601	9.000	8.840	49.997	84.385	0.000
A:B FP N- EI N0	132.570	7.601	9.000	17.440	115.376	149.763	0.000
A:B FP N- FP N0	135.422	7.601	9.000	17.820	118.228	152.615	0.000
A:B EI N0- FP N0	2.852	7.601	9.000	0.380	-14.342	20.046	0.716

Table 12.291: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 28 in year 2010 .

12.2.24 Response Variable UT.Mg

	rep	A	B	y
1	1	EI	N0	48.962
2	2	EI	N0	27.562
3	3	EI	N0	23.131
4	4	EI	N0	27.282
5	1	EI	N	108.123
6	2	EI	N	45.885
7	3	EI	N	88.605
8	4	EI	N	81.108
9	1	FP	N0	20.684
10	2	FP	N0	37.084
11	3	FP	N0	31.822
12	4	FP	N0	27.289
13	1	FP	N	97.994
14	2	FP	N	58.019
15	3	FP	N	98.519
16	4	FP	N	94.102

Table 12.292: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	80.930	3.883	20.844	0.000
A FP	87.158	3.883	22.448	0.001
A EI-FP	-6.228	5.491	-1.134	0.548

Table 12.293: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 28 in year 2010 .

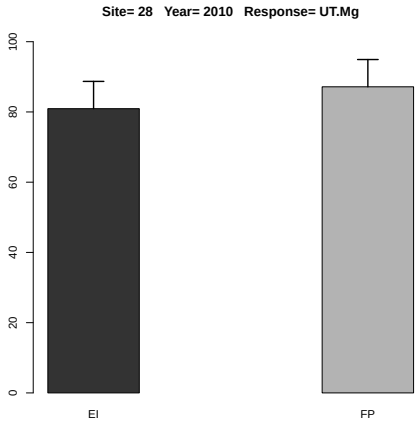

Figure 12.120: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13.789	13.789	0.056	9.000	0.818
B	1.000	11477.769	11477.769	46.523	9.000	0.000
A:B	1.000	76.430	76.430	0.310	9.000	0.591

Table 12.294: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		56.332	6.836	6.200	8.240	39.723	72.942	0.000
2	FP		58.189	6.836	6.200	8.510	41.580	74.798	0.000
3		N	84.044	6.836	6.200	12.290	67.435	100.654	0.000
4		N0	30.477	6.836	6.200	4.460	13.868	47.086	0.004
5	EI	N	80.930	8.808	10.700	9.190	61.468	100.392	0.000
6	FP	N	87.158	8.808	10.700	9.900	67.696	106.620	0.000
7	EI	N0	31.734	8.808	10.700	3.600	12.273	51.196	0.004
8	FP	N0	29.220	8.808	10.700	3.320	9.758	48.681	0.007

Table 12.295: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.857	7.854	9.000	-0.240	-19.623	15.909	0.818
B N-N0	53.567	7.854	9.000	6.820	35.801	71.333	0.000
A:B EI N- FP N	-6.228	11.107	9.000	-0.560	-31.353	18.897	0.589
A:B EI N- EI N0	49.196	11.107	9.000	4.430	24.071	74.321	0.002
A:B EI N- FP N0	51.711	11.107	9.000	4.660	26.585	76.835	0.001
A:B FP N- EI N0	55.424	11.107	9.000	4.990	30.299	80.549	0.001
A:B FP N- FP N0	57.938	11.107	9.000	5.220	32.813	83.064	0.001
A:B EI N0- FP N0	2.514	11.107	9.000	0.230	-22.610	27.640	0.826

Table 12.296: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 28 in year 2010 .

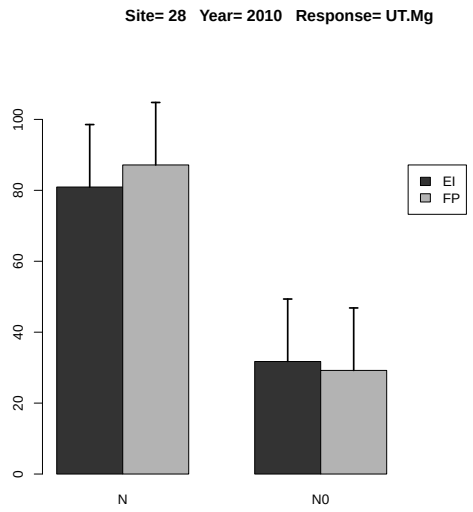

Figure 12.121: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.25 Response Variable UT.S

	rep	A	B	y
1	1	EI	N0	16.818
2	2	EI	N0	8.177
3	3	EI	N0	9.854
4	4	EI	N0	15.080
5	1	EI	N	30.941
6	2	EI	N	46.858
7	3	EI	N	33.886
8	4	EI	N	18.401
9	1	FP	N0	11.233
10	2	FP	N0	15.493
11	3	FP	N0	10.928
12	4	FP	N0	9.051
13	1	FP	N	39.918
14	2	FP	N	38.459
15	3	FP	N	34.396
16	4	FP	N	32.738

Table 12.297: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	32.521	3.521	9.238	0.005
A FP	36.378	3.521	10.333	0.004
A EI-FP	-3.856	4.979	-0.775	0.732

Table 12.298: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 28 in year 2010 .

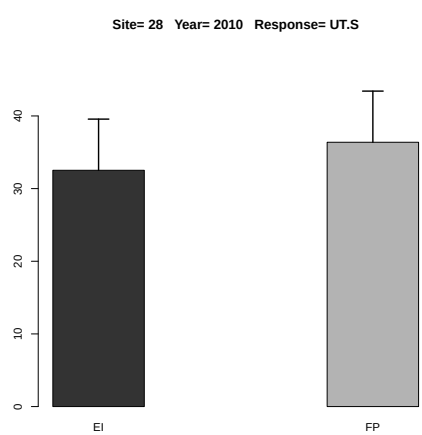

Figure 12.122: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9.303	9.303	0.232	9.000	0.642
B	1.000	2001.712	2001.712	49.842	9.000	0.000
A:B	1.000	21.738	21.738	0.541	9.000	0.481

Table 12.299: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.502	2.396	7.900	9.390	16.962	28.042	0.000
2	FP		24.027	2.396	7.900	10.030	18.487	29.567	0.000
3		N	34.450	2.396	7.900	14.380	28.910	39.989	0.000
4		N0	12.079	2.396	7.900	5.040	6.540	17.619	0.001
5	EI	N	32.522	3.280	11.800	9.910	25.363	39.680	0.000
6	FP	N	36.378	3.280	11.800	11.090	29.220	43.536	0.000
7	EI	N0	12.482	3.280	11.800	3.810	5.324	19.641	0.003
8	FP	N0	11.676	3.280	11.800	3.560	4.518	18.834	0.004

Table 12.300: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 28 in year 2010 .

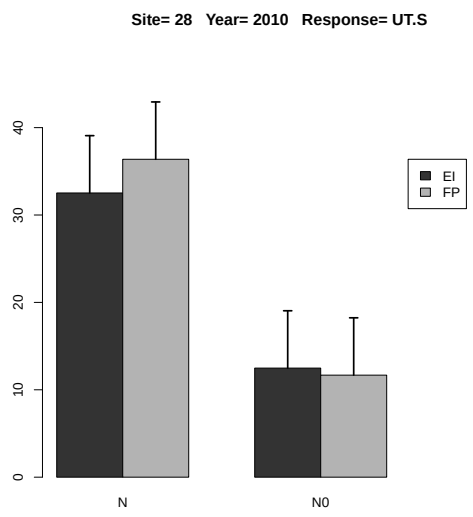

Figure 12.123: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.525	3.169	9.000	-0.480	-8.693	5.643	0.642
B N-N0	22.370	3.169	9.000	7.060	15.202	29.538	0.000
A:B EI N- FP N	-3.856	4.481	9.000	-0.860	-13.993	6.281	0.412
A:B EI N- EI N0	20.039	4.481	9.000	4.470	9.902	30.176	0.002
A:B EI N- FP N0	20.845	4.481	9.000	4.650	10.708	30.982	0.001
A:B FP N- EI N0	23.895	4.481	9.000	5.330	13.758	34.032	0.000
A:B FP N- FP N0	24.701	4.481	9.000	5.510	14.564	34.839	0.000
A:B EI N0- FP N0	0.806	4.481	9.000	0.180	-9.331	10.943	0.861

Table 12.301: Estimate of contrast in two-way ANOVA for variable UT.S at site 28 in year 2010 .

12.2.26 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	1.651
2	2	EI	N0	1.598
3	3	EI	N0	2.261
4	4	EI	N0	1.751
5	1	EI	N	2.033
6	2	EI	N	3.436
7	3	EI	N	2.594
8	4	EI	N	4.393
9	1	FP	N0	2.762
10	2	FP	N0	2.128
11	3	FP	N0	1.774
12	4	FP	N0	1.866
13	1	FP	N	3.552
14	2	FP	N	3.786
15	3	FP	N	2.958
16	4	FP	N	2.915

Table 12.302: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.114	0.395	6.000	7.880	2.147	4.080	0.000
A FP	3.303	0.395	6.000	8.360	2.336	4.269	0.000
A EI-FP	-0.189	0.558	6.000	-0.340	-1.556	1.178	0.747

Table 12.303: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 28 in year 2010 .

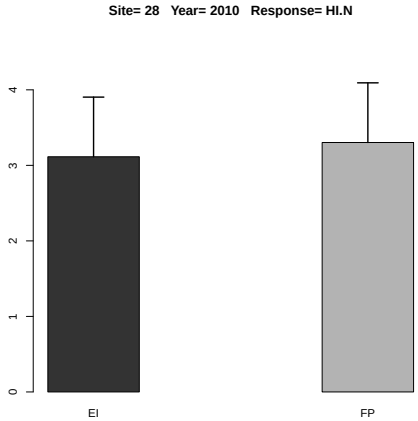

Figure 12.124: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.220	0.220	0.619	5.998	0.461
B	1.000	6.095	6.095	17.138	5.999	0.006
A:B	1.000	0.016	0.016	0.046	5.999	0.837

Table 12.304: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.465	0.227	6.000	10.840	1.908	3.021	0.000
2	FP		2.718	0.227	6.000	11.950	2.161	3.274	0.000
3		N	3.208	0.219	11.900	14.630	2.730	3.686	0.000
4		N0	1.974	0.219	11.900	9.000	1.496	2.452	0.000
5	EI	N	3.114	0.310	11.900	10.040	2.438	3.790	0.000
6	FP	N	3.303	0.310	11.900	10.650	2.627	3.979	0.000
7	EI	N0	1.815	0.310	11.900	5.850	1.139	2.491	0.000
8	FP	N0	2.132	0.310	11.900	6.880	1.456	2.809	0.000

Table 12.305: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.253	0.322	6.000	-0.790	-1.040	0.534	0.461
B N-N0	1.234	0.298	6.000	4.140	0.505	1.964	0.006
A:B EI N- FP N	-0.189	0.439	11.900	-0.430	-1.145	0.767	0.674
A:B EI N- EI N0	1.299	0.422	6.000	3.080	0.267	2.330	0.022
A:B EI N- FP N0	0.981	0.439	11.900	2.240	0.025	1.938	0.045
A:B FP N- EI N0	1.488	0.439	11.900	3.390	0.531	2.444	0.005
A:B FP N- FP N0	1.170	0.422	6.000	2.780	0.138	2.202	0.032
A:B EI N0- FP N0	-0.317	0.439	11.900	-0.720	-1.273	0.639	0.483

Table 12.306: Estimate of contrast in two-way ANOVA for variable HI.N at site 28 in year 2010 .

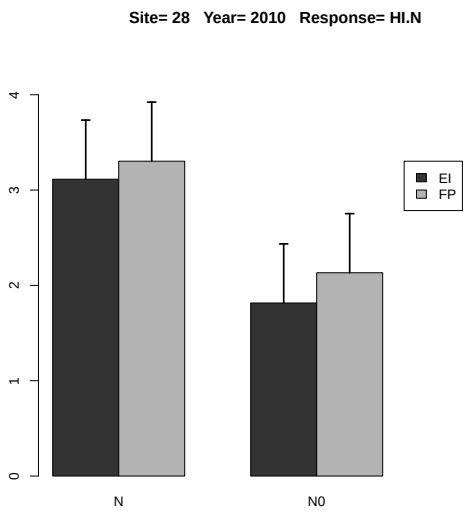

Figure 12.125: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.27 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	0.911
2	2	EI	N0	0.562
3	3	EI	N0	1.768
4	4	EI	N0	0.780
5	1	EI	N	2.040
6	2	EI	N	3.663
7	3	EI	N	2.702
8	4	EI	N	0.223
9	1	FP	N0	2.821
10	2	FP	N0	1.098
11	3	FP	N0	1.523
12	4	FP	N0	0.704
13	1	FP	N	1.205
14	2	FP	N	2.946
15	3	FP	N	2.528
16	4	FP	N	2.012

Table 12.307: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.157	0.578	5.000	3.740	0.673	3.641	0.013
A FP	2.173	0.578	5.000	3.760	0.689	3.657	0.013
A EI-FP	-0.015	0.608	3.000	-0.030	-1.951	1.920	0.981

Table 12.308: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 28 in year 2010 .

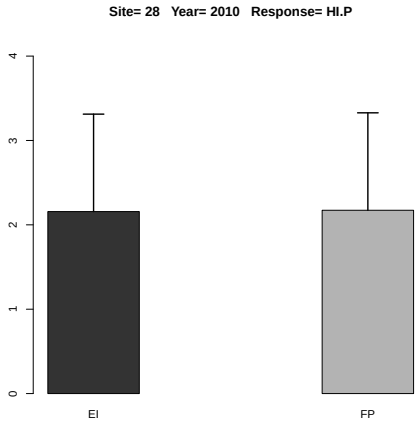

Figure 12.126: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.299	0.299	0.348	8.999	0.570
B	1.000	3.198	3.198	3.727	8.999	0.086
A:B	1.000	0.266	0.266	0.310	8.999	0.591

Table 12.309: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.581	0.360	7.500	4.390	0.740	2.422	0.003
2	FP		1.855	0.360	7.500	5.150	1.014	2.696	0.001
3		N	2.165	0.360	7.500	6.010	1.324	3.006	0.000
4		N0	1.271	0.360	7.500	3.530	0.430	2.112	0.009
5	EI	N	2.157	0.487	11.700	4.430	1.093	3.221	0.001
6	FP	N	2.173	0.487	11.700	4.460	1.109	3.237	0.001
7	EI	N0	1.005	0.487	11.700	2.060	-0.059	2.069	0.062
8	FP	N0	1.536	0.487	11.700	3.160	0.472	2.600	0.008

Table 12.310: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 28 in year 2010 .

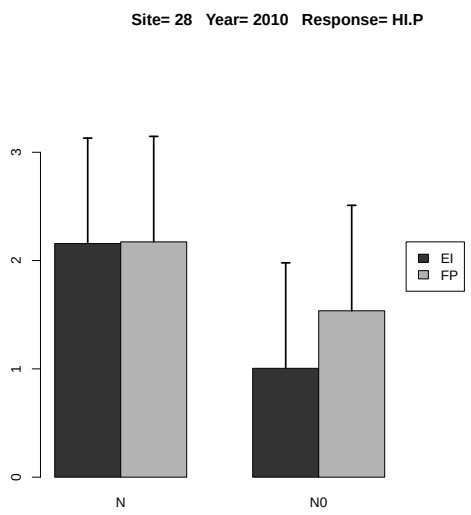

Figure 12.127: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.273	0.463	9.000	-0.590	-1.321	0.774	0.570
B N-N0	0.894	0.463	9.000	1.930	-0.154	1.942	0.086
A:B EI N- FP N	-0.015	0.655	9.000	-0.020	-1.497	1.466	0.982
A:B EI N- EI N0	1.152	0.655	9.000	1.760	-0.330	2.634	0.112
A:B EI N- FP N0	0.621	0.655	9.000	0.950	-0.861	2.103	0.368
A:B FP N- EI N0	1.167	0.655	9.000	1.780	-0.314	2.649	0.108
A:B FP N- FP N0	0.636	0.655	9.000	0.970	-0.845	2.118	0.357
A:B EI N0- FP N0	-0.531	0.655	9.000	-0.810	-2.013	0.951	0.438

Table 12.311: Estimate of contrast in two-way ANOVA for variable HI.P at site 28 in year 2010 .

12.2.28 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.864
2	2	EI	N0	0.924
3	3	EI	N0	1.013
4	4	EI	N0	0.619
5	1	EI	N	1.673
6	2	EI	N	0.759
7	3	EI	N	1.791
8	4	EI	N	0.833
9	1	FP	N0	0.998
10	2	FP	N0	0.749
11	3	FP	N0	0.861
12	4	FP	N0	0.882
13	1	FP	N	0.519
14	2	FP	N	0.567
15	3	FP	N	0.496
16	4	FP	N	0.490

Table 12.312: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.264	0.192	6.000	6.570	0.793	1.735	0.001
A FP	0.518	0.192	6.000	2.690	0.047	0.989	0.036
A EI-FP	0.746	0.272	6.000	2.740	0.080	1.412	0.034

Table 12.313: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 28 in year 2010 .

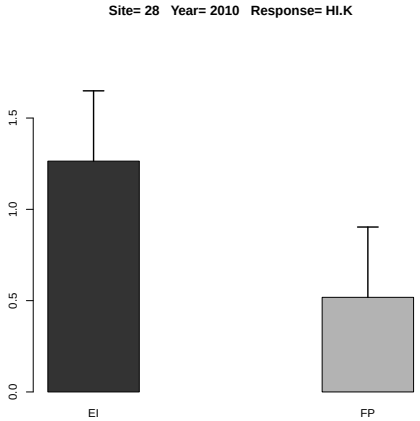

Figure 12.128: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.327	0.327	5.529	2.999	0.100
B	1.000	0.003	0.003	0.050	5.998	0.830
A:B	1.000	0.582	0.582	9.843	5.998	0.020

Table 12.314: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.060	0.117	5.900	9.100	0.774	1.345	0.000
2	FP		0.695	0.117	5.900	5.970	0.409	0.981	0.001
3		N	0.891	0.106	5.900	8.390	0.631	1.151	0.000
4		N0	0.864	0.106	5.900	8.140	0.603	1.124	0.000
5	EI	N	1.264	0.145	10.900	8.730	0.945	1.583	0.000
6	FP	N	0.518	0.145	10.900	3.580	0.199	0.837	0.004
7	EI	N0	0.855	0.145	10.900	5.910	0.536	1.174	0.000
8	FP	N0	0.873	0.145	10.900	6.030	0.553	1.191	0.000

Table 12.315: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.364	0.155	3.000	2.350	-0.129	0.857	0.100
B N-N0	0.027	0.122	6.000	0.220	-0.270	0.325	0.830
A:B EI N- FP N	0.746	0.197	6.600	3.790	0.274	1.218	0.008
A:B EI N- EI N0	0.409	0.172	6.000	2.380	-0.012	0.830	0.055
A:B EI N- FP N0	0.392	0.197	6.600	1.990	-0.080	0.863	0.090
A:B FP N- EI N0	-0.337	0.197	6.600	-1.710	-0.809	0.135	0.134
A:B FP N- FP N0	-0.354	0.172	6.000	-2.060	-0.775	0.067	0.085
A:B EI N0- FP N0	-0.017	0.197	6.600	-0.090	-0.489	0.454	0.932

Table 12.316: Estimate of contrast in two-way ANOVA for variable HI.K at site 28 in year 2010 .

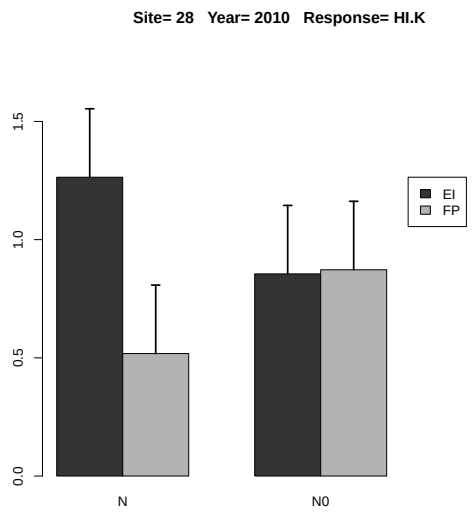

Figure 12.129: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.29 Response Variable HI.Mg

	rep	A	B	y
1	1	EI	N0	0.510
2	2	EI	N0	0.628
3	3	EI	N0	0.687
4	4	EI	N0	0.475
5	1	EI	N	2.310
6	2	EI	N	1.255
7	3	EI	N	2.176
8	4	EI	N	0.994
9	1	FP	N0	0.635
10	2	FP	N0	0.688
11	3	FP	N0	0.797
12	4	FP	N0	0.581
13	1	FP	N	1.787
14	2	FP	N	1.090
15	3	FP	N	1.466
16	4	FP	N	1.290

Table 12.317: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.684	0.255	4.300	6.610	0.997	2.370	0.002
A FP	1.408	0.255	4.300	5.530	0.722	2.095	0.004
A EI-FP	0.275	0.221	3.000	1.240	-0.429	0.980	0.302

Table 12.318: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 28 in year 2010 .

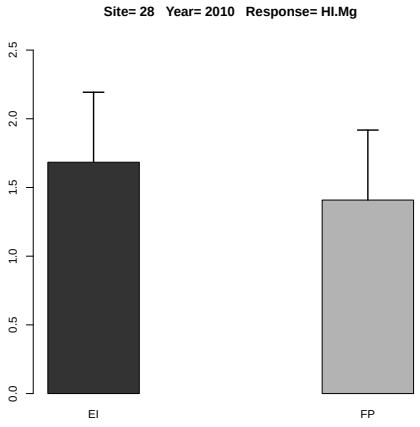

Figure 12.130: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.031	0.031	0.309	8.997	0.592
B	1.000	3.392	3.392	34.377	8.997	0.000
A:B	1.000	0.141	0.141	1.434	8.997	0.262

Table 12.319: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.129	0.146	5.600	7.750	0.767	1.492	0.000
2	FP		1.042	0.146	5.600	7.150	0.680	1.404	0.000
3		N	1.546	0.146	5.600	10.610	1.184	1.908	0.000
4		N0	0.625	0.146	5.600	4.290	0.263	0.988	0.006
5	EI	N	1.684	0.183	9.900	9.190	1.275	2.093	0.000
6	FP	N	1.408	0.183	9.900	7.690	1.000	1.817	0.000
7	EI	N0	0.575	0.183	9.900	3.140	0.166	0.984	0.011
8	FP	N0	0.675	0.183	9.900	3.690	0.267	1.084	0.004

Table 12.320: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 28 in year 2010 .

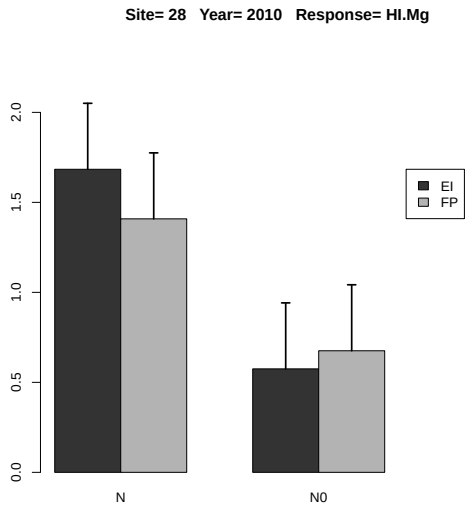

Figure 12.131: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.087	0.157	9.000	0.560	-0.268	0.443	0.592
B N-N0	0.921	0.157	9.000	5.860	0.566	1.276	0.000
A:B EI N- FP N	0.275	0.222	9.000	1.240	-0.227	0.778	0.246
A:B EI N- EI N0	1.109	0.222	9.000	4.990	0.607	1.611	0.001
A:B EI N- FP N0	1.008	0.222	9.000	4.540	0.506	1.511	0.001
A:B FP N- EI N0	0.834	0.222	9.000	3.750	0.331	1.336	0.004
A:B FP N- FP N0	0.733	0.222	9.000	3.300	0.230	1.235	0.009
A:B EI N0- FP N0	-0.101	0.222	9.000	-0.450	-0.603	0.402	0.661

Table 12.321: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 28 in year 2010 .

12.2.30 Response Variable HI.S

	rep	A	B	y
1	1	EI	N0	0.447
2	2	EI	N0	0.428
3	3	EI	N0	0.444
4	4	EI	N0	0.634
5	1	EI	N	1.110
6	2	EI	N	0.911
7	3	EI	N	1.025
8	4	EI	N	1.687
9	1	FP	N0	0.771
10	2	FP	N0	0.595
11	3	FP	N0	0.477
12	4	FP	N0	0.296
13	1	FP	N	1.238
14	2	FP	N	1.283
15	3	FP	N	0.924
16	4	FP	N	1.106

Table 12.322: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.183	0.135	6.000	8.780	0.854	1.513	0.000
A FP	1.138	0.135	6.000	8.440	0.808	1.467	0.000
A EI-FP	0.046	0.190	6.000	0.240	-0.420	0.512	0.818

Table 12.323: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 28 in year 2010 .

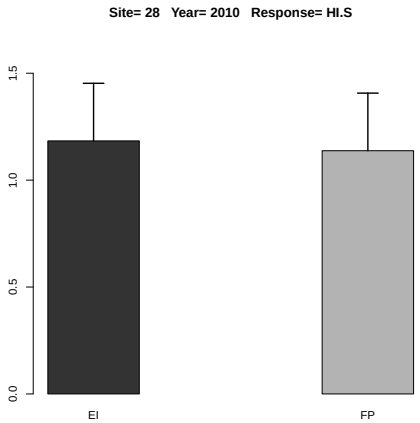

Figure 12.132: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.000	5.999	0.999
B	1.000	1.685	1.685	72.277	5.996	0.000
A:B	1.000	0.008	0.008	0.365	5.996	0.568

Table 12.324: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.836	0.096	6.000	8.690	0.601	1.071	0.000
2	FP		0.836	0.096	6.000	8.690	0.601	1.072	0.000
3		N	1.161	0.078	9.400	14.880	0.985	1.336	0.000
4		N0	0.512	0.078	9.400	6.560	0.336	0.687	0.000
5	EI	N	1.183	0.110	9.400	10.730	0.936	1.431	0.000
6	FP	N	1.138	0.110	9.400	10.310	0.890	1.385	0.000
7	EI	N0	0.488	0.110	9.400	4.430	0.241	0.736	0.002
8	FP	N0	0.535	0.110	9.400	4.850	0.287	0.783	0.001

Table 12.325: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 28 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.000	0.136	6.000	-0.000	-0.333	0.333	0.999
B N-N0	0.649	0.076	6.000	8.500	0.462	0.836	0.000
A:B EI N- FP N	0.046	0.156	9.400	0.290	-0.305	0.396	0.775
A:B EI N- EI N0	0.695	0.108	6.000	6.440	0.431	0.959	0.001
A:B EI N- FP N0	0.649	0.156	9.400	4.160	0.298	0.999	0.002
A:B FP N- EI N0	0.649	0.156	9.400	4.160	0.299	1.000	0.002
A:B FP N- FP N0	0.603	0.108	6.000	5.580	0.339	0.867	0.001
A:B EI N0- FP N0	-0.046	0.156	9.400	-0.300	-0.397	0.304	0.773

Table 12.326: Estimate of contrast in two-way ANOVA for variable HI.S at site 28 in year 2010 .

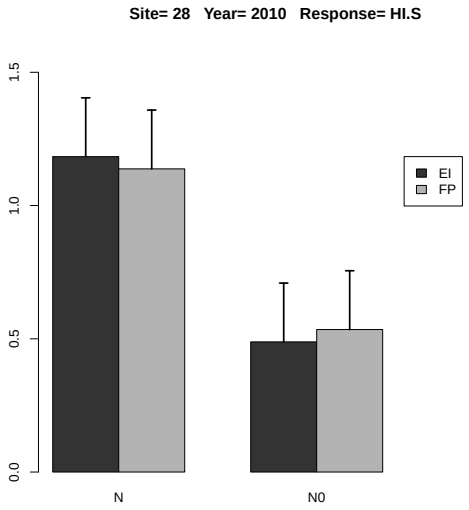

Figure 12.133: Estimated treatment means and standard error in the 2-way ANOVA.

12.2.31 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	49.320
2	2	EI	N	35.467
3	3	EI	N	43.990
4	4	EI	N	38.510
5	1	FP	N	56.610
6	2	FP	N	48.023
7	3	FP	N	50.063
8	4	FP	N	47.757

Table 12.327: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	41.822	2.609	3.500	16.030	34.122	49.521	0.000
A FP	50.613	2.609	3.500	19.400	42.914	58.313	0.000
A EI-FP	-8.792	1.415	3.000	-6.210	-13.295	-4.288	0.008

Table 12.328: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 28 in year 2010 .

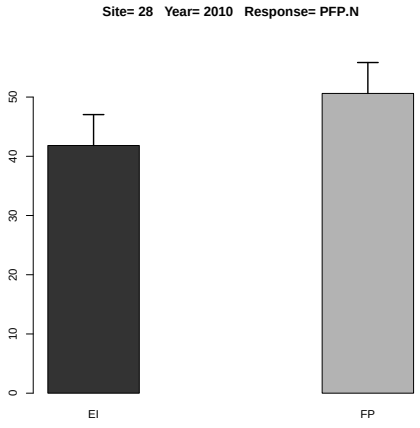

Figure 12.134: Estimated treatment means and standard error in the one-way ANOVA.

12.2.32 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	376.546
2	2	EI	N	270.779
3	3	EI	N	335.853
4	4	EI	N	294.014
5	1	FP	N	432.203
6	2	FP	N	366.646
7	3	FP	N	382.221
8	4	FP	N	364.610

Table 12.329: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	319.298	19.922	3.500	16.030	260.513	378.083	0.000
A FP	386.420	19.922	3.500	19.400	327.635	445.205	0.000
A EI-FP	-67.122	10.803	3.000	-6.210	-101.502	-32.742	0.008

Table 12.330: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 28 in year 2010 .

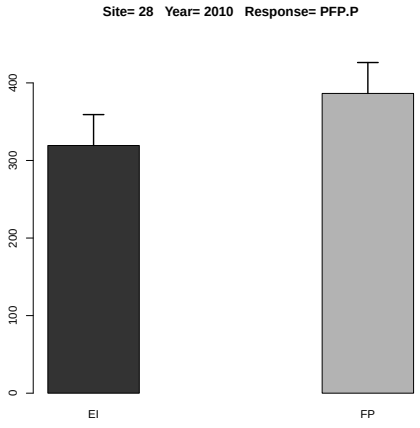

Figure 12.135: Estimated treatment means and standard error in the one-way ANOVA.

12.2.33 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	164.400
2	2	EI	N	118.222
3	3	EI	N	146.633
4	4	EI	N	128.367
5	1	FP	N	188.700
6	2	FP	N	160.078
7	3	FP	N	166.878
8	4	FP	N	159.189

Table 12.331: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	139.406	8.698	3.500	16.030	113.740	165.071	0.000
A FP	168.711	8.698	3.500	19.400	143.046	194.377	0.000
A EI-FP	-29.306	4.717	3.000	-6.210	-44.316	-14.295	0.008

Table 12.332: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 28 in year 2010 .

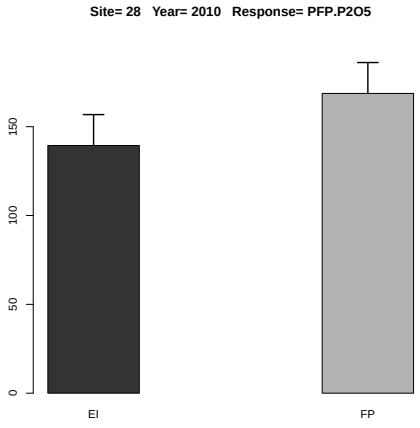

Figure 12.136: Estimated treatment means and standard error in the one-way ANOVA.

12.2.34 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	356.616
2	2	EI	N	256.447
3	3	EI	N	318.077
4	4	EI	N	278.453
5	1	FP	N	409.328
6	2	FP	N	347.240
7	3	FP	N	361.991
8	4	FP	N	345.312

Table 12.333: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	302.398	18.867	3.500	16.030	246.725	358.072	0.000
A FP	365.968	18.867	3.500	19.400	310.294	421.641	0.000
A EI-FP	-63.569	10.231	3.000	-6.210	-96.131	-31.008	0.008

Table 12.334: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 28 in year 2010 .

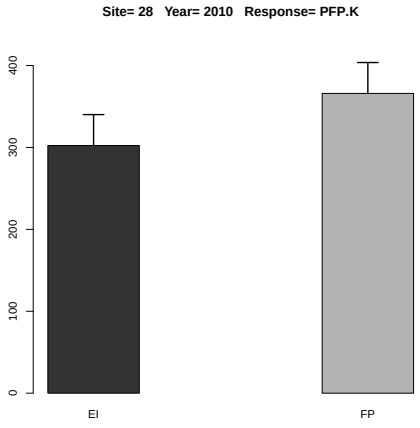

Figure 12.137: Estimated treatment means and standard error in the one-way ANOVA.

12.2.35 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	295.920
2	2	EI	N	212.800
3	3	EI	N	263.940
4	4	EI	N	231.060
5	1	FP	N	339.660
6	2	FP	N	288.140
7	3	FP	N	300.380
8	4	FP	N	286.540

Table 12.335: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	250.930	15.656	3.500	16.030	204.732	297.128	0.000
A FP	303.680	15.656	3.500	19.400	257.482	349.878	0.000
A EI-FP	-52.750	8.490	3.000	-6.210	-79.769	-25.732	0.008

Table 12.336: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 28 in year 2010 .

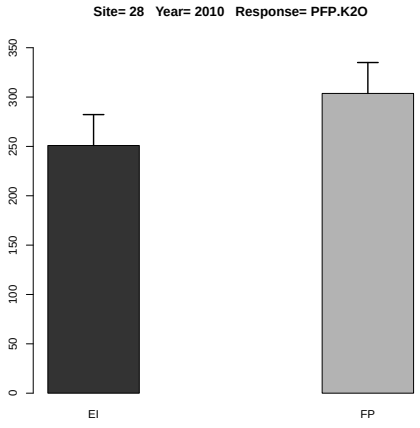

Figure 12.138: Estimated treatment means and standard error in the one-way ANOVA.

12.2.36 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	986.400
2	2	EI	N	709.333
3	3	EI	N	879.800
4	4	EI	N	770.200
5	1	FP	N	1132.200
6	2	FP	N	960.467
7	3	FP	N	1001.267
8	4	FP	N	955.133

Table 12.337: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	836.433	52.187	3.500	16.030	682.441	990.426	0.000
A FP	1012.267	52.187	3.500	19.400	858.274	1166.259	0.000
A EI-FP	-175.833	28.300	3.000	-6.210	-265.883	-85.784	0.008

Table 12.338: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Mg at site 28 in year 2010 .

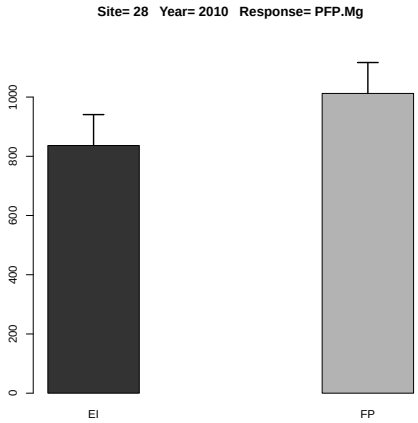

Figure 12.139: Estimated treatment means and standard error in the one-way ANOVA.

12.2.37 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	1479.600
2	2	EI	N	1064.000
3	3	EI	N	1319.700
4	4	EI	N	1155.300
5	1	FP	N	1698.300
6	2	FP	N	1440.700
7	3	FP	N	1501.900
8	4	FP	N	1432.700

Table 12.339: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1254.650	78.281	3.500	16.030	1023.660	1485.640	0.000
A FP	1518.400	78.281	3.500	19.400	1287.410	1749.390	0.000
A EI-FP	-263.750	42.450	3.000	-6.210	-398.912	-128.588	0.008

Table 12.340: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 28 in year 2010 .

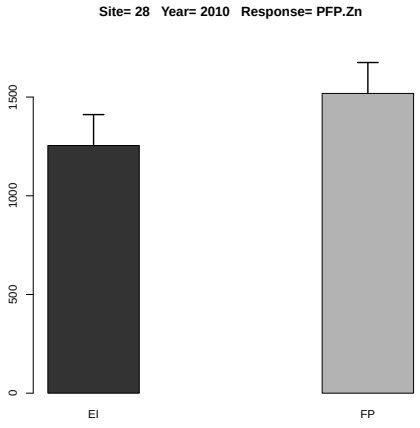

Figure 12.140: Estimated treatment means and standard error in the one-way ANOVA.

12.2.38 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.483
2	2	EI	N	0.422
3	3	EI	N	0.545
4	4	EI	N	0.397
5	1	FP	N	0.634
6	2	FP	N	0.620
7	3	FP	N	0.631
8	4	FP	N	0.525

Table 12.341: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.462	0.030	4.000	15.490	0.380	0.544	0.000
A FP	0.602	0.030	4.000	20.210	0.520	0.685	0.000
A EI-FP	-0.141	0.023	3.000	-6.020	-0.215	-0.066	0.009

Table 12.342: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 28 in year 2010 .

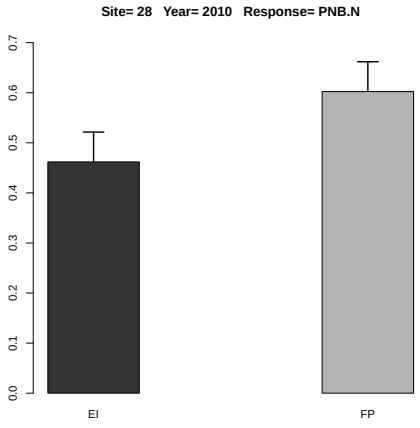

Figure 12.141: Estimated treatment means and standard error in the one-way ANOVA.

12.2.39 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.377
2	2	EI	N	0.514
3	3	EI	N	0.705
4	4	EI	N	0.059
5	1	FP	N	0.346
6	2	FP	N	0.513
7	3	FP	N	0.650
8	4	FP	N	0.693

Table 12.343: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.414	0.111	6.000	3.730	0.142	0.685	0.010
A FP	0.550	0.111	6.000	4.960	0.279	0.822	0.003
A EI-FP	-0.137	0.157	6.000	-0.870	-0.521	0.248	0.418

Table 12.344: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 28 in year 2010 .

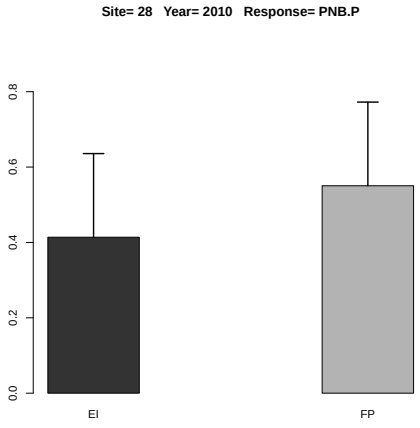

Figure 12.142: Estimated treatment means and standard error in the one-way ANOVA.

12.2.40 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	1.569
2	2	EI	N	0.949
3	3	EI	N	1.240
4	4	EI	N	1.142
5	1	FP	N	1.474
6	2	FP	N	1.250
7	3	FP	N	1.339
8	4	FP	N	1.278

Table 12.345: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.225	0.098	4.200	12.470	0.957	1.493	0.000
A FP	1.335	0.098	4.200	13.590	1.067	1.603	0.000
A EI-FP	-0.110	0.081	3.000	-1.350	-0.369	0.149	0.269

Table 12.346: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 28 in year 2010 .

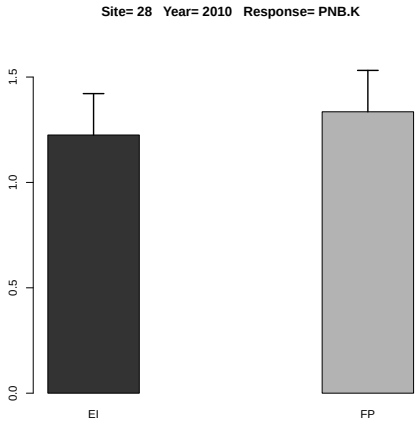

Figure 12.143: Estimated treatment means and standard error in the one-way ANOVA.

12.2.41 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	5.031
2	2	EI	N	1.702
3	3	EI	N	4.047
4	4	EI	N	2.696
5	1	FP	N	4.189
6	2	FP	N	2.017
7	3	FP	N	3.905
8	4	FP	N	3.534

Table 12.347: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.369	0.621	3.500	5.420	1.551	5.187	0.008
A FP	3.411	0.621	3.500	5.490	1.593	5.229	0.008
A EI-FP	-0.042	0.356	3.000	-0.120	-1.176	1.091	0.913

Table 12.348: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.Mg at site 28 in year 2010 .

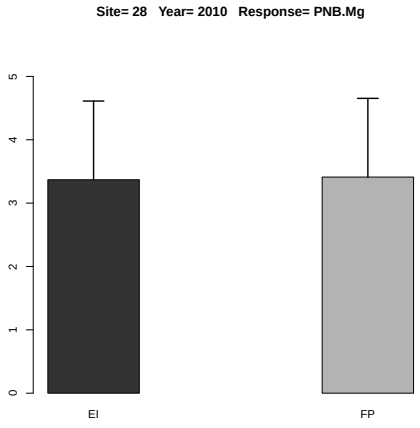

Figure 12.144: Estimated treatment means and standard error in the one-way ANOVA.

12.2.42 Response Variable AE

	rep	A	B	y
1	1	EI	N	33.570
2	2	EI	N	26.383
3	3	EI	N	32.773
4	4	EI	N	27.670
5	1	FP	N	44.967
6	2	FP	N	33.200
7	3	FP	N	38.300
8	4	FP	N	37.920

Table 12.349: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	30.099	0.982	30.662	0.000
A FP	38.597	0.982	39.318	0.000
A EI-FP	-8.497	1.388	-6.121	0.017

Table 12.350: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 28 in year 2010 .

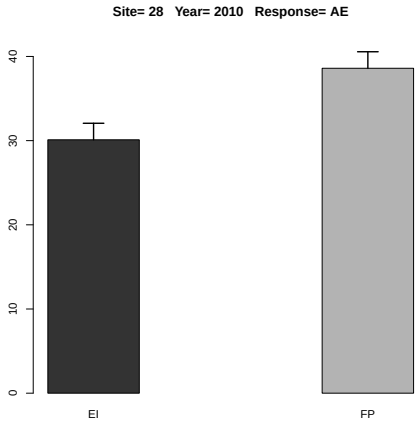

Figure 12.145: Estimated treatment means and standard error in the one-way ANOVA.

12.2.43 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.521
2	2	EI	N	0.436
3	3	EI	N	0.617
4	4	EI	N	0.332
5	1	FP	N	0.676
6	2	FP	N	0.589
7	3	FP	N	0.717
8	4	FP	N	0.585

Table 12.351: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.476	0.022	21.222	0.000
A FP	0.642	0.022	28.590	0.000
A EI-FP	-0.165	0.032	-5.210	0.027

Table 12.352: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 28 in year 2010 .

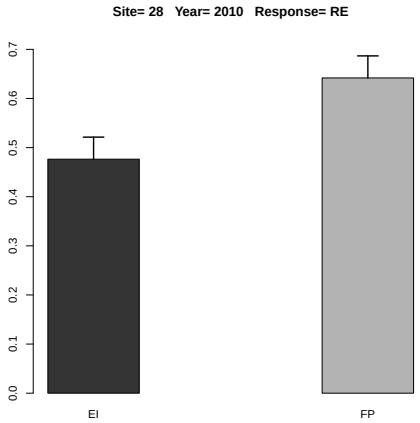

Figure 12.146: Estimated treatment means and standard error in the one-way ANOVA.

12.3 Year 2011

There are 24 variables not observed: UG.Cl UG.Mo US.Cl US.Mo UT.Cl UT.Mo PFP.Ca PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo HI.Cl HI.Mo

12.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	2591.000
2	2	EI	N0	1276.000
3	3	EI	N0	1425.000
4	4	EI	N0	1187.000
5	1	EI	N	10259.000
6	2	EI	N	10890.000
7	3	EI	N	10062.000
8	4	EI	N	10190.000
9	1	FP	N0	1570.000
10	2	FP	N0	1810.000
11	3	FP	N0	1926.000
12	4	FP	N0	1718.000
13	1	FP	N	10574.000
14	2	FP	N	10606.000
15	3	FP	N	9562.000
16	4	FP	N	9473.000

Table 12.353: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	10350.250	157.099	65.884	0.000
A FP	10053.750	157.099	63.996	0.000
A EI-FP	296.500	222.171	1.335	0.459

Table 12.354: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 28 in year 2011 .

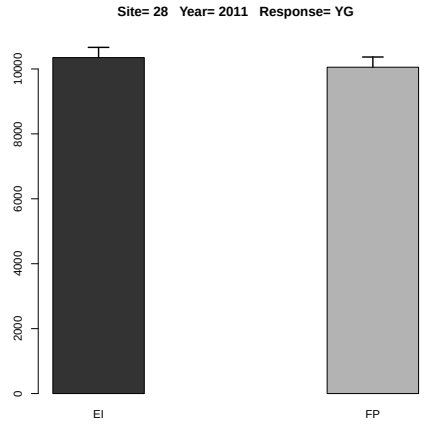

Figure 12.147: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	25680.062	25680.062	0.124	9.183	0.732
B	1.000	289961298.062	289961298.062	1403.650	9.183	0.000
A:B	1.000	187272.563	187272.563	0.907	9.183	0.365

Table 12.355: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5985.000	186.986	6.800	32.010	5539.928	6430.072	0.000
2	FP		5904.875	186.986	6.800	31.580	5459.803	6349.947	0.000
3		N	10202.000	186.986	6.800	54.560	9756.928	10647.072	0.000
4		N0	1687.875	186.986	6.800	9.030	1242.803	2132.947	0.000
5	EI	N	10350.250	246.548	11.400	41.980	9809.645	10890.855	0.000
6	FP	N	10053.750	246.548	11.400	40.780	9513.145	10594.355	0.000
7	EI	N0	1619.750	246.548	11.400	6.570	1079.145	2160.355	0.000
8	FP	N0	1756.000	246.548	11.400	7.120	1215.395	2296.605	0.000

Table 12.356: Estimate of treatment means in tow-way ANOVA for variable YG at site 28 in year 2011 .

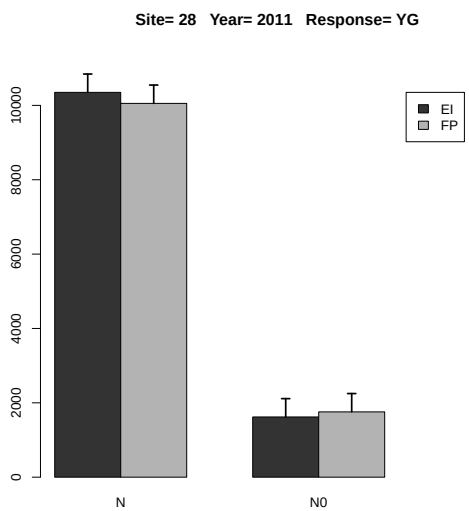

Figure 12.148: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	80.125	227.254	9.200	0.350	-432.400	592.650	0.732
B N-N0	8514.125	227.254	9.200	37.470	8001.600	9026.650	0.000
A:B EI N- FP N	296.500	321.385	9.200	0.920	-428.319	1021.319	0.380
A:B EI N- EI N0	8730.500	321.385	9.200	27.170	8005.681	9455.319	0.000
A:B EI N- FP N0	8594.250	321.385	9.200	26.740	7869.431	9319.069	0.000
A:B FP N- EI N0	8434.000	321.385	9.200	26.240	7709.181	9158.819	0.000
A:B FP N- FP N0	8297.750	321.385	9.200	25.820	7572.931	9022.569	0.000
A:B EI N0- FP N0	-136.250	321.385	9.200	-0.420	-861.069	588.569	0.681

Table 12.357: Estimate of contrast in two-way ANOVA for variable YG at site 28 in year 2011 .

12.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	4981.000
2	2	EI	N0	1946.000
3	3	EI	N0	2821.000
4	4	EI	N0	2468.000
5	1	EI	N	10454.000
6	2	EI	N	11555.000
7	3	EI	N	10618.000
8	4	EI	N	8982.000
9	1	FP	N0	2865.000
10	2	FP	N0	3186.000
11	3	FP	N0	3640.000
12	4	FP	N0	2478.000
13	1	FP	N	12144.000
14	2	FP	N	12358.000
15	3	FP	N	10131.000
16	4	FP	N	11400.000

Table 12.358: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	10402.250	442.147	23.527	0.000
A FP	11508.250	442.147	26.028	0.000
A EI-FP	-1106.000	625.290	-1.769	0.309

Table 12.359: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 28 in year 2011 .

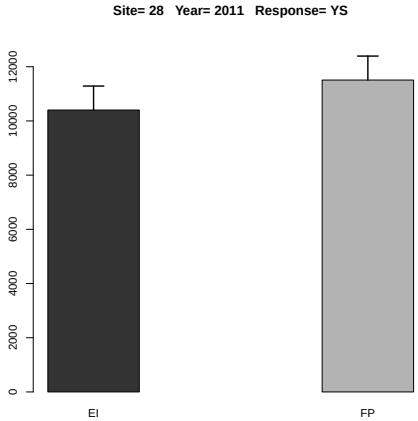

Figure 12.149: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1197383.062	1197383.062	1.226	8.797	0.298
B	1.000	250090503.062	250090503.062	256.087	8.797	0.000
A:B	1.000	1249365.062	1249365.062	1.279	8.797	0.288

Table 12.360: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6728.125	371.845	7.900	18.090	5869.238	7587.012	0.000
2	FP		7275.250	371.845	7.900	19.570	6416.363	8134.137	0.000
3		N	10955.250	371.845	7.900	29.460	10096.363	11814.137	0.000
4		N0	3048.125	371.845	7.900	8.200	2189.238	3907.012	0.000
5	EI	N	10402.250	510.237	11.700	20.390	9287.213	11517.287	0.000
6	FP	N	11508.250	510.237	11.700	22.550	10393.213	12623.287	0.000
7	EI	N0	3054.000	510.237	11.700	5.990	1938.963	4169.037	0.000
8	FP	N0	3042.250	510.237	11.700	5.960	1927.213	4157.287	0.000

Table 12.361: Estimate of treatment means in tow-way ANOVA for variable YS at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-547.125	494.111	8.800	-1.110	-1668.843	574.593	0.297
B N-N0	7907.125	494.111	8.800	16.000	6785.407	9028.843	0.000
A:B EI N- FP N	-1106.000	698.778	8.800	-1.580	-2692.349	480.349	0.149
A:B EI N- EI N0	7348.250	698.778	8.800	10.520	5761.901	8934.599	0.000
A:B EI N- FP N0	7360.000	698.778	8.800	10.530	5773.651	8946.349	0.000
A:B FP N- EI N0	8454.250	698.778	8.800	12.100	6867.901	10040.599	0.000
A:B FP N- FP N0	8466.000	698.778	8.800	12.120	6879.651	10052.349	0.000
A:B EI N0- FP N0	11.750	698.778	8.800	0.020	-1574.599	1598.099	0.987

Table 12.362: Estimate of contrast in two-way ANOVA for variable YS at site 28 in year 2011 .

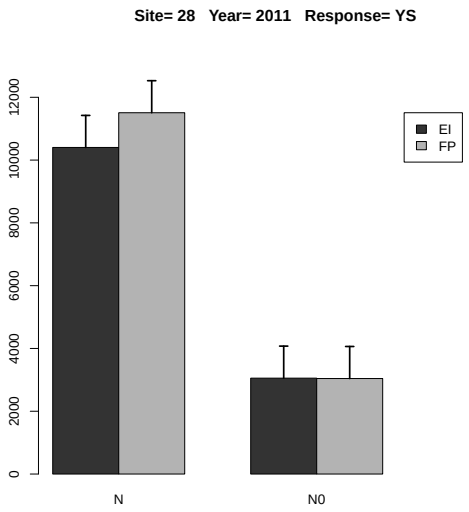

Figure 12.150: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	7572.000
2	2	EI	N0	3222.000
3	3	EI	N0	4246.000
4	4	EI	N0	3655.000
5	1	EI	N	20713.000
6	2	EI	N	22445.000
7	3	EI	N	20680.000
8	4	EI	N	19172.000
9	1	FP	N0	4435.000
10	2	FP	N0	4996.000
11	3	FP	N0	5566.000
12	4	FP	N0	4196.000
13	1	FP	N	22718.000
14	2	FP	N	22964.000
15	3	FP	N	19693.000
16	4	FP	N	20873.000

Table 12.363: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	20752.500	480.269	43.210	0.000
A FP	21562.000	480.269	44.896	0.000
A EI-FP	-809.500	679.203	-1.192	0.522

Table 12.364: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 28 in year 2011 .

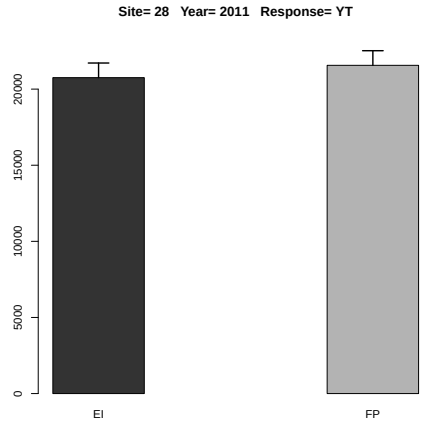

Figure 12.151: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	872356.000	872356.000	0.465	8.998	0.512
B	1.000	1078629806.250	1078629806.250	574.923	8.998	0.000
A:B	1.000	469225.000	469225.000	0.250	8.998	0.629

Table 12.365: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12713.125	544.554	6.800	23.350	11418.668	14007.582	0.000
2	FP		13180.125	544.554	6.800	24.200	11885.668	14474.582	0.000
3		N	21157.250	544.554	6.800	38.850	19862.793	22451.707	0.000
4		N0	4736.000	544.554	6.800	8.700	3441.543	6030.457	0.000
5	EI	N	20752.500	728.735	9.300	28.480	19112.583	22392.417	0.000
6	FP	N	21562.000	728.735	9.300	29.590	19922.083	23201.917	0.000
7	EI	N0	4673.750	728.735	9.300	6.410	3033.833	6313.667	0.000
8	FP	N0	4798.250	728.735	9.300	6.580	3158.333	6438.167	0.000

Table 12.366: Estimate of treatment means in tow-way ANOVA for variable YT at site 28 in year 2011 .

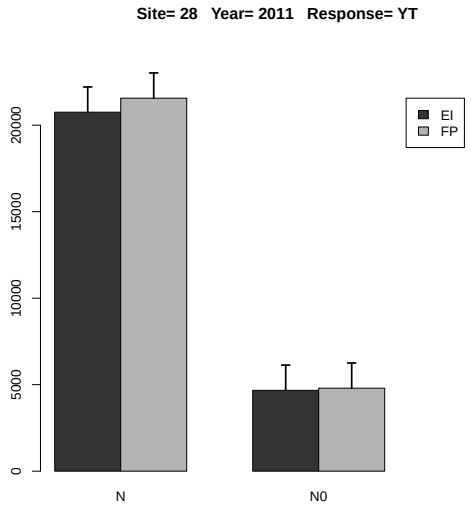

Figure 12.152: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-467.000	684.860	6.300	-0.680	-2121.748	1187.748	0.519
B N-N0	16421.250	684.860	6.300	23.980	14766.502	18075.998	0.000
A:B EI N- FP N	-809.500	968.538	6.300	-0.840	-3149.667	1530.667	0.434
A:B EI N- EI N0	16078.750	968.538	6.300	16.600	13738.583	18418.917	0.000
A:B EI N- FP N0	15954.250	968.538	6.300	16.470	13614.083	18294.417	0.000
A:B FP N- EI N0	16888.250	968.538	6.300	17.440	14548.083	19228.417	0.000
A:B FP N- FP N0	16763.750	968.538	6.300	17.310	14423.583	19103.917	0.000
A:B EI N0- FP N0	-124.500	968.538	6.300	-0.130	-2464.667	2215.667	0.902

Table 12.367: Estimate of contrast in two-way ANOVA for variable YT at site 28 in year 2011 .

12.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.342
2	2	EI	N0	0.396
3	3	EI	N0	0.336
4	4	EI	N0	0.325
5	1	EI	N	0.495
6	2	EI	N	0.485
7	3	EI	N	0.487
8	4	EI	N	0.532
9	1	FP	N0	0.354
10	2	FP	N0	0.362
11	3	FP	N0	0.346
12	4	FP	N0	0.409
13	1	FP	N	0.465
14	2	FP	N	0.462
15	3	FP	N	0.486
16	4	FP	N	0.454

Table 12.368: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.500	0.011	43.806	0.000
A FP	0.467	0.011	40.916	0.000
A EI-FP	0.033	0.016	2.044	0.241

Table 12.369: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 28 in year 2011 .

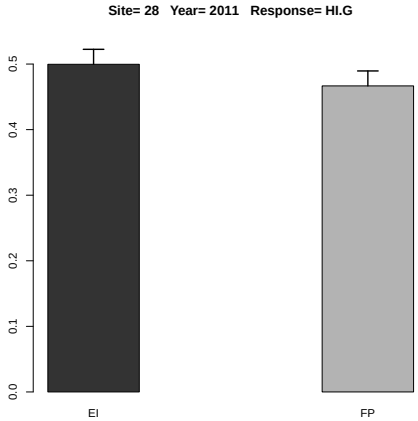

Figure 12.153: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.348	11.952	0.566
B	1.000	0.062	0.062	100.160	11.952	0.000
A:B	1.000	0.003	0.003	4.254	11.952	0.062

Table 12.370: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.425	0.009	12.000	48.330	0.406	0.444	0.000
2	FP		0.417	0.009	12.000	47.490	0.398	0.436	0.000
3		N	0.483	0.009	12.000	54.990	0.464	0.502	0.000
4		N0	0.359	0.009	12.000	40.830	0.340	0.378	0.000
5	EI	N	0.500	0.012	12.000	40.210	0.472	0.527	0.000
6	FP	N	0.467	0.012	12.000	37.560	0.440	0.494	0.000
7	EI	N0	0.350	0.012	12.000	28.140	0.323	0.377	0.000
8	FP	N0	0.368	0.012	12.000	29.610	0.341	0.395	0.000

Table 12.371: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.007	0.012	12.000	0.590	-0.020	0.034	0.566
B N-N0	0.124	0.012	12.000	10.010	0.097	0.151	0.000
A:B EI N- FP N	0.033	0.018	12.000	1.880	-0.005	0.071	0.085
A:B EI N- EI N0	0.150	0.018	12.000	8.540	0.112	0.188	0.000
A:B EI N- FP N0	0.132	0.018	12.000	7.490	0.093	0.170	0.000
A:B FP N- EI N0	0.117	0.018	12.000	6.660	0.079	0.155	0.000
A:B FP N- FP N0	0.099	0.018	12.000	5.620	0.060	0.137	0.000
A:B EI N0- FP N0	-0.018	0.018	12.000	-1.040	-0.057	0.020	0.318

Table 12.372: Estimate of contrast in two-way ANOVA for variable HI.G at site 28 in year 2011 .

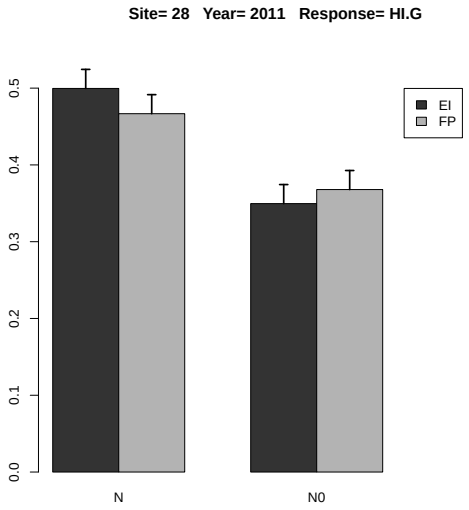

Figure 12.154: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	24.096
2	2	EI	N0	11.356
3	3	EI	N0	14.250
4	4	EI	N0	11.395
5	1	EI	N	133.367
6	2	EI	N	121.968
7	3	EI	N	129.800
8	4	EI	N	127.375
9	1	FP	N0	14.758
10	2	FP	N0	16.109
11	3	FP	N0	18.297
12	4	FP	N0	14.603
13	1	FP	N	127.945
14	2	FP	N	141.060
15	3	FP	N	119.525
16	4	FP	N	128.833

Table 12.373: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	128.127	4.545	28.193	0.000
A FP	129.341	4.545	28.460	0.000
A EI-FP	-1.213	6.427	-0.189	0.980

Table 12.374: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 28 in year 2011 .

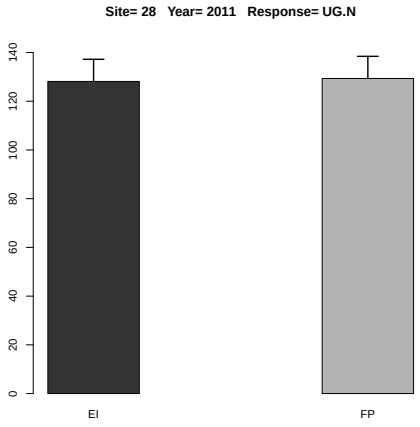

Figure 12.155: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.124	2.124	0.080	5.999	0.786
B	1.000	51189.956	51189.956	1936.462	6.000	0.000
A:B	1.000	0.298	0.298	0.011	6.000	0.919

Table 12.375: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		71.701	2.346	6.000	30.570	65.961	77.441	0.000
2	FP		72.641	2.346	6.000	30.970	66.902	78.381	0.000
3		N	128.734	2.098	11.300	61.350	124.130	133.338	0.000
4		N0	15.608	2.098	11.300	7.440	11.004	20.212	0.000
5	EI	N	128.127	2.967	11.300	43.180	121.617	134.638	0.000
6	FP	N	129.341	2.967	11.300	43.590	122.830	135.851	0.000
7	EI	N0	15.274	2.967	11.300	5.150	8.764	21.785	0.000
8	FP	N0	15.942	2.967	11.300	5.370	9.431	22.452	0.000

Table 12.376: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 28 in year 2011 .

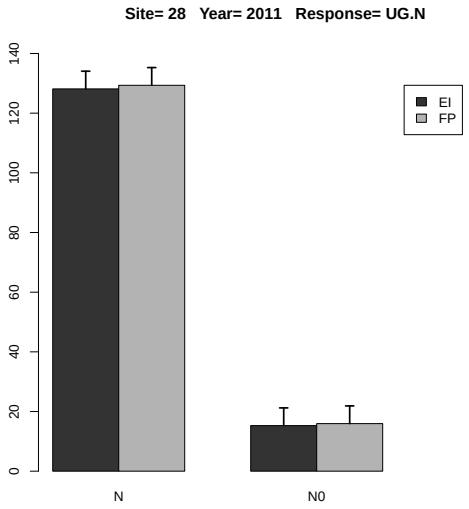

Figure 12.156: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.940	3.317	6.000	-0.280	-9.057	7.177	0.786
B N-N0	113.126	2.571	6.000	44.010	106.836	119.416	0.000
A:B EI N- FP N	-1.213	4.197	11.300	-0.290	-10.421	7.994	0.778
A:B EI N- EI N0	112.853	3.636	6.000	31.040	103.957	121.749	0.000
A:B EI N- FP N0	112.186	4.197	11.300	26.730	102.978	121.393	0.000
A:B FP N- EI N0	114.066	4.197	11.300	27.180	104.859	123.274	0.000
A:B FP N- FP N0	113.399	3.636	6.000	31.190	104.503	122.295	0.000
A:B EI N0- FP N0	-0.667	4.197	11.300	-0.160	-9.875	8.540	0.876

Table 12.377: Estimate of contrast in two-way ANOVA for variable UG.N at site 28 in year 2011 .

12.3.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	9.587
2	2	EI	N0	3.828
3	3	EI	N0	4.845
4	4	EI	N0	4.273
5	1	EI	N	31.803
6	2	EI	N	30.492
7	3	EI	N	29.180
8	4	EI	N	29.551
9	1	FP	N0	3.925
10	2	FP	N0	5.430
11	3	FP	N0	5.971
12	4	FP	N0	4.639
13	1	FP	N	32.779
14	2	FP	N	29.697
15	3	FP	N	24.861
16	4	FP	N	18.946

Table 12.378: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	30.256	1.807	16.744	0.001
A FP	26.571	1.807	14.704	0.001
A EI-FP	3.686	2.556	1.442	0.417

Table 12.379: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 28 in year 2011 .

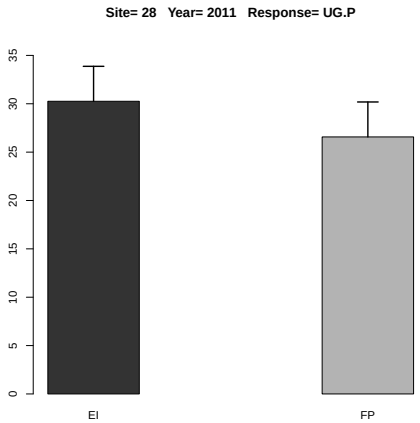

Figure 12.157: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	18.729	18.729	2.080	9.000	0.183
B	1.000	2134.717	2134.717	237.052	9.000	0.000
A:B	1.000	9.262	9.262	1.029	9.000	0.337

Table 12.380: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17.945	1.317	6.100	13.630	14.736	21.153	0.000
2	FP		15.781	1.317	6.100	11.980	12.572	18.989	0.000
3		N	28.414	1.317	6.100	21.580	25.205	31.622	0.000
4		N0	5.312	1.317	6.100	4.030	2.104	8.521	0.007
5	EI	N	30.256	1.691	10.600	17.890	26.516	33.997	0.000
6	FP	N	26.571	1.691	10.600	15.710	22.830	30.311	0.000
7	EI	N0	5.633	1.691	10.600	3.330	1.893	9.374	0.007
8	FP	N0	4.991	1.691	10.600	2.950	1.250	8.732	0.014

Table 12.381: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.164	1.500	9.000	1.440	-1.230	5.558	0.183
B N-N0	23.102	1.500	9.000	15.400	19.707	26.496	0.000
A:B EI N- FP N	3.686	2.122	9.000	1.740	-1.115	8.486	0.116
A:B EI N- EI N0	24.623	2.122	9.000	11.600	19.823	29.423	0.000
A:B EI N- FP N0	25.265	2.122	9.000	11.910	20.465	30.066	0.000
A:B FP N- EI N0	20.938	2.122	9.000	9.870	16.137	25.738	0.000
A:B FP N- FP N0	21.580	2.122	9.000	10.170	16.780	26.380	0.000
A:B EI N0- FP N0	0.642	2.122	9.000	0.300	-4.158	5.442	0.769

Table 12.382: Estimate of contrast in two-way ANOVA for variable UG.P at site 28 in year 2011 .

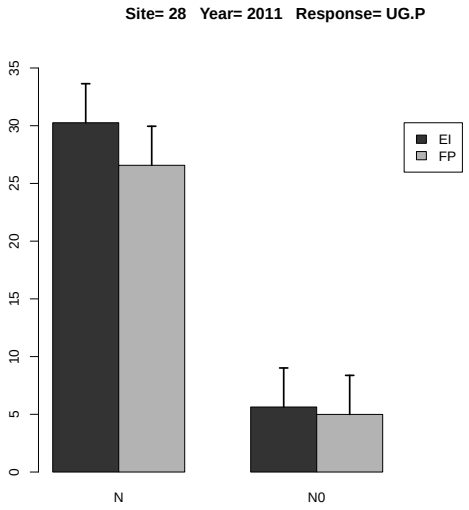

Figure 12.158: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	21.954
2	2	EI	N0	8.766
3	3	EI	N0	11.095
4	4	EI	N0	9.786
5	1	EI	N	72.829
6	2	EI	N	69.827
7	3	EI	N	66.822
8	4	EI	N	67.672
9	1	FP	N0	8.988
10	2	FP	N0	12.435
11	3	FP	N0	13.673
12	4	FP	N0	10.622
13	1	FP	N	75.065
14	2	FP	N	68.006
15	3	FP	N	56.932
16	4	FP	N	43.386

Table 12.383: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	69.287	4.138	16.744	0.000
A FP	60.847	4.138	14.704	0.001
A EI-FP	8.440	5.852	1.442	0.417

Table 12.384: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 28 in year 2011 .

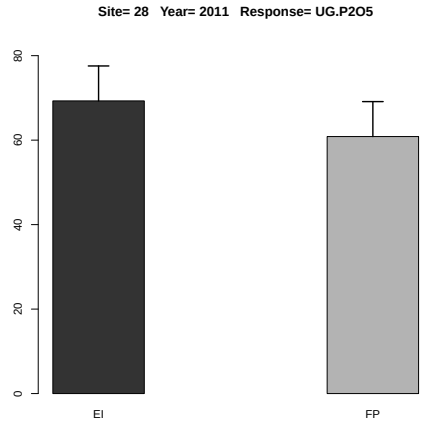

Figure 12.159: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	98.219	98.219	2.080	9.000	0.183
B	1.000	11194.671	11194.671	237.052	9.000	0.000
A:B	1.000	48.572	48.572	1.029	9.000	0.337

Table 12.385: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		41.094	3.015	6.100	13.630	33.746	48.441	0.000
2	FP		36.138	3.015	6.100	11.980	28.791	43.486	0.000
3		N	65.067	3.015	6.100	21.580	57.720	72.415	0.000
4		N0	12.165	3.015	6.100	4.030	4.817	19.512	0.007
5	EI	N	69.287	3.872	10.600	17.890	60.721	77.853	0.000
6	FP	N	60.847	3.872	10.600	15.710	52.281	69.413	0.000
7	EI	N0	12.900	3.872	10.600	3.330	4.334	21.466	0.007
8	FP	N0	11.430	3.872	10.600	2.950	2.864	19.995	0.014

Table 12.386: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 28 in year 2011 .

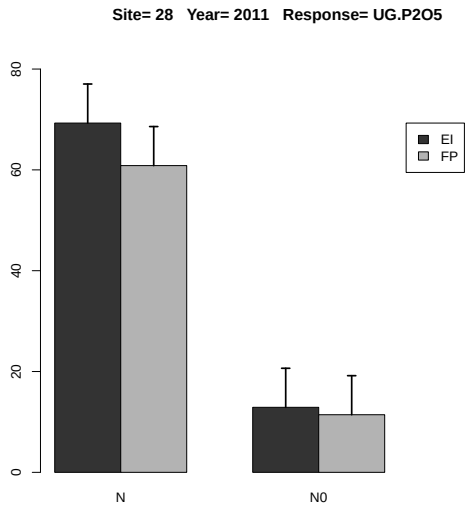

Figure 12.160: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.955	3.436	9.000	1.440	-2.817	12.728	0.183
B N-N0	52.902	3.436	9.000	15.400	45.130	60.675	0.000
A:B EI N- FP N	8.440	4.859	9.000	1.740	-2.552	19.432	0.116
A:B EI N- EI N0	56.387	4.859	9.000	11.600	45.395	67.379	0.000
A:B EI N- FP N0	57.858	4.859	9.000	11.910	46.865	68.850	0.000
A:B FP N- EI N0	47.947	4.859	9.000	9.870	36.955	58.940	0.000
A:B FP N- FP N0	49.418	4.859	9.000	10.170	38.425	60.410	0.000
A:B EI N0- FP N0	1.471	4.859	9.000	0.300	-9.522	12.463	0.769

Table 12.387: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 28 in year 2011
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12.3.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	11.400
2	2	EI	N0	4.849
3	3	EI	N0	5.843
4	4	EI	N0	5.341
5	1	EI	N	36.932
6	2	EI	N	37.026
7	3	EI	N	34.211
8	4	EI	N	37.703
9	1	FP	N0	5.024
10	2	FP	N0	7.059
11	3	FP	N0	8.089
12	4	FP	N0	6.357
13	1	FP	N	43.353
14	2	FP	N	40.303
15	3	FP	N	33.467
16	4	FP	N	26.524

Table 12.388: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	36.468	2.710	13.457	0.001
A FP	35.912	2.710	13.252	0.002
A EI-FP	0.556	3.832	0.145	0.988

Table 12.389: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 28 in year 2011 .

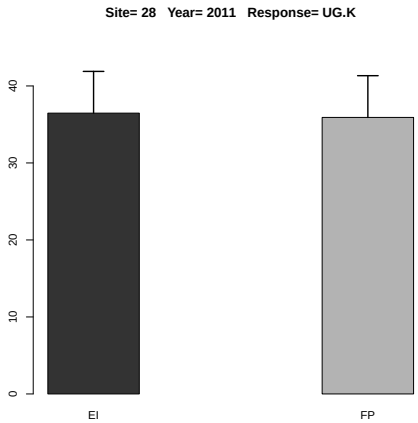

Figure 12.161: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.612	0.612	0.037	9.000	0.851
B	1.000	3467.967	3467.967	211.746	9.000	0.000
A:B	1.000	0.109	0.109	0.007	9.000	0.937

Table 12.390: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.663	1.518	8.000	14.270	18.163	25.163	0.000
2	FP		21.272	1.518	8.000	14.010	17.772	24.772	0.000
3		N	36.190	1.518	8.000	23.840	32.690	39.690	0.000
4		N0	6.745	1.518	8.000	4.440	3.245	10.245	0.002
5	EI	N	36.468	2.086	11.900	17.480	31.918	41.018	0.000
6	FP	N	35.912	2.086	11.900	17.220	31.361	40.462	0.000
7	EI	N0	6.858	2.086	11.900	3.290	2.308	11.409	0.007
8	FP	N0	6.632	2.086	11.900	3.180	2.082	11.183	0.008

Table 12.391: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.391	2.023	9.000	0.190	-4.186	4.969	0.851
B N-N0	29.445	2.023	9.000	14.550	24.867	34.022	0.000
A:B EI N- FP N	0.556	2.862	9.000	0.190	-5.917	7.030	0.850
A:B EI N- EI N0	29.610	2.862	9.000	10.350	23.136	36.083	0.000
A:B EI N- FP N0	29.836	2.862	9.000	10.430	23.362	36.309	0.000
A:B FP N- EI N0	29.054	2.862	9.000	10.150	22.580	35.527	0.000
A:B FP N- FP N0	29.280	2.862	9.000	10.230	22.806	35.753	0.000
A:B EI N0- FP N0	0.226	2.862	9.000	0.080	-6.247	6.700	0.939

Table 12.392: Estimate of contrast in two-way ANOVA for variable UG.K at site 28 in year 2011 .

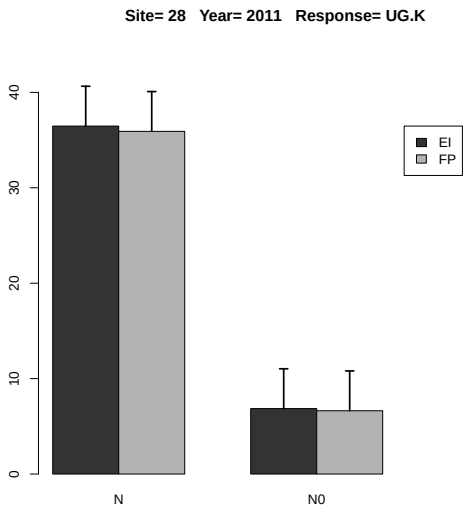

Figure 12.162: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	13.737
2	2	EI	N0	5.843
3	3	EI	N0	7.040
4	4	EI	N0	6.437
5	1	EI	N	44.504
6	2	EI	N	44.616
7	3	EI	N	41.224
8	4	EI	N	45.432
9	1	FP	N0	6.054
10	2	FP	N0	8.506
11	3	FP	N0	9.747
12	4	FP	N0	7.660
13	1	FP	N	52.241
14	2	FP	N	48.565
15	3	FP	N	40.328
16	4	FP	N	31.962

Table 12.393: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	43.944	3.265	13.457	0.002
A FP	43.274	3.265	13.252	0.002
A EI-FP	0.670	4.618	0.145	0.988

Table 12.394: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 28 in year 2011 .

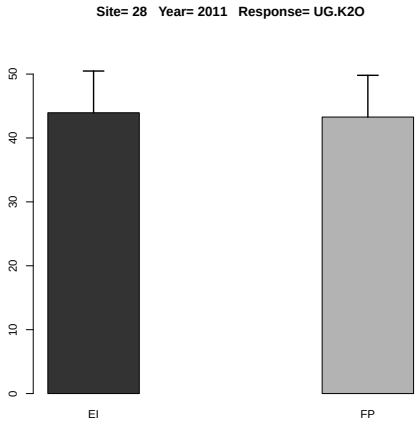

Figure 12.163: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.889	0.889	0.037	9.000	0.851
B	1.000	5035.575	5035.575	211.746	9.000	0.000
A:B	1.000	0.158	0.158	0.007	9.000	0.937

Table 12.395: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		26.104	1.829	8.000	14.270	21.887	30.322	0.000
2	FP		25.633	1.829	8.000	14.010	21.415	29.851	0.000
3		N	43.609	1.829	8.000	23.840	39.391	47.827	0.000
4		N0	8.128	1.829	8.000	4.440	3.910	12.346	0.002
5	EI	N	43.944	2.514	11.900	17.480	38.461	49.427	0.000
6	FP	N	43.274	2.514	11.900	17.220	37.791	48.757	0.000
7	EI	N0	8.264	2.514	11.900	3.290	2.781	13.748	0.007
8	FP	N0	7.992	2.514	11.900	3.180	2.509	13.475	0.008

Table 12.396: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 28 in year 2011 .

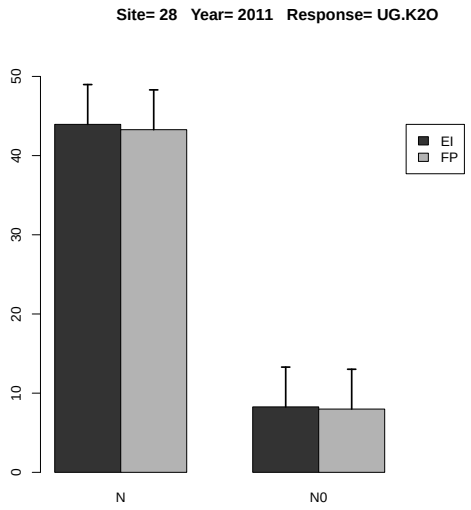

Figure 12.164: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.471	2.438	9.000	0.190	-5.045	5.987	0.851
B N-N0	35.481	2.438	9.000	14.550	29.965	40.997	0.000
A:B EI N- FP N	0.670	3.448	9.000	0.190	-7.130	8.471	0.850
A:B EI N- EI N0	35.680	3.448	9.000	10.350	27.879	43.480	0.000
A:B EI N- FP N0	35.952	3.448	9.000	10.430	28.152	43.753	0.000
A:B FP N- EI N0	35.010	3.448	9.000	10.150	27.209	42.810	0.000
A:B FP N- FP N0	35.282	3.448	9.000	10.230	27.482	43.083	0.000
A:B EI N0- FP N0	0.273	3.448	9.000	0.080	-7.528	8.073	0.939

Table 12.397: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 28 in year 2011 .

12.3.10 Response Variable UG.Ca

	rep	A	B	y
1	1	EI	N0	0.259
2	2	EI	N0	0.128
3	3	EI	N0	0.142
4	4	EI	N0	0.119
5	3	FP	N0	0.193

Table 12.398: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Ca

There is no or sufficient data for this response variable at this site and year.

12.3.11 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	3.368
2	2	EI	N0	1.404
3	3	EI	N0	1.710
4	4	EI	N0	1.424
5	1	EI	N	12.311
6	2	EI	N	10.890
7	3	EI	N	11.068
8	4	EI	N	11.209
9	1	FP	N0	1.413
10	2	FP	N0	1.810
11	3	FP	N0	2.119
12	4	FP	N0	1.718
13	1	FP	N	12.689
14	2	FP	N	11.667
15	3	FP	N	9.562
16	4	FP	N	7.578

Table 12.399: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	11.369	0.714	15.926	0.001
A FP	10.374	0.714	14.532	0.001
A EI-FP	0.996	1.010	0.986	0.622

Table 12.400: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 28 in year 2011 .

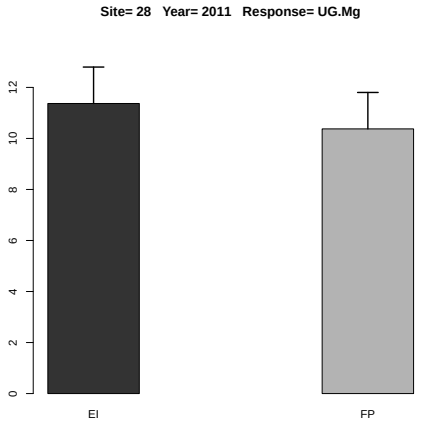

Figure 12.165: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.457	1.457	1.133	8.999	0.315
B	1.000	324.071	324.071	252.010	8.999	0.000
A:B	1.000	0.614	0.614	0.478	8.999	0.507

Table 12.401: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.673	0.498	6.100	13.390	5.458	7.888	0.000
2	FP		6.069	0.498	6.100	12.180	4.855	7.284	0.000
3		N	10.872	0.498	6.100	21.820	9.657	12.086	0.000
4		N0	1.871	0.498	6.100	3.750	0.656	3.085	0.009
5	EI	N	11.370	0.639	10.600	17.780	9.955	12.784	0.000
6	FP	N	10.374	0.639	10.600	16.220	8.959	11.789	0.000
7	EI	N0	1.977	0.639	10.600	3.090	0.562	3.392	0.011
8	FP	N0	1.765	0.639	10.600	2.760	0.350	3.180	0.019

Table 12.402: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 28 in year 2011 .

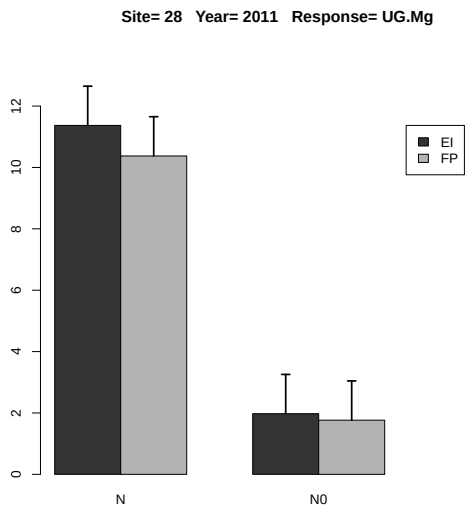

Figure 12.166: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.604	0.567	9.000	1.060	-0.679	1.886	0.315
B N-N0	9.001	0.567	9.000	15.870	7.718	10.284	0.000
A:B EI N- FP N	0.996	0.802	9.000	1.240	-0.818	2.809	0.246
A:B EI N- EI N0	9.393	0.802	9.000	11.710	7.579	11.207	0.000
A:B EI N- FP N0	9.605	0.802	9.000	11.980	7.791	11.418	0.000
A:B FP N- EI N0	8.397	0.802	9.000	10.470	6.583	10.211	0.000
A:B FP N- FP N0	8.609	0.802	9.000	10.740	6.795	10.423	0.000
A:B EI N0- FP N0	0.212	0.802	9.000	0.260	-1.602	2.026	0.798

Table 12.403: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 28 in year 2011 .

12.3.12 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	2.073
2	2	EI	N0	1.021
3	3	EI	N0	1.282
4	4	EI	N0	1.068
5	1	EI	N	8.207
6	2	EI	N	8.712
7	3	EI	N	8.050
8	4	EI	N	7.133
9	1	FP	N0	1.099
10	2	FP	N0	1.267
11	3	FP	N0	1.541
12	4	FP	N0	1.374
13	1	FP	N	8.459
14	2	FP	N	8.485
15	3	FP	N	7.650
16	4	FP	N	5.684

Table 12.404: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	8.025	0.254	31.649	0.000
A FP	7.569	0.254	29.851	0.000
A EI-FP	0.456	0.359	1.272	0.486

Table 12.405: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 28 in year 2011 .

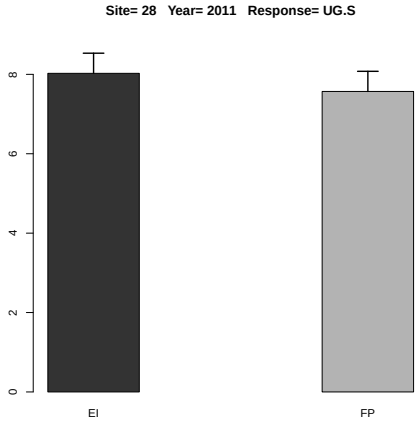

Figure 12.167: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.247	0.247	0.549	8.999	0.477
B	1.000	166.756	166.756	370.995	8.999	0.000
A:B	1.000	0.172	0.172	0.384	8.999	0.551

Table 12.406: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.693	0.310	5.700	15.140	3.924	5.463	0.000
2	FP		4.445	0.310	5.700	14.340	3.675	5.214	0.000
3		N	7.797	0.310	5.700	25.150	7.028	8.567	0.000
4		N0	1.341	0.310	5.700	4.320	0.571	2.110	0.006
5	EI	N	8.025	0.390	9.900	20.560	7.155	8.896	0.000
6	FP	N	7.569	0.390	9.900	19.400	6.699	8.440	0.000
7	EI	N0	1.361	0.390	9.900	3.490	0.491	2.231	0.006
8	FP	N0	1.320	0.390	9.900	3.380	0.450	2.191	0.007

Table 12.407: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.248	0.335	9.000	0.740	-0.510	1.007	0.477
B N-N0	6.457	0.335	9.000	19.260	5.698	7.215	0.000
A:B EI N- FP N	0.456	0.474	9.000	0.960	-0.616	1.528	0.361
A:B EI N- EI N0	6.664	0.474	9.000	14.060	5.592	7.737	0.000
A:B EI N- FP N0	6.705	0.474	9.000	14.140	5.633	7.778	0.000
A:B FP N- EI N0	6.208	0.474	9.000	13.100	5.136	7.281	0.000
A:B FP N- FP N0	6.249	0.474	9.000	13.180	5.177	7.322	0.000
A:B EI N0- FP N0	0.041	0.474	9.000	0.090	-1.032	1.113	0.933

Table 12.408: Estimate of contrast in two-way ANOVA for variable UG.S at site 28 in year 2011 .

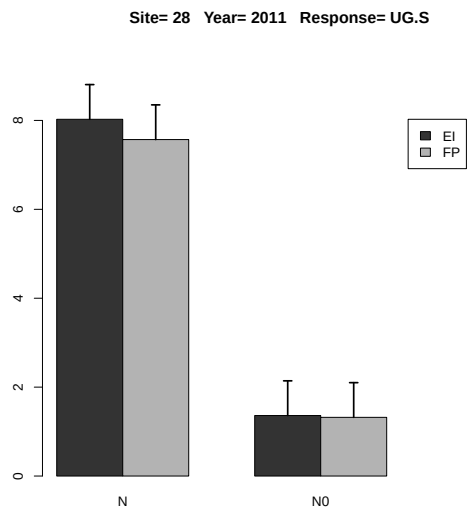

Figure 12.168: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.13 Response Variable UG.B

	rep	A	B	y
1	1	EI	N0	98.458
2	2	EI	N0	40.832
3	3	EI	N0	133.950
4	4	EI	N0	66.472
5	1	EI	N	359.065
6	2	EI	N	326.700
7	3	EI	N	382.356
8	4	EI	N	326.080
9	1	FP	N0	51.810
10	2	FP	N0	50.680
11	3	FP	N0	53.928
12	4	FP	N0	49.822
13	1	FP	N	264.350
14	2	FP	N	286.362
15	4	FP	N	179.987

Table 12.409: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.B

	Estimate	S.E.	t-value	p-value
A EI	348.550	18.698	18.642	0.005
A FP	254.835	24.138	10.557	0.015
A EI-FP	93.715	30.533	3.069	0.157

Table 12.410: Estimate of treatment means and contrast in one-way ANOVA for variable UG.B at site 28 in year 2011 .

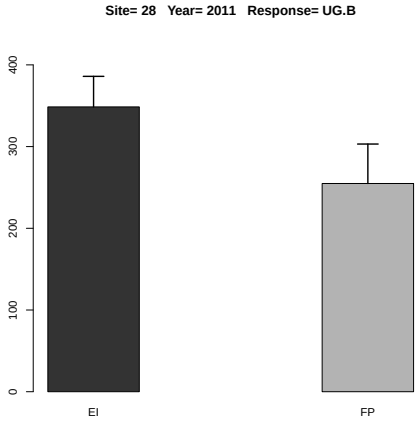

Figure 12.169: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	12154.942	12154.942	11.341	2.775	0.049
B	1.000	194579.726	194579.726	284.300	5.788	0.000
A:B	1.000	4442.334	4442.334	6.788	5.788	0.042

Table 12.411: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		216.739	14.761	5.900	14.680	180.413	253.066	0.000
2	FP		148.089	15.416	6.600	9.610	111.165	185.013	0.000
3		N	296.584	13.402	5.100	22.130	262.385	330.783	0.000
4		N0	68.244	12.643	4.400	5.400	34.338	102.150	0.004
5	EI	N	348.550	17.311	9.400	20.130	309.648	387.452	0.000
6	FP	N	244.618	19.463	10.500	12.570	201.509	287.727	0.000
7	EI	N0	84.928	17.311	9.400	4.910	46.026	123.830	0.001
8	FP	N0	51.560	17.311	9.400	2.980	12.658	90.462	0.015

Table 12.412: Estimate of treatment means in tow-way ANOVA for variable UG.B at site 28 in year 2011 .

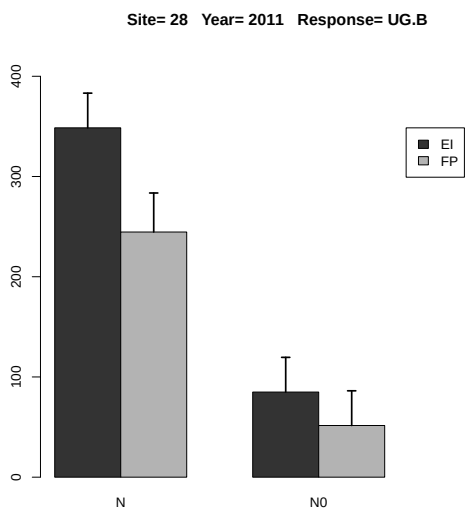

Figure 12.170: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	68.650	20.386	2.800	3.370	0.695	136.605	0.049
B N-N0	228.340	13.542	5.800	16.860	194.907	261.773	0.000
A:B EI N- FP N	103.933	25.269	5.500	4.110	40.601	167.264	0.008
A:B EI N- EI N0	263.622	18.090	5.500	14.570	218.290	308.954	0.000
A:B EI N- FP N0	296.990	23.652	4.700	12.560	234.906	359.074	0.000
A:B FP N- EI N0	159.690	25.269	5.500	6.320	96.358	223.021	0.001
A:B FP N- FP N0	193.058	20.158	6.100	9.580	143.852	242.263	0.000
A:B EI N0- FP N0	33.368	23.652	4.700	1.410	-28.716	95.452	0.221

Table 12.413: Estimate of contrast in two-way ANOVA for variable UG.B at site 28 in year 2011 .

12.3.14 Response Variable UG.Cu

	rep	A	B	y
1	2	EI	N0	11.484
2	3	EI	N0	5.700
3	4	EI	N0	7.122
4	1	EI	N	133.367
5	2	EI	N	119.790
6	3	EI	N	150.930
7	4	EI	N	132.470
8	1	FP	N0	18.840
9	2	FP	N0	10.860
10	3	FP	N0	9.630
11	4	FP	N0	118.542
12	1	FP	N	158.610
13	2	FP	N	222.726
14	3	FP	N	86.058
15	4	FP	N	75.784

Table 12.414: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Cu

	Estimate	S.E.	t-value	p-value
A EI	134.139	27.872	4.813	0.034
A FP	135.794	27.872	4.872	0.031
A EI-FP	-1.655	39.416	-0.042	0.999

Table 12.415: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Cu at site 28 in year 2011 .

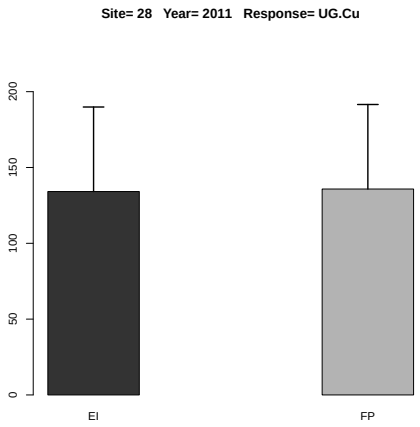

Figure 12.171: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	210.446	210.446	0.480	10.998	0.503
B	1.000	44974.857	44974.857	21.783	10.998	0.001
A:B	1.000	814.826	814.826	0.389	10.998	0.546

Table 12.416: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		71.121	17.481	11.000	4.070	32.645	109.596	0.002
2	FP		87.631	16.184	11.000	5.410	52.010	123.253	0.000
3		N	134.967	16.184	11.000	8.340	99.346	170.588	0.000
4		N0	23.785	17.481	11.000	1.360	-14.691	62.261	0.201
5	EI	N	134.139	22.887	11.000	5.860	83.763	184.516	0.000
6	FP	N	135.794	22.887	11.000	5.930	85.418	186.171	0.000
7	EI	N0	8.102	26.428	11.000	0.310	-50.067	66.271	0.765
8	FP	N0	39.468	22.887	11.000	1.720	-10.908	89.844	0.113

Table 12.417: Estimate of treatment means in tow-way ANOVA for variable UG.Cu at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-16.511	23.822	11.000	-0.690	-68.944	35.923	0.503
B N-N0	111.182	23.822	11.000	4.670	58.749	163.615	0.001
A:B EI N- FP N	-1.655	32.368	11.000	-0.050	-72.898	69.588	0.960
A:B EI N- EI N0	126.037	34.961	11.000	3.610	49.086	202.988	0.004
A:B EI N- FP N0	94.671	32.368	11.000	2.920	23.428	165.914	0.014
A:B FP N- EI N0	127.692	34.961	11.000	3.650	50.742	204.643	0.004
A:B FP N- FP N0	96.326	32.368	11.000	2.980	25.084	167.569	0.013
A:B EI N0- FP N0	-31.366	34.961	11.000	-0.900	-108.317	45.585	0.389

Table 12.418: Estimate of contrast in two-way ANOVA for variable UG.Cu at site 28 in year 2011 .

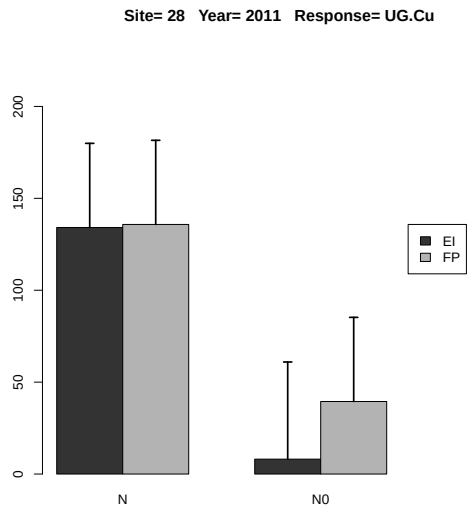

Figure 12.172: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.15 Response Variable UG.Fe

	rep	A	B	y
1	1	EI	N0	474.153
2	2	EI	N0	1180.300
3	3	EI	N0	1241.175
4	4	EI	N0	224.343
5	1	EI	N	3477.801
6	2	EI	N	8679.330
7	3	EI	N	4960.566
8	4	EI	N	13389.660
9	1	FP	N0	299.870
10	2	FP	N0	745.720
11	3	FP	N0	1032.336
12	4	FP	N0	2843.290
13	1	FP	N	11895.750
14	2	FP	N	13384.772
15	3	FP	N	10240.902
16	4	FP	N	1752.505

Table 12.419: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Fe

	Estimate	S.E.	t-value	p-value
A EI	7626.839	3194.147	2.388	0.178
A FP	9318.482	3194.147	2.917	0.116
A EI-FP	-1691.643	4517.206	-0.374	0.924

Table 12.420: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Fe at site 28 in year 2011 .

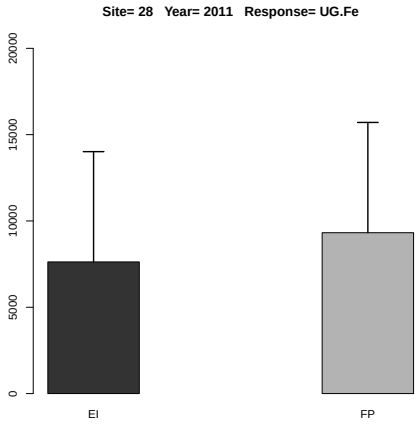

Figure 12.173: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4587968.009	4587968.009	0.381	17.104	0.545
B	1.000	223054964.283	223054964.283	18.533	17.104	0.000
A:B	1.000	1540904.514	1540904.514	0.128	17.104	0.725

Table 12.421: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4203.416	1226.572	17.100	3.430	1616.773	6790.059	0.003
2	FP		5274.393	1226.572	17.100	4.300	2687.750	7861.036	0.000
3		N	8472.661	1226.572	17.100	6.910	5886.018	11059.304	0.000
4		N0	1005.148	1226.572	17.100	0.820	-1581.495	3591.791	0.424
5	EI	N	7626.839	1734.634	17.100	4.400	3968.774	11284.905	0.000
6	FP	N	9318.482	1734.634	17.100	5.370	5660.417	12976.548	0.000
7	EI	N0	779.993	1734.634	17.100	0.450	-2878.073	4438.058	0.659
8	FP	N0	1230.304	1734.634	17.100	0.710	-2427.761	4888.369	0.488

Table 12.422: Estimate of treatment means in tow-way ANOVA for variable UG.Fe at site 28 in year 2011 .

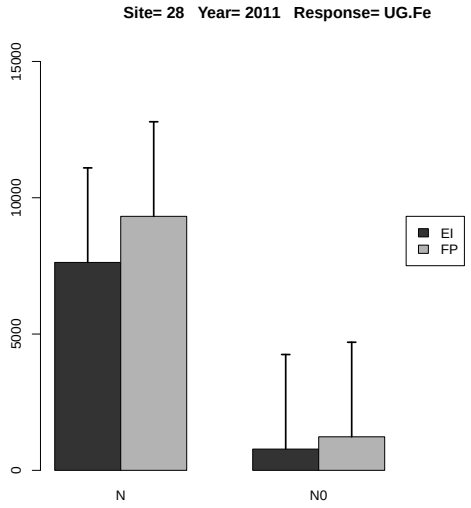

Figure 12.174: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1070.977	1734.634	17.100	-0.620	-4729.043	2587.088	0.545
B N-N0	7467.512	1734.634	17.100	4.300	3809.447	11125.578	0.000
A:B EI N- FP N	-1691.643	2453.144	17.100	-0.690	-6864.929	3481.643	0.500
A:B EI N- EI N0	6846.846	2453.144	17.100	2.790	1673.561	12020.132	0.012
A:B EI N- FP N0	6396.535	2453.144	17.100	2.610	1223.249	11569.821	0.018
A:B FP N- EI N0	8538.489	2453.144	17.100	3.480	3365.204	13711.775	0.003
A:B FP N- FP N0	8088.178	2453.144	17.100	3.300	2914.892	13261.464	0.004
A:B EI N0- FP N0	-450.311	2453.144	17.100	-0.180	-5623.597	4722.975	0.857

Table 12.423: Estimate of contrast in two-way ANOVA for variable UG.Fe at site 28 in year 2011 .

12.3.16 Response Variable UG.Mn

	rep	A	B	y
1	1	EI	N0	132.141
2	2	EI	N0	66.352
3	3	EI	N0	68.400
4	4	EI	N0	54.602
5	1	EI	N	625.799
6	2	EI	N	544.500
7	3	EI	N	654.030
8	4	EI	N	519.690
9	1	FP	N0	59.660
10	2	FP	N0	85.070
11	3	FP	N0	107.856
12	4	FP	N0	85.900
13	1	FP	N	708.458
14	2	FP	N	668.178
15	3	FP	N	497.224
16	4	FP	N	492.596

Table 12.424: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mn

	Estimate	S.E.	t-value	p-value
A EI	586.005	44.406	13.197	0.002
A FP	591.614	44.406	13.323	0.002
A EI-FP	-5.609	62.799	-0.089	0.995

Table 12.425: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mn at site 28 in year 2011 .

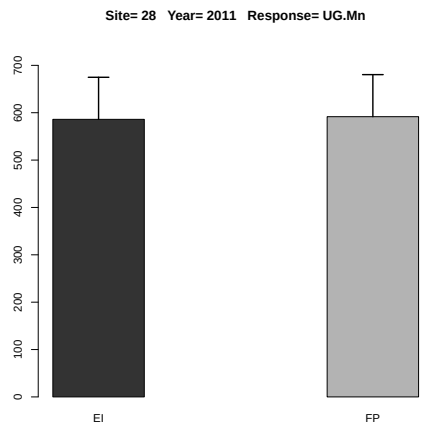

Figure 12.175: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	97.160	97.160	0.023	9.001	0.882
B	1.000	1025406.353	1025406.353	244.049	9.001	0.000
A:B	1.000	1.854	1.854	0.000	9.001	0.984

Table 12.426: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		333.189	25.083	7.500	13.280	274.737	391.642	0.000
2	FP		338.118	25.083	7.500	13.480	279.665	396.570	0.000
3		N	588.809	25.083	7.500	23.470	530.357	647.262	0.000
4		N0	82.498	25.083	7.500	3.290	24.045	140.950	0.012
5	EI	N	586.005	33.976	11.700	17.250	511.778	660.231	0.000
6	FP	N	591.614	33.976	11.700	17.410	517.388	665.840	0.000
7	EI	N0	80.374	33.976	11.700	2.370	6.147	154.600	0.036
8	FP	N0	84.621	33.976	11.700	2.490	10.395	158.848	0.029

Table 12.427: Estimate of treatment means in tow-way ANOVA for variable UG.Mn at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-4.928	32.410	9.000	-0.150	-78.243	68.386	0.882
B N-N0	506.312	32.410	9.000	15.620	432.997	579.626	0.000
A:B EI N- FP N	-5.609	45.835	9.000	-0.120	-109.292	98.073	0.905
A:B EI N- EI N0	505.631	45.835	9.000	11.030	401.948	609.314	0.000
A:B EI N- FP N0	501.383	45.835	9.000	10.940	397.700	605.066	0.000
A:B FP N- EI N0	511.240	45.835	9.000	11.150	407.558	614.923	0.000
A:B FP N- FP N0	506.993	45.835	9.000	11.060	403.310	610.675	0.000
A:B EI N0- FP N0	-4.248	45.835	9.000	-0.090	-107.930	99.435	0.928

Table 12.428: Estimate of contrast in two-way ANOVA for variable UG.Mn at site 28 in year 2011 .

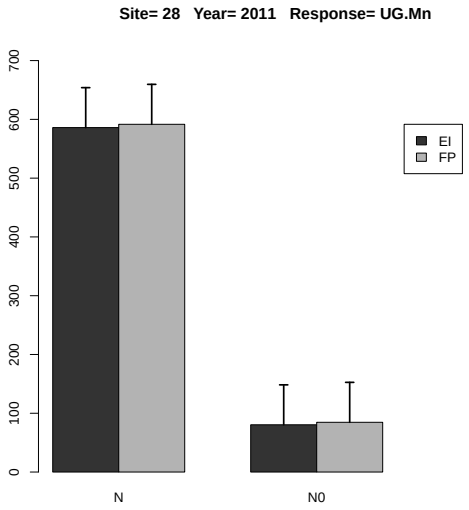

Figure 12.176: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.17 Response Variable UG.Zn

	rep	A	B	y
1	1	EI	N0	764.345
2	2	EI	N0	310.068
3	3	EI	N0	440.325
4	4	EI	N0	379.840
5	1	EI	N	2810.966
6	2	EI	N	2439.360
7	3	EI	N	2324.322
8	4	EI	N	2211.230
9	1	FP	N0	375.230
10	2	FP	N0	461.550
11	3	FP	N0	595.134
12	4	FP	N0	432.936
13	1	FP	N	2918.424
14	2	FP	N	2662.106
15	3	FP	N	2065.392
16	4	FP	N	1563.045

Table 12.429: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Zn

	Estimate	S.E.	t-value	p-value
A EI	2446.469	139.216	17.573	0.001
A FP	2302.242	139.216	16.537	0.001
A EI-FP	144.228	196.881	0.733	0.755

Table 12.430: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Zn at site 28 in year 2011 .

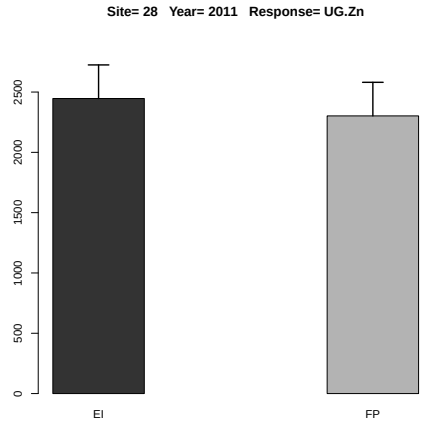

Figure 12.177: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	23000.680	23000.680	0.264	8.954	0.620
B	1.000	14507370.698	14507370.698	166.425	8.954	0.000
A:B	1.000	18713.077	18713.077	0.215	8.954	0.654

Table 12.431: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1460.057	139.869	5.500	10.440	1109.892	1810.222	0.000
2	FP		1384.227	139.869	5.500	9.900	1034.062	1734.392	0.000
3		N	2374.356	139.869	5.500	16.980	2024.190	2724.521	0.000
4		N0	469.928	139.869	5.500	3.360	119.763	820.094	0.018
5	EI	N	2446.470	174.527	9.600	14.020	2055.498	2837.441	0.000
6	FP	N	2302.242	174.527	9.600	13.190	1911.270	2693.213	0.000
7	EI	N0	473.644	174.527	9.600	2.710	82.673	864.616	0.022
8	FP	N0	466.212	174.527	9.600	2.670	75.241	857.184	0.024

Table 12.432: Estimate of treatment means in tow-way ANOVA for variable UG.Zn at site 28 in year 2011 .

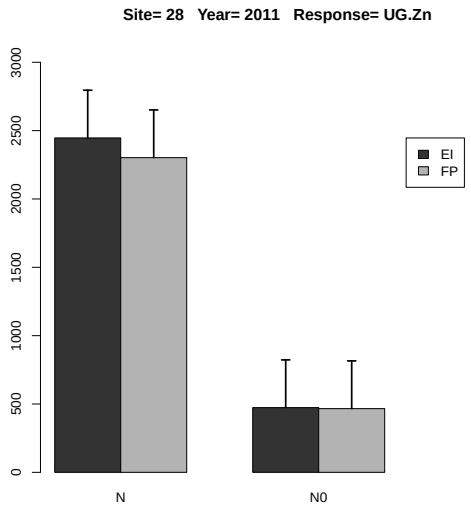

Figure 12.178: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	75.830	147.623	8.900	0.510	-258.735	410.395	0.620
B N-N0	1904.427	147.623	8.900	12.900	1569.862	2238.992	0.000
A:B EI N- FP N	144.228	208.771	8.900	0.690	-328.919	617.375	0.507
A:B EI N- EI N0	1972.825	208.771	8.900	9.450	1499.678	2445.972	0.000
A:B EI N- FP N0	1980.257	208.771	8.900	9.490	1507.110	2453.404	0.000
A:B FP N- EI N0	1828.597	208.771	8.900	8.760	1355.450	2301.744	0.000
A:B FP N- FP N0	1836.029	208.771	8.900	8.790	1362.882	2309.176	0.000
A:B EI N0- FP N0	7.432	208.771	8.900	0.040	-465.715	480.579	0.972

Table 12.433: Estimate of contrast in two-way ANOVA for variable UG.Zn at site 28 in year 2011 .

12.3.18 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	16.599
2	2	EI	N0	6.871
3	3	EI	N0	10.566
4	4	EI	N0	8.103
5	1	EI	N	57.708
6	2	EI	N	53.272
7	3	EI	N	58.115
8	4	EI	N	53.638
9	1	FP	N0	10.237
10	2	FP	N0	10.674
11	3	FP	N0	14.129
12	4	FP	N0	9.130
13	1	FP	N	56.919
14	2	FP	N	65.663
15	3	FP	N	47.915
16	4	FP	N	59.848

Table 12.434: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	55.683	3.429	16.237	0.001
A FP	57.586	3.429	16.792	0.001
A EI-FP	-1.903	4.850	-0.392	0.917

Table 12.435: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 28 in year 2011 .

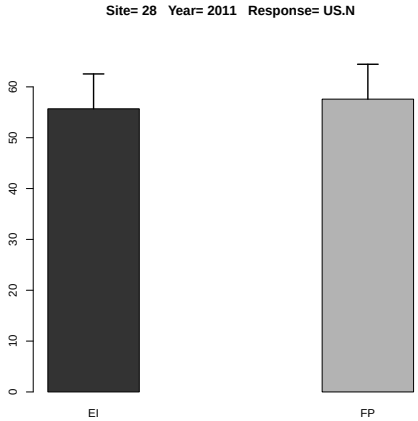

Figure 12.179: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.813	5.813	0.274	12.000	0.610
B	1.000	8407.501	8407.501	396.571	12.000	0.000
A:B	1.000	1.946	1.946	0.092	12.000	0.767

Table 12.436: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		33.109	1.628	12.000	20.340	29.562	36.656	0.000
2	FP		34.315	1.628	12.000	21.080	30.767	37.861	0.000
3		N	56.635	1.628	12.000	34.790	53.088	60.182	0.000
4		N0	10.789	1.628	12.000	6.630	7.242	14.335	0.000
5	EI	N	55.683	2.302	12.000	24.190	50.667	60.699	0.000
6	FP	N	57.586	2.302	12.000	25.010	52.570	62.602	0.000
7	EI	N0	10.535	2.302	12.000	4.580	5.519	15.551	0.001
8	FP	N0	11.043	2.302	12.000	4.800	6.027	16.059	0.000

Table 12.437: Estimate of treatment means in tow-way ANOVA for variable US.N at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.206	2.302	12.000	-0.520	-6.222	3.811	0.610
B N-N0	45.846	2.302	12.000	19.910	40.830	50.862	0.000
A:B EI N- FP N	-1.903	3.256	12.000	-0.580	-8.997	5.191	0.570
A:B EI N- EI N0	45.149	3.256	12.000	13.870	38.055	52.242	0.000
A:B EI N- FP N0	44.641	3.256	12.000	13.710	37.547	51.734	0.000
A:B FP N- EI N0	47.052	3.256	12.000	14.450	39.958	54.145	0.000
A:B FP N- FP N0	46.544	3.256	12.000	14.300	39.450	53.638	0.000
A:B EI N0- FP N0	-0.508	3.256	12.000	-0.160	-7.602	6.586	0.879

Table 12.438: Estimate of contrast in two-way ANOVA for variable US.N at site 28 in year 2011 .

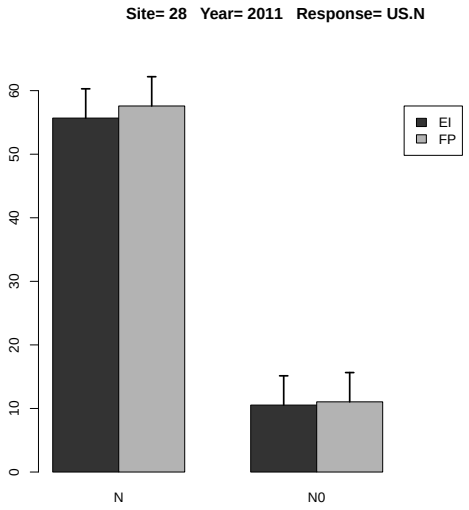

Figure 12.180: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.19 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	12.563
2	2	EI	N0	5.332
3	3	EI	N0	6.827
4	4	EI	N0	7.196
5	1	EI	N	6.272
6	2	EI	N	6.341
7	3	EI	N	4.929
8	4	EI	N	4.070
9	1	FP	N0	6.960
10	2	FP	N0	7.354
11	3	FP	N0	8.631
12	4	FP	N0	6.098
13	1	FP	N	5.660
14	2	FP	N	7.147
15	3	FP	N	4.947
16	4	FP	N	6.313

Table 12.439: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	5.403	0.435	12.408	0.002
A FP	6.017	0.435	13.818	0.001
A EI-FP	-0.614	0.616	-0.997	0.616

Table 12.440: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 28 in year 2011 .

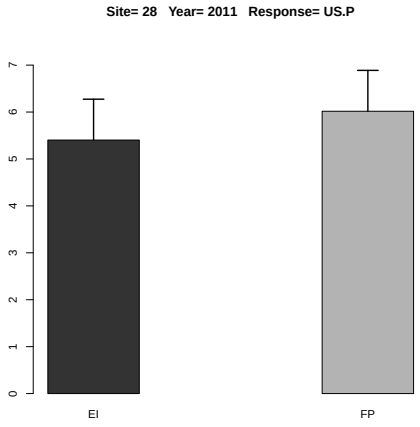

Figure 12.181: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.009	0.009	0.003	5.998	0.957
B	1.000	14.595	14.595	4.789	6.000	0.071
A:B	1.000	1.776	1.776	0.583	6.000	0.474

Table 12.441: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.691	0.666	6.000	10.050	5.062	8.320	0.000
2	FP		6.639	0.666	6.000	9.970	5.010	8.268	0.000
3		N	5.710	0.642	11.900	8.890	4.310	7.109	0.000
4		N0	7.620	0.642	11.900	11.870	6.221	9.020	0.000
5	EI	N	5.403	0.908	11.900	5.950	3.424	7.382	0.000
6	FP	N	6.017	0.908	11.900	6.630	4.038	7.996	0.000
7	EI	N0	7.979	0.908	11.900	8.790	6.000	9.959	0.000
8	FP	N0	7.261	0.908	11.900	8.000	5.281	9.240	0.000

Table 12.442: Estimate of treatment means in tow-way ANOVA for variable US.P at site 28 in year 2011 .

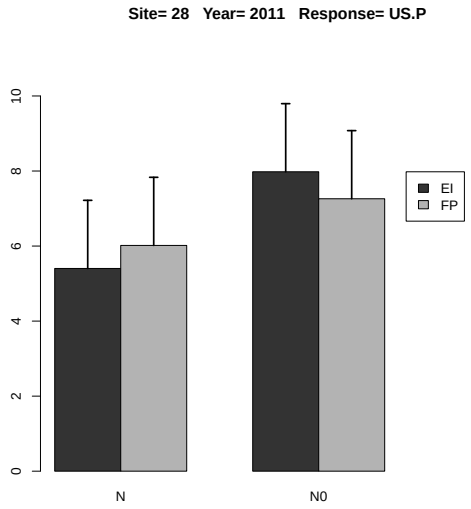

Figure 12.182: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.052	0.942	6.000	0.060	-2.252	2.356	0.958
B N-N0	-1.910	0.873	6.000	-2.190	-4.046	0.226	0.071
A:B EI N- FP N	-0.614	1.284	11.900	-0.480	-3.413	2.185	0.641
A:B EI N- EI N0	-2.576	1.234	6.000	-2.090	-5.597	0.444	0.082
A:B EI N- FP N0	-1.858	1.284	11.900	-1.450	-4.657	0.941	0.174
A:B FP N- EI N0	-1.962	1.284	11.900	-1.530	-4.762	0.837	0.152
A:B FP N- FP N0	-1.244	1.234	6.000	-1.010	-4.264	1.777	0.352
A:B EI N0- FP N0	0.719	1.284	11.900	0.560	-2.080	3.518	0.586

Table 12.443: Estimate of contrast in two-way ANOVA for variable US.P at site 28 in year 2011 .

12.3.20 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	13.363
2	2	EI	N0	5.885
3	3	EI	N0	7.197
4	4	EI	N0	7.659
5	1	EI	N	7.349
6	2	EI	N	6.723
7	3	EI	N	5.256
8	4	EI	N	4.432
9	1	FP	N0	7.110
10	2	FP	N0	7.800
11	3	FP	N0	9.106
12	4	FP	N0	6.493
13	1	FP	N	6.014
14	2	FP	N	7.838
15	3	FP	N	5.560
16	4	FP	N	6.653

Table 12.444: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	5.940	0.529	11.225	0.003
A FP	6.516	0.529	12.314	0.002
A EI-FP	-0.576	0.748	-0.770	0.735

Table 12.445: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 28 in year 2011 .

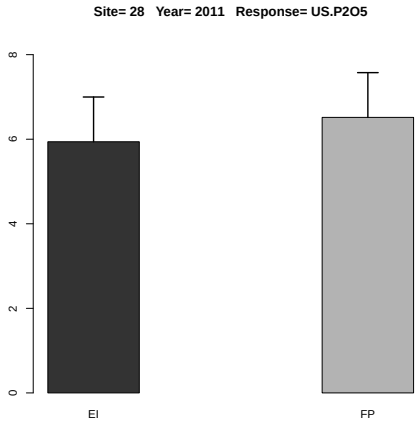

Figure 12.183: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.061	0.061	0.022	5.999	0.887
B	1.000	13.671	13.671	4.946	6.000	0.068
A:B	1.000	2.177	2.177	0.788	6.000	0.409

Table 12.446: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.233	0.768	6.000	9.410	5.353	9.114	0.000
2	FP		7.072	0.768	6.000	9.200	5.191	8.952	0.000
3		N	6.228	0.684	11.200	9.100	4.726	7.730	0.000
4		N0	8.077	0.684	11.200	11.810	6.575	9.579	0.000
5	EI	N	5.940	0.968	11.200	6.140	3.816	8.064	0.000
6	FP	N	6.516	0.968	11.200	6.730	4.392	8.640	0.000
7	EI	N0	8.526	0.968	11.200	8.810	6.402	10.650	0.000
8	FP	N0	7.627	0.968	11.200	7.880	5.503	9.752	0.000

Table 12.447: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.161	1.087	6.000	0.150	-2.498	2.821	0.887
B N-N0	-1.849	0.831	6.000	-2.220	-3.883	0.185	0.068
A:B EI N- FP N	-0.576	1.368	11.200	-0.420	-3.580	2.428	0.681
A:B EI N- EI N0	-2.586	1.176	6.000	-2.200	-5.463	0.290	0.070
A:B EI N- FP N0	-1.687	1.368	11.200	-1.230	-4.692	1.317	0.243
A:B FP N- EI N0	-2.010	1.368	11.200	-1.470	-5.014	0.994	0.169
A:B FP N- FP N0	-1.111	1.176	6.000	-0.950	-3.988	1.766	0.381
A:B EI N0- FP N0	0.899	1.368	11.200	0.660	-2.105	3.903	0.524

Table 12.448: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 28 in year 2011
.

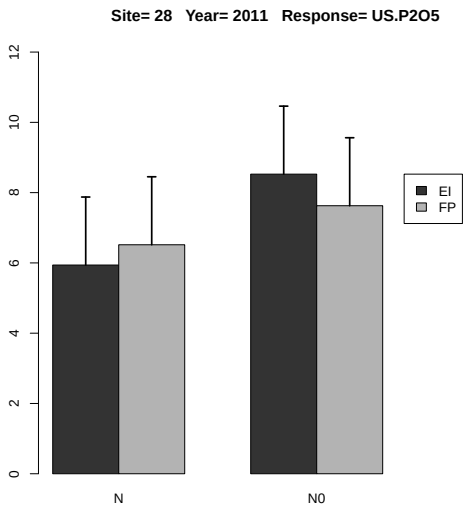

Figure 12.184: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.21 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	30.287
2	2	EI	N0	10.725
3	3	EI	N0	15.402
4	4	EI	N0	19.398
5	1	EI	N	107.267
6	2	EI	N	77.596
7	3	EI	N	90.301
8	4	EI	N	84.850
9	1	FP	N0	17.483
10	2	FP	N0	17.206
11	3	FP	N0	18.774
12	4	FP	N0	8.049
13	1	FP	N	114.306
14	2	FP	N	124.171
15	3	FP	N	73.666
16	4	FP	N	105.534

Table 12.449: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	90.004	9.336	9.640	0.005
A FP	104.419	9.336	11.184	0.003
A EI-FP	-14.416	13.204	-1.092	0.569

Table 12.450: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 28 in year 2011 .

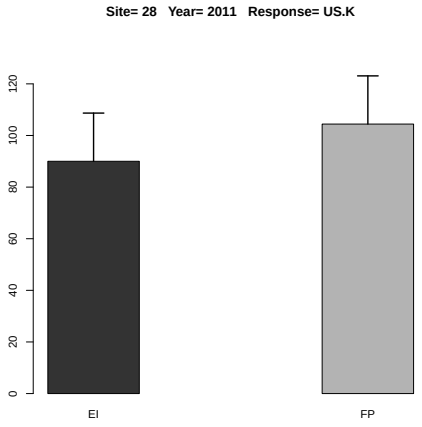

Figure 12.185: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	76.446	76.446	0.534	2.999	0.518
B	1.000	25629.376	25629.376	179.015	6.000	0.000
A:B	1.000	323.655	323.655	2.261	6.000	0.183

Table 12.451: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		54.478	5.277	6.000	10.320	41.566	67.391	0.000
2	FP		59.899	5.277	6.000	11.350	46.986	72.811	0.000
3		N	97.212	4.799	6.700	20.250	85.748	108.675	0.000
4		N0	17.166	4.799	6.700	3.580	5.702	28.630	0.010
5	EI	N	90.004	6.763	11.500	13.310	75.190	104.817	0.000
6	FP	N	104.419	6.763	11.500	15.440	89.606	119.233	0.000
7	EI	N0	18.953	6.763	11.500	2.800	4.140	33.766	0.017
8	FP	N0	15.378	6.763	11.500	2.270	0.565	30.192	0.043

Table 12.452: Estimate of treatment means in tow-way ANOVA for variable US.K at site 28 in year 2011 .

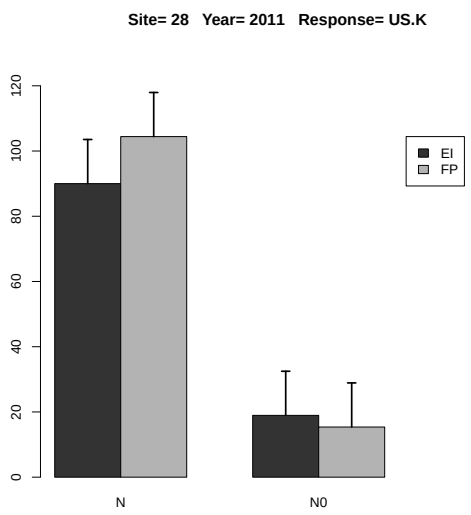

Figure 12.186: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.420	7.418	3.000	-0.730	-29.031	18.190	0.518
B N-N0	80.046	5.983	6.000	13.380	65.407	94.685	0.000
A:B EI N- FP N	-14.416	9.530	6.700	-1.510	-37.124	8.293	0.176
A:B EI N- EI N0	71.051	8.461	6.000	8.400	50.348	91.754	0.000
A:B EI N- FP N0	74.626	9.530	6.700	7.830	51.917	97.334	0.000
A:B FP N- EI N0	85.466	9.530	6.700	8.970	62.758	108.175	0.000
A:B FP N- FP N0	89.041	8.461	6.000	10.520	68.338	109.744	0.000
A:B EI N0- FP N0	3.575	9.530	6.700	0.380	-19.134	26.284	0.719

Table 12.453: Estimate of contrast in two-way ANOVA for variable US.K at site 28 in year 2011 .

12.3.22 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	31.034
2	2	EI	N0	11.165
3	3	EI	N0	15.717
4	4	EI	N0	19.871
5	1	EI	N	109.378
6	2	EI	N	79.873
7	3	EI	N	92.327
8	4	EI	N	86.865
9	1	FP	N0	17.722
10	2	FP	N0	17.681
11	3	FP	N0	19.303
12	4	FP	N0	8.369
13	1	FP	N	115.656
14	2	FP	N	125.680
15	3	FP	N	74.836
16	4	FP	N	107.532

Table 12.454: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	92.111	9.370	9.830	0.005
A FP	105.926	9.370	11.304	0.003
A EI-FP	-13.815	13.252	-1.043	0.593

Table 12.455: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 28 in year 2011 .

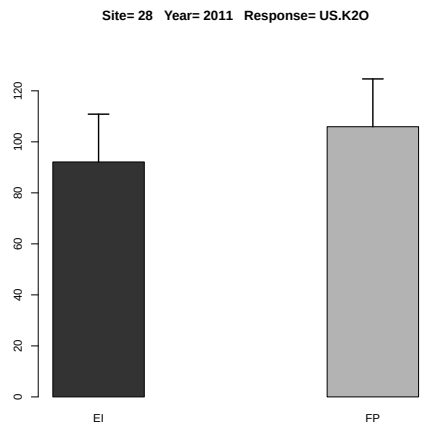

Figure 12.187: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	67.941	67.941	0.465	2.999	0.544
B	1.000	26510.679	26510.679	181.340	6.000	0.000
A:B	1.000	306.018	306.018	2.093	6.000	0.198

Table 12.456: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		55.779	5.292	6.000	10.540	42.830	68.728	0.000
2	FP		60.847	5.292	6.000	11.500	47.898	73.796	0.000
3		N	99.018	4.829	6.700	20.510	87.500	110.537	0.000
4		N0	17.608	4.829	6.700	3.650	6.090	29.126	0.009
5	EI	N	92.111	6.803	11.500	13.540	77.216	107.005	0.000
6	FP	N	105.926	6.803	11.500	15.570	91.031	120.821	0.000
7	EI	N0	19.447	6.803	11.500	2.860	4.552	34.342	0.015
8	FP	N0	15.769	6.803	11.500	2.320	0.874	30.663	0.040

Table 12.457: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.069	7.435	3.000	-0.680	-28.733	18.596	0.544
B N-N0	81.410	6.045	6.000	13.470	66.618	96.203	0.000
A:B EI N- FP N	-13.815	9.583	6.800	-1.440	-36.616	8.985	0.194
A:B EI N- EI N0	72.664	8.550	6.000	8.500	51.744	93.584	0.000
A:B EI N- FP N0	76.342	9.583	6.800	7.970	53.541	99.142	0.000
A:B FP N- EI N0	86.479	9.583	6.800	9.020	63.678	109.280	0.000
A:B FP N- FP N0	90.157	8.550	6.000	10.550	69.237	111.077	0.000
A:B EI N0- FP N0	3.678	9.583	6.800	0.380	-19.122	26.479	0.713

Table 12.458: Estimate of contrast in two-way ANOVA for variable US.K2O at site 28 in year 2011 .

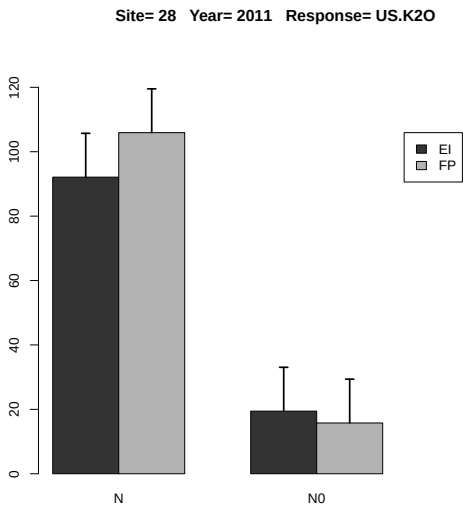

Figure 12.188: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.23 Response Variable US.Ca

	rep	A	B	y
1	1	EI	N0	20.785
2	2	EI	N0	8.288
3	3	EI	N0	12.336
4	4	EI	N0	9.154
5	1	EI	N	33.672
6	3	EI	N	40.209
7	1	FP	N0	11.867
8	2	FP	N0	10.857
9	3	FP	N0	16.922
10	4	FP	N0	13.239
11	1	FP	N	52.920
12	2	FP	N	34.296
13	3	FP	N	31.416
14	4	FP	N	46.514

Table 12.459: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Ca

	Estimate	S.E.	t-value	p-value
A EI	36.059	12.142	2.970	0.300
A FP	41.286	7.010	5.889	0.156
A EI-FP	-5.227	14.021	-0.373	0.927

Table 12.460: Estimate of treatment means and contrast in one-way ANOVA for variable US.Ca at site 28 in year 2011 .

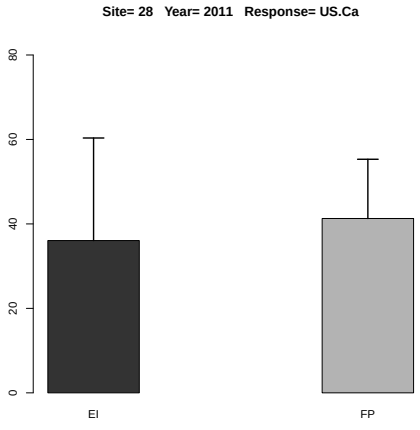

Figure 12.189: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	145.444	145.444	0.432	10.000	0.526
B	1.000	2351.243	2351.243	48.860	10.000	0.000
A:B	1.000	11.339	11.339	0.253	10.000	0.626

Table 12.461: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.791	2.901	10.000	8.540	18.326	31.256	0.000
2	FP		27.254	2.369	10.000	11.500	21.976	32.532	0.000
3		N	39.114	2.901	10.000	13.480	32.649	45.578	0.000
4		N0	12.931	2.369	10.000	5.460	7.653	18.210	0.000
5	EI	N	36.941	4.738	10.000	7.800	26.384	47.498	0.000
6	FP	N	41.286	3.350	10.000	12.320	33.821	48.751	0.000
7	EI	N0	12.641	3.350	10.000	3.770	5.176	20.106	0.004
8	FP	N0	13.222	3.350	10.000	3.950	5.757	20.686	0.003

Table 12.462: Estimate of treatment means in tow-way ANOVA for variable US.Ca at site 28 in year 2011 .

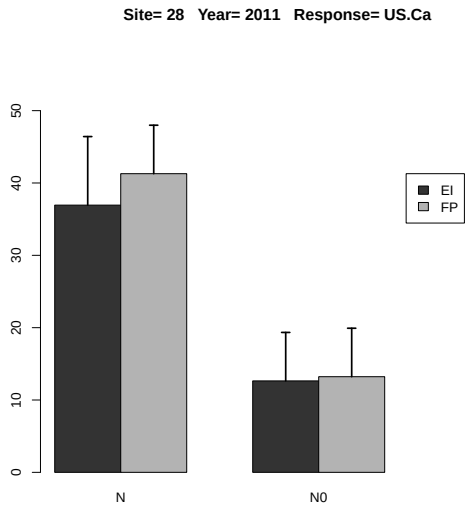

Figure 12.190: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.463	3.746	10.000	-0.660	-10.809	5.883	0.526
B N-N0	26.182	3.746	10.000	6.990	17.836	34.528	0.000
A:B EI N- FP N	-4.346	5.803	10.000	-0.750	-17.275	8.584	0.471
A:B EI N- EI N0	24.300	5.803	10.000	4.190	11.370	37.230	0.002
A:B EI N- FP N0	23.719	5.803	10.000	4.090	10.790	36.649	0.002
A:B FP N- EI N0	28.645	4.738	10.000	6.050	18.089	39.202	0.000
A:B FP N- FP N0	28.065	4.738	10.000	5.920	17.508	38.622	0.000
A:B EI N0- FP N0	-0.581	4.738	10.000	-0.120	-11.138	9.976	0.905

Table 12.463: Estimate of contrast in two-way ANOVA for variable US.Ca at site 28 in year 2011 .

12.3.24 Response Variable US.Mg

	rep	A	B	y
1	1	EI	N0	14.432
2	2	EI	N0	4.825
3	3	EI	N0	7.386
4	4	EI	N0	5.545
5	1	EI	N	15.546
6	2	EI	N	19.141
7	4	EI	N	14.398
8	1	FP	N0	7.393
9	2	FP	N0	7.672
10	3	FP	N0	8.660
11	4	FP	N0	6.073
12	1	FP	N	24.913
13	2	FP	N	18.868
14	3	FP	N	11.744
15	4	FP	N	20.298

Table 12.464: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	13.958	2.229	6.263	0.043
A FP	18.955	1.726	10.981	0.015
A EI-FP	-4.998	2.819	-1.773	0.358

Table 12.465: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 28 in year 2011 .

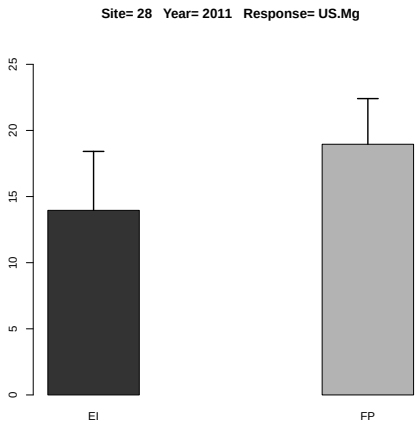

Figure 12.191: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10.612	10.612	0.310	8.255	0.593
B	1.000	367.727	367.727	26.027	8.255	0.001
A:B	1.000	10.252	10.252	0.751	8.255	0.411

Table 12.466: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.130	1.516	7.700	8.000	8.613	15.646	0.000
2	FP		13.202	1.412	6.900	9.350	9.854	16.550	0.000
3		N	17.584	1.516	7.700	11.600	14.067	21.101	0.000
4		N0	7.748	1.412	6.900	5.490	4.400	11.096	0.001
5	EI	N	16.212	2.217	11.000	7.310	11.330	21.095	0.000
6	FP	N	18.955	1.924	10.800	9.850	14.712	23.199	0.000
7	EI	N0	8.047	1.924	10.800	4.180	3.804	12.290	0.002
8	FP	N0	7.449	1.924	10.800	3.870	3.206	11.692	0.003

Table 12.467: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.073	1.928	8.300	-0.560	-5.495	3.349	0.593
B N-N0	9.835	1.928	8.300	5.100	5.414	14.258	0.001
A:B EI N- FP N	-2.743	2.836	8.500	-0.970	-9.217	3.730	0.360
A:B EI N- EI N0	8.165	2.836	8.500	2.880	1.692	14.638	0.019
A:B EI N- FP N0	8.763	2.836	8.500	3.090	2.289	15.236	0.014
A:B FP N- EI N0	10.908	2.613	8.000	4.170	4.880	16.937	0.003
A:B FP N- FP N0	11.506	2.613	8.000	4.400	5.478	17.535	0.002
A:B EI N0- FP N0	0.598	2.613	8.000	0.230	-5.431	6.626	0.825

Table 12.468: Estimate of contrast in two-way ANOVA for variable US.Mg at site 28 in year 2011 .

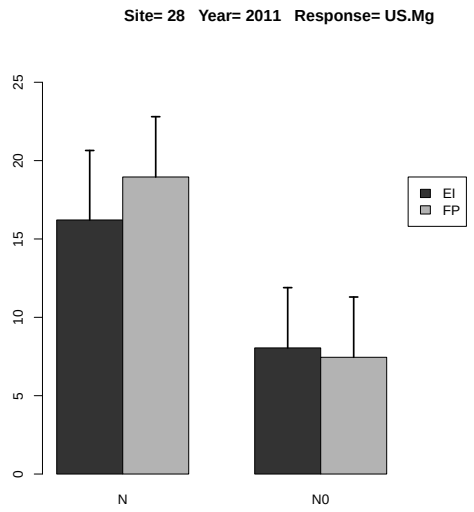

Figure 12.192: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.25 Response Variable US.S

	rep	A	B	y
1	1	EI	N0	3.027
2	2	EI	N0	1.226
3	3	EI	N0	1.693
4	4	EI	N0	1.747
5	1	EI	N	4.949
6	2	EI	N	5.333
7	3	EI	N	4.929
8	4	EI	N	4.828
9	1	FP	N0	1.889
10	2	FP	N0	1.593
11	3	FP	N0	1.820
12	4	FP	N0	1.503
13	1	FP	N	5.660
14	2	FP	N	5.911
15	3	FP	N	3.934
16	4	FP	N	5.305

Table 12.469: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	5.010	0.282	17.756	0.001
A FP	5.203	0.282	18.440	0.001
A EI-FP	-0.193	0.399	-0.484	0.878

Table 12.470: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 28 in year 2011 .

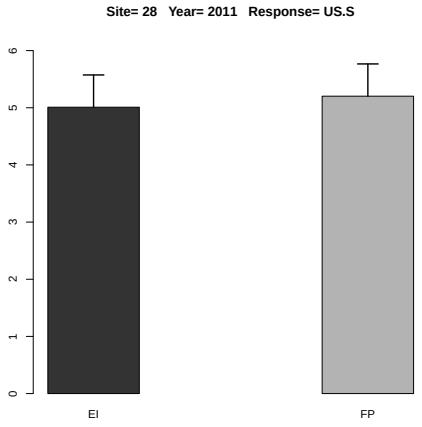

Figure 12.193: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	0.002	8.998	0.961
B	1.000	43.399	43.399	127.673	8.998	0.000
A:B	1.000	0.172	0.172	0.506	8.998	0.495

Table 12.471: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.466	0.220	7.900	15.730	2.957	3.976	0.000
2	FP		3.452	0.220	7.900	15.660	2.942	3.961	0.000
3		N	5.106	0.220	7.900	23.170	4.597	5.616	0.000
4		N0	1.812	0.220	7.900	8.220	1.303	2.322	0.000
5	EI	N	5.010	0.302	11.800	16.600	4.351	5.668	0.000
6	FP	N	5.202	0.302	11.800	17.240	4.544	5.861	0.000
7	EI	N0	1.923	0.302	11.800	6.370	1.265	2.582	0.000
8	FP	N0	1.701	0.302	11.800	5.640	1.043	2.360	0.000

Table 12.472: Estimate of treatment means in tow-way ANOVA for variable US.S at site 28 in year 2011 .

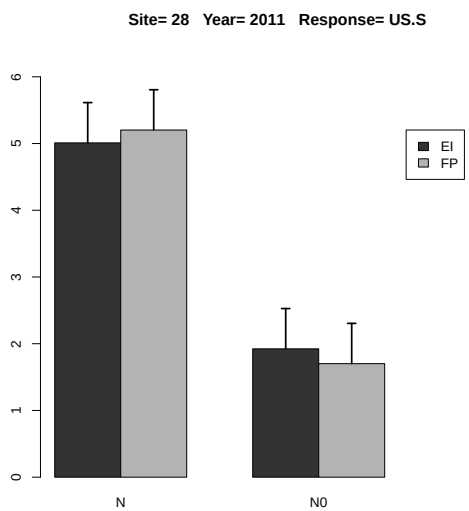

Figure 12.194: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.014	0.291	9.000	0.050	-0.645	0.674	0.961
B N-N0	3.294	0.291	9.000	11.300	2.634	3.953	0.000
A:B EI N- FP N	-0.193	0.412	9.000	-0.470	-1.126	0.740	0.651
A:B EI N- EI N0	3.087	0.412	9.000	7.490	2.154	4.019	0.000
A:B EI N- FP N0	3.308	0.412	9.000	8.020	2.376	4.241	0.000
A:B FP N- EI N0	3.279	0.412	9.000	7.950	2.347	4.212	0.000
A:B FP N- FP N0	3.501	0.412	9.000	8.490	2.569	4.434	0.000
A:B EI N0- FP N0	0.222	0.412	9.000	0.540	-0.711	1.155	0.603

Table 12.473: Estimate of contrast in two-way ANOVA for variable US.S at site 28 in year 2011 .

12.3.26 Response Variable US.B

	rep	A	B	y
1	1	EI	N0	3717.153
2	2	EI	N0	229.206
3	3	EI	N0	393.055
4	4	EI	N0	288.422
5	1	EI	N	927.079
6	2	EI	N	1107.831
7	3	EI	N	909.402
8	4	EI	N	705.888
9	1	FP	N0	318.800
10	2	FP	N0	249.294
11	3	FP	N0	415.250
12	4	FP	N0	192.255
13	1	FP	N	1093.868
14	2	FP	N	981.876
15	3	FP	N	751.649
16	4	FP	N	1004.844

Table 12.474: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.B

	Estimate	S.E.	t-value	p-value
A EI	912.550	78.967	11.556	0.003
A FP	958.059	78.967	12.132	0.002
A EI-FP	-45.509	111.676	-0.408	0.911

Table 12.475: Estimate of treatment means and contrast in one-way ANOVA for variable US.B at site 28 in year 2011 .

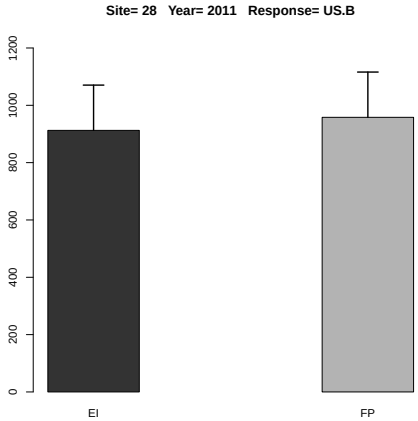

Figure 12.195: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	668388.002	668388.002	0.938	9.150	0.358
B	1.000	176190.482	176190.482	0.247	9.150	0.631
A:B	1.000	825496.719	825496.719	1.159	9.150	0.309

Table 12.476: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1034.755	311.273	8.300	3.320	321.469	1748.041	0.010
2	FP		625.980	311.273	8.300	2.010	-87.306	1339.265	0.078
3		N	935.305	311.273	8.300	3.000	222.019	1648.591	0.016
4		N0	725.429	311.273	8.300	2.330	12.143	1438.715	0.047
5	EI	N	912.550	431.223	12.100	2.120	-26.384	1851.484	0.056
6	FP	N	958.059	431.223	12.100	2.220	19.126	1896.993	0.046
7	EI	N0	1156.959	431.223	12.100	2.680	218.025	2095.893	0.020
8	FP	N0	293.900	431.223	12.100	0.680	-645.034	1232.833	0.508

Table 12.477: Estimate of treatment means in tow-way ANOVA for variable US.B at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	408.775	422.048	9.200	0.970	-543.583	1361.133	0.358
B N-N0	209.875	422.048	9.200	0.500	-742.483	1162.233	0.631
A:B EI N- FP N	-45.509	596.866	9.200	-0.080	-1392.347	1301.328	0.941
A:B EI N- EI N0	-244.409	596.866	9.200	-0.410	-1591.246	1102.428	0.692
A:B EI N- FP N0	618.650	596.866	9.200	1.040	-728.187	1965.488	0.327
A:B FP N- EI N0	-198.900	596.866	9.200	-0.330	-1545.737	1147.938	0.747
A:B FP N- FP N0	664.159	596.866	9.200	1.110	-682.678	2010.997	0.294
A:B EI N0- FP N0	863.059	596.866	9.200	1.450	-483.778	2209.897	0.181

Table 12.478: Estimate of contrast in two-way ANOVA for variable US.B at site 28 in year 2011 .

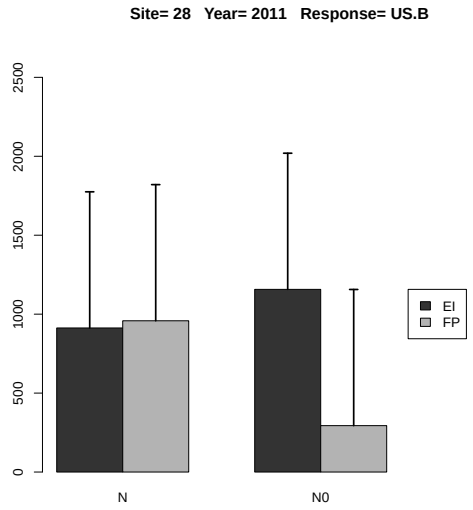

Figure 12.196: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.27 Response Variable US.Cu

	rep	A	B	y
1	1	EI	N0	117.216
2	2	EI	N0	40.090
3	3	EI	N0	147.160
4	4	EI	N0	156.095
5	1	EI	N	359.652
6	2	EI	N	628.429
7	3	EI	N	337.724
8	1	FP	N0	87.650
9	2	FP	N0	75.666
10	3	FP	N0	180.235
11	4	FP	N0	129.563
12	1	FP	N	326.312
13	2	FP	N	346.024
14	3	FP	N	542.986
15	4	FP	N	687.867

Table 12.479: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Cu

	Estimate	S.E.	t-value	p-value
A EI	512.625	111.303	4.606	0.077
A FP	475.797	86.215	5.519	0.054
A EI-FP	36.828	140.788	0.262	0.962

Table 12.480: Estimate of treatment means and contrast in one-way ANOVA for variable US.Cu at site 28 in year 2011 .

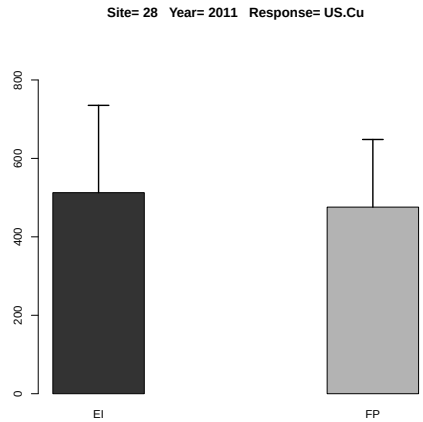

Figure 12.197: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6536.373	6536.373	0.089	10.994	0.771
B	1.000	437844.776	437844.776	30.452	10.994	0.000
A:B	1.000	871.352	871.352	0.061	10.994	0.809

Table 12.481: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		278.538	45.498	11.000	6.120	178.390	378.686	0.000
2	FP		297.038	42.123	11.000	7.050	204.319	389.757	0.000
3		N	458.866	45.498	11.000	10.090	358.718	559.014	0.000
4		N0	116.709	42.123	11.000	2.770	23.990	209.428	0.018
5	EI	N	441.935	68.787	11.000	6.420	290.526	593.345	0.000
6	FP	N	475.797	59.571	11.000	7.990	344.673	606.922	0.000
7	EI	N0	115.140	59.571	11.000	1.930	-15.984	246.265	0.079
8	FP	N0	118.278	59.571	11.000	1.990	-12.846	249.403	0.073

Table 12.482: Estimate of treatment means in tow-way ANOVA for variable US.Cu at site 28 in year 2011 .

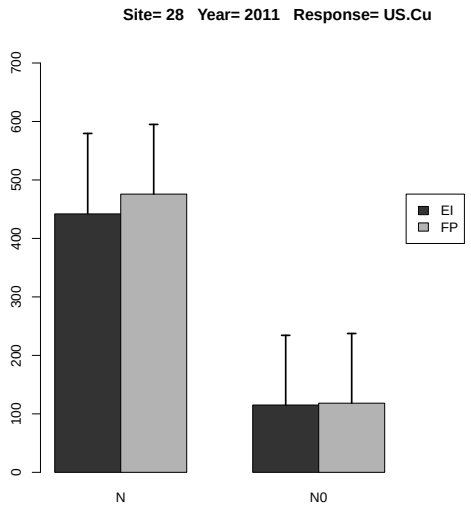

Figure 12.198: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-18.500	62.004	11.000	-0.300	-154.979	117.978	0.771
B N-N0	342.157	62.004	11.000	5.520	205.678	478.635	0.000
A:B EI N- FP N	-33.862	90.997	11.000	-0.370	-234.158	166.434	0.717
A:B EI N- EI N0	326.795	90.997	11.000	3.590	126.499	527.091	0.004
A:B EI N- FP N0	323.656	90.997	11.000	3.560	123.361	523.952	0.004
A:B FP N- EI N0	360.657	84.246	11.000	4.280	175.219	546.095	0.001
A:B FP N- FP N0	357.519	84.246	11.000	4.240	172.081	542.957	0.001
A:B EI N0- FP N0	-3.138	84.246	11.000	-0.040	-188.576	182.300	0.971

Table 12.483: Estimate of contrast in two-way ANOVA for variable US.Cu at site 28 in year 2011 .

12.3.28 Response Variable US.Fe

	rep	A	B	y
1	1	EI	N0	18678.678
2	2	EI	N0	5797.678
3	3	EI	N0	12956.812
4	4	EI	N0	8777.741
5	1	EI	N	20058.543
6	2	EI	N	31082.636
7	3	EI	N	20588.427
8	4	EI	N	20021.112
9	1	FP	N0	18265.263
10	2	FP	N0	32917.666
11	3	FP	N0	29028.670
12	4	FP	N0	27560.260
13	1	FP	N	34652.176
14	2	FP	N	20246.034
15	3	FP	N	19101.451
16	4	FP	N	27152.607

Table 12.484: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Fe

	Estimate	S.E.	t-value	p-value
A EI	22937.679	3880.389	5.911	0.019
A FP	25288.067	3880.389	6.517	0.014
A EI-FP	-2350.388	5487.699	-0.428	0.902

Table 12.485: Estimate of treatment means and contrast in one-way ANOVA for variable US.Fe at site 28 in year 2011 .

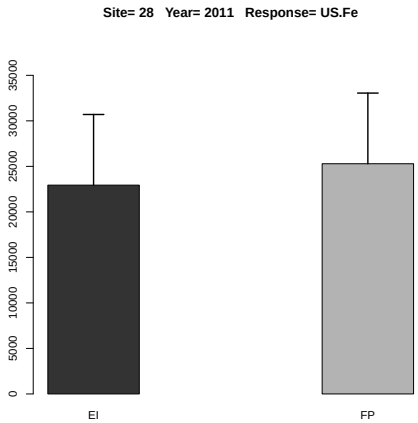

Figure 12.199: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	314729775.391	314729775.391	8.341	-0.000	
B	1.000	94673960.573	94673960.573	2.509	-0.000	
A:B	1.000	170037688.023	170037688.023	4.506	-0.000	

Table 12.486: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17245.203	2171.830	-53.600	7.940			
2	FP		26115.516	2171.830	-53.600	12.020			
3		N	24112.873	2171.830	-53.600	11.100			
4		N0	19247.846	2171.830	-53.600	8.860			
5	EI	N	22937.679	3071.431	-53.600	7.470			
6	FP	N	25288.067	3071.431	-53.600	8.230			
7	EI	N0	11552.727	3071.431	-53.600	3.760			
8	FP	N0	26942.965	3071.431	-53.600	8.770			

Table 12.487: Estimate of treatment means in tow-way ANOVA for variable US.Fe at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-8870.312	3071.431	-53.600	-2.890			
B N-N0	4865.027	3071.431	-53.600	1.580			
A:B EI N- FP N	-2350.387	4343.659	-53.600	-0.540			
A:B EI N- EI N0	11384.952	4343.659	-53.600	2.620			
A:B EI N- FP N0	-4005.285	4343.659	-53.600	-0.920			
A:B FP N- EI N0	13735.340	4343.659	-53.600	3.160			
A:B FP N- FP N0	-1654.898	4343.659	-53.600	-0.380			
A:B EI N0- FP N0	-15390.237	4343.659	-53.600	-3.540			

Table 12.488: Estimate of contrast in two-way ANOVA for variable US.Fe at site 28 in year 2011 .

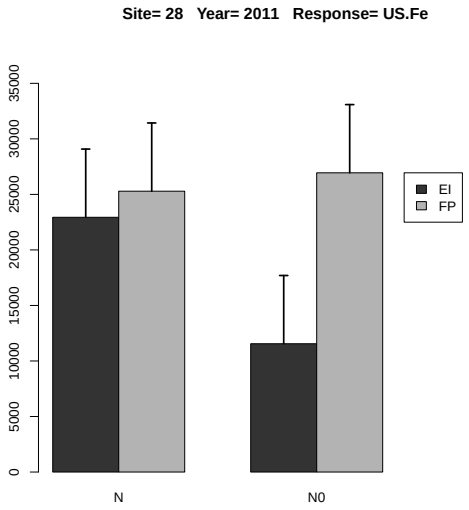

Figure 12.200: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.29 Response Variable US.Mn

	rep	A	B	y
1	1	EI	N0	3406.570
2	2	EI	N0	1187.807
3	3	EI	N0	1797.486
4	4	EI	N0	1260.021
5	1	EI	N	7295.457
6	2	EI	N	6897.696
7	3	EI	N	8241.798
8	4	EI	N	6189.588
9	1	FP	N0	1979.316
10	2	FP	N0	2147.306
11	3	FP	N0	2856.170
12	4	FP	N0	2129.750
13	1	FP	N	10091.084
14	2	FP	N	9593.922
15	3	FP	N	5779.284
16	4	FP	N	10642.506

Table 12.489: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mn

	Estimate	S.E.	t-value	p-value
A EI	7156.135	1060.298	6.749	0.013
A FP	9026.699	1060.298	8.513	0.007
A EI-FP	-1870.564	1499.488	-1.247	0.497

Table 12.490: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mn at site 28 in year 2011 .

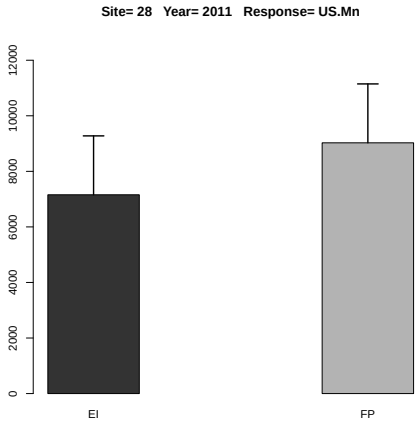

Figure 12.201: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4998483.044	4998483.044	2.930	9.696	0.119
B	1.000	143801522.438	143801522.438	84.303	9.696	0.000
A:B	1.000	2266228.407	2266228.407	1.329	9.696	0.277

Table 12.491: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4534.553	461.759	9.700	9.820	3501.304	5567.802	0.000
2	FP		5652.417	461.759	9.700	12.240	4619.168	6685.666	0.000
3		N	8091.417	461.759	9.700	17.520	7058.168	9124.666	0.000
4		N0	2095.553	461.759	9.700	4.540	1062.304	3128.802	0.001
5	EI	N	7156.135	653.025	9.700	10.960	5694.900	8617.369	0.000
6	FP	N	9026.699	653.025	9.700	13.820	7565.464	10487.934	0.000
7	EI	N0	1912.971	653.025	9.700	2.930	451.736	3374.206	0.015
8	FP	N0	2278.135	653.025	9.700	3.490	816.901	3739.370	0.006

Table 12.492: Estimate of treatment means in tow-way ANOVA for variable US.Mn at site 28 in year 2011 .

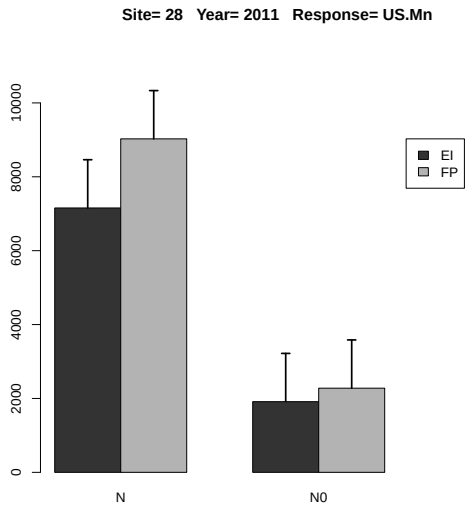

Figure 12.202: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1117.864	653.025	9.700	-1.710	-2579.099	343.370	0.119
B N-N0	5995.864	653.025	9.700	9.180	4534.629	7457.098	0.000
A:B EI N- FP N	-1870.564	923.517	9.700	-2.030	-3937.062	195.934	0.071
A:B EI N- EI N0	5243.164	923.517	9.700	5.680	3176.666	7309.662	0.000
A:B EI N- FP N0	4877.999	923.517	9.700	5.280	2811.501	6944.497	0.000
A:B FP N- EI N0	7113.728	923.517	9.700	7.700	5047.230	9180.226	0.000
A:B FP N- FP N0	6748.564	923.517	9.700	7.310	4682.066	8815.061	0.000
A:B EI N0- FP N0	-365.164	923.517	9.700	-0.400	-2431.662	1701.333	0.701

Table 12.493: Estimate of contrast in two-way ANOVA for variable US.Mn at site 28 in year 2011 .

12.3.30 Response Variable US.Zn

	rep	A	B	y
1	1	EI	N0	3477.640
2	2	EI	N0	1314.111
3	3	EI	N0	2076.234
4	4	EI	N0	1927.372
5	1	EI	N	7363.100
6	2	EI	N	2574.160
7	3	EI	N	3064.787
8	4	EI	N	3640.302
9	1	FP	N0	1598.522
10	2	FP	N0	1567.258
11	3	FP	N0	2197.665
12	4	FP	N0	1288.014
13	1	FP	N	4382.852
14	2	FP	N	2291.656
15	3	FP	N	3212.244
16	4	FP	N	2506.020

Table 12.494: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Zn

	Estimate	S.E.	t-value	p-value
A EI	4160.587	489.698	8.496	0.007
A FP	3098.193	489.698	6.327	0.016
A EI-FP	1062.394	692.538	1.534	0.383

Table 12.495: Estimate of treatment means and contrast in one-way ANOVA for variable US.Zn at site 28 in year 2011 .

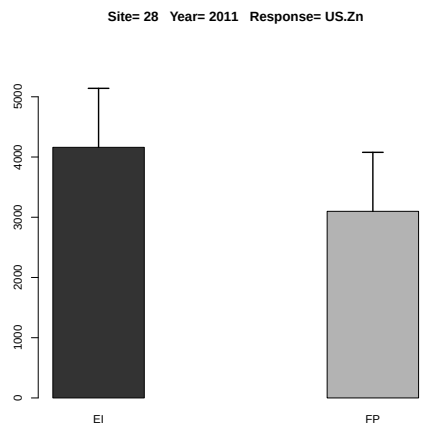

Figure 12.203: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1192039.337	1192039.337	1.845	3.000	0.267
B	1.000	11540127.048	11540127.048	17.865	6.852	0.004
A:B	1.000	277117.753	277117.753	0.429	6.852	0.534

Table 12.496: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3179.713	576.982	4.900	5.510	1685.053	4674.374	0.003
2	FP		2380.529	576.982	4.900	4.130	885.868	3875.189	0.010
3		N	3629.390	535.494	4.000	6.780	2144.973	5113.807	0.002
4		N0	1930.852	535.494	4.000	3.610	446.435	3415.269	0.022
5	EI	N	4160.587	643.159	7.200	6.470	2649.294	5671.880	0.000
6	FP	N	3098.193	643.159	7.200	4.820	1586.900	4609.486	0.002
7	EI	N0	2198.839	643.159	7.200	3.420	687.546	3710.132	0.011
8	FP	N0	1662.865	643.159	7.200	2.590	151.572	3174.158	0.035

Table 12.497: Estimate of treatment means in tow-way ANOVA for variable US.Zn at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	799.184	588.310	3.000	1.360	-1073.221	2671.590	0.268
B N-N0	1698.538	401.860	6.900	4.230	744.108	2652.968	0.004
A:B EI N- FP N	1062.394	712.461	5.900	1.490	-688.809	2813.597	0.187
A:B EI N- EI N0	1961.748	568.316	6.900	3.450	611.980	3311.516	0.011
A:B EI N- FP N0	2497.722	712.461	5.900	3.510	746.519	4248.926	0.013
A:B FP N- EI N0	899.354	712.461	5.900	1.260	-851.849	2650.557	0.254
A:B FP N- FP N0	1435.328	568.316	6.900	2.530	85.560	2785.097	0.040
A:B EI N0- FP N0	535.975	712.461	5.900	0.750	-1215.228	2287.177	0.481

Table 12.498: Estimate of contrast in two-way ANOVA for variable US.Zn at site 28 in year 2011 .

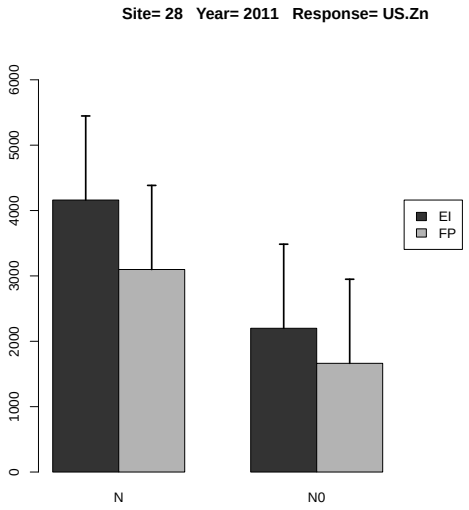

Figure 12.204: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.31 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	40.695
2	2	EI	N0	18.227
3	3	EI	N0	24.816
4	4	EI	N0	19.498
5	1	EI	N	191.075
6	2	EI	N	175.240
7	3	EI	N	187.915
8	4	EI	N	181.013
9	1	FP	N0	24.995
10	2	FP	N0	26.783
11	3	FP	N0	32.426
12	4	FP	N0	23.733
13	1	FP	N	184.865
14	2	FP	N	206.723
15	3	FP	N	167.440
16	4	FP	N	188.681

Table 12.499: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	183.811	7.823	23.495	0.000
A FP	186.927	7.823	23.894	0.000
A EI-FP	-3.116	11.064	-0.282	0.956

Table 12.500: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 28 in year 2011 .

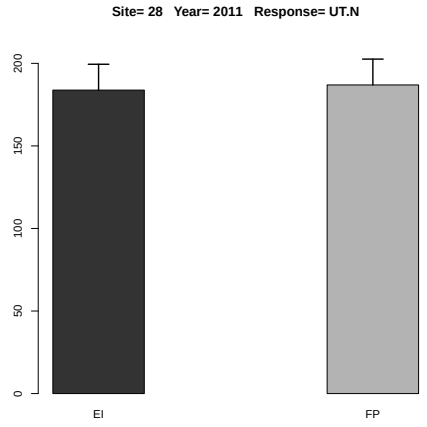

Figure 12.205: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	14.588	14.588	0.153	5.998	0.709
B	1.000	101088.641	101088.641	1060.597	6.000	0.000
A:B	1.000	3.768	3.768	0.040	6.000	0.849

Table 12.501: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		104.810	3.878	6.000	27.020	95.319	114.301	0.000
2	FP		106.956	3.878	6.000	27.580	97.465	116.446	0.000
3		N	185.369	3.671	11.800	50.490	177.358	193.380	0.000
4		N0	26.397	3.671	11.800	7.190	18.386	34.408	0.000
5	EI	N	183.811	5.192	11.800	35.400	172.482	195.140	0.000
6	FP	N	186.927	5.192	11.800	36.000	175.598	198.256	0.000
7	EI	N0	25.809	5.192	11.800	4.970	14.480	37.138	0.000
8	FP	N0	26.984	5.192	11.800	5.200	15.655	38.313	0.000

Table 12.502: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 28 in year 2011 .

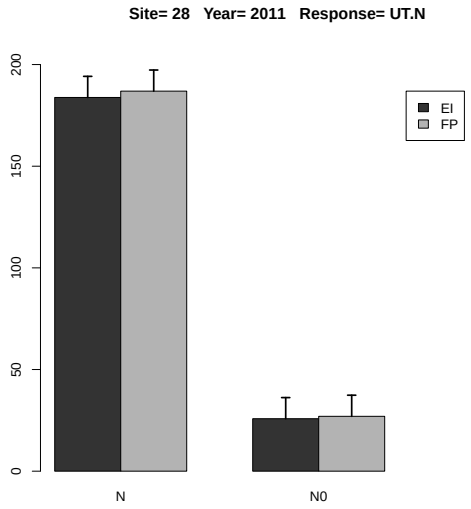

Figure 12.206: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.146	5.485	6.000	-0.390	-15.568	11.276	0.709
B N-N0	158.972	4.881	6.000	32.570	147.028	170.917	0.000
A:B EI N- FP N	-3.116	7.343	11.800	-0.420	-19.138	12.906	0.679
A:B EI N- EI N0	158.002	6.903	6.000	22.890	141.110	174.894	0.000
A:B EI N- FP N0	156.826	7.343	11.800	21.360	140.804	172.848	0.000
A:B FP N- EI N0	161.118	7.343	11.800	21.940	145.096	177.140	0.000
A:B FP N- FP N0	159.943	6.903	6.000	23.170	143.051	176.835	0.000
A:B EI N0- FP N0	-1.175	7.343	11.800	-0.160	-17.197	14.847	0.875

Table 12.503: Estimate of contrast in two-way ANOVA for variable UT.N at site 28 in year 2011 .

12.3.32 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	22.149
2	2	EI	N0	9.160
3	3	EI	N0	11.672
4	4	EI	N0	11.469
5	1	EI	N	38.075
6	2	EI	N	36.833
7	3	EI	N	34.109
8	4	EI	N	33.621
9	1	FP	N0	10.885
10	2	FP	N0	12.784
11	3	FP	N0	14.602
12	4	FP	N0	10.737
13	1	FP	N	38.440
14	2	FP	N	36.844
15	3	FP	N	29.808
16	4	FP	N	25.259

Table 12.504: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	35.659	1.455	24.509	0.000
A FP	32.588	1.455	22.397	0.000
A EI-FP	3.072	2.058	1.493	0.398

Table 12.505: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 28 in year 2011 .

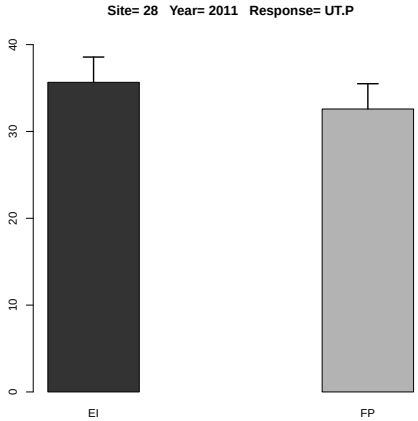

Figure 12.207: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	19.647	19.647	1.338	9.000	0.277
B	1.000	1796.291	1796.291	122.294	9.000	0.000
A:B	1.000	2.927	2.927	0.199	9.000	0.666

Table 12.506: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.636	1.770	5.700	13.910	20.243	29.029	0.000
2	FP		22.420	1.770	5.700	12.660	18.026	26.813	0.000
3		N	34.123	1.770	5.700	19.270	29.730	38.517	0.000
4		N0	12.932	1.770	5.700	7.300	8.539	17.326	0.000
5	EI	N	35.659	2.229	10.000	15.990	30.689	40.630	0.000
6	FP	N	32.588	2.229	10.000	14.620	27.617	37.558	0.000
7	EI	N0	13.613	2.229	10.000	6.110	8.642	18.583	0.000
8	FP	N0	12.252	2.229	10.000	5.500	7.281	17.222	0.000

Table 12.507: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.216	1.916	9.000	1.160	-2.119	6.551	0.277
B N-N0	21.191	1.916	9.000	11.060	16.856	25.526	0.000
A:B EI N- FP N	3.072	2.710	9.000	1.130	-3.059	9.202	0.286
A:B EI N- EI N0	22.047	2.710	9.000	8.140	15.916	28.177	0.000
A:B EI N- FP N0	23.408	2.710	9.000	8.640	17.277	29.538	0.000
A:B FP N- EI N0	18.975	2.710	9.000	7.000	12.845	25.106	0.000
A:B FP N- FP N0	20.336	2.710	9.000	7.500	14.205	26.466	0.000
A:B EI N0- FP N0	1.361	2.710	9.000	0.500	-4.770	7.491	0.628

Table 12.508: Estimate of contrast in two-way ANOVA for variable UT.P at site 28 in year 2011 .

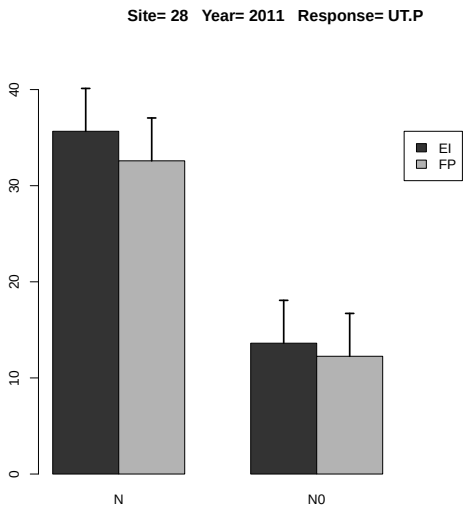

Figure 12.208: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.33 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	22.950
2	2	EI	N0	9.713
3	3	EI	N0	12.042
4	4	EI	N0	11.933
5	1	EI	N	39.152
6	2	EI	N	37.215
7	3	EI	N	34.436
8	4	EI	N	33.983
9	1	FP	N0	11.035
10	2	FP	N0	13.230
11	3	FP	N0	15.077
12	4	FP	N0	11.132
13	1	FP	N	38.794
14	2	FP	N	37.534
15	3	FP	N	30.421
16	4	FP	N	25.599

Table 12.509: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	36.196	1.414	25.603	0.000
A FP	33.087	1.414	23.404	0.000
A EI-FP	3.109	1.999	1.555	0.376

Table 12.510: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 28 in year 2011 .

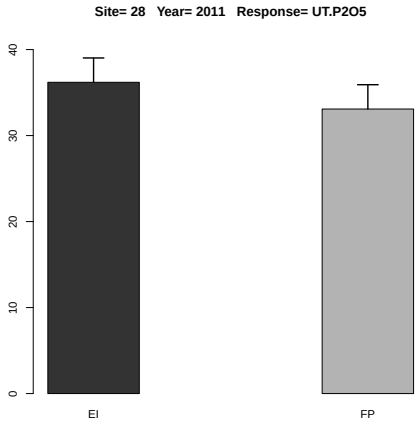

Figure 12.209: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	21.626	21.626	1.409	9.000	0.266
B	1.000	1806.722	1806.722	117.720	9.000	0.000
A:B	1.000	2.459	2.459	0.160	9.000	0.698

Table 12.511: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.178	1.819	5.600	13.840	20.656	29.700	0.000
2	FP		22.853	1.819	5.600	12.560	18.331	27.375	0.000
3		N	34.642	1.819	5.600	19.040	30.120	39.164	0.000
4		N0	13.389	1.819	5.600	7.360	8.867	17.911	0.000
5	EI	N	36.196	2.286	9.900	15.830	31.095	41.298	0.000
6	FP	N	33.087	2.286	9.900	14.470	27.986	38.189	0.000
7	EI	N0	14.159	2.286	9.900	6.190	9.058	19.261	0.000
8	FP	N0	12.618	2.286	9.900	5.520	7.517	17.720	0.000

Table 12.512: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 28 in year 2011 .

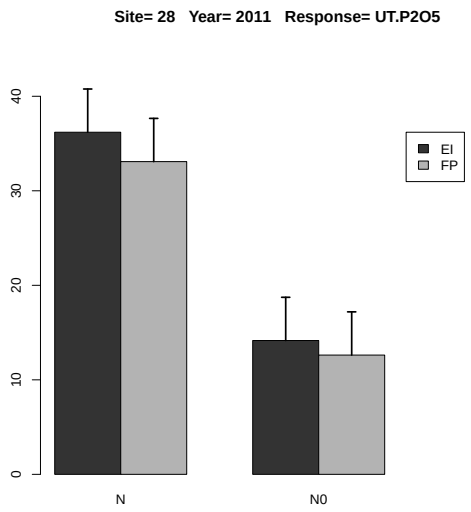

Figure 12.210: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.325	1.959	9.000	1.190	-2.106	6.756	0.266
B N-N0	21.253	1.959	9.000	10.850	16.822	25.684	0.000
A:B EI N- FP N	3.109	2.770	9.000	1.120	-3.157	9.376	0.291
A:B EI N- EI N0	22.037	2.770	9.000	7.960	15.770	28.303	0.000
A:B EI N- FP N0	23.578	2.770	9.000	8.510	17.311	29.845	0.000
A:B FP N- EI N0	18.928	2.770	9.000	6.830	12.661	25.194	0.000
A:B FP N- FP N0	20.469	2.770	9.000	7.390	14.202	26.735	0.000
A:B EI N0- FP N0	1.541	2.770	9.000	0.560	-4.725	7.808	0.592

Table 12.513: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 28 in year 2011 .

12.3.34 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	41.687
2	2	EI	N0	15.574
3	3	EI	N0	21.245
4	4	EI	N0	24.740
5	1	EI	N	144.200
6	2	EI	N	114.622
7	3	EI	N	124.512
8	4	EI	N	122.553
9	1	FP	N0	22.507
10	2	FP	N0	24.265
11	3	FP	N0	26.863
12	4	FP	N0	14.406
13	1	FP	N	157.659
14	2	FP	N	164.474
15	3	FP	N	107.133
16	4	FP	N	132.059

Table 12.514: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	126.472	9.769	12.946	0.002
A FP	140.331	9.769	14.365	0.001
A EI-FP	-13.859	13.815	-1.003	0.613

Table 12.515: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 28 in year 2011 .

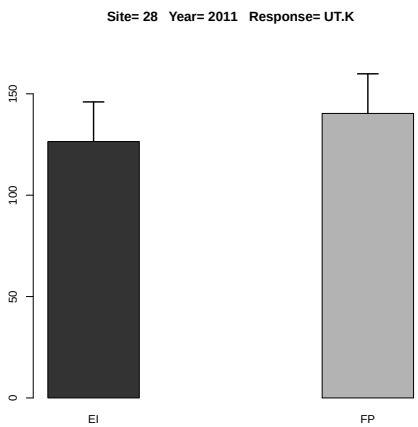

Figure 12.211: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	70.681	70.681	0.380	2.999	0.581
B	1.000	47952.777	47952.777	257.860	6.000	0.000
A:B	1.000	311.889	311.889	1.677	6.000	0.243

Table 12.516: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		76.141	6.254	5.900	12.180	60.755	91.528	0.000
2	FP		81.171	6.254	5.900	12.980	65.784	96.557	0.000
3		N	133.401	5.839	6.100	22.850	119.164	147.639	0.000
4		N0	23.911	5.839	6.100	4.090	9.674	38.148	0.006
5	EI	N	126.472	7.897	11.100	16.020	109.108	143.835	0.000
6	FP	N	140.331	7.897	11.100	17.770	122.968	157.695	0.000
7	EI	N0	25.811	7.897	11.100	3.270	8.448	43.175	0.007
8	FP	N0	22.010	7.897	11.100	2.790	4.647	39.374	0.018

Table 12.517: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.029	8.158	3.000	-0.620	-30.994	20.936	0.581
B N-N0	109.491	6.818	6.000	16.060	92.806	126.175	0.000
A:B EI N- FP N	-13.860	10.632	7.000	-1.300	-39.032	11.313	0.234
A:B EI N- EI N0	100.660	9.643	6.000	10.440	77.066	124.255	0.000
A:B EI N- FP N0	104.461	10.632	7.000	9.830	79.289	129.634	0.000
A:B FP N- EI N0	114.520	10.632	7.000	10.770	89.348	139.692	0.000
A:B FP N- FP N0	118.321	9.643	6.000	12.270	94.726	141.916	0.000
A:B EI N0- FP N0	3.801	10.632	7.000	0.360	-21.371	28.973	0.731

Table 12.518: Estimate of contrast in two-way ANOVA for variable UT.K at site 28 in year 2011 .

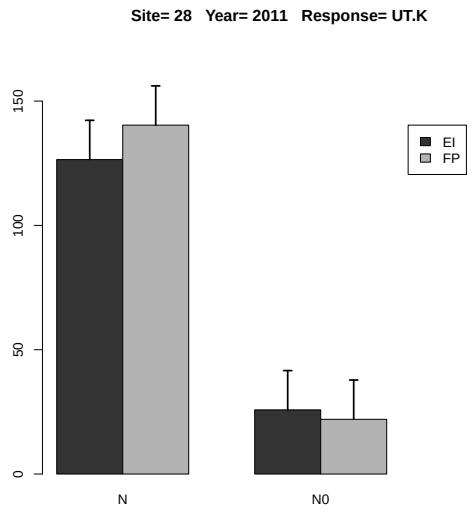

Figure 12.212: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.35 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	42.435
2	2	EI	N0	16.013
3	3	EI	N0	21.560
4	4	EI	N0	25.212
5	1	EI	N	146.310
6	2	EI	N	116.899
7	3	EI	N	126.538
8	4	EI	N	124.568
9	1	FP	N0	22.746
10	2	FP	N0	24.740
11	3	FP	N0	27.392
12	4	FP	N0	14.726
13	1	FP	N	159.009
14	2	FP	N	165.982
15	3	FP	N	108.303
16	4	FP	N	134.057

Table 12.519: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	128.579	9.768	13.164	0.002
A FP	141.838	9.768	14.521	0.001
A EI-FP	-13.259	13.814	-0.960	0.635

Table 12.520: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 28 in year 2011 .

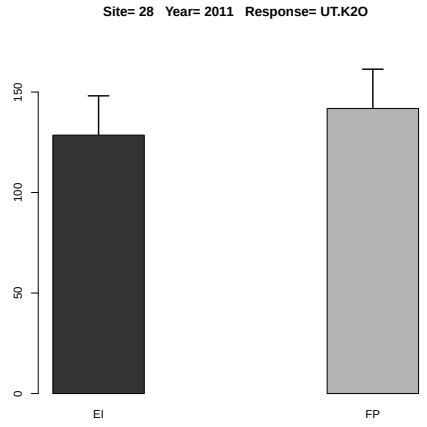

Figure 12.213: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	61.981	61.981	0.329	2.999	0.607
B	1.000	49155.524	49155.524	260.638	6.000	0.000
A:B	1.000	294.579	294.579	1.562	6.000	0.258

Table 12.521: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		77.442	6.261	5.900	12.370	62.036	92.848	0.000
2	FP		82.119	6.261	5.900	13.120	66.713	97.525	0.000
3		N	135.208	5.860	6.100	23.070	120.935	149.481	0.000
4		N0	24.353	5.860	6.100	4.160	10.080	38.626	0.006
5	EI	N	128.579	7.923	11.100	16.230	111.162	145.996	0.000
6	FP	N	141.838	7.923	11.100	17.900	124.421	159.255	0.000
7	EI	N0	26.305	7.923	11.100	3.320	8.888	43.722	0.007
8	FP	N0	22.401	7.923	11.100	2.830	4.984	39.818	0.016

Table 12.522: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 28 in year 2011 .

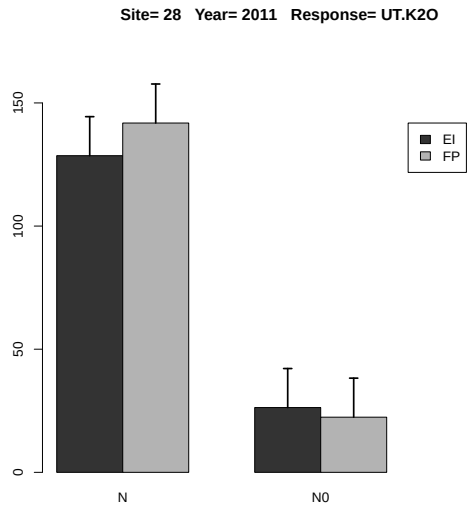

Figure 12.214: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-4.678	8.159	3.000	-0.570	-30.647	21.292	0.607
B N-N0	110.855	6.867	6.000	16.140	94.053	127.657	0.000
A:B EI N- FP N	-13.259	10.664	7.000	-1.240	-38.477	11.959	0.254
A:B EI N- EI N0	102.274	9.711	6.000	10.530	78.512	126.035	0.000
A:B EI N- FP N0	106.178	10.664	7.000	9.960	80.960	131.396	0.000
A:B FP N- EI N0	115.533	10.664	7.000	10.830	90.315	140.751	0.000
A:B FP N- FP N0	119.437	9.711	6.000	12.300	95.675	143.198	0.000
A:B EI N0- FP N0	3.904	10.664	7.000	0.370	-21.314	29.122	0.725

Table 12.523: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 28 in year 2011 .

12.3.36 Response Variable UT.Ca

	rep	A	B	y
1	1	EI	N0	21.044
2	2	EI	N0	8.416
3	3	EI	N0	12.479
4	4	EI	N0	9.273
5	3	FP	N0	17.115

Table 12.524: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Ca

There is no or sufficient data for this response variable at this site and year.

12.3.37 Response Variable UT.Mg

	rep	A	B	y
1	1	EI	N0	17.801
2	2	EI	N0	6.229
3	3	EI	N0	9.096
4	4	EI	N0	6.970
5	1	EI	N	27.857
6	2	EI	N	30.031
7	4	EI	N	25.607
8	1	FP	N0	8.806
9	2	FP	N0	9.482
10	3	FP	N0	10.779
11	4	FP	N0	7.791
12	1	FP	N	37.602
13	2	FP	N	30.534
14	3	FP	N	21.306
15	4	FP	N	27.876

Table 12.525: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	25.157	2.239	11.235	0.014
A FP	29.329	1.734	16.910	0.006
A EI-FP	-4.172	2.832	-1.473	0.446

Table 12.526: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 28 in year 2011 .

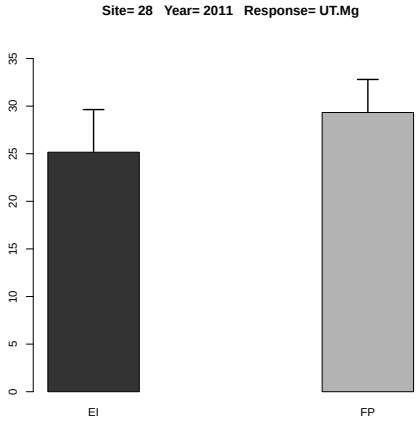

Figure 12.215: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	13.543	13.543	0.057	8.273	0.817
B	1.000	1315.181	1315.181	74.865	8.273	0.000
A:B	1.000	6.432	6.432	0.373	8.273	0.558

Table 12.527: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18.754	1.900	6.700	9.870	14.218	23.291	0.000
2	FP		19.272	1.789	5.800	10.770	14.864	23.679	0.000
3		N	28.407	1.900	6.700	14.950	23.871	32.943	0.000
4		N0	9.619	1.789	5.800	5.380	5.212	14.026	0.002
5	EI	N	27.485	2.644	10.600	10.390	21.642	33.328	0.000
6	FP	N	29.329	2.314	10.000	12.670	24.172	34.487	0.000
7	EI	N0	10.024	2.314	10.000	4.330	4.867	15.181	0.002
8	FP	N0	9.214	2.314	10.000	3.980	4.057	14.371	0.003

Table 12.528: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 28 in year 2011 .

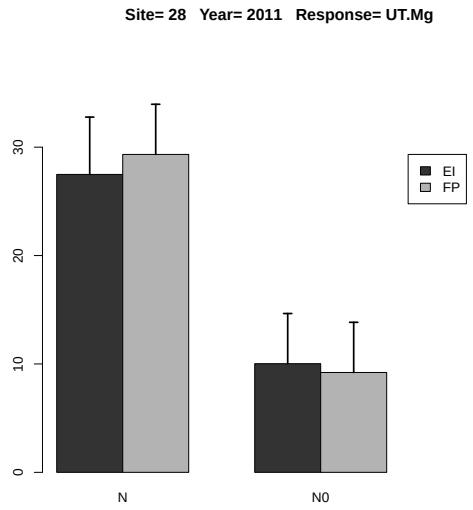

Figure 12.216: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.517	2.171	8.300	-0.240	-5.496	4.461	0.818
B N-N0	18.788	2.171	8.300	8.650	13.809	23.767	0.000
A:B EI N- FP N	-1.844	3.201	8.400	-0.580	-9.159	5.471	0.580
A:B EI N- EI N0	17.461	3.201	8.400	5.450	10.146	24.776	0.000
A:B EI N- FP N0	18.271	3.201	8.400	5.710	10.956	25.586	0.000
A:B FP N- EI N0	19.306	2.934	8.100	6.580	12.548	26.063	0.000
A:B FP N- FP N0	20.115	2.934	8.100	6.850	13.358	26.873	0.000
A:B EI N0- FP N0	0.810	2.934	8.100	0.280	-5.948	7.567	0.790

Table 12.529: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 28 in year 2011 .

12.3.38 Response Variable UT.S

	rep	A	B	y
1	1	EI	N0	5.100
2	2	EI	N0	2.247
3	3	EI	N0	2.975
4	4	EI	N0	2.815
5	1	EI	N	13.156
6	2	EI	N	14.045
7	3	EI	N	12.979
8	4	EI	N	11.961
9	1	FP	N0	2.988
10	2	FP	N0	2.860
11	3	FP	N0	3.361
12	4	FP	N0	2.877
13	1	FP	N	14.120
14	2	FP	N	14.396
15	3	FP	N	11.583
16	4	FP	N	10.989

Table 12.530: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	13.035	0.391	33.350	0.000
A FP	12.772	0.391	32.677	0.000
A EI-FP	0.263	0.553	0.476	0.882

Table 12.531: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 28 in year 2011 .

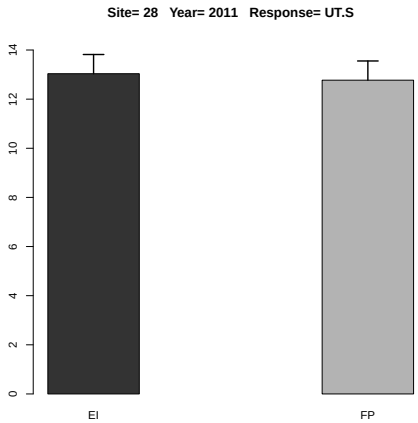

Figure 12.217: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.277	0.277	0.261	8.999	0.622
B	1.000	380.297	380.297	358.250	8.999	0.000
A:B	1.000	0.000	0.000	0.000	8.999	1.000

Table 12.532: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.160	0.450	6.100	18.130	7.065	9.255	0.000
2	FP		7.897	0.450	6.100	17.540	6.802	8.992	0.000
3		N	12.903	0.450	6.100	28.670	11.809	13.998	0.000
4		N0	3.153	0.450	6.100	7.000	2.058	4.248	0.000
5	EI	N	13.035	0.579	10.600	22.510	11.755	14.315	0.000
6	FP	N	12.772	0.579	10.600	22.060	11.492	14.052	0.000
7	EI	N0	3.284	0.579	10.600	5.670	2.004	4.564	0.000
8	FP	N0	3.022	0.579	10.600	5.220	1.741	4.302	0.000

Table 12.533: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.263	0.515	9.000	0.510	-0.902	1.428	0.622
B N-N0	9.751	0.515	9.000	18.930	8.585	10.916	0.000
A:B EI N- FP N	0.263	0.729	9.000	0.360	-1.385	1.911	0.726
A:B EI N- EI N0	9.751	0.729	9.000	13.380	8.103	11.399	0.000
A:B EI N- FP N0	10.014	0.729	9.000	13.740	8.366	11.662	0.000
A:B FP N- EI N0	9.488	0.729	9.000	13.020	7.840	11.136	0.000
A:B FP N- FP N0	9.750	0.729	9.000	13.380	8.102	11.399	0.000
A:B EI N0- FP N0	0.263	0.729	9.000	0.360	-1.385	1.911	0.727

Table 12.534: Estimate of contrast in two-way ANOVA for variable UT.S at site 28 in year 2011 .

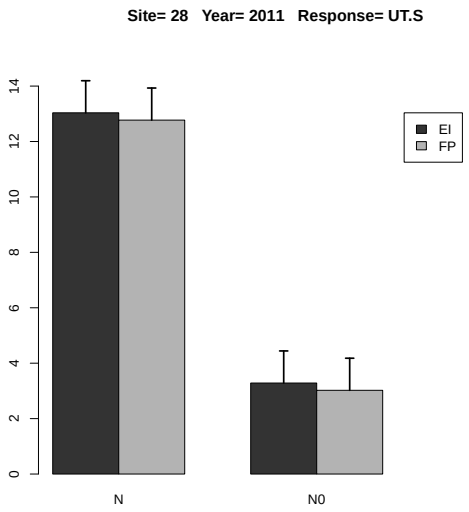

Figure 12.218: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.39 Response Variable UT.B

	rep	A	B	y
1	1	EI	N0	3815.611
2	2	EI	N0	270.038
3	3	EI	N0	527.005
4	4	EI	N0	354.894
5	1	EI	N	1286.144
6	2	EI	N	1434.531
7	3	EI	N	1291.758
8	4	EI	N	1031.968
9	1	FP	N0	370.610
10	2	FP	N0	299.974
11	3	FP	N0	469.178
12	4	FP	N0	242.077
13	1	FP	N	1358.218
14	2	FP	N	1268.238
15	4	FP	N	1184.831

Table 12.535: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.B

	Estimate	S.E.	t-value	p-value
A EI	1261.100	58.667	21.496	0.004
A FP	1280.648	75.739	16.909	0.006
A EI-FP	-19.548	95.803	-0.204	0.976

Table 12.536: Estimate of treatment means and contrast in one-way ANOVA for variable UT.B at site 28 in year 2011 .

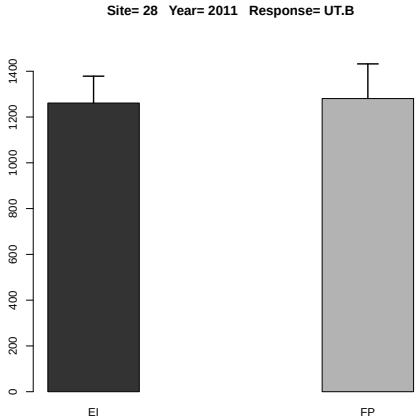

Figure 12.219: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	986026.053	986026.053	0.935	7.645	0.363
B	1.000	694997.397	694997.397	1.029	7.645	0.341
A:B	1.000	744229.155	744229.155	0.947	7.645	0.360

Table 12.537: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1251.494	325.687	7.600	3.840	493.721	2009.266	0.005
2	FP		804.634	350.760	8.200	2.290	-0.497	1609.765	0.050
3		N	1262.455	350.760	8.200	3.600	457.324	2067.586	0.007
4		N0	793.673	325.687	7.600	2.440	35.901	1551.446	0.042
5	EI	N	1261.100	452.052	10.100	2.790	254.617	2267.583	0.019
6	FP	N	1263.809	521.720	10.000	2.420	102.124	2425.494	0.036
7	EI	N0	1241.887	452.052	10.100	2.750	235.404	2248.370	0.020
8	FP	N0	345.460	452.052	10.100	0.760	-661.023	1351.943	0.462

Table 12.538: Estimate of treatment means in tow-way ANOVA for variable UT.B at site 28 in year 2011 .

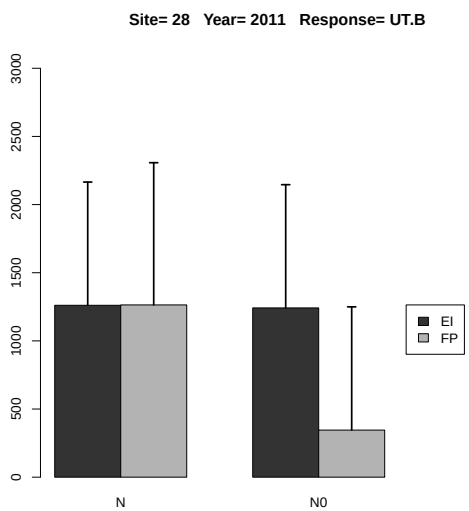

Figure 12.220: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	446.859	462.081	7.600	0.970	-627.383	1521.101	0.363
B N-N0	468.781	462.081	7.600	1.010	-605.460	1543.023	0.341
A:B EI N- FP N	-2.709	678.939	7.900	-0.000	-1573.245	1567.827	0.997
A:B EI N- EI N0	19.213	626.990	7.400	0.030	-1447.562	1485.989	0.976
A:B EI N- FP N0	915.640	626.990	7.400	1.460	-551.135	2382.416	0.185
A:B FP N- EI N0	21.922	678.939	7.900	0.030	-1548.614	1592.458	0.975
A:B FP N- FP N0	918.349	678.939	7.900	1.350	-652.187	2488.885	0.214
A:B EI N0- FP N0	896.427	626.990	7.400	1.430	-570.348	2363.203	0.194

Table 12.539: Estimate of contrast in two-way ANOVA for variable UT.B at site 28 in year 2011 .

12.3.40 Response Variable UT.Cu

	rep	A	B	y
1	2	EI	N0	51.574
2	3	EI	N0	152.860
3	4	EI	N0	163.217
4	1	EI	N	493.019
5	2	EI	N	748.219
6	3	EI	N	488.654
7	1	FP	N0	106.490
8	2	FP	N0	86.526
9	3	FP	N0	189.865
10	4	FP	N0	248.105
11	1	FP	N	484.922
12	2	FP	N	568.750
13	3	FP	N	629.044
14	4	FP	N	763.651

Table 12.540: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Cu

	Estimate	S.E.	t-value	p-value
A EI	627.317	73.060	8.586	0.023
A FP	611.592	56.592	10.807	0.016
A EI-FP	15.725	92.414	0.170	0.983

Table 12.541: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Cu at site 28 in year 2011 .

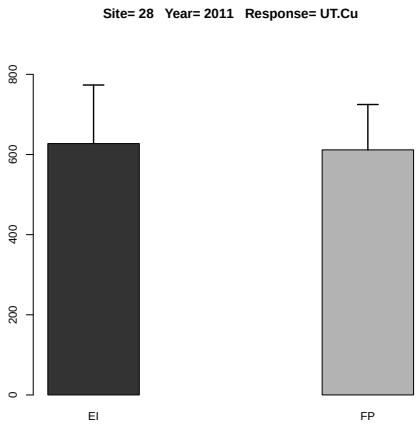

Figure 12.221: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4004.594	4004.594	0.495	6.513	0.506
B	1.000	748456.933	748456.933	90.952	6.801	0.000
A:B	1.000	1057.547	1057.547	0.131	6.801	0.729

Table 12.542: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		350.212	47.062	5.400	7.440	231.735	468.690	0.000
2	FP		384.669	42.883	4.000	8.970	265.214	504.124	0.001
3		N	603.307	45.157	4.700	13.360	484.687	721.927	0.000
4		N0	131.575	45.157	4.700	2.910	12.954	250.195	0.036
5	EI	N	595.022	60.420	9.100	9.850	458.578	731.466	0.000
6	FP	N	611.592	53.384	7.800	11.460	488.041	735.143	0.000
7	EI	N0	105.403	60.420	9.100	1.740	-31.041	241.846	0.115
8	FP	N0	157.746	53.384	7.800	2.950	34.196	281.297	0.019

Table 12.543: Estimate of treatment means in tow-way ANOVA for variable UT.Cu at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-34.457	48.966	6.500	-0.700	-152.019	83.105	0.506
B N-N0	471.733	49.464	6.800	9.540	354.070	589.395	0.000
A:B EI N- FP N	-16.570	69.601	6.700	-0.240	-182.881	149.742	0.819
A:B EI N- EI N0	489.620	75.784	7.100	6.460	311.149	668.091	0.000
A:B EI N- FP N0	437.276	69.601	6.700	6.280	270.964	603.587	0.000
A:B FP N- EI N0	506.189	69.601	6.700	7.270	339.878	672.501	0.000
A:B FP N- FP N0	453.845	63.589	6.300	7.140	300.174	607.516	0.000
A:B EI N0- FP N0	-52.344	69.601	6.700	-0.750	-218.655	113.968	0.478

Table 12.544: Estimate of contrast in two-way ANOVA for variable UT.Cu at site 28 in year 2011 .

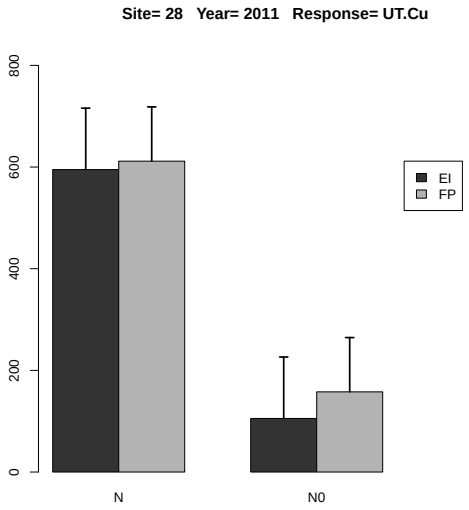

Figure 12.222: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.41 Response Variable UT.Fe

	rep	A	B	y
1	1	EI	N0	19152.831
2	2	EI	N0	6977.978
3	3	EI	N0	14197.987
4	4	EI	N0	9002.084
5	1	EI	N	23536.344
6	2	EI	N	39761.966
7	3	EI	N	25548.993
8	4	EI	N	33410.772
9	1	FP	N0	18565.133
10	2	FP	N0	33663.386
11	3	FP	N0	30061.006
12	4	FP	N0	30403.550
13	1	FP	N	46547.926
14	2	FP	N	33630.806
15	3	FP	N	29342.353
16	4	FP	N	28905.112

Table 12.545: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Fe

There is no or sufficient data for this response variable at this site and year.

12.3.42 Response Variable UT.Mn

	rep	A	B	y
1	1	EI	N0	3538.711
2	2	EI	N0	1254.159
3	3	EI	N0	1865.886
4	4	EI	N0	1314.623
5	1	EI	N	7921.256
6	2	EI	N	7442.196
7	3	EI	N	8895.828
8	4	EI	N	6709.278
9	1	FP	N0	2038.976
10	2	FP	N0	2232.376
11	3	FP	N0	2964.026
12	4	FP	N0	2215.650
13	1	FP	N	10799.542
14	2	FP	N	10262.100
15	3	FP	N	6276.508
16	4	FP	N	11135.102

Table 12.546: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	7742.140	861.150	6.300	8.990	5660.807	9823.472	0.000
A FP	9618.313	861.150	6.300	11.170	7536.980	11699.646	0.000
A EI-FP	-1876.174	1217.851	6.300	-1.540	-4819.623	1067.276	0.172

Table 12.547: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mn at site 28 in year 2011 .

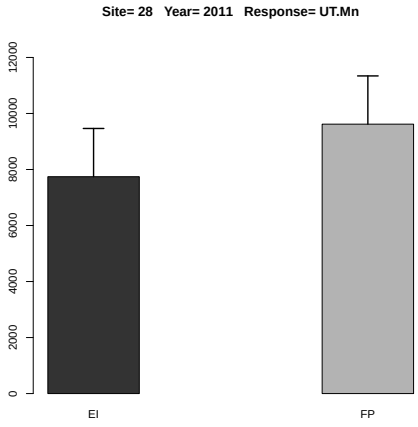

Figure 12.223: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5042655.361	5042655.361	2.787	12.857	0.119
B	1.000	169113138.429	169113138.429	93.457	12.857	0.000
A:B	1.000	2270329.465	2270329.465	1.255	12.857	0.283

Table 12.548: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4867.742	475.596	12.900	10.240	3839.121	5896.364	0.000
2	FP		5990.535	475.596	12.900	12.600	4961.914	7019.156	0.000
3		N	8680.226	475.596	12.900	18.250	7651.605	9708.848	0.000
4		N0	2178.051	475.596	12.900	4.580	1149.430	3206.672	0.000
5	EI	N	7742.140	672.594	12.900	11.510	6287.449	9196.830	0.000
6	FP	N	9618.313	672.594	12.900	14.300	8163.623	11073.003	0.000
7	EI	N0	1993.345	672.594	12.900	2.960	538.654	3448.035	0.011
8	FP	N0	2362.757	672.594	12.900	3.510	908.067	3817.447	0.004

Table 12.549: Estimate of treatment means in tow-way ANOVA for variable UT.Mn at site 28 in year 2011 .

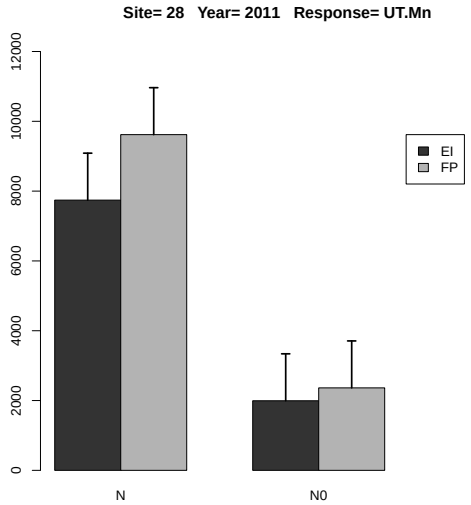

Figure 12.224: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1122.793	672.594	12.900	-1.670	-2577.483	331.897	0.119
B N-N0	6502.175	672.594	12.900	9.670	5047.485	7956.866	0.000
A:B EI N- FP N	-1876.174	951.192	12.900	-1.970	-3933.416	181.069	0.070
A:B EI N- EI N0	5748.795	951.192	12.900	6.040	3691.552	7806.037	0.000
A:B EI N- FP N0	5379.382	951.192	12.900	5.660	3322.140	7436.625	0.000
A:B FP N- EI N0	7624.968	951.192	12.900	8.020	5567.726	9682.211	0.000
A:B FP N- FP N0	7255.556	951.192	12.900	7.630	5198.313	9312.799	0.000
A:B EI N0- FP N0	-369.412	951.192	12.900	-0.390	-2426.655	1687.830	0.704

Table 12.550: Estimate of contrast in two-way ANOVA for variable UT.Mn at site 28 in year 2011 .

12.3.43 Response Variable UT.Zn

	rep	A	B	y
1	1	EI	N0	4241.985
2	2	EI	N0	1624.179
3	3	EI	N0	2516.559
4	4	EI	N0	2307.212
5	1	EI	N	10174.066
6	2	EI	N	5013.520
7	3	EI	N	5389.109
8	4	EI	N	5851.532
9	1	FP	N0	1973.752
10	2	FP	N0	2028.808
11	3	FP	N0	2792.799
12	4	FP	N0	1720.950
13	1	FP	N	7301.276
14	2	FP	N	4953.762
15	3	FP	N	5277.636
16	4	FP	N	4069.065

Table 12.551: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	6607.057	977.188	3.800	6.760	3845.696	9368.417	0.003
A FP	5400.435	977.188	3.800	5.530	2639.074	8161.795	0.006
A EI-FP	1206.622	684.491	3.300	1.760	-855.799	3269.043	0.167

Table 12.552: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Zn at site 28 in year 2011 .

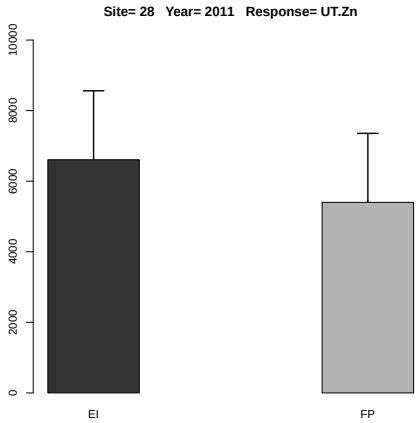

Figure 12.225: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1749107.159	1749107.159	1.843	2.999	0.268
B	1.000	51925434.371	51925434.371	54.724	4.787	0.001
A:B	1.000	439854.799	439854.799	0.464	4.787	0.527

Table 12.553: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4639.770	670.596	4.700	6.920	2876.427	6403.113	0.001
2	FP		3764.756	670.596	4.700	5.610	2001.413	5528.099	0.003
3		N	6003.746	636.525	4.100	9.430	4248.183	7759.309	0.001
4		N0	2400.780	636.525	4.100	3.770	645.218	4156.343	0.019
5	EI	N	6607.057	753.861	7.100	8.760	4830.620	8383.493	0.000
6	FP	N	5400.435	753.861	7.100	7.160	3623.998	7176.871	0.000
7	EI	N0	2672.484	753.861	7.100	3.550	896.047	4448.920	0.009
8	FP	N0	2129.077	753.861	7.100	2.820	352.641	3905.514	0.025

Table 12.554: Estimate of treatment means in tow-way ANOVA for variable UT.Zn at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	875.014	644.477	3.000	1.360	-1176.201	2926.230	0.268
B N-N0	3602.965	487.047	7.500	7.400	2466.194	4739.736	0.000
A:B EI N- FP N	1206.622	807.815	6.500	1.490	-730.598	3143.842	0.182
A:B EI N- EI N0	3934.573	688.788	7.500	5.710	2326.936	5542.210	0.001
A:B EI N- FP N0	4477.980	807.815	6.500	5.540	2540.760	6415.199	0.001
A:B FP N- EI N0	2727.951	807.815	6.500	3.380	790.731	4665.171	0.013
A:B FP N- FP N0	3271.358	688.788	7.500	4.750	1663.721	4878.994	0.002
A:B EI N0- FP N0	543.407	807.815	6.500	0.670	-1393.813	2480.626	0.524

Table 12.555: Estimate of contrast in two-way ANOVA for variable UT.Zn at site 28 in year 2011 .

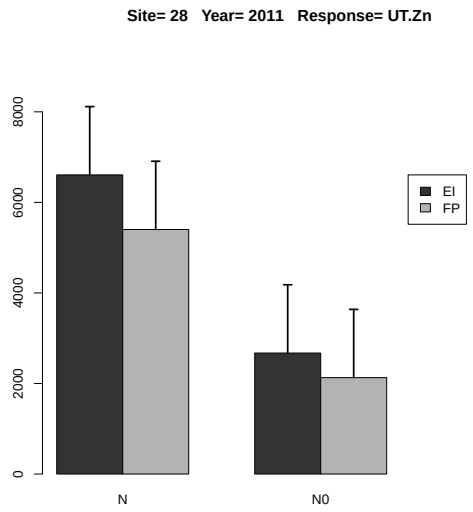

Figure 12.226: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.44 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	1.452
2	2	EI	N0	1.653
3	3	EI	N0	1.349
4	4	EI	N0	1.406
5	1	EI	N	2.311
6	2	EI	N	2.290
7	3	EI	N	2.233
8	4	EI	N	2.375
9	1	FP	N0	1.442
10	2	FP	N0	1.509
11	3	FP	N0	1.295
12	4	FP	N0	1.599
13	1	FP	N	2.248
14	2	FP	N	2.148
15	3	FP	N	2.495
16	4	FP	N	2.153

Table 12.556: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.302	0.061	6.000	37.730	2.153	2.451	0.000
A FP	2.261	0.061	6.000	37.050	2.111	2.410	0.000
A EI-FP	0.041	0.086	6.000	0.480	-0.170	0.253	0.648

Table 12.557: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 28 in year 2011 .

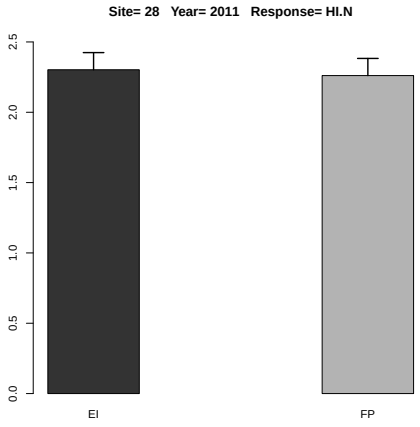

Figure 12.227: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.002	0.002	0.127	11.991	0.728
B	1.000	2.679	2.679	168.127	11.991	0.000
A:B	1.000	0.001	0.001	0.090	11.991	0.770

Table 12.558: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.883	0.045	12.000	42.200	1.786	1.981	0.000
2	FP		1.861	0.045	12.000	41.700	1.764	1.958	0.000
3		N	2.281	0.045	12.000	51.120	2.184	2.379	0.000
4		N0	1.463	0.045	12.000	32.780	1.366	1.560	0.000
5	EI	N	2.302	0.063	12.000	36.470	2.165	2.440	0.000
6	FP	N	2.261	0.063	12.000	35.820	2.123	2.398	0.000
7	EI	N0	1.465	0.063	12.000	23.210	1.327	1.602	0.000
8	FP	N0	1.461	0.063	12.000	23.150	1.324	1.599	0.000

Table 12.559: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 28 in year 2011 .

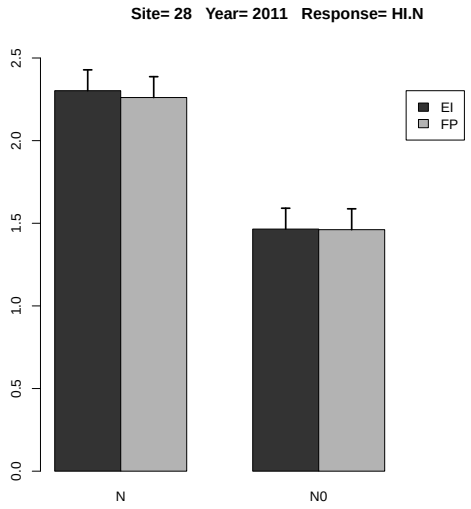

Figure 12.228: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.022	0.063	12.000	0.360	-0.115	0.160	0.728
B N-N0	0.818	0.063	12.000	12.970	0.681	0.956	0.000
A:B EI N- FP N	0.041	0.089	12.000	0.460	-0.153	0.236	0.651
A:B EI N- EI N0	0.837	0.089	12.000	9.380	0.643	1.032	0.000
A:B EI N- FP N0	0.841	0.089	12.000	9.420	0.646	1.035	0.000
A:B FP N- EI N0	0.796	0.089	12.000	8.920	0.601	0.990	0.000
A:B FP N- FP N0	0.799	0.089	12.000	8.960	0.605	0.994	0.000
A:B EI N0- FP N0	0.004	0.089	12.000	0.040	-0.191	0.198	0.969

Table 12.560: Estimate of contrast in two-way ANOVA for variable HI.N at site 28 in year 2011 .

12.3.45 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	0.763
2	2	EI	N0	0.718
3	3	EI	N0	0.710
4	4	EI	N0	0.594
5	1	EI	N	5.070
6	2	EI	N	4.809
7	3	EI	N	5.920
8	4	EI	N	7.261
9	1	FP	N0	0.564
10	2	FP	N0	0.738
11	3	FP	N0	0.692
12	4	FP	N0	0.761
13	1	FP	N	5.791
14	2	FP	N	4.155
15	3	FP	N	5.026
16	4	FP	N	3.001

Table 12.561: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	5.765	0.576	6.000	10.010	4.355	7.175	0.000
A FP	4.493	0.576	6.000	7.800	3.083	5.903	0.000
A EI-FP	1.272	0.815	6.000	1.560	-0.722	3.266	0.170

Table 12.562: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 28 in year 2011 .

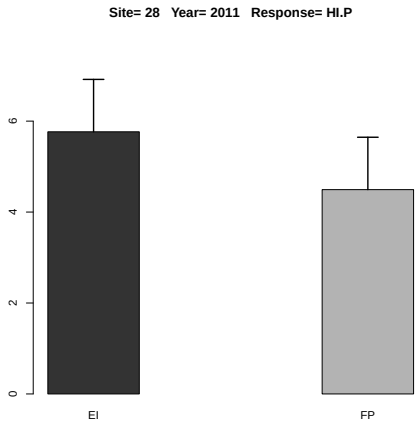

Figure 12.229: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.637	1.637	2.453	11.999	0.143
B	1.000	78.740	78.740	118.011	11.999	0.000
A:B	1.000	1.599	1.599	2.396	11.999	0.148

Table 12.563: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.231	0.289	12.000	11.190	2.601	3.860	0.000
2	FP		2.591	0.289	12.000	8.970	1.962	3.220	0.000
3		N	5.129	0.289	12.000	17.760	4.500	5.758	0.000
4		N0	0.692	0.289	12.000	2.400	0.063	1.322	0.034
5	EI	N	5.765	0.408	12.000	14.120	4.875	6.655	0.000
6	FP	N	4.493	0.408	12.000	11.000	3.603	5.383	0.000
7	EI	N0	0.696	0.408	12.000	1.700	-0.194	1.586	0.114
8	FP	N0	0.689	0.408	12.000	1.690	-0.201	1.579	0.118

Table 12.564: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.640	0.408	12.000	1.570	-0.250	1.530	0.143
B N-N0	4.437	0.408	12.000	10.860	3.547	5.327	0.000
A:B EI N- FP N	1.272	0.578	12.000	2.200	0.013	2.530	0.048
A:B EI N- EI N0	5.069	0.578	12.000	8.780	3.811	6.327	0.000
A:B EI N- FP N0	5.076	0.578	12.000	8.790	3.818	6.335	0.000
A:B FP N- EI N0	3.797	0.578	12.000	6.570	2.539	5.056	0.000
A:B FP N- FP N0	3.805	0.578	12.000	6.590	2.546	5.063	0.000
A:B EI N0- FP N0	0.007	0.578	12.000	0.010	-1.251	1.266	0.990

Table 12.565: Estimate of contrast in two-way ANOVA for variable HI.P at site 28 in year 2011 .

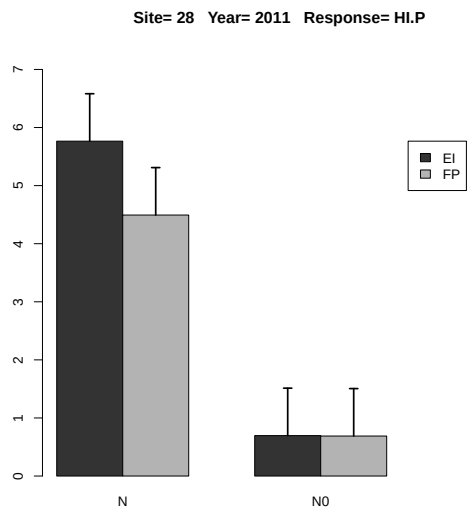

Figure 12.230: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.46 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.376
2	2	EI	N0	0.452
3	3	EI	N0	0.379
4	4	EI	N0	0.275
5	1	EI	N	0.344
6	2	EI	N	0.477
7	3	EI	N	0.379
8	4	EI	N	0.444
9	1	FP	N0	0.287
10	2	FP	N0	0.410
11	3	FP	N0	0.431
12	4	FP	N0	0.790
13	1	FP	N	0.379
14	2	FP	N	0.325
15	3	FP	N	0.454
16	4	FP	N	0.251

Table 12.566: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.411	0.037	6.000	11.080	0.320	0.502	0.000
A FP	0.352	0.037	6.000	9.490	0.262	0.443	0.000
A EI-FP	0.059	0.052	6.000	1.120	-0.070	0.187	0.306

Table 12.567: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 28 in year 2011 .

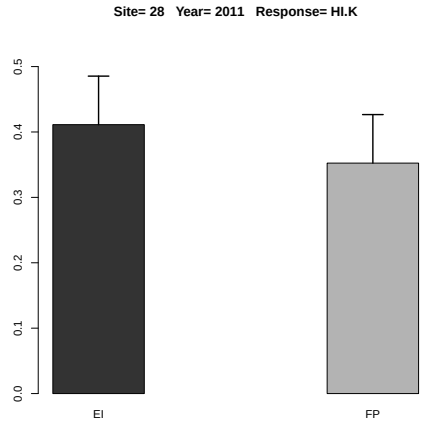

Figure 12.231: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.002	0.002	0.158	11.990	0.698
B	1.000	0.008	0.008	0.478	11.990	0.502
A:B	1.000	0.028	0.028	1.780	11.990	0.207

Table 12.568: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.391	0.044	12.000	8.810	0.294	0.488	0.000
2	FP		0.416	0.044	12.000	9.370	0.319	0.513	0.000
3		N	0.382	0.044	12.000	8.600	0.285	0.478	0.000
4		N0	0.425	0.044	12.000	9.580	0.328	0.522	0.000
5	EI	N	0.411	0.063	12.000	6.550	0.274	0.548	0.000
6	FP	N	0.352	0.063	12.000	5.610	0.216	0.489	0.000
7	EI	N0	0.371	0.063	12.000	5.910	0.234	0.508	0.000
8	FP	N0	0.479	0.063	12.000	7.640	0.343	0.616	0.000

Table 12.569: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 28 in year 2011 .

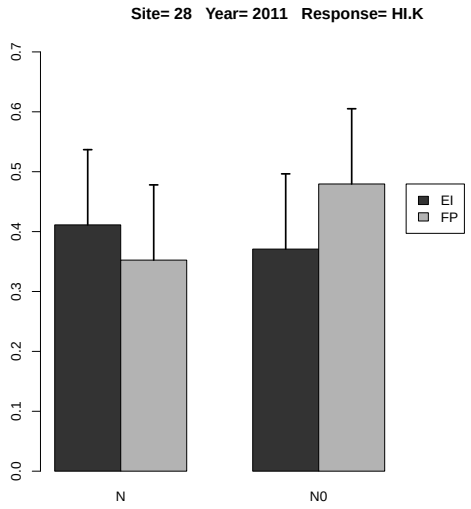

Figure 12.232: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.025	0.063	12.000	-0.400	-0.162	0.112	0.698
B N-N0	-0.043	0.063	12.000	-0.690	-0.180	0.093	0.502
A:B EI N- FP N	0.059	0.089	12.000	0.660	-0.135	0.252	0.520
A:B EI N- EI N0	0.040	0.089	12.000	0.450	-0.153	0.234	0.657
A:B EI N- FP N0	-0.068	0.089	12.000	-0.770	-0.262	0.125	0.456
A:B FP N- EI N0	-0.018	0.089	12.000	-0.210	-0.212	0.175	0.839
A:B FP N- FP N0	-0.127	0.089	12.000	-1.430	-0.321	0.066	0.178
A:B EI N0- FP N0	-0.109	0.089	12.000	-1.220	-0.302	0.085	0.244

Table 12.570: Estimate of contrast in two-way ANOVA for variable HI.K at site 28 in year 2011 .

12.3.47 Response Variable HI.Ca

	rep	A	B	y
1	1	EI	N0	0.012
2	2	EI	N0	0.015
3	3	EI	N0	0.012
4	4	EI	N0	0.013
5	3	FP	N0	0.011

Table 12.571: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Ca

There is no or sufficient data for this response variable at this site and year.

12.3.48 Response Variable HI.Mg

	rep	A	B	y
1	1	EI	N0	0.233
2	2	EI	N0	0.291
3	3	EI	N0	0.232
4	4	EI	N0	0.257
5	1	EI	N	0.792
6	2	EI	N	0.569
7	4	EI	N	0.779
8	1	FP	N0	0.191
9	2	FP	N0	0.236
10	3	FP	N0	0.245
11	4	FP	N0	0.283
12	1	FP	N	0.509
13	2	FP	N	0.618
14	3	FP	N	0.814
15	4	FP	N	0.373

Table 12.572: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.713	0.095	5.000	7.510	0.469	0.957	0.001
A FP	0.579	0.082	5.000	7.040	0.367	0.790	0.001
A EI-FP	0.134	0.126	5.000	1.070	-0.189	0.457	0.334

Table 12.573: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 28 in year 2011 .

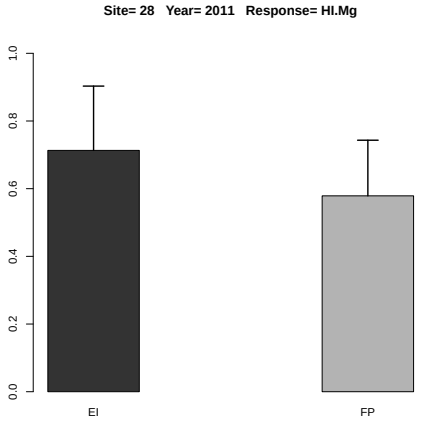

Figure 12.233: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.006	0.006	1.585	10.990	0.234
B	1.000	0.581	0.581	45.826	10.990	0.000
A:B	1.000	0.013	0.013	1.027	10.990	0.333

Table 12.574: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.483	0.043	11.000	11.140	0.388	0.579	0.000
2	FP		0.409	0.040	11.000	10.180	0.320	0.497	0.000
3		N	0.646	0.043	11.000	14.900	0.550	0.741	0.000
4		N0	0.246	0.040	11.000	6.120	0.158	0.334	0.000
5	EI	N	0.713	0.066	11.000	10.880	0.569	0.857	0.000
6	FP	N	0.579	0.057	11.000	10.190	0.454	0.704	0.000
7	EI	N0	0.253	0.057	11.000	4.460	0.128	0.378	0.001
8	FP	N0	0.239	0.057	11.000	4.200	0.114	0.364	0.002

Table 12.575: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 28 in year 2011 .

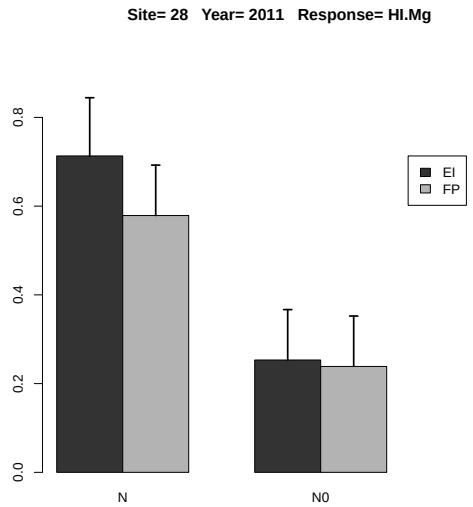

Figure 12.234: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.074	0.059	11.000	1.260	-0.056	0.204	0.234
B N-N0	0.400	0.059	11.000	6.770	0.270	0.530	0.000
A:B EI N- FP N	0.134	0.087	11.000	1.550	-0.057	0.325	0.150
A:B EI N- EI N0	0.460	0.087	11.000	5.300	0.269	0.651	0.000
A:B EI N- FP N0	0.474	0.087	11.000	5.470	0.283	0.665	0.000
A:B FP N- EI N0	0.326	0.080	11.000	4.060	0.149	0.502	0.002
A:B FP N- FP N0	0.340	0.080	11.000	4.240	0.163	0.517	0.001
A:B EI N0- FP N0	0.014	0.080	11.000	0.180	-0.162	0.191	0.860

Table 12.576: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 28 in year 2011 .

12.3.49 Response Variable HI.S

	rep	A	B	y
1	1	EI	N0	0.685
2	2	EI	N0	0.833
3	3	EI	N0	0.758
4	4	EI	N0	0.612
5	1	EI	N	1.658
6	2	EI	N	1.634
7	3	EI	N	1.633
8	4	EI	N	1.478
9	1	FP	N0	0.582
10	2	FP	N0	0.795
11	3	FP	N0	0.847
12	4	FP	N0	0.914
13	1	FP	N	1.494
14	2	FP	N	1.435
15	3	FP	N	1.945
16	4	FP	N	1.071

Table 12.577: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.601	0.130	5.400	12.310	1.274	1.927	0.000
A FP	1.486	0.130	5.400	11.430	1.160	1.813	0.000
A EI-FP	0.114	0.152	3.000	0.750	-0.369	0.597	0.506

Table 12.578: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 28 in year 2011 .

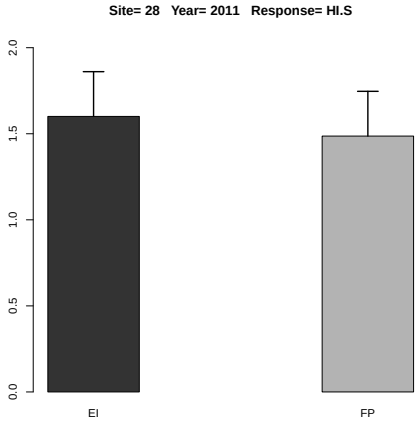

Figure 12.235: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.003	0.003	0.072	8.995	0.795
B	1.000	2.499	2.499	68.052	8.995	0.000
A:B	1.000	0.031	0.031	0.854	8.995	0.380

Table 12.579: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.161	0.076	7.300	15.360	0.984	1.339	0.000
2	FP		1.135	0.076	7.300	15.020	0.958	1.313	0.000
3		N	1.544	0.076	7.300	20.420	1.366	1.721	0.000
4		N0	0.753	0.076	7.300	9.960	0.576	0.930	0.000
5	EI	N	1.601	0.102	11.600	15.770	1.379	1.823	0.000
6	FP	N	1.486	0.102	11.600	14.640	1.264	1.708	0.000
7	EI	N0	0.722	0.102	11.600	7.110	0.500	0.944	0.000
8	FP	N0	0.785	0.102	11.600	7.730	0.562	1.007	0.000

Table 12.580: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.026	0.096	9.000	0.270	-0.191	0.242	0.795
B N-N0	0.790	0.096	9.000	8.250	0.574	1.007	0.000
A:B EI N- FP N	0.114	0.136	9.000	0.840	-0.192	0.421	0.421
A:B EI N- EI N0	0.879	0.136	9.000	6.490	0.572	1.186	0.000
A:B EI N- FP N0	0.816	0.136	9.000	6.020	0.509	1.123	0.000
A:B FP N- EI N0	0.765	0.136	9.000	5.640	0.458	1.071	0.000
A:B FP N- FP N0	0.702	0.136	9.000	5.180	0.395	1.008	0.001
A:B EI N0- FP N0	-0.063	0.136	9.000	-0.460	-0.369	0.244	0.653

Table 12.581: Estimate of contrast in two-way ANOVA for variable HI.S at site 28 in year 2011 .

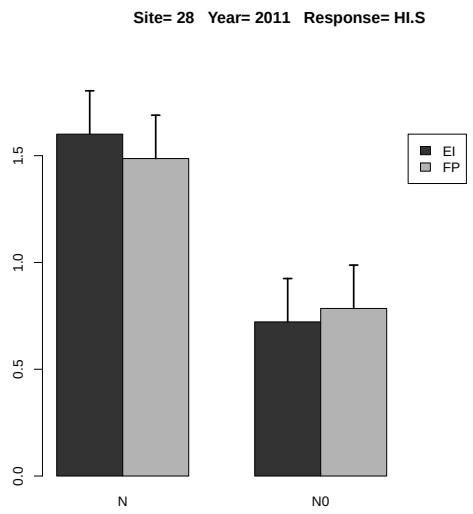

Figure 12.236: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.50 Response Variable HI.B

	rep	A	B	y
1	1	EI	N0	0.026
2	2	EI	N0	0.178
3	3	EI	N0	0.341
4	4	EI	N0	0.230
5	1	EI	N	0.387
6	2	EI	N	0.295
7	3	EI	N	0.420
8	4	EI	N	0.462
9	1	FP	N0	0.163
10	2	FP	N0	0.203
11	3	FP	N0	0.130
12	4	FP	N0	0.259
13	1	FP	N	0.242
14	2	FP	N	0.292
15	4	FP	N	0.179

Table 12.582: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.B

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.391	0.033	5.000	11.930	0.307	0.475	0.000
A FP	0.237	0.038	5.000	6.270	0.140	0.335	0.002
A EI-FP	0.154	0.050	5.000	3.070	0.025	0.282	0.028

Table 12.583: Estimate of treatment means and contrast in one-way ANOVA for variable HI.B at site 28 in year 2011 .

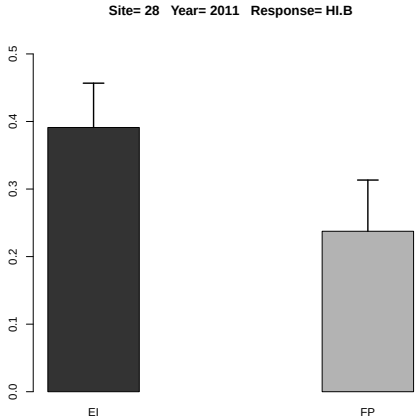

Figure 12.237: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.020	0.020	2.871	5.950	0.142
B	1.000	0.060	0.060	8.431	5.784	0.028
A:B	1.000	0.021	0.021	3.257	5.784	0.123

Table 12.584: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.293	0.033	5.500	8.980	0.211	0.374	0.000
2	FP		0.212	0.035	6.400	6.080	0.128	0.296	0.001
3		N	0.313	0.033	10.900	9.510	0.240	0.386	0.000
4		N0	0.191	0.030	10.800	6.270	0.124	0.259	0.000
5	EI	N	0.391	0.043	10.800	9.060	0.296	0.486	0.000
6	FP	N	0.235	0.050	10.900	4.720	0.125	0.344	0.001
7	EI	N0	0.194	0.043	10.800	4.490	0.099	0.289	0.001
8	FP	N0	0.189	0.043	10.800	4.370	0.093	0.284	0.001

Table 12.585: Estimate of treatment means in tow-way ANOVA for variable HI.B at site 28 in year 2011 .

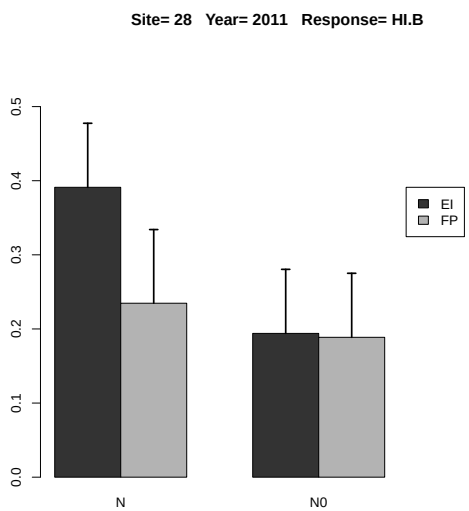

Figure 12.238: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.081	0.048	6.000	1.690	-0.036	0.198	0.141
B N-N0	0.122	0.042	5.800	2.900	0.018	0.225	0.028
A:B EI N- FP N	0.156	0.066	10.900	2.380	0.011	0.301	0.037
A:B EI N- EI N0	0.197	0.057	5.400	3.480	0.055	0.340	0.016
A:B EI N- FP N0	0.202	0.061	10.800	3.320	0.068	0.337	0.007
A:B FP N- EI N0	0.041	0.066	10.900	0.620	-0.104	0.186	0.549
A:B FP N- FP N0	0.046	0.062	6.200	0.750	-0.104	0.196	0.483
A:B EI N0- FP N0	0.005	0.061	10.800	0.090	-0.129	0.140	0.933

Table 12.586: Estimate of contrast in two-way ANOVA for variable HI.B at site 28 in year 2011 .

12.3.51 Response Variable HI.Cu

	rep	A	B	y
1	2	EI	N0	0.286
2	3	EI	N0	0.039
3	4	EI	N0	0.046
4	1	EI	N	0.371
5	2	EI	N	0.191
6	3	EI	N	0.447
7	1	FP	N0	0.215
8	2	FP	N0	0.144
9	3	FP	N0	0.053
10	4	FP	N0	0.915
11	1	FP	N	0.486
12	2	FP	N	0.644
13	3	FP	N	0.158
14	4	FP	N	0.110

Table 12.587: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Cu

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.336	0.125	5.000	2.690	0.015	0.657	0.043
A FP	0.350	0.108	5.000	3.230	0.072	0.627	0.023
A EI-FP	-0.013	0.165	5.000	-0.080	-0.438	0.411	0.938

Table 12.588: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Cu at site 28 in year 2011 .

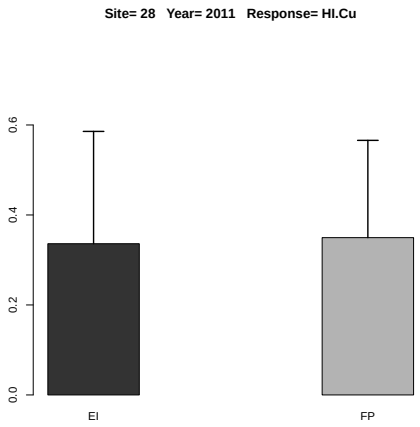

Figure 12.239: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.042	0.042	0.569	9.996	0.468
B	1.000	0.036	0.036	0.615	9.996	0.451
A:B	1.000	0.032	0.032	0.439	9.996	0.523

Table 12.589: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.230	0.111	10.000	2.070	-0.018	0.477	0.065
2	FP		0.341	0.096	10.000	3.540	0.126	0.555	0.005
3		N	0.343	0.104	10.000	3.300	0.111	0.574	0.008
4		N0	0.228	0.104	10.000	2.190	-0.004	0.459	0.053
5	EI	N	0.336	0.157	10.000	2.140	-0.014	0.686	0.058
6	FP	N	0.350	0.136	10.000	2.570	0.046	0.653	0.028
7	EI	N0	0.124	0.157	10.000	0.790	-0.226	0.474	0.450
8	FP	N0	0.332	0.136	10.000	2.440	0.029	0.635	0.035

Table 12.590: Estimate of treatment means in tow-way ANOVA for variable HI.Cu at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.111	0.147	10.000	-0.750	-0.438	0.217	0.468
B N-N0	0.115	0.147	10.000	0.780	-0.212	0.443	0.451
A:B EI N- FP N	-0.013	0.208	10.000	-0.060	-0.476	0.450	0.950
A:B EI N- EI N0	0.212	0.222	10.000	0.960	-0.282	0.707	0.361
A:B EI N- FP N0	0.004	0.208	10.000	0.020	-0.459	0.467	0.984
A:B FP N- EI N0	0.226	0.208	10.000	1.090	-0.237	0.689	0.302
A:B FP N- FP N0	0.018	0.192	10.000	0.090	-0.411	0.447	0.928
A:B EI N0- FP N0	-0.208	0.208	10.000	-1.000	-0.671	0.255	0.340

Table 12.591: Estimate of contrast in two-way ANOVA for variable HI.Cu at site 28 in year 2011 .

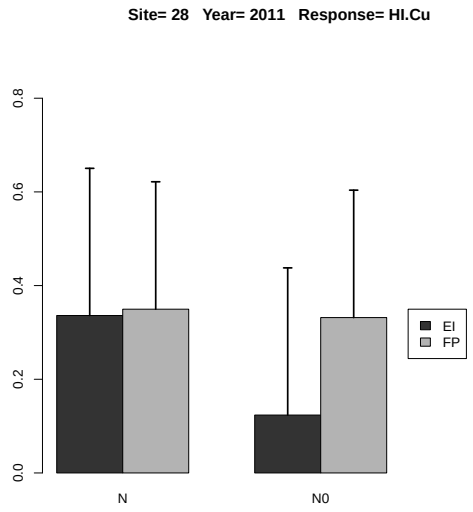

Figure 12.240: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.52 Response Variable HI.Fe

	rep	A	B	y
1	1	EI	N0	0.025
2	2	EI	N0	0.204
3	3	EI	N0	0.096
4	4	EI	N0	0.026
5	1	EI	N	0.173
6	2	EI	N	0.279
7	3	EI	N	0.241
8	4	EI	N	0.669
9	1	FP	N0	0.016
10	2	FP	N0	0.023
11	3	FP	N0	0.036
12	4	FP	N0	0.103
13	1	FP	N	0.343
14	2	FP	N	0.661
15	3	FP	N	0.536
16	4	FP	N	0.065

Table 12.592: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Fe

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.341	0.121	6.000	2.810	0.044	0.637	0.031
A FP	0.401	0.121	6.000	3.310	0.105	0.698	0.016
A EI-FP	-0.061	0.171	6.000	-0.350	-0.480	0.358	0.735

Table 12.593: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Fe at site 28 in year 2011 .

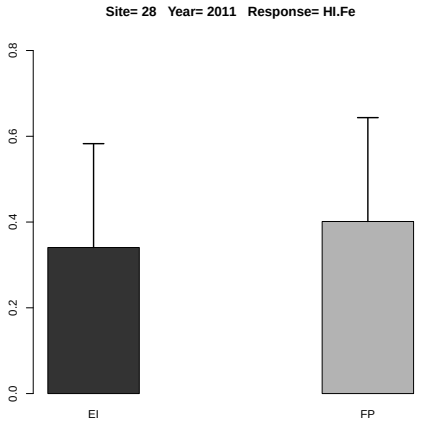

Figure 12.241: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.010	11.993	0.923
B	1.000	0.372	0.372	11.811	11.993	0.005
A:B	1.000	0.011	0.011	0.342	11.993	0.569

Table 12.594: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.214	0.063	12.000	3.410	0.077	0.351	0.005
2	FP		0.223	0.063	12.000	3.550	0.086	0.360	0.004
3		N	0.371	0.063	12.000	5.910	0.234	0.508	0.000
4		N0	0.066	0.063	12.000	1.050	-0.071	0.203	0.313
5	EI	N	0.341	0.089	12.000	3.840	0.147	0.534	0.002
6	FP	N	0.401	0.089	12.000	4.520	0.208	0.595	0.001
7	EI	N0	0.088	0.089	12.000	0.990	-0.106	0.281	0.343
8	FP	N0	0.044	0.089	12.000	0.500	-0.149	0.238	0.625

Table 12.595: Estimate of treatment means in tow-way ANOVA for variable HI.Fe at site 28 in year 2011 .

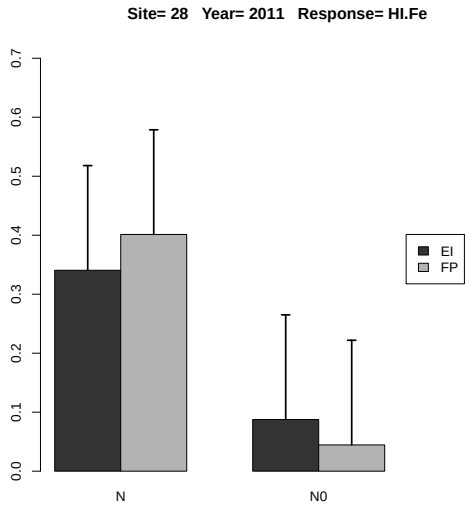

Figure 12.242: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.009	0.089	12.000	-0.100	-0.202	0.184	0.923
B N-N0	0.305	0.089	12.000	3.440	0.112	0.498	0.005
A:B EI N- FP N	-0.061	0.126	12.000	-0.480	-0.334	0.213	0.637
A:B EI N- EI N0	0.253	0.126	12.000	2.020	-0.020	0.526	0.067
A:B EI N- FP N0	0.296	0.126	12.000	2.360	0.023	0.570	0.036
A:B FP N- EI N0	0.314	0.126	12.000	2.500	0.040	0.587	0.028
A:B FP N- FP N0	0.357	0.126	12.000	2.840	0.083	0.630	0.015
A:B EI N0- FP N0	0.043	0.126	12.000	0.340	-0.230	0.316	0.737

Table 12.596: Estimate of contrast in two-way ANOVA for variable HI.Fe at site 28 in year 2011 .

12.3.53 Response Variable HI.Mn

	rep	A	B	y
1	1	EI	N0	0.039
2	2	EI	N0	0.056
3	3	EI	N0	0.038
4	4	EI	N0	0.043
5	1	EI	N	0.086
6	2	EI	N	0.079
7	3	EI	N	0.079
8	4	EI	N	0.084
9	1	FP	N0	0.030
10	2	FP	N0	0.040
11	3	FP	N0	0.038
12	4	FP	N0	0.040
13	1	FP	N	0.070
14	2	FP	N	0.070
15	3	FP	N	0.086
16	4	FP	N	0.046

Table 12.597: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.082	0.006	6.000	13.870	0.068	0.096	0.000
A FP	0.068	0.006	6.000	11.510	0.053	0.082	0.000
A EI-FP	0.014	0.008	6.000	1.670	-0.006	0.034	0.146

Table 12.598: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mn at site 28 in year 2011 .

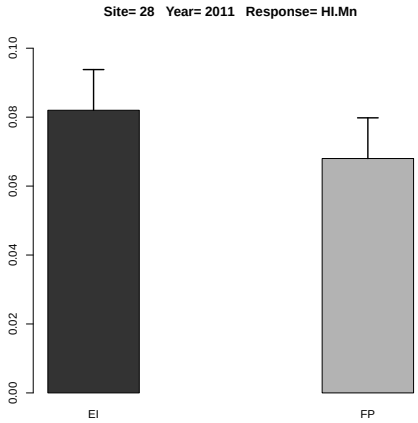

Figure 12.243: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	4.781	11.879	0.050
B	1.000	0.005	0.005	51.679	11.879	0.000
A:B	1.000	0.000	0.000	0.519	11.879	0.485

Table 12.599: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.063	0.003	11.900	18.550	0.056	0.070	0.000
2	FP		0.052	0.003	11.900	15.450	0.045	0.060	0.000
3		N	0.075	0.003	11.900	22.080	0.068	0.082	0.000
4		N0	0.040	0.003	11.900	11.920	0.033	0.048	0.000
5	EI	N	0.082	0.005	11.900	17.070	0.071	0.092	0.000
6	FP	N	0.068	0.005	11.900	14.160	0.058	0.078	0.000
7	EI	N0	0.044	0.005	11.900	9.160	0.034	0.054	0.000
8	FP	N0	0.037	0.005	11.900	7.690	0.026	0.047	0.000

Table 12.600: Estimate of treatment means in tow-way ANOVA for variable HI.Mn at site 28 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.010	0.005	11.900	2.190	0.000	0.021	0.050
B N-N0	0.034	0.005	11.900	7.190	0.024	0.045	0.000
A:B EI N- FP N	0.014	0.007	11.900	2.060	-0.001	0.029	0.062
A:B EI N- EI N0	0.038	0.007	11.900	5.590	0.023	0.053	0.000
A:B EI N- FP N0	0.045	0.007	11.900	6.630	0.030	0.060	0.000
A:B FP N- EI N0	0.024	0.007	11.900	3.540	0.009	0.039	0.004
A:B FP N- FP N0	0.031	0.007	11.900	4.570	0.016	0.046	0.001
A:B EI N0- FP N0	0.007	0.007	11.900	1.040	-0.008	0.022	0.320

Table 12.601: Estimate of contrast in two-way ANOVA for variable HI.Mn at site 28 in year 2011 .

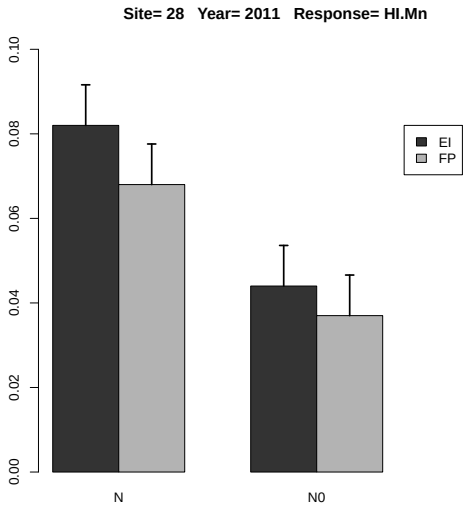

Figure 12.244: Estimated treatment means and standard error in the 2-way ANOVA.

12.3.54 Response Variable HI.Zn

	rep	A	B	y
1	1	EI	N0	0.220
2	2	EI	N0	0.236
3	3	EI	N0	0.212
4	4	EI	N0	0.197
5	1	EI	N	0.382
6	2	EI	N	0.948
7	3	EI	N	0.758
8	4	EI	N	0.607
9	1	FP	N0	0.235
10	2	FP	N0	0.294
11	3	FP	N0	0.271
12	4	FP	N0	0.336
13	1	FP	N	0.666
14	2	FP	N	1.162
15	3	FP	N	0.643
16	4	FP	N	0.624

Table 12.602: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.674	0.125	3.900	5.400	0.324	1.023	0.006
A FP	0.774	0.125	3.900	6.200	0.424	1.123	0.004
A EI-FP	-0.100	0.091	3.000	-1.090	-0.391	0.191	0.355

Table 12.603: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Zn at site 28 in year 2011 .

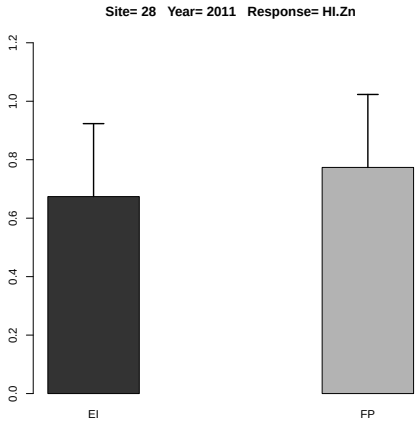

Figure 12.245: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.028	0.028	1.257	8.994	0.291
B	1.000	0.897	0.897	40.164	8.994	0.000
A:B	1.000	0.001	0.001	0.046	8.994	0.836

Table 12.604: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.445	0.072	5.400	6.220	0.265	0.625	0.001
2	FP		0.529	0.072	5.400	7.390	0.349	0.709	0.000
3		N	0.724	0.072	5.400	10.110	0.544	0.903	0.000
4		N0	0.250	0.072	5.400	3.500	0.070	0.430	0.015
5	EI	N	0.674	0.089	9.500	7.580	0.474	0.873	0.000
6	FP	N	0.774	0.089	9.500	8.700	0.574	0.973	0.000
7	EI	N0	0.216	0.089	9.500	2.430	0.017	0.416	0.036
8	FP	N0	0.284	0.089	9.500	3.190	0.085	0.484	0.010

Table 12.605: Estimate of treatment means in tow-way ANOVA for variable HI.Zn at site 28 in year 2011 .

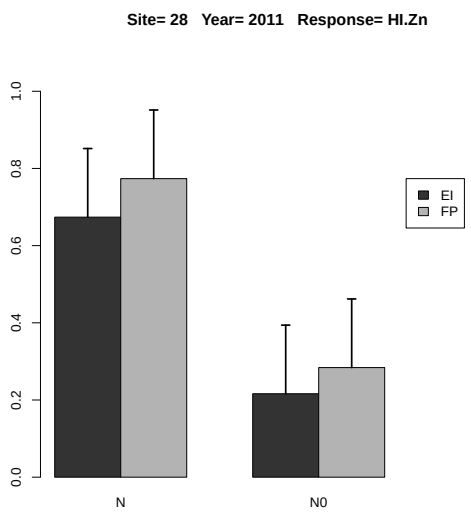

Figure 12.246: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.084	0.075	9.000	-1.120	-0.253	0.085	0.291
B N-N0	0.473	0.075	9.000	6.340	0.304	0.643	0.000
A:B EI N- FP N	-0.100	0.106	9.000	-0.940	-0.339	0.139	0.370
A:B EI N- EI N0	0.458	0.106	9.000	4.330	0.218	0.697	0.002
A:B EI N- FP N0	0.390	0.106	9.000	3.690	0.151	0.629	0.005
A:B FP N- EI N0	0.557	0.106	9.000	5.270	0.318	0.796	0.000
A:B FP N- FP N0	0.489	0.106	9.000	4.630	0.250	0.729	0.001
A:B EI N0- FP N0	-0.068	0.106	9.000	-0.640	-0.307	0.171	0.537

Table 12.606: Estimate of contrast in two-way ANOVA for variable HI.Zn at site 28 in year 2011 .

12.3.55 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	34.197
2	2	EI	N	36.300
3	3	EI	N	33.540
4	4	EI	N	33.967
5	1	FP	N	35.247
6	2	FP	N	35.353
7	3	FP	N	31.873
8	4	FP	N	31.577

Table 12.607: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	34.501	0.851	4.300	40.560	32.208	36.794	0.000
A FP	33.513	0.851	4.300	39.390	31.220	35.805	0.000
A EI-FP	0.988	0.741	3.000	1.330	-1.369	3.345	0.274

Table 12.608: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 28 in year 2011 .

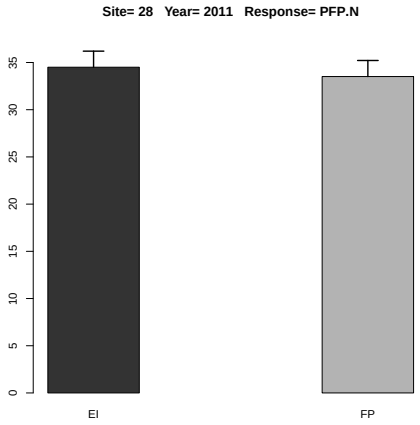

Figure 12.247: Estimated treatment means and standard error in the one-way ANOVA.

12.3.56 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	261.083
2	2	EI	N	277.142
3	3	EI	N	256.070
4	4	EI	N	259.327
5	1	FP	N	269.100
6	2	FP	N	269.914
7	3	FP	N	243.345
8	4	FP	N	241.080

Table 12.609: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	263.405	6.495	4.300	40.560	245.901	280.909	0.000
A FP	255.860	6.495	4.300	39.390	238.356	273.364	0.000
A EI-FP	7.546	5.654	3.000	1.330	-10.448	25.540	0.274

Table 12.610: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 28 in year 2011 .

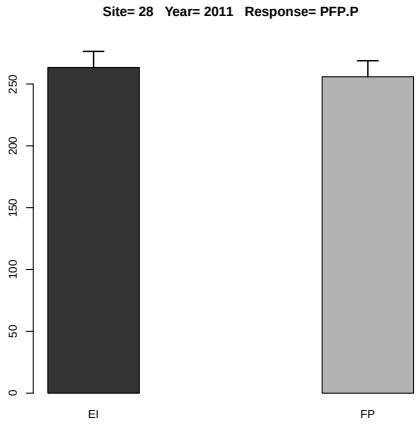

Figure 12.248: Estimated treatment means and standard error in the one-way ANOVA.

12.3.57 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	113.989
2	2	EI	N	121.000
3	3	EI	N	111.800
4	4	EI	N	113.222
5	1	FP	N	117.489
6	2	FP	N	117.844
7	3	FP	N	106.244
8	4	FP	N	105.256

Table 12.611: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	115.003	2.836	4.300	40.560	107.361	122.645	0.000
A FP	111.708	2.836	4.300	39.390	104.066	119.350	0.000
A EI-FP	3.294	2.469	3.000	1.330	-4.562	11.151	0.274

Table 12.612: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 28 in year 2011 .

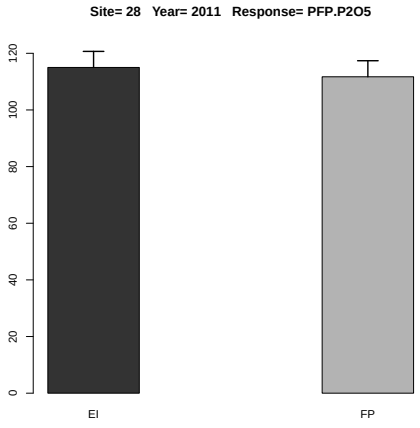

Figure 12.249: Estimated treatment means and standard error in the one-way ANOVA.

12.3.58 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	247.264
2	2	EI	N	262.473
3	3	EI	N	242.516
4	4	EI	N	245.601
5	1	FP	N	254.857
6	2	FP	N	255.628
7	3	FP	N	230.465
8	4	FP	N	228.320

Table 12.613: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	249.464	6.151	4.300	40.560	232.886	266.041	0.000
A FP	242.317	6.151	4.300	39.390	225.740	258.895	0.000
A EI-FP	7.146	5.355	3.000	1.330	-9.895	24.188	0.274

Table 12.614: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 28 in year 2011 .

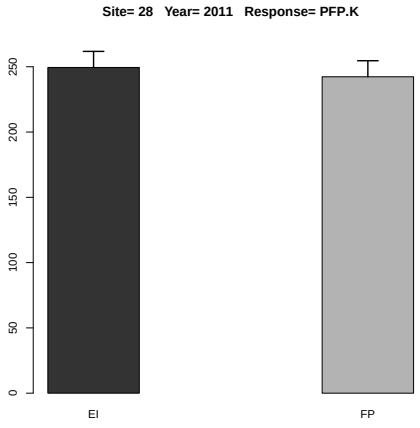

Figure 12.250: Estimated treatment means and standard error in the one-way ANOVA.

12.3.59 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	205.180
2	2	EI	N	217.800
3	3	EI	N	201.240
4	4	EI	N	203.800
5	1	FP	N	211.480
6	2	FP	N	212.120
7	3	FP	N	191.240
8	4	FP	N	189.460

Table 12.615: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	207.005	5.104	4.300	40.560	193.249	220.761	0.000
A FP	201.075	5.104	4.300	39.390	187.319	214.831	0.000
A EI-FP	5.930	4.443	3.000	1.330	-8.211	20.071	0.274

Table 12.616: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 28 in year 2011 .

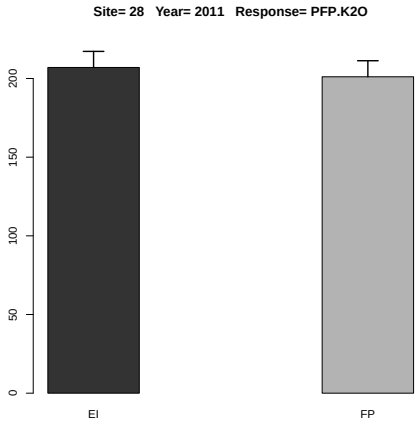

Figure 12.251: Estimated treatment means and standard error in the one-way ANOVA.

12.3.60 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	683.933
2	2	EI	N	726.000
3	3	EI	N	670.800
4	4	EI	N	679.333
5	1	FP	N	704.933
6	2	FP	N	707.067
7	3	FP	N	637.467
8	4	FP	N	631.533

Table 12.617: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	690.017	17.014	4.300	40.560	644.163	735.870	0.000
A FP	670.250	17.014	4.300	39.390	624.397	716.103	0.000
A EI-FP	19.767	14.811	3.000	1.330	-27.370	66.903	0.274

Table 12.618: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Mg at site 28 in year 2011 .

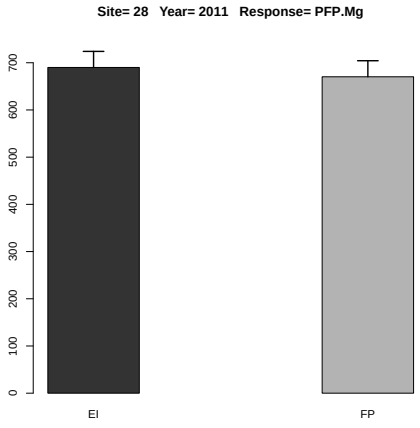

Figure 12.252: Estimated treatment means and standard error in the one-way ANOVA.

12.3.61 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	1025.900
2	2	EI	N	1089.000
3	3	EI	N	1006.200
4	4	EI	N	1019.000
5	1	FP	N	1057.400
6	2	FP	N	1060.600
7	3	FP	N	956.200
8	4	FP	N	947.300

Table 12.619: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1035.025	25.521	4.300	40.560	966.245	1103.805	0.000
A FP	1005.375	25.521	4.300	39.390	936.595	1074.155	0.000
A EI-FP	29.650	22.217	3.000	1.330	-41.052	100.352	0.274

Table 12.620: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.Zn at site 28 in year 2011 .

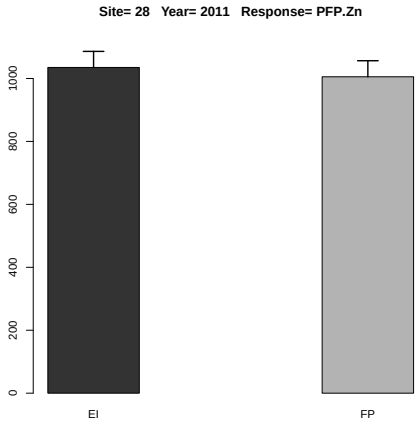

Figure 12.253: Estimated treatment means and standard error in the one-way ANOVA.

12.3.62 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.445
2	2	EI	N	0.407
3	3	EI	N	0.433
4	4	EI	N	0.425
5	1	FP	N	0.426
6	2	FP	N	0.470
7	3	FP	N	0.398
8	4	FP	N	0.429

Table 12.621: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.427	0.012	6.000	35.960	0.398	0.456	0.000
A FP	0.431	0.012	6.000	36.300	0.402	0.460	0.000
A EI-FP	-0.004	0.017	6.000	-0.240	-0.045	0.037	0.818

Table 12.622: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 28 in year 2011 .

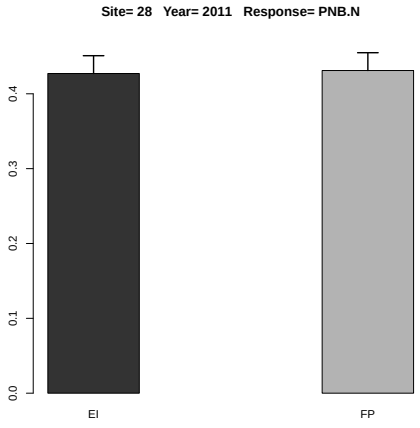

Figure 12.254: Estimated treatment means and standard error in the one-way ANOVA.

12.3.63 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.809
2	2	EI	N	0.776
3	3	EI	N	0.743
4	4	EI	N	0.752
5	1	FP	N	0.834
6	2	FP	N	0.756
7	3	FP	N	0.633
8	4	FP	N	0.482

Table 12.623: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.770	0.055	5.500	13.910	0.631	0.909	0.000
A FP	0.676	0.055	5.500	12.220	0.538	0.815	0.000
A EI-FP	0.094	0.065	3.000	1.440	-0.113	0.301	0.245

Table 12.624: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 28 in year 2011 .

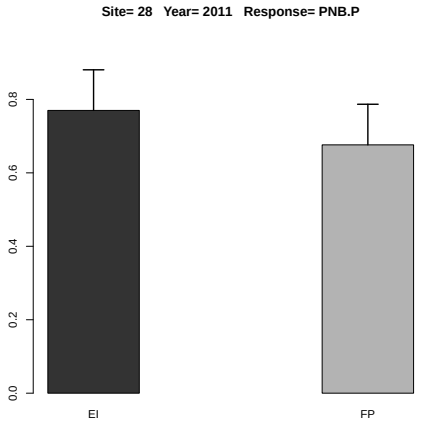

Figure 12.255: Estimated treatment means and standard error in the one-way ANOVA.

12.3.64 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.890
2	2	EI	N	0.892
3	3	EI	N	0.825
4	4	EI	N	0.909
5	1	FP	N	1.045
6	2	FP	N	0.971
7	3	FP	N	0.807
8	4	FP	N	0.639

Table 12.625: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.879	0.065	6.000	13.470	0.719	1.039	0.000
A FP	0.866	0.065	6.000	13.260	0.706	1.025	0.000
A EI-FP	0.013	0.092	6.000	0.150	-0.212	0.239	0.889

Table 12.626: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 28 in year 2011 .

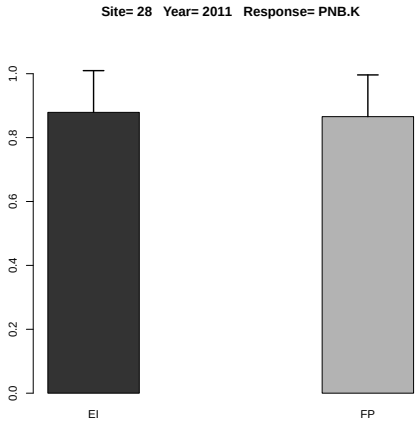

Figure 12.256: Estimated treatment means and standard error in the one-way ANOVA.

12.3.65 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.821
2	2	EI	N	0.726
3	3	EI	N	0.738
4	4	EI	N	0.747
5	1	FP	N	0.846
6	2	FP	N	0.778
7	3	FP	N	0.637
8	4	FP	N	0.505

Table 12.627: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.758	0.056	5.600	13.610	0.619	0.897	0.000
A FP	0.692	0.056	5.600	12.420	0.553	0.830	0.000
A EI-FP	0.066	0.067	3.000	0.990	-0.148	0.281	0.397

Table 12.628: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.Mg at site 28 in year 2011 .

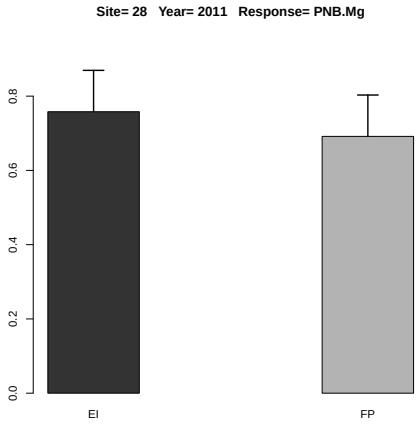

Figure 12.257: Estimated treatment means and standard error in the one-way ANOVA.

12.3.66 Response Variable PNB.Zn

	rep	A	B	y
1	1	EI	N	281.097
2	2	EI	N	243.936
3	3	EI	N	232.432
4	4	EI	N	221.123
5	1	FP	N	291.842
6	2	FP	N	266.211
7	3	FP	N	206.539
8	4	FP	N	156.304

Table 12.629: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Zn

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	244.647	23.406	4.200	10.450	181.043	308.251	0.000
A FP	230.224	23.406	4.200	9.840	166.620	293.828	0.000
A EI-FP	14.423	19.688	3.000	0.730	-48.233	77.079	0.517

Table 12.630: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.Zn at site 28 in year 2011 .

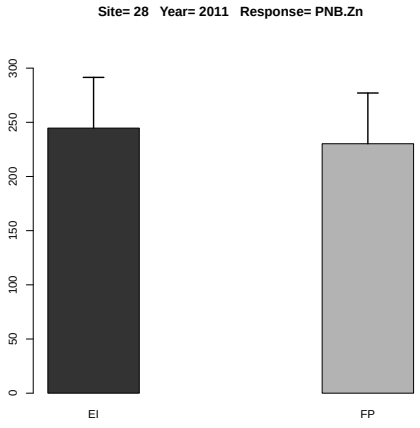

Figure 12.258: Estimated treatment means and standard error in the one-way ANOVA.

12.3.67 Response Variable AE

	rep	A	B	y
1	1	EI	N	25.560
2	2	EI	N	32.047
3	3	EI	N	28.790
4	4	EI	N	30.010
5	1	FP	N	30.013
6	2	FP	N	29.320
7	3	FP	N	25.453
8	4	FP	N	25.850

Table 12.631: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	29.102	1.405	20.712	0.000
A FP	27.659	1.405	19.685	0.001
A EI-FP	1.442	1.987	0.726	0.758

Table 12.632: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 28 in year 2011 .

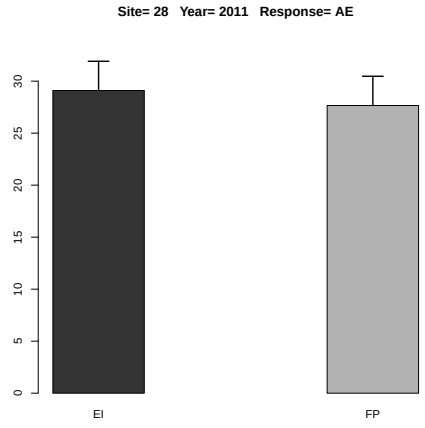

Figure 12.259: Estimated treatment means and standard error in the one-way ANOVA.

12.3.68 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.501
2	2	EI	N	0.523
3	3	EI	N	0.544
4	4	EI	N	0.538
5	1	FP	N	0.533
6	2	FP	N	0.600
7	3	FP	N	0.450
8	4	FP	N	0.550

Table 12.633: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.527	0.025	20.679	0.000
A FP	0.533	0.025	20.933	0.000
A EI-FP	-0.006	0.036	-0.180	0.981

Table 12.634: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 28 in year 2011 .

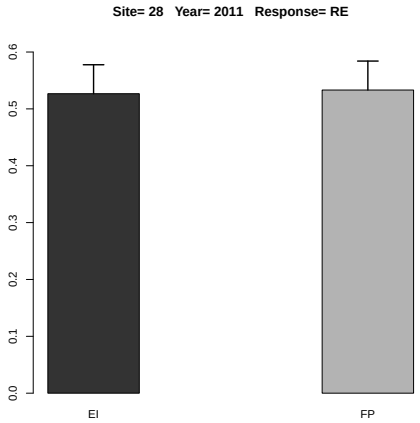

Figure 12.260: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 13

Analysis of Variance for Site 29

13.1 Year 2009

There are 52 variables not observed: UG.Ca UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

13.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	7166.000
2	2	EI	N	7156.000
3	3	EI	N	6534.000
4	4	EI	N	6164.000
5	1	EI	N0	3645.000
6	2	EI	N0	4335.000
7	3	EI	N0	4684.000
8	4	EI	N0	5348.000
9	1	FP	N	6657.000
10	2	FP	N	6621.000
11	3	FP	N	6252.000
12	4	FP	N	5454.000
13	1	FP	N0	3534.000
14	2	FP	N0	3033.000
15	3	FP	N0	3541.000
16	4	FP	N0	2996.000

Table 13.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	6755.000	62.117	108.746	0.000
A FP	6246.000	62.117	100.551	0.000
A EI-FP	509.000	87.847	5.794	0.020

Table 13.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 29 in year 2009 .

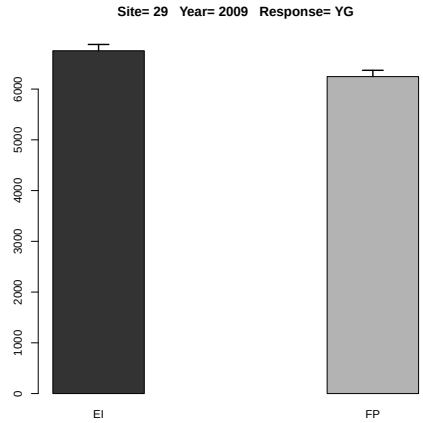

Figure 13.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3013696.000	3013696.000	10.482	12.257	0.007
B	1.000	27269284.000	27269284.000	94.847	12.257	0.000
A:B	1.000	515524.000	515524.000	1.793	12.257	0.205

Table 13.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5629.000	189.575	12.300	29.690	5216.912	6041.088	0.000
2	FP		4761.000	189.575	12.300	25.110	4348.912	5173.088	0.000
3		N	6500.500	189.575	12.300	34.290	6088.412	6912.588	0.000
4		N0	3889.500	189.575	12.300	20.520	3477.412	4301.588	0.000
5	EI	N	6755.000	268.099	12.300	25.200	6172.219	7337.781	0.000
6	FP	N	6246.000	268.099	12.300	23.300	5663.219	6828.781	0.000
7	EI	N0	4503.000	268.099	12.300	16.800	3920.219	5085.781	0.000
8	FP	N0	3276.000	268.099	12.300	12.220	2693.219	3858.781	0.000

Table 13.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 29 in year 2009 .

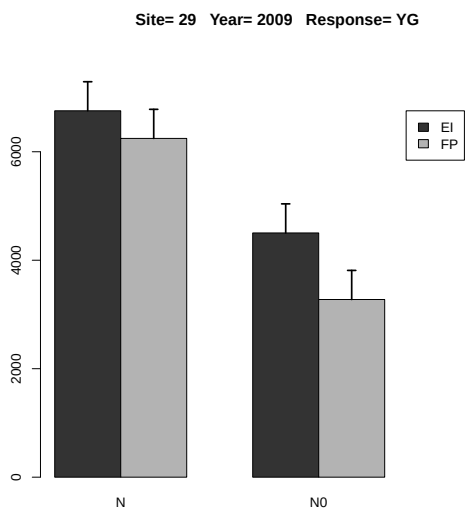

Figure 13.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	868.000	268.099	12.300	3.240	285.219	1450.781	0.007
B N-N0	2611.000	268.099	12.300	9.740	2028.219	3193.781	0.000
A:B EI N- FP N	509.000	379.149	12.300	1.340	-315.177	1333.177	0.204
A:B EI N- EI N0	2252.000	379.149	12.300	5.940	1427.823	3076.177	0.000
A:B EI N- FP N0	3479.000	379.149	12.300	9.180	2654.823	4303.177	0.000
A:B FP N- EI N0	1743.000	379.149	12.300	4.600	918.823	2567.177	0.001
A:B FP N- FP N0	2970.000	379.149	12.300	7.830	2145.823	3794.177	0.000
A:B EI N0- FP N0	1227.000	379.149	12.300	3.240	402.823	2051.177	0.007

Table 13.5: Estimate of contrast in two-way ANOVA for variable YG at site 29 in year 2009 .

13.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	10566.000
2	2	EI	N	12129.000
3	3	EI	N	10221.000
4	4	EI	N	8253.000
5	1	EI	N0	5828.000
6	2	EI	N0	6557.000
7	3	EI	N0	7860.000
8	4	EI	N0	5584.000
9	1	FP	N	8986.000
10	2	FP	N	10170.000
11	3	FP	N	9159.000
12	4	FP	N	7206.000
13	1	FP	N0	7308.000
14	2	FP	N0	5704.000
15	3	FP	N0	7194.000
16	4	FP	N0	7728.000

Table 13.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	10292.250	155.879	66.027	0.000
A FP	8880.250	155.879	56.969	0.000
A EI-FP	1412.000	220.446	6.405	0.015

Table 13.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 29 in year 2009 .

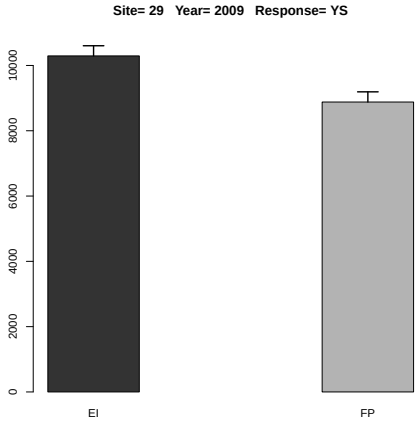

Figure 13.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	784553.062	784553.062	0.580	8.537	0.467
B	1.000	32852958.063	32852958.063	24.283	8.537	0.001
A:B	1.000	3756813.063	3756813.063	2.777	8.537	0.132

Table 13.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8374.750	445.514	7.600	18.800	7338.593	9410.907	0.000
2	FP		7931.875	445.514	7.600	17.800	6895.718	8968.032	0.000
3		N	9586.250	445.514	7.600	21.520	8550.093	10622.407	0.000
4		N0	6720.375	445.514	7.600	15.080	5684.218	7756.532	0.000
5	EI	N	10292.250	606.301	11.400	16.980	8963.324	11621.176	0.000
6	FP	N	8880.250	606.301	11.400	14.650	7551.324	10209.176	0.000
7	EI	N0	6457.250	606.301	11.400	10.650	5128.324	7786.176	0.000
8	FP	N0	6983.500	606.301	11.400	11.520	5654.574	8312.426	0.000

Table 13.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	442.875	581.581	8.500	0.760	-883.741	1769.491	0.467
B N-N0	2865.875	581.581	8.500	4.930	1539.259	4192.491	0.001
A:B EI N- FP N	1412.000	822.479	8.500	1.720	-464.118	3288.118	0.122
A:B EI N- EI N0	3835.000	822.479	8.500	4.660	1958.882	5711.118	0.001
A:B EI N- FP N0	3308.750	822.479	8.500	4.020	1432.632	5184.868	0.003
A:B FP N- EI N0	2423.000	822.479	8.500	2.950	546.882	4299.118	0.017
A:B FP N- FP N0	1896.750	822.479	8.500	2.310	20.632	3772.868	0.048
A:B EI N0- FP N0	-526.250	822.479	8.500	-0.640	-2402.368	1349.868	0.539

Table 13.10: Estimate of contrast in two-way ANOVA for variable YS at site 29 in year 2009 .

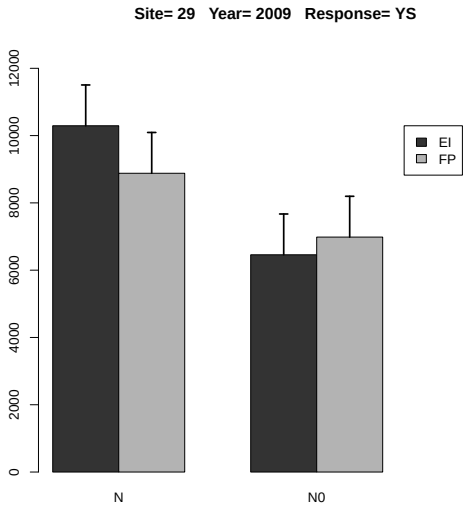

Figure 13.4: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	17732.000
2	2	EI	N	19285.000
3	3	EI	N	16755.000
4	4	EI	N	14417.000
5	1	EI	N0	9473.000
6	2	EI	N0	10892.000
7	3	EI	N0	12544.000
8	4	EI	N0	10932.000
9	1	FP	N	15643.000
10	2	FP	N	16791.000
11	3	FP	N	15411.000
12	4	FP	N	12660.000
13	1	FP	N0	10842.000
14	2	FP	N0	8737.000
15	3	FP	N0	10735.000
16	4	FP	N0	10724.000

Table 13.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	17047.250	172.769	98.671	0.000
A FP	15126.250	172.769	87.552	0.000
A EI-FP	1921.000	244.332	7.862	0.008

Table 13.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 29 in year 2009 .

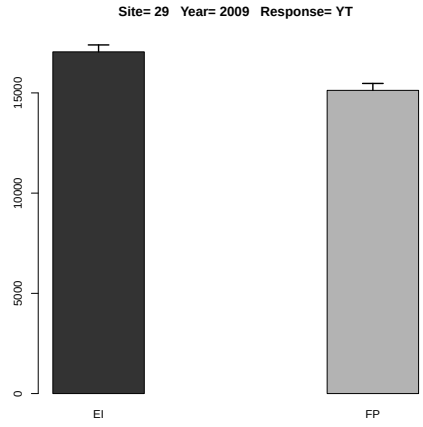

Figure 13.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6873573.063	6873573.063	2.855	3.844	0.169
B	1.000	119984639.063	119984639.063	49.840	3.844	0.002
A:B	1.000	1489010.063	1489010.063	0.619	3.844	0.477

Table 13.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14003.750	560.175	6.700	25.000	12665.267	15342.233	0.000
2	FP		12692.875	560.175	6.700	22.660	11354.392	14031.358	0.000
3		N	16086.750	560.175	6.700	28.720	14748.267	17425.233	0.000
4		N0	10609.875	560.175	6.700	18.940	9271.392	11948.358	0.000
5	EI	N	17047.250	784.043	6.100	21.740	15136.709	18957.791	0.000
6	FP	N	15126.250	784.043	6.100	19.290	13215.709	17036.791	0.000
7	EI	N0	10960.250	784.043	6.100	13.980	9049.709	12870.791	0.000
8	FP	N0	10259.500	784.043	6.100	13.090	8348.959	12170.041	0.000

Table 13.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 29 in year 2009 .

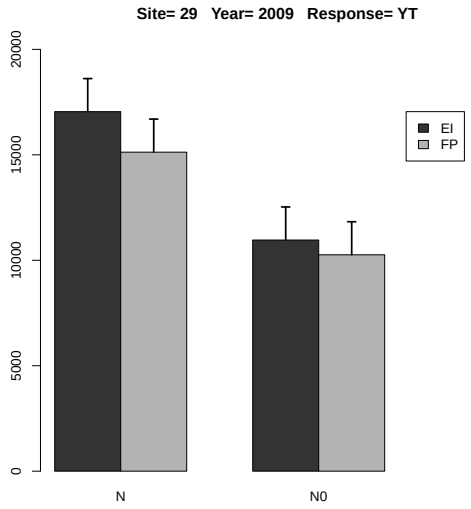

Figure 13.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1310.875	775.793	3.800	1.690	-877.966	3499.716	0.169
B N-N0	5476.875	775.793	3.800	7.060	3288.034	7665.716	0.002
A:B EI N- FP N	1921.000	1097.137	3.800	1.750	-1174.488	5016.489	0.158
A:B EI N- EI N0	6087.000	1097.137	3.800	5.550	2991.512	9182.488	0.006
A:B EI N- FP N0	6787.750	1097.137	3.800	6.190	3692.262	9883.238	0.004
A:B FP N- EI N0	4166.000	1097.137	3.800	3.800	1070.512	7261.489	0.021
A:B FP N- FP N0	4866.750	1097.137	3.800	4.440	1771.262	7962.239	0.012
A:B EI N0- FP N0	700.750	1097.137	3.800	0.640	-2394.738	3796.238	0.559

Table 13.15: Estimate of contrast in two-way ANOVA for variable YT at site 29 in year 2009 .

13.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.404
2	2	EI	N	0.371
3	3	EI	N	0.390
4	4	EI	N	0.428
5	1	EI	N0	0.385
6	2	EI	N0	0.398
7	3	EI	N0	0.373
8	4	EI	N0	0.489
9	1	FP	N	0.426
10	2	FP	N	0.394
11	3	FP	N	0.406
12	4	FP	N	0.431
13	1	FP	N0	0.326
14	2	FP	N0	0.347
15	3	FP	N0	0.330
16	4	FP	N0	0.279

Table 13.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.398	0.003	124.732	0.000
A FP	0.414	0.003	129.717	0.000
A EI-FP	-0.016	0.005	-3.525	0.073

Table 13.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 29 in year 2009 .

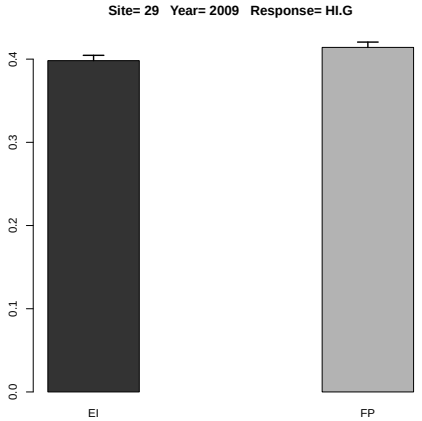

Figure 13.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.003	0.003	4.045	5.999	0.091
B	1.000	0.006	0.006	7.496	5.980	0.034
A:B	1.000	0.011	0.011	13.215	5.980	0.011

Table 13.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.405	0.013	6.000	30.760	0.373	0.437	0.000
2	FP		0.367	0.013	6.000	27.920	0.335	0.400	0.000
3		N	0.406	0.012	11.400	34.280	0.380	0.432	0.000
4		N0	0.366	0.012	11.400	30.890	0.340	0.392	0.000
5	EI	N	0.398	0.017	11.400	23.760	0.361	0.435	0.000
6	FP	N	0.414	0.017	11.400	24.710	0.377	0.451	0.000
7	EI	N0	0.411	0.017	11.400	24.550	0.375	0.448	0.000
8	FP	N0	0.321	0.017	11.400	19.130	0.284	0.357	0.000

Table 13.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.037	0.019	6.000	2.010	-0.008	0.083	0.091
B N-N0	0.040	0.015	6.000	2.740	0.004	0.076	0.034
A:B EI N- FP N	-0.016	0.024	11.400	-0.670	-0.068	0.036	0.515
A:B EI N- EI N0	-0.013	0.021	6.000	-0.630	-0.064	0.038	0.549
A:B EI N- FP N0	0.078	0.024	11.400	3.270	0.026	0.130	0.007
A:B FP N- EI N0	0.003	0.024	11.400	0.120	-0.049	0.055	0.910
A:B FP N- FP N0	0.093	0.021	6.000	4.510	0.043	0.144	0.004
A:B EI N0- FP N0	0.091	0.024	11.400	3.830	0.039	0.143	0.003

Table 13.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 29 in year 2009 .

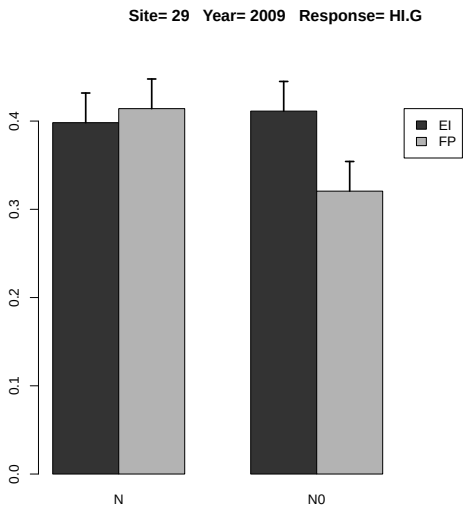

Figure 13.8: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N	174.134
2	2	EI	N	170.313
3	3	EI	N	154.856
4	4	EI	N	144.854
5	1	EI	N0	83.470
6	2	EI	N0	97.537
7	3	EI	N0	108.200
8	4	EI	N0	121.934
9	1	FP	N	156.440
10	2	FP	N	156.256
11	3	FP	N	151.298
12	4	FP	N	139.077
13	1	FP	N0	87.997
14	2	FP	N0	71.579
15	3	FP	N0	79.672
16	4	FP	N0	71.005

Table 13.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	161.039	2.369	67.973	0.000
A FP	150.768	2.369	63.638	0.000
A EI-FP	10.271	3.350	3.066	0.103

Table 13.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 29 in year 2009 .

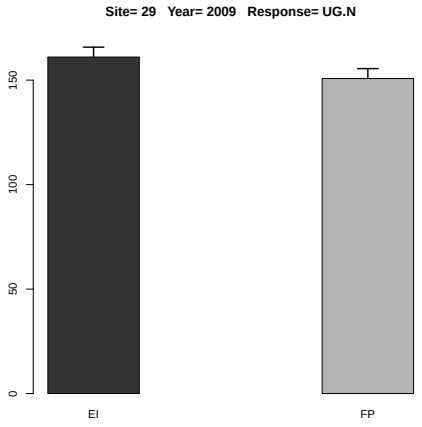

Figure 13.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1259.817	1259.817	8.660	12.000	0.012
B	1.000	17281.140	17281.140	118.795	12.000	0.000
A:B	1.000	223.531	223.531	1.537	12.000	0.239

Table 13.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		131.912	4.264	12.000	30.930	122.621	141.203	0.000
2	FP		114.165	4.264	12.000	26.770	104.874	123.456	0.000
3		N	155.903	4.264	12.000	36.560	146.612	165.194	0.000
4		N0	90.174	4.264	12.000	21.150	80.883	99.466	0.000
5	EI	N	161.039	6.030	12.000	26.700	147.900	174.179	0.000
6	FP	N	150.768	6.030	12.000	25.000	137.628	163.907	0.000
7	EI	N0	102.786	6.030	12.000	17.040	89.646	115.925	0.000
8	FP	N0	77.563	6.030	12.000	12.860	64.424	90.703	0.000

Table 13.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 29 in year 2009 .

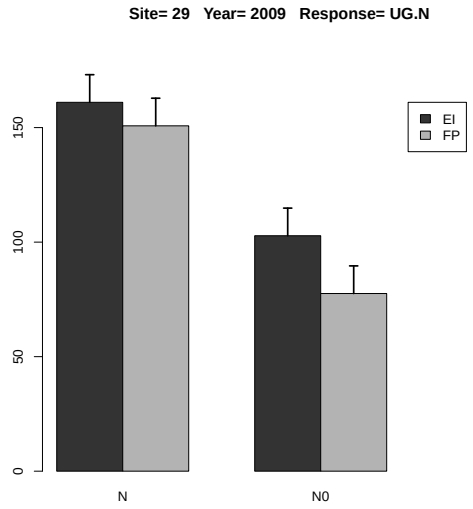

Figure 13.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	17.747	6.030	12.000	2.940	4.607	30.886	0.012
B N-N0	65.729	6.030	12.000	10.900	52.589	78.868	0.000
A:B EI N- FP N	10.271	8.528	12.000	1.200	-8.310	28.854	0.252
A:B EI N- EI N0	58.253	8.528	12.000	6.830	39.671	76.835	0.000
A:B EI N- FP N0	83.476	8.528	12.000	9.790	64.894	102.058	0.000
A:B FP N- EI N0	47.982	8.528	12.000	5.630	29.400	66.564	0.000
A:B FP N- FP N0	73.204	8.528	12.000	8.580	54.622	91.786	0.000
A:B EI N0- FP N0	25.222	8.528	12.000	2.960	6.640	43.804	0.012

Table 13.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 29 in year 2009 .

13.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N	37.263
2	2	EI	N	35.780
3	3	EI	N	36.590
4	4	EI	N	37.600
5	1	EI	N0	16.038
6	2	EI	N0	18.640
7	3	EI	N0	20.141
8	4	EI	N0	23.531
9	1	FP	N	32.619
10	2	FP	N	33.105
11	3	FP	N	32.510
12	4	FP	N	26.725
13	1	FP	N0	15.196
14	2	FP	N0	13.649
15	3	FP	N0	15.934
16	4	FP	N0	13.482

Table 13.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	36.808	1.285	28.652	0.000
A FP	31.240	1.285	24.317	0.000
A EI-FP	5.569	1.817	3.065	0.104

Table 13.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 29 in year 2009 .

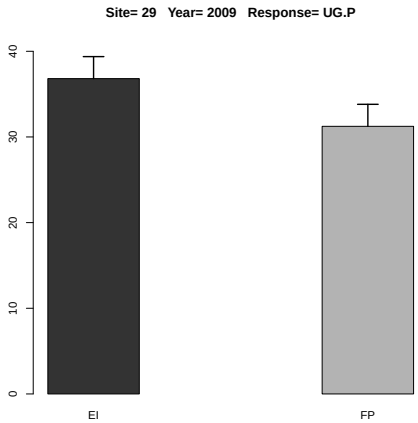

Figure 13.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	66.020	66.020	16.980	5.999	0.006
B	1.000	1148.891	1148.891	295.490	6.000	0.000
A:B	1.000	0.298	0.298	0.077	6.000	0.791

Table 13.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		28.198	0.909	6.000	31.030	25.974	30.422	0.000
2	FP		22.903	0.909	6.000	25.200	20.679	25.126	0.000
3		N	34.024	0.810	11.200	42.010	32.246	35.802	0.000
4		N0	17.076	0.810	11.200	21.090	15.299	18.854	0.000
5	EI	N	36.809	1.145	11.200	32.140	34.294	39.323	0.000
6	FP	N	31.240	1.145	11.200	27.280	28.726	33.754	0.000
7	EI	N0	19.588	1.145	11.200	17.100	17.074	22.102	0.000
8	FP	N0	14.565	1.145	11.200	12.720	12.051	17.079	0.000

Table 13.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.296	1.285	6.000	4.120	2.151	8.440	0.006
B N-N0	16.948	0.986	6.000	17.190	14.535	19.360	0.000
A:B EI N- FP N	5.569	1.620	11.200	3.440	2.013	9.124	0.005
A:B EI N- EI N0	17.221	1.394	6.000	12.350	13.809	20.633	0.000
A:B EI N- FP N0	22.243	1.620	11.200	13.730	18.688	25.799	0.000
A:B FP N- EI N0	11.652	1.620	11.200	7.190	8.097	15.208	0.000
A:B FP N- FP N0	16.674	1.394	6.000	11.960	13.263	20.086	0.000
A:B EI N0- FP N0	5.022	1.620	11.200	3.100	1.467	8.578	0.010

Table 13.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 29 in year 2009 .

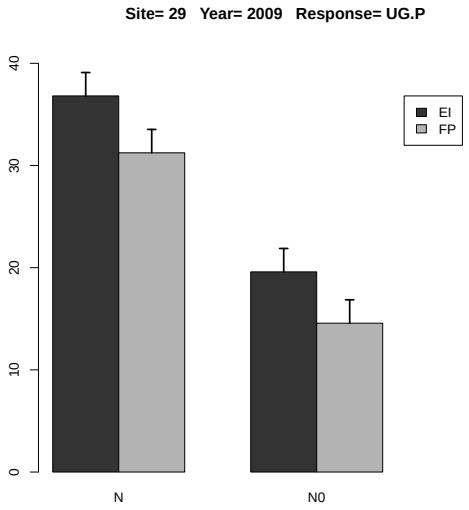

Figure 13.12: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N	85.333
2	2	EI	N	81.936
3	3	EI	N	83.792
4	4	EI	N	86.105
5	1	EI	N0	36.727
6	2	EI	N0	42.687
7	3	EI	N0	46.123
8	4	EI	N0	53.886
9	1	FP	N	74.698
10	2	FP	N	75.810
11	3	FP	N	74.449
12	4	FP	N	61.199
13	1	FP	N0	34.799
14	2	FP	N0	31.255
15	3	FP	N0	36.490
16	4	FP	N0	30.874

Table 13.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	84.291	2.942	28.652	0.000
A FP	71.539	2.942	24.317	0.000
A EI-FP	12.752	4.161	3.065	0.103

Table 13.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 29 in year 2009 .

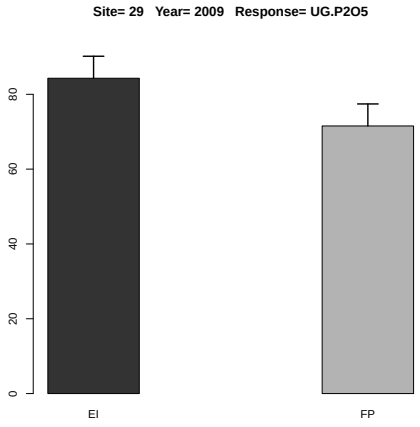

Figure 13.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	346.217	346.217	16.980	5.999	0.006
B	1.000	6024.901	6024.901	295.490	6.000	0.000
A:B	1.000	1.565	1.565	0.077	6.000	0.791

Table 13.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		64.574	2.081	6.000	31.030	59.482	69.666	0.000
2	FP		52.447	2.081	6.000	25.200	47.355	57.539	0.000
3		N	77.915	1.855	11.200	42.010	73.844	81.986	0.000
4		N0	39.105	1.855	11.200	21.090	35.034	43.176	0.000
5	EI	N	84.291	2.623	11.200	32.140	78.534	90.049	0.000
6	FP	N	71.539	2.623	11.200	27.280	65.782	77.297	0.000
7	EI	N0	44.856	2.623	11.200	17.100	39.099	50.613	0.000
8	FP	N0	33.355	2.623	11.200	12.720	27.597	39.112	0.000

Table 13.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 29 in year 2009 .

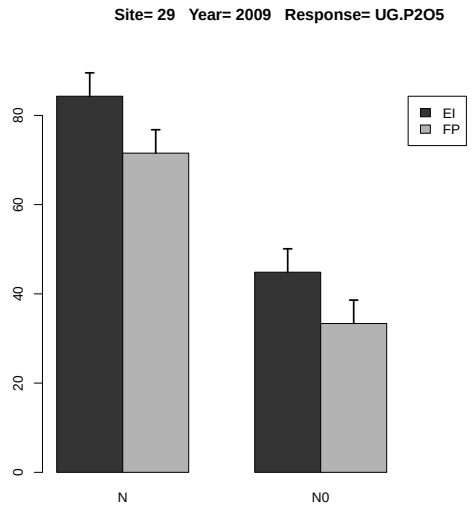

Figure 13.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	12.127	2.943	6.000	4.120	4.926	19.328	0.006
B N-N0	38.810	2.258	6.000	17.190	33.286	44.335	0.000
A:B EI N- FP N	12.752	3.709	11.200	3.440	4.610	20.895	0.005
A:B EI N- EI N0	39.436	3.193	6.000	12.350	31.623	47.248	0.000
A:B EI N- FP N0	50.937	3.709	11.200	13.730	42.795	59.079	0.000
A:B FP N- EI N0	26.683	3.709	11.200	7.190	18.541	34.825	0.000
A:B FP N- FP N0	38.185	3.193	6.000	11.960	30.372	45.998	0.000
A:B EI N0- FP N0	11.501	3.709	11.200	3.100	3.359	19.644	0.010

Table 13.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 29 in year 2009 .

13.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N	45.146
2	2	EI	N	41.505
3	3	EI	N	44.431
4	4	EI	N	44.997
5	1	EI	N0	22.963
6	2	EI	N0	25.143
7	3	EI	N0	24.825
8	4	EI	N0	33.692
9	1	FP	N	41.939
10	2	FP	N	38.402
11	3	FP	N	39.388
12	4	FP	N	31.633
13	1	FP	N0	22.264
14	2	FP	N0	17.591
15	3	FP	N0	20.892
16	4	FP	N0	17.377

Table 13.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	44.020	1.723	25.555	0.000
A FP	37.840	1.723	21.968	0.000
A EI-FP	6.179	2.436	2.537	0.157

Table 13.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 29 in year 2009 .

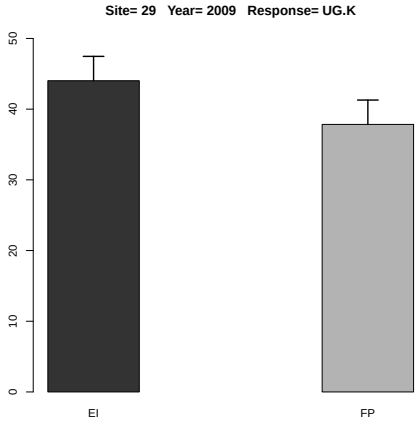

Figure 13.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	74.199	74.199	9.834	5.999	0.020
B	1.000	1272.568	1272.568	168.660	6.000	0.000
A:B	1.000	0.894	0.894	0.119	6.000	0.742

Table 13.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		35.338	1.500	6.000	23.560	31.668	39.008	0.000
2	FP		28.686	1.500	6.000	19.120	25.015	32.356	0.000
3		N	40.930	1.264	10.300	32.390	38.125	43.735	0.000
4		N0	23.094	1.264	10.300	18.280	20.288	25.899	0.000
5	EI	N	44.020	1.787	10.300	24.630	40.053	47.987	0.000
6	FP	N	37.840	1.787	10.300	21.180	33.873	41.807	0.000
7	EI	N0	26.656	1.787	10.300	14.920	22.689	30.623	0.000
8	FP	N0	19.531	1.787	10.300	10.930	15.564	23.498	0.000

Table 13.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	6.652	2.121	6.000	3.140	1.461	11.843	0.020
B N-N0	17.837	1.373	6.000	12.990	14.476	21.197	0.000
A:B EI N- FP N	6.179	2.527	10.300	2.450	0.569	11.789	0.034
A:B EI N- EI N0	17.364	1.942	6.000	8.940	12.611	22.116	0.000
A:B EI N- FP N0	24.489	2.527	10.300	9.690	18.879	30.099	0.000
A:B FP N- EI N0	11.184	2.527	10.300	4.430	5.574	16.794	0.001
A:B FP N- FP N0	18.309	1.942	6.000	9.430	13.557	23.062	0.000
A:B EI N0- FP N0	7.125	2.527	10.300	2.820	1.515	12.735	0.018

Table 13.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 29 in year 2009 .

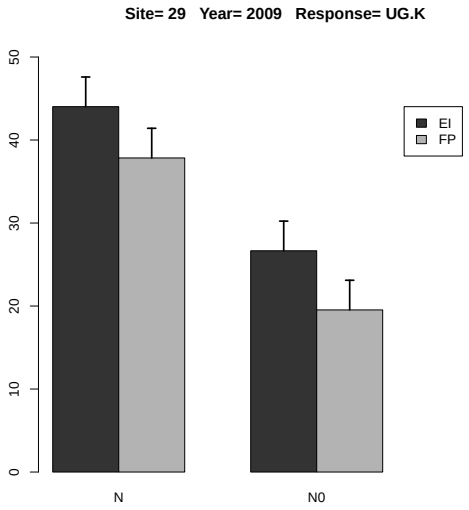

Figure 13.16: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N	54.401
2	2	EI	N	50.013
3	3	EI	N	53.540
4	4	EI	N	54.222
5	1	EI	N0	27.671
6	2	EI	N0	30.297
7	3	EI	N0	29.914
8	4	EI	N0	40.599
9	1	FP	N	50.537
10	2	FP	N	46.274
11	3	FP	N	47.462
12	4	FP	N	38.118
13	1	FP	N0	26.828
14	2	FP	N0	21.198
15	3	FP	N0	25.175
16	4	FP	N0	20.939

Table 13.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	53.044	2.076	25.555	0.000
A FP	45.598	2.076	21.968	0.000
A EI-FP	7.446	2.935	2.537	0.158

Table 13.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 29 in year 2009 .

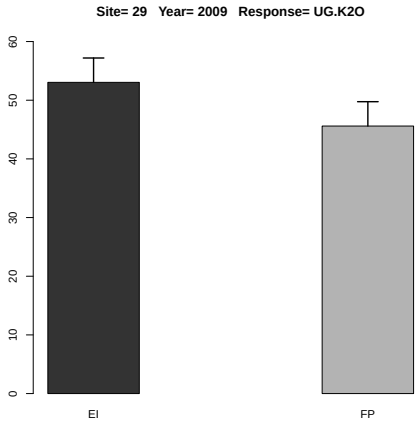

Figure 13.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	107.739	107.739	9.834	5.999	0.020
B	1.000	1847.801	1847.801	168.660	6.000	0.000
A:B	1.000	1.298	1.298	0.119	6.000	0.742

Table 13.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		42.582	1.808	6.000	23.560	38.159	47.005	0.000
2	FP		34.566	1.808	6.000	19.120	30.143	38.989	0.000
3		N	49.321	1.523	10.300	32.390	45.941	52.701	0.000
4		N0	27.828	1.523	10.300	18.280	24.448	31.208	0.000
5	EI	N	53.044	2.153	10.300	24.630	48.264	57.824	0.000
6	FP	N	45.598	2.153	10.300	21.180	40.818	50.378	0.000
7	EI	N0	32.120	2.153	10.300	14.920	27.340	36.901	0.000
8	FP	N0	23.535	2.153	10.300	10.930	18.755	28.315	0.000

Table 13.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 29 in year 2009 .

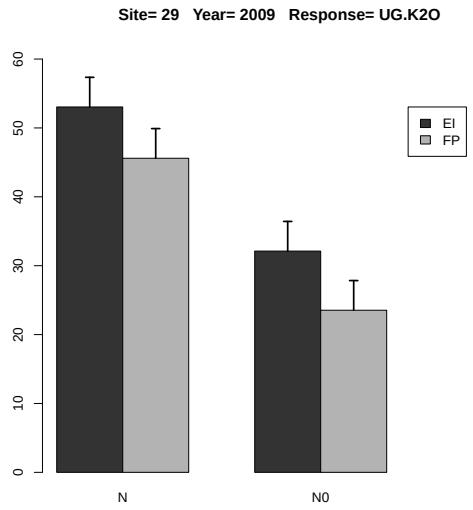

Figure 13.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	8.016	2.556	6.000	3.140	1.761	14.271	0.020
B N-N0	21.493	1.655	6.000	12.990	17.443	25.543	0.000
A:B EI N- FP N	7.446	3.045	10.300	2.450	0.686	14.206	0.034
A:B EI N- EI N0	20.923	2.341	6.000	8.940	15.196	26.650	0.000
A:B EI N- FP N0	29.509	3.045	10.300	9.690	22.749	36.269	0.000
A:B FP N- EI N0	13.477	3.045	10.300	4.430	6.717	20.237	0.001
A:B FP N- FP N0	22.063	2.341	6.000	9.430	16.336	27.790	0.000
A:B EI N0- FP N0	8.586	3.045	10.300	2.820	1.825	15.346	0.018

Table 13.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 29 in year 2009 .

13.1.10 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N	14.332
2	2	EI	N	16.459
3	3	EI	N	15.682
4	4	EI	N	16.026
5	1	EI	N0	6.561
6	2	EI	N0	7.803
7	3	EI	N0	8.900
8	4	EI	N0	9.626
9	1	FP	N	13.980
10	2	FP	N	15.228
11	3	FP	N	14.380
12	4	FP	N	10.908
13	1	FP	N0	7.068
14	2	FP	N0	6.066
15	3	FP	N0	6.728
16	4	FP	N0	5.393

Table 13.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	15.625	0.751	20.819	0.000
A FP	13.624	0.751	18.153	0.000
A EI-FP	2.001	1.061	1.885	0.278

Table 13.47: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 29 in year 2009 .

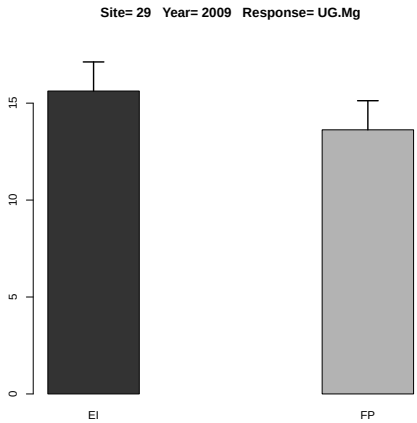

Figure 13.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.046	5.046	6.040	5.999	0.049
B	1.000	216.455	216.455	259.116	5.999	0.000
A:B	1.000	0.008	0.008	0.010	5.999	0.923

Table 13.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.924	0.562	6.000	21.200	10.547	13.300	0.000
2	FP		9.969	0.562	6.000	17.720	8.593	11.345	0.000
3		N	14.624	0.459	9.600	31.890	13.596	15.652	0.000
4		N0	7.268	0.459	9.600	15.850	6.240	8.296	0.000
5	EI	N	15.625	0.649	9.600	24.090	14.171	17.079	0.000
6	FP	N	13.624	0.649	9.600	21.000	12.170	15.078	0.000
7	EI	N0	8.223	0.649	9.600	12.680	6.768	9.677	0.000
8	FP	N0	6.314	0.649	9.600	9.730	4.860	7.768	0.000

Table 13.49: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.955	0.795	6.000	2.460	0.008	3.901	0.049
B N-N0	7.356	0.457	6.000	16.100	6.238	8.475	0.000
A:B EI N- FP N	2.001	0.917	9.600	2.180	-0.056	4.057	0.055
A:B EI N- EI N0	7.402	0.646	6.000	11.450	5.821	8.984	0.000
A:B EI N- FP N0	9.311	0.917	9.600	10.150	7.255	11.367	0.000
A:B FP N- EI N0	5.401	0.917	9.600	5.890	3.345	7.458	0.000
A:B FP N- FP N0	7.310	0.646	6.000	11.310	5.729	8.892	0.000
A:B EI N0- FP N0	1.909	0.917	9.600	2.080	-0.148	3.965	0.065

Table 13.50: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 29 in year 2009 .

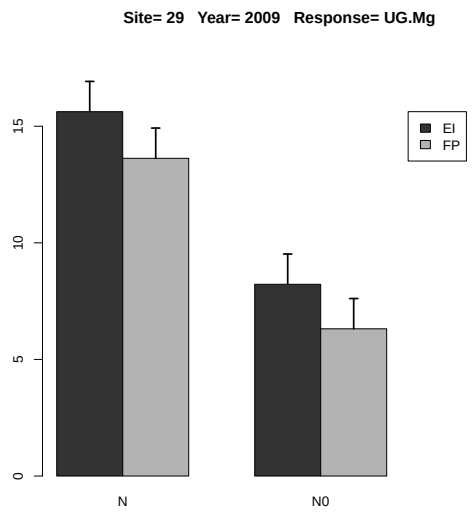

Figure 13.20: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.11 Response Variable US.N

	rep	A	B	y
1	1	EI	N	217.432
2	2	EI	N	243.451
3	3	EI	N	210.128
4	4	EI	N	169.965
5	1	EI	N0	89.505
6	2	EI	N0	104.760
7	3	EI	N0	128.395
8	4	EI	N0	84.910
9	1	FP	N	166.657
10	2	FP	N	195.974
11	3	FP	N	165.754
12	4	FP	N	127.933
13	1	FP	N0	120.060
14	2	FP	N0	93.366
15	3	FP	N0	118.361
16	4	FP	N0	125.504

Table 13.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	210.244	1.343	156.593	0.000
A FP	164.079	1.343	122.209	0.000
A EI-FP	46.164	1.899	24.313	0.000

Table 13.52: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 29 in year 2009 .

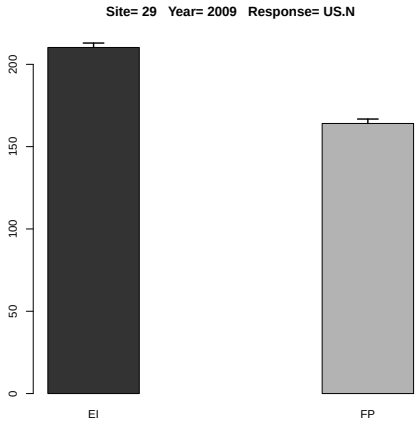

Figure 13.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1138.001	1138.001	2.342	9.000	0.160
B	1.000	24998.084	24998.084	51.447	9.000	0.000
A:B	1.000	3433.318	3433.318	7.066	9.000	0.026

Table 13.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		156.068	9.084	6.700	17.180	134.425	177.711	0.000
2	FP		139.201	9.084	6.700	15.320	117.558	160.844	0.000
3		N	187.162	9.084	6.700	20.600	165.519	208.804	0.000
4		N0	108.108	9.084	6.700	11.900	86.465	129.751	0.000
5	EI	N	210.244	11.969	11.200	17.570	183.964	236.523	0.000
6	FP	N	164.079	11.969	11.200	13.710	137.800	190.359	0.000
7	EI	N0	101.893	11.969	11.200	8.510	75.613	128.172	0.000
8	FP	N0	114.323	11.969	11.200	9.550	88.043	140.602	0.000

Table 13.54: Estimate of treatment means in tow-way ANOVA for variable US.N at site 29 in year 2009 .

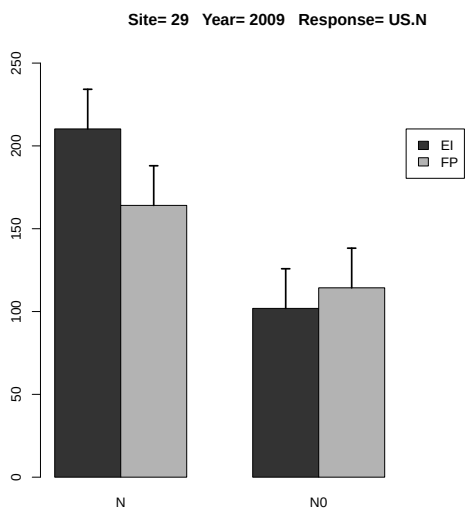

Figure 13.22: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	16.867	11.022	9.000	1.530	-8.065	41.800	0.160
B N-N0	79.054	11.022	9.000	7.170	54.121	103.987	0.000
A:B EI N- FP N	46.164	15.587	9.000	2.960	10.904	81.424	0.016
A:B EI N- EI N0	108.351	15.587	9.000	6.950	73.091	143.611	0.000
A:B EI N- FP N0	95.921	15.587	9.000	6.150	60.661	131.181	0.000
A:B FP N- EI N0	62.187	15.587	9.000	3.990	26.927	97.447	0.003
A:B FP N- FP N0	49.757	15.587	9.000	3.190	14.497	85.017	0.011
A:B EI N0- FP N0	-12.430	15.587	9.000	-0.800	-47.690	22.830	0.446

Table 13.55: Estimate of contrast in two-way ANOVA for variable US.N at site 29 in year 2009 .

13.1.12 Response Variable US.P

	rep	A	B	y
1	1	EI	N	8.333
2	2	EI	N	8.262
3	3	EI	N	9.753
4	4	EI	N	7.844
5	1	EI	N0	6.114
6	2	EI	N0	6.278
7	3	EI	N0	8.998
8	4	EI	N0	7.126
9	1	FP	N	6.118
10	2	FP	N	5.998
11	3	FP	N	7.886
12	4	FP	N	6.790
13	1	FP	N0	7.088
14	2	FP	N0	6.649
15	3	FP	N0	9.074
16	4	FP	N0	9.809

Table 13.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	8.548	0.198	43.239	0.000
A FP	6.698	0.198	33.883	0.000
A EI-FP	1.850	0.280	6.616	0.014

Table 13.57: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 29 in year 2009 .

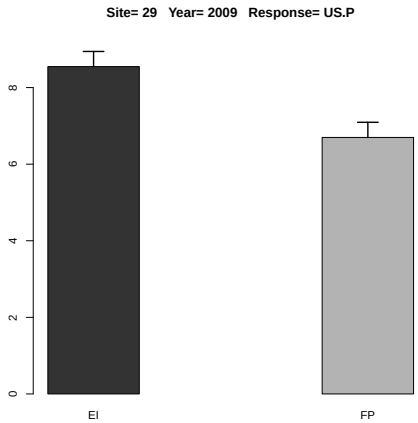

Figure 13.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.435	0.435	0.985	2.999	0.394
B	1.000	0.001	0.001	0.003	5.999	0.956
A:B	1.000	8.268	8.268	18.747	5.999	0.005

Table 13.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.838	0.538	4.000	14.560	6.346	9.331	0.000
2	FP		7.426	0.538	4.000	13.800	5.934	8.919	0.000
3		N	7.623	0.524	3.700	14.550	6.118	9.127	0.000
4		N0	7.642	0.524	3.700	14.590	6.138	9.147	0.000
5	EI	N	8.548	0.587	5.600	14.550	7.082	10.013	0.000
6	FP	N	6.698	0.587	5.600	11.400	5.232	8.164	0.000
7	EI	N0	7.129	0.587	5.600	12.140	5.664	8.595	0.000
8	FP	N0	8.155	0.587	5.600	13.890	6.689	9.620	0.000

Table 13.59: Estimate of treatment means in tow-way ANOVA for variable US.P at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.412	0.415	3.000	0.990	-0.909	1.733	0.394
B N-N0	-0.019	0.332	6.000	-0.060	-0.832	0.793	0.956
A:B EI N- FP N	1.850	0.531	6.700	3.480	0.581	3.118	0.011
A:B EI N- EI N0	1.419	0.470	6.000	3.020	0.269	2.568	0.023
A:B EI N- FP N0	0.393	0.531	6.700	0.740	-0.876	1.661	0.485
A:B FP N- EI N0	-0.431	0.531	6.700	-0.810	-1.700	0.837	0.445
A:B FP N- FP N0	-1.457	0.470	6.000	-3.100	-2.606	-0.308	0.021
A:B EI N0- FP N0	-1.026	0.531	6.700	-1.930	-2.294	0.243	0.097

Table 13.60: Estimate of contrast in two-way ANOVA for variable US.P at site 29 in year 2009 .

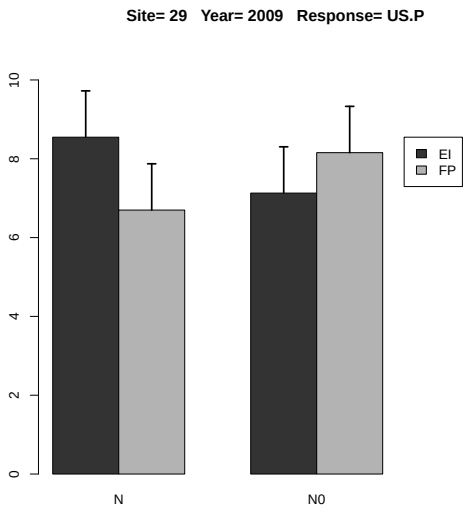

Figure 13.24: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.13 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N	9.415
2	2	EI	N	8.999
3	3	EI	N	10.659
4	4	EI	N	8.636
5	1	EI	N0	6.785
6	2	EI	N0	6.818
7	3	EI	N0	9.781
8	4	EI	N0	7.795
9	1	FP	N	6.672
10	2	FP	N	6.667
11	3	FP	N	8.462
12	4	FP	N	7.595
13	1	FP	N0	7.514
14	2	FP	N0	7.154
15	3	FP	N0	9.648
16	4	FP	N0	10.299

Table 13.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	9.427	0.258	36.555	0.000
A FP	7.349	0.258	28.497	0.000
A EI-FP	2.078	0.365	5.698	0.021

Table 13.62: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 29 in year 2009 .

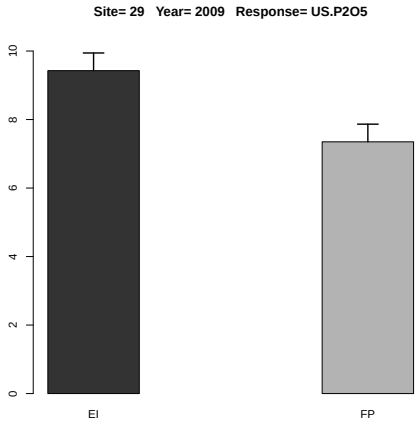

Figure 13.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.823	0.823	1.845	3.000	0.267
B	1.000	0.108	0.108	0.241	5.999	0.641
A:B	1.000	8.626	8.626	19.347	5.999	0.005

Table 13.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.611	0.560	4.100	15.380	7.073	10.149	0.000
2	FP		8.002	0.560	4.100	14.290	6.463	9.540	0.000
3		N	8.388	0.539	3.600	15.550	6.832	9.944	0.000
4		N0	8.224	0.539	3.600	15.250	6.668	9.780	0.000
5	EI	N	9.427	0.608	5.600	15.520	7.913	10.941	0.000
6	FP	N	7.349	0.608	5.600	12.100	5.835	8.863	0.000
7	EI	N0	7.795	0.608	5.600	12.830	6.280	9.309	0.000
8	FP	N0	8.654	0.608	5.600	14.240	7.139	10.168	0.000

Table 13.64: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 29 in year 2009 .

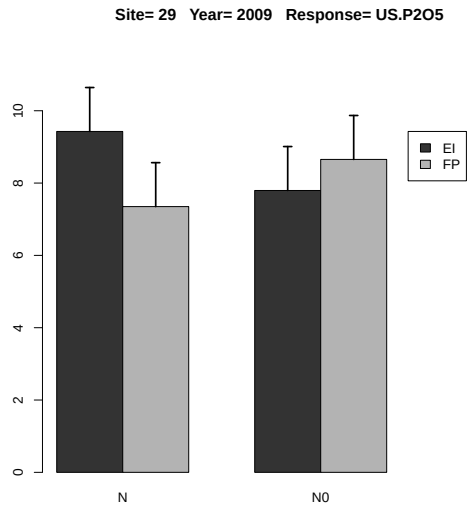

Figure 13.26: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.610	0.449	3.000	1.360	-0.819	2.038	0.268
B N-N0	0.164	0.334	6.000	0.490	-0.653	0.981	0.641
A:B EI N- FP N	2.078	0.559	6.300	3.720	0.724	3.432	0.009
A:B EI N- EI N0	1.633	0.472	6.000	3.460	0.477	2.788	0.013
A:B EI N- FP N0	0.773	0.559	6.300	1.380	-0.581	2.127	0.214
A:B FP N- EI N0	-0.446	0.559	6.300	-0.800	-1.799	0.908	0.455
A:B FP N- FP N0	-1.305	0.472	6.000	-2.760	-2.460	-0.149	0.033
A:B EI N0- FP N0	-0.859	0.559	6.300	-1.540	-2.213	0.495	0.173

Table 13.65: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 29 in year 2009 .

13.1.14 Response Variable US.K

	rep	A	B	y
1	1	EI	N	190.070
2	2	EI	N	202.808
3	3	EI	N	205.880
4	4	EI	N	144.190
5	1	EI	N0	92.361
6	2	EI	N0	109.311
7	3	EI	N0	171.780
8	4	EI	N0	92.869
9	1	FP	N	113.937
10	2	FP	N	134.060
11	3	FP	N	111.917
12	4	FP	N	101.961
13	1	FP	N0	79.521
14	2	FP	N0	70.452
15	3	FP	N0	95.114
16	4	FP	N0	108.766

Table 13.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	185.737	7.595	24.455	0.000
A FP	115.469	7.595	15.203	0.001
A EI-FP	70.268	10.741	6.542	0.014

Table 13.67: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 29 in year 2009 .

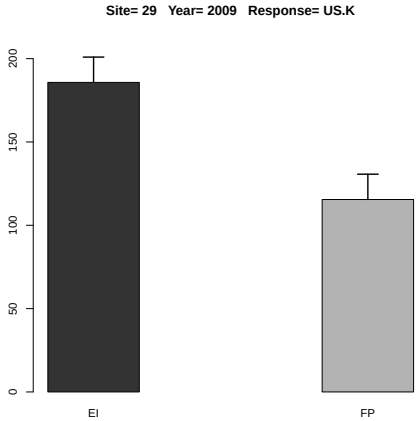

Figure 13.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5118.116	5118.116	10.974	3.000	0.045
B	1.000	9247.193	9247.193	19.827	6.000	0.004
A:B	1.000	1776.709	1776.709	3.810	6.000	0.099

Table 13.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		151.159	10.504	6.000	14.390	125.454	176.863	0.000
2	FP		101.966	10.504	6.000	9.710	76.262	127.670	0.000
3		N	150.603	9.185	6.100	16.400	128.241	172.964	0.000
4		N0	102.522	9.185	6.100	11.160	80.160	124.883	0.000
5	EI	N	185.737	12.986	11.000	14.300	157.141	214.333	0.000
6	FP	N	115.469	12.986	11.000	8.890	86.873	144.065	0.000
7	EI	N0	116.580	12.986	11.000	8.980	87.984	145.177	0.000
8	FP	N0	88.463	12.986	11.000	6.810	59.867	117.059	0.000

Table 13.69: Estimate of treatment means in tow-way ANOVA for variable US.K at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	49.193	14.850	3.000	3.310	1.932	96.453	0.045
B N-N0	48.081	10.798	6.000	4.450	21.659	74.503	0.004
A:B EI N- FP N	70.268	18.361	6.200	3.830	25.608	114.929	0.008
A:B EI N- EI N0	69.157	15.271	6.000	4.530	31.791	106.523	0.004
A:B EI N- FP N0	97.274	18.361	6.200	5.300	52.613	141.934	0.002
A:B FP N- EI N0	-1.111	18.361	6.200	-0.060	-45.772	43.549	0.954
A:B FP N- FP N0	27.006	15.271	6.000	1.770	-10.361	64.372	0.127
A:B EI N0- FP N0	28.117	18.361	6.200	1.530	-16.544	72.778	0.175

Table 13.70: Estimate of contrast in two-way ANOVA for variable US.K at site 29 in year 2009 .

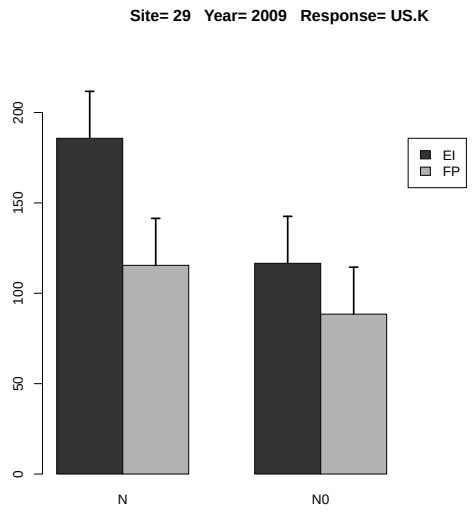

Figure 13.28: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.15 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N	192.354
2	2	EI	N	205.200
3	3	EI	N	208.569
4	4	EI	N	146.329
5	1	EI	N0	93.991
6	2	EI	N0	110.697
7	3	EI	N0	173.593
8	4	EI	N0	94.587
9	1	FP	N	115.469
10	2	FP	N	136.080
11	3	FP	N	113.511
12	4	FP	N	104.029
13	1	FP	N0	80.447
14	2	FP	N0	71.425
15	3	FP	N0	96.106
16	4	FP	N0	109.652

Table 13.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	188.113	7.747	24.280	0.000
A FP	117.272	7.747	15.137	0.001
A EI-FP	70.841	10.957	6.466	0.015

Table 13.72: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 29 in year 2009 .

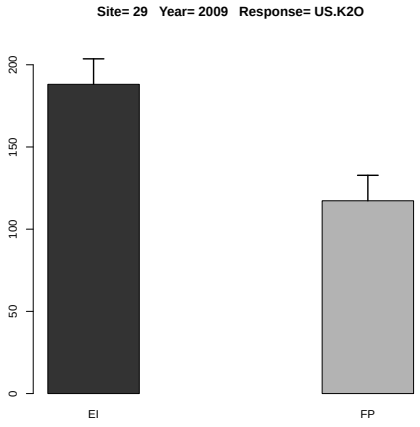

Figure 13.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5200.159	5200.159	11.142	5.999	0.016
B	1.000	9557.219	9557.219	20.478	6.000	0.004
A:B	1.000	1766.594	1766.594	3.785	6.000	0.100

Table 13.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		153.165	10.555	6.000	14.510	127.338	178.992	0.000
2	FP		103.340	10.555	6.000	9.790	77.513	129.167	0.000
3		N	152.693	9.213	10.900	16.570	132.400	172.985	0.000
4		N0	103.812	9.213	10.900	11.270	83.520	124.104	0.000
5	EI	N	188.113	13.028	10.900	14.440	159.416	216.810	0.000
6	FP	N	117.272	13.028	10.900	9.000	88.575	145.970	0.000
7	EI	N0	118.217	13.028	10.900	9.070	89.519	146.914	0.000
8	FP	N0	89.407	13.028	10.900	6.860	60.710	118.105	0.000

Table 13.74: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 29 in year 2009 .

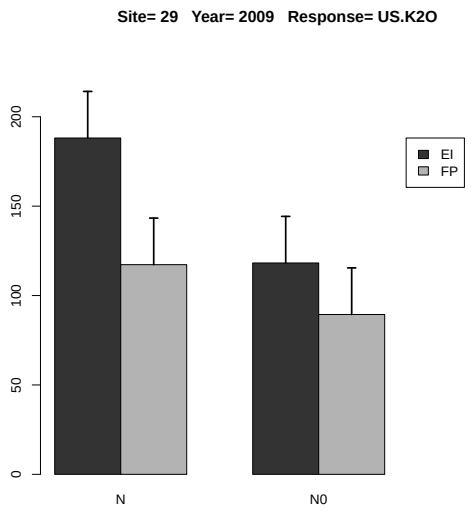

Figure 13.30: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	49.825	14.927	6.000	3.340	13.300	86.350	0.016
B N-N0	48.880	10.802	6.000	4.530	22.450	75.311	0.004
A:B EI N- FP N	70.841	18.425	10.900	3.840	30.256	111.425	0.003
A:B EI N- EI N0	69.896	15.276	6.000	4.580	32.518	107.274	0.004
A:B EI N- FP N0	98.706	18.425	10.900	5.360	58.121	139.290	0.000
A:B FP N- EI N0	-0.945	18.425	10.900	-0.050	-41.529	39.640	0.960
A:B FP N- FP N0	27.865	15.276	6.000	1.820	-9.513	65.243	0.118
A:B EI N0- FP N0	28.810	18.425	10.900	1.560	-11.775	69.394	0.146

Table 13.75: Estimate of contrast in two-way ANOVA for variable US.K2O at site 29 in year 2009 .

13.1.16 Response Variable US.Mg

	rep	A	B	y
1	1	EI	N	21.906
2	2	EI	N	20.002
3	3	EI	N	18.334
4	4	EI	N	13.321
5	1	EI	N0	10.827
6	2	EI	N0	10.687
7	3	EI	N0	14.859
8	4	EI	N0	8.197
9	1	FP	N	14.074
10	2	FP	N	16.750
11	3	FP	N	14.229
12	4	FP	N	9.561
13	1	FP	N0	10.301
14	2	FP	N0	7.448
15	3	FP	N0	11.396
16	4	FP	N0	11.022

Table 13.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	18.391	0.740	24.853	0.000
A FP	13.654	0.740	18.451	0.000
A EI-FP	4.737	1.046	4.527	0.039

Table 13.77: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 29 in year 2009 .

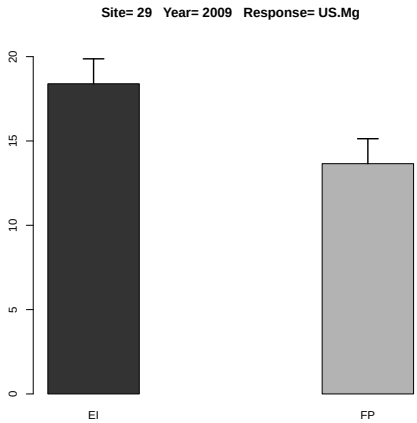

Figure 13.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	34.082	34.082	5.412	9.000	0.045
B	1.000	117.944	117.944	18.730	9.000	0.002
A:B	1.000	13.222	13.222	2.100	9.000	0.181

Table 13.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14.767	1.137	5.800	12.980	11.963	17.570	0.000
2	FP		11.848	1.137	5.800	10.420	9.044	14.652	0.000
3		N	16.022	1.137	5.800	14.090	13.218	18.826	0.000
4		N0	10.592	1.137	5.800	9.310	7.788	13.396	0.000
5	EI	N	18.391	1.443	10.200	12.750	15.184	21.597	0.000
6	FP	N	13.654	1.443	10.200	9.460	10.447	16.860	0.000
7	EI	N0	11.143	1.443	10.200	7.720	7.936	14.349	0.000
8	FP	N0	10.042	1.443	10.200	6.960	6.835	13.248	0.000

Table 13.79: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.919	1.255	9.000	2.330	0.081	5.757	0.045
B N-N0	5.430	1.255	9.000	4.330	2.592	8.268	0.002
A:B EI N- FP N	4.737	1.774	9.000	2.670	0.723	8.751	0.026
A:B EI N- EI N0	7.248	1.774	9.000	4.080	3.234	11.262	0.003
A:B EI N- FP N0	8.349	1.774	9.000	4.710	4.335	12.363	0.001
A:B FP N- EI N0	2.511	1.774	9.000	1.420	-1.503	6.525	0.191
A:B FP N- FP N0	3.612	1.774	9.000	2.040	-0.402	7.626	0.072
A:B EI N0- FP N0	1.101	1.774	9.000	0.620	-2.913	5.115	0.550

Table 13.80: Estimate of contrast in two-way ANOVA for variable US.Mg at site 29 in year 2009 .

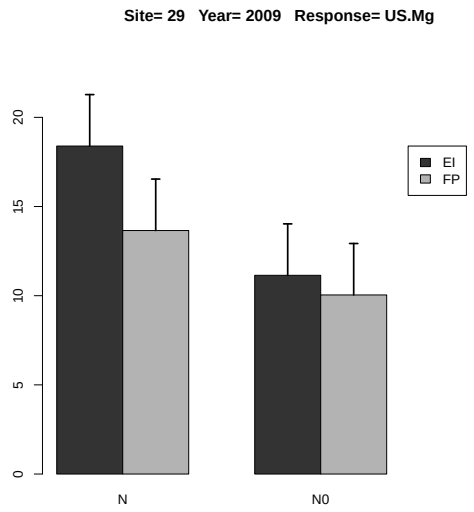

Figure 13.32: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.17 Response Variable UT.N

	rep	A	B	y
1	1	EI	N	391.566
2	2	EI	N	413.764
3	3	EI	N	364.983
4	4	EI	N	314.819
5	1	EI	N0	172.976
6	2	EI	N0	202.297
7	3	EI	N0	236.596
8	4	EI	N0	206.845
9	1	FP	N	323.097
10	2	FP	N	352.229
11	3	FP	N	317.053
12	4	FP	N	267.010
13	1	FP	N0	208.057
14	2	FP	N0	164.945
15	3	FP	N0	198.033
16	4	FP	N0	196.509

Table 13.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	371.283	3.637	102.071	0.000
A FP	314.847	3.637	86.556	0.000
A EI-FP	56.436	5.144	10.971	0.003

Table 13.82: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 29 in year 2009 .

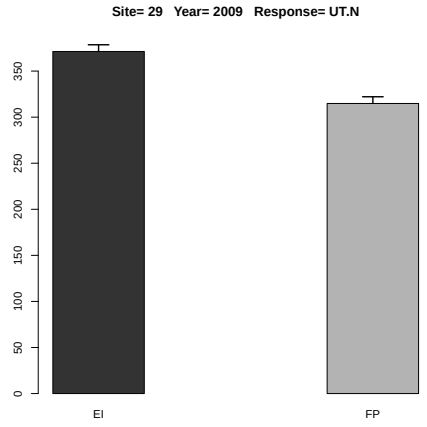

Figure 13.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4792.540	4792.540	4.826	9.000	0.056
B	1.000	83848.222	83848.222	84.441	9.000	0.000
A:B	1.000	1904.762	1904.762	1.918	9.000	0.199

Table 13.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		287.981	11.479	8.500	25.090	261.765	314.196	0.000
2	FP		253.367	11.479	8.500	22.070	227.151	279.582	0.000
3		N	343.065	11.479	8.500	29.880	316.850	369.280	0.000
4		N0	198.282	11.479	8.500	17.270	172.067	224.498	0.000
5	EI	N	371.283	15.997	12.000	23.210	336.418	406.148	0.000
6	FP	N	314.847	15.997	12.000	19.680	279.982	349.712	0.000
7	EI	N0	204.678	15.997	12.000	12.790	169.813	239.543	0.000
8	FP	N0	191.886	15.997	12.000	12.000	157.021	226.751	0.000

Table 13.84: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 29 in year 2009 .

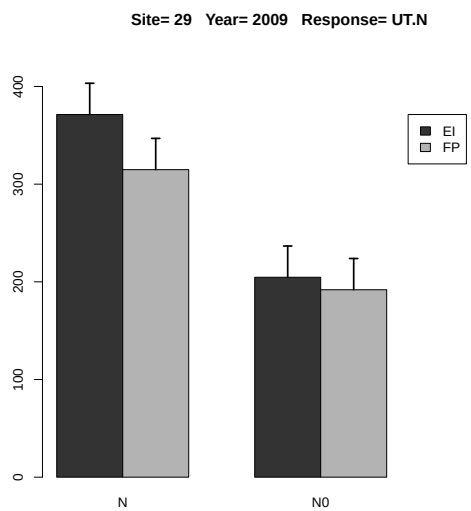

Figure 13.34: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	34.614	15.756	9.000	2.200	-1.028	70.256	0.056
B N-N0	144.783	15.756	9.000	9.190	109.141	180.425	0.000
A:B EI N- FP N	56.436	22.282	9.000	2.530	6.030	106.841	0.032
A:B EI N- EI N0	166.605	22.282	9.000	7.480	116.199	217.010	0.000
A:B EI N- FP N0	179.397	22.282	9.000	8.050	128.991	229.803	0.000
A:B FP N- EI N0	110.169	22.282	9.000	4.940	59.763	160.574	0.001
A:B FP N- FP N0	122.961	22.282	9.000	5.520	72.555	173.367	0.000
A:B EI N0- FP N0	12.792	22.282	9.000	0.570	-37.613	63.198	0.580

Table 13.85: Estimate of contrast in two-way ANOVA for variable UT.N at site 29 in year 2009 .

13.1.18 Response Variable UT.P

	rep	A	B	y
1	1	EI	N	45.596
2	2	EI	N	44.041
3	3	EI	N	46.343
4	4	EI	N	45.444
5	1	EI	N0	22.152
6	2	EI	N0	24.919
7	3	EI	N0	29.140
8	4	EI	N0	30.658
9	1	FP	N	38.738
10	2	FP	N	39.103
11	3	FP	N	40.396
12	4	FP	N	33.515
13	1	FP	N0	22.284
14	2	FP	N0	20.298
15	3	FP	N0	25.009
16	4	FP	N0	23.291

Table 13.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	45.356	1.099	41.275	0.000
A FP	37.938	1.099	34.524	0.000
A EI-FP	7.418	1.554	4.774	0.034

Table 13.87: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 29 in year 2009 .

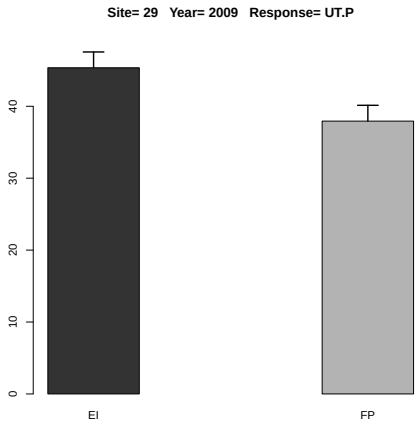

Figure 13.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	126.686	126.686	17.710	30.141	0.000
B	1.000	1146.291	1146.291	160.242	-0.000	
A:B	1.000	11.708	11.708	1.637	-0.000	

Table 13.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		36.037	0.962	48.500	37.460	34.103	37.970	0.000
2	FP		30.329	0.962	48.500	31.530	28.395	32.263	0.000
3		N	41.647	0.955	12.600	43.590	39.576	43.718	0.000
4		N0	24.719	0.955	12.600	25.870	22.648	26.790	0.000
5	EI	N	45.356	1.349	12.000	33.620	42.418	48.294	0.000
6	FP	N	37.938	1.349	12.000	28.120	35.000	40.876	0.000
7	EI	N0	26.717	1.349	12.000	19.810	23.779	29.655	0.000
8	FP	N0	22.720	1.349	12.000	16.840	19.782	25.658	0.000

Table 13.89: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.707	1.356	30.100	4.210	2.938	8.477	0.000
B N-N0	16.928	1.337	-370.800	12.660			
A:B EI N- FP N	7.418	1.905	13.100	3.890	3.307	11.530	0.002
A:B EI N- EI N0	18.639	1.891	-370.800	9.860			
A:B EI N- FP N0	22.636	1.905	13.100	11.880	18.525	26.747	0.000
A:B FP N- EI N0	11.221	1.905	13.100	5.890	7.110	15.332	0.000
A:B FP N- FP N0	15.218	1.891	-370.800	8.050			
A:B EI N0- FP N0	3.997	1.905	13.100	2.100	-0.114	8.108	0.056

Table 13.90: Estimate of contrast in two-way ANOVA for variable UT.P at site 29 in year 2009 .

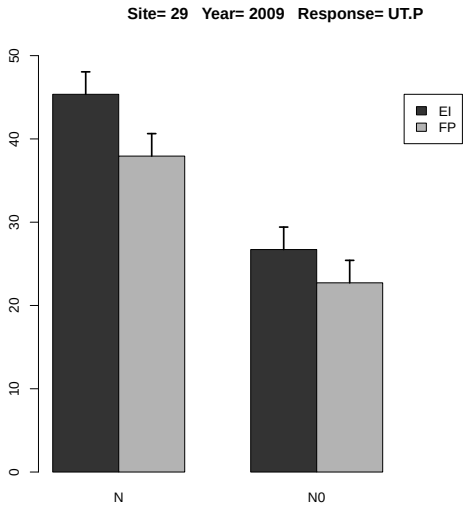

Figure 13.36: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.19 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N	46.678
2	2	EI	N	44.779
3	3	EI	N	47.249
4	4	EI	N	46.236
5	1	EI	N0	22.823
6	2	EI	N0	25.458
7	3	EI	N0	29.923
8	4	EI	N0	31.326
9	1	FP	N	39.292
10	2	FP	N	39.772
11	3	FP	N	40.973
12	4	FP	N	34.320
13	1	FP	N0	22.710
14	2	FP	N0	20.802
15	3	FP	N0	25.582
16	4	FP	N0	23.781

Table 13.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	46.236	1.063	43.477	0.000
A FP	38.589	1.063	36.287	0.000
A EI-FP	7.647	1.504	5.084	0.029

Table 13.92: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 29 in year 2009 .

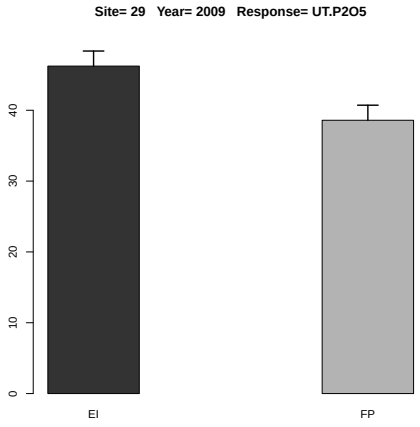

Figure 13.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	135.659	135.659	20.124	2.998	0.021
B	1.000	1171.229	1171.229	173.744	6.000	0.000
A:B	1.000	12.134	12.134	1.800	6.000	0.228

Table 13.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		36.809	0.992	5.900	37.120	34.374	39.244	0.000
2	FP		30.904	0.992	5.900	31.160	28.469	33.339	0.000
3		N	42.412	0.986	7.200	43.030	40.097	44.728	0.000
4		N0	25.301	0.986	7.200	25.670	22.985	27.616	0.000
5	EI	N	46.236	1.351	11.800	34.220	43.287	49.185	0.000
6	FP	N	38.589	1.351	11.800	28.560	35.640	41.538	0.000
7	EI	N0	27.382	1.351	11.800	20.260	24.433	30.331	0.000
8	FP	N0	23.219	1.351	11.800	17.180	20.270	26.168	0.000

Table 13.94: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 29 in year 2009 .

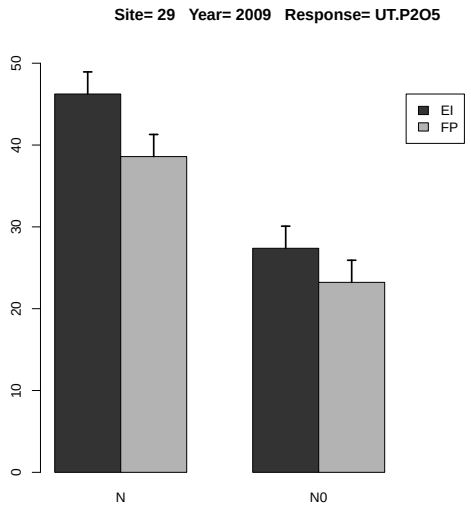

Figure 13.38: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.905	1.316	3.000	4.490	1.714	10.096	0.021
B N-N0	17.112	1.298	6.000	13.180	13.935	20.288	0.000
A:B EI N- FP N	7.647	1.849	7.900	4.140	3.376	11.917	0.003
A:B EI N- EI N0	18.853	1.836	6.000	10.270	14.361	23.346	0.000
A:B EI N- FP N0	23.017	1.849	7.900	12.450	18.746	27.287	0.000
A:B FP N- EI N0	11.207	1.849	7.900	6.060	6.936	15.477	0.000
A:B FP N- FP N0	15.370	1.836	6.000	8.370	10.878	19.862	0.000
A:B EI N0- FP N0	4.163	1.849	7.900	2.250	-0.107	8.434	0.055

Table 13.95: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 29 in year 2009 .

13.1.20 Response Variable UT.K

	rep	A	B	y
1	1	EI	N	235.216
2	2	EI	N	244.313
3	3	EI	N	250.311
4	4	EI	N	189.187
5	1	EI	N0	115.325
6	2	EI	N0	134.454
7	3	EI	N0	196.605
8	4	EI	N0	126.561
9	1	FP	N	155.876
10	2	FP	N	172.462
11	3	FP	N	151.304
12	4	FP	N	133.595
13	1	FP	N0	101.785
14	2	FP	N0	88.044
15	3	FP	N0	116.006
16	4	FP	N0	126.142

Table 13.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	229.757	6.368	36.077	0.000
A FP	153.309	6.368	24.073	0.000
A EI-FP	76.447	9.006	8.488	0.007

Table 13.97: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 29 in year 2009 .

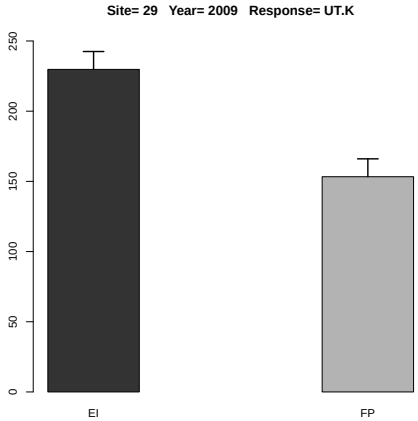

Figure 13.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9915.314	9915.314	18.458	2.999	0.023
B	1.000	17380.573	17380.573	32.356	6.000	0.001
A:B	1.000	1697.885	1697.885	3.161	6.000	0.126

Table 13.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		186.496	9.859	5.900	18.920	162.269	210.724	0.000
2	FP		130.652	9.859	5.900	13.250	106.425	154.879	0.000
3		N	191.533	9.409	6.600	20.360	168.976	214.090	0.000
4		N0	125.615	9.409	6.600	13.350	103.058	148.172	0.000
5	EI	N	229.757	12.820	11.500	17.920	201.683	257.831	0.000
6	FP	N	153.309	12.820	11.500	11.960	125.235	181.383	0.000
7	EI	N0	143.236	12.820	11.500	11.170	115.162	171.310	0.000
8	FP	N0	107.994	12.820	11.500	8.420	79.920	136.068	0.000

Table 13.99: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	55.845	12.998	3.000	4.300	14.472	97.218	0.023
B N-N0	65.918	11.588	6.000	5.690	37.562	94.274	0.001
A:B EI N- FP N	76.447	17.414	7.300	4.390	35.657	117.238	0.003
A:B EI N- EI N0	86.520	16.389	6.000	5.280	46.419	126.622	0.002
A:B EI N- FP N0	121.762	17.414	7.300	6.990	80.972	162.553	0.000
A:B FP N- EI N0	10.073	17.414	7.300	0.580	-30.717	50.863	0.580
A:B FP N- FP N0	45.315	16.389	6.000	2.770	5.214	85.416	0.033
A:B EI N0- FP N0	35.242	17.414	7.300	2.020	-5.548	76.032	0.081

Table 13.100: Estimate of contrast in two-way ANOVA for variable UT.K at site 29 in year 2009 .

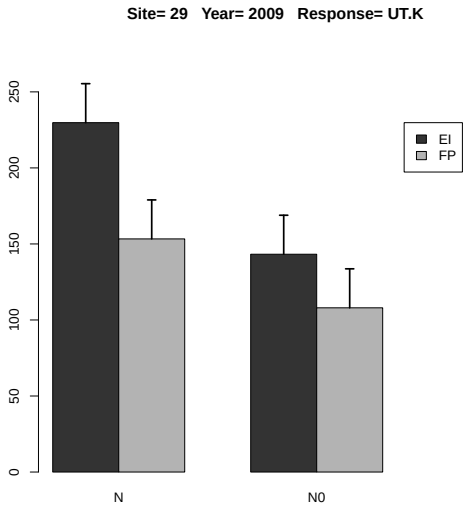

Figure 13.40: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.21 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N	237.500
2	2	EI	N	246.705
3	3	EI	N	253.000
4	4	EI	N	191.326
5	1	EI	N0	116.954
6	2	EI	N0	135.840
7	3	EI	N0	198.418
8	4	EI	N0	128.279
9	1	FP	N	157.408
10	2	FP	N	174.482
11	3	FP	N	152.899
12	4	FP	N	135.663
13	1	FP	N0	102.711
14	2	FP	N0	89.016
15	3	FP	N0	116.998
16	4	FP	N0	127.029

Table 13.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	232.133	6.523	35.585	0.000
A FP	155.113	6.523	23.778	0.000
A EI-FP	77.020	9.225	8.349	0.007

Table 13.102: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 29 in year 2009 .

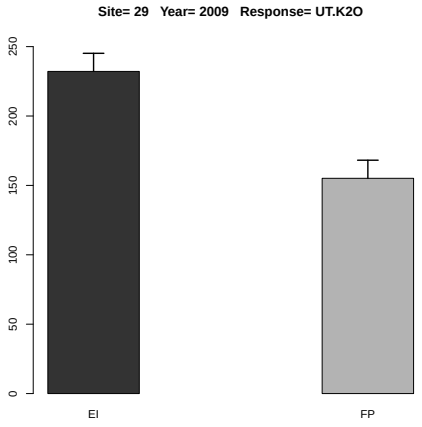

Figure 13.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	10005.123	10005.123	18.613	2.999	0.023
B	1.000	17804.660	17804.660	33.122	6.000	0.001
A:B	1.000	1687.997	1687.997	3.140	6.000	0.127

Table 13.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		188.503	9.907	5.900	19.030	164.163	212.842	0.000
2	FP		132.026	9.907	5.900	13.330	107.686	156.365	0.000
3		N	193.623	9.429	6.500	20.530	171.006	216.239	0.000
4		N0	126.906	9.429	6.500	13.460	104.289	149.522	0.000
5	EI	N	232.133	12.859	11.500	18.050	203.970	260.295	0.000
6	FP	N	155.113	12.859	11.500	12.060	126.951	183.275	0.000
7	EI	N0	144.873	12.859	11.500	11.270	116.711	173.035	0.000
8	FP	N0	108.938	12.859	11.500	8.470	80.776	137.101	0.000

Table 13.104: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 29 in year 2009 .

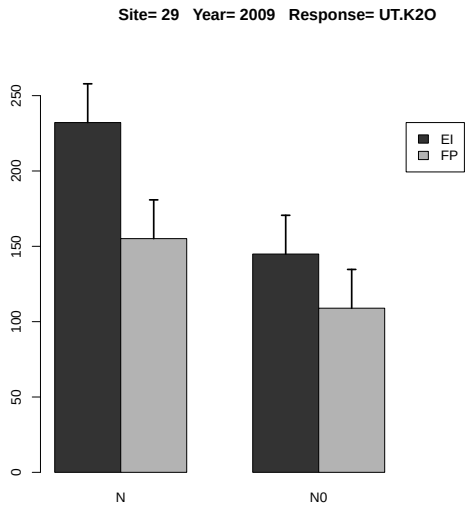

Figure 13.42: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	56.477	13.091	3.000	4.310	14.810	98.145	0.023
B N-N0	66.717	11.592	6.000	5.760	38.351	95.083	0.001
A:B EI N- FP N	77.020	17.486	7.300	4.400	36.017	118.022	0.003
A:B EI N- EI N0	87.260	16.394	6.000	5.320	47.144	127.376	0.002
A:B EI N- FP N0	123.194	17.486	7.300	7.050	82.192	164.197	0.000
A:B FP N- EI N0	10.240	17.486	7.300	0.590	-30.762	51.242	0.576
A:B FP N- FP N0	46.174	16.394	6.000	2.820	6.059	86.290	0.030
A:B EI N0- FP N0	35.935	17.486	7.300	2.060	-5.068	76.937	0.077

Table 13.105: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 29 in year 2009 .

13.1.22 Response Variable UT.Mg

	rep	A	B	y
1	1	EI	N	36.238
2	2	EI	N	36.461
3	3	EI	N	34.016
4	4	EI	N	29.347
5	1	EI	N0	17.388
6	2	EI	N0	18.490
7	3	EI	N0	23.758
8	4	EI	N0	17.823
9	1	FP	N	28.053
10	2	FP	N	31.979
11	3	FP	N	28.609
12	4	FP	N	20.469
13	1	FP	N0	17.369
14	2	FP	N0	13.514
15	3	FP	N0	18.124
16	4	FP	N0	16.415

Table 13.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	34.015	0.751	45.294	0.000
A FP	27.277	0.751	36.322	0.000
A EI-FP	6.738	1.062	6.344	0.015

Table 13.107: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 29 in year 2009 .

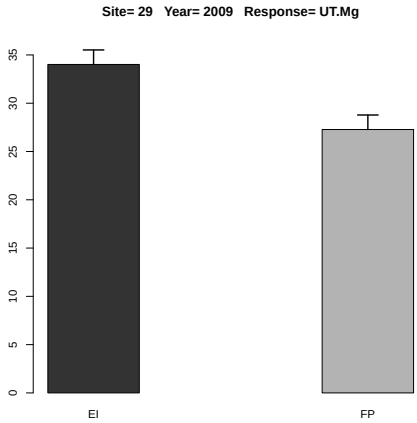

Figure 13.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	95.016	95.016	10.412	9.000	0.010
B	1.000	653.959	653.959	71.665	9.000	0.000
A:B	1.000	13.899	13.899	1.523	9.000	0.248

Table 13.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		26.690	1.349	5.900	19.780	23.382	29.998	0.000
2	FP		21.816	1.349	5.900	16.170	18.508	25.125	0.000
3		N	30.646	1.349	5.900	22.710	27.338	33.955	0.000
4		N0	17.860	1.349	5.900	13.240	14.552	21.168	0.000
5	EI	N	34.015	1.721	10.400	19.770	30.199	37.831	0.000
6	FP	N	27.277	1.721	10.400	15.850	23.462	31.093	0.000
7	EI	N0	19.365	1.721	10.400	11.250	15.549	23.181	0.000
8	FP	N0	16.355	1.721	10.400	9.500	12.539	20.171	0.000

Table 13.109: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.874	1.510	9.000	3.230	1.457	8.291	0.010
B N-N0	12.786	1.510	9.000	8.470	9.370	16.203	0.000
A:B EI N- FP N	6.738	2.136	9.000	3.150	1.906	11.570	0.012
A:B EI N- EI N0	14.650	2.136	9.000	6.860	9.818	19.482	0.000
A:B EI N- FP N0	17.660	2.136	9.000	8.270	12.828	22.492	0.000
A:B FP N- EI N0	7.912	2.136	9.000	3.700	3.080	12.745	0.005
A:B FP N- FP N0	10.922	2.136	9.000	5.110	6.090	15.754	0.001
A:B EI N0- FP N0	3.010	2.136	9.000	1.410	-1.822	7.842	0.192

Table 13.110: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 29 in year 2009 .

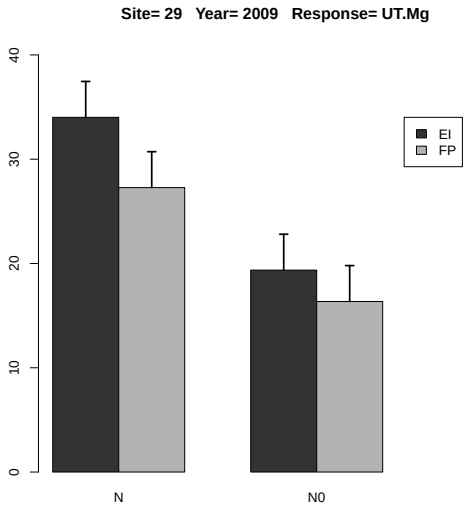

Figure 13.44: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.23 Response Variable HI.N

	rep	A	B	y
1	1	EI	N	0.801
2	2	EI	N	0.700
3	3	EI	N	0.737
4	4	EI	N	0.852
5	1	EI	N0	0.933
6	2	EI	N0	0.931
7	3	EI	N0	0.843
8	4	EI	N0	1.436
9	1	FP	N	0.939
10	2	FP	N	0.797
11	3	FP	N	0.913
12	4	FP	N	1.087
13	1	FP	N0	0.733
14	2	FP	N0	0.767
15	3	FP	N0	0.673
16	4	FP	N0	0.566

Table 13.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.772	0.048	3.600	15.940	0.632	0.913	0.000
A FP	0.934	0.048	3.600	19.280	0.793	1.075	0.000
A EI-FP	-0.162	0.029	3.000	-5.540	-0.254	-0.069	0.012

Table 13.112: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 29 in year 2009 .

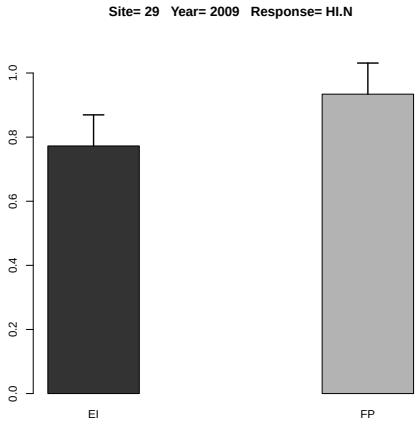

Figure 13.45: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.036	0.036	1.599	8.994	0.238
B	1.000	0.000	0.000	0.009	8.994	0.929
A:B	1.000	0.263	0.263	11.706	8.994	0.008

Table 13.113: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.904	0.058	7.400	15.460	0.767	1.041	0.000
2	FP		0.809	0.058	7.400	13.840	0.673	0.946	0.000
3		N	0.853	0.058	7.400	14.590	0.717	0.990	0.000
4		N0	0.860	0.058	7.400	14.710	0.723	0.997	0.000
5	EI	N	0.772	0.079	11.700	9.790	0.600	0.945	0.000
6	FP	N	0.934	0.079	11.700	11.840	0.761	1.106	0.000
7	EI	N0	1.036	0.079	11.700	13.130	0.863	1.208	0.000
8	FP	N0	0.685	0.079	11.700	8.680	0.512	0.857	0.000

Table 13.114: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 29 in year 2009 .

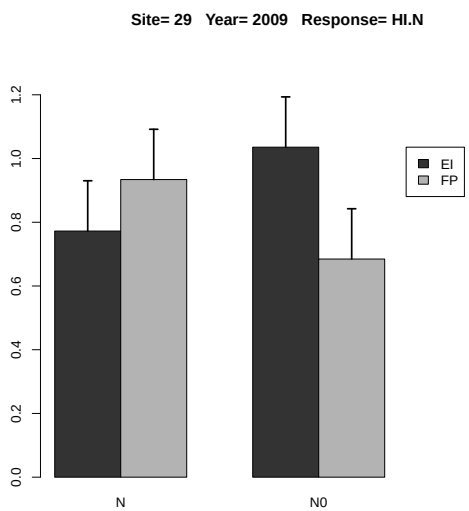

Figure 13.46: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.095	0.075	9.000	1.260	-0.075	0.264	0.238
B N-N0	-0.007	0.075	9.000	-0.090	-0.176	0.163	0.928
A:B EI N- FP N	-0.162	0.106	9.000	-1.530	-0.401	0.078	0.162
A:B EI N- EI N0	-0.263	0.106	9.000	-2.480	-0.503	-0.024	0.035
A:B EI N- FP N0	0.088	0.106	9.000	0.830	-0.152	0.327	0.429
A:B FP N- EI N0	-0.102	0.106	9.000	-0.960	-0.341	0.138	0.362
A:B FP N- FP N0	0.249	0.106	9.000	2.350	0.010	0.489	0.043
A:B EI N0- FP N0	0.351	0.106	9.000	3.310	0.111	0.591	0.009

Table 13.115: Estimate of contrast in two-way ANOVA for variable HI.N at site 29 in year 2009 .

13.1.24 Response Variable HI.P

	rep	A	B	y
1	1	EI	N	4.472
2	2	EI	N	4.331
3	3	EI	N	3.752
4	4	EI	N	4.794
5	1	EI	N0	2.623
6	2	EI	N0	2.969
7	3	EI	N0	2.238
8	4	EI	N0	3.302
9	1	FP	N	5.331
10	2	FP	N	5.519
11	3	FP	N	4.123
12	4	FP	N	3.936
13	1	FP	N0	2.144
14	2	FP	N0	2.053
15	3	FP	N0	1.756
16	4	FP	N0	1.374

Table 13.116: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	4.337	0.326	6.000	13.300	3.538	5.136	0.000
A FP	4.727	0.326	6.000	14.500	3.929	5.526	0.000
A EI-FP	-0.390	0.449	3.000	-0.870	-1.818	1.038	0.448

Table 13.117: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 29 in year 2009 .

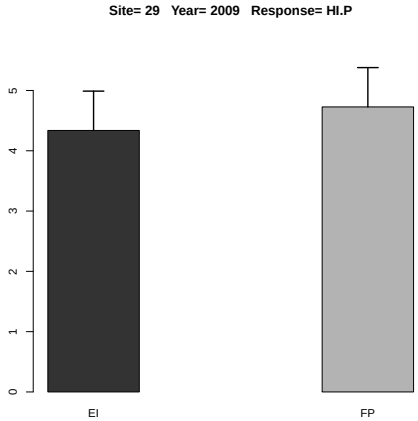

Figure 13.47: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.048	0.048	0.615	6.000	0.463
B	1.000	19.797	19.797	255.067	5.998	0.000
A:B	1.000	1.800	1.800	23.190	5.998	0.003

Table 13.118: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.560	0.253	6.000	14.070	2.941	4.179	0.000
2	FP		3.280	0.253	6.000	12.960	2.660	3.899	0.000
3		N	4.532	0.192	7.800	23.600	4.087	4.977	0.000
4		N0	2.308	0.192	7.800	12.020	1.862	2.752	0.000
5	EI	N	4.337	0.272	7.800	15.970	3.708	4.966	0.000
6	FP	N	4.727	0.272	7.800	17.410	4.098	5.357	0.000
7	EI	N0	2.783	0.272	7.800	10.250	2.154	3.413	0.000
8	FP	N0	1.832	0.272	7.800	6.750	1.202	2.461	0.000

Table 13.119: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.281	0.358	6.000	0.780	-0.595	1.156	0.463
B N-N0	2.225	0.139	6.000	15.970	1.884	2.566	0.000
A:B EI N- FP N	-0.390	0.384	7.800	-1.020	-1.280	0.500	0.340
A:B EI N- EI N0	1.554	0.197	6.000	7.890	1.072	2.036	0.000
A:B EI N- FP N0	2.505	0.384	7.800	6.520	1.615	3.395	0.000
A:B FP N- EI N0	1.944	0.384	7.800	5.060	1.054	2.834	0.001
A:B FP N- FP N0	2.896	0.197	6.000	14.700	2.413	3.377	0.000
A:B EI N0- FP N0	0.951	0.384	7.800	2.480	0.061	1.841	0.039

Table 13.120: Estimate of contrast in two-way ANOVA for variable HI.P at site 29 in year 2009 .

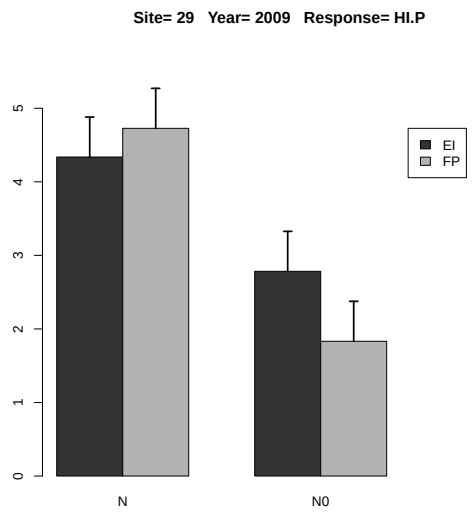

Figure 13.48: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.25 Response Variable HI.K

	rep	A	B	y
1	1	EI	N	0.238
2	2	EI	N	0.205
3	3	EI	N	0.216
4	4	EI	N	0.312
5	1	EI	N0	0.249
6	2	EI	N0	0.230
7	3	EI	N0	0.145
8	4	EI	N0	0.363
9	1	FP	N	0.368
10	2	FP	N	0.286
11	3	FP	N	0.352
12	4	FP	N	0.310
13	1	FP	N0	0.280
14	2	FP	N0	0.250
15	3	FP	N0	0.220
16	4	FP	N0	0.160

Table 13.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.242	0.022	6.000	11.210	0.190	0.295	0.000
A FP	0.329	0.022	6.000	15.220	0.276	0.382	0.000
A EI-FP	-0.087	0.031	6.000	-2.830	-0.162	-0.012	0.030

Table 13.122: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 29 in year 2009 .

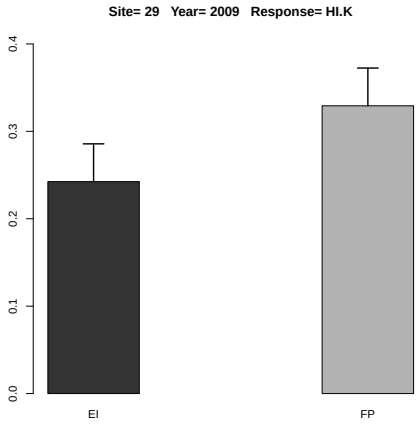

Figure 13.49: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	0.774	6.000	0.413
B	1.000	0.010	0.010	7.159	5.984	0.037
A:B	1.000	0.011	0.011	8.369	5.984	0.028

Table 13.123: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.244	0.027	6.000	9.020	0.178	0.311	0.000
2	FP		0.278	0.027	6.000	10.260	0.212	0.345	0.000
3		N	0.286	0.021	8.600	13.460	0.237	0.334	0.000
4		N0	0.237	0.021	8.600	11.150	0.188	0.285	0.000
5	EI	N	0.242	0.030	8.600	8.070	0.174	0.311	0.000
6	FP	N	0.329	0.030	8.600	10.960	0.261	0.398	0.000
7	EI	N0	0.246	0.030	8.600	8.200	0.178	0.315	0.000
8	FP	N0	0.227	0.030	8.600	7.560	0.159	0.296	0.000

Table 13.124: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 29 in year 2009 .

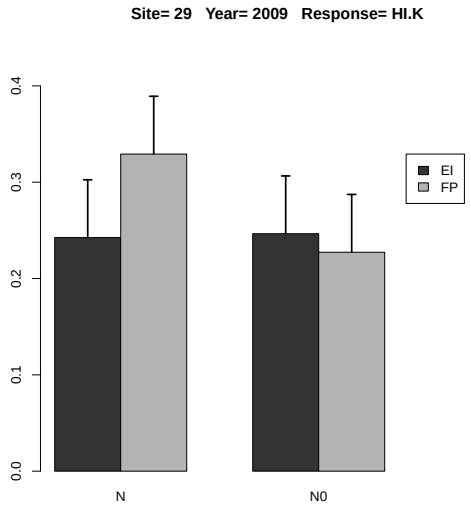

Figure 13.50: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.034	0.038	6.000	-0.880	-0.128	0.060	0.413
B N-N0	0.049	0.018	6.000	2.680	0.004	0.094	0.037
A:B EI N- FP N	-0.087	0.042	8.600	-2.040	-0.183	0.010	0.073
A:B EI N- EI N0	-0.004	0.026	6.000	-0.150	-0.067	0.059	0.883
A:B EI N- FP N0	0.015	0.042	8.600	0.360	-0.082	0.112	0.728
A:B FP N- EI N0	0.083	0.042	8.600	1.950	-0.014	0.179	0.085
A:B FP N- FP N0	0.102	0.026	6.000	3.940	0.038	0.165	0.008
A:B EI N0- FP N0	0.019	0.042	8.600	0.450	-0.078	0.116	0.662

Table 13.125: Estimate of contrast in two-way ANOVA for variable HI.K at site 29 in year 2009 .

13.1.26 Response Variable HI.Mg

	rep	A	B	y
1	1	EI	N	0.654
2	2	EI	N	0.823
3	3	EI	N	0.855
4	4	EI	N	1.203
5	1	EI	N0	0.606
6	2	EI	N0	0.730
7	3	EI	N0	0.599
8	4	EI	N0	1.174
9	1	FP	N	0.993
10	2	FP	N	0.909
11	3	FP	N	1.011
12	4	FP	N	1.141
13	1	FP	N0	0.686
14	2	FP	N0	0.814
15	3	FP	N0	0.590
16	4	FP	N0	0.489

Table 13.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.884	0.088	4.600	10.020	0.651	1.117	0.000
A FP	1.014	0.088	4.600	11.490	0.780	1.246	0.000
A EI-FP	-0.130	0.083	3.000	-1.560	-0.395	0.136	0.218

Table 13.127: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 29 in year 2009 .

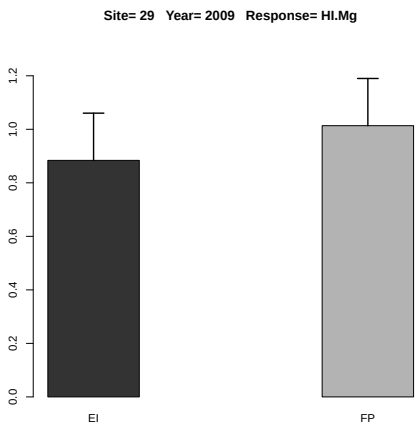

Figure 13.51: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.000	5.999	0.992
B	1.000	0.226	0.226	13.975	5.995	0.010
A:B	1.000	0.069	0.069	4.249	5.995	0.085

Table 13.128: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.831	0.088	6.000	9.480	0.616	1.045	0.000
2	FP		0.829	0.088	6.000	9.460	0.615	1.044	0.000
3		N	0.949	0.070	8.900	13.620	0.791	1.106	0.000
4		N0	0.711	0.070	8.900	10.210	0.554	0.869	0.000
5	EI	N	0.884	0.098	8.900	8.980	0.661	1.107	0.000
6	FP	N	1.014	0.098	8.900	10.290	0.790	1.236	0.000
7	EI	N0	0.777	0.098	8.900	7.890	0.554	1.000	0.000
8	FP	N0	0.645	0.098	8.900	6.550	0.422	0.868	0.000

Table 13.129: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 29 in year 2009 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.001	0.124	6.000	0.010	-0.302	0.305	0.992
B N-N0	0.237	0.064	6.000	3.740	0.082	0.393	0.010
A:B EI N- FP N	-0.130	0.139	8.900	-0.930	-0.445	0.186	0.376
A:B EI N- EI N0	0.106	0.090	6.000	1.190	-0.113	0.326	0.281
A:B EI N- FP N0	0.239	0.139	8.900	1.710	-0.076	0.554	0.121
A:B FP N- EI N0	0.236	0.139	8.900	1.700	-0.079	0.551	0.124
A:B FP N- FP N0	0.368	0.090	6.000	4.100	0.148	0.588	0.006
A:B EI N0- FP N0	0.132	0.139	8.900	0.950	-0.183	0.448	0.367

Table 13.130: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 29 in year 2009 .

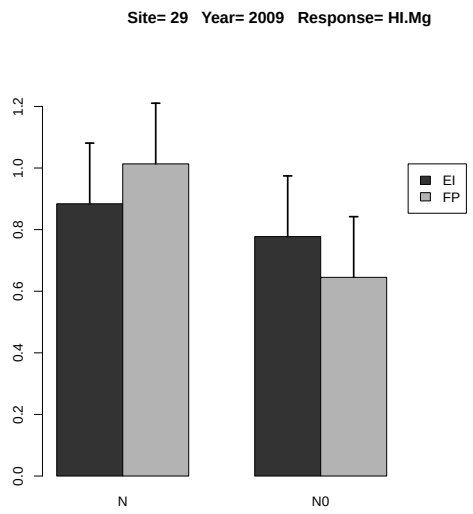

Figure 13.52: Estimated treatment means and standard error in the 2-way ANOVA.

13.1.27 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	23.887
2	2	EI	N	23.853
3	3	EI	N	21.780
4	4	EI	N	20.547
5	1	FP	N	36.779
6	2	FP	N	36.580
7	3	FP	N	34.541
8	4	FP	N	30.133

Table 13.131: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	22.517	1.236	3.700	18.210	18.970	26.063	0.000
A FP	34.508	1.236	3.700	27.910	30.962	38.055	0.000
A EI-FP	-11.992	0.803	3.000	-14.940	-14.546	-9.437	0.001

Table 13.132: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 29 in year 2009 .

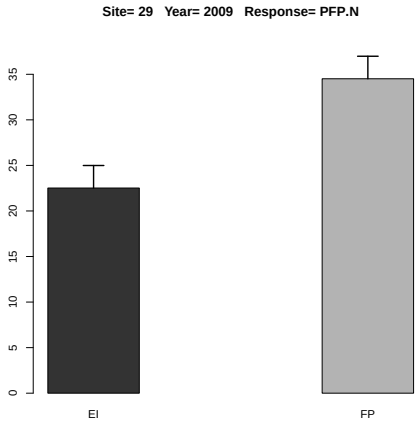

Figure 13.53: Estimated treatment means and standard error in the one-way ANOVA.

13.1.28 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	182.369
2	2	EI	N	182.114
3	3	EI	N	166.285
4	4	EI	N	156.869
5	1	FP	N	338.830
6	2	FP	N	336.998
7	3	FP	N	318.217
8	4	FP	N	277.600

Table 13.133: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	171.909	10.989	4.000	15.640	141.448	202.370	0.000
A FP	317.911	10.989	4.000	28.930	287.450	348.372	0.000
A EI-FP	-146.002	8.476	3.000	-17.230	-172.976	-119.028	0.000

Table 13.134: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 29 in year 2009 .

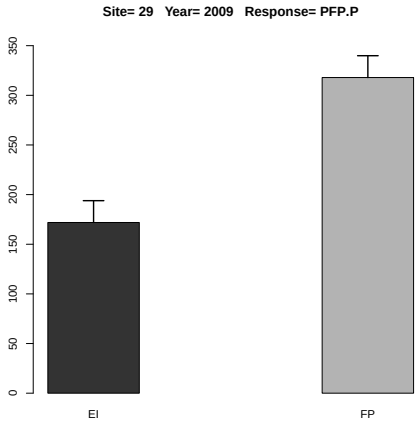

Figure 13.54: Estimated treatment means and standard error in the one-way ANOVA.

13.1.29 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	79.622
2	2	EI	N	79.511
3	3	EI	N	72.600
4	4	EI	N	68.489
5	1	FP	N	147.933
6	2	FP	N	147.133
7	3	FP	N	138.933
8	4	FP	N	121.200

Table 13.135: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	75.056	4.798	4.000	15.640	61.756	88.355	0.000
A FP	138.800	4.798	4.000	28.930	125.501	152.099	0.000
A EI-FP	-63.744	3.701	3.000	-17.230	-75.521	-51.968	0.000

Table 13.136: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 29 in year 2009 .

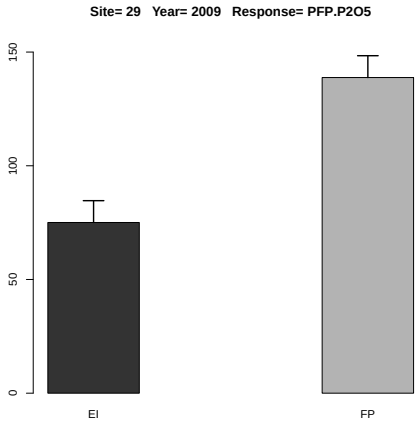

Figure 13.55: Estimated treatment means and standard error in the one-way ANOVA.

13.1.30 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	95.954
2	2	EI	N	95.820
3	3	EI	N	87.491
4	4	EI	N	82.537
5	1	FP	N	178.276
6	2	FP	N	177.312
7	3	FP	N	167.430
8	4	FP	N	146.059

Table 13.137: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	90.450	5.782	4.000	15.640	74.423	106.477	0.000
A FP	167.269	5.782	4.000	28.930	151.242	183.296	0.000
A EI-FP	-76.819	4.460	3.000	-17.230	-91.011	-62.627	0.000

Table 13.138: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 29 in year 2009 .

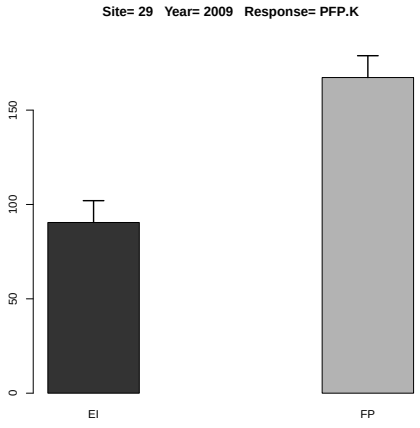

Figure 13.56: Estimated treatment means and standard error in the one-way ANOVA.

13.1.31 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	79.622
2	2	EI	N	79.511
3	3	EI	N	72.600
4	4	EI	N	68.489
5	1	FP	N	147.933
6	2	FP	N	147.133
7	3	FP	N	138.933
8	4	FP	N	121.200

Table 13.139: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	75.056	4.798	4.000	15.640	61.756	88.355	0.000
A FP	138.800	4.798	4.000	28.930	125.501	152.099	0.000
A EI-FP	-63.744	3.701	3.000	-17.230	-75.521	-51.968	0.000

Table 13.140: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 29 in year 2009 .

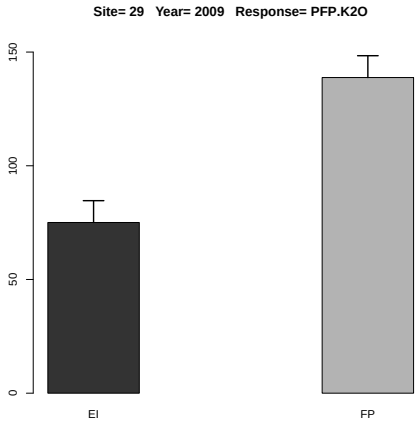

Figure 13.57: Estimated treatment means and standard error in the one-way ANOVA.

13.1.32 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	265.407
2	2	EI	N	265.037
3	3	EI	N	242.000
4	4	EI	N	228.296

Table 13.141: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

13.1.33 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	143.320
2	2	EI	N	143.120
3	3	EI	N	130.680
4	4	EI	N	123.280

Table 13.142: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

13.1.34 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	2388.667
2	2	EI	N	2385.333
3	3	EI	N	2178.000
4	4	EI	N	2054.667

Table 13.143: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

13.1.35 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.580
2	2	EI	N	0.568
3	3	EI	N	0.516
4	4	EI	N	0.483
5	1	FP	N	0.864
6	2	FP	N	0.863
7	3	FP	N	0.836
8	4	FP	N	0.768

Table 13.144: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.537	0.023	3.200	23.730	0.467	0.606	0.000
A FP	0.833	0.023	3.200	36.830	0.763	0.902	0.000
A EI-FP	-0.296	0.008	3.000	-35.840	-0.323	-0.270	0.000

Table 13.145: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 29 in year 2009 .

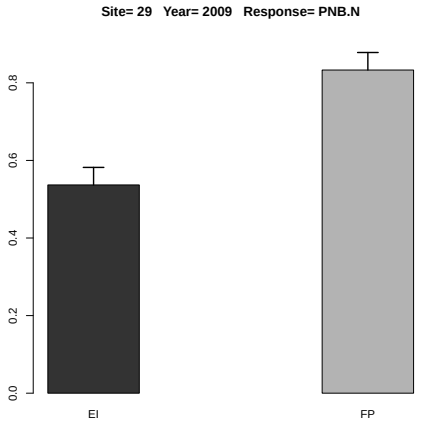

Figure 13.58: Estimated treatment means and standard error in the one-way ANOVA.

13.1.36 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.948
2	2	EI	N	0.911
3	3	EI	N	0.931
4	4	EI	N	0.957
5	1	FP	N	1.660
6	2	FP	N	1.685
7	3	FP	N	1.655
8	4	FP	N	1.360

Table 13.146: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.937	0.055	6.000	17.080	0.802	1.071	0.000
A FP	1.590	0.055	6.000	28.990	1.456	1.724	0.000
A EI-FP	-0.653	0.078	6.000	-8.420	-0.843	-0.464	0.000

Table 13.147: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 29 in year 2009 .

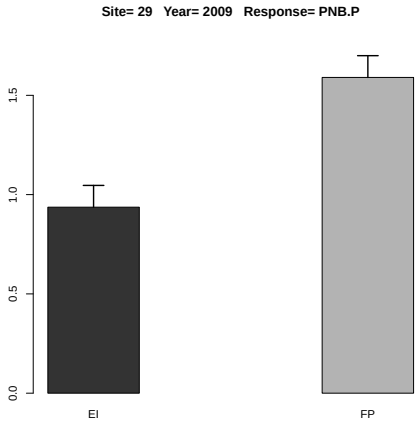

Figure 13.59: Estimated treatment means and standard error in the one-way ANOVA.

13.1.37 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.605
2	2	EI	N	0.556
3	3	EI	N	0.595
4	4	EI	N	0.603
5	1	FP	N	1.123
6	2	FP	N	1.028
7	3	FP	N	1.055
8	4	FP	N	0.847

Table 13.148: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.589	0.042	6.000	13.900	0.486	0.693	0.000
A FP	1.013	0.042	6.000	23.890	0.909	1.117	0.000
A EI-FP	-0.424	0.060	6.000	-7.070	-0.571	-0.277	0.000

Table 13.149: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 29 in year 2009 .

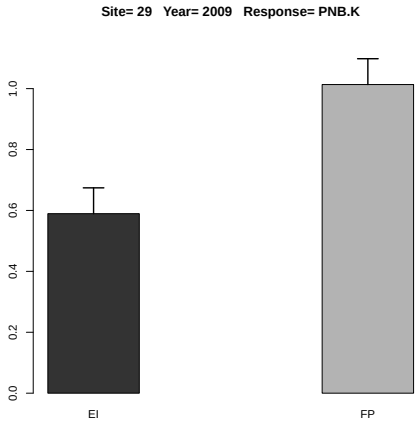

Figure 13.60: Estimated treatment means and standard error in the one-way ANOVA.

13.1.38 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.531
2	2	EI	N	0.610
3	3	EI	N	0.581
4	4	EI	N	0.594

Table 13.150: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

There is no or sufficient data for this response variable at this site and year.

13.1.39 Response Variable AE

	rep	A	B	y
1	1	EI	N	11.737
2	2	EI	N	9.403
3	3	EI	N	6.167
4	4	EI	N	2.720
5	1	FP	N	17.254
6	2	FP	N	19.823
7	3	FP	N	14.978
8	4	FP	N	13.580

Table 13.151: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	7.507	0.856	8.766	0.006
A FP	16.409	0.856	19.161	0.000
A EI-FP	-8.902	1.211	-7.350	0.010

Table 13.152: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 29 in year 2009 .

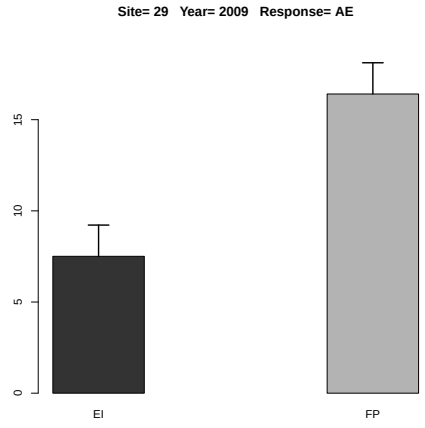

Figure 13.61: Estimated treatment means and standard error in the one-way ANOVA.

13.1.40 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.729
2	2	EI	N	0.705
3	3	EI	N	0.428
4	4	EI	N	0.360
5	1	FP	N	0.636
6	2	FP	N	1.035
7	3	FP	N	0.658
8	4	FP	N	0.390

Table 13.153: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.555	0.068	8.220	0.007
A FP	0.679	0.068	10.055	0.004
A EI-FP	-0.124	0.096	-1.298	0.475

Table 13.154: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 29 in year 2009 .

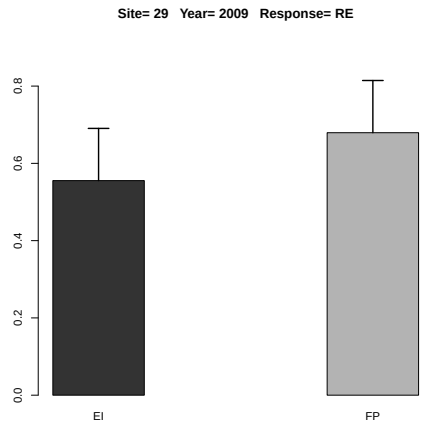

Figure 13.62: Estimated treatment means and standard error in the one-way ANOVA.

13.2 Year 2010

There are 79 variables not observed: UG.N UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.N PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PNB.P PNB.K

13.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	8617.000
2	2	EI	N	9414.000
3	3	EI	N	9044.000
4	4	EI	N	9403.000
5	1	EI	N0	4397.000
6	2	EI	N0	4497.000
7	3	EI	N0	3574.000
8	4	EI	N0	3909.000
9	1	FP	N	7138.000
10	2	FP	N	7242.000
11	3	FP	N	6433.000
12	4	FP	N	6707.000
13	1	FP	N0	4342.000
14	2	FP	N0	4311.000
15	3	FP	N0	3633.000
16	4	FP	N0	4306.000

Table 13.155: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	9119.500	196.778	46.344	0.000
A FP	6880.000	196.778	34.963	0.000
A EI-FP	2239.500	278.287	8.047	0.008

Table 13.156: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 29 in year 2010 .

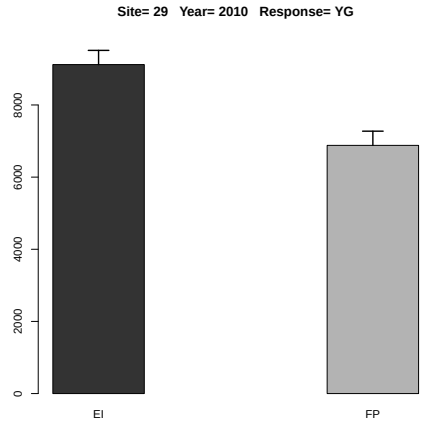

Figure 13.63: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4777503.062	4777503.062	55.977	9.007	0.000
B	1.000	60174927.562	60174927.562	705.056	9.007	0.000
A:B	1.000	5258995.562	5258995.562	61.618	9.007	0.000

Table 13.157: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6606.875	161.620	4.600	40.880	6181.382	7032.368	0.000
2	FP		5514.000	161.620	4.600	34.120	5088.507	5939.493	0.000
3		N	7999.750	161.620	4.600	49.500	7574.257	8425.243	0.000
4		N0	4121.125	161.620	4.600	25.500	3695.633	4546.618	0.000
5	EI	N	9119.500	191.806	7.800	47.550	8675.692	9563.308	0.000
6	FP	N	6880.000	191.806	7.800	35.870	6436.192	7323.808	0.000
7	EI	N0	4094.250	191.806	7.800	21.350	3650.442	4538.058	0.000
8	FP	N0	4148.000	191.806	7.800	21.630	3704.192	4591.808	0.000

Table 13.158: Estimate of treatment means in tow-way ANOVA for variable YG at site 29 in year 2010 .

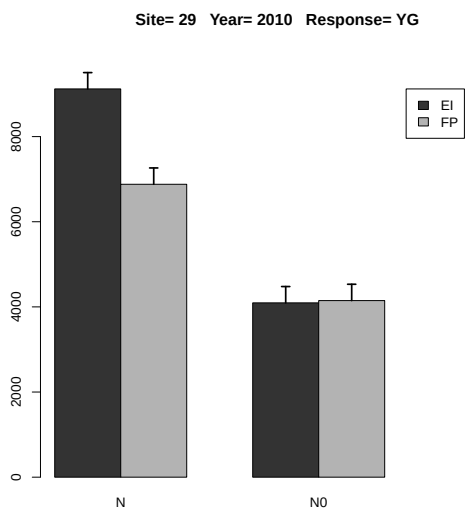

Figure 13.64: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1092.875	146.072	9.000	7.480	762.479	1423.271	0.000
B N-N0	3878.625	146.072	9.000	26.550	3548.229	4209.021	0.000
A:B EI N- FP N	2239.500	206.577	9.000	10.840	1772.249	2706.751	0.000
A:B EI N- EI N0	5025.250	206.577	9.000	24.330	4557.999	5492.501	0.000
A:B EI N- FP N0	4971.500	206.577	9.000	24.070	4504.249	5438.751	0.000
A:B FP N- EI N0	2785.750	206.577	9.000	13.490	2318.499	3253.001	0.000
A:B FP N- FP N0	2732.000	206.577	9.000	13.230	2264.749	3199.251	0.000
A:B EI N0- FP N0	-53.750	206.577	9.000	-0.260	-521.001	413.501	0.801

Table 13.159: Estimate of contrast in two-way ANOVA for variable YG at site 29 in year 2010 .

13.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	11542.000
2	2	EI	N	13418.000
3	3	EI	N	10935.000
4	4	EI	N	12206.000
5	1	EI	N0	7402.000
6	2	EI	N0	8107.000
7	3	EI	N0	6622.000
8	4	EI	N0	7689.000
9	1	FP	N	7307.000
10	2	FP	N	7990.000
11	3	FP	N	7395.000
12	4	FP	N	6995.000
13	1	FP	N0	5312.000
14	2	FP	N0	5398.000
15	3	FP	N0	5022.000
16	4	FP	N0	5746.000

Table 13.160: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	12025.250	310.623	38.713	0.000
A FP	7421.750	310.623	23.893	0.000
A EI-FP	4603.500	439.287	10.479	0.004

Table 13.161: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 29 in year 2010 .

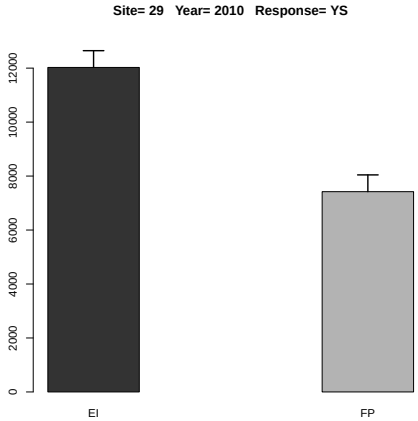

Figure 13.65: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	17043841.145	17043841.145	110.822	3.000	0.002
B	1.000	43857506.250	43857506.250	285.168	5.911	0.000
A:B	1.000	6340324.000	6340324.000	41.226	5.911	0.001

Table 13.162: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9740.125	303.929	5.000	32.050	8957.689	10522.561	0.000
2	FP		6395.625	303.929	5.000	21.040	5613.189	7178.061	0.000
3		N	9723.500	277.041	3.900	35.100	8944.938	10502.062	0.000
4		N0	6412.250	277.041	3.900	23.150	5633.688	7190.812	0.000
5	EI	N	12025.250	334.062	7.000	36.000	11235.669	12814.831	0.000
6	FP	N	7421.750	334.062	7.000	22.220	6632.169	8211.331	0.000
7	EI	N0	7455.000	334.062	7.000	22.320	6665.419	8244.581	0.000
8	FP	N0	5369.500	334.062	7.000	16.070	4579.919	6159.081	0.000

Table 13.163: Estimate of treatment means in tow-way ANOVA for variable YS at site 29 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3344.500	317.701	3.000	10.530	2333.368	4355.632	0.002
B N-N0	3311.250	196.084	6.100	16.890	2833.905	3788.595	0.000
A:B EI N- FP N	4603.500	373.340	5.300	12.330	3661.946	5545.054	0.000
A:B EI N- EI N0	4570.250	277.304	6.100	16.480	3895.182	5245.319	0.000
A:B EI N- FP N0	6655.750	373.340	5.300	17.830	5714.196	7597.304	0.000
A:B FP N- EI N0	-33.250	373.340	5.300	-0.090	-974.804	908.304	0.932
A:B FP N- FP N0	2052.250	277.304	6.100	7.400	1377.181	2727.318	0.000
A:B EI N0- FP N0	2085.500	373.340	5.300	5.590	1143.946	3027.054	0.002

Table 13.164: Estimate of contrast in two-way ANOVA for variable YS at site 29 in year 2010 .

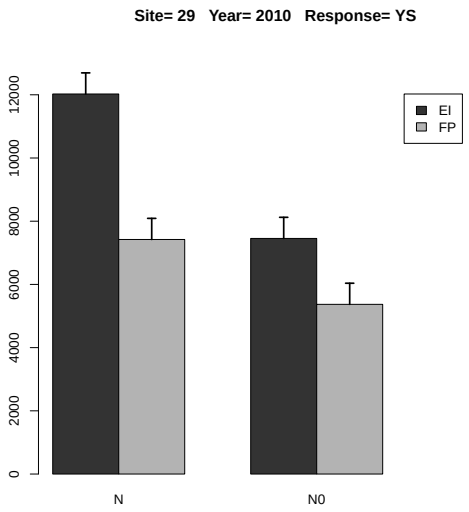

Figure 13.66: Estimated treatment means and standard error in the 2-way ANOVA.

13.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	20159.000
2	2	EI	N	22832.000
3	3	EI	N	19979.000
4	4	EI	N	21609.000
5	1	EI	N0	11799.000
6	2	EI	N0	12604.000
7	3	EI	N0	10196.000
8	4	EI	N0	11598.000
9	1	FP	N	14445.000
10	2	FP	N	15232.000
11	3	FP	N	13828.000
12	4	FP	N	13702.000
13	1	FP	N0	9654.000
14	2	FP	N0	9709.000
15	3	FP	N0	8655.000
16	4	FP	N0	10052.000

Table 13.165: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	21144.750	379.619	55.700	0.000
A FP	14301.750	379.619	37.674	0.000
A EI-FP	6843.000	536.862	12.746	0.002

Table 13.166: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 29 in year 2010 .

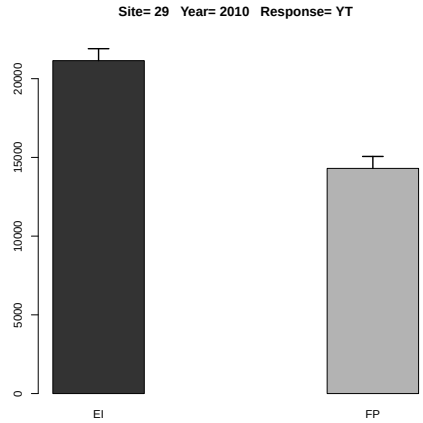

Figure 13.67: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	60168383.849	60168383.849	175.343	2.999	0.001
B	1.000	206777210.062	206777210.062	602.590	6.191	0.000
A:B	1.000	23148126.562	23148126.562	67.458	6.191	0.000

Table 13.167: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16347.000	430.542	4.000	37.970	15155.986	17538.014	0.000
2	FP		11909.625	430.542	4.000	27.660	10718.611	13100.639	0.000
3		N	17723.250	422.776	3.800	41.920	16530.085	18916.415	0.000
4		N0	10533.375	422.776	3.800	24.910	9340.210	11726.540	0.000
5	EI	N	21144.750	477.765	5.900	44.260	19972.359	22317.141	0.000
6	FP	N	14301.750	477.765	5.900	29.930	13129.359	15474.141	0.000
7	EI	N0	11549.250	477.765	5.900	24.170	10376.859	12721.641	0.000
8	FP	N0	9517.500	477.765	5.900	19.920	8345.109	10689.891	0.000

Table 13.168: Estimate of treatment means in tow-way ANOVA for variable YT at site 29 in year 2010 .

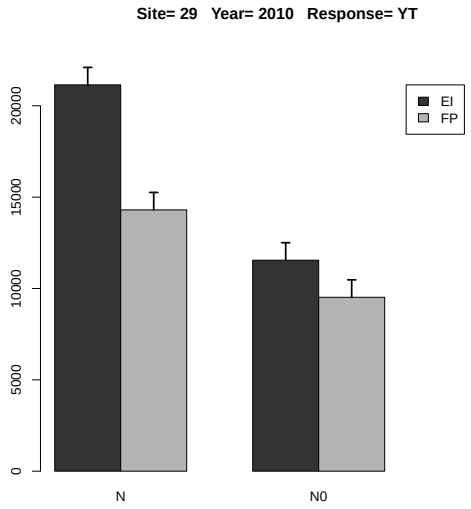

Figure 13.68: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4437.375	335.106	3.000	13.240	3370.765	5503.984	0.001
B N-N0	7189.875	292.894	6.700	24.550	6490.484	7889.266	0.000
A:B EI N- FP N	6843.000	445.065	7.400	15.380	5801.873	7884.127	0.000
A:B EI N- EI N0	9595.500	414.214	6.700	23.170	8606.412	10584.588	0.000
A:B EI N- FP N0	11627.250	445.065	7.400	26.120	10586.122	12668.378	0.000
A:B FP N- EI N0	2752.500	445.065	7.400	6.180	1711.372	3793.628	0.000
A:B FP N- FP N0	4784.250	414.214	6.700	11.550	3795.162	5773.338	0.000
A:B EI N0- FP N0	2031.750	445.065	7.400	4.570	990.622	3072.878	0.002

Table 13.169: Estimate of contrast in two-way ANOVA for variable YT at site 29 in year 2010 .

13.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.427
2	2	EI	N	0.412
3	3	EI	N	0.453
4	4	EI	N	0.435
5	1	EI	N0	0.373
6	2	EI	N0	0.357
7	3	EI	N0	0.351
8	4	EI	N0	0.337
9	1	FP	N	0.494
10	2	FP	N	0.475
11	3	FP	N	0.465
12	4	FP	N	0.489
13	1	FP	N0	0.450
14	2	FP	N0	0.444
15	3	FP	N0	0.420
16	4	FP	N0	0.428

Table 13.170: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.432	0.009	48.920	0.000
A FP	0.481	0.009	54.490	0.000
A EI-FP	-0.049	0.012	-3.939	0.056

Table 13.171: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 29 in year 2010 .

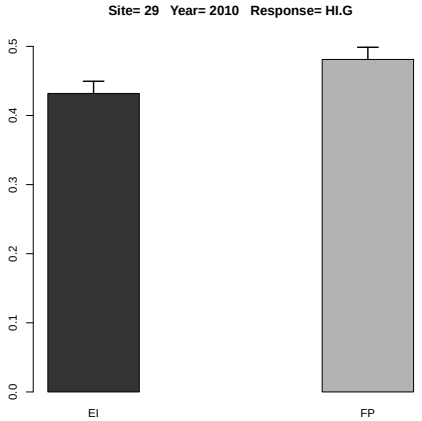

Figure 13.69: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.015	0.015	74.820	5.997	0.000
B	1.000	0.015	0.015	73.682	5.958	0.000
A:B	1.000	0.001	0.001	4.981	5.958	0.067

Table 13.172: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.393	0.005	6.000	73.750	0.380	0.406	0.000
2	FP		0.458	0.005	6.000	85.980	0.445	0.471	0.000
3		N	0.457	0.005	11.900	87.710	0.445	0.468	0.000
4		N0	0.395	0.005	11.900	75.870	0.384	0.406	0.000
5	EI	N	0.432	0.007	11.900	58.680	0.416	0.448	0.000
6	FP	N	0.481	0.007	11.900	65.360	0.465	0.497	0.000
7	EI	N0	0.354	0.007	11.900	48.130	0.338	0.370	0.000
8	FP	N0	0.435	0.007	11.900	59.170	0.419	0.452	0.000

Table 13.173: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 29 in year 2010 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.065	0.007	6.000	-8.650	-0.084	-0.047	0.000
B N-N0	0.062	0.007	6.000	8.580	0.044	0.079	0.000
A:B EI N- FP N	-0.049	0.010	11.900	-4.720	-0.072	-0.026	0.000
A:B EI N- EI N0	0.078	0.010	6.000	7.650	0.053	0.102	0.000
A:B EI N- FP N0	-0.004	0.010	11.900	-0.340	-0.026	0.019	0.737
A:B FP N- EI N0	0.127	0.010	11.900	12.180	0.104	0.149	0.000
A:B FP N- FP N0	0.046	0.010	6.000	4.490	0.021	0.070	0.004
A:B EI N0- FP N0	-0.081	0.010	11.900	-7.800	-0.104	-0.058	0.000

Table 13.174: Estimate of contrast in two-way ANOVA for variable HI.G at site 29 in year 2010 .

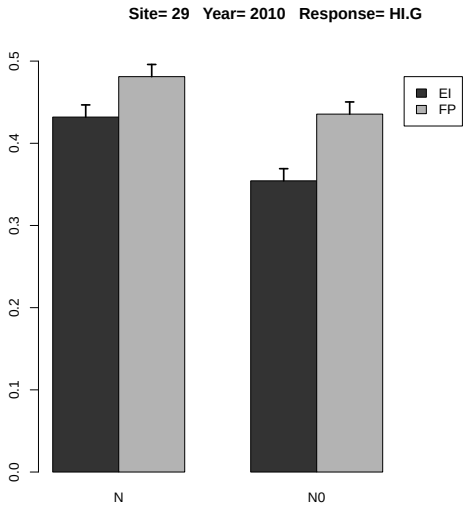

Figure 13.70: Estimated treatment means and standard error in the 2-way ANOVA.

13.2.5 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	28.723
2	2	EI	N	31.380
3	3	EI	N	30.147
4	4	EI	N	31.343
5	1	FP	N	39.436
6	2	FP	N	40.011
7	3	FP	N	35.541
8	4	FP	N	37.055

Table 13.175: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	30.398	0.861	6.000	35.330	28.293	32.504	0.000
A FP	38.011	0.861	6.000	44.170	35.906	40.117	0.000
A EI-FP	-7.613	1.217	6.000	-6.260	-10.590	-4.635	0.001

Table 13.176: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 29 in year 2010 .

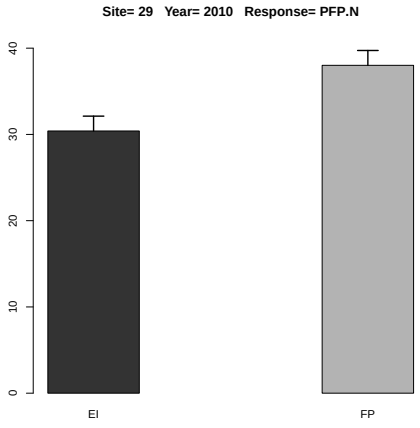

Figure 13.71: Estimated treatment means and standard error in the one-way ANOVA.

13.2.6 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	219.296
2	2	EI	N	239.579
3	3	EI	N	230.162
4	4	EI	N	239.299
5	1	FP	N	363.312
6	2	FP	N	368.606
7	3	FP	N	327.429
8	4	FP	N	341.375

Table 13.177: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	232.084	7.590	6.000	30.580	213.512	250.656	0.000
A FP	350.181	7.590	6.000	46.140	331.609	368.753	0.000
A EI-FP	-118.097	10.734	6.000	-11.000	-144.362	-91.832	0.000

Table 13.178: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 29 in year 2010 .

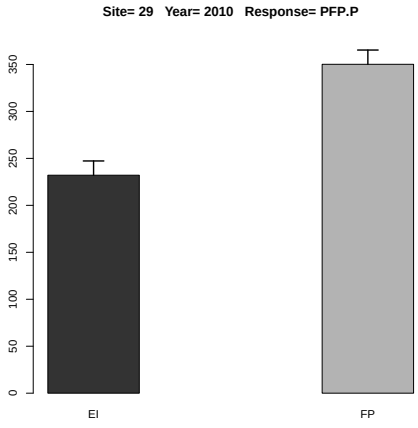

Figure 13.72: Estimated treatment means and standard error in the one-way ANOVA.

13.2.7 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	95.744
2	2	EI	N	104.600
3	3	EI	N	100.489
4	4	EI	N	104.478
5	1	FP	N	158.622
6	2	FP	N	160.933
7	3	FP	N	142.956
8	4	FP	N	149.044

Table 13.179: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	101.328	3.314	6.000	30.580	93.219	109.436	0.000
A FP	152.889	3.314	6.000	46.140	144.780	160.997	0.000
A EI-FP	-51.561	4.686	6.000	-11.000	-63.028	-40.094	0.000

Table 13.180: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 29 in year 2010 .

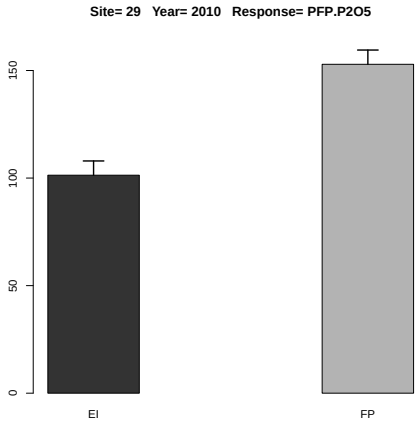

Figure 13.73: Estimated treatment means and standard error in the one-way ANOVA.

13.2.8 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	115.383
2	2	EI	N	126.054
3	3	EI	N	121.100
4	4	EI	N	125.907
5	1	FP	N	191.157
6	2	FP	N	193.942
7	3	FP	N	172.277
8	4	FP	N	179.615

Table 13.181: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	122.111	3.993	6.000	30.580	112.340	131.883	0.000
A FP	184.248	3.993	6.000	46.140	174.476	194.019	0.000
A EI-FP	-62.137	5.648	6.000	-11.000	-75.956	-48.318	0.000

Table 13.182: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 29 in year 2010 .

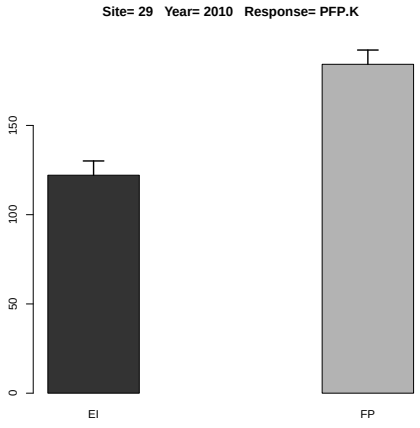

Figure 13.74: Estimated treatment means and standard error in the one-way ANOVA.

13.2.9 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	95.744
2	2	EI	N	104.600
3	3	EI	N	100.489
4	4	EI	N	104.478
5	1	FP	N	158.622
6	2	FP	N	160.933
7	3	FP	N	142.956
8	4	FP	N	149.044

Table 13.183: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	101.328	3.314	6.000	30.580	93.219	109.436	0.000
A FP	152.889	3.314	6.000	46.140	144.780	160.997	0.000
A EI-FP	-51.561	4.686	6.000	-11.000	-63.028	-40.094	0.000

Table 13.184: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 29 in year 2010 .

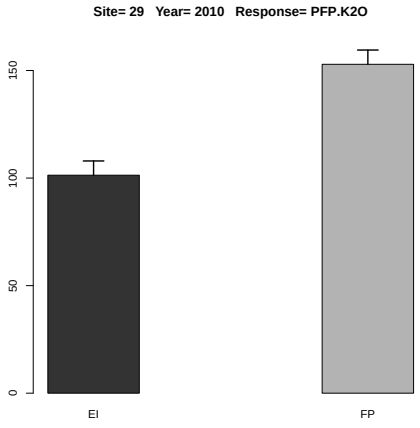

Figure 13.75: Estimated treatment means and standard error in the one-way ANOVA.

13.2.10 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	319.148
2	2	EI	N	348.667
3	3	EI	N	334.963
4	4	EI	N	348.259

Table 13.185: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

13.2.11 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	172.340
2	2	EI	N	188.280
3	3	EI	N	180.880
4	4	EI	N	188.060

Table 13.186: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

13.2.12 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	2872.333
2	2	EI	N	3138.000
3	3	EI	N	3014.667
4	4	EI	N	3134.333

Table 13.187: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

13.2.13 Response Variable AE

	rep	A	B	y
1	1	EI	N	14.067
2	2	EI	N	16.390
3	3	EI	N	18.233
4	4	EI	N	18.313
5	1	FP	N	15.448
6	2	FP	N	16.193
7	3	FP	N	15.470
8	4	FP	N	13.265

Table 13.188: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	16.751	1.002	16.721	0.001
A FP	15.094	1.002	15.067	0.001
A EI-FP	1.657	1.417	1.170	0.532

Table 13.189: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 29 in year 2010 .

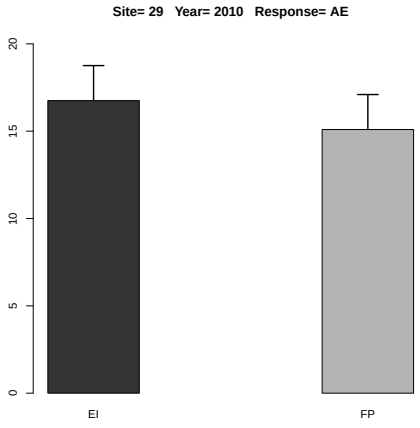

Figure 13.76: Estimated treatment means and standard error in the one-way ANOVA.

13.3 Year 2011

There are 79 variables not observed: UG.N UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.N PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PNB.P PNB.K

13.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	3671.000
2	2	EI	N	3507.000
3	3	EI	N	3915.000
4	4	EI	N	3446.000
5	1	EI	N0	2746.000
6	2	EI	N0	2616.000
7	3	EI	N0	2588.000
8	4	EI	N0	2586.000
9	1	FP	N	2233.000
10	2	FP	N	2981.000
11	3	FP	N	2412.000
12	4	FP	N	2437.000
13	1	FP	N0	1890.000
14	2	FP	N0	2097.000
15	3	FP	N0	2084.000
16	4	FP	N0	2065.000

Table 13.190: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	3634.750	159.813	22.744	0.001
A FP	2515.750	159.813	15.742	0.001
A EI-FP	1119.000	226.010	4.951	0.030

Table 13.191: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 29 in year 2011 .

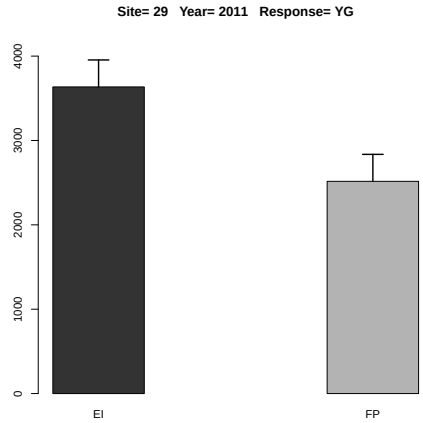

Figure 13.77: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1718143.104	1718143.104	57.149	5.999	0.000
B	1.000	2197806.250	2197806.250	73.103	5.984	0.000
A:B	1.000	269361.000	269361.000	8.959	5.984	0.024

Table 13.192: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3134.375	80.395	6.000	38.990	2937.648	3331.102	0.000
2	FP		2274.875	80.395	6.000	28.300	2078.148	2471.602	0.000
3		N	3075.250	71.489	11.200	43.020	2918.256	3232.244	0.000
4		N0	2334.000	71.489	11.200	32.650	2177.006	2490.994	0.000
5	EI	N	3634.750	101.101	11.200	35.950	3412.727	3856.773	0.000
6	FP	N	2515.750	101.101	11.200	24.880	2293.727	2737.773	0.000
7	EI	N0	2634.000	101.101	11.200	26.050	2411.977	2856.023	0.000
8	FP	N0	2034.000	101.101	11.200	20.120	1811.977	2256.023	0.000

Table 13.193: Estimate of treatment means in tow-way ANOVA for variable YG at site 29 in year 2011 .

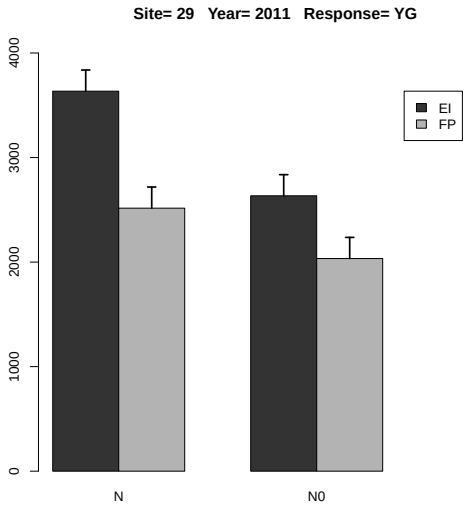

Figure 13.78: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	859.500	113.695	6.000	7.560	581.286	1137.714	0.000
B N-N0	741.250	86.695	6.000	8.550	528.978	953.522	0.000
A:B EI N- FP N	1119.000	142.978	11.200	7.830	805.013	1432.987	0.000
A:B EI N- EI N0	1000.750	122.606	6.000	8.160	700.551	1300.949	0.000
A:B EI N- FP N0	1600.750	142.978	11.200	11.200	1286.763	1914.737	0.000
A:B FP N- EI N0	-118.250	142.978	11.200	-0.830	-432.237	195.737	0.425
A:B FP N- FP N0	481.750	122.606	6.000	3.930	181.551	781.949	0.008
A:B EI N0- FP N0	600.000	142.978	11.200	4.200	286.013	913.987	0.001

Table 13.194: Estimate of contrast in two-way ANOVA for variable YG at site 29 in year 2011 .

13.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	10097.000
2	2	EI	N	9469.000
3	3	EI	N	10383.000
4	4	EI	N	8643.000
5	1	EI	N0	8699.000
6	2	EI	N0	8691.000
7	3	EI	N0	9110.000
8	4	EI	N0	8383.000
9	1	FP	N	4992.000
10	2	FP	N	7050.000
11	3	FP	N	6253.000
12	4	FP	N	6030.000
13	1	FP	N0	5349.000
14	2	FP	N0	6063.000
15	3	FP	N0	6398.000
16	4	FP	N0	6176.000

Table 13.195: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	9648.000	452.329	21.330	0.000
A FP	6081.250	452.329	13.444	0.001
A EI-FP	3566.750	639.690	5.576	0.022

Table 13.196: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 29 in year 2011 .

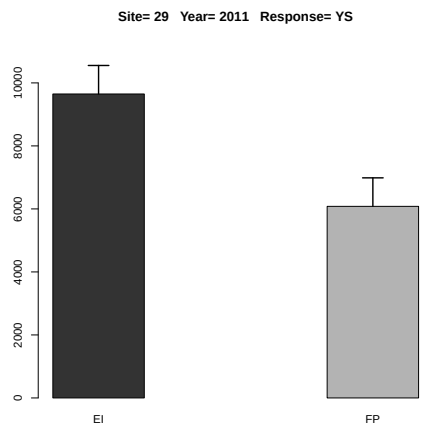

Figure 13.79: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9854994.737	9854994.737	61.469	6.000	0.000
B	1.000	1024144.000	1024144.000	6.388	6.189	0.044
A:B	1.000	709806.250	709806.250	4.427	6.189	0.079

Table 13.197: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9184.375	283.691	6.000	32.370	8490.196	9878.554	0.000
2	FP		6038.875	283.691	6.000	21.290	5344.696	6733.054	0.000
3		N	7864.625	224.188	8.800	35.080	7355.711	8373.539	0.000
4		N0	7358.625	224.188	8.800	32.820	6849.711	7867.539	0.000
5	EI	N	9648.000	317.050	8.800	30.430	8928.287	10367.713	0.000
6	FP	N	6081.250	317.050	8.800	19.180	5361.537	6800.963	0.000
7	EI	N0	8720.750	317.050	8.800	27.510	8001.037	9440.463	0.000
8	FP	N0	5996.500	317.050	8.800	18.910	5276.787	6716.213	0.000

Table 13.198: Estimate of treatment means in tow-way ANOVA for variable YS at site 29 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3145.500	401.199	6.000	7.840	2163.783	4127.217	0.000
B N-N0	506.000	200.202	5.800	2.530	13.005	998.995	0.046
A:B EI N- FP N	3566.750	448.377	8.800	7.950	2548.923	4584.577	0.000
A:B EI N- EI N0	927.250	283.128	5.800	3.280	230.050	1624.450	0.018
A:B EI N- FP N0	3651.500	448.377	8.800	8.140	2633.673	4669.327	0.000
A:B FP N- EI N0	-2639.500	448.377	8.800	-5.890	-3657.327	-1621.673	0.000
A:B FP N- FP N0	84.750	283.128	5.800	0.300	-612.450	781.950	0.775
A:B EI N0- FP N0	2724.250	448.377	8.800	6.080	1706.423	3742.077	0.000

Table 13.199: Estimate of contrast in two-way ANOVA for variable YS at site 29 in year 2011 .

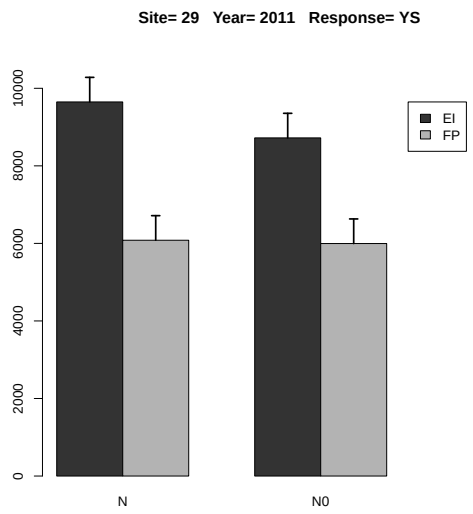

Figure 13.80: Estimated treatment means and standard error in the 2-way ANOVA.

13.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	13768.000
2	2	EI	N	12976.000
3	3	EI	N	14298.000
4	4	EI	N	12089.000
5	1	EI	N0	11445.000
6	2	EI	N0	11307.000
7	3	EI	N0	11698.000
8	4	EI	N0	10969.000
9	1	FP	N	7225.000
10	2	FP	N	10031.000
11	3	FP	N	8665.000
12	4	FP	N	8467.000
13	1	FP	N0	7239.000
14	2	FP	N0	8160.000
15	3	FP	N0	8482.000
16	4	FP	N0	8241.000

Table 13.200: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	13282.750	595.414	22.308	0.000
A FP	8597.000	595.414	14.439	0.001
A EI-FP	4685.750	842.043	5.565	0.022

Table 13.201: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 29 in year 2011 .

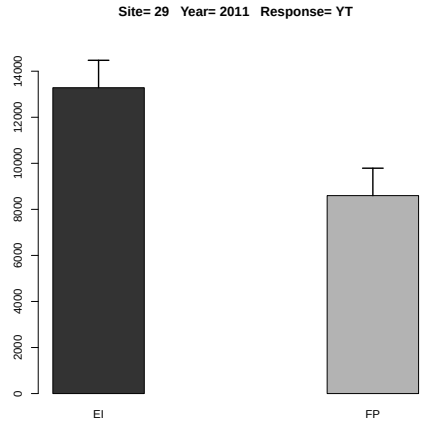

Figure 13.81: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	19088004.147	19088004.147	63.114	5.999	0.000
B	1.000	6222530.250	6222530.250	20.575	5.819	0.004
A:B	1.000	1853682.250	1853682.250	6.129	5.819	0.049

Table 13.202: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12318.750	356.471	6.000	34.560	11446.475	13191.025	0.000
2	FP		8313.750	356.471	6.000	23.320	7441.475	9186.025	0.000
3		N	10939.875	287.121	9.300	38.100	10293.373	11586.377	0.000
4		N0	9692.625	287.121	9.300	33.760	9046.123	10339.127	0.000
5	EI	N	13282.750	406.050	9.300	32.710	12368.459	14197.041	0.000
6	FP	N	8597.000	406.050	9.300	21.170	7682.709	9511.291	0.000
7	EI	N0	11354.750	406.050	9.300	27.960	10440.459	12269.041	0.000
8	FP	N0	8030.500	406.050	9.300	19.780	7116.209	8944.791	0.000

Table 13.203: Estimate of treatment means in tow-way ANOVA for variable YT at site 29 in year 2011 .

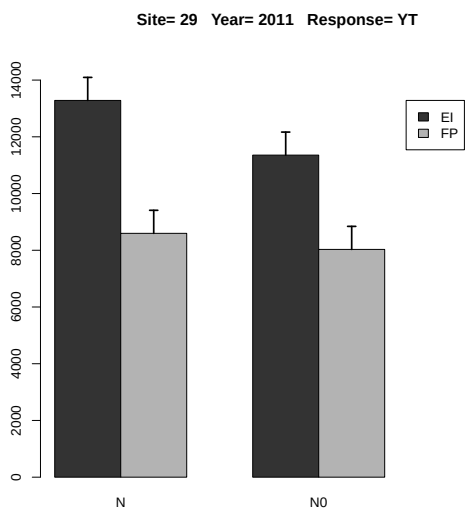

Figure 13.82: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4005.000	504.127	6.000	7.940	2771.416	5238.584	0.000
B N-N0	1247.250	274.971	6.000	4.540	575.337	1919.163	0.004
A:B EI N- FP N	4685.750	574.241	9.300	8.160	3392.747	5978.753	0.000
A:B EI N- EI N0	1928.000	388.868	6.000	4.960	977.772	2878.228	0.002
A:B EI N- FP N0	5252.250	574.241	9.300	9.150	3959.247	6545.253	0.000
A:B FP N- EI N0	-2757.750	574.241	9.300	-4.800	-4050.753	-1464.747	0.001
A:B FP N- FP N0	566.500	388.868	6.000	1.460	-383.728	1516.728	0.195
A:B EI N0- FP N0	3324.250	574.241	9.300	5.790	2031.247	4617.253	0.000

Table 13.204: Estimate of contrast in two-way ANOVA for variable YT at site 29 in year 2011 .

13.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.267
2	2	EI	N	0.270
3	3	EI	N	0.274
4	4	EI	N	0.285
5	1	EI	N0	0.240
6	2	EI	N0	0.231
7	3	EI	N0	0.221
8	4	EI	N0	0.236
9	1	FP	N	0.309
10	2	FP	N	0.297
11	3	FP	N	0.278
12	4	FP	N	0.288
13	1	FP	N0	0.261
14	2	FP	N0	0.257
15	3	FP	N0	0.246
16	4	FP	N0	0.251

Table 13.205: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.274	0.007	40.764	0.000
A FP	0.293	0.007	43.616	0.000
A EI-FP	-0.019	0.010	-2.017	0.247

Table 13.206: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 29 in year 2011 .

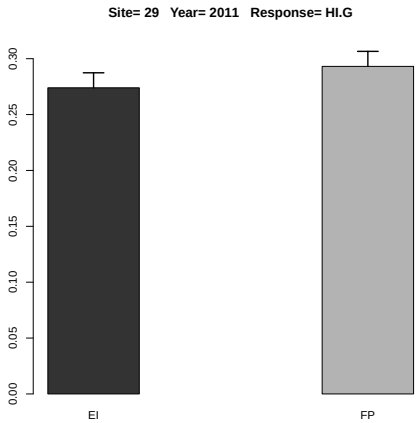

Figure 13.83: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	14.880	3.000	0.031
B	1.000	0.007	0.007	149.184	5.912	0.000
A:B	1.000	0.000	0.000	0.124	5.912	0.737

Table 13.207: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.253	0.004	5.900	63.050	0.243	0.263	0.000
2	FP		0.273	0.004	5.900	68.120	0.264	0.283	0.000
3		N	0.283	0.004	4.900	82.100	0.275	0.292	0.000
4		N0	0.243	0.004	4.900	70.310	0.234	0.252	0.000
5	EI	N	0.274	0.005	9.500	58.870	0.264	0.284	0.000
6	FP	N	0.293	0.005	9.500	62.990	0.283	0.304	0.000
7	EI	N0	0.232	0.005	9.500	49.870	0.222	0.242	0.000
8	FP	N0	0.254	0.005	9.500	54.500	0.243	0.264	0.000

Table 13.208: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 29 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.020	0.005	3.000	-3.860	-0.037	-0.004	0.031
B N-N0	0.041	0.003	5.900	12.210	0.032	0.049	0.000
A:B EI N- FP N	-0.019	0.006	5.400	-3.070	-0.035	-0.004	0.025
A:B EI N- EI N0	0.042	0.005	5.900	8.890	0.030	0.053	0.000
A:B EI N- FP N0	0.020	0.006	5.400	3.260	0.005	0.036	0.020
A:B FP N- EI N0	0.061	0.006	5.400	9.790	0.045	0.077	0.000
A:B FP N- FP N0	0.040	0.005	5.900	8.390	0.028	0.051	0.000
A:B EI N0- FP N0	-0.021	0.006	5.400	-3.450	-0.037	-0.006	0.016

Table 13.209: Estimate of contrast in two-way ANOVA for variable HI.G at site 29 in year 2011 .

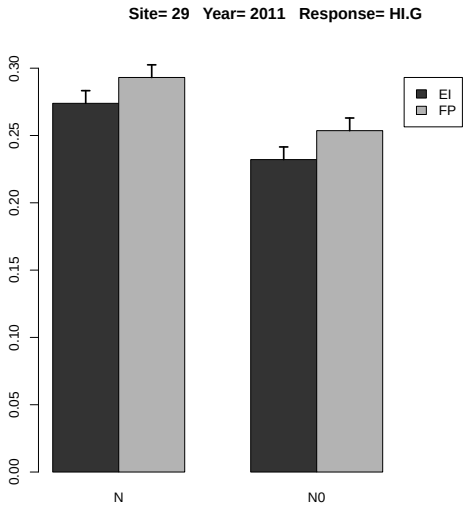

Figure 13.84: Estimated treatment means and standard error in the 2-way ANOVA.

13.3.5 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	12.237
2	2	EI	N	11.690
3	3	EI	N	13.050
4	4	EI	N	11.487
5	1	FP	N	12.337
6	2	FP	N	16.470
7	3	FP	N	13.326
8	4	FP	N	13.464

Table 13.210: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	12.116	0.678	6.000	17.870	10.457	13.775	0.000
A FP	13.899	0.678	6.000	20.500	12.240	15.558	0.000
A EI-FP	-1.783	0.959	6.000	-1.860	-4.129	0.563	0.112

Table 13.211: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 29 in year 2011 .

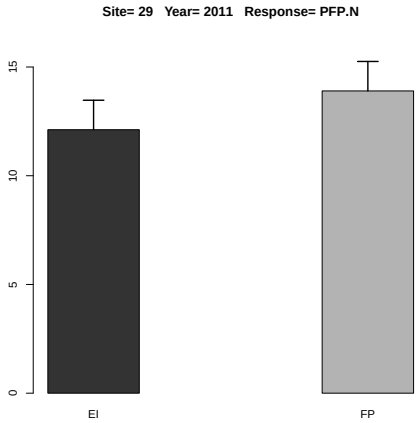

Figure 13.85: Estimated treatment means and standard error in the one-way ANOVA.

13.3.6 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	93.424
2	2	EI	N	89.250
3	3	EI	N	99.634
4	4	EI	N	87.698
5	1	FP	N	113.656
6	2	FP	N	151.728
7	3	FP	N	122.767
8	4	FP	N	124.039

Table 13.212: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	92.501	6.114	6.000	15.130	77.540	107.462	0.000
A FP	128.048	6.114	6.000	20.940	113.087	143.008	0.000
A EI-FP	-35.546	8.647	6.000	-4.110	-56.704	-14.388	0.006

Table 13.213: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 29 in year 2011 .

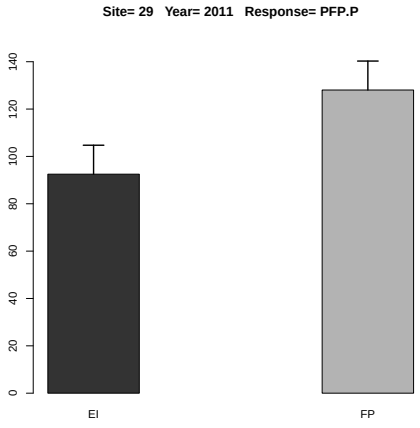

Figure 13.86: Estimated treatment means and standard error in the one-way ANOVA.

13.3.7 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	40.789
2	2	EI	N	38.967
3	3	EI	N	43.500
4	4	EI	N	38.289
5	1	FP	N	49.622
6	2	FP	N	66.244
7	3	FP	N	53.600
8	4	FP	N	54.156

Table 13.214: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	40.386	2.669	6.000	15.130	33.854	46.918	0.000
A FP	55.906	2.669	6.000	20.940	49.374	62.438	0.000
A EI-FP	-15.519	3.775	6.000	-4.110	-24.757	-6.282	0.006

Table 13.215: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 29 in year 2011 .

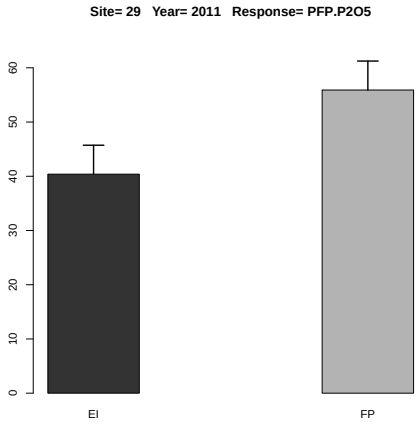

Figure 13.87: Estimated treatment means and standard error in the one-way ANOVA.

13.3.8 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	49.155
2	2	EI	N	46.959
3	3	EI	N	52.422
4	4	EI	N	46.142
5	1	FP	N	59.800
6	2	FP	N	79.832
7	3	FP	N	64.594
8	4	FP	N	65.263

Table 13.216: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	48.670	3.217	6.000	15.130	40.798	56.541	0.000
A FP	67.372	3.217	6.000	20.940	59.501	75.244	0.000
A EI-FP	-18.703	4.550	6.000	-4.110	-29.835	-7.570	0.006

Table 13.217: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 29 in year 2011 .

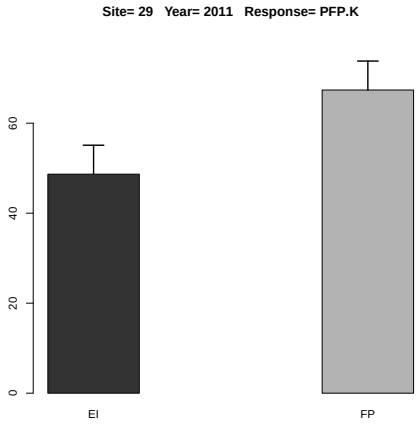

Figure 13.88: Estimated treatment means and standard error in the one-way ANOVA.

13.3.9 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	40.789
2	2	EI	N	38.967
3	3	EI	N	43.500
4	4	EI	N	38.289
5	1	FP	N	49.622
6	2	FP	N	66.244
7	3	FP	N	53.600
8	4	FP	N	54.156

Table 13.218: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	40.386	2.669	6.000	15.130	33.854	46.918	0.000
A FP	55.906	2.669	6.000	20.940	49.374	62.438	0.000
A EI-FP	-15.519	3.775	6.000	-4.110	-24.757	-6.282	0.006

Table 13.219: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 29 in year 2011 .

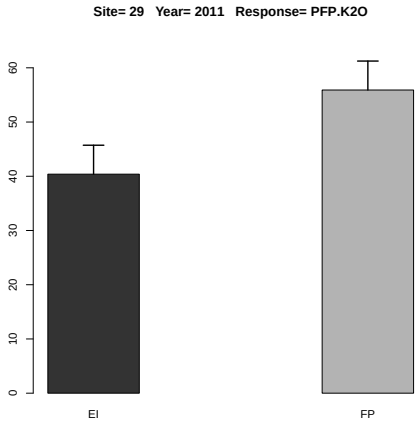

Figure 13.89: Estimated treatment means and standard error in the one-way ANOVA.

13.3.10 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	135.963
2	2	EI	N	129.889
3	3	EI	N	145.000
4	4	EI	N	127.630

Table 13.220: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

13.3.11 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	73.420
2	2	EI	N	70.140
3	3	EI	N	78.300
4	4	EI	N	68.920

Table 13.221: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

13.3.12 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	1223.667
2	2	EI	N	1169.000
3	3	EI	N	1305.000
4	4	EI	N	1148.667

Table 13.222: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

13.3.13 Response Variable AE

	rep	A	B	y
1	1	EI	N	3.083
2	2	EI	N	2.970
3	3	EI	N	4.423
4	4	EI	N	2.867
5	1	FP	N	1.895
6	2	FP	N	4.884
7	3	FP	N	1.812
8	4	FP	N	2.055

Table 13.223: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	3.336	0.669	4.988	0.030
A FP	2.662	0.669	3.980	0.054
A EI-FP	0.674	0.946	0.713	0.765

Table 13.224: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 29 in year 2011 .

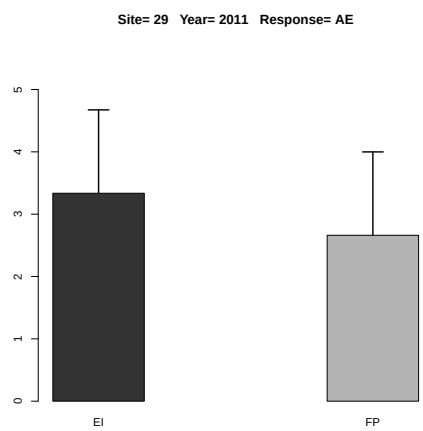

Figure 13.90: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 14

Analysis of Variance for Site 38

14.1 Year 2010a

There are 70 variables not observed: YS YT HI.G UG.Ca UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

14.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	8746.000
2	2	EI	N0	7768.000
3	3	EI	N0	1709.000
4	4	EI	N0	7329.000
5	1	EI	N	8378.000
6	2	EI	N	8882.000
7	3	EI	N	5083.000
8	4	EI	N	7575.000
9	1	FP	N0	6001.000
10	2	FP	N0	4840.000
11	3	FP	N0	3068.000
12	4	FP	N0	5312.000
13	1	FP	N	4665.000
14	2	FP	N	5374.000
15	3	FP	N	4330.000
16	4	FP	N	6571.000

Table 14.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	7479.500	559.626	13.365	0.002
A FP	5235.000	559.626	9.354	0.005
A EI-FP	2244.500	791.430	2.836	0.123

Table 14.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 38 in year 2010a .

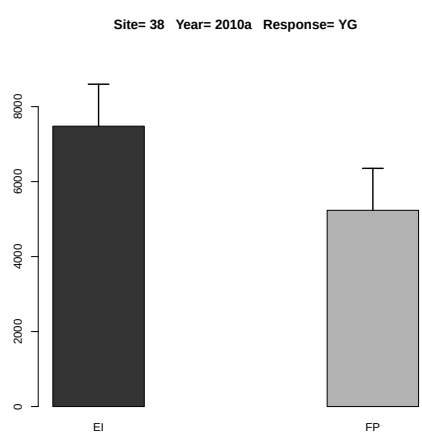

Figure 14.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5408115.100	5408115.100	5.165	3.000	0.108
B	1.000	2314201.563	2314201.563	2.210	4.416	0.205
A:B	1.000	437913.063	437913.063	0.418	4.416	0.550

Table 14.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6933.750	914.486	4.500	7.580	4503.029	9364.471	0.001
2	FP		5020.125	914.486	4.500	5.490	2589.404	7450.846	0.004
3		N	6357.250	851.165	3.600	7.470	3887.096	8827.404	0.003
4		N0	5596.625	851.165	3.600	6.580	3126.471	8066.779	0.004
5	EI	N	7479.500	983.444	5.900	7.610	5060.929	9898.071	0.000
6	FP	N	5235.000	983.444	5.900	5.320	2816.429	7653.571	0.002
7	EI	N0	6388.000	983.444	5.900	6.500	3969.429	8806.571	0.001
8	FP	N0	4805.250	983.444	5.900	4.890	2386.679	7223.821	0.003

Table 14.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 38 in year 2010a .

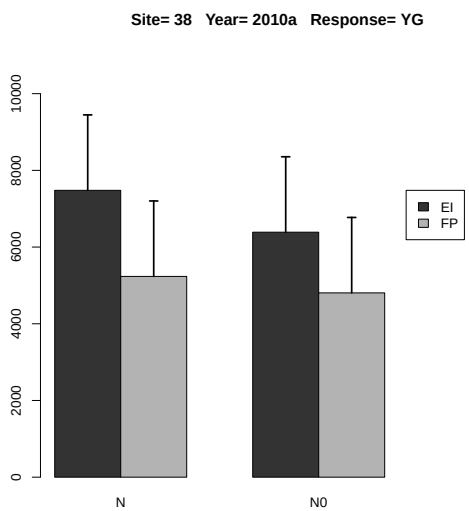

Figure 14.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1913.625	842.001	3.000	2.270	-766.172	4593.422	0.108
B N-N0	760.625	511.622	4.400	1.490	-608.657	2129.907	0.205
A:B EI N- FP N	2244.500	985.253	5.100	2.280	-266.585	4755.585	0.070
A:B EI N- EI N0	1091.500	723.542	4.400	1.510	-844.956	3027.956	0.199
A:B EI N- FP N0	2674.250	985.253	5.100	2.710	163.165	5185.335	0.041
A:B FP N- EI N0	-1153.000	985.253	5.100	-1.170	-3664.085	1358.085	0.293
A:B FP N- FP N0	429.750	723.542	4.400	0.590	-1506.706	2366.206	0.582
A:B EI N0- FP N0	1582.750	985.253	5.100	1.610	-928.335	4093.835	0.167

Table 14.5: Estimate of contrast in two-way ANOVA for variable YG at site 38 in year 2010a .

14.1.2 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	82.212
2	2	EI	N0	102.538
3	3	EI	N0	24.780
4	4	EI	N0	112.134
5	1	EI	N	121.481
6	2	EI	N	111.025
7	3	EI	N	64.554
8	4	EI	N	111.353
9	1	FP	N0	86.414
10	2	FP	N0	63.404
11	3	FP	N0	47.861
12	4	FP	N0	71.181
13	1	FP	N	68.576
14	2	FP	N	62.876
15	3	FP	N	58.888
16	4	FP	N	99.222

Table 14.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	102.103	8.576	11.906	0.002
A FP	72.390	8.576	8.441	0.007
A EI-FP	29.713	12.128	2.450	0.169

Table 14.7: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 38 in year 2010a .

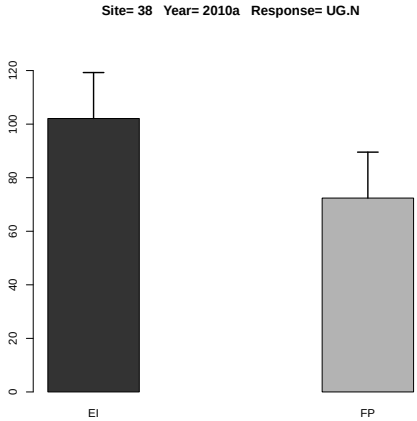

Figure 14.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	780.413	780.413	3.847	3.000	0.145
B	1.000	721.591	721.591	3.557	6.000	0.108
A:B	1.000	272.638	272.638	1.344	6.000	0.290

Table 14.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		91.260	12.169	4.400	7.500	58.721	123.798	0.001
2	FP		69.803	12.169	4.400	5.740	37.265	102.341	0.003
3		N	87.247	11.439	3.700	7.630	54.279	120.215	0.002
4		N0	73.816	11.439	3.700	6.450	40.847	106.784	0.004
5	EI	N	102.103	13.170	5.900	7.750	69.806	134.401	0.000
6	FP	N	72.390	13.170	5.900	5.500	40.093	104.688	0.002
7	EI	N0	80.416	13.170	5.900	6.110	48.118	112.714	0.001
8	FP	N0	67.215	13.170	5.900	5.100	34.917	99.513	0.002

Table 14.9: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 38 in year 2010a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	21.457	10.940	3.000	1.960	-13.362	56.276	0.145
B N-N0	13.431	7.122	6.000	1.890	-3.995	30.858	0.108
A:B EI N- FP N	29.713	13.054	5.600	2.280	-2.821	62.247	0.066
A:B EI N- EI N0	21.687	10.072	6.000	2.150	-2.958	46.332	0.075
A:B EI N- FP N0	34.888	13.054	5.600	2.670	2.354	67.422	0.040
A:B FP N- EI N0	-8.026	13.054	5.600	-0.610	-40.560	24.509	0.563
A:B FP N- FP N0	5.175	10.072	6.000	0.510	-19.469	29.820	0.626
A:B EI N0- FP N0	13.201	13.054	5.600	1.010	-19.333	45.735	0.354

Table 14.10: Estimate of contrast in two-way ANOVA for variable UG.N at site 38 in year 2010a .

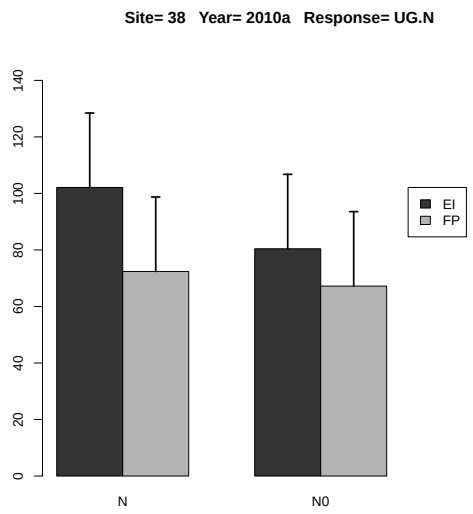

Figure 14.4: Estimated treatment means and standard error in the 2-way ANOVA.

14.1.3 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	18.367
2	2	EI	N0	14.759
3	3	EI	N0	4.614
4	4	EI	N0	15.391
5	1	EI	N	15.080
6	2	EI	N	13.323
7	3	EI	N	12.707
8	4	EI	N	18.938
9	1	FP	N0	11.402
10	2	FP	N0	9.196
11	3	FP	N0	7.056
12	4	FP	N0	14.342
13	1	FP	N	7.931
14	2	FP	N	11.823
15	3	FP	N	10.825
16	4	FP	N	15.113

Table 14.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	15.012	0.913	16.441	0.001
A FP	11.423	0.913	12.510	0.002
A EI-FP	3.589	1.291	2.779	0.129

Table 14.12: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 38 in year 2010a .

Figure 14.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	40.095	40.095	4.402	2.996	0.127
B	1.000	7.039	7.039	0.773	6.000	0.413
A:B	1.000	0.649	0.649	0.071	6.000	0.798

Table 14.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		14.147	1.658	4.500	8.530	9.733	18.561	0.001
2	FP		10.961	1.658	4.500	6.610	6.547	15.375	0.002
3		N	13.217	1.656	4.600	7.980	8.852	17.583	0.001
4		N0	11.891	1.656	4.600	7.180	7.526	16.256	0.001
5	EI	N	15.012	1.972	8.000	7.610	10.460	19.564	0.000
6	FP	N	11.423	1.972	8.000	5.790	6.871	15.975	0.000
7	EI	N0	13.283	1.972	8.000	6.740	8.731	17.835	0.000
8	FP	N0	10.499	1.972	8.000	5.320	5.947	15.051	0.001

Table 14.14: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 38 in year 2010a .

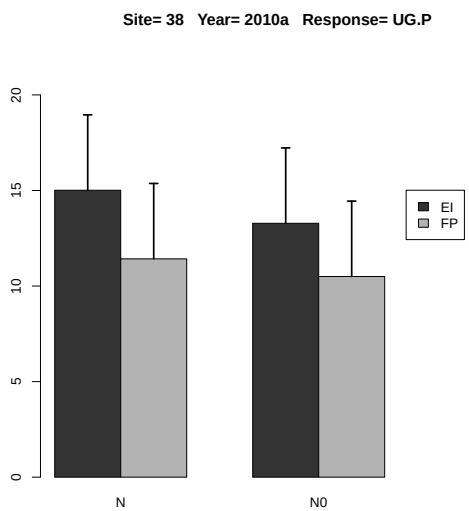

Figure 14.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3.186	1.519	3.000	2.100	-1.650	8.023	0.127
B N-N0	1.327	1.509	6.000	0.880	-2.366	5.019	0.413
A:B EI N- FP N	3.589	2.141	8.000	1.680	-1.352	8.530	0.132
A:B EI N- EI N0	1.729	2.134	6.000	0.810	-3.493	6.952	0.449
A:B EI N- FP N0	4.513	2.141	8.000	2.110	-0.428	9.454	0.068
A:B FP N- EI N0	-1.860	2.141	8.000	-0.870	-6.801	3.082	0.410
A:B FP N- FP N0	0.924	2.134	6.000	0.430	-4.298	6.146	0.680
A:B EI N0- FP N0	2.784	2.141	8.000	1.300	-2.158	7.725	0.230

Table 14.15: Estimate of contrast in two-way ANOVA for variable UG.P at site 38 in year 2010a .

14.1.4 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	42.060
2	2	EI	N0	33.799
3	3	EI	N0	10.567
4	4	EI	N0	35.245
5	1	EI	N	34.534
6	2	EI	N	30.510
7	3	EI	N	29.100
8	4	EI	N	43.367
9	1	FP	N0	26.110
10	2	FP	N0	21.059
11	3	FP	N0	16.159
12	4	FP	N0	32.844
13	1	FP	N	18.161
14	2	FP	N	27.074
15	3	FP	N	24.789
16	4	FP	N	34.609

Table 14.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	34.378	2.091	16.441	0.000
A FP	26.158	2.091	12.510	0.001
A EI-FP	8.219	2.957	2.779	0.129

Table 14.17: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 38 in year 2010a .

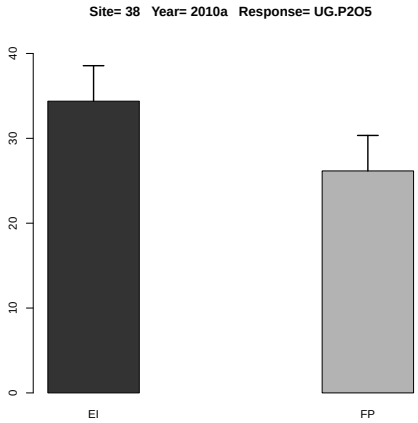

Figure 14.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	210.264	210.264	4.402	2.996	0.127
B	1.000	36.912	36.912	0.773	6.000	0.413
A:B	1.000	3.404	3.404	0.071	6.000	0.798

Table 14.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		32.398	3.798	4.500	8.530	22.290	42.506	0.001
2	FP		25.101	3.798	4.500	6.610	14.993	35.209	0.002
3		N	30.268	3.792	4.600	7.980	20.272	40.264	0.001
4		N0	27.230	3.792	4.600	7.180	17.234	37.226	0.001
5	EI	N	34.378	4.516	8.000	7.610	23.953	44.802	0.000
6	FP	N	26.158	4.516	8.000	5.790	15.734	36.583	0.000
7	EI	N0	30.418	4.516	8.000	6.740	19.993	40.842	0.000
8	FP	N0	24.043	4.516	8.000	5.320	13.619	34.468	0.001

Table 14.19: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 38 in year 2010a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	7.297	3.478	3.000	2.100	-3.780	18.373	0.127
B N-N0	3.038	3.456	6.000	0.880	-5.418	11.494	0.413
A:B EI N- FP N	8.219	4.903	8.000	1.680	-3.096	19.535	0.132
A:B EI N- EI N0	3.960	4.887	6.000	0.810	-7.998	15.919	0.449
A:B EI N- FP N0	10.335	4.903	8.000	2.110	-0.981	21.650	0.068
A:B FP N- EI N0	-4.259	4.903	8.000	-0.870	-15.575	7.056	0.410
A:B FP N- FP N0	2.115	4.887	6.000	0.430	-9.843	14.074	0.680
A:B EI N0- FP N0	6.374	4.903	8.000	1.300	-4.941	17.690	0.230

Table 14.20: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 38 in year 2010a
.

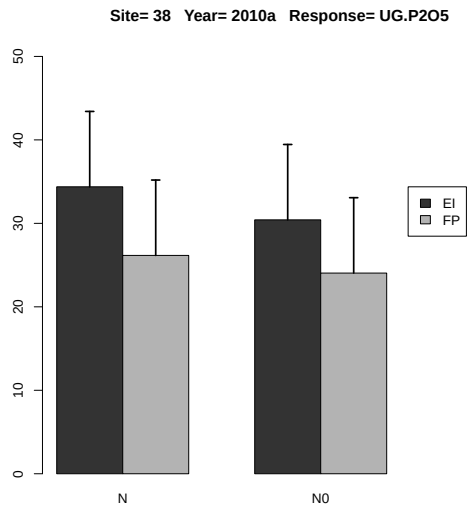

Figure 14.8: Estimated treatment means and standard error in the 2-way ANOVA.

14.1.5 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	27.987
2	2	EI	N0	24.081
3	3	EI	N0	6.323
4	4	EI	N0	32.980
5	1	EI	N	20.945
6	2	EI	N	20.429
7	3	EI	N	17.282
8	4	EI	N	27.270
9	1	FP	N0	16.803
10	2	FP	N0	15.004
11	3	FP	N0	10.738
12	4	FP	N0	20.186
13	1	FP	N	10.263
14	2	FP	N	16.122
15	3	FP	N	17.753
16	4	FP	N	25.627

Table 14.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	21.481	1.711	12.553	0.002
A FP	17.441	1.711	10.192	0.004
A EI-FP	4.040	2.420	1.669	0.339

Table 14.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 38 in year 2010a .

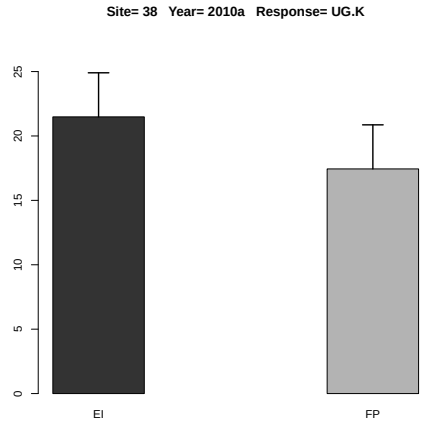

Figure 14.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	103.104	103.104	3.882	2.999	0.143
B	1.000	0.158	0.158	0.006	6.000	0.941
A:B	1.000	9.735	9.735	0.367	6.000	0.567

Table 14.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.162	3.108	4.500	7.130	13.887	30.438	0.001
2	FP		16.562	3.108	4.500	5.330	8.287	24.837	0.004
3		N	19.461	3.050	4.300	6.380	11.251	27.672	0.002
4		N0	19.263	3.050	4.300	6.320	11.053	27.473	0.002
5	EI	N	21.481	3.603	7.400	5.960	13.063	29.900	0.000
6	FP	N	17.441	3.603	7.400	4.840	9.022	25.860	0.002
7	EI	N0	22.843	3.603	7.400	6.340	14.424	31.262	0.000
8	FP	N0	15.683	3.603	7.400	4.350	7.264	24.101	0.003

Table 14.24: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 38 in year 2010a .

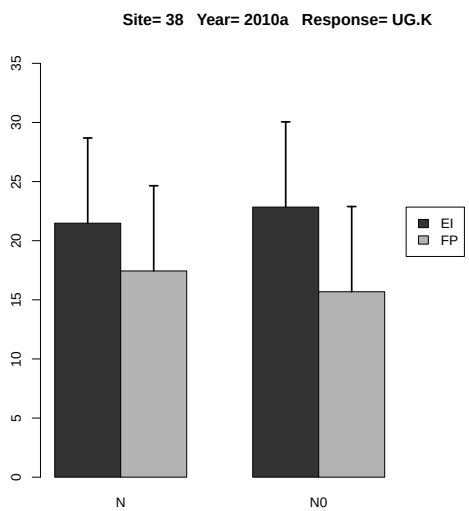

Figure 14.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.600	2.842	3.000	1.970	-3.447	14.647	0.143
B N-N0	0.199	2.577	6.000	0.080	-6.106	6.503	0.941
A:B EI N- FP N	4.040	3.836	7.400	1.050	-4.923	13.004	0.325
A:B EI N- EI N0	-1.361	3.644	6.000	-0.370	-10.278	7.555	0.722
A:B EI N- FP N0	5.799	3.836	7.400	1.510	-3.165	14.762	0.172
A:B FP N- EI N0	-5.402	3.836	7.400	-1.410	-14.365	3.562	0.200
A:B FP N- FP N0	1.759	3.644	6.000	0.480	-7.158	10.675	0.646
A:B EI N0- FP N0	7.160	3.836	7.400	1.870	-1.803	16.124	0.102

Table 14.25: Estimate of contrast in two-way ANOVA for variable UG.K at site 38 in year 2010a .

14.1.6 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	33.725
2	2	EI	N0	29.017
3	3	EI	N0	7.620
4	4	EI	N0	39.742
5	1	EI	N	25.239
6	2	EI	N	24.616
7	3	EI	N	20.825
8	4	EI	N	32.860
9	1	FP	N0	20.247
10	2	FP	N0	18.080
11	3	FP	N0	12.939
12	4	FP	N0	24.324
13	1	FP	N	12.367
14	2	FP	N	19.427
15	3	FP	N	21.392
16	4	FP	N	30.880

Table 14.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	25.885	2.062	12.553	0.002
A FP	21.017	2.062	10.192	0.004
A EI-FP	4.868	2.916	1.669	0.338

Table 14.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 38 in year 2010a .

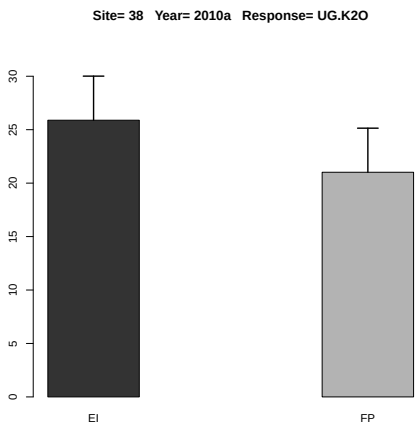

Figure 14.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	149.710	149.710	3.882	2.999	0.143
B	1.000	0.229	0.229	0.006	6.000	0.941
A:B	1.000	14.136	14.136	0.367	6.000	0.567

Table 14.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		26.706	3.745	4.500	7.130	16.734	36.677	0.001
2	FP		19.957	3.745	4.500	5.330	9.985	29.929	0.004
3		N	23.451	3.675	4.300	6.380	13.558	33.344	0.002
4		N0	23.212	3.675	4.300	6.320	13.318	33.105	0.002
5	EI	N	25.885	4.341	7.400	5.960	15.741	36.030	0.000
6	FP	N	21.017	4.341	7.400	4.840	10.872	31.161	0.002
7	EI	N0	27.526	4.341	7.400	6.340	17.381	37.670	0.000
8	FP	N0	18.898	4.341	7.400	4.350	8.753	29.042	0.003

Table 14.29: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 38 in year 2010a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	6.748	3.425	3.000	1.970	-4.153	17.650	0.143
B N-N0	0.239	3.105	6.000	0.080	-7.358	7.837	0.941
A:B EI N- FP N	4.869	4.623	7.400	1.050	-5.932	15.669	0.325
A:B EI N- EI N0	-1.641	4.391	6.000	-0.370	-12.385	9.104	0.722
A:B EI N- FP N0	6.988	4.623	7.400	1.510	-3.813	17.788	0.172
A:B FP N- EI N0	-6.509	4.623	7.400	-1.410	-17.310	4.292	0.200
A:B FP N- FP N0	2.119	4.391	6.000	0.480	-8.625	12.864	0.646
A:B EI N0- FP N0	8.628	4.623	7.400	1.870	-2.173	19.429	0.102

Table 14.30: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 38 in year 2010a .

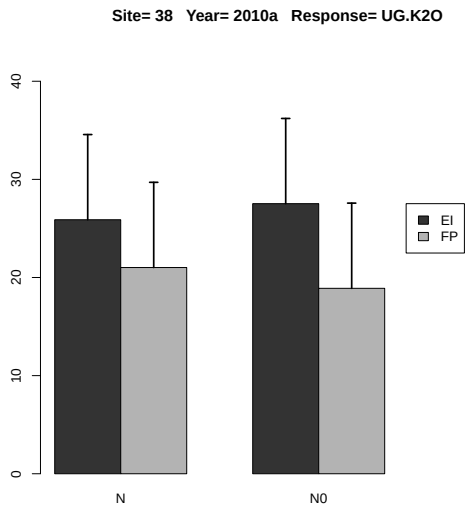

Figure 14.12: Estimated treatment means and standard error in the 2-way ANOVA.

14.1.7 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	7.871
2	2	EI	N0	6.991
3	3	EI	N0	2.051
4	4	EI	N0	6.596
5	1	EI	N	6.702
6	2	EI	N	6.217
7	3	EI	N	5.591
8	4	EI	N	6.817
9	1	FP	N0	4.201
10	2	FP	N0	4.356
11	3	FP	N0	3.682
12	4	FP	N0	6.374
13	1	FP	N	3.266
14	2	FP	N	4.837
15	3	FP	N	5.196
16	4	FP	N	7.228

Table 14.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	6.332	0.587	10.782	0.003
A FP	5.132	0.587	8.738	0.006
A EI-FP	1.201	0.831	1.446	0.415

Table 14.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 38 in year 2010a .

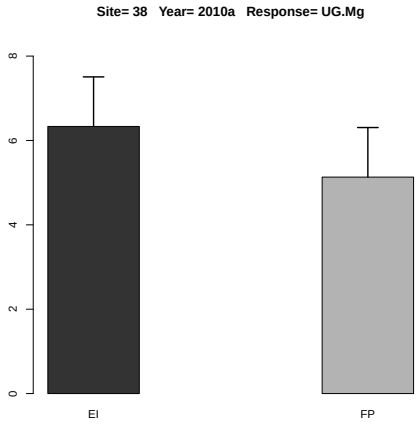

Figure 14.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.228	2.228	1.579	3.000	0.298
B	1.000	0.871	0.871	0.617	5.999	0.462
A:B	1.000	0.001	0.001	0.000	5.999	0.985

Table 14.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6.105	0.722	5.900	8.460	4.333	7.876	0.000
2	FP		4.892	0.722	5.900	6.780	3.121	6.664	0.000
3		N	5.732	0.614	4.900	9.340	4.143	7.320	0.000
4		N0	5.265	0.614	4.900	8.580	3.677	6.854	0.000
5	EI	N	6.332	0.835	9.500	7.580	4.459	8.205	0.000
6	FP	N	5.131	0.835	9.500	6.140	3.259	7.004	0.000
7	EI	N0	5.877	0.835	9.500	7.040	4.005	7.750	0.000
8	FP	N0	4.653	0.835	9.500	5.570	2.780	6.526	0.000

Table 14.34: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 38 in year 2010a .

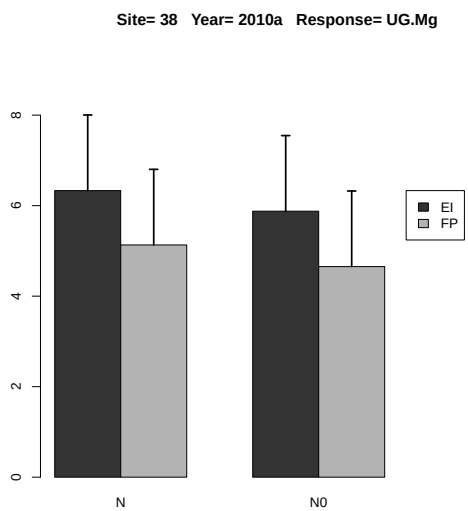

Figure 14.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.212	0.965	3.000	1.260	-1.859	4.283	0.298
B N-N0	0.467	0.594	6.000	0.790	-0.987	1.920	0.462
A:B EI N- FP N	1.201	1.133	5.300	1.060	-1.660	4.061	0.335
A:B EI N- EI N0	0.455	0.840	6.000	0.540	-1.601	2.510	0.608
A:B EI N- FP N0	1.679	1.133	5.300	1.480	-1.181	4.540	0.195
A:B FP N- EI N0	-0.746	1.133	5.300	-0.660	-3.606	2.115	0.538
A:B FP N- FP N0	0.478	0.840	6.000	0.570	-1.577	2.534	0.590
A:B EI N0- FP N0	1.224	1.133	5.300	1.080	-1.636	4.085	0.327

Table 14.35: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 38 in year 2010a .

14.1.8 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	6.122
2	2	EI	N0	6.214
3	3	EI	N0	1.367
4	4	EI	N0	2.932
5	1	EI	N	6.702
6	2	EI	N	6.217
7	3	EI	N	4.066
8	4	EI	N	5.303
9	1	FP	N0	4.801
10	2	FP	N0	3.388
11	3	FP	N0	2.454
12	4	FP	N0	3.187
13	1	FP	N	3.732
14	2	FP	N	3.224
15	3	FP	N	3.031
16	4	FP	N	3.943

Table 14.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	5.572	0.367	15.176	0.001
A FP	3.482	0.367	9.484	0.005
A EI-FP	2.090	0.519	4.024	0.052

Table 14.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 38 in year 2010a .

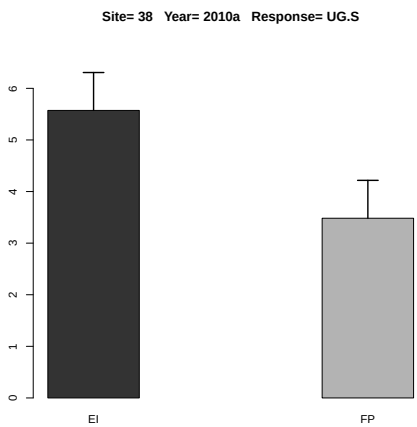

Figure 14.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.552	2.552	4.182	3.000	0.133
B	1.000	2.068	2.068	3.389	5.999	0.115
A:B	1.000	1.928	1.928	3.159	5.999	0.126

Table 14.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.865	0.664	4.900	7.320	3.148	6.583	0.001
2	FP		3.470	0.664	4.900	5.220	1.752	5.188	0.004
3		N	4.527	0.603	3.700	7.510	2.803	6.251	0.002
4		N0	3.808	0.603	3.700	6.320	2.084	5.532	0.004
5	EI	N	5.572	0.720	6.600	7.740	3.849	7.295	0.000
6	FP	N	3.482	0.720	6.600	4.840	1.759	5.206	0.002
7	EI	N0	4.159	0.720	6.600	5.780	2.436	5.882	0.001
8	FP	N0	3.458	0.720	6.600	4.810	1.734	5.181	0.002

Table 14.39: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 38 in year 2010a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.395	0.682	3.000	2.050	-0.776	3.567	0.133
B N-N0	0.719	0.391	6.000	1.840	-0.237	1.675	0.115
A:B EI N- FP N	2.090	0.786	5.000	2.660	0.071	4.109	0.045
A:B EI N- EI N0	1.413	0.552	6.000	2.560	0.062	2.765	0.043
A:B EI N- FP N0	2.115	0.786	5.000	2.690	0.096	4.133	0.043
A:B FP N- EI N0	-0.676	0.786	5.000	-0.860	-2.695	1.343	0.429
A:B FP N- FP N0	0.025	0.552	6.000	0.050	-1.327	1.377	0.966
A:B EI N0- FP N0	0.701	0.786	5.000	0.890	-1.318	2.720	0.413

Table 14.40: Estimate of contrast in two-way ANOVA for variable UG.S at site 38 in year 2010a .

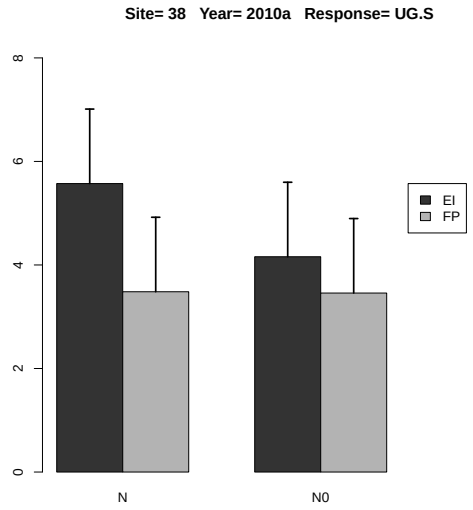

Figure 14.16: Estimated treatment means and standard error in the 2-way ANOVA.

14.1.9 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	41.890
2	2	EI	N	44.410
3	3	EI	N	25.415
4	4	EI	N	37.875
5	1	FP	N	31.100
6	2	FP	N	35.827
7	3	FP	N	28.867
8	4	FP	N	43.807

Table 14.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	37.398	3.787	5.200	9.880	27.791	47.005	0.000
A FP	34.900	3.787	5.200	9.220	25.293	44.507	0.000
A EI-FP	2.498	4.206	3.000	0.590	-10.887	15.882	0.594

Table 14.42: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 38 in year 2010a .

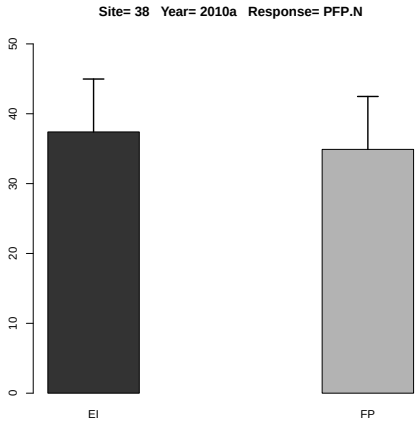

Figure 14.17: Estimated treatment means and standard error in the one-way ANOVA.

14.1.10 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	213.213
2	2	EI	N	226.040
3	3	EI	N	129.358
4	4	EI	N	192.778
5	1	FP	N	232.279
6	2	FP	N	267.582
7	3	FP	N	215.599
8	4	FP	N	327.182

Table 14.43: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	190.347	23.122	5.200	8.230	131.604	249.090	0.000
A FP	260.660	23.122	5.200	11.270	201.917	319.403	0.000
A EI-FP	-70.313	25.520	3.000	-2.760	-151.534	10.907	0.070

Table 14.44: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 38 in year 2010a .

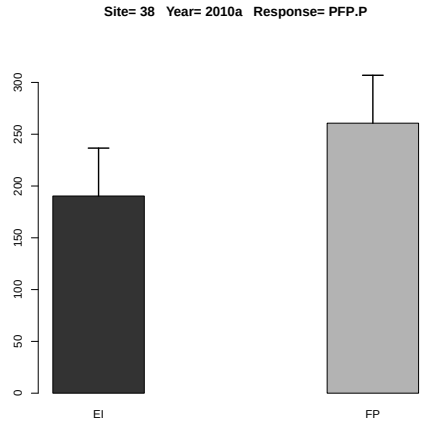

Figure 14.18: Estimated treatment means and standard error in the one-way ANOVA.

14.1.11 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	93.089
2	2	EI	N	98.689
3	3	EI	N	56.478
4	4	EI	N	84.167
5	1	FP	N	101.413
6	2	FP	N	116.826
7	3	FP	N	94.130
8	4	FP	N	142.848

Table 14.45: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	83.106	10.095	5.200	8.230	57.458	108.753	0.000
A FP	113.804	10.095	5.200	11.270	88.157	139.452	0.000
A EI-FP	-30.699	11.142	3.000	-2.760	-66.159	4.761	0.070

Table 14.46: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 38 in year 2010a .

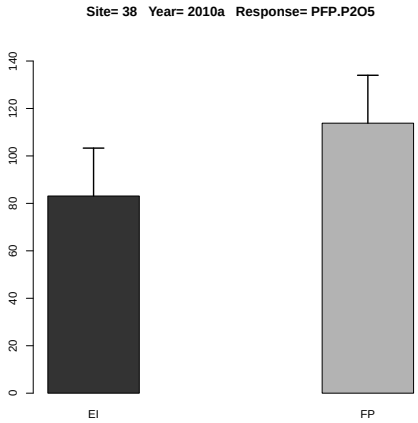

Figure 14.19: Estimated treatment means and standard error in the one-way ANOVA.

14.1.12 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	112.182
2	2	EI	N	118.931
3	3	EI	N	68.062
4	4	EI	N	101.430
5	1	FP	N	93.697
6	2	FP	N	107.938
7	3	FP	N	86.969
8	4	FP	N	131.980

Table 14.47: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	100.151	10.642	5.200	9.410	73.111	127.192	0.000
A FP	105.146	10.642	5.200	9.880	78.105	132.186	0.000
A EI-FP	-4.995	11.739	3.000	-0.430	-42.352	32.363	0.699

Table 14.48: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 38 in year 2010a .

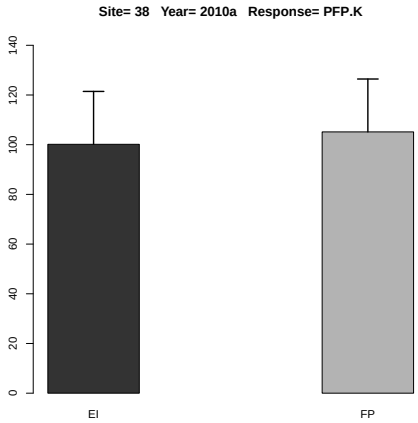

Figure 14.20: Estimated treatment means and standard error in the one-way ANOVA.

14.1.13 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	93.089
2	2	EI	N	98.689
3	3	EI	N	56.478
4	4	EI	N	84.167
5	1	FP	N	77.750
6	2	FP	N	89.567
7	3	FP	N	72.167
8	4	FP	N	109.517

Table 14.49: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	83.106	8.831	5.200	9.410	60.667	105.544	0.000
A FP	87.250	8.831	5.200	9.880	64.812	109.688	0.000
A EI-FP	-4.144	9.741	3.000	-0.430	-35.143	26.854	0.699

Table 14.50: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 38 in year 2010a .

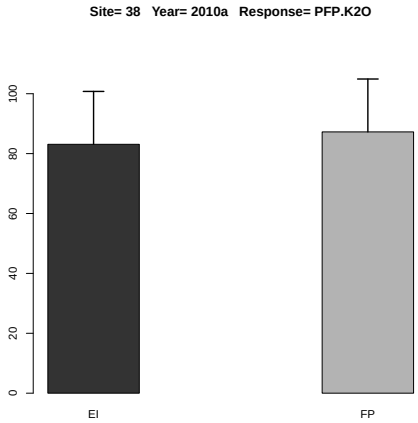

Figure 14.21: Estimated treatment means and standard error in the one-way ANOVA.

14.1.14 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	190.409
2	2	EI	N	201.864
3	3	EI	N	115.523
4	4	EI	N	172.159

Table 14.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

14.1.15 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	310.296
2	2	EI	N	328.963
3	3	EI	N	188.259
4	4	EI	N	280.556

Table 14.52: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

14.1.16 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	4189.000
2	2	EI	N	4441.000
3	3	EI	N	2541.500
4	4	EI	N	3787.500

Table 14.53: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

14.1.17 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.607
2	2	EI	N	0.555
3	3	EI	N	0.323
4	4	EI	N	0.557
5	1	FP	N	0.457
6	2	FP	N	0.419
7	3	FP	N	0.393
8	4	FP	N	0.661

Table 14.54: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.510	0.062	5.100	8.180	0.351	0.670	0.000
A FP	0.483	0.062	5.100	7.730	0.323	0.642	0.000
A EI-FP	0.028	0.067	3.000	0.420	-0.185	0.241	0.705

Table 14.55: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 38 in year 2010a .

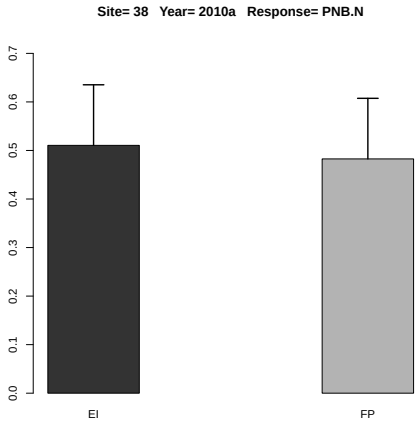

Figure 14.22: Estimated treatment means and standard error in the one-way ANOVA.

14.1.18 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.384
2	2	EI	N	0.339
3	3	EI	N	0.323
4	4	EI	N	0.482
5	1	FP	N	0.395
6	2	FP	N	0.589
7	3	FP	N	0.539
8	4	FP	N	0.753

Table 14.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.382	0.058	4.900	6.590	0.232	0.532	0.001
A FP	0.569	0.058	4.900	9.820	0.419	0.719	0.000
A EI-FP	-0.187	0.060	3.000	-3.130	-0.377	0.003	0.052

Table 14.57: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 38 in year 2010a .

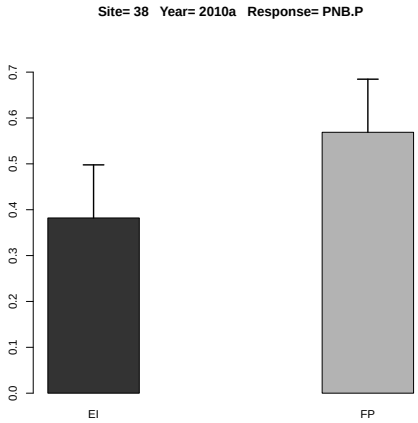

Figure 14.23: Estimated treatment means and standard error in the one-way ANOVA.

14.1.19 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.280
2	2	EI	N	0.274
3	3	EI	N	0.231
4	4	EI	N	0.365
5	1	FP	N	0.206
6	2	FP	N	0.324
7	3	FP	N	0.357
8	4	FP	N	0.515

Table 14.58: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.288	0.049	4.900	5.850	0.160	0.415	0.002
A FP	0.350	0.049	4.900	7.130	0.223	0.477	0.001
A EI-FP	-0.063	0.050	3.000	-1.250	-0.223	0.098	0.301

Table 14.59: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 38 in year 2010a .

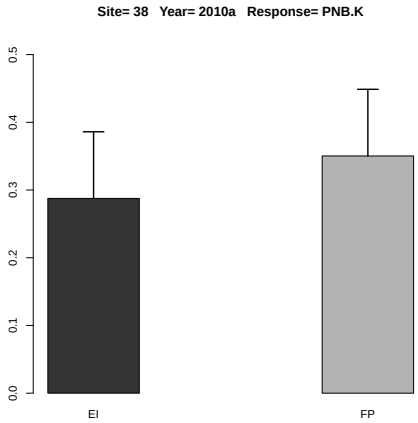

Figure 14.24: Estimated treatment means and standard error in the one-way ANOVA.

14.1.20 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.152
2	2	EI	N	0.141
3	3	EI	N	0.127
4	4	EI	N	0.155

Table 14.60: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

There is no or sufficient data for this response variable at this site and year.

14.1.21 Response Variable PNB.S

	rep	A	B	y
1	1	EI	N	0.248
2	2	EI	N	0.230
3	3	EI	N	0.151
4	4	EI	N	0.196

Table 14.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.S

There is no or sufficient data for this response variable at this site and year.

14.1.22 Response Variable AE

	rep	A	B	y
1	1	EI	N	-1.840
2	2	EI	N	5.570
3	3	EI	N	16.870
4	4	EI	N	1.230
5	1	FP	N	-8.907
6	2	FP	N	3.560
7	3	FP	N	8.413
8	4	FP	N	8.393

Table 14.62: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	5.458	2.499	2.184	0.213
A FP	2.865	2.499	1.146	0.543
A EI-FP	2.593	3.535	0.733	0.754

Table 14.63: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 38 in year 2010a .

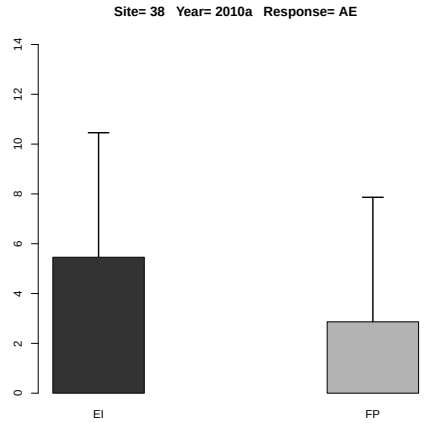

Figure 14.25: Estimated treatment means and standard error in the one-way ANOVA.

14.2 Year 2010b

There are 47 variables not observed: UG.Ca UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

14.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	2492.000
2	2	EI	N0	1725.000
3	3	EI	N0	5796.000
4	4	EI	N0	6691.000
5	1	EI	N	7528.000
6	2	EI	N	7364.000
7	3	EI	N	8208.000
8	4	EI	N	6889.000
9	1	FP	N0	1398.000
10	2	FP	N0	2377.000
11	3	FP	N0	3376.000
12	4	FP	N0	5050.000
13	1	FP	N	6790.000
14	2	FP	N	7340.000
15	3	FP	N	8113.000
16	4	FP	N	8877.000

Table 14.64: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	7497.250	417.662	17.951	0.001
A FP	7780.000	417.662	18.627	0.001
A EI-FP	-282.750	590.663	-0.479	0.880

Table 14.65: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 38 in year 2010b .

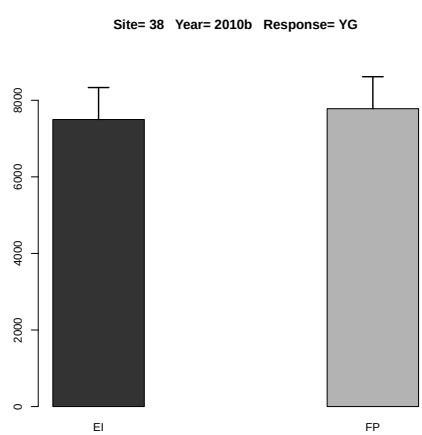

Figure 14.26: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	710649.000	710649.000	0.536	7.369	0.487
B	1.000	64818601.000	64818601.000	48.861	7.369	0.000
A:B	1.000	1983872.250	1983872.250	1.495	7.369	0.259

Table 14.66: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5836.625	653.572	4.500	8.930	4100.421	7572.829	0.000
2	FP		5415.125	653.572	4.500	8.290	3678.921	7151.329	0.001
3		N	7638.625	653.572	4.500	11.690	5902.421	9374.829	0.000
4		N0	3613.125	653.572	4.500	5.530	1876.921	5349.329	0.004
5	EI	N	7497.250	770.052	7.300	9.740	5693.351	9301.149	0.000
6	FP	N	7780.000	770.052	7.300	10.100	5976.101	9583.899	0.000
7	EI	N0	4176.000	770.052	7.300	5.420	2372.101	5979.899	0.001
8	FP	N0	3050.250	770.052	7.300	3.960	1246.351	4854.149	0.005

Table 14.67: Estimate of treatment means in tow-way ANOVA for variable YG at site 38 in year 2010b .

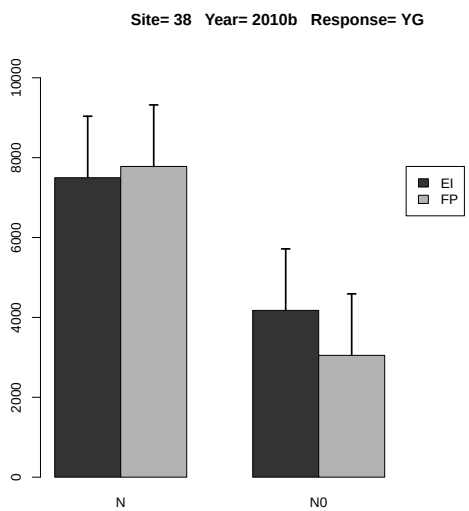

Figure 14.27: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	421.500	575.888	7.400	0.730	-926.558	1769.558	0.487
B N-N0	4025.500	575.888	7.400	6.990	2677.442	5373.558	0.000
A:B EI N- FP N	-282.750	814.428	7.400	-0.350	-2189.192	1623.692	0.738
A:B EI N- EI N0	3321.250	814.428	7.400	4.080	1414.808	5227.692	0.004
A:B EI N- FP N0	4447.000	814.428	7.400	5.460	2540.558	6353.442	0.001
A:B FP N- EI N0	3604.000	814.428	7.400	4.430	1697.558	5510.442	0.003
A:B FP N- FP N0	4729.750	814.428	7.400	5.810	2823.308	6636.192	0.000
A:B EI N0- FP N0	1125.750	814.428	7.400	1.380	-780.692	3032.192	0.207

Table 14.68: Estimate of contrast in two-way ANOVA for variable YG at site 38 in year 2010b .

14.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	5787.000
2	2	EI	N0	3525.000
3	3	EI	N0	13781.000
4	4	EI	N0	14733.000
5	1	EI	N	15839.000
6	2	EI	N	15335.000
7	3	EI	N	18520.000
8	4	EI	N	18446.000
9	1	FP	N0	2821.000
10	2	FP	N0	5643.000
11	3	FP	N0	7750.000
12	4	FP	N0	10400.000
13	1	FP	N	14770.000
14	2	FP	N	17615.000
15	3	FP	N	19515.000
16	4	FP	N	24164.000

Table 14.69: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	17035.000	1006.836	16.919	0.000
A FP	19016.000	1006.836	18.887	0.000
A EI-FP	-1981.000	1423.882	-1.391	0.437

Table 14.70: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 38 in year 2010b .

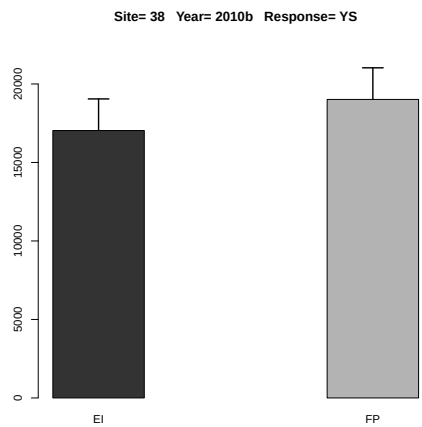

Figure 14.28: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	557530.560	557530.560	0.135	2.999	0.738
B	1.000	397643481.000	397643481.000	96.062	8.697	0.000
A:B	1.000	22886656.000	22886656.000	5.529	8.697	0.044

Table 14.71: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13245.750	1806.014	3.600	7.330	8023.759	18467.741	0.003
2	FP		12834.750	1806.014	3.600	7.110	7612.759	18056.741	0.003
3		N	18025.500	1790.771	3.500	10.070	12788.059	23262.941	0.001
4		N0	8055.000	1790.771	3.500	4.500	2817.559	13292.441	0.014
5	EI	N	17035.000	1943.995	4.800	8.760	11982.278	22087.722	0.000
6	FP	N	19016.000	1943.995	4.800	9.780	13963.278	24068.722	0.000
7	EI	N0	9456.500	1943.995	4.800	4.860	4403.778	14509.222	0.005
8	FP	N0	6653.500	1943.995	4.800	3.420	1600.777	11706.222	0.020

Table 14.72: Estimate of treatment means in tow-way ANOVA for variable YS at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	411.000	1119.898	3.000	0.370	-3153.641	3975.641	0.738
B N-N0	9970.500	1017.281	8.700	9.800	7657.271	12283.729	0.000
A:B EI N- FP N	-1981.000	1512.955	8.100	-1.310	-5462.845	1500.845	0.226
A:B EI N- EI N0	7578.500	1438.653	8.700	5.270	4307.100	10849.900	0.001
A:B EI N- FP N0	10381.500	1512.955	8.100	6.860	6899.655	13863.345	0.000
A:B FP N- EI N0	9559.500	1512.955	8.100	6.320	6077.655	13041.345	0.000
A:B FP N- FP N0	12362.500	1438.653	8.700	8.590	9091.100	15633.900	0.000
A:B EI N0- FP N0	2803.000	1512.955	8.100	1.850	-678.845	6284.845	0.101

Table 14.73: Estimate of contrast in two-way ANOVA for variable YS at site 38 in year 2010b .

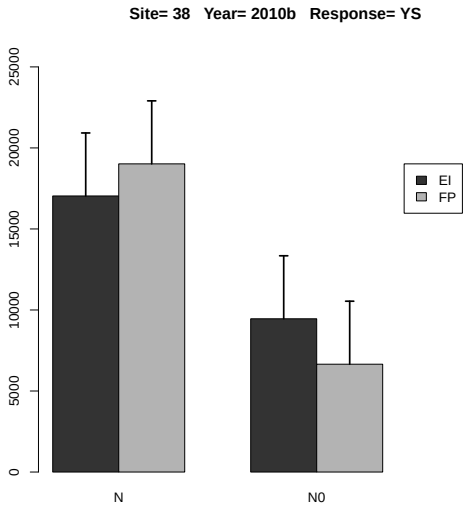

Figure 14.29: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	8279.000
2	2	EI	N0	5250.000
3	3	EI	N0	19577.000
4	4	EI	N0	21424.000
5	1	EI	N	23367.000
6	2	EI	N	22699.000
7	3	EI	N	26728.000
8	4	EI	N	25335.000
9	1	FP	N0	4219.000
10	2	FP	N0	8020.000
11	3	FP	N0	11126.000
12	4	FP	N0	15450.000
13	1	FP	N	21560.000
14	2	FP	N	24955.000
15	3	FP	N	27628.000
16	4	FP	N	33041.000

Table 14.74: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	24532.250	1414.935	17.338	0.000
A FP	26796.000	1414.935	18.938	0.001
A EI-FP	-2263.750	2001.020	-1.131	0.550

Table 14.75: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 38 in year 2010b .

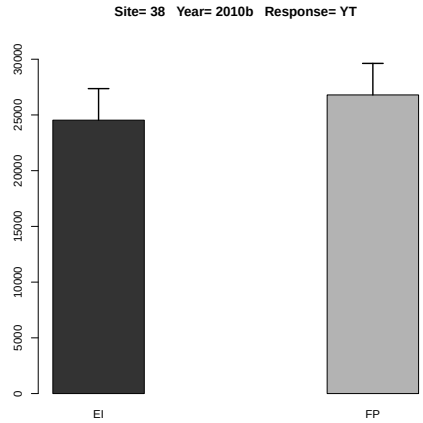

Figure 14.30: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2772225.000	2772225.000	0.280	18.119	0.603
B	1.000	783552064.000	783552064.000	79.094	18.119	0.000
A:B	1.000	38347056.250	38347056.250	3.871	18.119	0.065

Table 14.76: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19082.375	2433.154	3.700	7.840	12131.971	26032.779	0.002
2	FP		18249.875	2433.154	3.700	7.500	11299.471	25200.279	0.002
3		N	25664.125	2433.154	3.700	10.550	18713.721	32614.529	0.001
4		N0	11668.125	2433.154	3.700	4.800	4717.721	18618.529	0.010
5	EI	N	24532.250	2675.550	5.400	9.170	17791.613	31272.887	0.000
6	FP	N	26796.000	2675.550	5.400	10.020	20055.363	33536.637	0.000
7	EI	N0	13632.500	2675.550	5.400	5.100	6891.863	20373.137	0.003
8	FP	N0	9703.750	2675.550	5.400	3.630	2963.113	16444.387	0.013

Table 14.77: Estimate of treatment means in tow-way ANOVA for variable YT at site 38 in year 2010b .

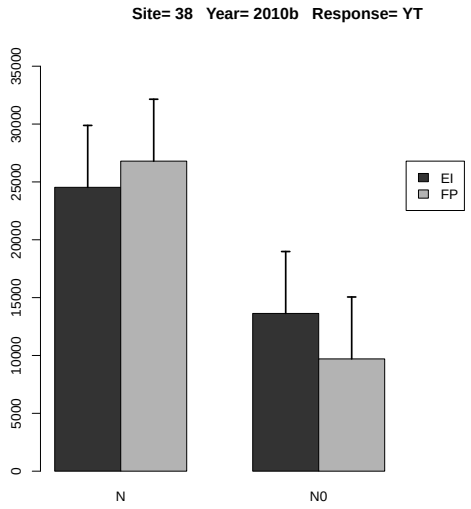

Figure 14.31: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	832.500	1573.740	18.100	0.530	-2472.255	4137.255	0.603
B N-N0	13996.000	1573.740	18.100	8.890	10691.246	17300.754	0.000
A:B EI N- FP N	-2263.750	2225.604	18.100	-1.020	-6937.379	2409.879	0.323
A:B EI N- EI N0	10899.750	2225.604	18.100	4.900	6226.121	15573.379	0.000
A:B EI N- FP N0	14828.500	2225.604	18.100	6.660	10154.871	19502.129	0.000
A:B FP N- EI N0	13163.500	2225.604	18.100	5.910	8489.871	17837.129	0.000
A:B FP N- FP N0	17092.250	2225.604	18.100	7.680	12418.621	21765.879	0.000
A:B EI N0- FP N0	3928.750	2225.604	18.100	1.770	-744.879	8602.379	0.094

Table 14.78: Estimate of contrast in two-way ANOVA for variable YT at site 38 in year 2010b .

14.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.301
2	2	EI	N0	0.329
3	3	EI	N0	0.296
4	4	EI	N0	0.312
5	1	EI	N	0.322
6	2	EI	N	0.324
7	3	EI	N	0.307
8	4	EI	N	0.272
9	1	FP	N0	0.331
10	2	FP	N0	0.296
11	3	FP	N0	0.303
12	4	FP	N0	0.327
13	1	FP	N	0.315
14	2	FP	N	0.294
15	3	FP	N	0.294
16	4	FP	N	0.269

Table 14.79: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.306	0.004	72.701	0.000
A FP	0.293	0.004	69.485	0.000
A EI-FP	0.014	0.006	2.274	0.197

Table 14.80: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 38 in year 2010b .

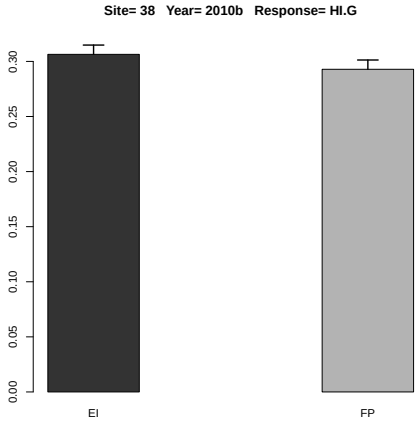

Figure 14.32: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.199	-0.000	
B	1.000	0.001	0.001	1.722	-0.000	
A:B	1.000	0.000	0.000	0.970	-0.000	

Table 14.81: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.308	0.007	-13.400	45.380			
2	FP		0.304	0.007	-13.400	44.760			
3		N	0.300	0.007	12.700	44.470	0.285	0.314	0.000
4		N0	0.312	0.007	12.700	46.300	0.297	0.327	0.000
5	EI	N	0.306	0.009	12.000	32.200	0.286	0.327	0.000
6	FP	N	0.293	0.009	12.000	30.780	0.272	0.314	0.000
7	EI	N0	0.309	0.009	12.000	32.530	0.289	0.330	0.000
8	FP	N0	0.314	0.009	12.000	33.060	0.294	0.335	0.000

Table 14.82: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.004	0.010	-29.800	0.450			
B N-N0	-0.012	0.009	-8.600	-1.310			
A:B EI N- FP N	0.014	0.013	13.400	1.010	-0.015	0.042	0.331
A:B EI N- EI N0	-0.003	0.013	-8.600	-0.230			
A:B EI N- FP N0	-0.008	0.013	13.400	-0.600	-0.037	0.021	0.556
A:B FP N- EI N0	-0.017	0.013	13.400	-1.240	-0.046	0.012	0.237
A:B FP N- FP N0	-0.022	0.013	-8.600	-1.620			
A:B EI N0- FP N0	-0.005	0.013	13.400	-0.370	-0.034	0.024	0.714

Table 14.83: Estimate of contrast in two-way ANOVA for variable HI.G at site 38 in year 2010b .

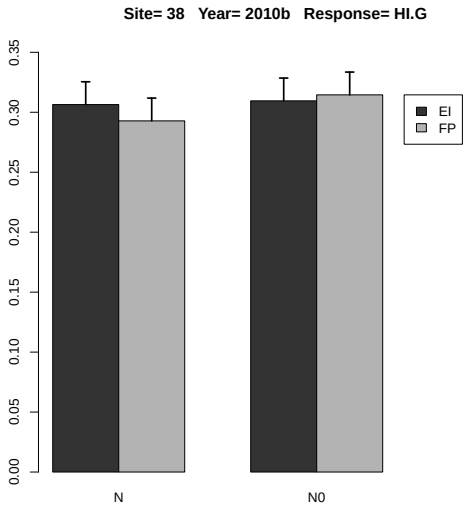

Figure 14.33: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	32.147
2	2	EI	N0	21.390
3	3	EI	N0	49.846
4	4	EI	N0	99.027
5	1	EI	N	73.774
6	2	EI	N	69.958
7	3	EI	N	15.595
8	4	EI	N	83.357
9	1	FP	N0	18.454
10	2	FP	N0	33.278
11	3	FP	N0	32.072
12	4	FP	N0	46.965
13	1	FP	N	86.912
14	2	FP	N	64.592
15	3	FP	N	83.564
16	4	FP	N	91.433

Table 14.84: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	60.671	11.420	5.313	0.025
A FP	81.625	11.420	7.147	0.011
A EI-FP	-20.954	16.150	-1.297	0.475

Table 14.85: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 38 in year 2010b .

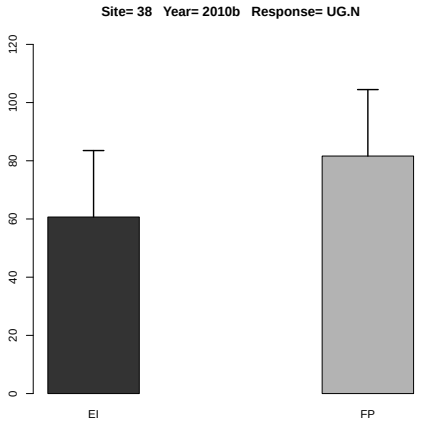

Figure 14.34: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9.266	9.266	0.021	9.000	0.889
B	1.000	3481.227	3481.227	7.781	9.000	0.021
A:B	1.000	1510.432	1510.432	3.376	9.000	0.099

Table 14.86: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		55.637	9.666	5.800	5.760	31.742	79.531	0.001
2	FP		57.159	9.666	5.800	5.910	33.264	81.053	0.001
3		N	71.148	9.666	5.800	7.360	47.254	95.043	0.000
4		N0	41.647	9.666	5.800	4.310	17.753	65.542	0.005
5	EI	N	60.671	12.221	10.100	4.960	33.474	87.869	0.001
6	FP	N	81.625	12.221	10.100	6.680	54.428	108.823	0.000
7	EI	N0	50.602	12.221	10.100	4.140	23.405	77.800	0.002
8	FP	N0	32.692	12.221	10.100	2.680	5.495	59.890	0.023

Table 14.87: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 38 in year 2010b .

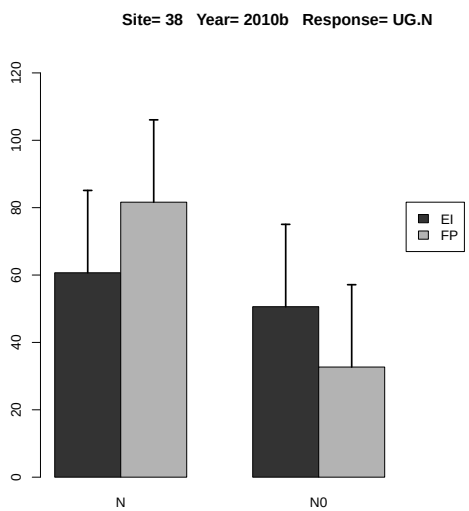

Figure 14.35: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.522	10.576	9.000	-0.140	-25.446	22.402	0.889
B N-N0	29.501	10.576	9.000	2.790	5.577	53.425	0.021
A:B EI N- FP N	-20.954	14.956	9.000	-1.400	-54.788	12.880	0.195
A:B EI N- EI N0	10.069	14.956	9.000	0.670	-23.765	43.903	0.518
A:B EI N- FP N0	27.979	14.956	9.000	1.870	-5.855	61.813	0.094
A:B FP N- EI N0	31.023	14.956	9.000	2.070	-2.811	64.857	0.068
A:B FP N- FP N0	48.933	14.956	9.000	3.270	15.099	82.767	0.010
A:B EI N0- FP N0	17.910	14.956	9.000	1.200	-15.924	51.744	0.262

Table 14.88: Estimate of contrast in two-way ANOVA for variable UG.N at site 38 in year 2010b .

14.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	5.482
2	2	EI	N0	3.277
3	3	EI	N0	16.808
4	4	EI	N0	11.375
5	1	EI	N	18.067
6	2	EI	N	15.464
7	3	EI	N	17.237
8	4	EI	N	15.156
9	1	FP	N0	3.076
10	2	FP	N0	4.992
11	3	FP	N0	8.102
12	4	FP	N0	12.120
13	1	FP	N	13.580
14	2	FP	N	17.616
15	3	FP	N	18.660
16	4	FP	N	21.305

Table 14.89: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	16.481	1.551	10.625	0.003
A FP	17.790	1.551	11.469	0.003
A EI-FP	-1.309	2.194	-0.597	0.824

Table 14.90: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 38 in year 2010b .

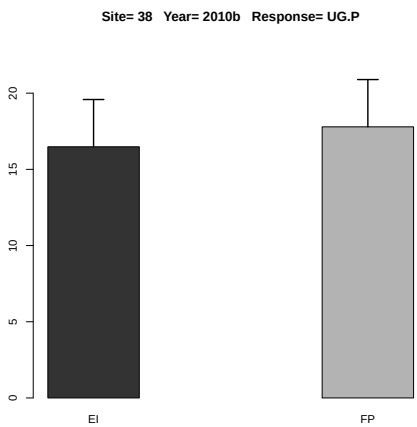

Figure 14.36: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.535	0.535	0.055	2.999	0.830
B	1.000	322.671	322.671	32.966	6.000	0.001
A:B	1.000	12.058	12.058	1.232	6.000	0.310

Table 14.91: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.858	1.685	5.100	7.630	8.557	17.160	0.001
2	FP		12.431	1.685	5.100	7.380	8.130	16.732	0.001
3		N	17.136	1.618	4.900	10.590	12.945	21.326	0.000
4		N0	8.154	1.618	4.900	5.040	3.963	12.345	0.004
5	EI	N	16.481	2.016	9.100	8.170	11.925	21.037	0.000
6	FP	N	17.790	2.016	9.100	8.820	13.234	22.346	0.000
7	EI	N0	9.236	2.016	9.100	4.580	4.679	13.792	0.001
8	FP	N0	7.072	2.016	9.100	3.510	2.516	11.629	0.007

Table 14.92: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.427	1.827	3.000	0.230	-5.386	6.240	0.830
B N-N0	8.982	1.564	6.000	5.740	5.154	12.809	0.001
A:B EI N- FP N	-1.309	2.405	7.100	-0.540	-6.979	4.361	0.603
A:B EI N- EI N0	7.245	2.212	6.000	3.280	1.832	12.659	0.017
A:B EI N- FP N0	9.409	2.405	7.100	3.910	3.739	15.078	0.006
A:B FP N- EI N0	8.554	2.405	7.100	3.560	2.885	14.224	0.009
A:B FP N- FP N0	10.718	2.212	6.000	4.840	5.304	16.131	0.003
A:B EI N0- FP N0	2.163	2.405	7.100	0.900	-3.506	7.833	0.398

Table 14.93: Estimate of contrast in two-way ANOVA for variable UG.P at site 38 in year 2010b .

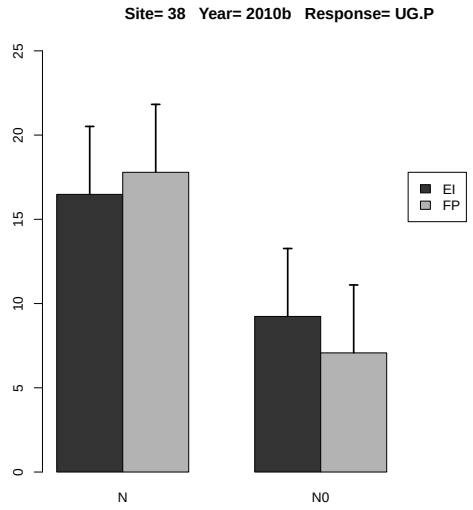

Figure 14.37: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	12.555
2	2	EI	N0	7.505
3	3	EI	N0	38.491
4	4	EI	N0	26.048
5	1	EI	N	41.374
6	2	EI	N	35.413
7	3	EI	N	39.472
8	4	EI	N	34.707
9	1	FP	N0	7.043
10	2	FP	N0	11.431
11	3	FP	N0	18.554
12	4	FP	N0	27.755
13	1	FP	N	31.098
14	2	FP	N	40.341
15	3	FP	N	42.731
16	4	FP	N	48.788

Table 14.94: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	37.742	3.552	10.625	0.003
A FP	40.740	3.552	11.469	0.003
A EI-FP	-2.998	5.023	-0.597	0.824

Table 14.95: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 38 in year 2010b .

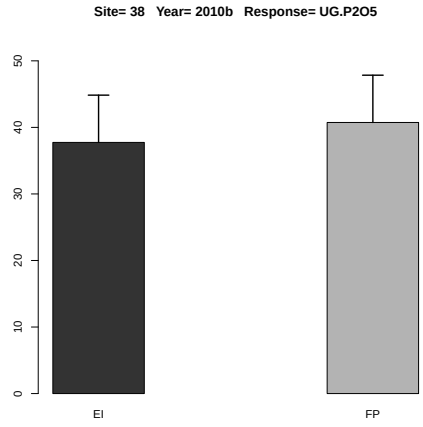

Figure 14.38: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.807	2.807	0.055	2.999	0.830
B	1.000	1692.120	1692.120	32.966	6.000	0.001
A:B	1.000	63.233	63.233	1.232	6.000	0.310

Table 14.96: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.446	3.860	5.100	7.630	19.596	39.295	0.001
2	FP		28.468	3.860	5.100	7.380	18.618	38.317	0.001
3		N	39.241	3.706	4.900	10.590	29.644	48.837	0.000
4		N0	18.673	3.706	4.900	5.040	9.076	28.270	0.004
5	EI	N	37.742	4.617	9.100	8.170	27.308	48.175	0.000
6	FP	N	40.739	4.617	9.100	8.820	30.306	51.173	0.000
7	EI	N0	21.150	4.617	9.100	4.580	10.716	31.584	0.001
8	FP	N0	16.196	4.617	9.100	3.510	5.762	26.630	0.007

Table 14.97: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 38 in year 2010b .

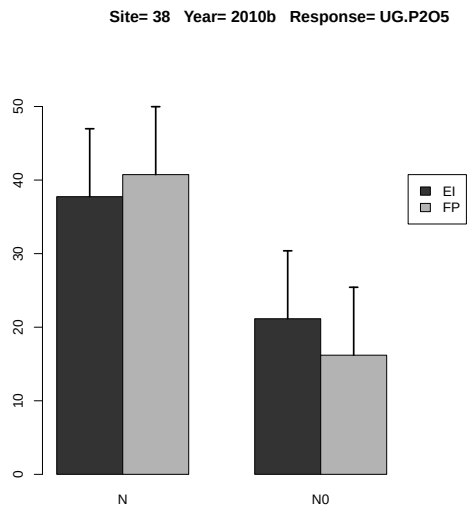

Figure 14.39: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.978	4.183	3.000	0.230	-12.335	14.291	0.830
B N-N0	20.568	3.582	6.000	5.740	11.802	29.333	0.001
A:B EI N- FP N	-2.998	5.507	7.100	-0.540	-15.982	9.986	0.603
A:B EI N- EI N0	16.592	5.066	6.000	3.280	4.196	28.988	0.017
A:B EI N- FP N0	21.546	5.507	7.100	3.910	8.562	34.529	0.006
A:B FP N- EI N0	19.590	5.507	7.100	3.560	6.606	32.573	0.009
A:B FP N- FP N0	24.544	5.066	6.000	4.840	12.148	36.940	0.003
A:B EI N0- FP N0	4.954	5.507	7.100	0.900	-8.030	17.938	0.398

Table 14.98: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 38 in year 2010b .

14.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	4.984
2	2	EI	N0	2.933
3	3	EI	N0	25.502
4	4	EI	N0	10.037
5	1	EI	N	16.562
6	2	EI	N	16.201
7	3	EI	N	13.954
8	4	EI	N	11.711
9	1	FP	N0	2.377
10	2	FP	N0	3.803
11	3	FP	N0	8.778
12	4	FP	N0	11.110
13	1	FP	N	14.938
14	2	FP	N	17.616
15	3	FP	N	16.226
16	4	FP	N	21.305

Table 14.99: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	14.607	1.682	8.686	0.006
A FP	17.521	1.682	10.420	0.003
A EI-FP	-2.914	2.378	-1.226	0.506

Table 14.100: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 38 in year 2010b .

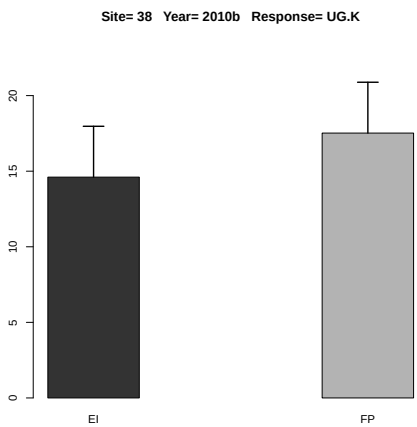

Figure 14.40: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.052	2.052	0.063	9.000	0.807
B	1.000	217.484	217.484	6.719	9.000	0.029
A:B	1.000	52.728	52.728	1.629	9.000	0.234

Table 14.101: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.735	2.076	8.500	6.140	7.993	17.478	0.000
2	FP		12.019	2.076	8.500	5.790	7.277	16.761	0.000
3		N	16.064	2.076	8.500	7.740	11.322	20.806	0.000
4		N0	8.690	2.076	8.500	4.190	3.948	13.433	0.003
5	EI	N	14.607	2.890	12.000	5.050	8.307	20.907	0.000
6	FP	N	17.521	2.890	12.000	6.060	11.222	23.821	0.000
7	EI	N0	10.864	2.890	12.000	3.760	4.564	17.164	0.003
8	FP	N0	6.517	2.890	12.000	2.250	0.217	12.817	0.044

Table 14.102: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.716	2.845	9.000	0.250	-5.719	7.151	0.807
B N-N0	7.374	2.845	9.000	2.590	0.939	13.809	0.029
A:B EI N- FP N	-2.914	4.023	9.000	-0.720	-12.015	6.186	0.487
A:B EI N- EI N0	3.743	4.023	9.000	0.930	-5.358	12.844	0.376
A:B EI N- FP N0	8.090	4.023	9.000	2.010	-1.011	17.191	0.075
A:B FP N- EI N0	6.657	4.023	9.000	1.650	-2.443	15.758	0.132
A:B FP N- FP N0	11.004	4.023	9.000	2.740	1.904	20.105	0.023
A:B EI N0- FP N0	4.347	4.023	9.000	1.080	-4.754	13.448	0.308

Table 14.103: Estimate of contrast in two-way ANOVA for variable UG.K at site 38 in year 2010b .

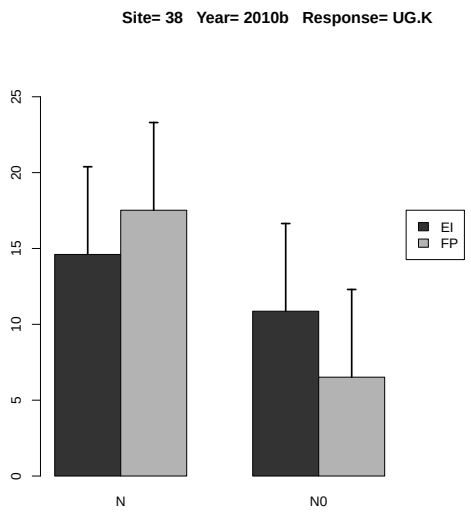

Figure 14.41: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	6.006
2	2	EI	N0	3.534
3	3	EI	N0	30.730
4	4	EI	N0	12.094
5	1	EI	N	19.957
6	2	EI	N	19.522
7	3	EI	N	16.814
8	4	EI	N	14.112
9	1	FP	N0	2.864
10	2	FP	N0	4.583
11	3	FP	N0	10.577
12	4	FP	N0	13.388
13	1	FP	N	18.000
14	2	FP	N	21.227
15	3	FP	N	19.552
16	4	FP	N	25.672

Table 14.104: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	17.601	2.026	8.686	0.006
A FP	21.113	2.026	10.420	0.003
A EI-FP	-3.512	2.866	-1.226	0.506

Table 14.105: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 38 in year 2010b .

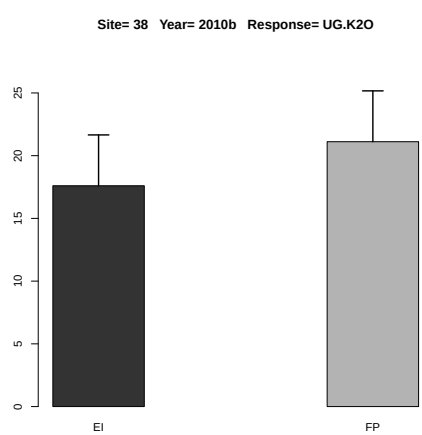

Figure 14.42: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.980	2.980	0.063	9.000	0.807
B	1.000	315.792	315.792	6.719	9.000	0.029
A:B	1.000	76.562	76.562	1.629	9.000	0.234

Table 14.106: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		15.346	2.501	8.500	6.140	9.632	21.061	0.000
2	FP		14.483	2.501	8.500	5.790	8.768	20.198	0.000
3		N	19.357	2.501	8.500	7.740	13.643	25.072	0.000
4		N0	10.472	2.501	8.500	4.190	4.757	16.186	0.003
5	EI	N	17.601	3.483	12.000	5.050	10.010	25.192	0.000
6	FP	N	21.113	3.483	12.000	6.060	13.522	28.704	0.000
7	EI	N0	13.091	3.483	12.000	3.760	5.500	20.682	0.003
8	FP	N0	7.853	3.483	12.000	2.250	0.262	15.444	0.044

Table 14.107: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 38 in year 2010b .

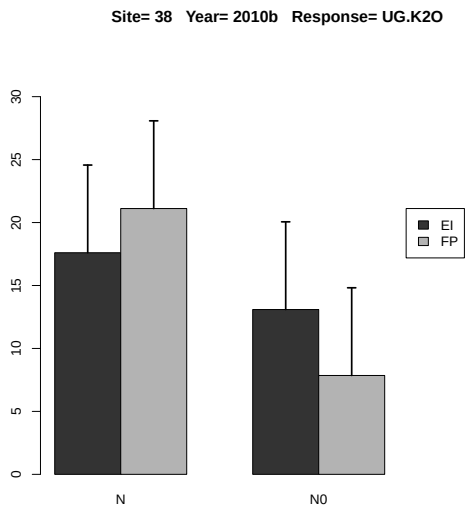

Figure 14.43: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.863	3.428	9.000	0.250	-6.891	8.617	0.807
B N-N0	8.885	3.428	9.000	2.590	1.131	16.640	0.029
A:B EI N- FP N	-3.512	4.848	9.000	-0.720	-14.478	7.454	0.487
A:B EI N- EI N0	4.510	4.848	9.000	0.930	-6.456	15.476	0.376
A:B EI N- FP N0	9.748	4.848	9.000	2.010	-1.218	20.715	0.075
A:B FP N- EI N0	8.022	4.848	9.000	1.650	-2.944	18.988	0.132
A:B FP N- FP N0	13.260	4.848	9.000	2.740	2.294	24.226	0.023
A:B EI N0- FP N0	5.238	4.848	9.000	1.080	-5.728	16.204	0.308

Table 14.108: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 38 in year 2010b
.

14.2.10 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	1.495
2	2	EI	N0	1.035
3	3	EI	N0	4.637
4	4	EI	N0	3.345
5	1	EI	N	4.517
6	2	EI	N	5.155
7	3	EI	N	4.925
8	4	EI	N	4.133
9	1	FP	N0	0.839
10	2	FP	N0	1.426
11	3	FP	N0	2.363
12	4	FP	N0	3.030
13	1	FP	N	4.753
14	2	FP	N	4.404
15	3	FP	N	4.868
16	4	FP	N	5.326

Table 14.109: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	4.682	0.285	16.431	0.000
A FP	4.838	0.285	16.976	0.001
A EI-FP	-0.155	0.403	-0.385	0.919

Table 14.110: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 38 in year 2010b .

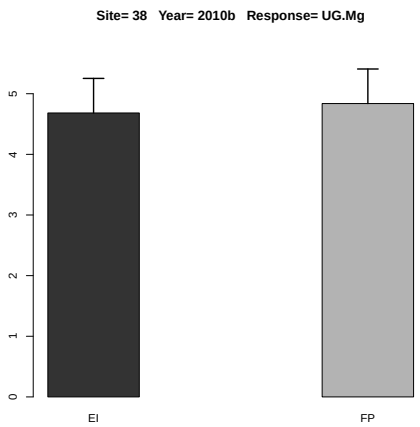

Figure 14.44: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.312	0.312	0.398	8.999	0.544
B	1.000	24.776	24.776	31.608	8.999	0.000
A:B	1.000	0.755	0.755	0.963	8.999	0.352

Table 14.111: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.655	0.397	5.900	9.210	2.681	4.629	0.000
2	FP		3.376	0.397	5.900	8.510	2.402	4.350	0.000
3		N	4.760	0.397	5.900	12.000	3.786	5.734	0.000
4		N0	2.271	0.397	5.900	5.730	1.297	3.245	0.001
5	EI	N	4.683	0.505	10.300	9.270	3.561	5.804	0.000
6	FP	N	4.838	0.505	10.300	9.570	3.716	5.959	0.000
7	EI	N0	2.628	0.505	10.300	5.200	1.507	3.749	0.000
8	FP	N0	1.915	0.505	10.300	3.790	0.793	3.036	0.003

Table 14.112: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.279	0.443	9.000	0.630	-0.722	1.281	0.544
B N-N0	2.489	0.443	9.000	5.620	1.487	3.490	0.000
A:B EI N- FP N	-0.155	0.626	9.000	-0.250	-1.571	1.261	0.810
A:B EI N- EI N0	2.054	0.626	9.000	3.280	0.638	3.470	0.009
A:B EI N- FP N0	2.768	0.626	9.000	4.420	1.352	4.184	0.002
A:B FP N- EI N0	2.210	0.626	9.000	3.530	0.793	3.626	0.006
A:B FP N- FP N0	2.923	0.626	9.000	4.670	1.507	4.339	0.001
A:B EI N0- FP N0	0.714	0.626	9.000	1.140	-0.703	2.130	0.284

Table 14.113: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 38 in year 2010b
.

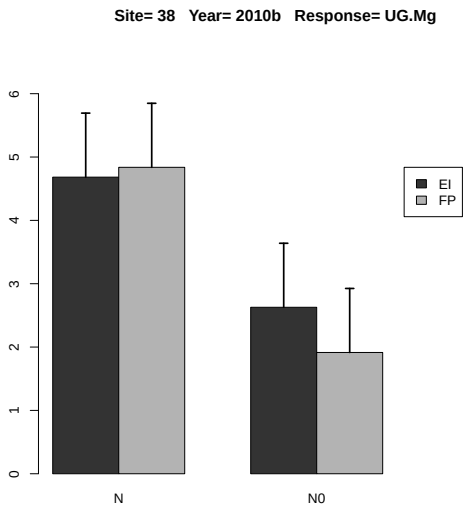

Figure 14.45: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.11 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	2.243
2	2	EI	N0	1.035
3	3	EI	N0	3.478
4	4	EI	N0	3.345
5	1	EI	N	7.528
6	2	EI	N	5.155
7	3	EI	N	3.283
8	4	EI	N	4.822
9	1	FP	N0	1.258
10	2	FP	N0	1.664
11	3	FP	N0	1.688
12	4	FP	N0	2.525
13	1	FP	N	8.827
14	2	FP	N	4.404
15	3	FP	N	4.057
16	4	FP	N	3.551

Table 14.114: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	5.197	0.431	12.049	0.002
A FP	5.210	0.431	12.078	0.002
A EI-FP	-0.013	0.610	-0.020	1.000

Table 14.115: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 38 in year 2010b .

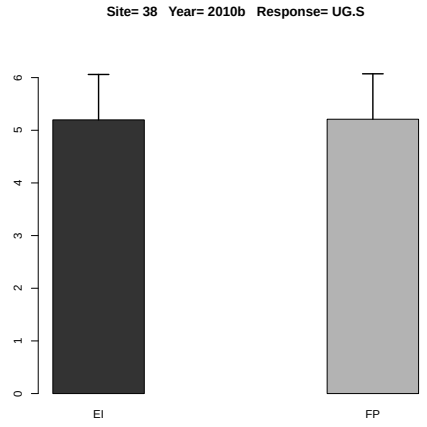

Figure 14.46: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.531	0.531	0.214	8.999	0.655
B	1.000	37.181	37.181	14.945	8.999	0.004
A:B	1.000	0.568	0.568	0.228	8.999	0.644

Table 14.116: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3.861	0.593	8.000	6.520	2.494	5.228	0.000
2	FP		3.497	0.593	8.000	5.900	2.130	4.864	0.000
3		N	5.203	0.593	8.000	8.780	3.836	6.571	0.000
4		N0	2.155	0.593	8.000	3.640	0.787	3.522	0.007
5	EI	N	5.197	0.814	11.900	6.390	3.422	6.972	0.000
6	FP	N	5.210	0.814	11.900	6.400	3.434	6.985	0.000
7	EI	N0	2.525	0.814	11.900	3.100	0.750	4.300	0.009
8	FP	N0	1.784	0.814	11.900	2.190	0.009	3.559	0.049

Table 14.117: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 38 in year 2010b .

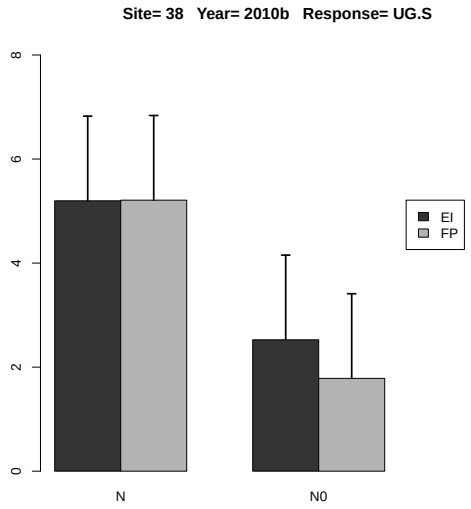

Figure 14.47: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.364	0.789	9.000	0.460	-1.420	2.148	0.655
B N-N0	3.049	0.789	9.000	3.870	1.265	4.833	0.004
A:B EI N- FP N	-0.012	1.115	9.000	-0.010	-2.535	2.510	0.991
A:B EI N- EI N0	2.672	1.115	9.000	2.400	0.149	5.195	0.040
A:B EI N- FP N0	3.413	1.115	9.000	3.060	0.890	5.936	0.014
A:B FP N- EI N0	2.684	1.115	9.000	2.410	0.161	5.207	0.040
A:B FP N- FP N0	3.426	1.115	9.000	3.070	0.903	5.949	0.013
A:B EI N0- FP N0	0.741	1.115	9.000	0.660	-1.782	3.264	0.523

Table 14.118: Estimate of contrast in two-way ANOVA for variable UG.S at site 38 in year 2010b .

14.2.12 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	32.083
2	2	EI	N0	29.068
3	3	EI	N0	54.078
4	4	EI	N0	147.063
5	1	EI	N	80.793
6	2	EI	N	80.848
7	3	EI	N	155.906
8	4	EI	N	132.731
9	1	FP	N0	20.968
10	2	FP	N0	54.602
11	3	FP	N0	35.406
12	4	FP	N0	48.055
13	1	FP	N	79.718
14	2	FP	N	66.445
15	3	FP	N	123.744
16	4	FP	N	131.462

Table 14.119: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	112.569	5.190	21.688	0.000
A FP	100.342	5.190	19.332	0.001
A EI-FP	12.227	7.340	1.666	0.339

Table 14.120: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 38 in year 2010b .

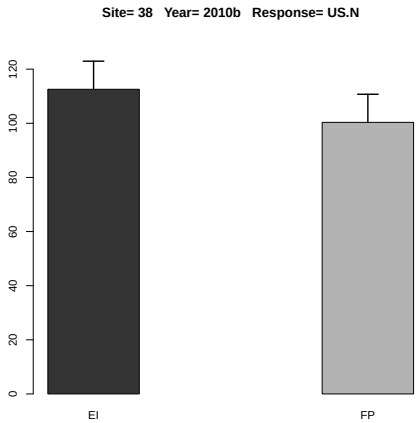

Figure 14.48: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1447.258	1447.258	1.857	9.000	0.206
B	1.000	11573.650	11573.650	14.854	9.000	0.004
A:B	1.000	184.635	184.635	0.237	9.000	0.638

Table 14.121: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		89.071	16.204	4.400	5.500	45.800	132.342	0.004
2	FP		70.050	16.204	4.400	4.320	26.779	113.321	0.010
3		N	106.456	16.204	4.400	6.570	63.184	149.727	0.002
4		N0	52.665	16.204	4.400	3.250	9.394	95.936	0.027
5	EI	N	112.569	18.973	7.400	5.930	68.139	157.000	0.000
6	FP	N	100.342	18.973	7.400	5.290	55.911	144.773	0.001
7	EI	N0	65.573	18.973	7.400	3.460	21.142	110.004	0.010
8	FP	N0	39.758	18.973	7.400	2.100	-4.673	84.188	0.072

Table 14.122: Estimate of treatment means in tow-way ANOVA for variable US.N at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	19.021	13.957	9.000	1.360	-12.552	50.594	0.206
B N-N0	53.791	13.957	9.000	3.850	22.218	85.363	0.004
A:B EI N- FP N	12.227	19.738	9.000	0.620	-32.423	56.878	0.551
A:B EI N- EI N0	46.996	19.738	9.000	2.380	2.346	91.647	0.041
A:B EI N- FP N0	72.812	19.738	9.000	3.690	28.161	117.463	0.005
A:B FP N- EI N0	34.769	19.738	9.000	1.760	-9.882	79.420	0.112
A:B FP N- FP N0	60.584	19.738	9.000	3.070	15.934	105.235	0.013
A:B EI N0- FP N0	25.816	19.738	9.000	1.310	-18.835	70.466	0.223

Table 14.123: Estimate of contrast in two-way ANOVA for variable US.N at site 38 in year 2010b .

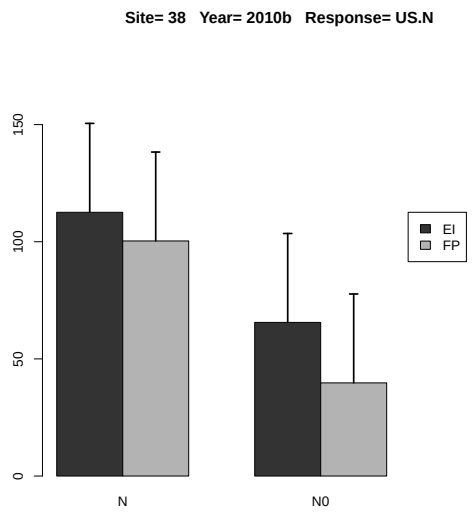

Figure 14.49: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.13 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	2.801
2	2	EI	N0	2.381
3	3	EI	N0	34.773
4	4	EI	N0	8.449
5	1	EI	N	9.372
6	2	EI	N	6.280
7	3	EI	N	10.817
8	4	EI	N	17.857
9	1	FP	N0	1.667
10	2	FP	N0	2.821
11	3	FP	N0	6.139
12	4	FP	N0	7.097
13	1	FP	N	9.966
14	2	FP	N	153.173
15	3	FP	N	27.942
16	4	FP	N	23.300

Table 14.124: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	11.082	24.724	0.448	0.894
A FP	53.595	24.724	2.168	0.216
A EI-FP	-42.514	34.966	-1.216	0.511

Table 14.125: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 38 in year 2010b .

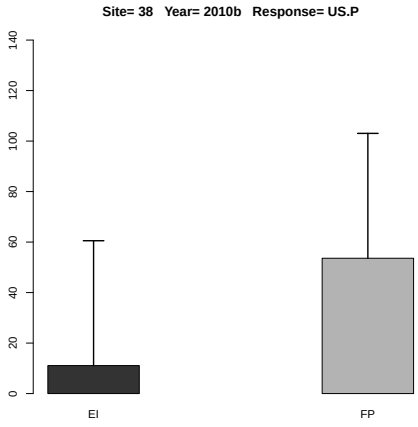

Figure 14.50: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1214.089	1214.089	1.026	11.999	0.331
B	1.000	2317.939	2317.939	1.959	11.999	0.187
A:B	1.000	2518.441	2518.441	2.129	11.999	0.170

Table 14.126: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.591	12.160	12.000	0.950	-14.904	38.086	0.359
2	FP		29.013	12.160	12.000	2.390	2.518	55.508	0.034
3		N	32.339	12.160	12.000	2.660	5.843	58.834	0.021
4		N0	8.266	12.160	12.000	0.680	-18.229	34.761	0.510
5	EI	N	11.082	17.197	12.000	0.640	-26.388	48.551	0.531
6	FP	N	53.595	17.197	12.000	3.120	16.126	91.065	0.009
7	EI	N0	12.101	17.197	12.000	0.700	-25.369	49.571	0.495
8	FP	N0	4.431	17.197	12.000	0.260	-33.039	41.901	0.801

Table 14.127: Estimate of treatment means in tow-way ANOVA for variable US.P at site 38 in year 2010b .

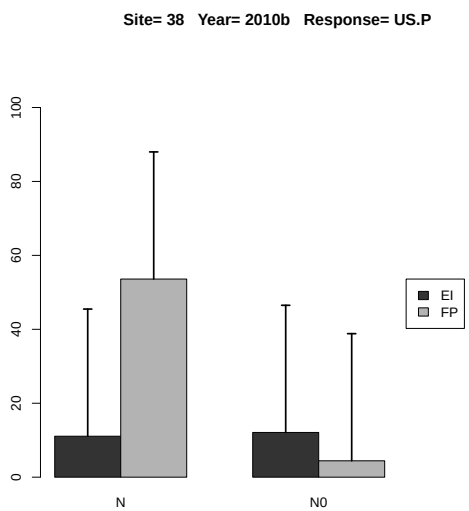

Figure 14.51: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-17.422	17.197	12.000	-1.010	-54.892	20.048	0.331
B N-N0	24.073	17.197	12.000	1.400	-13.397	61.542	0.187
A:B EI N- FP N	-42.514	24.320	12.000	-1.750	-95.504	10.476	0.106
A:B EI N- EI N0	-1.020	24.320	12.000	-0.040	-54.010	51.971	0.967
A:B EI N- FP N0	6.651	24.320	12.000	0.270	-46.340	59.641	0.789
A:B FP N- EI N0	41.494	24.320	12.000	1.710	-11.496	94.485	0.114
A:B FP N- FP N0	49.164	24.320	12.000	2.020	-3.826	102.155	0.066
A:B EI N0- FP N0	7.670	24.320	12.000	0.320	-45.320	60.660	0.758

Table 14.128: Estimate of contrast in two-way ANOVA for variable US.P at site 38 in year 2010b .

14.2.14 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	2.980
2	2	EI	N0	2.530
3	3	EI	N0	35.487
4	4	EI	N0	8.953
5	1	EI	N	10.220
6	2	EI	N	7.219
7	3	EI	N	11.577
8	4	EI	N	18.617
9	1	FP	N0	1.834
10	2	FP	N0	3.107
11	3	FP	N0	6.691
12	4	FP	N0	7.688
13	1	FP	N	10.607
14	2	FP	N	154.264
15	3	FP	N	29.086
16	4	FP	N	24.043

Table 14.129: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	11.908	24.751	0.481	0.879
A FP	54.500	24.751	2.202	0.209
A EI-FP	-42.592	35.003	-1.217	0.510

Table 14.130: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 38 in year 2010b .

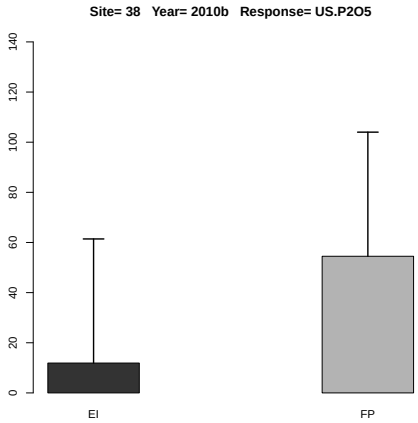

Figure 14.52: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1220.421	1220.421	1.026	12.000	0.331
B	1.000	2409.894	2409.894	2.025	12.000	0.180
A:B	1.000	2525.029	2525.029	2.122	12.000	0.171

Table 14.131: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.198	12.195	12.000	1.000	-14.373	38.769	0.337
2	FP		29.665	12.195	12.000	2.430	3.094	56.236	0.032
3		N	33.204	12.195	12.000	2.720	6.633	59.775	0.018
4		N0	8.659	12.195	12.000	0.710	-17.912	35.230	0.491
5	EI	N	11.908	17.247	12.000	0.690	-25.669	49.485	0.503
6	FP	N	54.500	17.247	12.000	3.160	16.923	92.077	0.008
7	EI	N0	12.488	17.247	12.000	0.720	-25.090	50.065	0.483
8	FP	N0	4.830	17.247	12.000	0.280	-32.747	42.407	0.784

Table 14.132: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-17.467	17.247	12.000	-1.010	-55.044	20.110	0.331
B N-N0	24.545	17.247	12.000	1.420	-13.032	62.123	0.180
A:B EI N- FP N	-42.592	24.390	12.000	-1.750	-95.734	10.550	0.106
A:B EI N- EI N0	-0.580	24.390	12.000	-0.020	-53.722	52.563	0.981
A:B EI N- FP N0	7.078	24.390	12.000	0.290	-46.064	60.220	0.777
A:B FP N- EI N0	42.013	24.390	12.000	1.720	-11.130	95.155	0.111
A:B FP N- FP N0	49.670	24.390	12.000	2.040	-3.472	102.812	0.064
A:B EI N0- FP N0	7.658	24.390	12.000	0.310	-45.485	60.800	0.759

Table 14.133: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 38 in year 2010b .

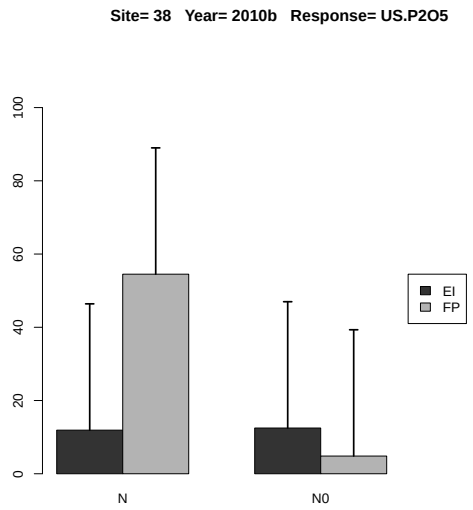

Figure 14.53: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.15 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	37.615
2	2	EI	N0	17.663
3	3	EI	N0	38.758
4	4	EI	N0	9.881
5	1	EI	N	107.332
6	2	EI	N	7.726
7	3	EI	N	105.228
8	4	EI	N	62.205
9	1	FP	N0	21.420
10	2	FP	N0	3.232
11	3	FP	N0	47.072
12	4	FP	N0	7.492
13	1	FP	N	87.959
14	2	FP	N	105.265
15	3	FP	N	148.582
16	4	FP	N	13.810

Table 14.134: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	70.623	23.071	3.061	0.104
A FP	88.904	23.071	3.854	0.059
A EI-FP	-18.281	32.627	-0.560	0.842

Table 14.135: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 38 in year 2010b .

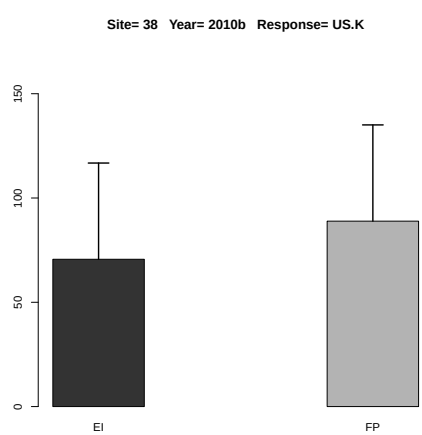

Figure 14.54: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	116.774	116.774	0.137	2.999	0.736
B	1.000	12937.544	12937.544	15.182	5.999	0.008
A:B	1.000	598.109	598.109	0.702	5.999	0.434

Table 14.136: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		48.301	16.284	4.800	2.970	5.956	90.647	0.033
2	FP		54.354	16.284	4.800	3.340	12.008	96.700	0.022
3		N	79.763	15.861	4.700	5.030	38.078	121.448	0.005
4		N0	22.892	15.861	4.700	1.440	-18.793	64.577	0.213
5	EI	N	70.623	19.279	8.400	3.660	26.511	114.734	0.006
6	FP	N	88.904	19.279	8.400	4.610	44.792	133.016	0.002
7	EI	N0	25.979	19.279	8.400	1.350	-18.132	70.091	0.213
8	FP	N0	19.804	19.279	8.400	1.030	-24.307	63.916	0.333

Table 14.137: Estimate of treatment means in tow-way ANOVA for variable US.K at site 38 in year 2010b .

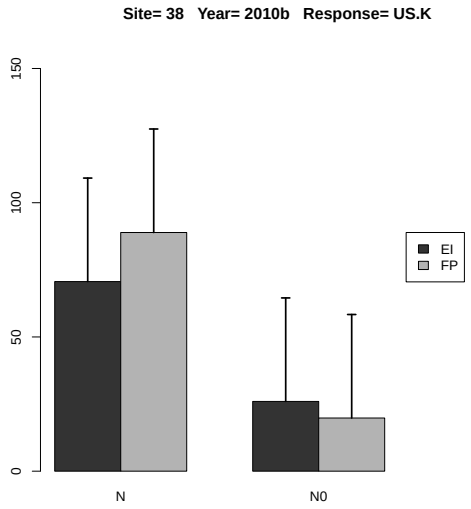

Figure 14.55: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.053	16.352	3.000	-0.370	-58.100	45.994	0.736
B N-N0	56.872	14.596	6.000	3.900	21.155	92.589	0.008
A:B EI N- FP N	-18.281	21.919	7.400	-0.830	-69.614	33.052	0.430
A:B EI N- EI N0	44.644	20.642	6.000	2.160	-5.868	95.155	0.074
A:B EI N- FP N0	50.819	21.919	7.400	2.320	-0.514	102.151	0.052
A:B FP N- EI N0	62.925	21.919	7.400	2.870	11.592	114.257	0.023
A:B FP N- FP N0	69.100	20.642	6.000	3.350	18.588	119.611	0.015
A:B EI N0- FP N0	6.175	21.919	7.400	0.280	-45.158	57.508	0.786

Table 14.138: Estimate of contrast in two-way ANOVA for variable US.K at site 38 in year 2010b .

14.2.16 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	37.796
2	2	EI	N0	17.835
3	3	EI	N0	39.689
4	4	EI	N0	10.254
5	1	EI	N	108.194
6	2	EI	N	8.741
7	3	EI	N	105.832
8	4	EI	N	62.567
9	1	FP	N0	21.559
10	2	FP	N0	3.468
11	3	FP	N0	47.649
12	4	FP	N0	8.056
13	1	FP	N	88.519
14	2	FP	N	106.248
15	3	FP	N	149.461
16	4	FP	N	14.312

Table 14.139: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	71.334	23.082	3.090	0.101
A FP	89.635	23.082	3.883	0.058
A EI-FP	-18.301	32.643	-0.561	0.842

Table 14.140: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 38 in year 2010b .

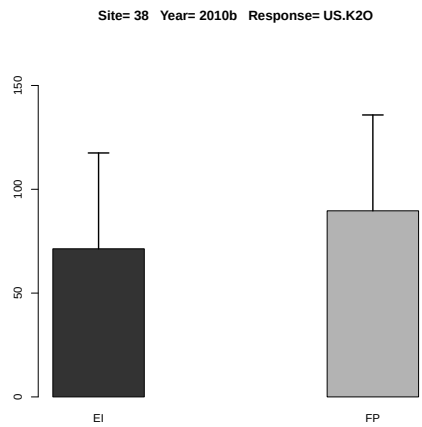

Figure 14.56: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	116.611	116.611	0.137	2.999	0.736
B	1.000	13085.548	13085.548	15.350	6.000	0.008
A:B	1.000	600.829	600.829	0.705	6.000	0.433

Table 14.141: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		48.864	16.318	4.800	2.990	6.400	91.327	0.032
2	FP		54.909	16.318	4.800	3.360	12.446	97.372	0.021
3		N	80.484	15.899	4.700	5.060	38.672	122.296	0.005
4		N0	23.288	15.899	4.700	1.460	-18.524	65.100	0.207
5	EI	N	71.334	19.309	8.400	3.690	27.130	115.537	0.006
6	FP	N	89.635	19.309	8.400	4.640	45.431	133.839	0.002
7	EI	N0	26.393	19.309	8.400	1.370	-17.810	70.597	0.207
8	FP	N0	20.183	19.309	8.400	1.050	-24.021	64.387	0.325

Table 14.142: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.045	16.345	3.000	-0.370	-58.071	45.981	0.736
B N-N0	57.196	14.599	6.000	3.920	21.474	92.918	0.008
A:B EI N- FP N	-18.301	21.915	7.400	-0.840	-69.621	33.019	0.430
A:B EI N- EI N0	44.940	20.646	6.000	2.180	-5.578	95.458	0.072
A:B EI N- FP N0	51.151	21.915	7.400	2.330	-0.169	102.471	0.051
A:B FP N- EI N0	63.241	21.915	7.400	2.890	11.921	114.561	0.022
A:B FP N- FP N0	69.452	20.646	6.000	3.360	18.934	119.970	0.015
A:B EI N0- FP N0	6.211	21.915	7.400	0.280	-45.110	57.531	0.785

Table 14.143: Estimate of contrast in two-way ANOVA for variable US.K2O at site 38 in year 2010b .

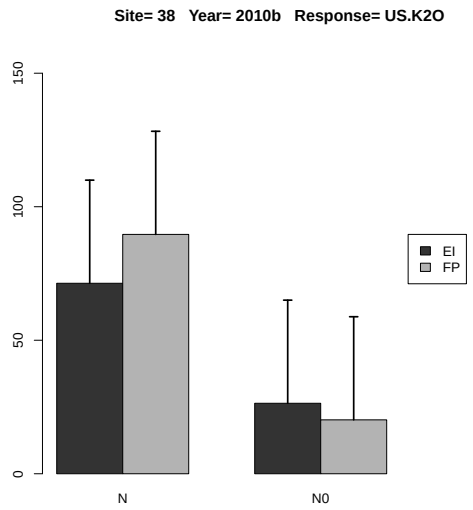

Figure 14.57: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.17 Response Variable US.Mg

	rep	A	B	y
1	1	EI	N0	8.611
2	2	EI	N0	3.969
3	3	EI	N0	6.669
4	4	EI	N0	2.947
5	1	EI	N	25.087
6	2	EI	N	3.213
7	3	EI	N	31.127
8	4	EI	N	24.411
9	1	FP	N0	4.176
10	2	FP	N0	1.129
11	3	FP	N0	13.095
12	4	FP	N0	2.172
13	1	FP	N	23.246
14	2	FP	N	34.312
15	3	FP	N	38.321
16	4	FP	N	9.378

Table 14.144: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	20.959	6.873	3.050	0.104
A FP	26.314	6.873	3.829	0.060
A EI-FP	-5.355	9.720	-0.551	0.847

Table 14.145: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 38 in year 2010b .

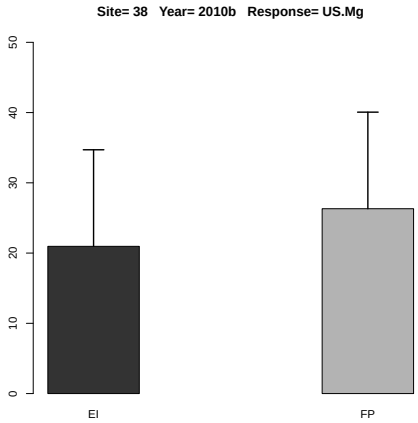

Figure 14.58: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	15.443	15.443	0.250	2.999	0.651
B	1.000	1338.235	1338.235	21.666	6.000	0.003
A:B	1.000	33.194	33.194	0.537	6.000	0.491

Table 14.146: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13.254	3.792	5.900	3.500	3.926	22.582	0.013
2	FP		15.729	3.792	5.900	4.150	6.400	25.056	0.006
3		N	23.637	3.481	5.800	6.790	15.057	32.216	0.001
4		N0	5.346	3.481	5.800	1.540	-3.234	13.925	0.177
5	EI	N	20.959	4.701	10.800	4.460	10.591	31.327	0.001
6	FP	N	26.314	4.701	10.800	5.600	15.946	36.682	0.000
7	EI	N0	5.549	4.701	10.800	1.180	-4.819	15.917	0.263
8	FP	N0	5.143	4.701	10.800	1.090	-5.225	15.511	0.298

Table 14.147: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 38 in year 2010b .

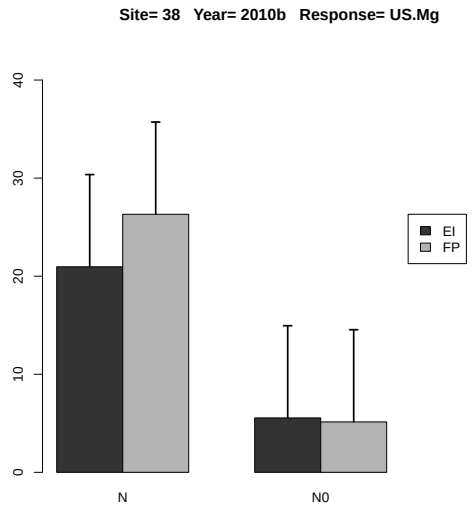

Figure 14.59: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.474	4.949	3.000	-0.500	-18.224	13.276	0.651
B N-N0	18.291	3.930	6.000	4.650	8.676	27.906	0.004
A:B EI N- FP N	-5.355	6.319	6.700	-0.850	-20.457	9.746	0.426
A:B EI N- EI N0	15.410	5.557	6.000	2.770	1.812	29.008	0.032
A:B EI N- FP N0	15.816	6.319	6.700	2.500	0.715	30.918	0.042
A:B FP N- EI N0	20.765	6.319	6.700	3.290	5.664	35.867	0.014
A:B FP N- FP N0	21.172	5.557	6.000	3.810	7.574	34.770	0.009
A:B EI N0- FP N0	0.406	6.319	6.700	0.060	-14.695	15.508	0.951

Table 14.148: Estimate of contrast in two-way ANOVA for variable US.Mg at site 38 in year 2010b
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14.2.18 Response Variable US.S

	rep	A	B	y
1	1	EI	N0	3.426
2	2	EI	N0	2.936
3	3	EI	N0	6.669
4	4	EI	N0	9.793
5	1	EI	N	6.467
6	2	EI	N	11.686
7	3	EI	N	8.965
8	4	EI	N	7.261
9	1	FP	N0	1.180
10	2	FP	N0	3.253
11	3	FP	N0	3.814
12	4	FP	N0	9.758
13	1	FP	N	7.137
14	2	FP	N	8.666
15	3	FP	N	9.462
16	4	FP	N	21.028

Table 14.149: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	8.595	2.613	3.289	0.087
A FP	11.573	2.613	4.429	0.041
A EI-FP	-2.978	3.695	-0.806	0.716

Table 14.150: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 38 in year 2010b .

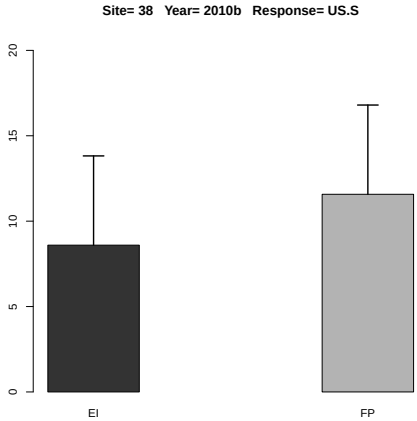

Figure 14.60: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.443	1.443	0.197	3.000	0.687
B	1.000	99.213	99.213	13.567	6.000	0.010
A:B	1.000	17.498	17.498	2.393	6.000	0.173

Table 14.151: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7.150	1.856	5.100	3.850	2.407	11.894	0.011
2	FP		8.037	1.856	5.100	4.330	3.294	12.781	0.007
3		N	10.084	1.704	4.200	5.920	5.420	14.748	0.004
4		N0	5.104	1.704	4.200	2.990	0.440	9.767	0.038
5	EI	N	8.595	2.087	7.700	4.120	3.748	13.441	0.004
6	FP	N	11.573	2.087	7.700	5.540	6.726	16.420	0.001
7	EI	N0	5.706	2.087	7.700	2.730	0.859	10.553	0.027
8	FP	N0	4.501	2.087	7.700	2.160	-0.345	9.348	0.064

Table 14.152: Estimate of treatment means in tow-way ANOVA for variable US.S at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.887	1.997	3.000	-0.440	-7.241	5.468	0.687
B N-N0	4.980	1.352	6.000	3.680	1.672	8.289	0.010
A:B EI N- FP N	-2.978	2.411	5.800	-1.240	-8.935	2.978	0.265
A:B EI N- EI N0	2.889	1.912	6.000	1.510	-1.790	7.568	0.182
A:B EI N- FP N0	4.093	2.411	5.800	1.700	-1.863	10.050	0.142
A:B FP N- EI N0	5.867	2.411	5.800	2.430	-0.089	11.824	0.052
A:B FP N- FP N0	7.072	1.912	6.000	3.700	2.393	11.751	0.010
A:B EI N0- FP N0	1.205	2.411	5.800	0.500	-4.752	7.161	0.636

Table 14.153: Estimate of contrast in two-way ANOVA for variable US.S at site 38 in year 2010b .

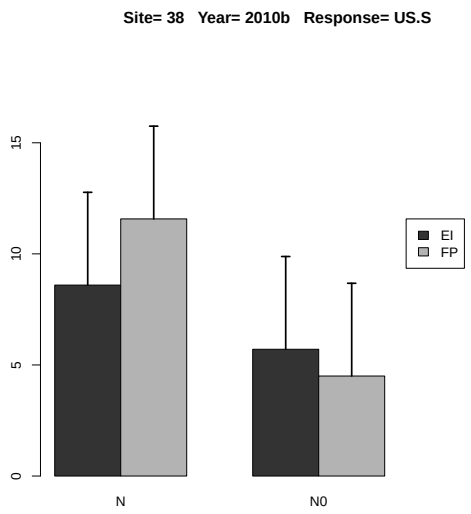

Figure 14.61: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.19 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	64.230
2	2	EI	N0	50.458
3	3	EI	N0	103.924
4	4	EI	N0	246.090
5	1	EI	N	154.567
6	2	EI	N	150.806
7	3	EI	N	171.501
8	4	EI	N	216.088
9	1	FP	N0	39.421
10	2	FP	N0	87.880
11	3	FP	N0	67.478
12	4	FP	N0	95.020
13	1	FP	N	166.630
14	2	FP	N	131.036
15	3	FP	N	207.308
16	4	FP	N	222.895

Table 14.154: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	173.241	8.063	21.487	0.000
A FP	181.967	8.063	22.569	0.000
A EI-FP	-8.727	11.402	-0.765	0.737

Table 14.155: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 38 in year 2010b .

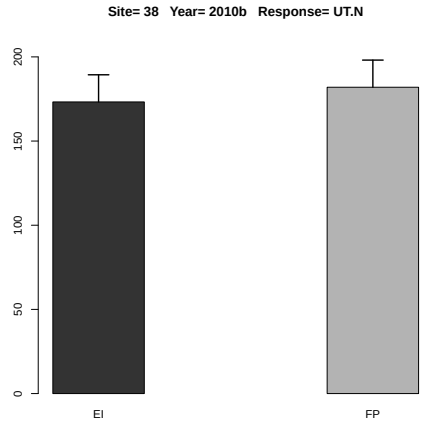

Figure 14.62: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1224.921	1224.921	0.888	8.999	0.371
B	1.000	27749.838	27749.838	20.111	8.999	0.002
A:B	1.000	2751.246	2751.246	1.994	8.999	0.192

Table 14.156: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		144.708	23.034	4.200	6.280	82.073	207.343	0.003
2	FP		127.209	23.034	4.200	5.520	64.573	189.844	0.004
3		N	177.604	23.034	4.200	7.710	114.969	240.239	0.001
4		N0	94.312	23.034	4.200	4.090	31.677	156.948	0.013
5	EI	N	173.240	26.515	6.700	6.530	110.065	236.416	0.000
6	FP	N	181.967	26.515	6.700	6.860	118.792	245.143	0.000
7	EI	N0	116.175	26.515	6.700	4.380	53.000	179.351	0.004
8	FP	N0	72.450	26.515	6.700	2.730	9.274	135.625	0.030

Table 14.157: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 38 in year 2010b .

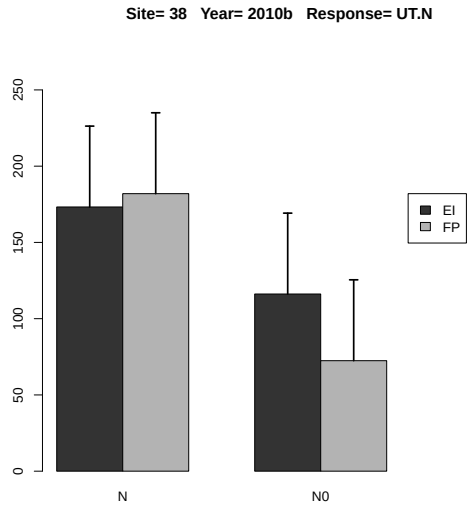

Figure 14.63: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	17.499	18.573	9.000	0.940	-24.515	59.514	0.371
B N-N0	83.291	18.573	9.000	4.480	41.277	125.306	0.002
A:B EI N- FP N	-8.727	26.267	9.000	-0.330	-68.144	50.691	0.747
A:B EI N- EI N0	57.065	26.267	9.000	2.170	-2.352	116.483	0.058
A:B EI N- FP N0	100.791	26.267	9.000	3.840	41.374	160.208	0.004
A:B FP N- EI N0	65.792	26.267	9.000	2.500	6.375	125.209	0.034
A:B FP N- FP N0	109.518	26.267	9.000	4.170	50.100	168.935	0.002
A:B EI N0- FP N0	43.726	26.267	9.000	1.660	-15.692	103.143	0.130

Table 14.158: Estimate of contrast in two-way ANOVA for variable UT.N at site 38 in year 2010b .

14.2.20 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	8.283
2	2	EI	N0	5.658
3	3	EI	N0	51.582
4	4	EI	N0	19.824
5	1	EI	N	27.439
6	2	EI	N	21.744
7	3	EI	N	28.054
8	4	EI	N	33.013
9	1	FP	N0	4.742
10	2	FP	N0	7.813
11	3	FP	N0	14.241
12	4	FP	N0	19.217
13	1	FP	N	23.546
14	2	FP	N	170.789
15	3	FP	N	46.602
16	4	FP	N	44.605

Table 14.159: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	27.563	25.022	1.102	0.564
A FP	71.386	25.022	2.853	0.121
A EI-FP	-43.823	35.386	-1.238	0.501

Table 14.160: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 38 in year 2010b .

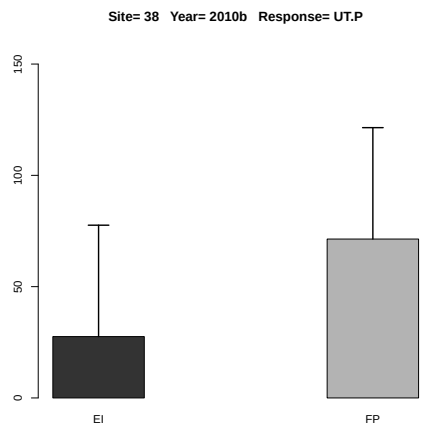

Figure 14.64: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1155.291	1155.291	0.923	12.000	0.356
B	1.000	4370.271	4370.271	3.491	12.000	0.086
A:B	1.000	2879.023	2879.023	2.299	12.000	0.155

Table 14.161: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.450	12.510	12.000	1.950	-2.808	51.707	0.074
2	FP		41.444	12.510	12.000	3.310	14.187	68.702	0.006
3		N	49.474	12.510	12.000	3.950	22.217	76.731	0.002
4		N0	16.420	12.510	12.000	1.310	-10.837	43.677	0.214
5	EI	N	27.563	17.692	12.000	1.560	-10.985	66.110	0.145
6	FP	N	71.386	17.692	12.000	4.030	32.838	109.933	0.002
7	EI	N0	21.337	17.692	12.000	1.210	-17.211	59.885	0.251
8	FP	N0	11.503	17.692	12.000	0.650	-27.044	50.051	0.528

Table 14.162: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-16.995	17.692	12.000	-0.960	-55.542	21.553	0.356
B N-N0	33.054	17.692	12.000	1.870	-5.494	71.602	0.086
A:B EI N- FP N	-43.823	25.020	12.000	-1.750	-98.338	10.692	0.105
A:B EI N- EI N0	6.226	25.020	12.000	0.250	-48.289	60.740	0.808
A:B EI N- FP N0	16.059	25.020	12.000	0.640	-38.455	70.574	0.533
A:B FP N- EI N0	50.049	25.020	12.000	2.000	-4.466	104.563	0.069
A:B FP N- FP N0	59.882	25.020	12.000	2.390	5.368	114.397	0.034
A:B EI N0- FP N0	9.834	25.020	12.000	0.390	-44.681	64.348	0.701

Table 14.163: Estimate of contrast in two-way ANOVA for variable UT.P at site 38 in year 2010b .

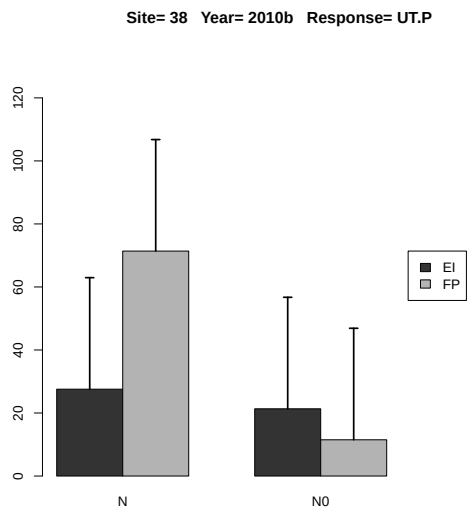

Figure 14.65: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.21 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	8.462
2	2	EI	N0	5.808
3	3	EI	N0	52.296
4	4	EI	N0	20.328
5	1	EI	N	28.287
6	2	EI	N	22.683
7	3	EI	N	28.814
8	4	EI	N	33.773
9	1	FP	N0	4.910
10	2	FP	N0	8.099
11	3	FP	N0	14.793
12	4	FP	N0	19.808
13	1	FP	N	24.187
14	2	FP	N	171.880
15	3	FP	N	47.746
16	4	FP	N	45.348

Table 14.164: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	28.389	25.050	1.133	0.549
A FP	72.290	25.050	2.886	0.118
A EI-FP	-43.901	35.426	-1.239	0.500

Table 14.165: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 38 in year 2010b .

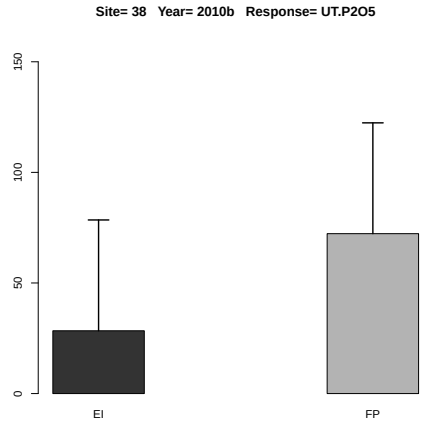

Figure 14.66: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1161.469	1161.469	0.922	11.999	0.356
B	1.000	4496.202	4496.202	3.568	11.999	0.083
A:B	1.000	2886.066	2886.066	2.290	11.999	0.156

Table 14.166: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.056	12.551	12.000	2.000	-2.290	52.402	0.069
2	FP		42.096	12.551	12.000	3.350	14.751	69.442	0.006
3		N	50.340	12.551	12.000	4.010	22.994	77.686	0.002
4		N0	16.813	12.551	12.000	1.340	-10.533	44.159	0.205
5	EI	N	28.389	17.750	12.000	1.600	-10.284	67.062	0.136
6	FP	N	72.290	17.750	12.000	4.070	33.617	110.963	0.002
7	EI	N0	21.723	17.750	12.000	1.220	-16.950	60.396	0.244
8	FP	N0	11.902	17.750	12.000	0.670	-26.770	50.575	0.515

Table 14.167: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 38 in year 2010b .

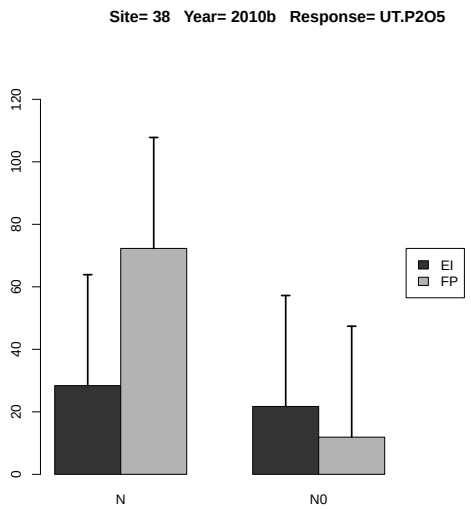

Figure 14.67: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-17.040	17.750	12.000	-0.960	-55.713	21.633	0.356
B N-N0	33.527	17.750	12.000	1.890	-5.146	72.200	0.083
A:B EI N- FP N	-43.901	25.102	12.000	-1.750	-98.593	10.791	0.106
A:B EI N- EI N0	6.666	25.102	12.000	0.270	-48.026	61.358	0.795
A:B EI N- FP N0	16.487	25.102	12.000	0.660	-38.205	71.179	0.524
A:B FP N- EI N0	50.567	25.102	12.000	2.010	-4.125	105.259	0.067
A:B FP N- FP N0	60.388	25.102	12.000	2.410	5.696	115.080	0.033
A:B EI N0- FP N0	9.821	25.102	12.000	0.390	-44.871	64.513	0.703

Table 14.168: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 38 in year 2010b .

14.2.22 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	42.599
2	2	EI	N0	20.596
3	3	EI	N0	64.261
4	4	EI	N0	19.917
5	1	EI	N	123.894
6	2	EI	N	23.927
7	3	EI	N	119.182
8	4	EI	N	73.916
9	1	FP	N0	23.797
10	2	FP	N0	7.035
11	3	FP	N0	55.850
12	4	FP	N0	18.602
13	1	FP	N	102.897
14	2	FP	N	122.881
15	3	FP	N	164.808
16	4	FP	N	35.115

Table 14.169: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	85.230	22.382	3.808	0.061
A FP	106.425	22.382	4.755	0.034
A EI-FP	-21.196	31.653	-0.670	0.787

Table 14.170: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 38 in year 2010b .

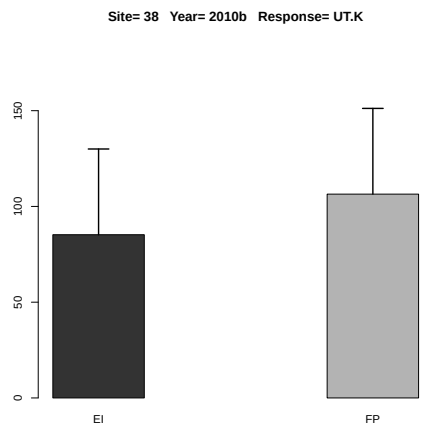

Figure 14.68: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	93.236	93.236	0.120	2.999	0.752
B	1.000	16509.847	16509.847	21.207	5.999	0.004
A:B	1.000	1006.009	1006.009	1.292	5.999	0.299

Table 14.171: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		61.036	16.636	4.500	3.670	16.890	105.183	0.017
2	FP		66.373	16.636	4.500	3.990	22.227	110.519	0.013
3		N	95.827	16.309	4.400	5.880	52.068	139.587	0.003
4		N0	31.582	16.309	4.400	1.940	-12.178	75.342	0.119
5	EI	N	85.230	19.341	7.600	4.410	40.178	130.282	0.003
6	FP	N	106.425	19.341	7.600	5.500	61.373	151.477	0.001
7	EI	N0	36.843	19.341	7.600	1.900	-8.209	81.895	0.095
8	FP	N0	26.321	19.341	7.600	1.360	-18.731	71.373	0.213

Table 14.172: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.337	15.421	3.000	-0.350	-54.421	43.748	0.752
B N-N0	64.245	13.951	6.000	4.610	30.108	98.383	0.004
A:B EI N- FP N	-21.195	20.795	7.400	-1.020	-69.797	27.406	0.340
A:B EI N- EI N0	48.386	19.730	6.000	2.450	0.109	96.664	0.050
A:B EI N- FP N0	58.909	20.795	7.400	2.830	10.307	107.510	0.024
A:B FP N- EI N0	69.582	20.795	7.400	3.350	20.981	118.183	0.011
A:B FP N- FP N0	80.104	19.730	6.000	4.060	31.827	128.382	0.007
A:B EI N0- FP N0	10.522	20.795	7.400	0.510	-38.079	59.123	0.627

Table 14.173: Estimate of contrast in two-way ANOVA for variable UT.K at site 38 in year 2010b .

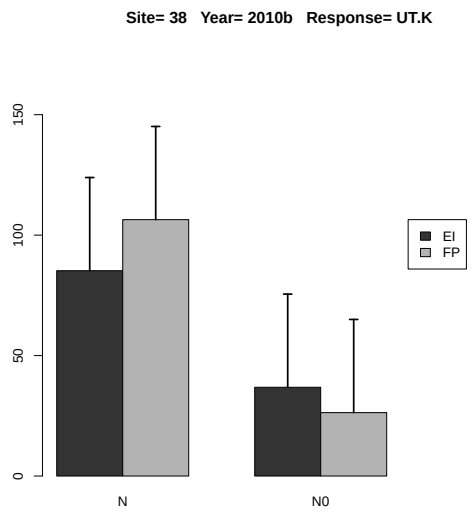

Figure 14.69: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.23 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	42.780
2	2	EI	N0	20.768
3	3	EI	N0	65.191
4	4	EI	N0	20.290
5	1	EI	N	124.756
6	2	EI	N	24.942
7	3	EI	N	119.786
8	4	EI	N	74.279
9	1	FP	N0	23.935
10	2	FP	N0	7.271
11	3	FP	N0	56.426
12	4	FP	N0	19.166
13	1	FP	N	103.457
14	2	FP	N	123.864
15	3	FP	N	165.687
16	4	FP	N	35.617

Table 14.174: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	85.940	22.398	3.837	0.060
A FP	107.156	22.398	4.784	0.034
A EI-FP	-21.216	31.676	-0.670	0.787

Table 14.175: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 38 in year 2010b .

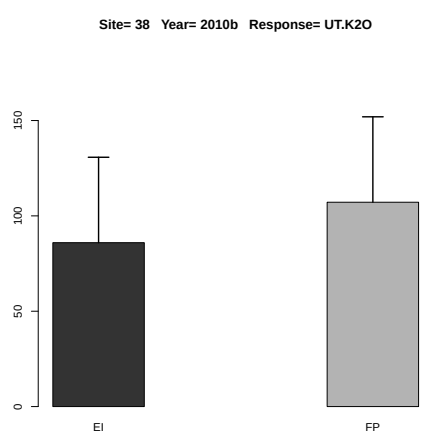

Figure 14.70: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	93.387	93.387	0.119	2.999	0.753
B	1.000	16676.985	16676.985	21.322	6.000	0.004
A:B	1.000	1009.536	1009.536	1.291	6.000	0.299

Table 14.176: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		61.599	16.676	4.500	3.690	17.321	105.877	0.017
2	FP		66.928	16.676	4.500	4.010	22.650	111.206	0.012
3		N	96.548	16.356	4.400	5.900	52.654	140.442	0.003
4		N0	31.979	16.356	4.400	1.960	-11.915	75.873	0.116
5	EI	N	85.940	19.387	7.600	4.430	40.767	131.114	0.002
6	FP	N	107.156	19.387	7.600	5.530	61.983	152.329	0.001
7	EI	N0	37.257	19.387	7.600	1.920	-7.916	82.430	0.093
8	FP	N0	26.700	19.387	7.600	1.380	-18.473	71.873	0.208

Table 14.177: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 38 in year 2010b .

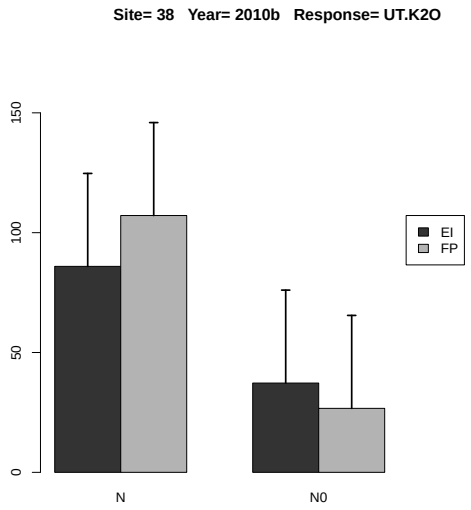

Figure 14.71: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.329	15.422	3.000	-0.350	-54.418	43.760	0.752
B N-N0	64.570	13.983	6.000	4.620	30.353	98.786	0.004
A:B EI N- FP N	-21.216	20.818	7.400	-1.020	-69.854	27.422	0.340
A:B EI N- EI N0	48.683	19.776	6.000	2.460	0.293	97.073	0.049
A:B EI N- FP N0	59.241	20.818	7.400	2.850	10.603	107.879	0.023
A:B FP N- EI N0	69.899	20.818	7.400	3.360	21.261	118.537	0.011
A:B FP N- FP N0	80.456	19.776	6.000	4.070	32.067	128.846	0.007
A:B EI N0- FP N0	10.558	20.818	7.400	0.510	-38.081	59.196	0.627

Table 14.178: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 38 in year 2010b
.

14.2.24 Response Variable UT.Mg

	rep	A	B	y
1	1	EI	N0	10.106
2	2	EI	N0	5.004
3	3	EI	N0	11.306
4	4	EI	N0	6.292
5	1	EI	N	29.604
6	2	EI	N	8.367
7	3	EI	N	36.051
8	4	EI	N	28.544
9	1	FP	N0	5.014
10	2	FP	N0	2.555
11	3	FP	N0	15.458
12	4	FP	N0	5.202
13	1	FP	N	27.999
14	2	FP	N	38.716
15	3	FP	N	43.189
16	4	FP	N	14.704

Table 14.179: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	25.642	6.598	3.886	0.058
A FP	31.152	6.598	4.722	0.035
A EI-FP	-5.510	9.330	-0.591	0.828

Table 14.180: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 38 in year 2010b .

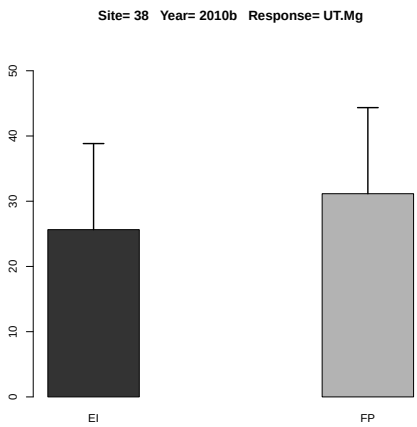

Figure 14.72: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11.461	11.461	0.211	2.999	0.677
B	1.000	1727.186	1727.186	31.793	6.000	0.001
A:B	1.000	43.961	43.961	0.809	6.000	0.403

Table 14.181: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16.909	3.854	5.700	4.390	7.354	26.465	0.005
2	FP		19.105	3.854	5.700	4.960	9.549	28.660	0.003
3		N	28.397	3.541	5.300	8.020	19.435	37.358	0.000
4		N0	7.617	3.541	5.300	2.150	-1.344	16.579	0.081
5	EI	N	25.642	4.653	10.100	5.510	15.287	35.996	0.000
6	FP	N	31.152	4.653	10.100	6.700	20.798	41.506	0.000
7	EI	N0	8.177	4.653	10.100	1.760	-2.177	18.531	0.109
8	FP	N0	7.057	4.653	10.100	1.520	-3.297	17.411	0.160

Table 14.182: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-2.195	4.779	3.000	-0.460	-17.407	13.017	0.677
B N-N0	20.780	3.685	6.000	5.640	11.762	29.797	0.001
A:B EI N- FP N	-5.511	6.035	6.500	-0.910	-20.017	8.996	0.394
A:B EI N- EI N0	17.465	5.212	6.000	3.350	4.712	30.218	0.015
A:B EI N- FP N0	18.584	6.035	6.500	3.080	4.078	33.091	0.020
A:B FP N- EI N0	22.975	6.035	6.500	3.810	8.469	37.481	0.008
A:B FP N- FP N0	24.095	5.212	6.000	4.620	11.342	36.848	0.004
A:B EI N0- FP N0	1.120	6.035	6.500	0.190	-13.386	15.626	0.859

Table 14.183: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 38 in year 2010b .

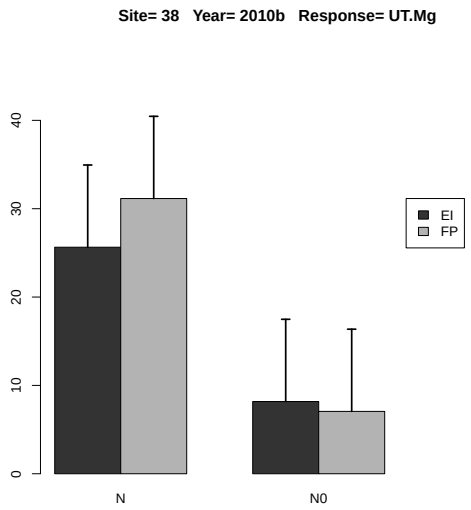

Figure 14.73: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.25 Response Variable UT.S

	rep	A	B	y
1	1	EI	N0	5.669
2	2	EI	N0	3.971
3	3	EI	N0	10.147
4	4	EI	N0	13.138
5	1	EI	N	13.995
6	2	EI	N	16.840
7	3	EI	N	12.249
8	4	EI	N	12.083
9	1	FP	N0	2.439
10	2	FP	N0	4.917
11	3	FP	N0	5.502
12	4	FP	N0	12.283
13	1	FP	N	15.964
14	2	FP	N	13.070
15	3	FP	N	13.518
16	4	FP	N	24.578

Table 14.184: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	13.792	2.416	5.709	0.020
A FP	16.783	2.416	6.947	0.012
A EI-FP	-2.991	3.416	-0.876	0.679

Table 14.185: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 38 in year 2010b .

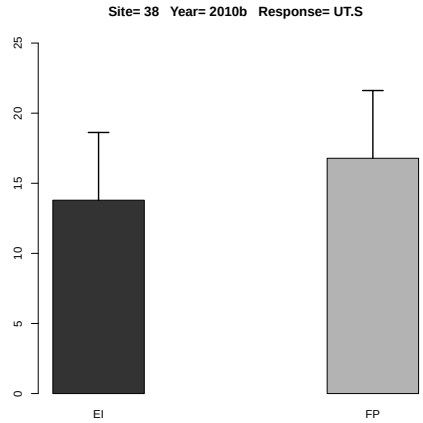

Figure 14.74: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.011	1.011	0.086	2.998	0.788
B	1.000	257.866	257.866	21.970	6.000	0.003
A:B	1.000	24.374	24.374	2.077	6.000	0.200

Table 14.186: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.011	1.682	5.000	6.550	6.694	15.329	0.001
2	FP		11.534	1.682	5.000	6.860	7.216	15.851	0.001
3		N	15.287	1.665	5.200	9.180	11.060	19.515	0.000
4		N0	7.258	1.665	5.200	4.360	3.031	11.486	0.007
5	EI	N	13.792	2.073	9.500	6.650	9.137	18.446	0.000
6	FP	N	16.783	2.073	9.500	8.100	12.128	21.437	0.000
7	EI	N0	8.231	2.073	9.500	3.970	3.576	12.886	0.003
8	FP	N0	6.285	2.073	9.500	3.030	1.631	10.940	0.013

Table 14.187: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 38 in year 2010b .

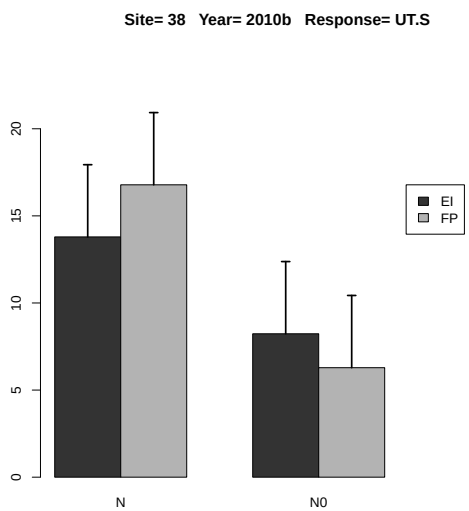

Figure 14.75: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.522	1.780	3.000	-0.290	-6.189	5.144	0.788
B N-N0	8.029	1.713	6.000	4.690	3.837	12.221	0.003
A:B EI N- FP N	-2.991	2.470	7.800	-1.210	-8.715	2.733	0.262
A:B EI N- EI N0	5.561	2.422	6.000	2.300	-0.367	11.488	0.061
A:B EI N- FP N0	7.507	2.470	7.800	3.040	1.783	13.230	0.017
A:B FP N- EI N0	8.552	2.470	7.800	3.460	2.828	14.275	0.009
A:B FP N- FP N0	10.498	2.422	6.000	4.330	4.570	16.425	0.005
A:B EI N0- FP N0	1.946	2.470	7.800	0.790	-3.778	7.670	0.454

Table 14.188: Estimate of contrast in two-way ANOVA for variable UT.S at site 38 in year 2010b .

14.2.26 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	1.002
2	2	EI	N0	0.736
3	3	EI	N0	0.922
4	4	EI	N0	0.673
5	1	EI	N	0.913
6	2	EI	N	0.865
7	3	EI	N	0.100
8	4	EI	N	0.628
9	1	FP	N0	0.880
10	2	FP	N0	0.609
11	3	FP	N0	0.906
12	4	FP	N0	0.977
13	1	FP	N	1.090
14	2	FP	N	0.972
15	3	FP	N	0.675
16	4	FP	N	0.696

Table 14.189: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.627	0.150	4.000	4.170	0.210	1.043	0.014
A FP	0.858	0.150	4.000	5.710	0.442	1.275	0.005
A EI-FP	-0.232	0.117	3.000	-1.980	-0.603	0.140	0.141

Table 14.190: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 38 in year 2010b .

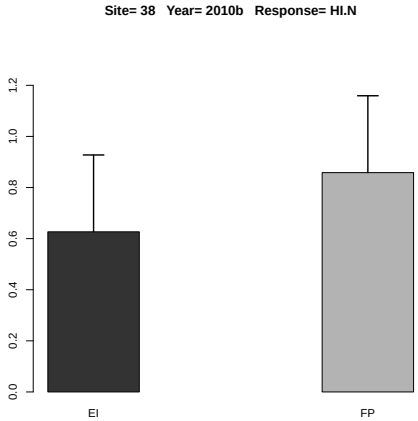

Figure 14.76: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.058	0.058	1.107	8.996	0.320
B	1.000	0.037	0.037	0.696	8.996	0.426
A:B	1.000	0.049	0.049	0.933	8.996	0.359

Table 14.191: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.730	0.088	7.600	8.250	0.524	0.936	0.000
2	FP		0.851	0.088	7.600	9.610	0.645	1.057	0.000
3		N	0.743	0.088	7.600	8.390	0.536	0.949	0.000
4		N0	0.838	0.088	7.600	9.470	0.632	1.044	0.000
5	EI	N	0.627	0.120	11.700	5.220	0.364	0.889	0.000
6	FP	N	0.858	0.120	11.700	7.150	0.596	1.121	0.000
7	EI	N0	0.833	0.120	11.700	6.940	0.571	1.096	0.000
8	FP	N0	0.843	0.120	11.700	7.020	0.581	1.105	0.000

Table 14.192: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.121	0.115	9.000	-1.050	-0.380	0.139	0.320
B N-N0	-0.096	0.115	9.000	-0.830	-0.355	0.164	0.426
A:B EI N- FP N	-0.232	0.162	9.000	-1.430	-0.599	0.136	0.187
A:B EI N- EI N0	-0.207	0.162	9.000	-1.270	-0.574	0.161	0.235
A:B EI N- FP N0	-0.217	0.162	9.000	-1.330	-0.584	0.151	0.215
A:B FP N- EI N0	0.025	0.162	9.000	0.150	-0.342	0.392	0.881
A:B FP N- FP N0	0.015	0.162	9.000	0.090	-0.352	0.382	0.928
A:B EI N0- FP N0	-0.010	0.162	9.000	-0.060	-0.377	0.357	0.953

Table 14.193: Estimate of contrast in two-way ANOVA for variable HI.N at site 38 in year 2010b .

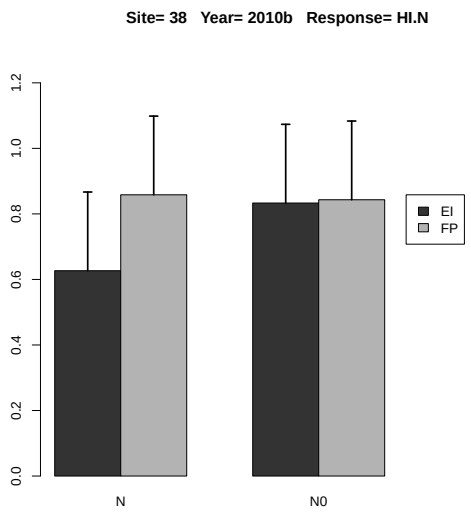

Figure 14.77: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.27 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	1.957
2	2	EI	N0	1.377
3	3	EI	N0	0.483
4	4	EI	N0	1.346
5	1	EI	N	1.928
6	2	EI	N	2.463
7	3	EI	N	1.593
8	4	EI	N	0.849
9	1	FP	N0	1.845
10	2	FP	N0	1.769
11	3	FP	N0	1.320
12	4	FP	N0	1.708
13	1	FP	N	1.363
14	2	FP	N	0.115
15	3	FP	N	0.668
16	4	FP	N	0.914

Table 14.194: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.708	0.301	6.000	5.670	0.971	2.446	0.001
A FP	0.765	0.301	6.000	2.540	0.027	1.502	0.044
A EI-FP	0.943	0.426	6.000	2.210	-0.100	1.986	0.069

Table 14.195: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 38 in year 2010b .

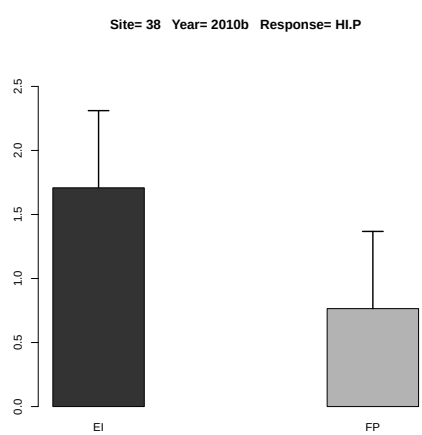

Figure 14.78: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.290	0.290	1.251	2.999	0.345
B	1.000	0.229	0.229	0.988	5.999	0.359
A:B	1.000	1.724	1.724	7.443	5.999	0.034

Table 14.196: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.500	0.207	5.700	7.230	0.986	2.014	0.000
2	FP		1.213	0.207	5.700	5.850	0.699	1.727	0.001
3		N	1.236	0.203	6.200	6.110	0.746	1.728	0.001
4		N0	1.476	0.203	6.200	7.290	0.985	1.967	0.000
5	EI	N	1.708	0.268	11.100	6.370	1.119	2.297	0.000
6	FP	N	0.765	0.268	11.100	2.850	0.176	1.354	0.016
7	EI	N0	1.291	0.268	11.100	4.810	0.702	1.880	0.000
8	FP	N0	1.661	0.268	11.100	6.190	1.071	2.250	0.000

Table 14.197: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 38 in year 2010b .

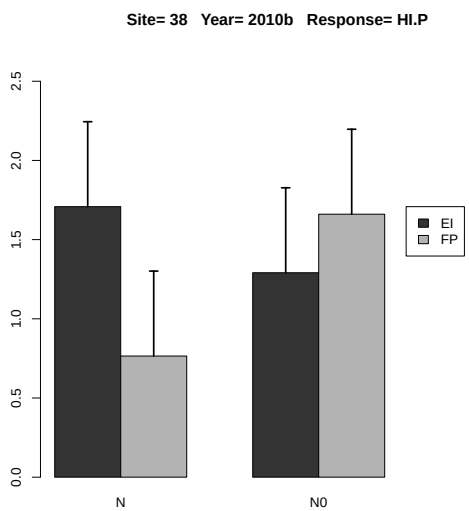

Figure 14.79: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.287	0.256	3.000	1.120	-0.529	1.103	0.345
B N-N0	-0.239	0.241	6.000	-0.990	-0.828	0.350	0.358
A:B EI N- FP N	0.943	0.352	7.600	2.680	0.126	1.761	0.029
A:B EI N- EI N0	0.417	0.340	6.000	1.230	-0.415	1.250	0.266
A:B EI N- FP N0	0.048	0.352	7.600	0.140	-0.770	0.865	0.896
A:B FP N- EI N0	-0.526	0.352	7.600	-1.500	-1.343	0.291	0.175
A:B FP N- FP N0	-0.896	0.340	6.000	-2.630	-1.728	-0.063	0.039
A:B EI N0- FP N0	-0.370	0.352	7.600	-1.050	-1.187	0.448	0.325

Table 14.198: Estimate of contrast in two-way ANOVA for variable HI.P at site 38 in year 2010b .

14.2.28 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.132
2	2	EI	N0	0.166
3	3	EI	N0	0.658
4	4	EI	N0	1.016
5	1	EI	N	0.154
6	2	EI	N	2.097
7	3	EI	N	0.133
8	4	EI	N	0.188
9	1	FP	N0	0.111
10	2	FP	N0	1.177
11	3	FP	N0	0.186
12	4	FP	N0	1.483
13	1	FP	N	0.170
14	2	FP	N	0.167
15	3	FP	N	0.109
16	4	FP	N	1.543

Table 14.199: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.643	0.422	6.000	1.520	-0.390	1.676	0.179
A FP	0.497	0.422	6.000	1.180	-0.536	1.531	0.283
A EI-FP	0.146	0.597	6.000	0.240	-1.315	1.607	0.815

Table 14.200: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 38 in year 2010b .

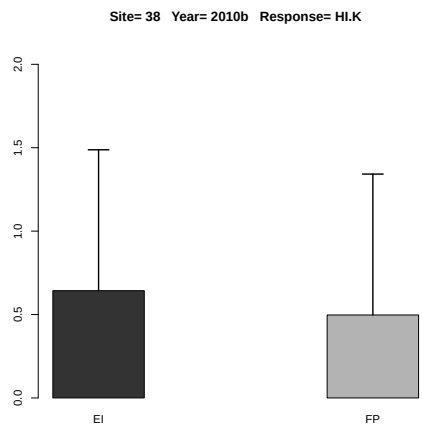

Figure 14.80: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.010	0.010	0.024	8.999	0.880
B	1.000	0.008	0.008	0.020	8.999	0.890
A:B	1.000	0.154	0.154	0.365	8.999	0.561

Table 14.201: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.568	0.279	6.300	2.040	-0.107	1.243	0.086
2	FP		0.618	0.279	6.300	2.220	-0.056	1.293	0.066
3		N	0.570	0.279	6.300	2.040	-0.105	1.245	0.085
4		N0	0.616	0.279	6.300	2.210	-0.058	1.291	0.067
5	EI	N	0.643	0.361	10.800	1.780	-0.154	1.440	0.103
6	FP	N	0.497	0.361	10.800	1.380	-0.299	1.294	0.197
7	EI	N0	0.493	0.361	10.800	1.370	-0.304	1.290	0.200
8	FP	N0	0.739	0.361	10.800	2.050	-0.058	1.536	0.066

Table 14.202: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.050	0.325	9.000	-0.150	-0.784	0.684	0.880
B N-N0	-0.046	0.325	9.000	-0.140	-0.780	0.688	0.890
A:B EI N- FP N	0.146	0.459	9.000	0.320	-0.892	1.184	0.758
A:B EI N- EI N0	0.150	0.459	9.000	0.330	-0.888	1.188	0.751
A:B EI N- FP N0	-0.096	0.459	9.000	-0.210	-1.134	0.942	0.839
A:B FP N- EI N0	0.004	0.459	9.000	0.010	-1.034	1.042	0.993
A:B FP N- FP N0	-0.242	0.459	9.000	-0.530	-1.280	0.796	0.611
A:B EI N0- FP N0	-0.246	0.459	9.000	-0.540	-1.284	0.792	0.605

Table 14.203: Estimate of contrast in two-way ANOVA for variable HI.K at site 38 in year 2010b .

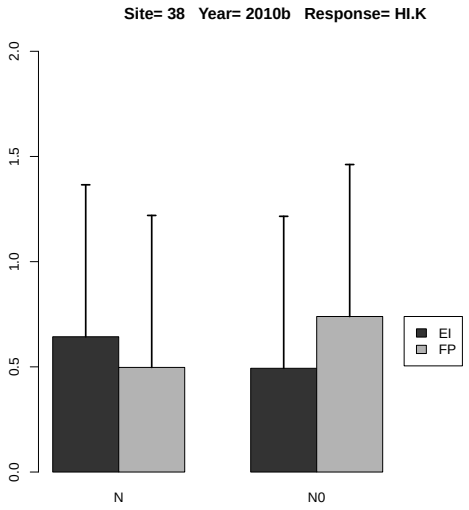

Figure 14.81: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.29 Response Variable HI.Mg

	rep	A	B	y
1	1	EI	N0	0.174
2	2	EI	N0	0.261
3	3	EI	N0	0.695
4	4	EI	N0	1.135
5	1	EI	N	0.180
6	2	EI	N	1.605
7	3	EI	N	0.158
8	4	EI	N	0.169
9	1	FP	N0	0.201
10	2	FP	N0	1.264
11	3	FP	N0	0.180
12	4	FP	N0	1.395
13	1	FP	N	0.204
14	2	FP	N	0.128
15	3	FP	N	0.127
16	4	FP	N	0.568

Table 14.204: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.528	0.264	6.000	2.000	-0.119	1.175	0.093
A FP	0.257	0.264	6.000	0.970	-0.390	0.904	0.369
A EI-FP	0.271	0.374	6.000	0.720	-0.644	1.186	0.496

Table 14.205: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 38 in year 2010b .

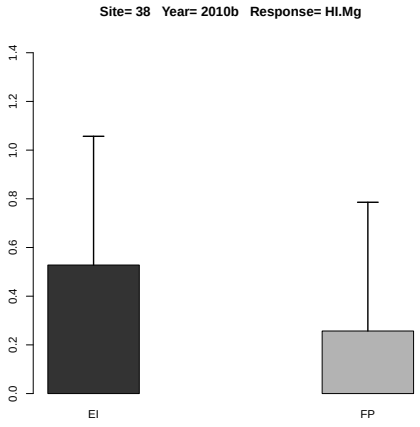

Figure 14.82: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.006	0.006	0.024	8.998	0.880
B	1.000	0.293	0.293	1.185	8.998	0.305
A:B	1.000	0.216	0.216	0.874	8.998	0.374

Table 14.206: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.547	0.209	6.600	2.620	0.047	1.047	0.036
2	FP		0.508	0.209	6.600	2.440	0.008	1.008	0.047
3		N	0.393	0.209	6.600	1.880	-0.107	0.892	0.105
4		N0	0.663	0.209	6.600	3.180	0.163	1.163	0.017
5	EI	N	0.528	0.273	11.100	1.940	-0.072	1.128	0.079
6	FP	N	0.257	0.273	11.100	0.940	-0.343	0.857	0.366
7	EI	N0	0.566	0.273	11.100	2.080	-0.034	1.166	0.062
8	FP	N0	0.760	0.273	11.100	2.790	0.160	1.360	0.018

Table 14.207: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 38 in year 2010b .

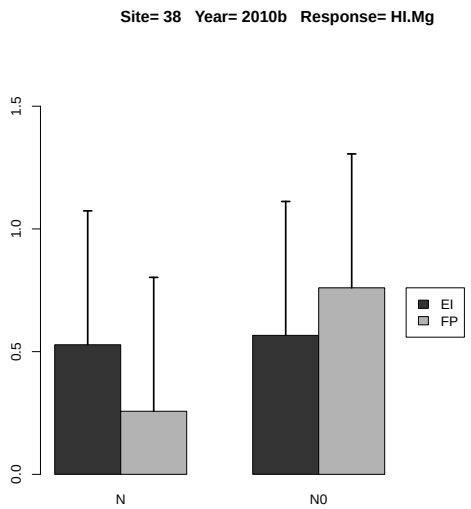

Figure 14.83: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.039	0.249	9.000	0.160	-0.524	0.601	0.880
B N-N0	-0.271	0.249	9.000	-1.090	-0.833	0.292	0.305
A:B EI N- FP N	0.271	0.352	9.000	0.770	-0.524	1.067	0.461
A:B EI N- EI N0	-0.038	0.352	9.000	-0.110	-0.834	0.757	0.916
A:B EI N- FP N0	-0.232	0.352	9.000	-0.660	-1.028	0.564	0.526
A:B FP N- EI N0	-0.309	0.352	9.000	-0.880	-1.105	0.486	0.402
A:B FP N- FP N0	-0.503	0.352	9.000	-1.430	-1.299	0.292	0.186
A:B EI N0- FP N0	-0.194	0.352	9.000	-0.550	-0.989	0.602	0.595

Table 14.208: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 38 in year 2010b .

14.2.30 Response Variable HI.S

	rep	A	B	y
1	1	EI	N0	0.655
2	2	EI	N0	0.353
3	3	EI	N0	0.521
4	4	EI	N0	0.342
5	1	EI	N	1.164
6	2	EI	N	0.441
7	3	EI	N	0.366
8	4	EI	N	0.664
9	1	FP	N0	1.066
10	2	FP	N0	0.512
11	3	FP	N0	0.443
12	4	FP	N0	0.259
13	1	FP	N	1.237
14	2	FP	N	0.508
15	3	FP	N	0.429
16	4	FP	N	0.169

Table 14.209: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.659	0.206	3.800	3.200	0.074	1.244	0.036
A FP	0.586	0.206	3.800	2.850	0.001	1.171	0.050
A EI-FP	0.073	0.141	3.000	0.520	-0.375	0.521	0.639

Table 14.210: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 38 in year 2010b .

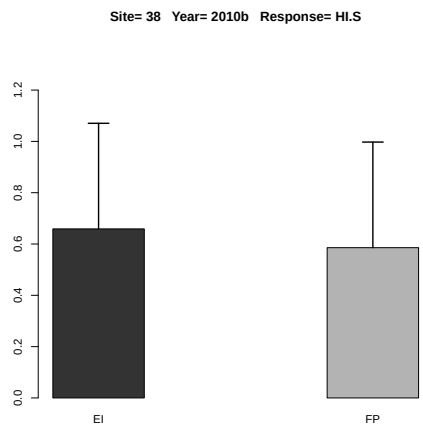

Figure 14.84: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.016	3.000	0.907
B	1.000	0.043	0.043	1.806	5.996	0.228
A:B	1.000	0.031	0.031	1.292	5.996	0.299

Table 14.211: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.563	0.165	3.800	3.420	0.096	1.031	0.029
2	FP		0.578	0.165	3.800	3.510	0.110	1.045	0.027
3		N	0.622	0.160	3.400	3.900	0.145	1.099	0.024
4		N0	0.519	0.160	3.400	3.250	0.042	0.996	0.040
5	EI	N	0.659	0.174	4.600	3.800	0.202	1.116	0.015
6	FP	N	0.586	0.174	4.600	3.370	0.128	1.043	0.022
7	EI	N0	0.468	0.174	4.600	2.690	0.010	0.925	0.047
8	FP	N0	0.570	0.174	4.600	3.280	0.113	1.027	0.024

Table 14.212: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 38 in year 2010b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.014	0.113	3.000	-0.130	-0.375	0.346	0.907
B N-N0	0.104	0.077	6.000	1.340	-0.085	0.292	0.228
A:B EI N- FP N	0.073	0.137	5.800	0.530	-0.265	0.411	0.613
A:B EI N- EI N0	0.191	0.109	6.000	1.750	-0.076	0.458	0.130
A:B EI N- FP N0	0.089	0.137	5.800	0.650	-0.249	0.427	0.540
A:B FP N- EI N0	0.118	0.137	5.800	0.860	-0.220	0.456	0.423
A:B FP N- FP N0	0.016	0.109	6.000	0.150	-0.251	0.283	0.888
A:B EI N0- FP N0	-0.102	0.137	5.800	-0.740	-0.440	0.236	0.485

Table 14.213: Estimate of contrast in two-way ANOVA for variable HI.S at site 38 in year 2010b .

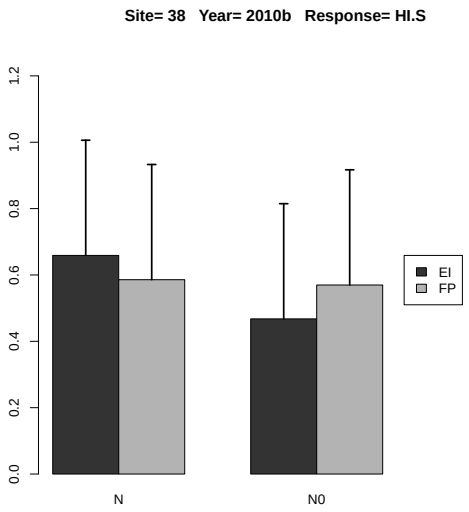

Figure 14.85: Estimated treatment means and standard error in the 2-way ANOVA.

14.2.31 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	37.640
2	2	EI	N	36.820
3	3	EI	N	41.040
4	4	EI	N	34.445
5	1	FP	N	45.267
6	2	FP	N	48.933
7	3	FP	N	54.087
8	4	FP	N	59.180

Table 14.214: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	37.486	2.353	6.000	15.930	31.728	43.245	0.000
A FP	51.867	2.353	6.000	22.040	46.108	57.625	0.000
A EI-FP	-14.380	3.328	6.000	-4.320	-22.524	-6.237	0.005

Table 14.215: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 38 in year 2010b .

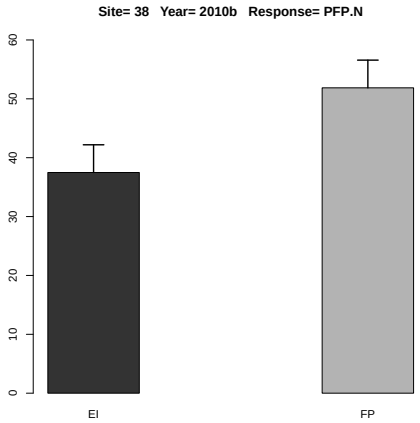

Figure 14.86: Estimated treatment means and standard error in the one-way ANOVA.

14.2.32 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	191.581
2	2	EI	N	187.408
3	3	EI	N	208.887
4	4	EI	N	175.319
5	1	FP	N	338.087
6	2	FP	N	365.472
7	3	FP	N	403.961
8	4	FP	N	442.002

Table 14.216: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	190.799	16.767	6.000	11.380	149.770	231.827	0.000
A FP	387.381	16.767	6.000	23.100	346.352	428.409	0.000
A EI-FP	-196.582	23.712	6.000	-8.290	-254.605	-138.559	0.000

Table 14.217: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 38 in year 2010b .

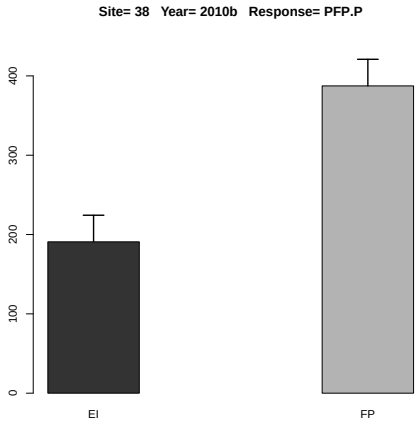

Figure 14.87: Estimated treatment means and standard error in the one-way ANOVA.

14.2.33 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	83.644
2	2	EI	N	81.822
3	3	EI	N	91.200
4	4	EI	N	76.544
5	1	FP	N	147.609
6	2	FP	N	159.565
7	3	FP	N	176.370
8	4	FP	N	192.978

Table 14.218: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	83.303	7.321	6.000	11.380	65.390	101.216	0.000
A FP	169.130	7.321	6.000	23.100	151.218	187.043	0.000
A EI-FP	-85.828	10.353	6.000	-8.290	-111.160	-60.495	0.000

Table 14.219: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 38 in year 2010b .

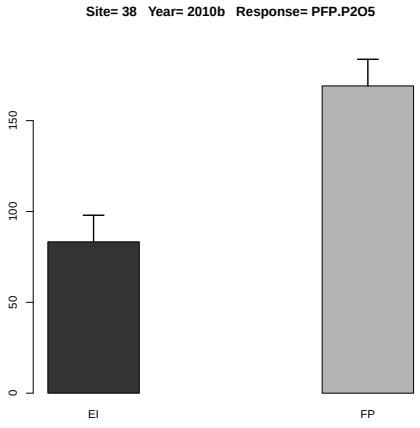

Figure 14.88: Estimated treatment means and standard error in the one-way ANOVA.

14.2.34 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	100.801
2	2	EI	N	98.605
3	3	EI	N	109.906
4	4	EI	N	92.244
5	1	FP	N	136.378
6	2	FP	N	147.425
7	3	FP	N	162.951
8	4	FP	N	178.296

Table 14.220: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	100.389	6.964	6.000	14.420	83.349	117.429	0.000
A FP	156.263	6.964	6.000	22.440	139.222	173.303	0.000
A EI-FP	-55.874	9.849	6.000	-5.670	-79.972	-31.775	0.001

Table 14.221: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 38 in year 2010b .

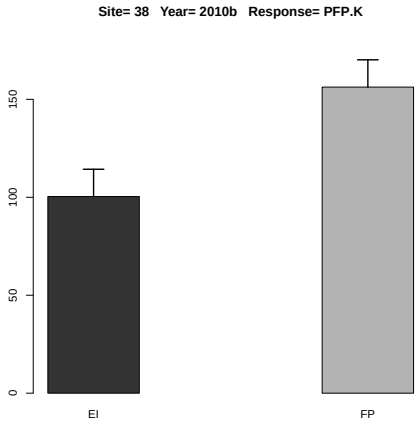

Figure 14.89: Estimated treatment means and standard error in the one-way ANOVA.

14.2.35 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	83.644
2	2	EI	N	81.822
3	3	EI	N	91.200
4	4	EI	N	76.544
5	1	FP	N	113.167
6	2	FP	N	122.333
7	3	FP	N	135.217
8	4	FP	N	147.950

Table 14.222: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	83.303	5.779	6.000	14.420	69.163	97.443	0.000
A FP	129.667	5.779	6.000	22.440	115.526	143.807	0.000
A EI-FP	-46.364	8.172	6.000	-5.670	-66.361	-26.367	0.001

Table 14.223: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 38 in year 2010b .

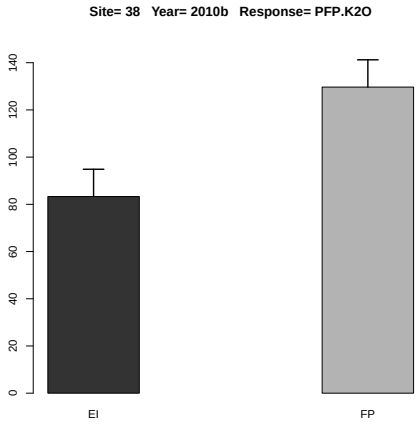

Figure 14.90: Estimated treatment means and standard error in the one-way ANOVA.

14.2.36 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	171.091
2	2	EI	N	167.364
3	3	EI	N	186.545
4	4	EI	N	156.568

Table 14.224: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

14.2.37 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	278.815
2	2	EI	N	272.741
3	3	EI	N	304.000
4	4	EI	N	255.148

Table 14.225: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

14.2.38 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	3764.000
2	2	EI	N	3682.000
3	3	EI	N	4104.000
4	4	EI	N	3444.500

Table 14.226: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

14.2.39 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.369
2	2	EI	N	0.350
3	3	EI	N	0.078
4	4	EI	N	0.417
5	1	FP	N	0.579
6	2	FP	N	0.431
7	3	FP	N	0.557
8	4	FP	N	0.610

Table 14.227: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.303	0.061	6.000	4.990	0.154	0.452	0.002
A FP	0.544	0.061	6.000	8.950	0.395	0.693	0.000
A EI-FP	-0.241	0.085	3.000	-2.850	-0.510	0.028	0.065

Table 14.228: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 38 in year 2010b .

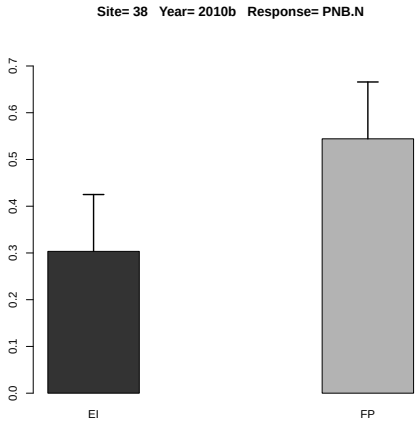

Figure 14.91: Estimated treatment means and standard error in the one-way ANOVA.

14.2.40 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.460
2	2	EI	N	0.394
3	3	EI	N	0.439
4	4	EI	N	0.386
5	1	FP	N	0.676
6	2	FP	N	0.877
7	3	FP	N	0.929
8	4	FP	N	1.061

Table 14.229: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.419	0.058	6.000	7.250	0.278	0.561	0.000
A FP	0.886	0.058	6.000	15.310	0.744	1.027	0.000
A EI-FP	-0.466	0.082	6.000	-5.700	-0.667	-0.266	0.001

Table 14.230: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 38 in year 2010b .

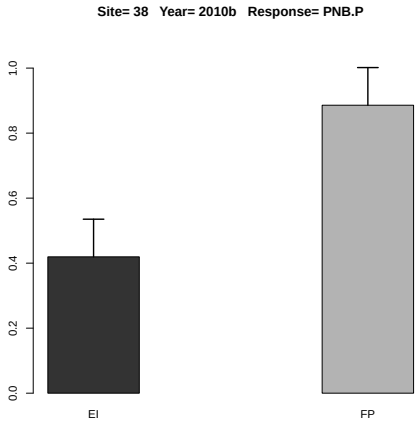

Figure 14.92: Estimated treatment means and standard error in the one-way ANOVA.

14.2.41 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.222
2	2	EI	N	0.217
3	3	EI	N	0.187
4	4	EI	N	0.157
5	1	FP	N	0.300
6	2	FP	N	0.354
7	3	FP	N	0.326
8	4	FP	N	0.428

Table 14.231: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.196	0.022	6.000	8.800	0.141	0.250	0.000
A FP	0.352	0.022	6.000	15.830	0.297	0.406	0.000
A EI-FP	-0.156	0.031	6.000	-4.970	-0.233	-0.079	0.002

Table 14.232: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 38 in year 2010b .

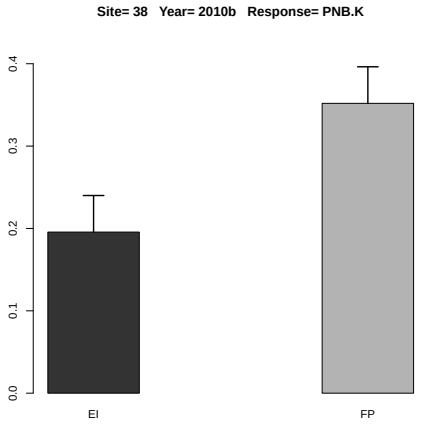

Figure 14.93: Estimated treatment means and standard error in the one-way ANOVA.

14.2.42 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.103
2	2	EI	N	0.117
3	3	EI	N	0.112
4	4	EI	N	0.094

Table 14.233: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

There is no or sufficient data for this response variable at this site and year.

14.2.43 Response Variable PNB.S

	rep	A	B	y
1	1	EI	N	0.279
2	2	EI	N	0.191
3	3	EI	N	0.122
4	4	EI	N	0.179

Table 14.234: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.S

There is no or sufficient data for this response variable at this site and year.

14.2.44 Response Variable AE

	rep	A	B	y
1	1	EI	N	25.180
2	2	EI	N	28.195
3	3	EI	N	12.060
4	4	EI	N	0.990
5	1	FP	N	35.947
6	2	FP	N	33.087
7	3	FP	N	31.580
8	4	FP	N	25.513

Table 14.235: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	16.606	3.104	5.350	0.025
A FP	31.532	3.104	10.159	0.004
A EI-FP	-14.925	4.389	-3.400	0.081

Table 14.236: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 38 in year 2010b .

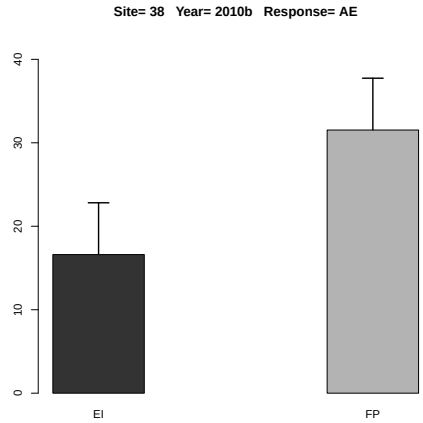

Figure 14.94: Estimated treatment means and standard error in the one-way ANOVA.

14.2.45 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.452
2	2	EI	N	0.502
3	3	EI	N	0.338
4	4	EI	N	-0.150
5	1	FP	N	0.848
6	2	FP	N	0.288
7	3	FP	N	0.932
8	4	FP	N	0.853

Table 14.237: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.285	0.179	1.593	0.363
A FP	0.730	0.179	4.077	0.051
A EI-FP	-0.445	0.253	-1.756	0.312

Table 14.238: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 38 in year 2010b .

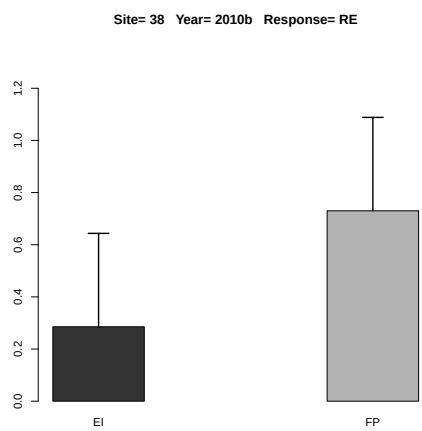

Figure 14.95: Estimated treatment means and standard error in the one-way ANOVA.

14.3 Year 2011a

There are 58 variables not observed: UG.Ca UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn US.K2O UT.K2O HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

14.3.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	2688.000
2	2	EI	N0	2119.000
3	3	EI	N0	3558.000
4	4	EI	N0	4738.000
5	1	EI	N	9415.000
6	2	EI	N	8331.000
7	3	EI	N	8738.000
8	4	EI	N	7929.000
9	1	FP	N0	2500.000
10	2	FP	N0	2084.000
11	3	FP	N0	3306.000
12	4	FP	N0	5987.000
13	1	FP	N	7887.000
14	2	FP	N	7553.000
15	3	FP	N	7517.000
16	4	FP	N	8176.000

Table 14.239: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	8603.250	274.038	31.394	0.000
A FP	7783.250	274.038	28.402	0.000
A EI-FP	820.000	387.548	2.116	0.226

Table 14.240: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 38 in year 2011a .

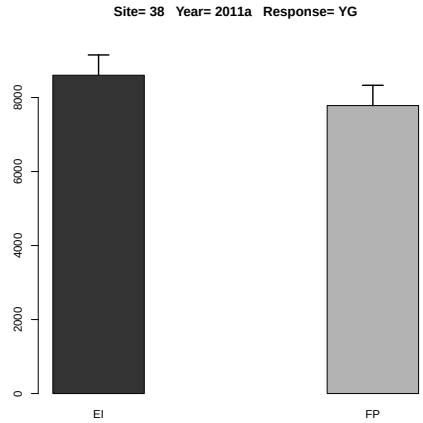

Figure 14.96: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	392502.250	392502.250	0.402	7.398	0.545
B	1.000	92958522.250	92958522.250	95.284	7.398	0.000
A:B	1.000	1027182.250	1027182.250	1.053	7.398	0.337

Table 14.241: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5939.500	427.362	6.300	13.900	4905.475	6973.525	0.000
2	FP		5626.250	427.362	6.300	13.170	4592.225	6660.275	0.000
3		N	8193.250	427.362	6.300	19.170	7159.225	9227.275	0.000
4		N0	3372.500	427.362	6.300	7.890	2338.475	4406.525	0.000
5	EI	N	8603.250	551.894	11.300	15.590	7392.206	9814.294	0.000
6	FP	N	7783.250	551.894	11.300	14.100	6572.206	8994.294	0.000
7	EI	N0	3275.750	551.894	11.300	5.940	2064.706	4486.794	0.000
8	FP	N0	3469.250	551.894	11.300	6.290	2258.206	4680.294	0.000

Table 14.242: Estimate of treatment means in tow-way ANOVA for variable YG at site 38 in year 2011a .

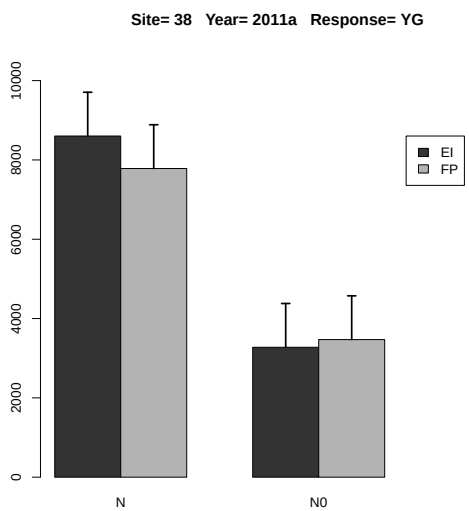

Figure 14.97: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	313.250	493.860	10.200	0.630	-784.631	1411.131	0.540
B N-N0	4820.750	493.860	10.200	9.760	3722.869	5918.631	0.000
A:B EI N- FP N	820.000	698.423	10.200	1.170	-732.639	2372.639	0.267
A:B EI N- EI N0	5327.500	698.423	10.200	7.630	3774.861	6880.139	0.000
A:B EI N- FP N0	5134.000	698.423	10.200	7.350	3581.361	6686.639	0.000
A:B FP N- EI N0	4507.500	698.423	10.200	6.450	2954.861	6060.139	0.000
A:B FP N- FP N0	4314.000	698.423	10.200	6.180	2761.361	5866.639	0.000
A:B EI N0- FP N0	-193.500	698.423	10.200	-0.280	-1746.139	1359.139	0.787

Table 14.243: Estimate of contrast in two-way ANOVA for variable YG at site 38 in year 2011a .

14.3.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	7138.000
2	2	EI	N0	4647.000
3	3	EI	N0	9105.000
4	4	EI	N0	14253.000
5	1	EI	N	27604.000
6	2	EI	N	23725.000
7	3	EI	N	22839.000
8	4	EI	N	22952.000
9	1	FP	N0	6730.000
10	2	FP	N0	5912.000
11	3	FP	N0	7207.000
12	4	FP	N0	18552.000
13	1	FP	N	21780.000
14	2	FP	N	19499.000
15	3	FP	N	20160.000
16	4	FP	N	26857.000

Table 14.244: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	24280.000	1510.220	16.077	0.001
A FP	22074.000	1510.220	14.616	0.001
A EI-FP	2206.000	2135.774	1.033	0.598

Table 14.245: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 38 in year 2011a .

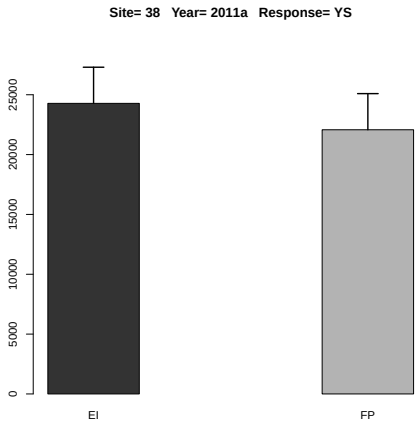

Figure 14.98: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1697543.597	1697543.597	0.181	2.999	0.699
B	1.000	782209024.000	782209024.000	83.570	20.605	0.000
A:B	1.000	9123420.250	9123420.250	0.975	20.605	0.335

Table 14.246: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16532.875	1766.796	4.500	9.360	11841.606	21224.143	0.000
2	FP		15837.125	1766.796	4.500	8.960	11145.856	20528.393	0.000
3		N	23177.000	1743.358	4.600	13.290	18563.074	27790.926	0.000
4		N0	9193.000	1743.358	4.600	5.270	4579.074	13806.926	0.004
5	EI	N	24280.000	2071.609	8.300	11.720	19531.296	29028.704	0.000
6	FP	N	22074.000	2071.609	8.300	10.660	17325.296	26822.704	0.000
7	EI	N0	8785.750	2071.609	8.300	4.240	4037.046	13534.454	0.003
8	FP	N0	9600.250	2071.609	8.300	4.630	4851.546	14348.954	0.002

Table 14.247: Estimate of treatment means in tow-way ANOVA for variable YS at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	695.750	1633.728	3.000	0.430	-4504.572	5896.072	0.699
B N-N0	13984.000	1529.703	20.600	9.140	10799.046	17168.954	0.000
A:B EI N- FP N	2206.000	2238.093	9.500	0.990	-2816.495	7228.495	0.349
A:B EI N- EI N0	15494.250	2163.327	20.600	7.160	10990.045	19998.455	0.000
A:B EI N- FP N0	14679.750	2238.093	9.500	6.560	9657.255	19702.245	0.000
A:B FP N- EI N0	13288.250	2238.093	9.500	5.940	8265.755	18310.745	0.000
A:B FP N- FP N0	12473.750	2163.327	20.600	5.770	7969.545	16977.955	0.000
A:B EI N0- FP N0	-814.500	2238.093	9.500	-0.360	-5836.995	4207.995	0.724

Table 14.248: Estimate of contrast in two-way ANOVA for variable YS at site 38 in year 2011a .

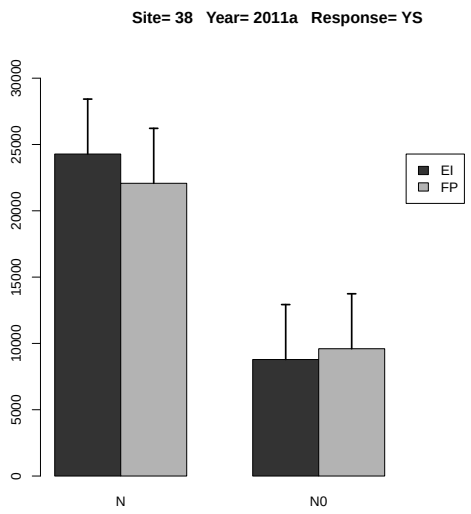

Figure 14.99: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	9826.000
2	2	EI	N0	6766.000
3	3	EI	N0	12663.000
4	4	EI	N0	18991.000
5	1	EI	N	37019.000
6	2	EI	N	32056.000
7	3	EI	N	31577.000
8	4	EI	N	30881.000
9	1	FP	N0	9230.000
10	2	FP	N0	7996.000
11	3	FP	N0	10513.000
12	4	FP	N0	24539.000
13	1	FP	N	29667.000
14	2	FP	N	27052.000
15	3	FP	N	27677.000
16	4	FP	N	35033.000

Table 14.249: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	32883.250	1766.757	18.612	0.001
A FP	29857.250	1766.757	16.899	0.000
A EI-FP	3026.000	2498.572	1.211	0.513

Table 14.250: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 38 in year 2011a .

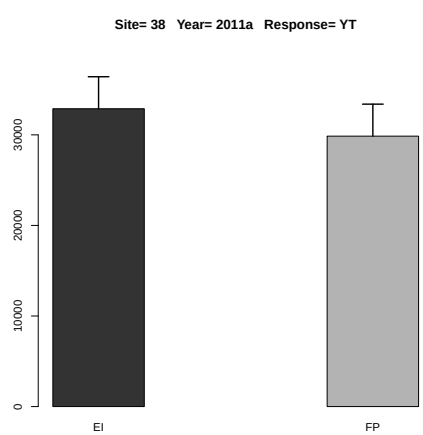

Figure 14.100: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4072324.000	4072324.000	0.246	-0.000	
B	1.000	1414474490.250	1414474490.250	85.410	-0.000	
A:B	1.000	16273156.000	16273156.000	0.983	-0.000	

Table 14.251: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22472.375	2158.183	5.000	10.410	16926.157	28018.593	0.000
2	FP		21463.375	2158.183	5.000	9.950	15917.157	27009.593	0.000
3		N	31370.250	2158.183	5.000	14.540	25824.033	36916.467	0.000
4		N0	12565.500	2158.183	5.000	5.820	7019.283	18111.717	0.002
5	EI	N	32883.250	2593.815	11.300	12.680	27191.685	38574.815	0.000
6	FP	N	29857.250	2593.815	11.300	11.510	24165.685	35548.815	0.000
7	EI	N0	12061.500	2593.815	11.300	4.650	6369.935	17753.065	0.001
8	FP	N0	13069.500	2593.815	11.300	5.040	7377.935	18761.065	0.000

Table 14.252: Estimate of treatment means in tow-way ANOVA for variable YT at site 38 in year 2011a .

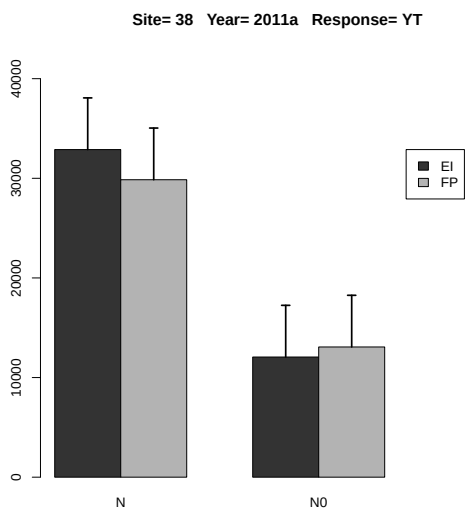

Figure 14.101: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1009.000	2034.758	-26.500	0.500			
B N-N0	18804.750	2034.758	-26.500	9.240			
A:B EI N- FP N	3026.000	2877.583	-26.500	1.050			
A:B EI N- EI N0	20821.750	2877.583	-26.500	7.240			
A:B EI N- FP N0	19813.750	2877.583	-26.500	6.890			
A:B FP N- EI N0	17795.750	2877.583	-26.500	6.180			
A:B FP N- FP N0	16787.750	2877.583	-26.500	5.830			
A:B EI N0- FP N0	-1008.000	2877.583	-26.500	-0.350			

Table 14.253: Estimate of contrast in two-way ANOVA for variable YT at site 38 in year 2011a .

14.3.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.274
2	2	EI	N0	0.313
3	3	EI	N0	0.281
4	4	EI	N0	0.249
5	1	EI	N	0.254
6	2	EI	N	0.260
7	3	EI	N	0.277
8	4	EI	N	0.257
9	1	FP	N0	0.271
10	2	FP	N0	0.261
11	3	FP	N0	0.314
12	4	FP	N0	0.244
13	1	FP	N	0.266
14	2	FP	N	0.279
15	3	FP	N	0.272
16	4	FP	N	0.233

Table 14.254: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.262	0.007	39.094	0.000
A FP	0.263	0.007	39.181	0.000
A EI-FP	-0.001	0.009	-0.062	0.998

Table 14.255: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 38 in year 2011a .

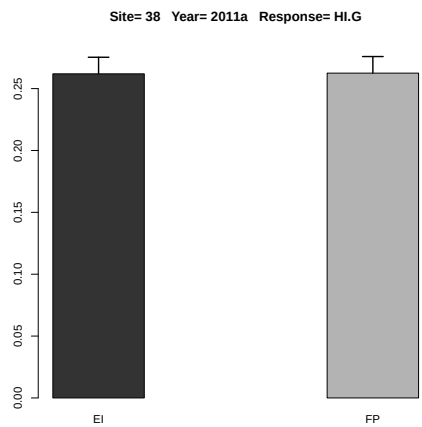

Figure 14.102: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.131	8.948	0.725
B	1.000	0.001	0.001	2.527	8.948	0.147
A:B	1.000	0.000	0.000	0.185	8.948	0.677

Table 14.256: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.271	0.010	4.500	27.820	0.245	0.296	0.000
2	FP		0.268	0.010	4.500	27.500	0.242	0.293	0.000
3		N	0.262	0.010	4.500	26.950	0.236	0.288	0.000
4		N0	0.276	0.010	4.500	28.360	0.250	0.302	0.000
5	EI	N	0.262	0.011	7.600	22.830	0.235	0.289	0.000
6	FP	N	0.263	0.011	7.600	22.880	0.236	0.289	0.000
7	EI	N0	0.279	0.011	7.600	24.340	0.253	0.306	0.000
8	FP	N0	0.273	0.011	7.600	23.750	0.246	0.299	0.000

Table 14.257: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.003	0.009	8.900	0.360	-0.016	0.023	0.726
B N-N0	-0.014	0.009	8.900	-1.590	-0.033	0.006	0.147
A:B EI N- FP N	-0.001	0.012	8.900	-0.050	-0.028	0.027	0.963
A:B EI N- EI N0	-0.017	0.012	8.900	-1.430	-0.045	0.010	0.187
A:B EI N- FP N0	-0.011	0.012	8.900	-0.870	-0.038	0.017	0.408
A:B FP N- EI N0	-0.017	0.012	8.900	-1.380	-0.044	0.011	0.201
A:B FP N- FP N0	-0.010	0.012	8.900	-0.820	-0.037	0.018	0.434
A:B EI N0- FP N0	0.007	0.012	8.900	0.560	-0.021	0.034	0.589

Table 14.258: Estimate of contrast in two-way ANOVA for variable HI.G at site 38 in year 2011a .

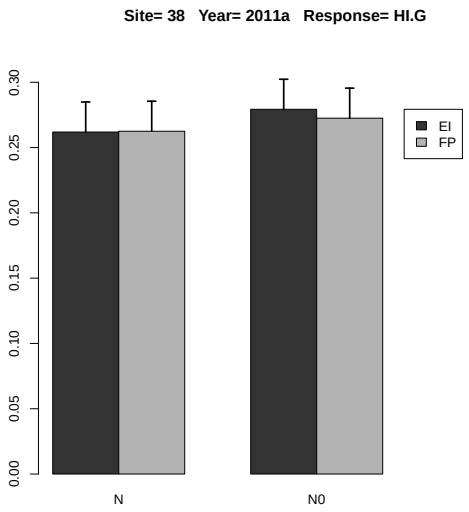

Figure 14.103: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	37.363
2	2	EI	N0	24.368
3	3	EI	N0	43.408
4	4	EI	N0	55.908
5	1	EI	N	145.933
6	2	EI	N	141.627
7	3	EI	N	147.672
8	4	EI	N	144.308
9	1	FP	N0	27.000
10	2	FP	N0	25.425
11	3	FP	N0	42.647
12	4	FP	N0	74.239
13	1	FP	N	126.981
14	2	FP	N	119.337
15	3	FP	N	130.044
16	4	FP	N	141.445

Table 14.259: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	144.885	3.043	47.614	0.000
A FP	129.452	3.043	42.543	0.000
A EI-FP	15.433	4.303	3.586	0.071

Table 14.260: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 38 in year 2011a .

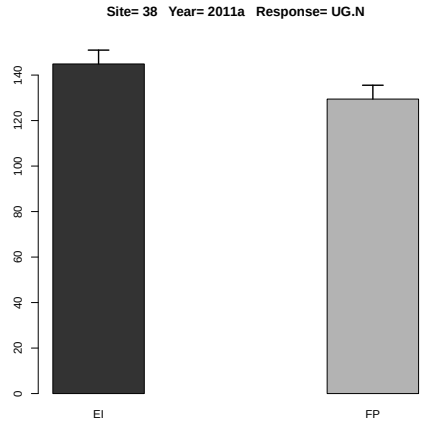

Figure 14.104: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	159.471	159.471	1.828	2.999	0.269
B	1.000	36766.893	36766.893	421.501	6.000	0.000
A:B	1.000	306.213	306.213	3.510	6.000	0.110

Table 14.261: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		92.573	6.130	4.100	15.100	75.750	109.397	0.000
2	FP		85.890	6.130	4.100	14.010	69.066	102.713	0.000
3		N	137.168	6.076	4.100	22.570	120.408	153.928	0.000
4		N0	41.295	6.076	4.100	6.800	24.535	58.055	0.002
5	EI	N	144.885	6.963	6.500	20.810	128.152	161.618	0.000
6	FP	N	129.452	6.963	6.500	18.590	112.719	146.185	0.000
7	EI	N0	40.262	6.963	6.500	5.780	23.529	56.995	0.001
8	FP	N0	42.328	6.963	6.500	6.080	25.595	59.061	0.001

Table 14.262: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 38 in year 2011a .

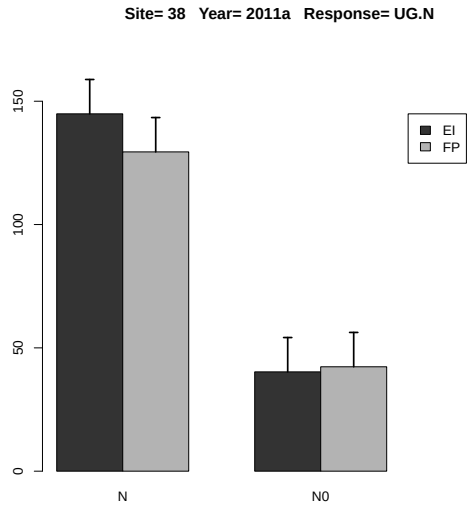

Figure 14.105: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	6.684	4.943	3.000	1.350	-9.051	22.419	0.269
B N-N0	95.874	4.670	6.000	20.530	84.447	107.300	0.000
A:B EI N- FP N	15.433	6.800	7.700	2.270	-0.361	31.228	0.054
A:B EI N- EI N0	104.623	6.604	6.000	15.840	88.463	120.783	0.000
A:B EI N- FP N0	102.557	6.800	7.700	15.080	86.763	118.352	0.000
A:B FP N- EI N0	89.190	6.800	7.700	13.120	73.395	104.984	0.000
A:B FP N- FP N0	87.124	6.604	6.000	13.190	70.964	103.284	0.000
A:B EI N0- FP N0	-2.066	6.800	7.700	-0.300	-17.860	13.729	0.769

Table 14.263: Estimate of contrast in two-way ANOVA for variable UG.N at site 38 in year 2011a .

14.3.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	5.645
2	2	EI	N0	6.145
3	3	EI	N0	9.962
4	4	EI	N0	13.740
5	1	EI	N	15.064
6	2	EI	N	21.661
7	3	EI	N	13.107
8	4	EI	N	13.479
9	1	FP	N0	6.750
10	2	FP	N0	6.044
11	3	FP	N0	9.257
12	4	FP	N0	16.165
13	1	FP	N	16.563
14	2	FP	N	17.372
15	3	FP	N	19.544
16	4	FP	N	18.805

Table 14.264: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	15.828	1.712	9.247	0.005
A FP	18.071	1.712	10.558	0.004
A EI-FP	-2.243	2.421	-0.927	0.652

Table 14.265: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 38 in year 2011a .

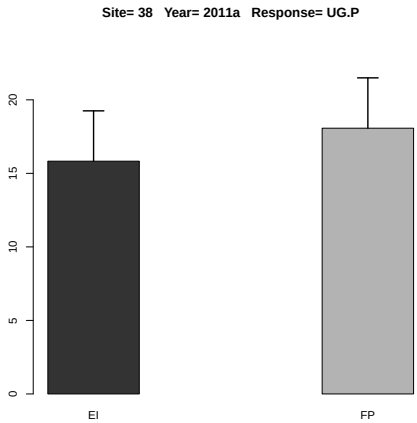

Figure 14.106: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	8.549	8.549	0.653	9.000	0.440
B	1.000	239.373	239.373	18.289	9.000	0.002
A:B	1.000	2.441	2.441	0.187	9.000	0.676

Table 14.266: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		12.350	1.300	8.700	9.500	9.393	15.308	0.000
2	FP		13.812	1.300	8.700	10.620	10.855	16.770	0.000
3		N	16.949	1.300	8.700	13.030	13.992	19.907	0.000
4		N0	9.213	1.300	8.700	7.080	6.256	12.171	0.000
5	EI	N	15.828	1.824	12.000	8.680	11.853	19.802	0.000
6	FP	N	18.071	1.824	12.000	9.910	14.096	22.046	0.000
7	EI	N0	8.873	1.824	12.000	4.860	4.898	12.848	0.000
8	FP	N0	9.554	1.824	12.000	5.240	5.579	13.529	0.000

Table 14.267: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.462	1.809	9.000	-0.810	-5.554	2.630	0.440
B N-N0	7.736	1.809	9.000	4.280	3.644	11.828	0.002
A:B EI N- FP N	-2.243	2.558	9.000	-0.880	-8.030	3.544	0.403
A:B EI N- EI N0	6.955	2.558	9.000	2.720	1.168	12.742	0.024
A:B EI N- FP N0	6.274	2.558	9.000	2.450	0.487	12.061	0.037
A:B FP N- EI N0	9.198	2.558	9.000	3.600	3.411	14.985	0.006
A:B FP N- FP N0	8.517	2.558	9.000	3.330	2.730	14.304	0.009
A:B EI N0- FP N0	-0.681	2.558	9.000	-0.270	-6.468	5.106	0.796

Table 14.268: Estimate of contrast in two-way ANOVA for variable UG.P at site 38 in year 2011a .

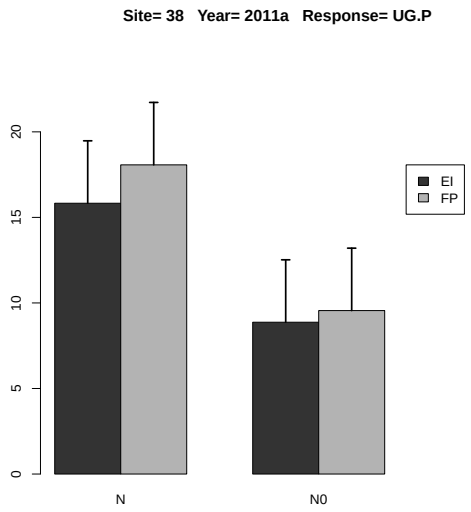

Figure 14.107: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	12.927
2	2	EI	N0	14.072
3	3	EI	N0	22.814
4	4	EI	N0	31.465
5	1	EI	N	34.497
6	2	EI	N	49.603
7	3	EI	N	30.015
8	4	EI	N	30.868
9	1	FP	N0	15.457
10	2	FP	N0	13.840
11	3	FP	N0	21.198
12	4	FP	N0	37.018
13	1	FP	N	37.929
14	2	FP	N	39.782
15	3	FP	N	44.756
16	4	FP	N	43.063

Table 14.269: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	36.245	3.920	9.247	0.005
A FP	41.382	3.920	10.558	0.003
A EI-FP	-5.137	5.543	-0.927	0.652

Table 14.270: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 38 in year 2011a .

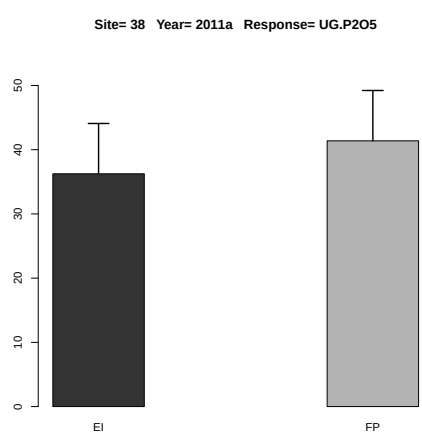

Figure 14.108: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	44.832	44.832	0.653	9.000	0.440
B	1.000	1255.295	1255.295	18.289	9.000	0.002
A:B	1.000	12.803	12.803	0.187	9.000	0.676

Table 14.271: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		28.282	2.978	8.700	9.500	21.510	35.055	0.000
2	FP		31.630	2.978	8.700	10.620	24.858	38.403	0.000
3		N	38.814	2.978	8.700	13.030	32.042	45.586	0.000
4		N0	21.099	2.978	8.700	7.080	14.326	27.871	0.000
5	EI	N	36.245	4.177	12.000	8.680	27.143	45.348	0.000
6	FP	N	41.382	4.177	12.000	9.910	32.280	50.484	0.000
7	EI	N0	20.320	4.177	12.000	4.860	11.217	29.422	0.000
8	FP	N0	21.878	4.177	12.000	5.240	12.776	30.980	0.000

Table 14.272: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 38 in year 2011a .

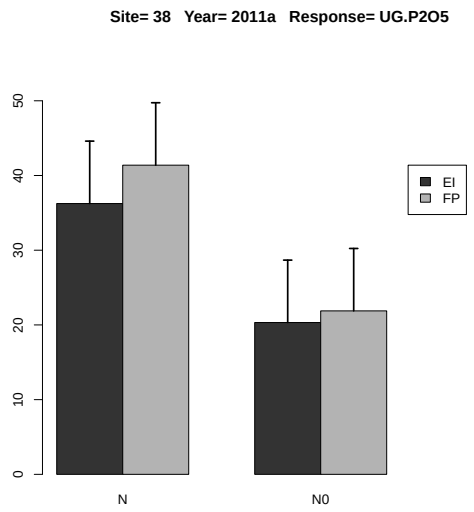

Figure 14.109: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.348	4.142	9.000	-0.810	-12.718	6.023	0.440
B N-N0	17.715	4.142	9.000	4.280	8.345	27.086	0.002
A:B EI N- FP N	-5.137	5.858	9.000	-0.880	-18.389	8.115	0.403
A:B EI N- EI N0	15.926	5.858	9.000	2.720	2.674	29.178	0.024
A:B EI N- FP N0	14.367	5.858	9.000	2.450	1.115	27.619	0.037
A:B FP N- EI N0	21.063	5.858	9.000	3.600	7.811	34.315	0.006
A:B FP N- FP N0	19.504	5.858	9.000	3.330	6.252	32.756	0.009
A:B EI N0- FP N0	-1.559	5.858	9.000	-0.270	-14.811	11.693	0.796

Table 14.273: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 38 in year 2011a .

14.3.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	9.677
2	2	EI	N0	9.324
3	3	EI	N0	14.944
4	4	EI	N0	22.269
5	1	EI	N	31.070
6	2	EI	N	34.157
7	3	EI	N	24.466
8	4	EI	N	24.580
9	1	FP	N0	10.000
10	2	FP	N0	9.170
11	3	FP	N0	13.555
12	4	FP	N0	26.942
13	1	FP	N	27.604
14	2	FP	N	31.723
15	3	FP	N	27.813
16	4	FP	N	32.704

Table 14.274: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	28.568	1.908	14.973	0.001
A FP	29.961	1.908	15.703	0.001
A EI-FP	-1.393	2.698	-0.516	0.863

Table 14.275: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 38 in year 2011a .

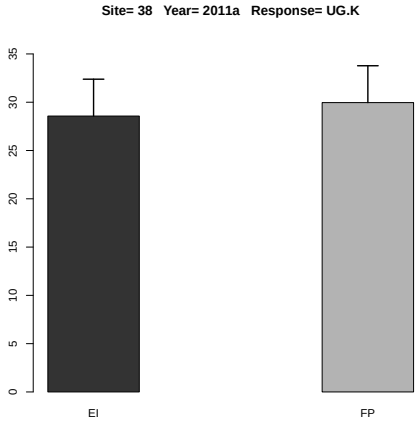

Figure 14.110: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.090	5.090	0.164	9.000	0.695
B	1.000	873.773	873.773	28.124	9.000	0.000
A:B	1.000	0.280	0.280	0.009	9.000	0.926

Table 14.276: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.311	2.131	7.700	10.000	16.364	26.258	0.000
2	FP		22.439	2.131	7.700	10.530	17.492	27.386	0.000
3		N	29.265	2.131	7.700	13.730	24.318	34.212	0.000
4		N0	14.485	2.131	7.700	6.800	9.538	19.432	0.000
5	EI	N	28.568	2.903	11.800	9.840	22.230	34.906	0.000
6	FP	N	29.961	2.903	11.800	10.320	23.623	36.299	0.000
7	EI	N0	14.053	2.903	11.800	4.840	7.715	20.391	0.000
8	FP	N0	14.916	2.903	11.800	5.140	8.579	21.254	0.000

Table 14.277: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.128	2.787	9.000	-0.400	-7.433	5.176	0.695
B N-N0	14.780	2.787	9.000	5.300	8.475	21.084	0.000
A:B EI N- FP N	-1.393	3.941	9.000	-0.350	-10.309	7.523	0.732
A:B EI N- EI N0	14.515	3.941	9.000	3.680	5.599	23.431	0.005
A:B EI N- FP N0	13.652	3.941	9.000	3.460	4.736	22.568	0.007
A:B FP N- EI N0	15.908	3.941	9.000	4.040	6.992	24.824	0.003
A:B FP N- FP N0	15.045	3.941	9.000	3.820	6.129	23.961	0.004
A:B EI N0- FP N0	-0.863	3.941	9.000	-0.220	-9.779	8.053	0.832

Table 14.278: Estimate of contrast in two-way ANOVA for variable UG.K at site 38 in year 2011a .

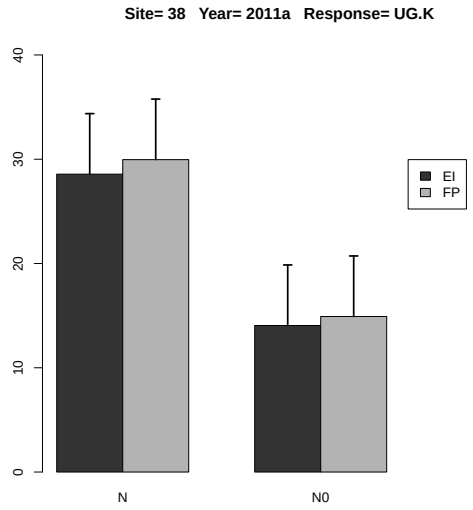

Figure 14.111: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	11.661
2	2	EI	N0	11.235
3	3	EI	N0	18.007
4	4	EI	N0	26.834
5	1	EI	N	37.439
6	2	EI	N	41.159
7	3	EI	N	29.482
8	4	EI	N	29.619
9	1	FP	N0	12.050
10	2	FP	N0	11.049
11	3	FP	N0	16.333
12	4	FP	N0	32.465
13	1	FP	N	33.263
14	2	FP	N	38.226
15	3	FP	N	33.515
16	4	FP	N	39.408

Table 14.279: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	34.425	2.299	14.973	0.001
A FP	36.103	2.299	15.703	0.001
A EI-FP	-1.678	3.252	-0.516	0.863

Table 14.280: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 38 in year 2011a .

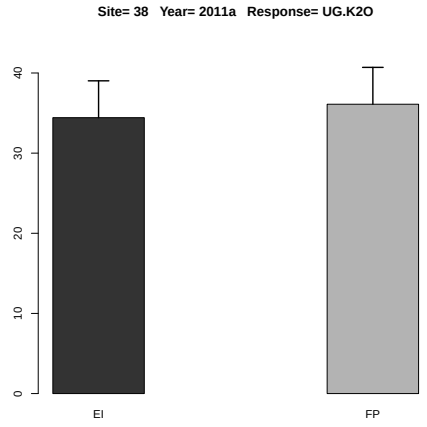

Figure 14.112: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	7.390	7.390	0.164	9.000	0.695
B	1.000	1268.740	1268.740	28.124	9.000	0.000
A:B	1.000	0.407	0.407	0.009	9.000	0.926

Table 14.281: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.679	2.568	7.700	10.000	19.718	31.640	0.000
2	FP		27.039	2.568	7.700	10.530	21.078	33.000	0.000
3		N	35.264	2.568	7.700	13.730	29.303	41.225	0.000
4		N0	17.454	2.568	7.700	6.800	11.493	23.415	0.000
5	EI	N	34.425	3.498	11.800	9.840	26.788	42.062	0.000
6	FP	N	36.103	3.498	11.800	10.320	28.466	43.740	0.000
7	EI	N0	16.934	3.498	11.800	4.840	9.297	24.571	0.000
8	FP	N0	17.974	3.498	11.800	5.140	10.337	25.611	0.000

Table 14.282: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 38 in year 2011a .

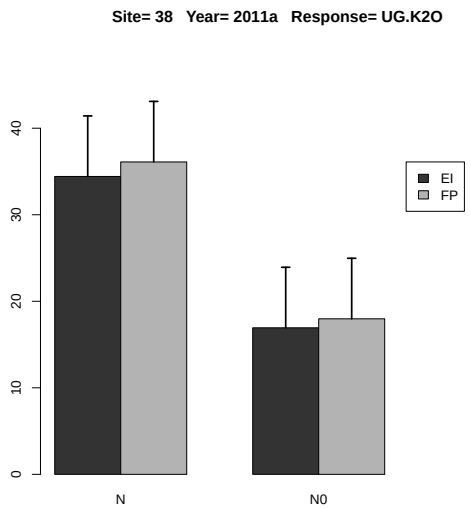

Figure 14.113: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.359	3.358	9.000	-0.400	-8.956	6.238	0.695
B N-N0	17.810	3.358	9.000	5.300	10.213	25.407	0.000
A:B EI N- FP N	-1.678	4.749	9.000	-0.350	-12.422	9.066	0.732
A:B EI N- EI N0	17.491	4.749	9.000	3.680	6.747	28.234	0.005
A:B EI N- FP N0	16.450	4.749	9.000	3.460	5.707	27.194	0.007
A:B FP N- EI N0	19.169	4.749	9.000	4.040	8.425	29.913	0.003
A:B FP N- FP N0	18.129	4.749	9.000	3.820	7.385	28.872	0.004
A:B EI N0- FP N0	-1.040	4.749	9.000	-0.220	-11.784	9.704	0.832

Table 14.283: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 38 in year 2011a .

14.3.10 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	2.150
2	2	EI	N0	2.119
3	3	EI	N0	3.202
4	4	EI	N0	4.264
5	1	EI	N	7.532
6	2	EI	N	7.498
7	3	EI	N	5.243
8	4	EI	N	5.550
9	1	FP	N0	2.000
10	2	FP	N0	2.084
11	3	FP	N0	2.975
12	4	FP	N0	5.388
13	1	FP	N	6.310
14	2	FP	N	6.798
15	3	FP	N	6.765
16	4	FP	N	7.358

Table 14.284: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	6.456	0.543	11.889	0.002
A FP	6.808	0.543	12.537	0.002
A EI-FP	-0.352	0.768	-0.458	0.889

Table 14.285: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 38 in year 2011a .

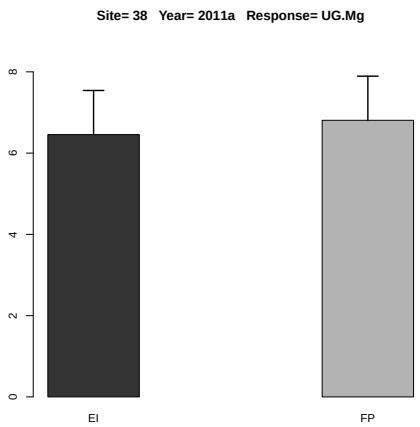

Figure 14.114: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.281	0.281	0.215	11.999	0.651
B	1.000	52.094	52.094	39.812	11.999	0.000
A:B	1.000	0.030	0.030	0.023	11.999	0.882

Table 14.286: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.695	0.404	12.000	11.610	3.814	5.576	0.000
2	FP		4.960	0.404	12.000	12.260	4.079	5.841	0.000
3		N	6.632	0.404	12.000	16.400	5.751	7.513	0.000
4		N0	3.023	0.404	12.000	7.470	2.142	3.904	0.000
5	EI	N	6.456	0.572	12.000	11.290	5.210	7.702	0.000
6	FP	N	6.808	0.572	12.000	11.900	5.562	8.054	0.000
7	EI	N0	2.934	0.572	12.000	5.130	1.688	4.180	0.000
8	FP	N0	3.112	0.572	12.000	5.440	1.866	4.358	0.000

Table 14.287: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.265	0.572	12.000	-0.460	-1.511	0.981	0.651
B N-N0	3.609	0.572	12.000	6.310	2.363	4.855	0.000
A:B EI N- FP N	-0.352	0.809	12.000	-0.440	-2.114	1.410	0.671
A:B EI N- EI N0	3.522	0.809	12.000	4.350	1.759	5.284	0.001
A:B EI N- FP N0	3.344	0.809	12.000	4.130	1.581	5.106	0.001
A:B FP N- EI N0	3.874	0.809	12.000	4.790	2.111	5.636	0.000
A:B FP N- FP N0	3.696	0.809	12.000	4.570	1.933	5.458	0.001
A:B EI N0- FP N0	-0.178	0.809	12.000	-0.220	-1.940	1.584	0.830

Table 14.288: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 38 in year 2011a .

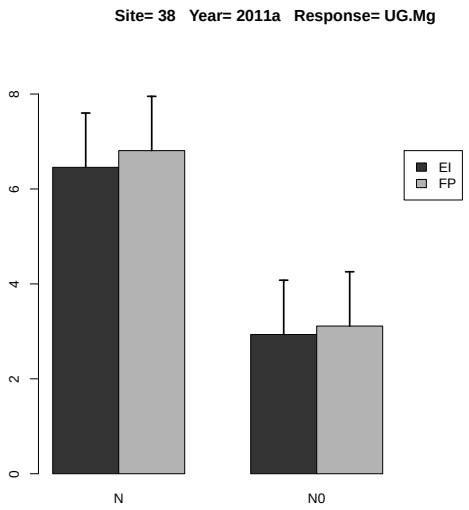

Figure 14.115: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.11 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	13.978
2	2	EI	N0	13.985
3	3	EI	N0	18.502
4	4	EI	N0	15.162
5	1	EI	N	69.671
6	2	EI	N	50.819
7	3	EI	N	41.942
8	4	EI	N	47.574
9	1	FP	N0	10.500
10	2	FP	N0	10.212
11	3	FP	N0	12.563
12	4	FP	N0	26.942
13	1	FP	N	42.590
14	2	FP	N	48.339
15	3	FP	N	51.867
16	4	FP	N	53.962

Table 14.289: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	52.502	5.898	8.901	0.006
A FP	49.189	5.898	8.340	0.007
A EI-FP	3.312	8.341	0.397	0.915

Table 14.290: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 38 in year 2011a .

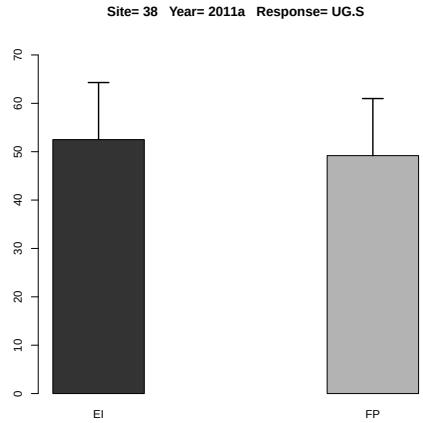

Figure 14.116: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11.306	11.306	0.208	5.998	0.664
B	1.000	5073.795	5073.795	93.411	6.000	0.000
A:B	1.000	8.759	8.759	0.161	6.000	0.702

Table 14.291: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		33.954	2.840	6.000	11.960	27.005	40.904	0.000
2	FP		32.122	2.840	6.000	11.310	25.172	39.071	0.000
3		N	50.846	2.725	11.900	18.660	44.903	56.788	0.000
4		N0	15.230	2.725	11.900	5.590	9.287	21.173	0.000
5	EI	N	52.502	3.854	11.900	13.620	44.097	60.906	0.000
6	FP	N	49.190	3.854	11.900	12.760	40.785	57.594	0.000
7	EI	N0	15.406	3.854	11.900	4.000	7.002	23.811	0.002
8	FP	N0	15.054	3.854	11.900	3.910	6.649	23.458	0.002

Table 14.292: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 38 in year 2011a .

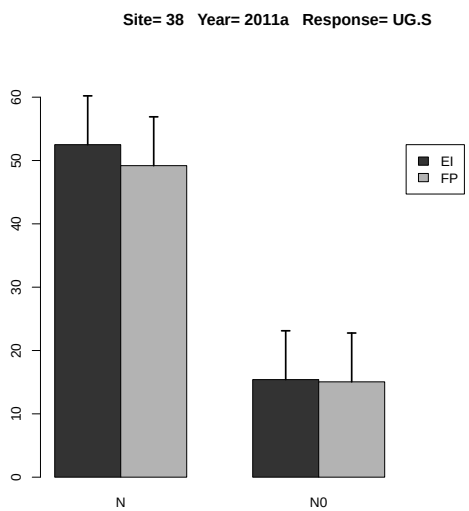

Figure 14.117: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.832	4.016	6.000	0.460	-7.996	11.661	0.664
B N-N0	35.615	3.685	6.000	9.660	26.598	44.632	0.000
A:B EI N- FP N	3.312	5.451	11.900	0.610	-8.573	15.198	0.555
A:B EI N- EI N0	37.095	5.211	6.000	7.120	24.343	49.847	0.000
A:B EI N- FP N0	37.448	5.451	11.900	6.870	25.562	49.333	0.000
A:B FP N- EI N0	33.783	5.451	11.900	6.200	21.897	45.669	0.000
A:B FP N- FP N0	34.136	5.211	6.000	6.550	21.384	46.887	0.001
A:B EI N0- FP N0	0.353	5.451	11.900	0.060	-11.533	12.238	0.950

Table 14.293: Estimate of contrast in two-way ANOVA for variable UG.S at site 38 in year 2011a .

14.3.12 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	62.026
2	2	EI	N0	28.750
3	3	EI	N0	53.528
4	4	EI	N0	84.710
5	1	EI	N	224.906
6	2	EI	N	202.595
7	3	EI	N	180.672
8	4	EI	N	182.296
9	1	FP	N0	56.149
10	2	FP	N0	32.626
11	3	FP	N0	50.933
12	4	FP	N0	133.583
13	1	FP	N	205.598
14	2	FP	N	156.621
15	3	FP	N	151.934
16	4	FP	N	201.411

Table 14.294: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	197.617	9.736	20.297	0.001
A FP	178.891	9.736	18.374	0.000
A EI-FP	18.726	13.769	1.360	0.449

Table 14.295: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 38 in year 2011a .

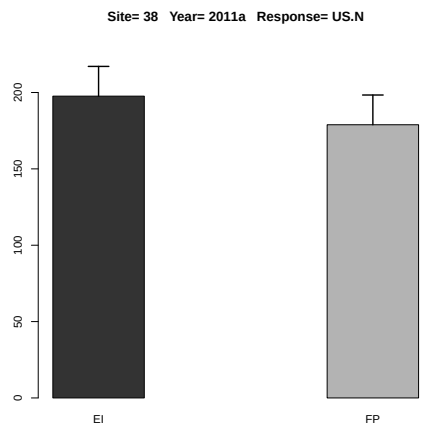

Figure 14.118: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	54.610	54.610	0.090	2.998	0.783
B	1.000	62966.806	62966.806	104.323	6.000	0.000
A:B	1.000	887.758	887.758	1.471	6.000	0.271

Table 14.296: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		127.435	12.665	4.800	10.060	94.505	160.366	0.000
2	FP		123.607	12.665	4.800	9.760	90.676	156.538	0.000
3		N	188.254	12.555	4.900	14.990	155.861	220.647	0.000
4		N0	62.788	12.555	4.900	5.000	30.395	95.181	0.004
5	EI	N	197.617	15.358	8.800	12.870	162.783	232.451	0.000
6	FP	N	178.891	15.358	8.800	11.650	144.057	213.725	0.000
7	EI	N0	57.254	15.358	8.800	3.730	22.419	92.088	0.005
8	FP	N0	68.323	15.358	8.800	4.450	33.489	103.157	0.002

Table 14.297: Estimate of treatment means in tow-way ANOVA for variable US.N at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	3.829	12.728	3.000	0.300	-36.690	44.347	0.783
B N-N0	125.466	12.284	6.000	10.210	95.408	155.524	0.000
A:B EI N- FP N	18.726	17.689	7.800	1.060	-22.244	59.696	0.321
A:B EI N- EI N0	140.364	17.372	6.000	8.080	97.855	182.872	0.000
A:B EI N- FP N0	129.294	17.689	7.800	7.310	88.324	170.265	0.000
A:B FP N- EI N0	121.637	17.689	7.800	6.880	80.667	162.608	0.000
A:B FP N- FP N0	110.568	17.372	6.000	6.360	68.060	153.077	0.001
A:B EI N0- FP N0	-11.069	17.689	7.800	-0.630	-52.039	29.901	0.549

Table 14.298: Estimate of contrast in two-way ANOVA for variable US.N at site 38 in year 2011a .

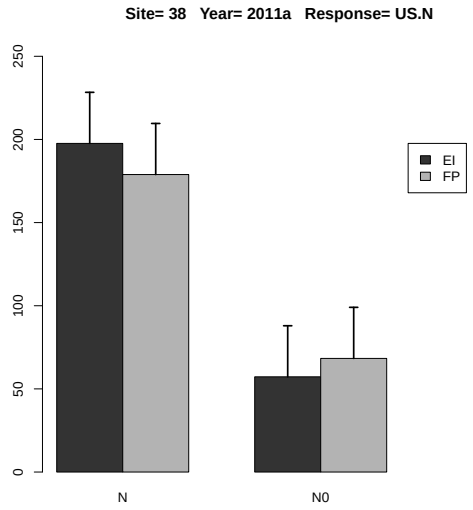

Figure 14.119: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.13 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	11.622
2	2	EI	N0	5.423
3	3	EI	N0	17.587
4	4	EI	N0	15.524
5	1	EI	N	10.897
6	2	EI	N	9.228
7	3	EI	N	11.165
8	4	EI	N	6.766
9	1	FP	N0	6.560
10	2	FP	N0	6.978
11	3	FP	N0	13.181
12	4	FP	N0	28.489
13	1	FP	N	8.593
14	2	FP	N	9.529
15	3	FP	N	19.845
16	4	FP	N	216.427

Table 14.299: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	9.514	36.707	0.259	0.962
A FP	63.598	36.707	1.733	0.319
A EI-FP	-54.085	51.912	-1.042	0.594

Table 14.300: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 38 in year 2011a .

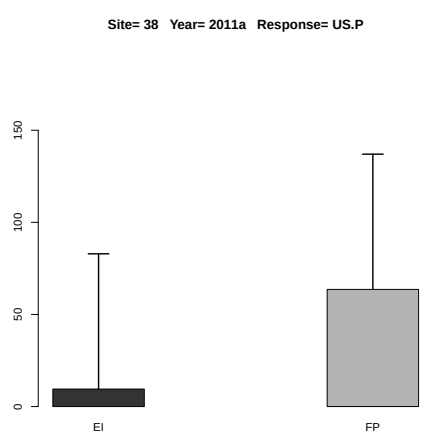

Figure 14.120: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2093.833	2093.833	0.983	2.999	0.395
B	1.000	2187.566	2187.566	1.027	5.999	0.350
A:B	1.000	2790.172	2790.172	1.310	5.999	0.296

Table 14.301: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.027	19.820	6.000	0.560	-37.475	59.529	0.598
2	FP		38.700	19.820	6.000	1.950	-9.802	87.202	0.099
3		N	36.556	18.199	6.800	2.010	-6.693	79.805	0.086
4		N0	13.170	18.199	6.800	0.720	-30.079	56.419	0.493
5	EI	N	9.514	25.672	11.600	0.370	-46.651	65.678	0.718
6	FP	N	63.599	25.672	11.600	2.480	7.434	119.763	0.030
7	EI	N0	12.539	25.672	11.600	0.490	-43.625	68.704	0.634
8	FP	N0	13.802	25.672	11.600	0.540	-42.363	69.966	0.601

Table 14.302: Estimate of treatment means in tow-way ANOVA for variable US.P at site 38 in year 2011a .

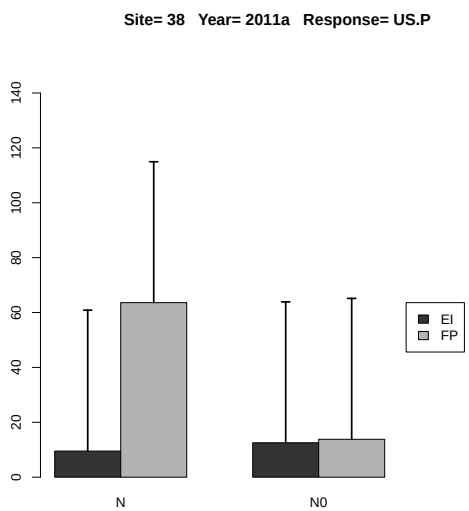

Figure 14.121: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-27.674	27.908	3.000	-0.990	-116.509	61.161	0.395
B N-N0	23.386	23.073	6.000	1.010	-33.075	79.847	0.350
A:B EI N- FP N	-54.085	36.211	6.900	-1.490	-139.986	31.817	0.180
A:B EI N- EI N0	-3.025	32.630	6.000	-0.090	-82.873	76.822	0.929
A:B EI N- FP N0	-4.288	36.211	6.900	-0.120	-90.189	81.613	0.909
A:B FP N- EI N0	51.059	36.211	6.900	1.410	-34.842	136.961	0.202
A:B FP N- FP N0	49.797	32.630	6.000	1.530	-30.051	129.644	0.178
A:B EI N0- FP N0	-1.263	36.211	6.900	-0.030	-87.164	84.639	0.973

Table 14.303: Estimate of contrast in two-way ANOVA for variable US.P at site 38 in year 2011a .

14.3.14 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	11.826
2	2	EI	N0	5.700
3	3	EI	N0	18.020
4	4	EI	N0	16.420
5	1	EI	N	11.457
6	2	EI	N	9.566
7	3	EI	N	11.658
8	4	EI	N	7.075
9	1	FP	N0	6.889
10	2	FP	N0	7.279
11	3	FP	N0	13.486
12	4	FP	N0	29.189
13	1	FP	N	9.054
14	2	FP	N	9.955
15	3	FP	N	20.793
16	4	FP	N	217.588

Table 14.304: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	9.939	36.835	0.270	0.959
A FP	64.348	36.835	1.747	0.315
A EI-FP	-54.409	52.093	-1.044	0.592

Table 14.305: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 38 in year 2011a .

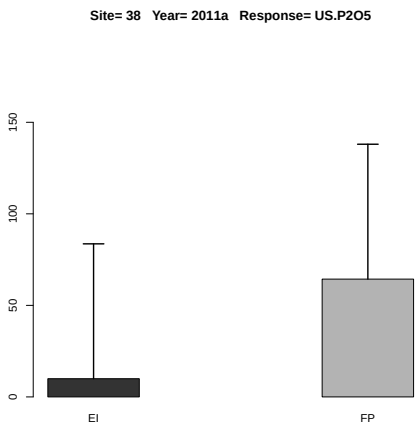

Figure 14.122: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2110.210	2110.210	0.989	2.999	0.393
B	1.000	2216.936	2216.936	1.039	6.003	0.347
A:B	1.000	2829.102	2829.102	1.326	6.003	0.293

Table 14.306: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		11.465	19.907	6.000	0.580	-37.251	60.181	0.586
2	FP		39.279	19.907	6.000	1.970	-9.436	87.995	0.096
3		N	37.143	18.278	6.800	2.030	-6.330	80.617	0.083
4		N0	13.601	18.278	6.800	0.740	-29.872	57.074	0.482
5	EI	N	9.939	25.750	11.600	0.390	-46.404	66.282	0.707
6	FP	N	64.348	25.750	11.600	2.500	8.004	120.691	0.029
7	EI	N0	12.992	25.750	11.600	0.500	-43.352	69.335	0.623
8	FP	N0	14.211	25.750	11.600	0.550	-42.133	70.554	0.592

Table 14.307: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-27.814	27.972	3.000	-0.990	-116.842	61.214	0.393
B N-N0	23.542	23.099	6.000	1.020	-32.972	80.057	0.347
A:B EI N- FP N	-54.409	36.276	6.900	-1.500	-140.478	31.661	0.178
A:B EI N- EI N0	-3.053	32.666	6.000	-0.090	-82.976	76.871	0.929
A:B EI N- FP N0	-4.272	36.276	6.900	-0.120	-90.341	81.798	0.910
A:B FP N- EI N0	51.356	36.276	6.900	1.420	-34.713	137.426	0.201
A:B FP N- FP N0	50.137	32.666	6.000	1.530	-29.787	130.060	0.176
A:B EI N0- FP N0	-1.219	36.276	6.900	-0.030	-87.289	84.850	0.974

Table 14.308: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 38 in year 2011a
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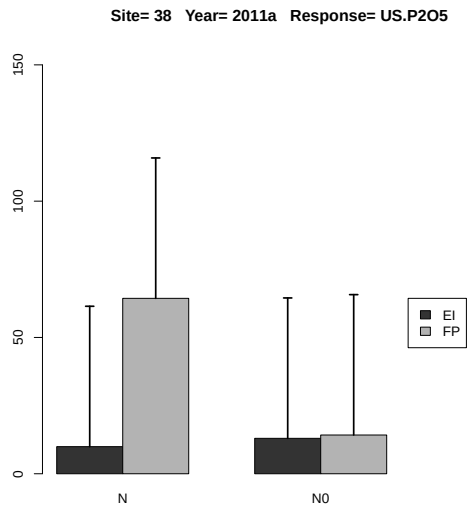

Figure 14.123: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.15 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	99.390
2	2	EI	N0	53.118
3	3	EI	N0	96.936
4	4	EI	N0	140.619
5	1	EI	N	370.838
6	2	EI	N	344.222
7	3	EI	N	328.344
8	4	EI	N	326.604
9	1	FP	N0	83.149
10	2	FP	N0	58.050
11	3	FP	N0	93.581
12	4	FP	N0	207.822
13	1	FP	N	332.578
14	2	FP	N	275.958
15	3	FP	N	281.978
16	4	FP	N	342.856

Table 14.309: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	342.502	12.699	26.971	0.000
A FP	308.343	12.699	24.281	0.000
A EI-FP	34.159	17.959	1.902	0.274

Table 14.310: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 38 in year 2011a .

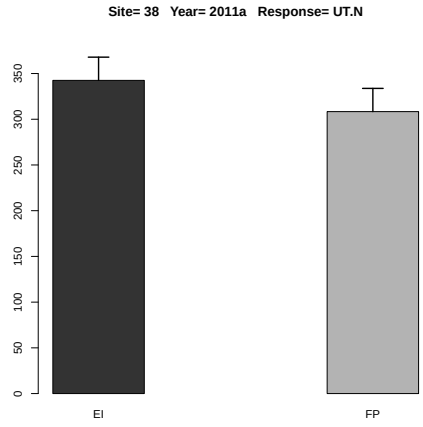

Figure 14.124: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	410.050	410.050	0.362	2.999	0.590
B	1.000	195964.542	195964.542	173.032	6.000	0.000
A:B	1.000	2236.744	2236.744	1.975	6.000	0.210

Table 14.311: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		220.009	17.722	4.700	12.410	173.705	266.313	0.000
2	FP		209.497	17.722	4.700	11.820	163.193	255.801	0.000
3		N	325.422	17.566	4.800	18.530	279.807	371.038	0.000
4		N0	104.083	17.566	4.800	5.930	58.467	149.699	0.002
5	EI	N	342.502	21.346	8.600	16.050	293.874	391.130	0.000
6	FP	N	308.343	21.346	8.600	14.450	259.714	356.971	0.000
7	EI	N0	97.516	21.346	8.600	4.570	48.887	146.144	0.002
8	FP	N0	110.650	21.346	8.600	5.180	62.022	159.279	0.001

Table 14.312: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 38 in year 2011a .

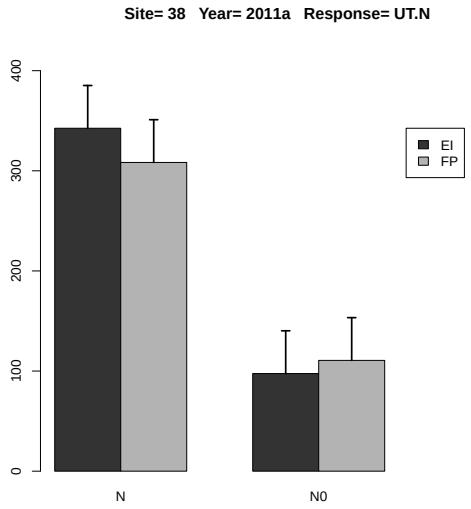

Figure 14.125: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	10.512	17.470	3.000	0.600	-45.102	66.126	0.590
B N-N0	221.339	16.827	6.000	13.150	180.166	262.513	0.000
A:B EI N- FP N	34.159	24.256	7.800	1.410	-22.035	90.354	0.198
A:B EI N- EI N0	244.987	23.796	6.000	10.300	186.759	303.214	0.000
A:B EI N- FP N0	231.852	24.256	7.800	9.560	175.657	288.046	0.000
A:B FP N- EI N0	210.827	24.256	7.800	8.690	154.633	267.022	0.000
A:B FP N- FP N0	197.692	23.796	6.000	8.310	139.464	255.920	0.000
A:B EI N0- FP N0	-13.135	24.256	7.800	-0.540	-69.329	43.059	0.603

Table 14.313: Estimate of contrast in two-way ANOVA for variable UT.N at site 38 in year 2011a .

14.3.16 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	17.267
2	2	EI	N0	11.568
3	3	EI	N0	27.550
4	4	EI	N0	29.264
5	1	EI	N	25.961
6	2	EI	N	30.889
7	3	EI	N	24.272
8	4	EI	N	20.245
9	1	FP	N0	13.310
10	2	FP	N0	13.021
11	3	FP	N0	22.438
12	4	FP	N0	44.654
13	1	FP	N	25.155
14	2	FP	N	26.901
15	3	FP	N	39.389
16	4	FP	N	235.231

Table 14.314: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	25.342	37.513	0.676	0.784
A FP	81.669	37.513	2.177	0.214
A EI-FP	-56.328	53.051	-1.062	0.584

Table 14.315: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 38 in year 2011a .

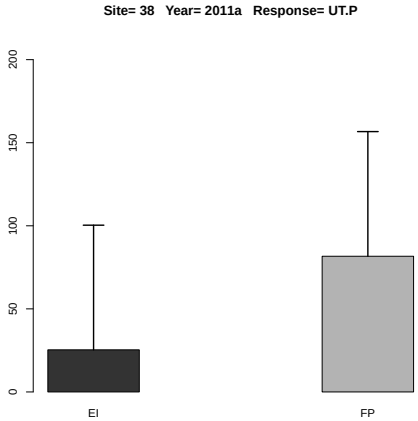

Figure 14.126: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2041.214	2041.214	1.028	3.000	0.385
B	1.000	3874.203	3874.203	1.952	6.000	0.212
A:B	1.000	2957.679	2957.679	1.490	6.000	0.268

Table 14.316: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.377	20.710	6.000	1.130	-27.319	74.072	0.302
2	FP		52.513	20.710	6.000	2.540	1.817	103.208	0.044
3		N	53.505	18.617	6.300	2.870	8.464	98.546	0.027
4		N0	22.384	18.617	6.300	1.200	-22.657	67.425	0.273
5	EI	N	25.341	26.019	11.200	0.970	-31.809	82.492	0.351
6	FP	N	81.669	26.019	11.200	3.140	24.519	138.820	0.009
7	EI	N0	21.412	26.019	11.200	0.820	-35.738	78.562	0.428
8	FP	N0	23.356	26.019	11.200	0.900	-33.795	80.506	0.388

Table 14.317: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-29.136	28.730	3.000	-1.010	-120.576	62.305	0.385
B N-N0	31.122	22.276	6.000	1.400	-23.381	85.624	0.212
A:B EI N- FP N	-56.328	36.354	6.500	-1.550	-143.610	30.954	0.168
A:B EI N- EI N0	3.929	31.502	6.000	0.120	-73.149	81.008	0.905
A:B EI N- FP N0	1.986	36.354	6.500	0.050	-85.296	89.268	0.958
A:B FP N- EI N0	60.257	36.354	6.500	1.660	-27.025	147.539	0.145
A:B FP N- FP N0	58.314	31.502	6.000	1.850	-18.765	135.393	0.114
A:B EI N0- FP N0	-1.943	36.354	6.500	-0.050	-89.225	85.339	0.959

Table 14.318: Estimate of contrast in two-way ANOVA for variable UT.P at site 38 in year 2011a .

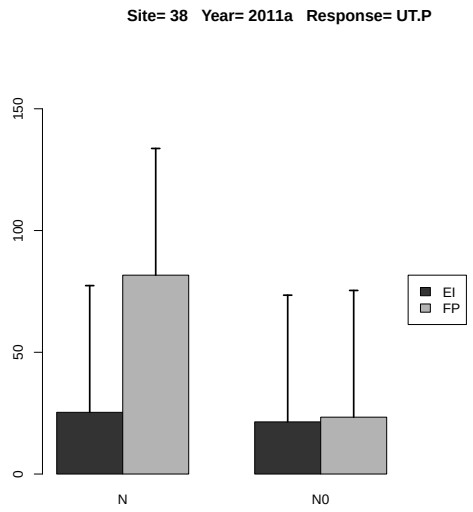

Figure 14.127: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.17 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	17.471
2	2	EI	N0	11.845
3	3	EI	N0	27.982
4	4	EI	N0	30.160
5	1	EI	N	26.521
6	2	EI	N	31.227
7	3	EI	N	24.765
8	4	EI	N	20.555
9	1	FP	N0	13.639
10	2	FP	N0	13.323
11	3	FP	N0	22.743
12	4	FP	N0	45.354
13	1	FP	N	25.617
14	2	FP	N	27.327
15	3	FP	N	40.337
16	4	FP	N	236.393

Table 14.319: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	25.767	37.643	0.685	0.779
A FP	82.419	37.643	2.190	0.211
A EI-FP	-56.652	53.235	-1.064	0.583

Table 14.320: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 38 in year 2011a .

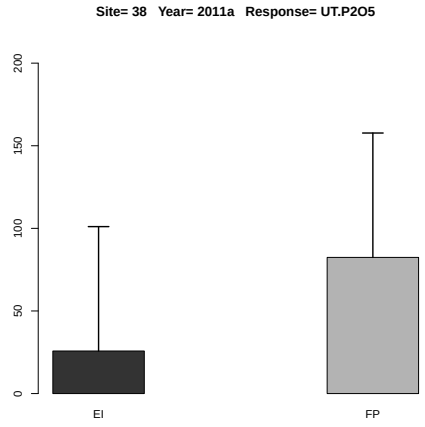

Figure 14.128: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2057.422	2057.422	1.034	3.000	0.384
B	1.000	3913.256	3913.256	1.966	6.001	0.210
A:B	1.000	2997.757	2997.757	1.506	6.001	0.266

Table 14.321: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.816	20.798	6.000	1.150	-27.098	74.730	0.296
2	FP		53.092	20.798	6.000	2.550	2.178	104.005	0.043
3		N	54.093	18.699	6.300	2.890	8.810	99.375	0.026
4		N0	22.815	18.699	6.300	1.220	-22.468	68.097	0.266
5	EI	N	25.767	26.102	11.200	0.990	-31.577	83.110	0.344
6	FP	N	82.419	26.102	11.200	3.160	25.075	139.762	0.009
7	EI	N0	21.865	26.102	11.200	0.840	-35.479	79.208	0.420
8	FP	N0	23.765	26.102	11.200	0.910	-33.579	81.108	0.382

Table 14.322: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 38 in year 2011a .

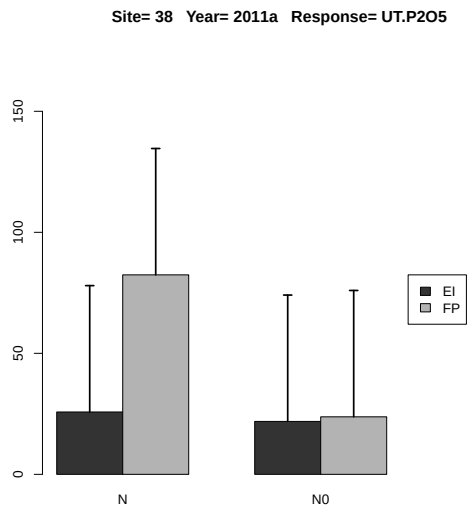

Figure 14.129: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-29.276	28.794	3.000	-1.020	-120.920	62.368	0.384
B N-N0	31.278	22.306	6.000	1.400	-23.302	85.858	0.210
A:B EI N- FP N	-56.652	36.424	6.500	-1.560	-144.116	30.812	0.167
A:B EI N- EI N0	3.902	31.546	6.000	0.120	-73.286	81.090	0.906
A:B EI N- FP N0	2.002	36.424	6.500	0.050	-85.462	89.466	0.958
A:B FP N- EI N0	60.554	36.424	6.500	1.660	-26.910	148.018	0.144
A:B FP N- FP N0	58.654	31.546	6.000	1.860	-18.534	135.842	0.112
A:B EI N0- FP N0	-1.900	36.424	6.500	-0.050	-89.364	85.564	0.960

Table 14.323: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 38 in year 2011a .

14.3.18 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	0.602
2	2	EI	N0	0.848
3	3	EI	N0	0.811
4	4	EI	N0	0.660
5	1	EI	N	0.649
6	2	EI	N	0.699
7	3	EI	N	0.817
8	4	EI	N	0.792
9	1	FP	N0	0.481
10	2	FP	N0	0.779
11	3	FP	N0	0.837
12	4	FP	N0	0.556
13	1	FP	N	0.618
14	2	FP	N	0.762
15	3	FP	N	0.856
16	4	FP	N	0.702

Table 14.324: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.739	0.045	4.000	16.390	0.614	0.865	0.000
A FP	0.734	0.045	4.000	16.280	0.609	0.860	0.000
A EI-FP	0.005	0.034	3.000	0.140	-0.105	0.115	0.899

Table 14.325: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 38 in year 2011a .

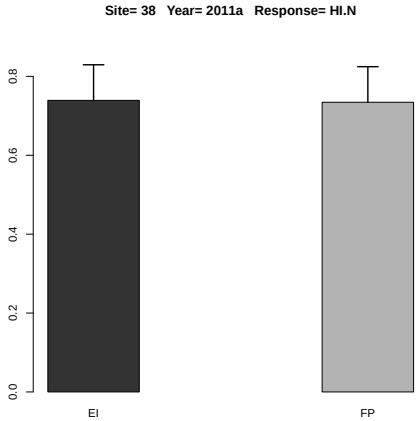

Figure 14.130: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	1.101	8.987	0.322
B	1.000	0.006	0.006	1.374	8.987	0.271
A:B	1.000	0.004	0.004	0.827	8.987	0.387

Table 14.326: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.735	0.056	3.600	13.100	0.573	0.897	0.000
2	FP		0.699	0.056	3.600	12.460	0.537	0.861	0.000
3		N	0.737	0.056	3.600	13.140	0.575	0.899	0.000
4		N0	0.697	0.056	3.600	12.420	0.535	0.859	0.000
5	EI	N	0.739	0.061	5.000	12.110	0.582	0.896	0.000
6	FP	N	0.734	0.061	5.000	12.030	0.577	0.892	0.000
7	EI	N0	0.730	0.061	5.000	11.960	0.573	0.887	0.000
8	FP	N0	0.663	0.061	5.000	10.860	0.506	0.821	0.000

Table 14.327: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 38 in year 2011a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.036	0.034	9.000	1.050	-0.042	0.113	0.322
B N-N0	0.040	0.034	9.000	1.170	-0.037	0.117	0.271
A:B EI N- FP N	0.005	0.048	9.000	0.100	-0.105	0.114	0.923
A:B EI N- EI N0	0.009	0.048	9.000	0.190	-0.100	0.118	0.857
A:B EI N- FP N0	0.076	0.048	9.000	1.570	-0.033	0.185	0.151
A:B FP N- EI N0	0.004	0.048	9.000	0.090	-0.105	0.114	0.932
A:B FP N- FP N0	0.071	0.048	9.000	1.470	-0.038	0.180	0.175
A:B EI N0- FP N0	0.067	0.048	9.000	1.380	-0.042	0.176	0.200

Table 14.328: Estimate of contrast in two-way ANOVA for variable HI.N at site 38 in year 2011a .

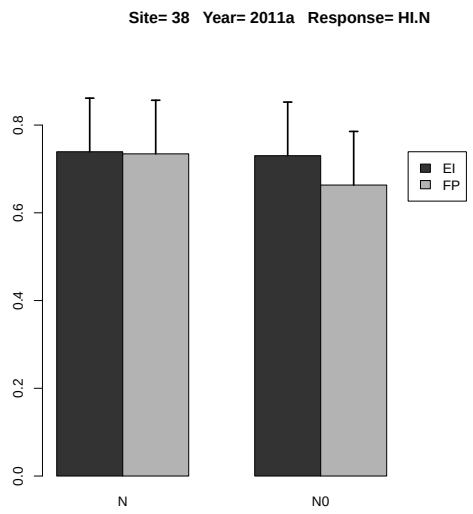

Figure 14.131: Estimated treatment means and standard error in the 2-way ANOVA.

14.3.19 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	0.486
2	2	EI	N0	1.133
3	3	EI	N0	0.566
4	4	EI	N0	0.885
5	1	EI	N	1.382
6	2	EI	N	2.347
7	3	EI	N	1.174
8	4	EI	N	1.992
9	1	FP	N0	1.029
10	2	FP	N0	0.866
11	3	FP	N0	0.702
12	4	FP	N0	0.567
13	1	FP	N	1.928
14	2	FP	N	1.823
15	3	FP	N	0.985
16	4	FP	N	0.087

Table 14.329: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.724	0.358	6.000	4.810	0.847	2.601	0.003
A FP	1.206	0.358	6.000	3.360	0.329	2.083	0.015
A EI-FP	0.518	0.507	6.000	1.020	-0.722	1.759	0.346

Table 14.330: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 38 in year 2011a .

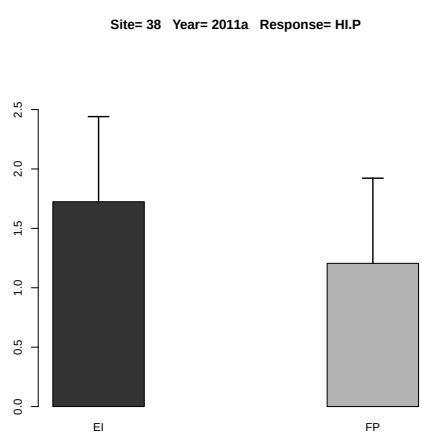

Figure 14.132: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.071	0.071	0.546	5.999	0.488
B	1.000	1.879	1.879	14.441	5.998	0.009
A:B	1.000	0.294	0.294	2.258	5.998	0.184

Table 14.331: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.246	0.237	6.000	5.260	0.667	1.825	0.002
2	FP		0.998	0.237	6.000	4.220	0.419	1.578	0.006
3		N	1.465	0.190	9.200	7.700	1.036	1.893	0.000
4		N0	0.779	0.190	9.200	4.100	0.351	1.208	0.002
5	EI	N	1.724	0.269	9.200	6.410	1.118	2.330	0.000
6	FP	N	1.206	0.269	9.200	4.480	0.600	1.812	0.001
7	EI	N0	0.768	0.269	9.200	2.860	0.162	1.374	0.018
8	FP	N0	0.791	0.269	9.200	2.940	0.185	1.397	0.016

Table 14.332: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 38 in year 2011a .

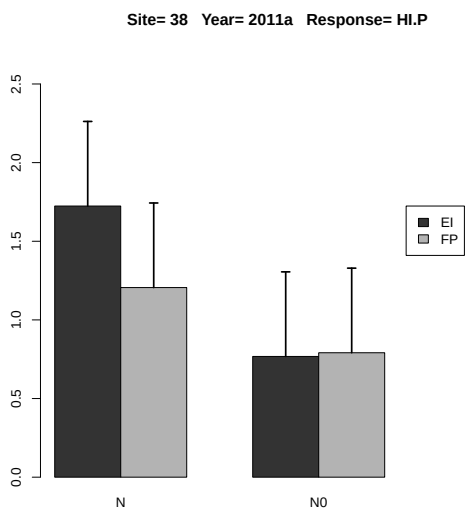

Figure 14.133: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.247	0.335	6.000	0.740	-0.572	1.066	0.488
B N-N0	0.685	0.180	6.000	3.800	0.244	1.127	0.009
A:B EI N- FP N	0.518	0.380	9.200	1.360	-0.339	1.376	0.205
A:B EI N- EI N0	0.956	0.255	6.000	3.750	0.332	1.581	0.009
A:B EI N- FP N0	0.933	0.380	9.200	2.450	0.076	1.790	0.036
A:B FP N- EI N0	0.438	0.380	9.200	1.150	-0.419	1.295	0.278
A:B FP N- FP N0	0.414	0.255	6.000	1.620	-0.210	1.038	0.155
A:B EI N0- FP N0	-0.024	0.380	9.200	-0.060	-0.881	0.834	0.952

Table 14.333: Estimate of contrast in two-way ANOVA for variable HI.P at site 38 in year 2011a .

14.3.20 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	47.075
2	2	EI	N	41.655
3	3	EI	N	43.690
4	4	EI	N	39.645
5	1	FP	N	52.580
6	2	FP	N	50.353
7	3	FP	N	50.113
8	4	FP	N	54.507

Table 14.334: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	43.016	1.338	6.000	32.140	39.742	46.291	0.000
A FP	51.888	1.338	6.000	38.770	48.614	55.163	0.000
A EI-FP	-8.872	1.893	6.000	-4.690	-13.503	-4.241	0.003

Table 14.335: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 38 in year 2011a .

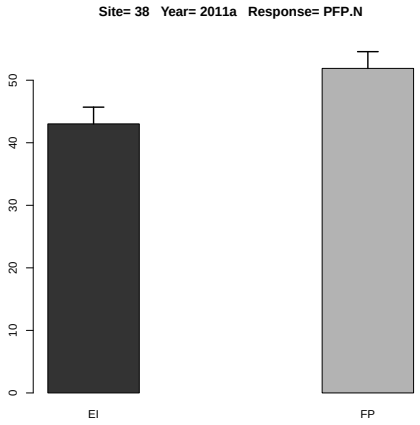

Figure 14.134: Estimated treatment means and standard error in the one-way ANOVA.

14.3.21 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	239.604
2	2	EI	N	212.017
3	3	EI	N	222.375
4	4	EI	N	201.787
5	1	FP	N	392.708
6	2	FP	N	376.078
7	3	FP	N	374.285
8	4	FP	N	407.098

Table 14.336: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	218.946	7.899	6.000	27.720	199.619	238.273	0.000
A FP	387.543	7.899	6.000	49.070	368.216	406.869	0.000
A EI-FP	-168.597	11.170	6.000	-15.090	-195.929	-141.265	0.000

Table 14.337: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 38 in year 2011a .

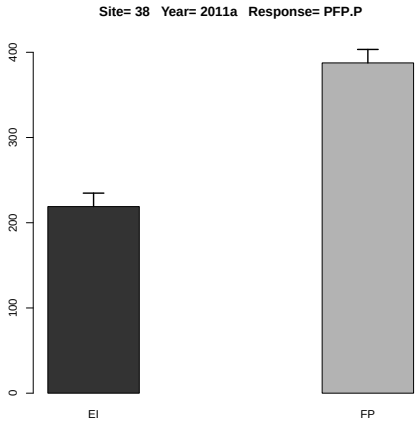

Figure 14.135: Estimated treatment means and standard error in the one-way ANOVA.

14.3.22 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	104.611
2	2	EI	N	92.567
3	3	EI	N	97.089
4	4	EI	N	88.100
5	1	FP	N	171.457
6	2	FP	N	164.196
7	3	FP	N	163.413
8	4	FP	N	177.739

Table 14.338: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	95.592	3.449	6.000	27.720	87.153	104.030	0.000
A FP	169.201	3.449	6.000	49.070	160.763	177.639	0.000
A EI-FP	-73.609	4.877	6.000	-15.090	-85.543	-61.676	0.000

Table 14.339: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 38 in year 2011a .

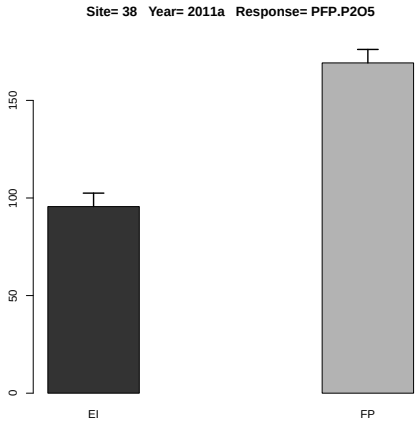

Figure 14.136: Estimated treatment means and standard error in the one-way ANOVA.

14.3.23 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	126.068
2	2	EI	N	111.553
3	3	EI	N	117.003
4	4	EI	N	106.170
5	1	FP	N	158.412
6	2	FP	N	151.703
7	3	FP	N	150.980
8	4	FP	N	164.216

Table 14.340: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	115.198	3.724	6.000	30.940	106.087	124.310	0.000
A FP	156.328	3.724	6.000	41.980	147.217	165.439	0.000
A EI-FP	-41.129	5.266	6.000	-7.810	-54.015	-28.244	0.000

Table 14.341: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 38 in year 2011a .

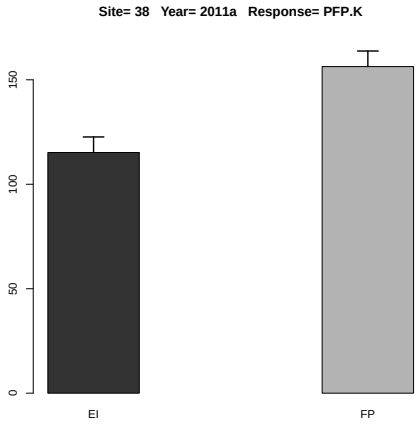

Figure 14.137: Estimated treatment means and standard error in the one-way ANOVA.

14.3.24 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	104.611
2	2	EI	N	92.567
3	3	EI	N	97.089
4	4	EI	N	88.100
5	1	FP	N	131.450
6	2	FP	N	125.883
7	3	FP	N	125.283
8	4	FP	N	136.267

Table 14.342: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	95.592	3.090	6.000	30.940	88.031	103.152	0.000
A FP	129.721	3.090	6.000	41.980	122.160	137.281	0.000
A EI-FP	-34.129	4.370	6.000	-7.810	-44.821	-23.437	0.000

Table 14.343: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 38 in year 2011a .

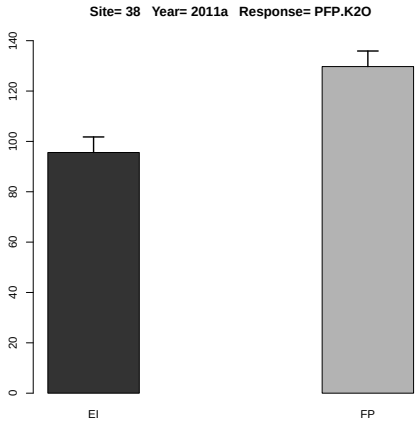

Figure 14.138: Estimated treatment means and standard error in the one-way ANOVA.

14.3.25 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	213.977
2	2	EI	N	189.341
3	3	EI	N	198.591
4	4	EI	N	180.205

Table 14.344: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

14.3.26 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	348.704
2	2	EI	N	308.556
3	3	EI	N	323.630
4	4	EI	N	293.667

Table 14.345: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

14.3.27 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	4707.500
2	2	EI	N	4165.500
3	3	EI	N	4369.000
4	4	EI	N	3964.500

Table 14.346: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

14.3.28 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.730
2	2	EI	N	0.708
3	3	EI	N	0.738
4	4	EI	N	0.722
5	1	FP	N	0.847
6	2	FP	N	0.796
7	3	FP	N	0.867
8	4	FP	N	0.943

Table 14.347: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.724	0.022	5.900	32.780	0.670	0.779	0.000
A FP	0.863	0.022	5.900	39.050	0.809	0.917	0.000
A EI-FP	-0.139	0.029	3.000	-4.790	-0.231	-0.046	0.017

Table 14.348: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 38 in year 2011a .

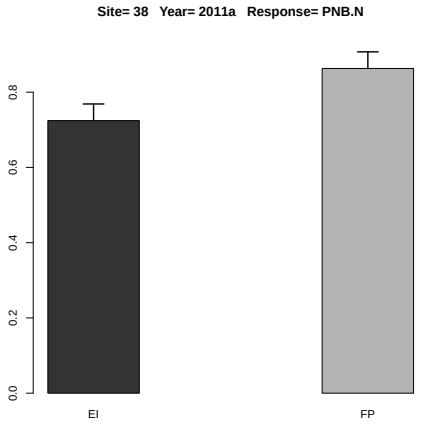

Figure 14.139: Estimated treatment means and standard error in the one-way ANOVA.

14.3.29 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.383
2	2	EI	N	0.551
3	3	EI	N	0.334
4	4	EI	N	0.343
5	1	FP	N	0.825
6	2	FP	N	0.865
7	3	FP	N	0.973
8	4	FP	N	0.936

Table 14.349: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.403	0.043	6.000	9.370	0.298	0.508	0.000
A FP	0.900	0.043	6.000	20.930	0.795	1.005	0.000
A EI-FP	-0.497	0.061	6.000	-8.180	-0.646	-0.348	0.000

Table 14.350: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 38 in year 2011a .

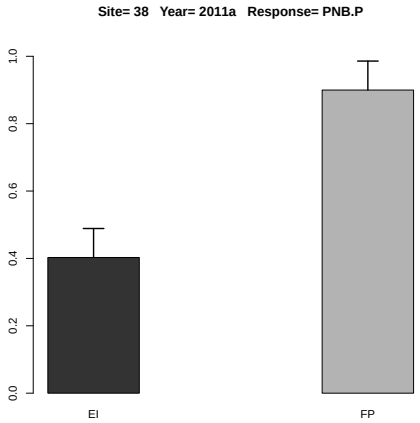

Figure 14.140: Estimated treatment means and standard error in the one-way ANOVA.

14.3.30 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.416
2	2	EI	N	0.457
3	3	EI	N	0.328
4	4	EI	N	0.329
5	1	FP	N	0.554
6	2	FP	N	0.637
7	3	FP	N	0.559
8	4	FP	N	0.657

Table 14.351: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.383	0.030	6.000	12.940	0.310	0.455	0.000
A FP	0.602	0.030	6.000	20.350	0.529	0.674	0.000
A EI-FP	-0.219	0.041	3.000	-5.370	-0.349	-0.089	0.013

Table 14.352: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 38 in year 2011a .

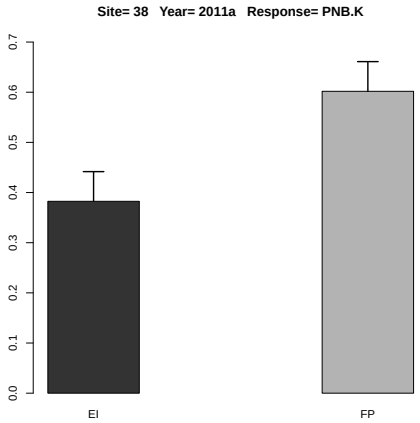

Figure 14.141: Estimated treatment means and standard error in the one-way ANOVA.

14.3.31 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.171
2	2	EI	N	0.170
3	3	EI	N	0.119
4	4	EI	N	0.126

Table 14.353: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

There is no or sufficient data for this response variable at this site and year.

14.3.32 Response Variable PNB.S

	rep	A	B	y
1	1	EI	N	2.580
2	2	EI	N	1.882
3	3	EI	N	1.553
4	4	EI	N	1.762

Table 14.354: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.S

There is no or sufficient data for this response variable at this site and year.

14.3.33 Response Variable AE

	rep	A	B	y
1	1	EI	N	33.635
2	2	EI	N	31.060
3	3	EI	N	25.900
4	4	EI	N	15.955
5	1	FP	N	35.913
6	2	FP	N	36.460
7	3	FP	N	28.073
8	4	FP	N	14.593

Table 14.355: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	26.637	0.977	27.265	0.000
A FP	28.760	0.977	29.437	0.000
A EI-FP	-2.123	1.382	-1.536	0.382

Table 14.356: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 38 in year 2011a .

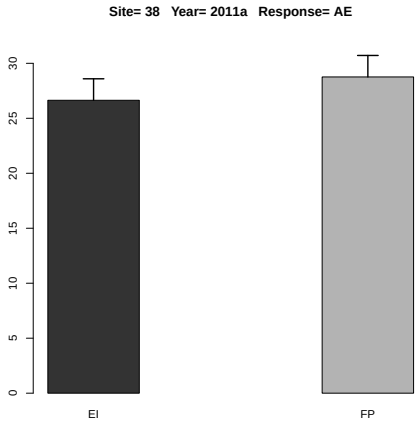

Figure 14.142: Estimated treatment means and standard error in the one-way ANOVA.

14.3.34 Response Variable RE

	rep	A	B	y
1	1	EI	N	1.357
2	2	EI	N	1.456
3	3	EI	N	1.157
4	4	EI	N	0.930
5	1	FP	N	1.663
6	2	FP	N	1.453
7	3	FP	N	1.256
8	4	FP	N	0.900

Table 14.357: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	1.225	0.054	22.767	0.001
A FP	1.318	0.054	24.496	0.000
A EI-FP	-0.093	0.076	-1.222	0.508

Table 14.358: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 38 in year 2011a .

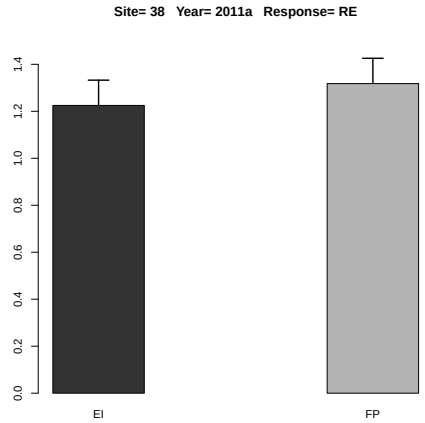

Figure 14.143: Estimated treatment means and standard error in the one-way ANOVA.

14.4 Year 2011b

There are 47 variables not observed: UG.Ca UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

14.4.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	1991.000
2	2	EI	N0	971.000
3	3	EI	N0	4362.000
4	4	EI	N0	3582.000
5	1	EI	N	10064.000
6	2	EI	N	7871.000
7	3	EI	N	9437.000
8	4	EI	N	7643.000
9	1	FP	N0	1554.000
10	2	FP	N0	1361.000
11	3	FP	N0	4044.000
12	4	FP	N0	4432.000
13	1	FP	N	7875.000
14	2	FP	N	7571.000
15	3	FP	N	8175.000
16	4	FP	N	8110.000

Table 14.359: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	8753.750	408.059	21.452	0.000
A FP	7932.750	408.059	19.440	0.000
A EI-FP	821.000	577.082	1.423	0.424

Table 14.360: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 38 in year 2011b .

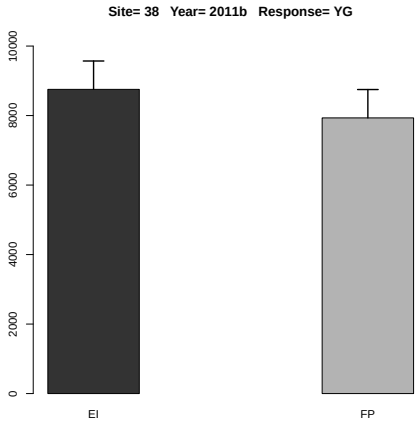

Figure 14.144: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	489650.063	489650.063	0.441	9.627	0.522
B	1.000	123482100.063	123482100.063	111.184	9.627	0.000
A:B	1.000	887835.063	887835.063	0.799	9.627	0.393

Table 14.361: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5740.125	512.588	5.200	11.200	4439.546	7040.704	0.000
2	FP		5390.250	512.588	5.200	10.520	4089.671	6690.829	0.000
3		N	8343.250	512.588	5.200	16.280	7042.671	9643.829	0.000
4		N0	2787.125	512.588	5.200	5.440	1486.546	4087.704	0.002
5	EI	N	8753.750	633.697	8.400	13.810	7304.891	10202.609	0.000
6	FP	N	7932.750	633.697	8.400	12.520	6483.891	9381.609	0.000
7	EI	N0	2726.500	633.697	8.400	4.300	1277.641	4175.359	0.002
8	FP	N0	2847.750	633.697	8.400	4.490	1398.891	4296.609	0.002

Table 14.362: Estimate of treatment means in tow-way ANOVA for variable YG at site 38 in year 2011b .

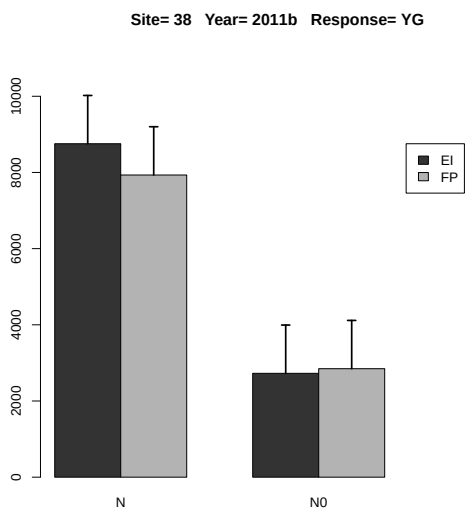

Figure 14.145: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	349.875	526.926	6.500	0.660	-917.095	1616.845	0.530
B N-N0	5556.125	526.926	6.500	10.540	4289.155	6823.095	0.000
A:B EI N- FP N	821.000	745.187	6.500	1.100	-970.766	2612.767	0.310
A:B EI N- EI N0	6027.250	745.187	6.500	8.090	4235.484	7819.016	0.000
A:B EI N- FP N0	5906.000	745.187	6.500	7.930	4114.234	7697.766	0.000
A:B FP N- EI N0	5206.250	745.187	6.500	6.990	3414.483	6998.016	0.000
A:B FP N- FP N0	5085.000	745.187	6.500	6.820	3293.233	6876.766	0.000
A:B EI N0- FP N0	-121.250	745.187	6.500	-0.160	-1913.016	1670.516	0.876

Table 14.363: Estimate of contrast in two-way ANOVA for variable YG at site 38 in year 2011b .

14.4.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	6414.000
2	2	EI	N0	2626.000
3	3	EI	N0	13429.000
4	4	EI	N0	11514.000
5	1	EI	N	30220.000
6	2	EI	N	22825.000
7	3	EI	N	26286.000
8	4	EI	N	22858.000
9	1	FP	N0	4786.000
10	2	FP	N0	4276.000
11	3	FP	N0	11800.000
12	4	FP	N0	13024.000
13	1	FP	N	20165.000
14	2	FP	N	21054.000
15	3	FP	N	24280.000
16	4	FP	N	22997.000

Table 14.364: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	25547.250	1599.587	15.971	0.000
A FP	22124.000	1599.587	13.831	0.001
A EI-FP	3423.250	2262.157	1.513	0.390

Table 14.365: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 38 in year 2011b .

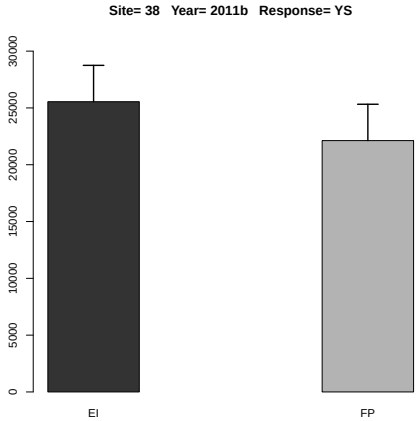

Figure 14.146: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11885256.250	11885256.250	1.151	33.672	0.291
B	1.000	942735616.000	942735616.000	91.325	33.672	0.000
A:B	1.000	11553201.000	11553201.000	1.119	33.672	0.298

Table 14.366: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17021.500	1585.761	5.400	10.730	13028.299	21014.701	0.000
2	FP		15297.750	1585.761	5.400	9.650	11304.549	19290.951	0.000
3		N	23835.625	1585.761	5.400	15.030	19842.424	27828.826	0.000
4		N0	8483.625	1585.761	5.400	5.350	4490.424	12476.826	0.002
5	EI	N	25547.250	1950.640	11.300	13.100	21269.746	29824.754	0.000
6	FP	N	22124.000	1950.640	11.300	11.340	17846.496	26401.504	0.000
7	EI	N0	8495.750	1950.640	11.300	4.360	4218.246	12773.254	0.001
8	FP	N0	8471.500	1950.640	11.300	4.340	4193.996	12749.004	0.001

Table 14.367: Estimate of treatment means in tow-way ANOVA for variable YS at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1723.750	1606.461	33.700	1.070	-1542.145	4989.645	0.291
B N-N0	15352.000	1606.461	33.700	9.560	12086.105	18617.895	0.000
A:B EI N- FP N	3423.250	2271.879	33.700	1.510	-1195.423	8041.923	0.141
A:B EI N- EI N0	17051.500	2271.879	33.700	7.510	12432.827	21670.173	0.000
A:B EI N- FP N0	17075.750	2271.879	33.700	7.520	12457.077	21694.423	0.000
A:B FP N- EI N0	13628.250	2271.879	33.700	6.000	9009.577	18246.923	0.000
A:B FP N- FP N0	13652.500	2271.879	33.700	6.010	9033.827	18271.173	0.000
A:B EI N0- FP N0	24.250	2271.879	33.700	0.010	-4594.423	4642.923	0.992

Table 14.368: Estimate of contrast in two-way ANOVA for variable YS at site 38 in year 2011b .

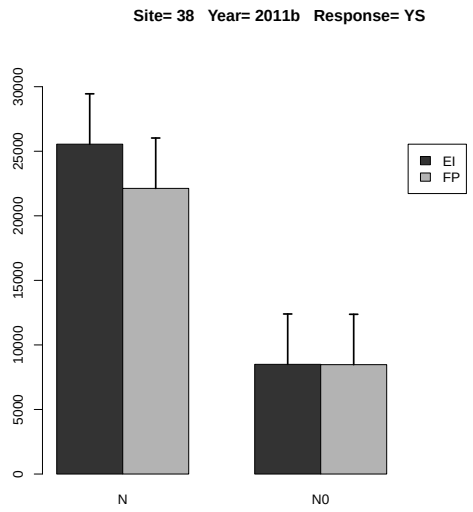

Figure 14.147: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	8405.000
2	2	EI	N0	3597.000
3	3	EI	N0	17791.000
4	4	EI	N0	15096.000
5	1	EI	N	40284.000
6	2	EI	N	30696.000
7	3	EI	N	35723.000
8	4	EI	N	30501.000
9	1	FP	N0	6340.000
10	2	FP	N0	5637.000
11	3	FP	N0	15844.000
12	4	FP	N0	17456.000
13	1	FP	N	28040.000
14	2	FP	N	28625.000
15	3	FP	N	32455.000
16	4	FP	N	31107.000

Table 14.369: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	34301.000	1970.586	17.406	0.001
A FP	30056.750	1970.586	15.253	0.001
A EI-FP	4244.250	2786.829	1.523	0.387

Table 14.370: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 38 in year 2011b .

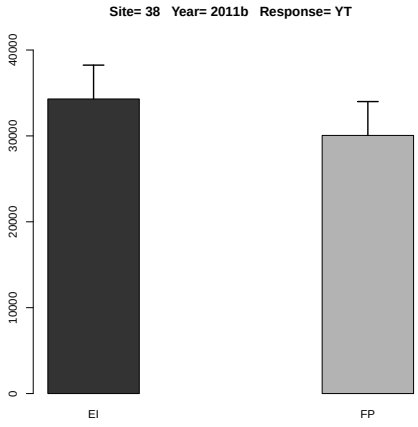

Figure 14.148: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	17199682.562	17199682.562	0.961	35.158	0.334
B	1.000	1748598764.062	1748598764.062	97.689	35.158	0.000
A:B	1.000	18846451.562	18846451.562	1.053	35.158	0.312

Table 14.371: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22761.625	2093.034	5.200	10.870	17448.703	28074.547	0.000
2	FP		20688.000	2093.034	5.200	9.880	15375.078	26000.922	0.000
3		N	32178.875	2093.034	5.200	15.370	26865.953	37491.797	0.000
4		N0	11270.750	2093.034	5.200	5.380	5957.828	16583.672	0.003
5	EI	N	34301.000	2572.593	9.300	13.330	28510.291	40091.709	0.000
6	FP	N	30056.750	2572.593	9.300	11.680	24266.041	35847.459	0.000
7	EI	N0	11222.250	2572.593	9.300	4.360	5431.541	17012.959	0.002
8	FP	N0	11319.250	2572.593	9.300	4.400	5528.541	17109.959	0.002

Table 14.372: Estimate of treatment means in tow-way ANOVA for variable YT at site 38 in year 2011b .

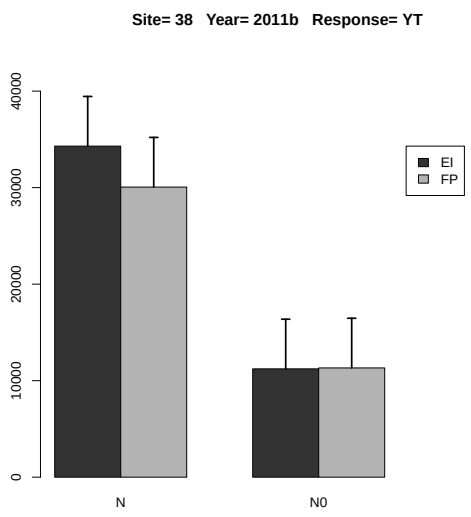

Figure 14.149: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2073.625	2115.394	9.700	0.980	-2658.043	6805.293	0.351
B N-N0	20908.125	2115.394	9.700	9.880	16176.457	25639.793	0.000
A:B EI N- FP N	4244.250	2991.618	9.700	1.420	-2447.339	10935.839	0.187
A:B EI N- EI N0	23078.750	2991.618	9.700	7.710	16387.161	29770.339	0.000
A:B EI N- FP N0	22981.750	2991.618	9.700	7.680	16290.161	29673.339	0.000
A:B FP N- EI N0	18834.500	2991.618	9.700	6.300	12142.911	25526.089	0.000
A:B FP N- FP N0	18737.500	2991.618	9.700	6.260	12045.911	25429.089	0.000
A:B EI N0- FP N0	-97.000	2991.618	9.700	-0.030	-6788.589	6594.589	0.975

Table 14.373: Estimate of contrast in two-way ANOVA for variable YT at site 38 in year 2011b .

14.4.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.237
2	2	EI	N0	0.270
3	3	EI	N0	0.245
4	4	EI	N0	0.237
5	1	EI	N	0.250
6	2	EI	N	0.256
7	3	EI	N	0.264
8	4	EI	N	0.251
9	1	FP	N0	0.245
10	2	FP	N0	0.241
11	3	FP	N0	0.255
12	4	FP	N0	0.254
13	1	FP	N	0.281
14	2	FP	N	0.264
15	3	FP	N	0.252
16	4	FP	N	0.261

Table 14.374: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.255	0.006	40.787	0.000
A FP	0.264	0.006	42.263	0.000
A EI-FP	-0.009	0.009	-1.043	0.593

Table 14.375: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 38 in year 2011b .

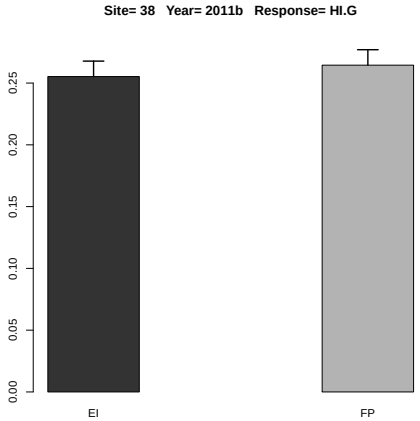

Figure 14.150: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.982	11.893	0.341
B	1.000	0.001	0.001	4.616	11.893	0.053
A:B	1.000	0.000	0.000	0.488	11.893	0.498

Table 14.376: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.251	0.004	11.900	65.010	0.243	0.260	0.000
2	FP		0.257	0.004	11.900	66.410	0.248	0.265	0.000
3		N	0.260	0.004	11.900	67.230	0.251	0.268	0.000
4		N0	0.248	0.004	11.900	64.190	0.240	0.257	0.000
5	EI	N	0.255	0.005	11.900	46.690	0.243	0.267	0.000
6	FP	N	0.265	0.005	11.900	48.380	0.253	0.276	0.000
7	EI	N0	0.247	0.005	11.900	45.240	0.235	0.259	0.000
8	FP	N0	0.249	0.005	11.900	45.540	0.237	0.261	0.000

Table 14.377: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.005	0.005	11.900	-0.990	-0.017	0.006	0.342
B N-N0	0.012	0.005	11.900	2.150	-0.000	0.024	0.053
A:B EI N- FP N	-0.009	0.008	11.900	-1.190	-0.026	0.008	0.256
A:B EI N- EI N0	0.008	0.008	11.900	1.030	-0.009	0.025	0.326
A:B EI N- FP N0	0.006	0.008	11.900	0.820	-0.010	0.023	0.429
A:B FP N- EI N0	0.017	0.008	11.900	2.220	0.000	0.034	0.047
A:B FP N- FP N0	0.016	0.008	11.900	2.010	-0.001	0.032	0.067
A:B EI N0- FP N0	-0.002	0.008	11.900	-0.210	-0.018	0.015	0.840

Table 14.378: Estimate of contrast in two-way ANOVA for variable HI.G at site 38 in year 2011b .

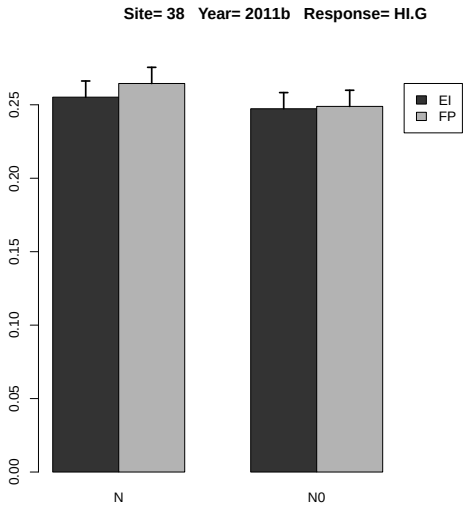

Figure 14.151: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	27.675
2	2	EI	N0	10.584
3	3	EI	N0	47.546
4	4	EI	N0	42.984
5	1	EI	N	135.864
6	2	EI	N	116.491
7	3	EI	N	122.681
8	4	EI	N	114.645
9	1	FP	N0	14.608
10	2	FP	N0	15.515
11	3	FP	N0	48.528
12	4	FP	N0	46.979
13	1	FP	N	103.950
14	2	FP	N	109.022
15	3	FP	N	111.180
16	4	FP	N	109.485

Table 14.379: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	122.420	4.320	28.336	0.000
A FP	108.409	4.320	25.093	0.000
A EI-FP	14.011	6.110	2.293	0.194

Table 14.380: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 38 in year 2011b .

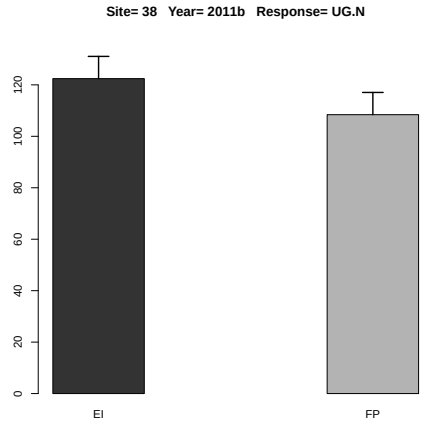

Figure 14.152: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	219.053	219.053	1.508	9.000	0.251
B	1.000	27964.150	27964.150	192.525	9.000	0.000
A:B	1.000	174.801	174.801	1.203	9.000	0.301

Table 14.381: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		77.309	5.291	6.100	14.610	64.413	90.205	0.000
2	FP		69.909	5.291	6.100	13.210	57.013	82.804	0.000
3		N	115.415	5.291	6.100	21.810	102.519	128.311	0.000
4		N0	31.802	5.291	6.100	6.010	18.906	44.698	0.001
5	EI	N	122.420	6.794	10.600	18.020	107.391	137.450	0.000
6	FP	N	108.409	6.794	10.600	15.960	93.380	123.439	0.000
7	EI	N0	32.197	6.794	10.600	4.740	17.168	47.227	0.001
8	FP	N0	31.408	6.794	10.600	4.620	16.378	46.437	0.001

Table 14.382: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 38 in year 2011b .

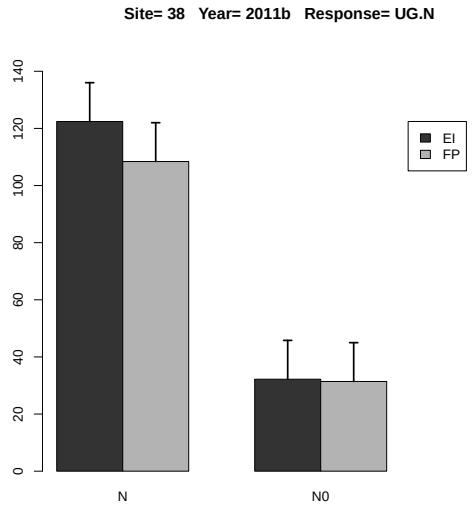

Figure 14.153: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	7.400	6.026	9.000	1.230	-6.231	21.032	0.251
B N-N0	83.612	6.026	9.000	13.880	69.981	97.244	0.000
A:B EI N- FP N	14.011	8.522	9.000	1.640	-5.267	33.289	0.135
A:B EI N- EI N0	90.223	8.522	9.000	10.590	70.945	109.501	0.000
A:B EI N- FP N0	91.013	8.522	9.000	10.680	71.734	110.291	0.000
A:B FP N- EI N0	76.212	8.522	9.000	8.940	56.934	95.490	0.000
A:B FP N- FP N0	77.002	8.522	9.000	9.040	57.724	96.280	0.000
A:B EI N0- FP N0	0.790	8.522	9.000	0.090	-18.489	20.068	0.928

Table 14.383: Estimate of contrast in two-way ANOVA for variable UG.N at site 38 in year 2011b .

14.4.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	5.177
2	2	EI	N0	3.010
3	3	EI	N0	12.650
4	4	EI	N0	11.104
5	1	EI	N	22.141
6	2	EI	N	18.103
7	3	EI	N	20.761
8	4	EI	N	11.465
9	1	FP	N0	4.507
10	2	FP	N0	3.811
11	3	FP	N0	11.728
12	4	FP	N0	12.410
13	1	FP	N	13.387
14	2	FP	N	15.899
15	3	FP	N	22.073
16	4	FP	N	16.220

Table 14.384: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	18.117	2.040	8.883	0.006
A FP	16.895	2.040	8.284	0.007
A EI-FP	1.223	2.884	0.424	0.904

Table 14.385: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 38 in year 2011b .

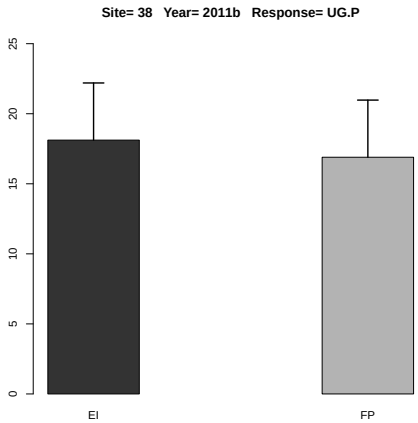

Figure 14.154: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.197	1.197	0.080	9.000	0.784
B	1.000	357.719	357.719	23.813	9.000	0.001
A:B	1.000	1.826	1.826	0.122	9.000	0.735

Table 14.386: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		13.051	1.738	5.900	7.510	8.783	17.320	0.000
2	FP		12.504	1.738	5.900	7.190	8.236	16.773	0.000
3		N	17.506	1.738	5.900	10.070	13.238	21.775	0.000
4		N0	8.049	1.738	5.900	4.630	3.781	12.318	0.004
5	EI	N	18.117	2.213	10.300	8.190	13.206	23.029	0.000
6	FP	N	16.895	2.213	10.300	7.630	11.983	21.806	0.000
7	EI	N0	7.985	2.213	10.300	3.610	3.074	12.897	0.005
8	FP	N0	8.114	2.213	10.300	3.670	3.202	13.025	0.004

Table 14.387: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.547	1.938	9.000	0.280	-3.837	4.931	0.784
B N-N0	9.457	1.938	9.000	4.880	5.073	13.841	0.001
A:B EI N- FP N	1.223	2.741	9.000	0.450	-4.977	7.422	0.666
A:B EI N- EI N0	10.132	2.741	9.000	3.700	3.933	16.332	0.005
A:B EI N- FP N0	10.004	2.741	9.000	3.650	3.804	16.203	0.005
A:B FP N- EI N0	8.910	2.741	9.000	3.250	2.710	15.109	0.010
A:B FP N- FP N0	8.781	2.741	9.000	3.200	2.581	14.981	0.011
A:B EI N0- FP N0	-0.128	2.741	9.000	-0.050	-6.328	6.071	0.964

Table 14.388: Estimate of contrast in two-way ANOVA for variable UG.P at site 38 in year 2011b .

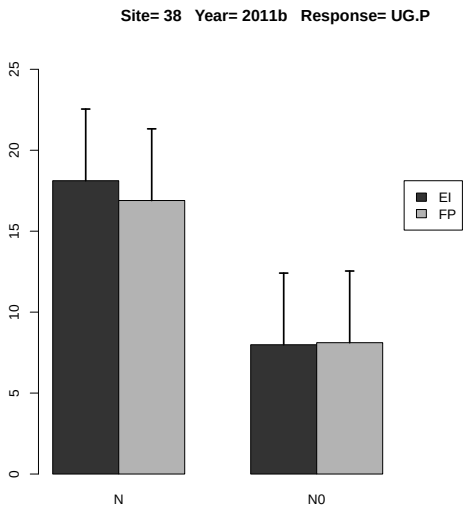

Figure 14.155: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	11.854
2	2	EI	N0	6.893
3	3	EI	N0	28.968
4	4	EI	N0	25.429
5	1	EI	N	50.702
6	2	EI	N	41.457
7	3	EI	N	47.544
8	4	EI	N	26.254
9	1	FP	N0	10.320
10	2	FP	N0	8.727
11	3	FP	N0	26.856
12	4	FP	N0	28.418
13	1	FP	N	30.657
14	2	FP	N	36.409
15	3	FP	N	50.546
16	4	FP	N	37.144

Table 14.389: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	41.489	4.671	8.883	0.006
A FP	38.689	4.671	8.284	0.007
A EI-FP	2.800	6.605	0.424	0.904

Table 14.390: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 38 in year 2011b .

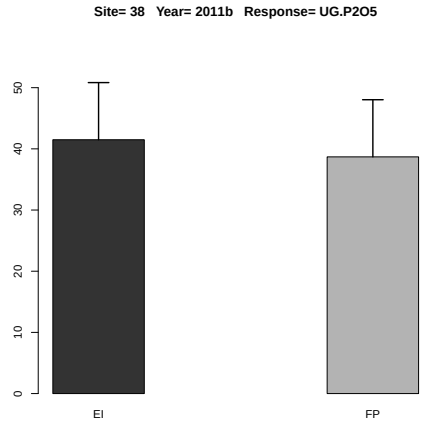

Figure 14.156: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	6.279	6.279	0.080	9.000	0.784
B	1.000	1875.912	1875.912	23.813	9.000	0.001
A:B	1.000	9.574	9.574	0.122	9.000	0.735

Table 14.391: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.888	3.981	5.900	7.510	20.113	39.663	0.000
2	FP		28.635	3.981	5.900	7.190	18.860	38.410	0.000
3		N	40.089	3.981	5.900	10.070	30.314	49.864	0.000
4		N0	18.433	3.981	5.900	4.630	8.658	28.208	0.004
5	EI	N	41.489	5.069	10.300	8.190	30.241	52.737	0.000
6	FP	N	38.689	5.069	10.300	7.630	27.441	49.937	0.000
7	EI	N0	18.286	5.069	10.300	3.610	7.038	29.534	0.005
8	FP	N0	18.580	5.069	10.300	3.670	7.333	29.828	0.004

Table 14.392: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 38 in year 2011b .

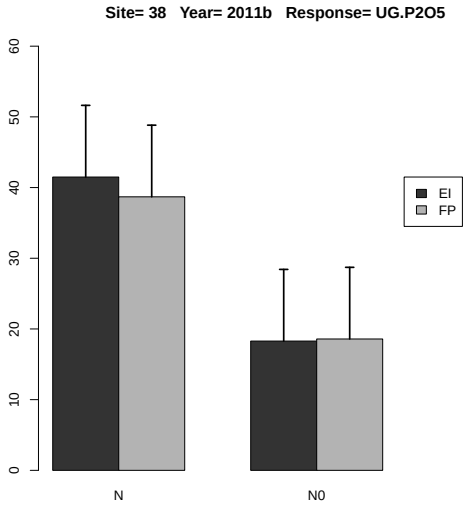

Figure 14.157: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.253	4.438	9.000	0.280	-8.786	11.292	0.784
B N-N0	21.656	4.438	9.000	4.880	11.617	31.695	0.001
A:B EI N- FP N	2.800	6.276	9.000	0.450	-11.397	16.997	0.666
A:B EI N- EI N0	23.203	6.276	9.000	3.700	9.006	37.400	0.005
A:B EI N- FP N0	22.909	6.276	9.000	3.650	8.711	37.106	0.005
A:B FP N- EI N0	20.403	6.276	9.000	3.250	6.206	34.600	0.010
A:B FP N- FP N0	20.109	6.276	9.000	3.200	5.912	34.306	0.011
A:B EI N0- FP N0	-0.294	6.276	9.000	-0.050	-14.492	13.903	0.964

Table 14.393: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 38 in year 2011b .

14.4.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	7.566
2	2	EI	N0	4.758
3	3	EI	N0	20.065
4	4	EI	N0	17.194
5	1	EI	N	36.230
6	2	EI	N	27.549
7	3	EI	N	33.029
8	4	EI	N	19.872
9	1	FP	N0	6.838
10	2	FP	N0	5.580
11	3	FP	N0	16.580
12	4	FP	N0	18.171
13	1	FP	N	23.625
14	2	FP	N	23.470
15	3	FP	N	32.700
16	4	FP	N	23.519

Table 14.394: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	29.170	2.452	11.897	0.002
A FP	25.829	2.452	10.534	0.003
A EI-FP	3.342	3.467	0.964	0.633

Table 14.395: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 38 in year 2011b .

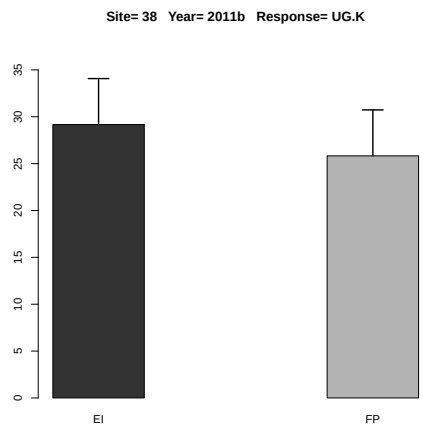

Figure 14.158: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	15.562	15.562	0.488	9.000	0.503
B	1.000	949.295	949.295	29.765	9.000	0.000
A:B	1.000	7.498	7.498	0.235	9.000	0.639

Table 14.396: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		20.783	2.565	5.800	8.100	14.457	27.108	0.000
2	FP		18.810	2.565	5.800	7.330	12.485	25.136	0.000
3		N	27.499	2.565	5.800	10.720	21.174	33.825	0.000
4		N0	12.094	2.565	5.800	4.720	5.768	18.420	0.004
5	EI	N	29.170	3.250	10.200	8.970	21.944	36.396	0.000
6	FP	N	25.828	3.250	10.200	7.950	18.603	33.054	0.000
7	EI	N0	12.396	3.250	10.200	3.810	5.170	19.622	0.003
8	FP	N0	11.792	3.250	10.200	3.630	4.566	19.018	0.004

Table 14.397: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.972	2.824	9.000	0.700	-4.415	8.360	0.502
B N-N0	15.405	2.824	9.000	5.460	9.018	21.793	0.000
A:B EI N- FP N	3.341	3.993	9.000	0.840	-5.692	12.375	0.424
A:B EI N- EI N0	16.774	3.993	9.000	4.200	7.741	25.808	0.002
A:B EI N- FP N0	17.378	3.993	9.000	4.350	8.344	26.411	0.002
A:B FP N- EI N0	13.433	3.993	9.000	3.360	4.399	22.466	0.008
A:B FP N- FP N0	14.036	3.993	9.000	3.510	5.003	23.070	0.007
A:B EI N0- FP N0	0.603	3.993	9.000	0.150	-8.430	9.637	0.883

Table 14.398: Estimate of contrast in two-way ANOVA for variable UG.K at site 38 in year 2011b .

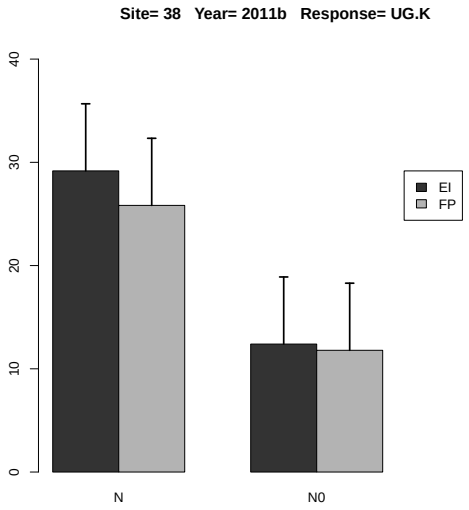

Figure 14.159: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	9.117
2	2	EI	N0	5.733
3	3	EI	N0	24.179
4	4	EI	N0	20.718
5	1	EI	N	43.658
6	2	EI	N	33.196
7	3	EI	N	39.801
8	4	EI	N	23.946
9	1	FP	N0	8.239
10	2	FP	N0	6.724
11	3	FP	N0	19.979
12	4	FP	N0	21.896
13	1	FP	N	28.468
14	2	FP	N	28.281
15	3	FP	N	39.404
16	4	FP	N	28.340

Table 14.399: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	35.150	2.954	11.897	0.003
A FP	31.123	2.954	10.534	0.004
A EI-FP	4.027	4.178	0.964	0.633

Table 14.400: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 38 in year 2011b .

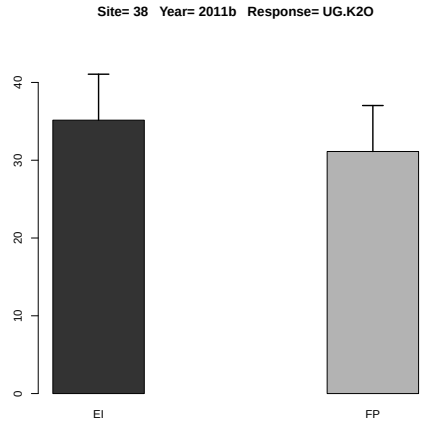

Figure 14.160: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	22.596	22.596	0.488	9.000	0.503
B	1.000	1378.400	1378.400	29.765	9.000	0.000
A:B	1.000	10.887	10.887	0.235	9.000	0.639

Table 14.401: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.043	3.090	5.800	8.100	17.421	32.666	0.000
2	FP		22.667	3.090	5.800	7.330	15.044	30.289	0.000
3		N	33.137	3.090	5.800	10.720	25.514	40.759	0.000
4		N0	14.573	3.090	5.800	4.720	6.951	22.196	0.004
5	EI	N	35.150	3.917	10.200	8.970	26.443	43.857	0.000
6	FP	N	31.123	3.917	10.200	7.950	22.416	39.831	0.000
7	EI	N0	14.937	3.917	10.200	3.810	6.229	23.644	0.003
8	FP	N0	14.210	3.917	10.200	3.630	5.503	22.917	0.004

Table 14.402: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 38 in year 2011b .

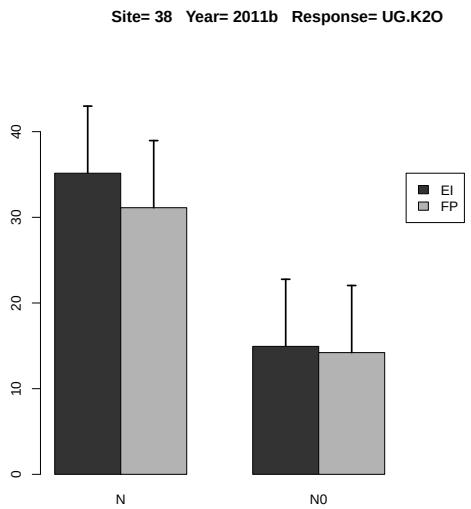

Figure 14.161: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.377	3.403	9.000	0.700	-5.320	10.074	0.502
B N-N0	18.563	3.403	9.000	5.460	10.866	26.261	0.000
A:B EI N- FP N	4.027	4.812	9.000	0.840	-6.859	14.912	0.424
A:B EI N- EI N0	20.213	4.812	9.000	4.200	9.328	31.099	0.002
A:B EI N- FP N0	20.940	4.812	9.000	4.350	10.055	31.826	0.002
A:B FP N- EI N0	16.187	4.812	9.000	3.360	5.301	27.072	0.008
A:B FP N- FP N0	16.914	4.812	9.000	3.510	6.028	27.799	0.007
A:B EI N0- FP N0	0.727	4.812	9.000	0.150	-10.158	11.612	0.883

Table 14.403: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 38 in year 2011b .

14.4.10 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	1.792
2	2	EI	N0	0.874
3	3	EI	N0	3.926
4	4	EI	N0	3.582
5	1	EI	N	8.051
6	2	EI	N	6.297
7	3	EI	N	7.550
8	4	EI	N	4.586
9	1	FP	N0	1.243
10	2	FP	N0	1.089
11	3	FP	N0	3.235
12	4	FP	N0	3.546
13	1	FP	N	5.513
14	2	FP	N	5.300
15	3	FP	N	7.357
16	4	FP	N	5.677

Table 14.404: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	6.621	0.537	12.322	0.002
A FP	5.962	0.537	11.095	0.003
A EI-FP	0.659	0.760	0.867	0.683

Table 14.405: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 38 in year 2011b .

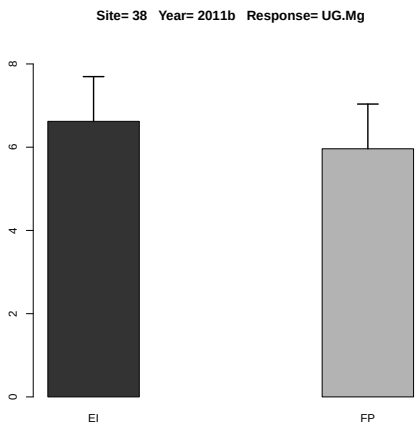

Figure 14.162: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.854	0.854	0.647	8.999	0.442
B	1.000	60.232	60.232	45.639	8.999	0.000
A:B	1.000	0.155	0.155	0.118	8.999	0.740

Table 14.406: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.582	0.525	5.800	8.720	3.283	5.882	0.000
2	FP		4.120	0.525	5.800	7.840	2.821	5.419	0.000
3		N	6.291	0.525	5.800	11.970	4.992	7.591	0.000
4		N0	2.411	0.525	5.800	4.590	1.111	3.710	0.004
5	EI	N	6.621	0.664	10.100	9.970	5.143	8.099	0.000
6	FP	N	5.962	0.664	10.100	8.980	4.483	7.440	0.000
7	EI	N0	2.543	0.664	10.100	3.830	1.065	4.022	0.003
8	FP	N0	2.278	0.664	10.100	3.430	0.800	3.756	0.006

Table 14.407: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.462	0.574	9.000	0.800	-0.837	1.762	0.442
B N-N0	3.881	0.574	9.000	6.760	2.581	5.180	0.000
A:B EI N- FP N	0.659	0.812	9.000	0.810	-1.179	2.497	0.438
A:B EI N- EI N0	4.077	0.812	9.000	5.020	2.240	5.915	0.001
A:B EI N- FP N0	4.343	0.812	9.000	5.350	2.505	6.180	0.000
A:B FP N- EI N0	3.418	0.812	9.000	4.210	1.581	5.256	0.002
A:B FP N- FP N0	3.683	0.812	9.000	4.530	1.846	5.521	0.001
A:B EI N0- FP N0	0.265	0.812	9.000	0.330	-1.572	2.103	0.751

Table 14.408: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 38 in year 2011b
.

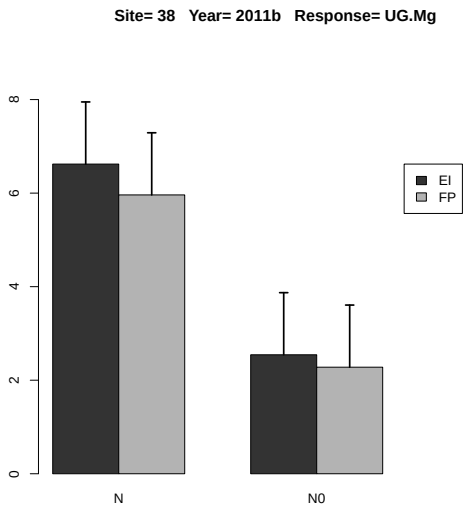

Figure 14.163: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.11 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	21.304
2	2	EI	N0	7.282
3	3	EI	N0	31.406
4	4	EI	N0	32.954
5	1	EI	N	91.582
6	2	EI	N	58.245
7	3	EI	N	90.595
8	4	EI	N	91.716
9	1	FP	N0	10.567
10	2	FP	N0	10.480
11	3	FP	N0	29.521
12	4	FP	N0	38.115
13	1	FP	N	72.450
14	2	FP	N	41.641
15	3	FP	N	58.860
16	4	FP	N	67.313

Table 14.409: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	83.035	2.364	35.125	0.000
A FP	60.066	2.364	25.409	0.000
A EI-FP	22.969	3.343	6.870	0.012

Table 14.410: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 38 in year 2011b .

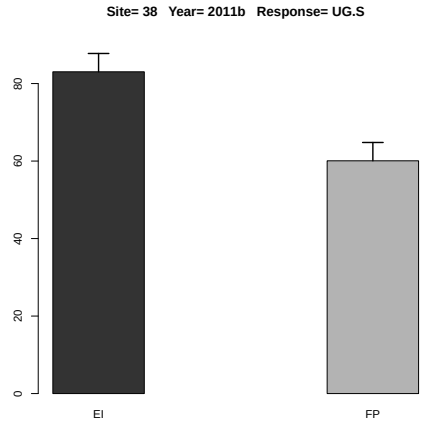

Figure 14.164: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	577.672	577.672	9.541	9.000	0.013
B	1.000	9543.932	9543.932	157.624	9.000	0.000
A:B	1.000	479.739	479.739	7.923	9.000	0.020

Table 14.411: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		53.136	6.459	3.600	8.230	34.425	71.846	0.002
2	FP		41.118	6.459	3.600	6.370	22.408	59.829	0.004
3		N	71.550	6.459	3.600	11.080	52.840	90.261	0.001
4		N0	22.704	6.459	3.600	3.510	3.994	41.414	0.029
5	EI	N	83.035	7.021	4.900	11.830	64.895	101.174	0.000
6	FP	N	60.066	7.021	4.900	8.560	41.926	78.205	0.000
7	EI	N0	23.237	7.021	4.900	3.310	5.097	41.376	0.022
8	FP	N0	22.171	7.021	4.900	3.160	4.032	40.310	0.026

Table 14.412: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 38 in year 2011b .

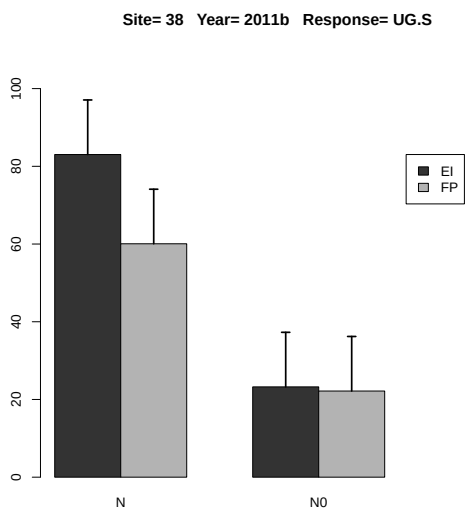

Figure 14.165: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	12.017	3.891	9.000	3.090	3.216	20.819	0.013
B N-N0	48.846	3.891	9.000	12.550	40.045	57.648	0.000
A:B EI N- FP N	22.969	5.502	9.000	4.170	10.522	35.416	0.002
A:B EI N- EI N0	59.798	5.502	9.000	10.870	47.351	72.245	0.000
A:B EI N- FP N0	60.864	5.502	9.000	11.060	48.417	73.311	0.000
A:B FP N- EI N0	36.829	5.502	9.000	6.690	24.382	49.276	0.000
A:B FP N- FP N0	37.895	5.502	9.000	6.890	25.448	50.342	0.000
A:B EI N0- FP N0	1.066	5.502	9.000	0.190	-11.381	13.513	0.851

Table 14.413: Estimate of contrast in two-way ANOVA for variable UG.S at site 38 in year 2011b .

14.4.12 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	42.052
2	2	EI	N0	19.080
3	3	EI	N0	75.052
4	4	EI	N0	64.636
5	1	EI	N	267.633
6	2	EI	N	161.488
7	3	EI	N	205.154
8	4	EI	N	136.567
9	1	FP	N0	24.431
10	2	FP	N0	24.852
11	3	FP	N0	85.004
12	4	FP	N0	96.564
13	1	FP	N	140.522
14	2	FP	N	162.586
15	3	FP	N	124.176
16	4	FP	N	149.913

Table 14.414: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	192.710	23.734	8.120	0.007
A FP	144.299	23.734	6.080	0.018
A EI-FP	48.411	33.565	1.442	0.417

Table 14.415: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 38 in year 2011b .

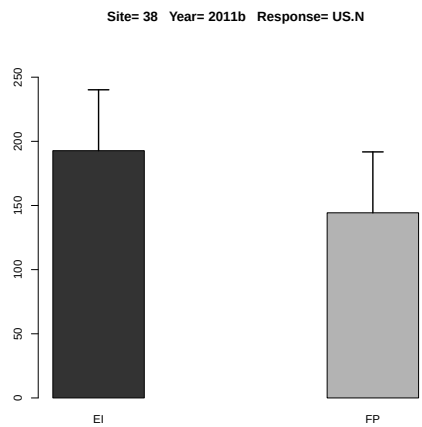

Figure 14.166: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1673.127	1673.127	1.182	12.002	0.298
B	1.000	52482.973	52482.973	37.084	12.002	0.000
A:B	1.000	3126.926	3126.926	2.209	12.002	0.163

Table 14.416: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		121.458	13.301	12.000	9.130	92.478	150.437	0.000
2	FP		101.006	13.301	12.000	7.590	72.026	129.985	0.000
3		N	168.505	13.301	12.000	12.670	139.525	197.484	0.000
4		N0	53.959	13.301	12.000	4.060	24.979	82.938	0.002
5	EI	N	192.710	18.810	12.000	10.250	151.727	233.694	0.000
6	FP	N	144.299	18.810	12.000	7.670	103.316	185.282	0.000
7	EI	N0	50.205	18.810	12.000	2.670	9.222	91.188	0.020
8	FP	N0	57.713	18.810	12.000	3.070	16.729	98.696	0.010

Table 14.417: Estimate of treatment means in tow-way ANOVA for variable US.N at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	20.452	18.810	12.000	1.090	-20.531	61.435	0.298
B N-N0	114.546	18.810	12.000	6.090	73.563	155.529	0.000
A:B EI N- FP N	48.411	26.601	12.000	1.820	-9.548	106.371	0.094
A:B EI N- EI N0	142.505	26.601	12.000	5.360	84.546	200.464	0.000
A:B EI N- FP N0	134.998	26.601	12.000	5.070	77.039	192.957	0.000
A:B FP N- EI N0	94.094	26.601	12.000	3.540	36.135	152.053	0.004
A:B FP N- FP N0	86.586	26.601	12.000	3.250	28.627	144.545	0.007
A:B EI N0- FP N0	-7.508	26.601	12.000	-0.280	-65.467	50.452	0.783

Table 14.418: Estimate of contrast in two-way ANOVA for variable US.N at site 38 in year 2011b .

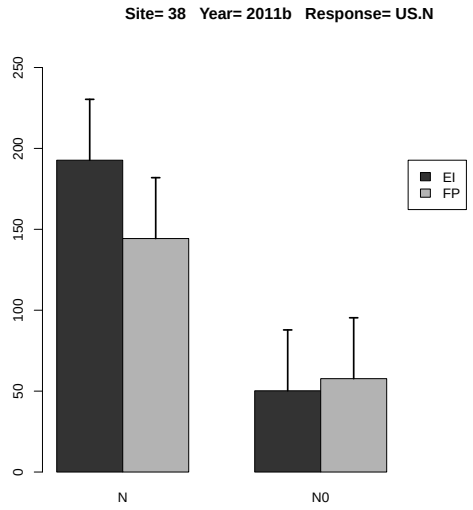

Figure 14.167: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.13 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	3.750
2	2	EI	N0	3.779
3	3	EI	N0	23.496
4	4	EI	N0	9.046
5	1	EI	N	14.810
6	2	EI	N	4.689
7	3	EI	N	8.164
8	4	EI	N	2.518
9	1	FP	N0	4.696
10	2	FP	N0	5.867
11	3	FP	N0	32.942
12	4	FP	N0	26.314
13	1	FP	N	7.951
14	2	FP	N	10.431
15	3	FP	N	16.764
16	4	FP	N	15.724

Table 14.419: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	7.545	3.037	2.484	0.164
A FP	12.718	3.037	4.187	0.048
A EI-FP	-5.172	4.295	-1.204	0.516

Table 14.420: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 38 in year 2011b .

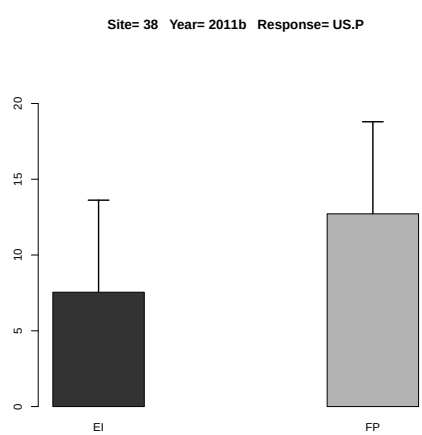

Figure 14.168: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	153.935	153.935	2.670	2.998	0.201
B	1.000	51.980	51.980	0.902	6.000	0.379
A:B	1.000	5.130	5.130	0.089	6.000	0.776

Table 14.421: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		8.782	3.737	4.900	2.350	-0.868	18.431	0.066
2	FP		15.086	3.737	4.900	4.040	5.436	24.736	0.010
3		N	10.132	3.721	5.200	2.720	0.657	19.606	0.040
4		N0	13.736	3.721	5.200	3.690	4.262	23.211	0.013
5	EI	N	7.545	4.601	9.300	1.640	-2.813	17.904	0.134
6	FP	N	12.717	4.601	9.300	2.760	2.359	23.076	0.021
7	EI	N0	10.018	4.601	9.300	2.180	-0.341	20.377	0.056
8	FP	N0	17.455	4.601	9.300	3.790	7.096	27.814	0.004

Table 14.422: Estimate of treatment means in tow-way ANOVA for variable US.P at site 38 in year 2011b .

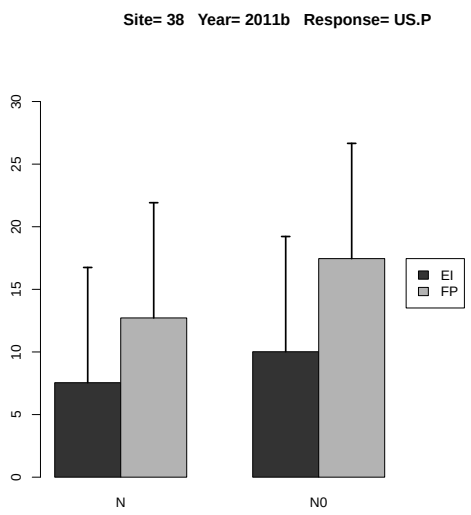

Figure 14.169: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.305	3.858	3.000	-1.630	-18.590	5.980	0.201
B N-N0	-3.605	3.797	6.000	-0.950	-12.895	5.685	0.379
A:B EI N- FP N	-5.172	5.413	7.900	-0.960	-17.680	7.335	0.368
A:B EI N- EI N0	-2.472	5.369	6.000	-0.460	-15.610	10.666	0.661
A:B EI N- FP N0	-9.909	5.413	7.900	-1.830	-22.417	2.598	0.105
A:B FP N- EI N0	2.700	5.413	7.900	0.500	-9.808	15.207	0.631
A:B FP N- FP N0	-4.737	5.369	6.000	-0.880	-17.875	8.401	0.412
A:B EI N0- FP N0	-7.437	5.413	7.900	-1.370	-19.945	5.070	0.207

Table 14.423: Estimate of contrast in two-way ANOVA for variable US.P at site 38 in year 2011b .

14.4.14 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	3.877
2	2	EI	N0	3.882
3	3	EI	N0	24.368
4	4	EI	N0	9.402
5	1	EI	N	15.390
6	2	EI	N	5.169
7	3	EI	N	9.062
8	4	EI	N	2.968
9	1	FP	N0	4.870
10	2	FP	N0	6.021
11	3	FP	N0	33.949
12	4	FP	N0	26.849
13	1	FP	N	8.397
14	2	FP	N	10.927
15	3	FP	N	17.512
16	4	FP	N	16.367

Table 14.424: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	8.147	3.074	2.650	0.143
A FP	13.301	3.074	4.327	0.044
A EI-FP	-5.153	4.347	-1.185	0.525

Table 14.425: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 38 in year 2011b .

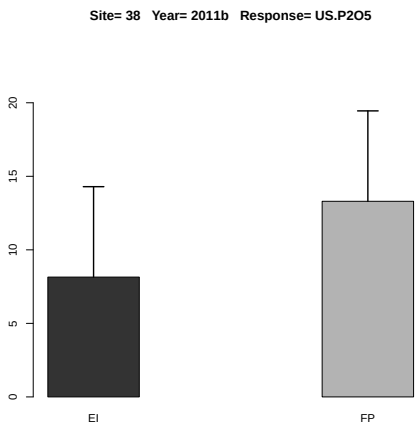

Figure 14.170: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	159.037	159.037	2.647	2.996	0.202
B	1.000	47.013	47.013	0.782	6.000	0.410
A:B	1.000	5.696	5.696	0.095	6.000	0.769

Table 14.426: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		9.265	3.860	4.800	2.400	-0.756	19.285	0.063
2	FP		15.611	3.860	4.800	4.040	5.591	25.632	0.011
3		N	10.724	3.853	5.100	2.780	0.868	20.580	0.038
4		N0	14.152	3.853	5.100	3.670	4.296	24.008	0.014
5	EI	N	8.147	4.734	9.100	1.720	-2.545	18.839	0.119
6	FP	N	13.301	4.734	9.100	2.810	2.609	23.993	0.020
7	EI	N0	10.382	4.734	9.100	2.190	-0.310	21.074	0.056
8	FP	N0	17.922	4.734	9.100	3.790	7.230	28.614	0.004

Table 14.427: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.347	3.901	3.000	-1.630	-18.770	6.077	0.202
B N-N0	-3.428	3.876	6.000	-0.880	-12.912	6.056	0.410
A:B EI N- FP N	-5.153	5.499	8.000	-0.940	-17.845	7.538	0.376
A:B EI N- EI N0	-2.235	5.481	6.000	-0.410	-15.647	11.177	0.698
A:B EI N- FP N0	-9.775	5.499	8.000	-1.780	-22.467	2.917	0.114
A:B FP N- EI N0	2.918	5.499	8.000	0.530	-9.773	15.610	0.610
A:B FP N- FP N0	-4.622	5.481	6.000	-0.840	-18.034	8.790	0.431
A:B EI N0- FP N0	-7.540	5.499	8.000	-1.370	-20.232	5.152	0.208

Table 14.428: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 38 in year 2011b .

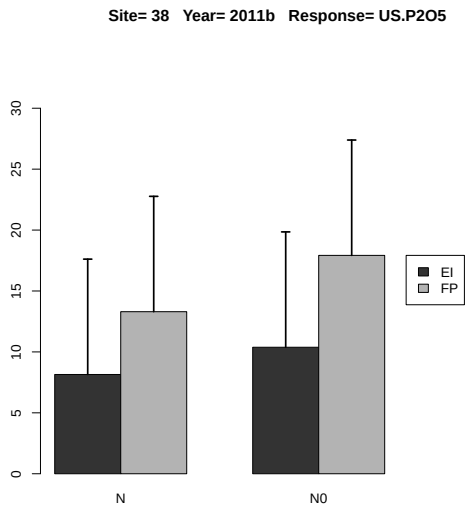

Figure 14.171: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.15 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	38.980
2	2	EI	N0	13.415
3	3	EI	N0	105.789
4	4	EI	N0	61.300
5	1	EI	N	172.902
6	2	EI	N	114.176
7	3	EI	N	163.792
8	4	EI	N	140.403
9	1	FP	N0	28.671
10	2	FP	N0	27.230
11	3	FP	N0	77.525
12	4	FP	N0	99.791
13	1	FP	N	109.238
14	2	FP	N	97.703
15	3	FP	N	170.760
16	4	FP	N	205.347

Table 14.429: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	147.818	18.901	7.821	0.008
A FP	145.762	18.901	7.712	0.008
A EI-FP	2.056	26.730	0.077	0.997

Table 14.430: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 38 in year 2011b .

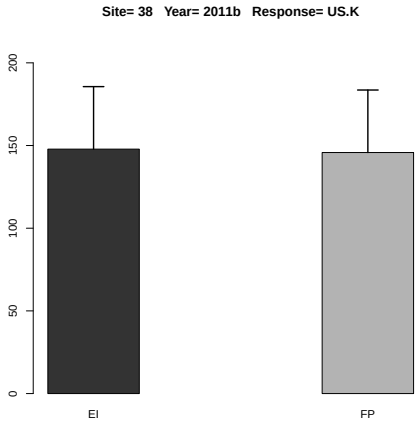

Figure 14.172: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.439	0.439	0.001	3.000	0.973
B	1.000	32545.901	32545.901	101.452	6.000	0.000
A:B	1.000	30.135	30.135	0.094	6.000	0.770

Table 14.431: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		101.344	18.543	4.800	5.470	53.117	149.572	0.003
2	FP		102.033	18.543	4.800	5.500	53.806	150.261	0.003
3		N	146.790	16.653	3.500	8.810	97.665	195.915	0.002
4		N0	56.588	16.653	3.500	3.400	7.463	105.713	0.034
5	EI	N	147.818	19.595	5.900	7.540	99.748	195.888	0.000
6	FP	N	145.762	19.595	5.900	7.440	97.692	193.832	0.000
7	EI	N0	54.871	19.595	5.900	2.800	6.801	102.941	0.032
8	FP	N0	58.304	19.595	5.900	2.980	10.234	106.374	0.025

Table 14.432: Estimate of treatment means in tow-way ANOVA for variable US.K at site 38 in year 2011b .

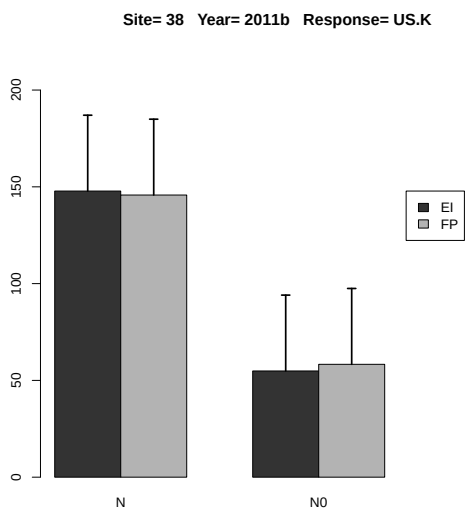

Figure 14.173: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.689	18.610	3.000	-0.040	-59.916	58.539	0.973
B N-N0	90.202	8.956	6.000	10.070	68.289	112.116	0.000
A:B EI N- FP N	2.056	20.652	4.400	0.100	-53.150	57.262	0.925
A:B EI N- EI N0	92.947	12.665	6.000	7.340	61.957	123.937	0.000
A:B EI N- FP N0	89.514	20.652	4.400	4.330	34.308	144.720	0.010
A:B FP N- EI N0	90.891	20.652	4.400	4.400	35.685	146.097	0.009
A:B FP N- FP N0	87.458	12.665	6.000	6.910	56.467	118.448	0.000
A:B EI N0- FP N0	-3.433	20.652	4.400	-0.170	-58.639	51.772	0.875

Table 14.433: Estimate of contrast in two-way ANOVA for variable US.K at site 38 in year 2011b .

14.4.16 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	39.235
2	2	EI	N0	13.537
3	3	EI	N0	106.943
4	4	EI	N0	61.957
5	1	EI	N	173.608
6	2	EI	N	115.014
7	3	EI	N	165.219
8	4	EI	N	141.165
9	1	FP	N0	28.938
10	2	FP	N0	27.426
11	3	FP	N0	78.413
12	4	FP	N0	100.527
13	1	FP	N	109.804
14	2	FP	N	98.374
15	3	FP	N	171.639
16	4	FP	N	206.419

Table 14.434: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	148.752	18.960	7.845	0.008
A FP	146.559	18.960	7.730	0.009
A EI-FP	2.193	26.814	0.082	0.996

Table 14.435: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 38 in year 2011b .

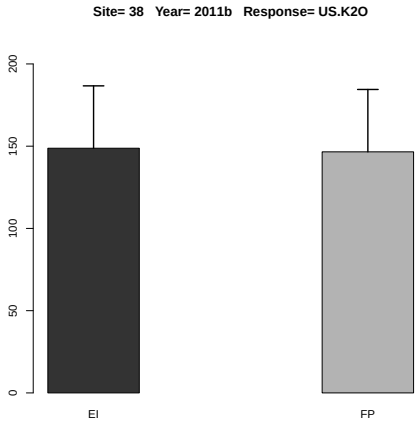

Figure 14.174: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.341	0.341	0.001	3.000	0.976
B	1.000	32785.307	32785.307	101.714	6.000	0.000
A:B	1.000	31.368	31.368	0.097	6.000	0.766

Table 14.436: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		102.085	18.681	4.800	5.460	53.458	150.712	0.003
2	FP		102.692	18.681	4.800	5.500	54.066	151.319	0.003
3		N	147.655	16.788	3.500	8.800	98.093	197.218	0.002
4		N0	57.122	16.788	3.500	3.400	7.559	106.684	0.034
5	EI	N	148.752	19.730	5.900	7.540	100.296	197.208	0.000
6	FP	N	146.559	19.730	5.900	7.430	98.103	195.015	0.000
7	EI	N0	55.418	19.730	5.900	2.810	6.962	103.874	0.031
8	FP	N0	58.826	19.730	5.900	2.980	10.370	107.282	0.025

Table 14.437: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.608	18.687	3.000	-0.030	-60.079	58.864	0.976
B N-N0	90.534	8.977	6.000	10.090	68.568	112.499	0.000
A:B EI N- FP N	2.193	20.731	4.400	0.110	-53.244	57.630	0.920
A:B EI N- EI N0	93.334	12.695	6.000	7.350	62.270	124.397	0.000
A:B EI N- FP N0	89.926	20.731	4.400	4.340	34.489	145.363	0.010
A:B FP N- EI N0	91.141	20.731	4.400	4.400	35.704	146.578	0.009
A:B FP N- FP N0	87.733	12.695	6.000	6.910	56.670	118.797	0.000
A:B EI N0- FP N0	-3.408	20.731	4.400	-0.160	-58.845	52.029	0.877

Table 14.438: Estimate of contrast in two-way ANOVA for variable US.K2O at site 38 in year 2011b
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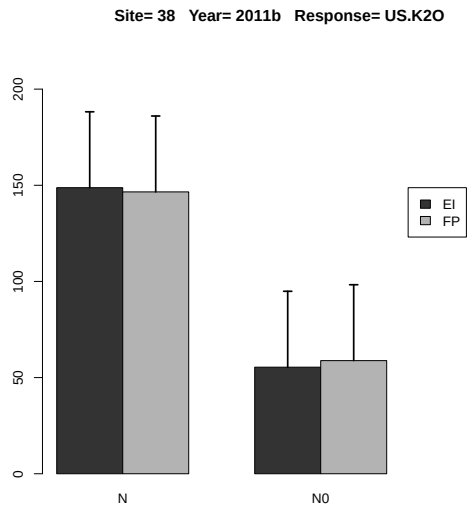

Figure 14.175: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.17 Response Variable US.Mg

	rep	A	B	y
1	1	EI	N0	7.336
2	2	EI	N0	3.238
3	3	EI	N0	15.364
4	4	EI	N0	12.169
5	1	EI	N	49.126
6	2	EI	N	19.674
7	3	EI	N	27.662
8	4	EI	N	21.928
9	1	FP	N0	6.454
10	2	FP	N0	7.442
11	3	FP	N0	20.175
12	4	FP	N0	19.871
13	1	FP	N	24.832
14	2	FP	N	28.321
15	3	FP	N	21.041
16	4	FP	N	24.052

Table 14.439: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	29.598	5.049	5.862	0.019
A FP	24.561	5.049	4.865	0.032
A EI-FP	5.036	7.140	0.705	0.769

Table 14.440: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 38 in year 2011b .

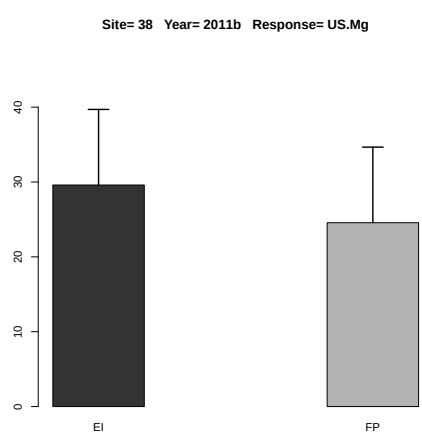

Figure 14.176: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.160	1.160	0.017	12.000	0.899
B	1.000	970.134	970.134	14.092	12.000	0.003
A:B	1.000	80.910	80.910	1.175	12.000	0.300

Table 14.441: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.562	2.933	12.000	6.670	13.171	25.954	0.000
2	FP		19.023	2.933	12.000	6.480	12.632	25.415	0.000
3		N	27.079	2.933	12.000	9.230	20.688	33.471	0.000
4		N0	11.506	2.933	12.000	3.920	5.114	17.898	0.002
5	EI	N	29.598	4.149	12.000	7.130	20.558	38.637	0.000
6	FP	N	24.561	4.149	12.000	5.920	15.522	33.600	0.000
7	EI	N0	9.527	4.149	12.000	2.300	0.487	18.566	0.040
8	FP	N0	13.486	4.149	12.000	3.250	4.446	22.524	0.007

Table 14.442: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 38 in year 2011b .

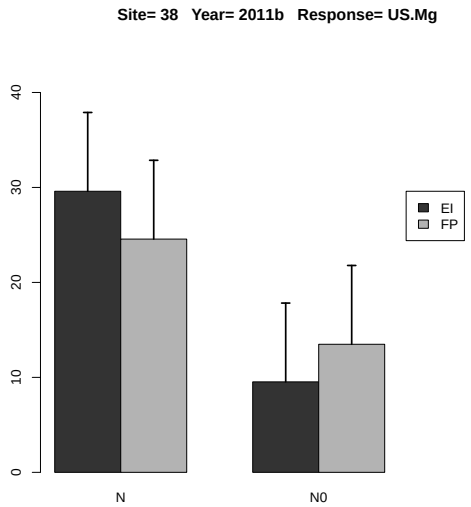

Figure 14.177: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.539	4.149	12.000	0.130	-8.501	9.578	0.899
B N-N0	15.573	4.149	12.000	3.750	6.534	24.613	0.003
A:B EI N- FP N	5.036	5.867	12.000	0.860	-7.747	17.819	0.407
A:B EI N- EI N0	20.071	5.867	12.000	3.420	7.288	32.854	0.005
A:B EI N- FP N0	16.112	5.867	12.000	2.750	3.329	28.895	0.018
A:B FP N- EI N0	15.035	5.867	12.000	2.560	2.252	27.818	0.025
A:B FP N- FP N0	11.076	5.867	12.000	1.890	-1.707	23.859	0.084
A:B EI N0- FP N0	-3.959	5.867	12.000	-0.670	-16.742	8.824	0.513

Table 14.443: Estimate of contrast in two-way ANOVA for variable US.Mg at site 38 in year 2011b .

14.4.18 Response Variable US.S

	rep	A	B	y
1	1	EI	N0	37.434
2	2	EI	N0	10.184
3	3	EI	N0	73.700
4	4	EI	N0	15.899
5	1	EI	N	254.520
6	2	EI	N	51.009
7	3	EI	N	116.740
8	4	EI	N	29.948
9	1	FP	N0	22.091
10	2	FP	N0	26.061
11	3	FP	N0	56.001
12	4	FP	N0	100.519
13	1	FP	N	113.155
14	2	FP	N	150.220
15	3	FP	N	78.154
16	4	FP	N	121.196

Table 14.444: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	113.054	40.627	2.783	0.129
A FP	115.681	40.627	2.847	0.122
A EI-FP	-2.627	57.456	-0.046	0.999

Table 14.445: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 38 in year 2011b .

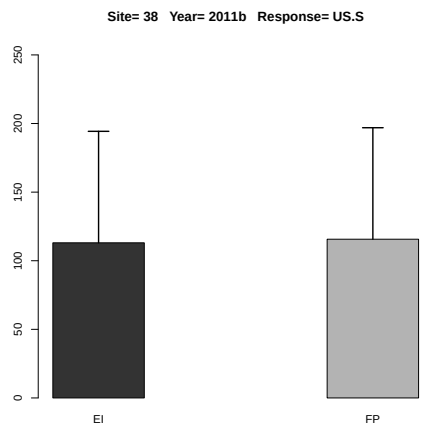

Figure 14.178: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	283.006	283.006	0.100	5.999	0.763
B	1.000	20524.230	20524.230	7.241	5.998	0.036
A:B	1.000	202.682	202.682	0.072	5.998	0.798

Table 14.446: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		73.679	21.809	6.000	3.380	20.312	127.047	0.015
2	FP		83.425	21.809	6.000	3.830	30.057	136.792	0.009
3		N	114.368	20.371	11.700	5.610	69.878	158.858	0.000
4		N0	42.736	20.371	11.700	2.100	-1.754	87.226	0.058
5	EI	N	113.054	28.809	11.700	3.920	50.136	175.972	0.002
6	FP	N	115.681	28.809	11.700	4.020	52.763	178.600	0.002
7	EI	N0	34.304	28.809	11.700	1.190	-28.614	97.223	0.257
8	FP	N0	51.168	28.809	11.700	1.780	-11.750	114.087	0.102

Table 14.447: Estimate of treatment means in tow-way ANOVA for variable US.S at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-9.745	30.842	6.000	-0.320	-85.218	65.727	0.763
B N-N0	71.631	26.620	6.000	2.690	6.494	136.769	0.036
A:B EI N- FP N	-2.627	40.742	11.700	-0.060	-91.607	86.353	0.950
A:B EI N- EI N0	78.750	37.647	6.000	2.090	-13.369	170.869	0.081
A:B EI N- FP N0	61.886	40.742	11.700	1.520	-27.094	150.866	0.155
A:B FP N- EI N0	81.377	40.742	11.700	2.000	-7.603	170.357	0.070
A:B FP N- FP N0	64.513	37.647	6.000	1.710	-27.606	156.632	0.137
A:B EI N0- FP N0	-16.864	40.742	11.700	-0.410	-105.844	72.116	0.686

Table 14.448: Estimate of contrast in two-way ANOVA for variable US.S at site 38 in year 2011b .

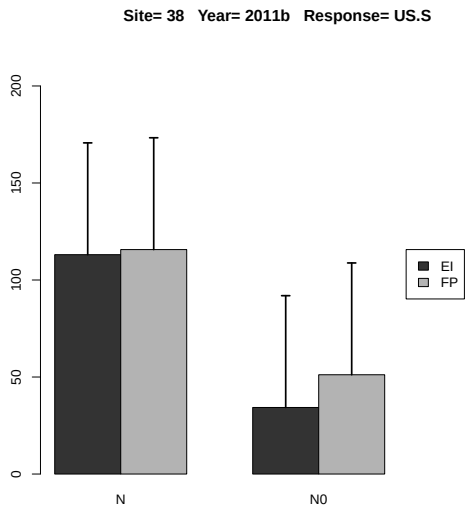

Figure 14.179: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.19 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	69.727
2	2	EI	N0	29.664
3	3	EI	N0	122.598
4	4	EI	N0	107.620
5	1	EI	N	403.497
6	2	EI	N	277.979
7	3	EI	N	327.835
8	4	EI	N	251.212
9	1	FP	N0	39.039
10	2	FP	N0	40.367
11	3	FP	N0	133.532
12	4	FP	N0	143.543
13	1	FP	N	244.472
14	2	FP	N	271.608
15	3	FP	N	235.356
16	4	FP	N	259.398

Table 14.449: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	315.131	27.661	11.393	0.003
A FP	252.708	27.661	9.136	0.005
A EI-FP	62.422	39.118	1.596	0.362

Table 14.450: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 38 in year 2011b .

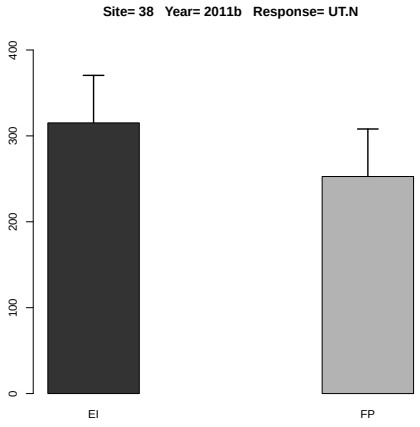

Figure 14.180: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3102.972	3102.972	1.274	11.999	0.281
B	1.000	157066.748	157066.748	64.505	11.999	0.000
A:B	1.000	4780.364	4780.364	1.963	11.999	0.187

Table 14.451: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		198.767	17.446	12.000	11.390	160.754	236.779	0.000
2	FP		170.914	17.446	12.000	9.800	132.902	208.927	0.000
3		N	283.920	17.446	12.000	16.270	245.907	321.932	0.000
4		N0	85.761	17.446	12.000	4.920	47.749	123.774	0.000
5	EI	N	315.131	24.673	12.000	12.770	261.373	368.889	0.000
6	FP	N	252.708	24.673	12.000	10.240	198.951	306.466	0.000
7	EI	N0	82.402	24.673	12.000	3.340	28.644	136.160	0.006
8	FP	N0	89.120	24.673	12.000	3.610	35.362	142.878	0.004

Table 14.452: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 38 in year 2011b .

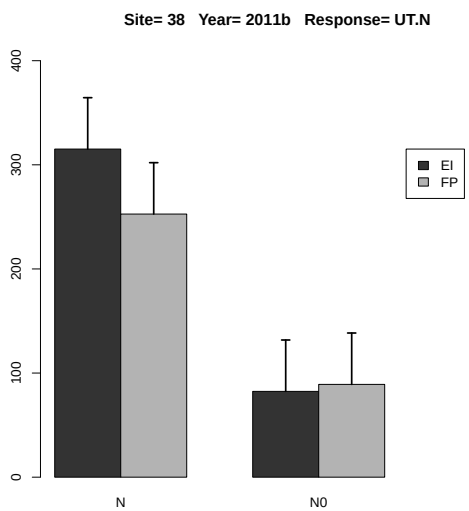

Figure 14.181: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	27.852	24.673	12.000	1.130	-25.906	81.610	0.281
B N-N0	198.158	24.673	12.000	8.030	144.400	251.916	0.000
A:B EI N- FP N	62.422	34.892	12.000	1.790	-13.603	138.447	0.099
A:B EI N- EI N0	232.728	34.892	12.000	6.670	156.703	308.753	0.000
A:B EI N- FP N0	226.010	34.892	12.000	6.480	149.985	302.036	0.000
A:B FP N- EI N0	170.306	34.892	12.000	4.880	94.281	246.331	0.000
A:B FP N- FP N0	163.588	34.892	12.000	4.690	87.563	239.613	0.000
A:B EI N0- FP N0	-6.718	34.892	12.000	-0.190	-82.743	69.307	0.851

Table 14.453: Estimate of contrast in two-way ANOVA for variable UT.N at site 38 in year 2011b .

14.4.20 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	8.927
2	2	EI	N0	6.789
3	3	EI	N0	36.146
4	4	EI	N0	20.150
5	1	EI	N	36.951
6	2	EI	N	22.792
7	3	EI	N	28.926
8	4	EI	N	13.983
9	1	FP	N0	9.203
10	2	FP	N0	9.678
11	3	FP	N0	44.670
12	4	FP	N0	38.724
13	1	FP	N	21.338
14	2	FP	N	26.330
15	3	FP	N	38.837
16	4	FP	N	31.944

Table 14.454: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	25.663	5.061	5.071	0.029
A FP	29.612	5.061	5.851	0.019
A EI-FP	-3.949	7.157	-0.552	0.846

Table 14.455: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 38 in year 2011b .

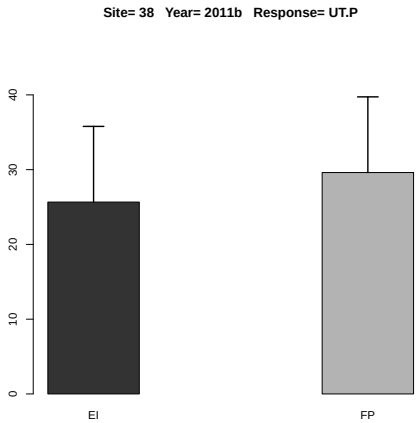

Figure 14.182: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	124.690	124.690	1.120	2.998	0.368
B	1.000	136.978	136.978	1.230	6.000	0.310
A:B	1.000	13.077	13.077	0.117	6.000	0.743

Table 14.456: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		21.833	5.371	4.800	4.070	7.896	35.770	0.010
2	FP		27.590	5.371	4.800	5.140	13.654	41.527	0.004
3		N	27.638	5.330	5.000	5.190	13.937	41.339	0.004
4		N0	21.786	5.330	5.000	4.090	8.085	35.487	0.009
5	EI	N	25.663	6.539	9.000	3.920	10.862	40.464	0.004
6	FP	N	29.612	6.539	9.000	4.530	14.812	44.413	0.001
7	EI	N0	18.003	6.539	9.000	2.750	3.202	32.803	0.022
8	FP	N0	25.569	6.539	9.000	3.910	10.768	40.369	0.004

Table 14.457: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.758	5.441	3.000	-1.060	-23.077	11.562	0.368
B N-N0	5.852	5.276	6.000	1.110	-7.058	18.761	0.310
A:B EI N- FP N	-3.949	7.579	7.800	-0.520	-21.492	13.593	0.617
A:B EI N- EI N0	7.660	7.461	6.000	1.030	-10.597	25.917	0.344
A:B EI N- FP N0	0.094	7.579	7.800	0.010	-17.448	17.637	0.990
A:B FP N- EI N0	11.609	7.579	7.800	1.530	-5.933	29.152	0.165
A:B FP N- FP N0	4.044	7.461	6.000	0.540	-14.213	22.301	0.607
A:B EI N0- FP N0	-7.566	7.579	7.800	-1.000	-25.108	9.976	0.348

Table 14.458: Estimate of contrast in two-way ANOVA for variable UT.P at site 38 in year 2011b .

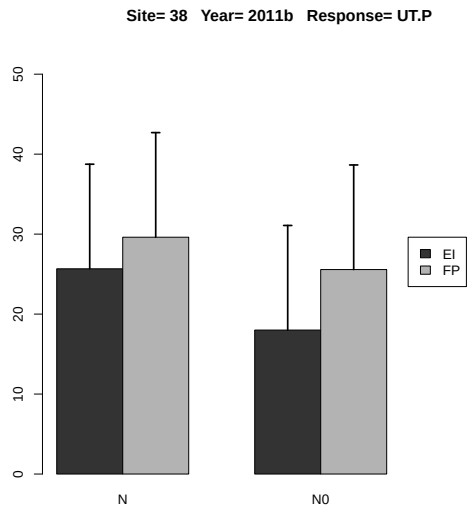

Figure 14.183: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.21 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	9.054
2	2	EI	N0	6.892
3	3	EI	N0	37.018
4	4	EI	N0	20.506
5	1	EI	N	37.531
6	2	EI	N	23.272
7	3	EI	N	29.823
8	4	EI	N	14.432
9	1	FP	N0	9.376
10	2	FP	N0	9.832
11	3	FP	N0	45.677
12	4	FP	N0	39.258
13	1	FP	N	21.784
14	2	FP	N	26.826
15	3	FP	N	39.584
16	4	FP	N	32.587

Table 14.459: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	26.265	5.098	5.152	0.028
A FP	30.195	5.098	5.923	0.019
A EI-FP	-3.931	7.209	-0.545	0.850

Table 14.460: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 38 in year 2011b .

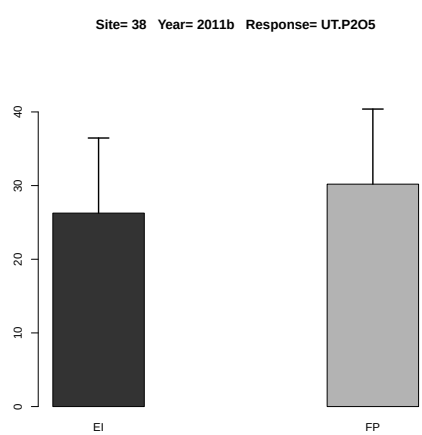

Figure 14.184: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	128.042	128.042	1.119	2.998	0.368
B	1.000	145.368	145.368	1.270	6.000	0.303
A:B	1.000	13.972	13.972	0.122	6.000	0.739

Table 14.461: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		22.316	5.495	4.800	4.060	8.004	36.628	0.011
2	FP		28.116	5.495	4.800	5.120	13.803	42.428	0.004
3		N	28.230	5.462	4.900	5.170	14.143	42.317	0.004
4		N0	22.202	5.462	4.900	4.060	8.115	36.288	0.010
5	EI	N	26.265	6.671	8.800	3.940	11.129	41.401	0.004
6	FP	N	30.195	6.671	8.800	4.530	15.059	45.331	0.002
7	EI	N0	18.367	6.671	8.800	2.750	3.231	33.504	0.023
8	FP	N0	26.036	6.671	8.800	3.900	10.900	41.172	0.004

Table 14.462: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 38 in year 2011b .

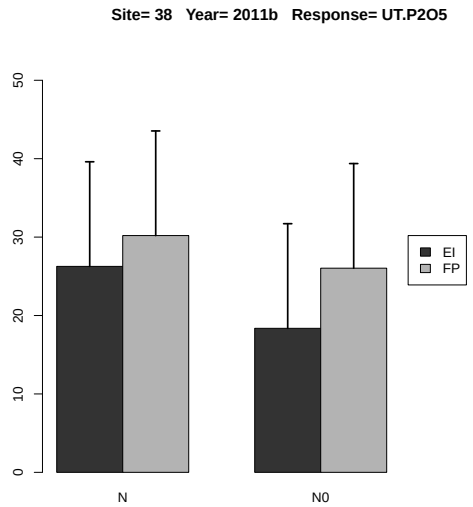

Figure 14.185: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-5.800	5.484	3.000	-1.060	-23.257	11.658	0.368
B N-N0	6.028	5.349	6.000	1.130	-7.061	19.118	0.303
A:B EI N- FP N	-3.931	7.661	7.900	-0.510	-21.650	13.789	0.622
A:B EI N- EI N0	7.897	7.565	6.000	1.040	-10.614	26.409	0.337
A:B EI N- FP N0	0.229	7.661	7.900	0.030	-17.490	17.948	0.977
A:B FP N- EI N0	11.828	7.661	7.900	1.540	-5.891	29.547	0.162
A:B FP N- FP N0	4.160	7.565	6.000	0.550	-14.352	22.671	0.602
A:B EI N0- FP N0	-7.668	7.661	7.900	-1.000	-25.388	10.051	0.347

Table 14.463: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 38 in year 2011b .

14.4.22 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	46.545
2	2	EI	N0	18.173
3	3	EI	N0	125.854
4	4	EI	N0	78.494
5	1	EI	N	209.132
6	2	EI	N	141.724
7	3	EI	N	196.822
8	4	EI	N	160.275
9	1	FP	N0	35.509
10	2	FP	N0	32.810
11	3	FP	N0	94.105
12	4	FP	N0	117.962
13	1	FP	N	132.863
14	2	FP	N	121.173
15	3	FP	N	203.459
16	4	FP	N	228.866

Table 14.464: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	176.988	21.283	8.316	0.008
A FP	171.590	21.283	8.062	0.008
A EI-FP	5.398	30.099	0.179	0.982

Table 14.465: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 38 in year 2011b .

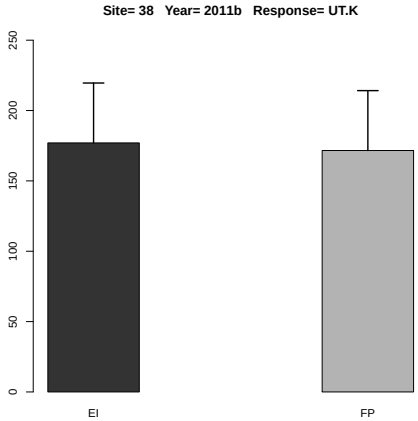

Figure 14.186: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.854	1.854	0.004	3.000	0.954
B	1.000	44611.966	44611.966	95.454	6.000	0.000
A:B	1.000	67.697	67.697	0.145	6.000	0.717

Table 14.466: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		122.127	20.583	4.800	5.930	68.412	175.842	0.002
2	FP		120.844	20.583	4.800	5.870	67.129	174.559	0.002
3		N	174.289	18.682	3.600	9.330	119.777	228.802	0.001
4		N0	68.682	18.682	3.600	3.680	14.169	123.194	0.026
5	EI	N	176.988	21.956	6.100	8.060	123.422	230.554	0.000
6	FP	N	171.590	21.956	6.100	7.820	118.025	225.156	0.000
7	EI	N0	67.266	21.956	6.100	3.060	13.701	120.832	0.022
8	FP	N0	70.097	21.956	6.100	3.190	16.531	123.662	0.018

Table 14.467: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.284	20.381	3.000	0.060	-63.580	66.148	0.954
B N-N0	105.608	10.809	6.000	9.770	79.158	132.058	0.000
A:B EI N- FP N	5.398	23.070	4.700	0.230	-54.908	65.704	0.825
A:B EI N- EI N0	109.722	15.287	6.000	7.180	72.316	147.127	0.000
A:B EI N- FP N0	106.891	23.070	4.700	4.630	46.586	167.197	0.006
A:B FP N- EI N0	104.324	23.070	4.700	4.520	44.018	164.630	0.007
A:B FP N- FP N0	101.494	15.287	6.000	6.640	64.088	138.900	0.001
A:B EI N0- FP N0	-2.830	23.070	4.700	-0.120	-63.136	57.476	0.907

Table 14.468: Estimate of contrast in two-way ANOVA for variable UT.K at site 38 in year 2011b .

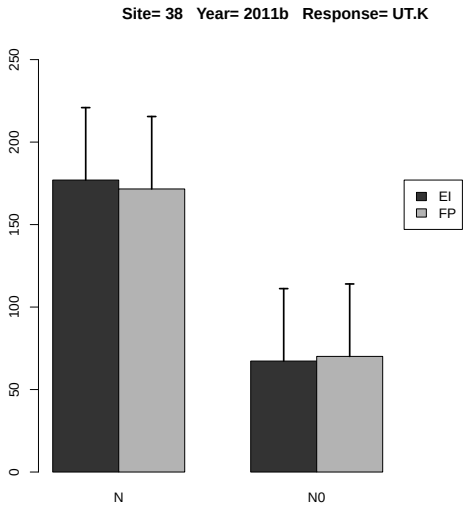

Figure 14.187: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.23 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	46.801
2	2	EI	N0	18.294
3	3	EI	N0	127.009
4	4	EI	N0	79.150
5	1	EI	N	209.839
6	2	EI	N	142.563
7	3	EI	N	198.248
8	4	EI	N	161.037
9	1	FP	N0	35.775
10	2	FP	N0	33.006
11	3	FP	N0	94.993
12	4	FP	N0	118.698
13	1	FP	N	133.429
14	2	FP	N	121.844
15	3	FP	N	204.339
16	4	FP	N	229.938

Table 14.469: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	177.922	21.340	8.337	0.007
A FP	172.388	21.340	8.078	0.008
A EI-FP	5.534	30.179	0.183	0.981

Table 14.470: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 38 in year 2011b .

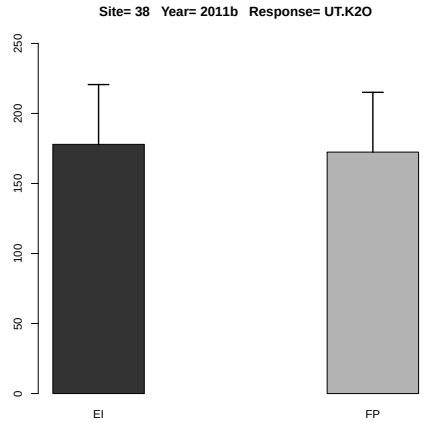

Figure 14.188: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2.093	2.093	0.004	3.000	0.951
B	1.000	44892.185	44892.185	95.507	6.000	0.000
A:B	1.000	69.538	69.538	0.148	6.000	0.714

Table 14.471: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		122.868	20.723	4.800	5.930	68.744	176.991	0.002
2	FP		121.503	20.723	4.800	5.860	67.379	175.626	0.002
3		N	175.155	18.820	3.600	9.310	120.199	230.111	0.001
4		N0	69.216	18.820	3.600	3.680	14.260	124.172	0.026
5	EI	N	177.922	22.095	6.000	8.050	123.964	231.880	0.000
6	FP	N	172.387	22.095	6.000	7.800	118.430	226.345	0.000
7	EI	N0	67.814	22.095	6.000	3.070	13.856	121.771	0.022
8	FP	N0	70.618	22.095	6.000	3.200	16.660	124.576	0.018

Table 14.472: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 38 in year 2011b .

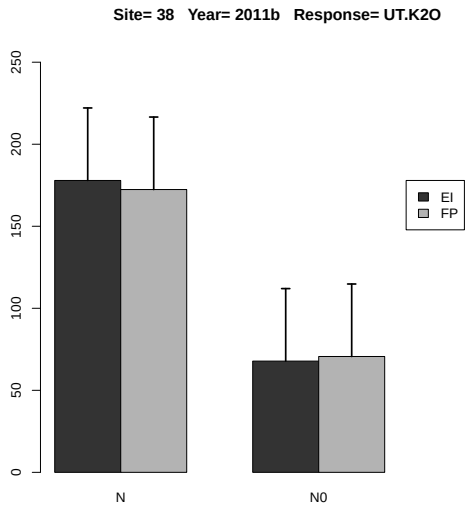

Figure 14.189: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.365	20.456	3.000	0.070	-63.738	66.467	0.951
B N-N0	105.939	10.840	6.000	9.770	79.413	132.464	0.000
A:B EI N- FP N	5.534	23.150	4.700	0.240	-54.994	66.062	0.821
A:B EI N- EI N0	110.108	15.330	6.000	7.180	72.596	147.621	0.000
A:B EI N- FP N0	107.304	23.150	4.700	4.640	46.776	167.832	0.006
A:B FP N- EI N0	104.574	23.150	4.700	4.520	44.046	165.102	0.007
A:B FP N- FP N0	101.769	15.330	6.000	6.640	64.257	139.282	0.001
A:B EI N0- FP N0	-2.805	23.150	4.700	-0.120	-63.333	57.723	0.908

Table 14.473: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 38 in year 2011b
.

14.4.24 Response Variable UT.Mg

	rep	A	B	y
1	1	EI	N0	9.128
2	2	EI	N0	4.112
3	3	EI	N0	19.290
4	4	EI	N0	15.751
5	1	EI	N	57.177
6	2	EI	N	25.971
7	3	EI	N	35.211
8	4	EI	N	26.514
9	1	FP	N0	7.697
10	2	FP	N0	8.531
11	3	FP	N0	23.410
12	4	FP	N0	23.417
13	1	FP	N	30.345
14	2	FP	N	33.621
15	3	FP	N	28.398
16	4	FP	N	29.729

Table 14.474: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	36.218	5.422	6.680	0.014
A FP	30.523	5.422	5.630	0.021
A EI-FP	5.695	7.667	0.743	0.749

Table 14.475: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 38 in year 2011b .

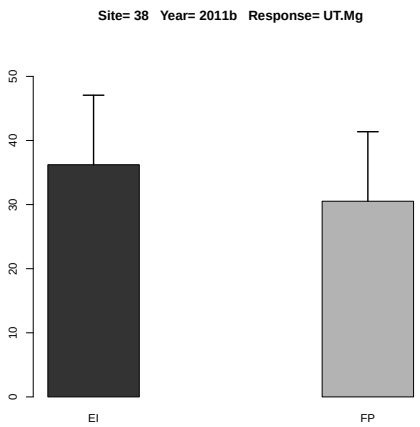

Figure 14.190: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4.006	4.006	0.047	12.000	0.832
B	1.000	1513.825	1513.825	17.700	12.000	0.001
A:B	1.000	88.153	88.153	1.031	12.000	0.330

Table 14.476: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24.144	3.270	12.000	7.380	17.020	31.268	0.000
2	FP		23.143	3.270	12.000	7.080	16.019	30.267	0.000
3		N	33.371	3.270	12.000	10.210	26.247	40.495	0.000
4		N0	13.917	3.270	12.000	4.260	6.793	21.041	0.001
5	EI	N	36.218	4.624	12.000	7.830	26.144	46.293	0.000
6	FP	N	30.523	4.624	12.000	6.600	20.448	40.598	0.000
7	EI	N0	12.070	4.624	12.000	2.610	1.995	22.145	0.023
8	FP	N0	15.764	4.624	12.000	3.410	5.689	25.838	0.005

Table 14.477: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.001	4.624	12.000	0.220	-9.074	11.076	0.832
B N-N0	19.454	4.624	12.000	4.210	9.379	29.529	0.001
A:B EI N- FP N	5.695	6.539	12.000	0.870	-8.553	19.943	0.401
A:B EI N- EI N0	24.148	6.539	12.000	3.690	9.901	38.396	0.003
A:B EI N- FP N0	20.455	6.539	12.000	3.130	6.207	34.703	0.009
A:B FP N- EI N0	18.453	6.539	12.000	2.820	4.205	32.701	0.015
A:B FP N- FP N0	14.759	6.539	12.000	2.260	0.512	29.007	0.043
A:B EI N0- FP N0	-3.694	6.539	12.000	-0.560	-17.942	10.554	0.583

Table 14.478: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 38 in year 2011b
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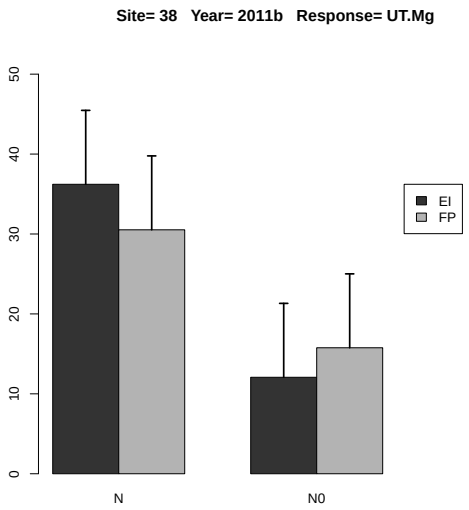

Figure 14.191: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.25 Response Variable UT.S

	rep	A	B	y
1	1	EI	N0	58.738
2	2	EI	N0	17.466
3	3	EI	N0	105.107
4	4	EI	N0	48.853
5	1	EI	N	346.102
6	2	EI	N	109.255
7	3	EI	N	207.335
8	4	EI	N	121.664
9	1	FP	N0	32.658
10	2	FP	N0	36.541
11	3	FP	N0	85.522
12	4	FP	N0	138.634
13	1	FP	N	185.605
14	2	FP	N	191.861
15	3	FP	N	137.014
16	4	FP	N	188.509

Table 14.479: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	196.089	40.998	4.783	0.033
A FP	175.747	40.998	4.287	0.045
A EI-FP	20.342	57.981	0.351	0.933

Table 14.480: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 38 in year 2011b .

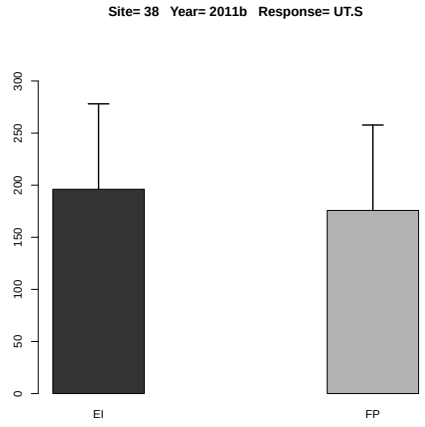

Figure 14.192: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	14.604	14.604	0.004	5.999	0.950
B	1.000	58059.722	58059.722	17.127	6.000	0.006
A:B	1.000	1306.071	1306.071	0.385	6.000	0.558

Table 14.481: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		126.815	24.476	6.000	5.180	66.921	186.709	0.002
2	FP		124.543	24.476	6.000	5.090	64.648	184.438	0.002
3		N	185.918	22.614	11.700	8.220	136.484	235.352	0.000
4		N0	65.440	22.614	11.700	2.890	16.006	114.874	0.014
5	EI	N	196.089	31.982	11.700	6.130	126.179	265.999	0.000
6	FP	N	175.747	31.982	11.700	5.500	105.837	245.657	0.000
7	EI	N0	57.541	31.982	11.700	1.800	-12.369	127.451	0.098
8	FP	N0	73.339	31.982	11.700	2.290	3.429	143.249	0.041

Table 14.482: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 38 in year 2011b .

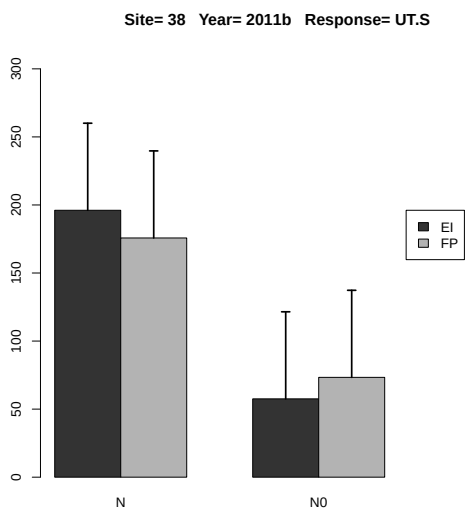

Figure 14.193: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.272	34.615	6.000	0.070	-82.432	86.976	0.950
B N-N0	120.478	29.112	6.000	4.140	49.245	191.711	0.006
A:B EI N- FP N	20.342	45.229	11.700	0.450	-78.526	119.210	0.661
A:B EI N- EI N0	138.548	41.170	6.000	3.370	37.809	239.287	0.015
A:B EI N- FP N0	122.750	45.229	11.700	2.710	23.882	221.618	0.019
A:B FP N- EI N0	118.206	45.229	11.700	2.610	19.338	217.074	0.023
A:B FP N- FP N0	102.408	41.170	6.000	2.490	1.669	203.147	0.047
A:B EI N0- FP N0	-15.798	45.229	11.700	-0.350	-114.666	83.070	0.733

Table 14.483: Estimate of contrast in two-way ANOVA for variable UT.S at site 38 in year 2011b .

14.4.26 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	0.658
2	2	EI	N0	0.555
3	3	EI	N0	0.634
4	4	EI	N0	0.665
5	1	EI	N	0.508
6	2	EI	N	0.721
7	3	EI	N	0.598
8	4	EI	N	0.839
9	1	FP	N0	0.598
10	2	FP	N0	0.624
11	3	FP	N0	0.571
12	4	FP	N0	0.487
13	1	FP	N	0.740
14	2	FP	N	0.671
15	3	FP	N	0.895
16	4	FP	N	0.730

Table 14.484: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.667	0.061	6.000	10.860	0.516	0.817	0.000
A FP	0.759	0.061	6.000	12.360	0.609	0.909	0.000
A EI-FP	-0.092	0.087	6.000	-1.060	-0.305	0.120	0.328

Table 14.485: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 38 in year 2011b .

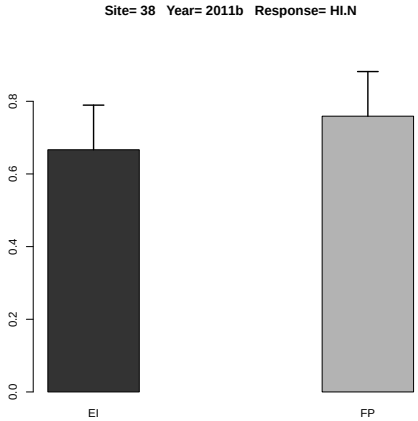

Figure 14.194: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.001	0.001	0.131	11.987	0.724
B	1.000	0.052	0.052	5.725	11.987	0.034
A:B	1.000	0.023	0.023	2.490	11.987	0.141

Table 14.486: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.647	0.034	12.000	19.220	0.574	0.721	0.000
2	FP		0.664	0.034	12.000	19.730	0.591	0.738	0.000
3		N	0.713	0.034	12.000	21.170	0.639	0.786	0.000
4		N0	0.599	0.034	12.000	17.790	0.525	0.672	0.000
5	EI	N	0.667	0.048	12.000	14.000	0.563	0.770	0.000
6	FP	N	0.759	0.048	12.000	15.940	0.655	0.863	0.000
7	EI	N0	0.628	0.048	12.000	13.180	0.524	0.732	0.000
8	FP	N0	0.570	0.048	12.000	11.970	0.466	0.674	0.000

Table 14.487: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.017	0.048	12.000	-0.360	-0.121	0.086	0.724
B N-N0	0.114	0.048	12.000	2.390	0.010	0.218	0.034
A:B EI N- FP N	-0.092	0.067	12.000	-1.370	-0.239	0.054	0.195
A:B EI N- EI N0	0.039	0.067	12.000	0.580	-0.108	0.185	0.575
A:B EI N- FP N0	0.097	0.067	12.000	1.440	-0.050	0.243	0.176
A:B FP N- EI N0	0.131	0.067	12.000	1.950	-0.016	0.278	0.075
A:B FP N- FP N0	0.189	0.067	12.000	2.810	0.042	0.336	0.016
A:B EI N0- FP N0	0.058	0.067	12.000	0.860	-0.089	0.205	0.407

Table 14.488: Estimate of contrast in two-way ANOVA for variable HI.N at site 38 in year 2011b .

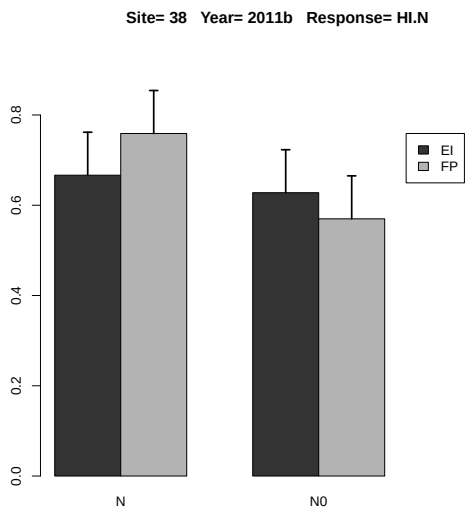

Figure 14.195: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.27 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	1.380
2	2	EI	N0	0.797
3	3	EI	N0	0.538
4	4	EI	N0	1.228
5	1	EI	N	1.495
6	2	EI	N	3.861
7	3	EI	N	2.543
8	4	EI	N	4.553
9	1	FP	N0	0.960
10	2	FP	N0	0.649
11	3	FP	N0	0.356
12	4	FP	N0	0.472
13	1	FP	N	1.684
14	2	FP	N	1.524
15	3	FP	N	1.317
16	4	FP	N	1.032

Table 14.489: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	3.113	0.492	6.000	6.330	1.909	4.317	0.001
A FP	1.389	0.492	6.000	2.820	0.185	2.593	0.030
A EI-FP	1.724	0.696	6.000	2.480	0.021	3.427	0.048

Table 14.490: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 38 in year 2011b .

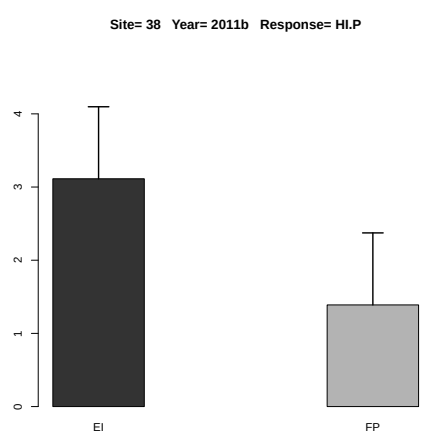

Figure 14.196: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4.412	4.412	8.181	11.997	0.014
B	1.000	8.451	8.451	15.672	11.998	0.002
A:B	1.000	1.815	1.815	3.366	11.998	0.091

Table 14.491: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.049	0.260	12.000	7.890	1.484	2.615	0.000
2	FP		0.999	0.260	12.000	3.850	0.433	1.565	0.002
3		N	2.251	0.260	12.000	8.670	1.685	2.817	0.000
4		N0	0.797	0.260	12.000	3.070	0.232	1.363	0.010
5	EI	N	3.113	0.367	12.000	8.480	2.313	3.913	0.000
6	FP	N	1.389	0.367	12.000	3.780	0.589	2.189	0.003
7	EI	N0	0.986	0.367	12.000	2.680	0.186	1.786	0.020
8	FP	N0	0.609	0.367	12.000	1.660	-0.191	1.409	0.123

Table 14.492: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 38 in year 2011b .

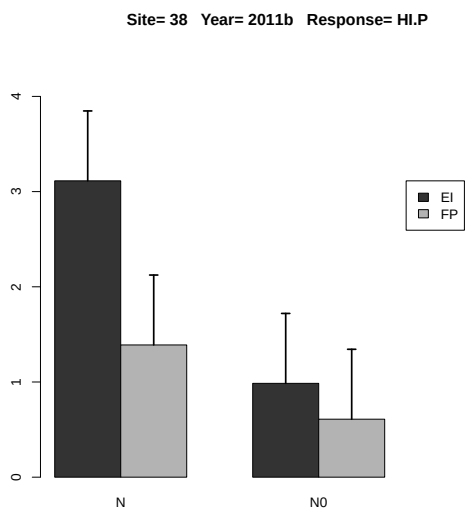

Figure 14.197: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.050	0.367	12.000	2.860	0.250	1.850	0.014
B N-N0	1.454	0.367	12.000	3.960	0.653	2.253	0.002
A:B EI N- FP N	1.724	0.519	12.000	3.320	0.593	2.855	0.006
A:B EI N- EI N0	2.127	0.519	12.000	4.100	0.996	3.259	0.002
A:B EI N- FP N0	2.504	0.519	12.000	4.820	1.372	3.635	0.000
A:B FP N- EI N0	0.403	0.519	12.000	0.780	-0.728	1.535	0.452
A:B FP N- FP N0	0.780	0.519	12.000	1.500	-0.351	1.911	0.159
A:B EI N0- FP N0	0.377	0.519	12.000	0.730	-0.755	1.508	0.482

Table 14.493: Estimate of contrast in two-way ANOVA for variable HI.P at site 38 in year 2011b .

14.4.28 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.194
2	2	EI	N0	0.355
3	3	EI	N0	0.190
4	4	EI	N0	0.280
5	1	EI	N	0.210
6	2	EI	N	0.241
7	3	EI	N	0.202
8	4	EI	N	0.142
9	1	FP	N0	0.238
10	2	FP	N0	0.205
11	3	FP	N0	0.214
12	4	FP	N0	0.182
13	1	FP	N	0.216
14	2	FP	N	0.240
15	3	FP	N	0.191
16	4	FP	N	0.115

Table 14.494: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.199	0.024	3.100	8.190	0.123	0.274	0.003
A FP	0.191	0.024	3.100	7.860	0.115	0.266	0.004
A EI-FP	0.008	0.007	3.000	1.090	-0.015	0.031	0.358

Table 14.495: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 38 in year 2011b .

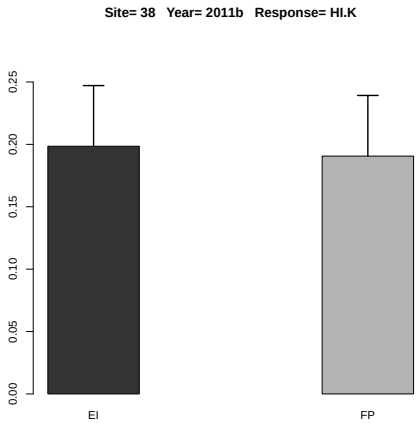

Figure 14.198: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.002	0.002	1.108	2.999	0.370
B	1.000	0.006	0.006	2.707	5.987	0.151
A:B	1.000	0.001	0.001	0.652	5.987	0.450

Table 14.496: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.227	0.021	5.500	10.660	0.173	0.280	0.000
2	FP		0.200	0.021	5.500	9.420	0.147	0.254	0.000
3		N	0.195	0.021	5.700	9.420	0.143	0.246	0.000
4		N0	0.232	0.021	5.700	11.250	0.181	0.283	0.000
5	EI	N	0.199	0.027	10.500	7.430	0.139	0.258	0.000
6	FP	N	0.191	0.027	10.500	7.130	0.131	0.250	0.000
7	EI	N0	0.255	0.027	10.500	9.530	0.196	0.314	0.000
8	FP	N0	0.210	0.027	10.500	7.850	0.151	0.269	0.000

Table 14.497: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.026	0.025	3.000	1.050	-0.053	0.106	0.370
B N-N0	-0.038	0.023	6.000	-1.650	-0.094	0.018	0.151
A:B EI N- FP N	0.008	0.034	7.500	0.230	-0.071	0.087	0.823
A:B EI N- EI N0	-0.056	0.032	6.000	-1.730	-0.136	0.023	0.134
A:B EI N- FP N0	-0.011	0.034	7.500	-0.330	-0.091	0.068	0.748
A:B FP N- EI N0	-0.064	0.034	7.500	-1.890	-0.143	0.015	0.098
A:B FP N- FP N0	-0.019	0.032	6.000	-0.590	-0.099	0.060	0.575
A:B EI N0- FP N0	0.045	0.034	7.500	1.320	-0.034	0.124	0.225

Table 14.498: Estimate of contrast in two-way ANOVA for variable HI.K at site 38 in year 2011b .

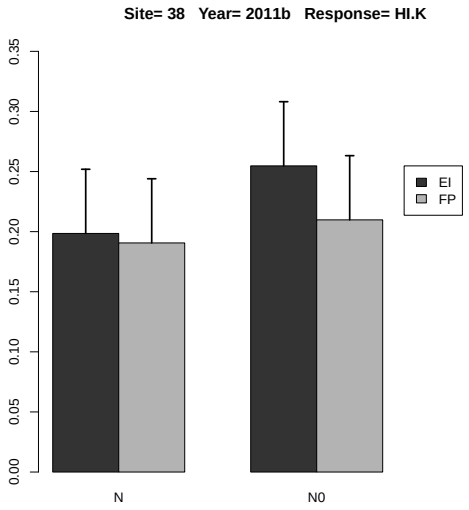

Figure 14.199: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.29 Response Variable HI.Mg

	rep	A	B	y
1	1	EI	N0	0.244
2	2	EI	N0	0.270
3	3	EI	N0	0.256
4	4	EI	N0	0.294
5	1	EI	N	0.164
6	2	EI	N	0.320
7	3	EI	N	0.273
8	4	EI	N	0.209
9	1	FP	N0	0.193
10	2	FP	N0	0.146
11	3	FP	N0	0.160
12	4	FP	N0	0.178
13	1	FP	N	0.222
14	2	FP	N	0.187
15	3	FP	N	0.350
16	4	FP	N	0.236

Table 14.499: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.241	0.035	6.000	6.940	0.156	0.327	0.000
A FP	0.249	0.035	6.000	7.140	0.163	0.334	0.000
A EI-FP	-0.007	0.048	3.000	-0.150	-0.160	0.145	0.890

Table 14.500: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 38 in year 2011b .

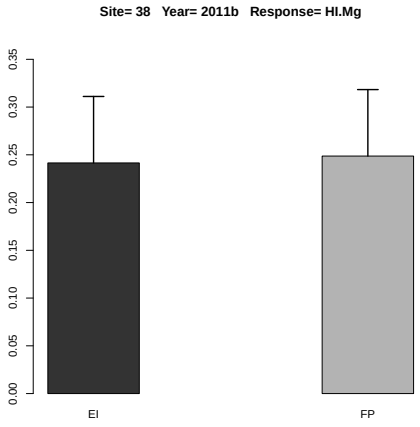

Figure 14.200: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.007	0.007	2.925	5.997	0.138
B	1.000	0.003	0.003	1.173	5.988	0.321
A:B	1.000	0.011	0.011	4.213	5.988	0.086

Table 14.501: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.254	0.018	6.000	13.730	0.208	0.299	0.000
2	FP		0.209	0.018	6.000	11.320	0.164	0.254	0.000
3		N	0.245	0.018	12.000	13.480	0.205	0.285	0.000
4		N0	0.218	0.018	12.000	11.980	0.178	0.257	0.000
5	EI	N	0.241	0.026	12.000	9.390	0.185	0.297	0.000
6	FP	N	0.249	0.026	12.000	9.670	0.193	0.305	0.000
7	EI	N0	0.266	0.026	12.000	10.350	0.210	0.322	0.000
8	FP	N0	0.169	0.026	12.000	6.590	0.113	0.226	0.000

Table 14.502: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 38 in year 2011b .

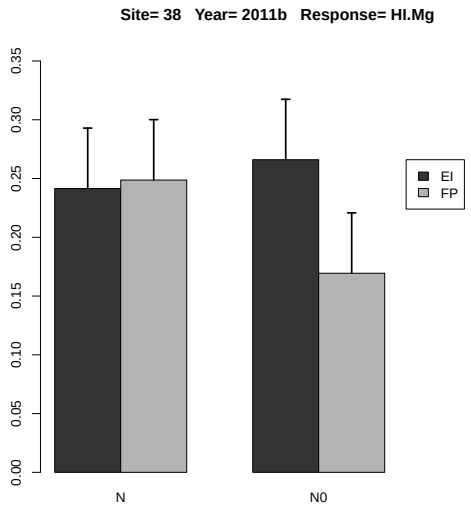

Figure 14.201: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.045	0.026	6.000	1.710	-0.019	0.109	0.138
B N-N0	0.027	0.025	6.000	1.080	-0.034	0.089	0.321
A:B EI N- FP N	-0.007	0.036	12.000	-0.200	-0.086	0.072	0.846
A:B EI N- EI N0	-0.024	0.036	6.000	-0.690	-0.112	0.063	0.519
A:B EI N- FP N0	0.072	0.036	12.000	1.980	-0.007	0.151	0.071
A:B FP N- EI N0	-0.017	0.036	12.000	-0.480	-0.097	0.062	0.643
A:B FP N- FP N0	0.079	0.036	6.000	2.220	-0.008	0.167	0.069
A:B EI N0- FP N0	0.097	0.036	12.000	2.660	0.017	0.176	0.021

Table 14.503: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 38 in year 2011b .

14.4.30 Response Variable HI.S

	rep	A	B	y
1	1	EI	N0	0.569
2	2	EI	N0	0.715
3	3	EI	N0	0.426
4	4	EI	N0	2.073
5	1	EI	N	0.360
6	2	EI	N	1.142
7	3	EI	N	0.776
8	4	EI	N	3.063
9	1	FP	N0	0.478
10	2	FP	N0	0.402
11	3	FP	N0	0.527
12	4	FP	N0	0.379
13	1	FP	N	0.640
14	2	FP	N	0.277
15	3	FP	N	0.753
16	4	FP	N	0.555

Table 14.504: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.335	0.429	6.000	3.110	0.286	2.384	0.021
A FP	0.556	0.429	6.000	1.300	-0.492	1.605	0.242
A EI-FP	0.779	0.606	6.000	1.280	-0.705	2.262	0.246

Table 14.505: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 38 in year 2011b .

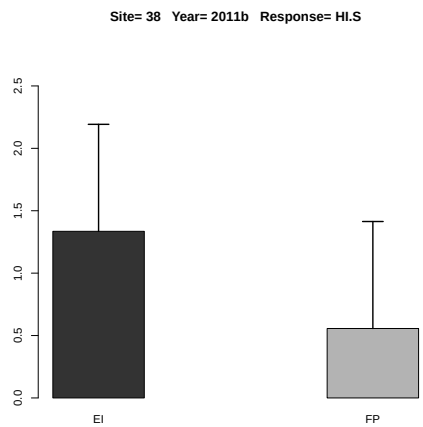

Figure 14.202: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.113	0.113	1.701	6.000	0.240
B	1.000	0.249	0.249	3.748	5.998	0.101
A:B	1.000	0.078	0.078	1.175	5.998	0.320

Table 14.506: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.140	0.346	6.000	3.290	0.293	1.988	0.017
2	FP		0.502	0.346	6.000	1.450	-0.346	1.349	0.198
3		N	0.946	0.253	6.800	3.730	0.344	1.548	0.008
4		N0	0.696	0.253	6.800	2.750	0.094	1.298	0.029
5	EI	N	1.335	0.358	6.800	3.730	0.484	2.186	0.008
6	FP	N	0.556	0.358	6.800	1.550	-0.295	1.408	0.165
7	EI	N0	0.946	0.358	6.800	2.640	0.094	1.797	0.034
8	FP	N0	0.447	0.358	6.800	1.250	-0.405	1.298	0.253

Table 14.507: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 38 in year 2011b .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.639	0.490	6.000	1.300	-0.560	1.837	0.240
B N-N0	0.249	0.129	6.000	1.940	-0.066	0.565	0.101
A:B EI N- FP N	0.779	0.506	6.800	1.540	-0.425	1.982	0.169
A:B EI N- EI N0	0.389	0.182	6.000	2.140	-0.057	0.835	0.077
A:B EI N- FP N0	0.888	0.506	6.800	1.750	-0.316	2.092	0.124
A:B FP N- EI N0	-0.389	0.506	6.800	-0.770	-1.593	0.815	0.468
A:B FP N- FP N0	0.110	0.182	6.000	0.600	-0.336	0.556	0.569
A:B EI N0- FP N0	0.499	0.506	6.800	0.990	-0.705	1.703	0.358

Table 14.508: Estimate of contrast in two-way ANOVA for variable HI.S at site 38 in year 2011b .

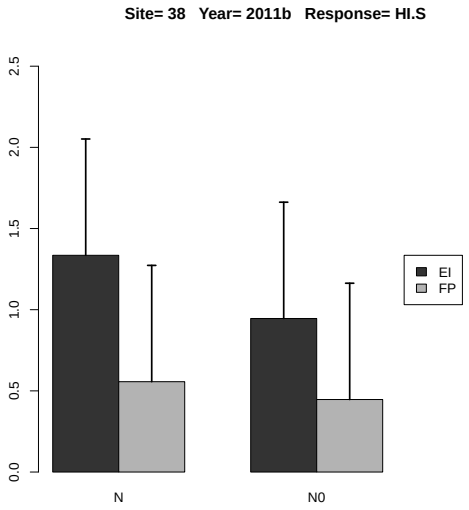

Figure 14.203: Estimated treatment means and standard error in the 2-way ANOVA.

14.4.31 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	50.320
2	2	EI	N	39.355
3	3	EI	N	47.185
4	4	EI	N	38.215
5	1	FP	N	52.500
6	2	FP	N	50.473
7	3	FP	N	54.500
8	4	FP	N	54.067

Table 14.509: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	43.769	2.188	5.900	20.010	38.395	49.142	0.000
A FP	52.885	2.188	5.900	24.170	47.512	58.258	0.000
A EI-FP	-9.116	2.897	3.000	-3.150	-18.337	0.104	0.051

Table 14.510: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 38 in year 2011b .

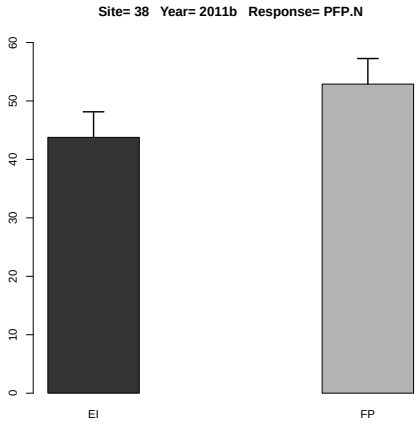

Figure 14.204: Estimated treatment means and standard error in the one-way ANOVA.

14.4.32 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	256.121
2	2	EI	N	200.310
3	3	EI	N	240.164
4	4	EI	N	194.508
5	1	FP	N	392.111
6	2	FP	N	376.974
7	3	FP	N	407.049
8	4	FP	N	403.812

Table 14.511: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	222.776	11.680	5.800	19.070	194.008	251.544	0.000
A FP	394.986	11.680	5.800	33.820	366.218	423.755	0.000
A EI-FP	-172.211	15.100	3.000	-11.400	-220.265	-124.157	0.001

Table 14.512: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 38 in year 2011b .

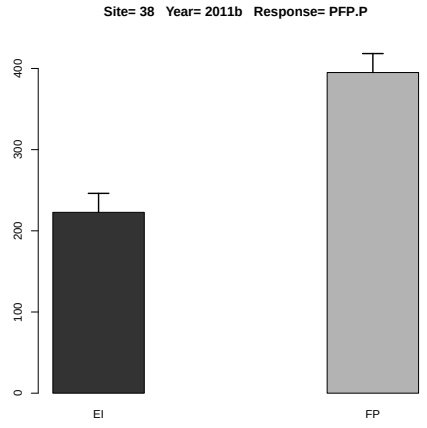

Figure 14.205: Estimated treatment means and standard error in the one-way ANOVA.

14.4.33 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	111.822
2	2	EI	N	87.456
3	3	EI	N	104.856
4	4	EI	N	84.922
5	1	FP	N	171.196
6	2	FP	N	164.587
7	3	FP	N	177.717
8	4	FP	N	176.304

Table 14.513: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	97.264	5.099	5.800	19.070	84.704	109.824	0.000
A FP	172.451	5.099	5.800	33.820	159.891	185.011	0.000
A EI-FP	-75.187	6.593	3.000	-11.400	-96.168	-54.207	0.001

Table 14.514: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 38 in year 2011b .

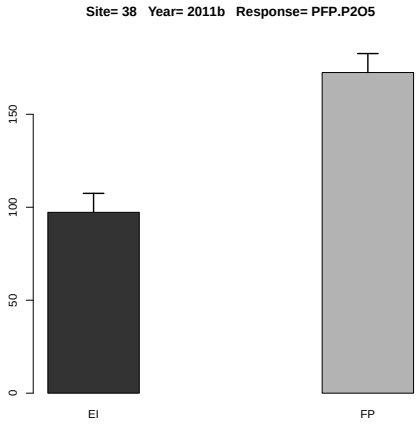

Figure 14.206: Estimated treatment means and standard error in the one-way ANOVA.

14.4.34 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	134.758
2	2	EI	N	105.394
3	3	EI	N	126.362
4	4	EI	N	102.341
5	1	FP	N	158.171
6	2	FP	N	152.065
7	3	FP	N	164.196
8	4	FP	N	162.891

Table 14.515: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	117.214	5.926	5.900	19.780	102.647	131.780	0.000
A FP	159.331	5.926	5.900	26.890	144.764	173.897	0.000
A EI-FP	-42.117	7.793	3.000	-5.400	-66.917	-17.317	0.012

Table 14.516: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 38 in year 2011b .

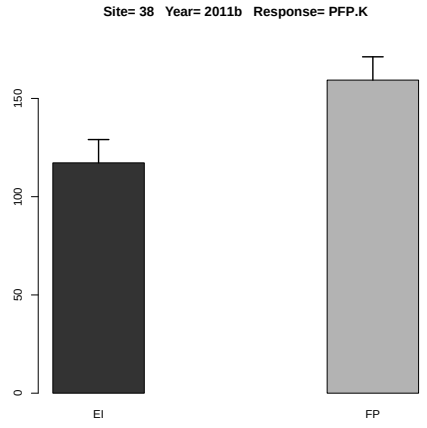

Figure 14.207: Estimated treatment means and standard error in the one-way ANOVA.

14.4.35 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	111.822
2	2	EI	N	87.456
3	3	EI	N	104.856
4	4	EI	N	84.922
5	1	FP	N	131.250
6	2	FP	N	126.183
7	3	FP	N	136.250
8	4	FP	N	135.167

Table 14.517: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	97.264	4.918	5.900	19.780	85.177	109.351	0.000
A FP	132.213	4.918	5.900	26.890	120.126	144.299	0.000
A EI-FP	-34.949	6.466	3.000	-5.400	-55.528	-14.370	0.012

Table 14.518: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 38 in year 2011b .

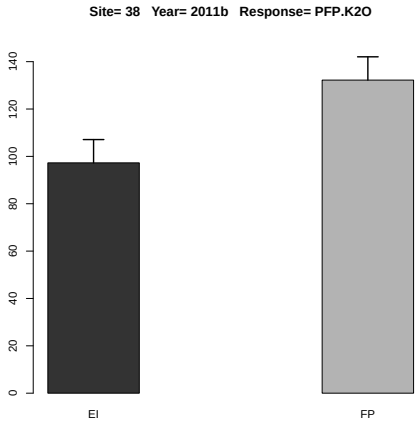

Figure 14.208: Estimated treatment means and standard error in the one-way ANOVA.

14.4.36 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	228.727
2	2	EI	N	178.886
3	3	EI	N	214.477
4	4	EI	N	173.705

Table 14.519: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

14.4.37 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	372.741
2	2	EI	N	291.519
3	3	EI	N	349.519
4	4	EI	N	283.074

Table 14.520: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

14.4.38 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	5032.000
2	2	EI	N	3935.500
3	3	EI	N	4718.500
4	4	EI	N	3821.500

Table 14.521: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

14.4.39 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.679
2	2	EI	N	0.582
3	3	EI	N	0.613
4	4	EI	N	0.573
5	1	FP	N	0.693
6	2	FP	N	0.727
7	3	FP	N	0.741
8	4	FP	N	0.730

Table 14.522: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.612	0.018	6.000	33.110	0.567	0.657	0.000
A FP	0.723	0.018	6.000	39.090	0.677	0.768	0.000
A EI-FP	-0.111	0.026	6.000	-4.230	-0.175	-0.047	0.005

Table 14.523: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 38 in year 2011b .

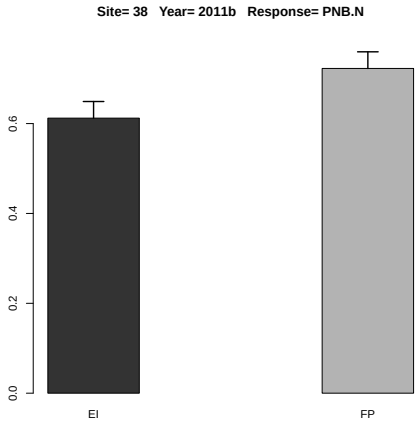

Figure 14.209: Estimated treatment means and standard error in the one-way ANOVA.

14.4.40 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.563
2	2	EI	N	0.461
3	3	EI	N	0.528
4	4	EI	N	0.292
5	1	FP	N	0.667
6	2	FP	N	0.792
7	3	FP	N	1.099
8	4	FP	N	0.808

Table 14.524: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.461	0.077	6.000	5.950	0.271	0.651	0.001
A FP	0.841	0.077	6.000	10.850	0.651	1.031	0.000
A EI-FP	-0.380	0.106	3.000	-3.600	-0.716	-0.044	0.037

Table 14.525: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 38 in year 2011b .

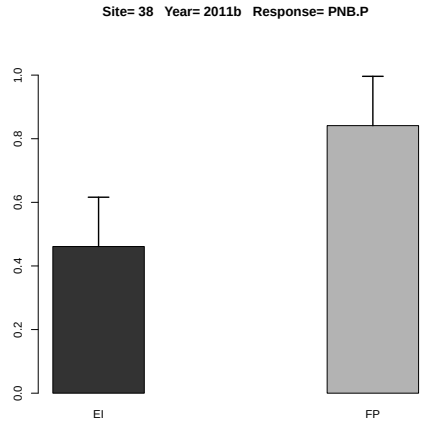

Figure 14.210: Estimated treatment means and standard error in the one-way ANOVA.

14.4.41 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.485
2	2	EI	N	0.369
3	3	EI	N	0.442
4	4	EI	N	0.266
5	1	FP	N	0.475
6	2	FP	N	0.471
7	3	FP	N	0.657
8	4	FP	N	0.472

Table 14.526: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.391	0.047	5.300	8.310	0.272	0.509	0.000
A FP	0.519	0.047	5.300	11.040	0.400	0.638	0.000
A EI-FP	-0.128	0.053	3.000	-2.430	-0.296	0.040	0.094

Table 14.527: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 38 in year 2011b .

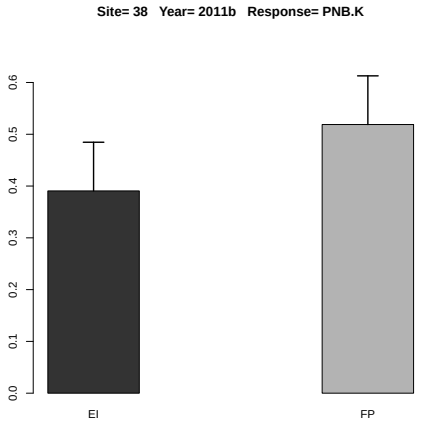

Figure 14.211: Estimated treatment means and standard error in the one-way ANOVA.

14.4.42 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.183
2	2	EI	N	0.143
3	3	EI	N	0.172
4	4	EI	N	0.104

Table 14.528: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

There is no or sufficient data for this response variable at this site and year.

14.4.43 Response Variable PNB.S

	rep	A	B	y
1	1	EI	N	3.392
2	2	EI	N	2.157
3	3	EI	N	3.355
4	4	EI	N	3.397

Table 14.529: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.S

There is no or sufficient data for this response variable at this site and year.

14.4.44 Response Variable AE

	rep	A	B	y
1	1	EI	N	40.365
2	2	EI	N	34.500
3	3	EI	N	25.375
4	4	EI	N	20.305
5	1	FP	N	42.140
6	2	FP	N	41.400
7	3	FP	N	27.540
8	4	FP	N	24.520

Table 14.530: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	30.136	0.830	36.290	0.000
A FP	33.900	0.830	40.822	0.000
A EI-FP	-3.764	1.174	-3.205	0.093

Table 14.531: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 38 in year 2011b .

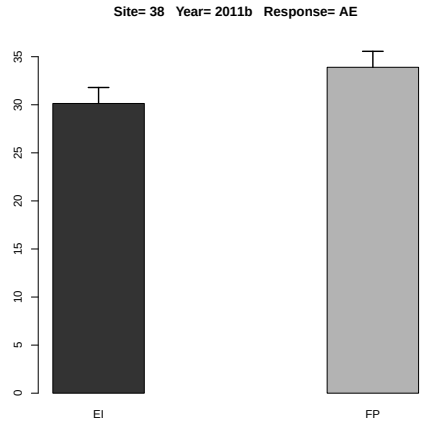

Figure 14.212: Estimated treatment means and standard error in the one-way ANOVA.

14.4.45 Response Variable RE

	rep	A	B	y
1	1	EI	N	1.669
2	2	EI	N	1.242
3	3	EI	N	1.026
4	4	EI	N	0.718
5	1	FP	N	1.370
6	2	FP	N	1.542
7	3	FP	N	0.679
8	4	FP	N	0.772

Table 14.532: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	1.164	0.108	10.737	0.003
A FP	1.091	0.108	10.063	0.004
A EI-FP	0.073	0.153	0.477	0.881

Table 14.533: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 38 in year 2011b .

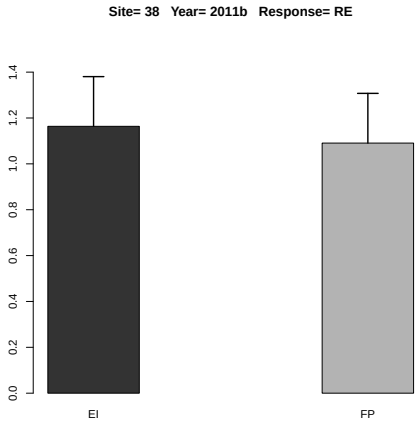

Figure 14.213: Estimated treatment means and standard error in the one-way ANOVA.

14.5 Year 2012a

There are 47 variables not observed: UG.Ca UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.P2O5 PNB.K2O PNB.Ca PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

14.5.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	1356.000
2	2	EI	N0	940.000
3	3	EI	N0	4294.000
4	4	EI	N0	3450.000
5	1	EI	N	10152.000
6	2	EI	N	10016.000
7	3	EI	N	8414.000
8	4	EI	N	7717.000
9	1	FP	N0	1682.000
10	2	FP	N0	1225.000
11	3	FP	N0	3956.000
12	4	FP	N0	5171.000
13	1	FP	N	7495.000
14	2	FP	N	7369.000
15	3	FP	N	6681.000
16	4	FP	N	8764.000

Table 14.534: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	9074.750	618.996	14.660	0.002
A FP	7577.250	618.996	12.241	0.002
A EI-FP	1497.500	875.392	1.711	0.326

Table 14.535: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 38 in year 2012a .

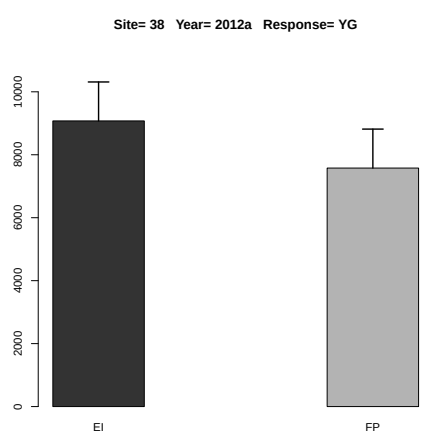

Figure 14.214: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	998001.000	998001.000	0.480	10.348	0.504
B	1.000	123954822.250	123954822.250	59.580	10.348	0.000
A:B	1.000	3984016.000	3984016.000	1.915	10.348	0.196

Table 14.536: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		5792.375	509.961	10.300	11.360	4661.268	6923.482	0.000
2	FP		5292.875	509.961	10.300	10.380	4161.768	6423.982	0.000
3		N	8326.000	509.961	10.300	16.330	7194.893	9457.107	0.000
4		N0	2759.250	509.961	10.300	5.410	1628.143	3890.357	0.000
5	EI	N	9074.750	721.194	10.300	12.580	7475.123	10674.377	0.000
6	FP	N	7577.250	721.194	10.300	10.510	5977.623	9176.877	0.000
7	EI	N0	2510.000	721.194	10.300	3.480	910.373	4109.627	0.006
8	FP	N0	3008.500	721.194	10.300	4.170	1408.873	4608.127	0.002

Table 14.537: Estimate of treatment means in tow-way ANOVA for variable YG at site 38 in year 2012a .

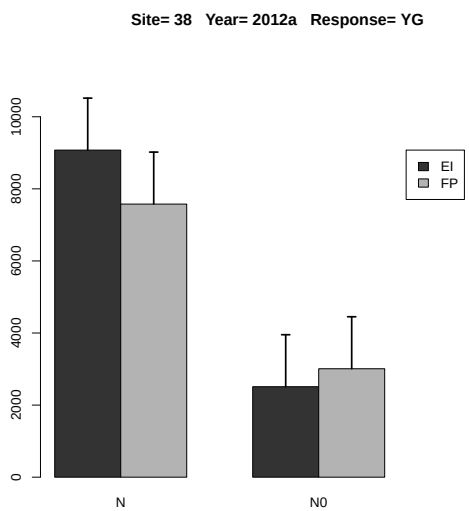

Figure 14.215: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	499.500	721.194	10.300	0.690	-1100.127	2099.127	0.504
B N-N0	5566.750	721.194	10.300	7.720	3967.123	7166.377	0.000
A:B EI N- FP N	1497.500	1019.922	10.300	1.470	-764.714	3759.714	0.172
A:B EI N- EI N0	6564.750	1019.922	10.300	6.440	4302.536	8826.964	0.000
A:B EI N- FP N0	6066.250	1019.922	10.300	5.950	3804.036	8328.464	0.000
A:B FP N- EI N0	5067.250	1019.922	10.300	4.970	2805.036	7329.464	0.000
A:B FP N- FP N0	4568.750	1019.922	10.300	4.480	2306.536	6830.964	0.001
A:B EI N0- FP N0	-498.500	1019.922	10.300	-0.490	-2760.714	1763.714	0.635

Table 14.538: Estimate of contrast in two-way ANOVA for variable YG at site 38 in year 2012a .

14.5.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	5467.000
2	2	EI	N0	3292.000
3	3	EI	N0	14747.000
4	4	EI	N0	12569.000
5	1	EI	N	30725.000
6	2	EI	N	30426.000
7	3	EI	N	26175.000
8	4	EI	N	25025.000
9	1	FP	N0	5388.000
10	2	FP	N0	4128.000
11	3	FP	N0	12799.000
12	4	FP	N0	17196.000
13	1	FP	N	24881.000
14	2	FP	N	22900.000
15	3	FP	N	21101.000
16	4	FP	N	26367.000

Table 14.539: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	28087.750	1372.647	20.462	0.000
A FP	23812.250	1372.647	17.348	0.001
A EI-FP	4275.500	1941.216	2.202	0.209

Table 14.540: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 38 in year 2012a .

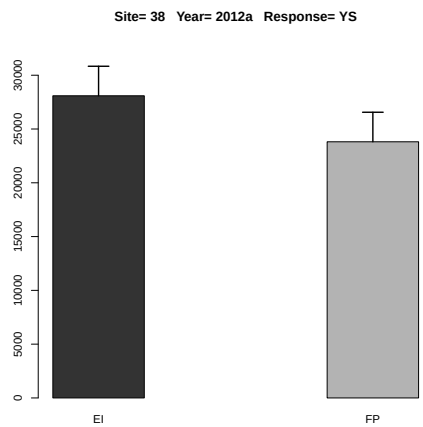

Figure 14.216: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	11672472.250	11672472.250	0.566	12.000	0.466
B	1.000	1089231012.250	1089231012.250	52.822	12.000	0.000
A:B	1.000	26363090.250	26363090.250	1.278	12.000	0.280

Table 14.541: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		18553.250	1605.490	12.000	11.560	15055.188	22051.312	0.000
2	FP		16845.000	1605.490	12.000	10.490	13346.938	20343.062	0.000
3		N	25950.000	1605.490	12.000	16.160	22451.938	29448.062	0.000
4		N0	9448.250	1605.490	12.000	5.880	5950.188	12946.312	0.000
5	EI	N	28087.750	2270.505	12.000	12.370	23140.744	33034.756	0.000
6	FP	N	23812.250	2270.505	12.000	10.490	18865.244	28759.256	0.000
7	EI	N0	9018.750	2270.505	12.000	3.970	4071.744	13965.756	0.002
8	FP	N0	9877.750	2270.505	12.000	4.350	4930.744	14824.756	0.001

Table 14.542: Estimate of treatment means in tow-way ANOVA for variable YS at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1708.250	2270.505	12.000	0.750	-3238.756	6655.256	0.466
B N-N0	16501.750	2270.505	12.000	7.270	11554.744	21448.756	0.000
A:B EI N- FP N	4275.500	3210.979	12.000	1.330	-2720.622	11271.622	0.208
A:B EI N- EI N0	19069.000	3210.979	12.000	5.940	12072.878	26065.123	0.000
A:B EI N- FP N0	18210.000	3210.979	12.000	5.670	11213.878	25206.123	0.000
A:B FP N- EI N0	14793.500	3210.979	12.000	4.610	7797.377	21789.623	0.001
A:B FP N- FP N0	13934.500	3210.979	12.000	4.340	6938.377	20930.623	0.001
A:B EI N0- FP N0	-859.000	3210.979	12.000	-0.270	-7855.123	6137.123	0.794

Table 14.543: Estimate of contrast in two-way ANOVA for variable YS at site 38 in year 2012a .

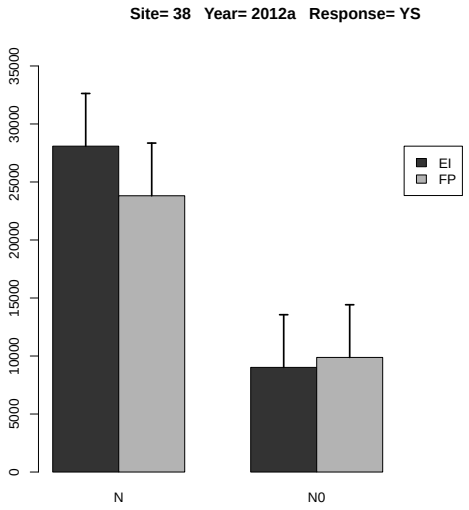

Figure 14.217: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	6823.000
2	2	EI	N0	4232.000
3	3	EI	N0	19041.000
4	4	EI	N0	16019.000
5	1	EI	N	40877.000
6	2	EI	N	40442.000
7	3	EI	N	34589.000
8	4	EI	N	32742.000
9	1	FP	N0	7070.000
10	2	FP	N0	5353.000
11	3	FP	N0	16755.000
12	4	FP	N0	22367.000
13	1	FP	N	32376.000
14	2	FP	N	30269.000
15	3	FP	N	27782.000
16	4	FP	N	35131.000

Table 14.544: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	37162.500	1984.202	18.729	0.001
A FP	31389.500	1984.202	15.820	0.001
A EI-FP	5773.000	2806.085	2.057	0.238

Table 14.545: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 38 in year 2012a .

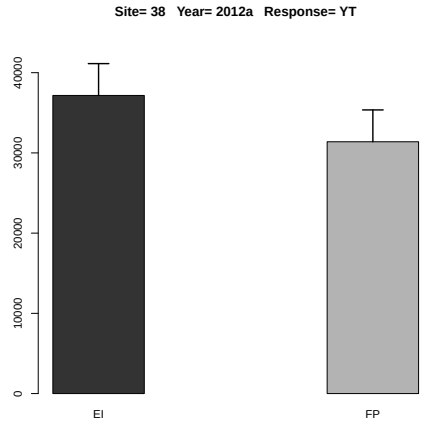

Figure 14.218: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	19496640.250	19496640.250	0.547	12.000	0.474
B	1.000	1948074769.000	1948074769.000	54.699	12.000	0.000
A:B	1.000	50844030.250	50844030.250	1.428	12.000	0.255

Table 14.546: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		24345.625	2109.925	12.000	11.540	19748.493	28942.757	0.000
2	FP		22137.875	2109.925	12.000	10.490	17540.743	26735.007	0.000
3		N	34276.000	2109.925	12.000	16.250	29678.868	38873.132	0.000
4		N0	12207.500	2109.925	12.000	5.790	7610.368	16804.632	0.000
5	EI	N	37162.500	2983.885	12.000	12.450	30661.173	43663.827	0.000
6	FP	N	31389.500	2983.885	12.000	10.520	24888.173	37890.827	0.000
7	EI	N0	11528.750	2983.885	12.000	3.860	5027.423	18030.077	0.002
8	FP	N0	12886.250	2983.885	12.000	4.320	6384.923	19387.577	0.001

Table 14.547: Estimate of treatment means in tow-way ANOVA for variable YT at site 38 in year 2012a .

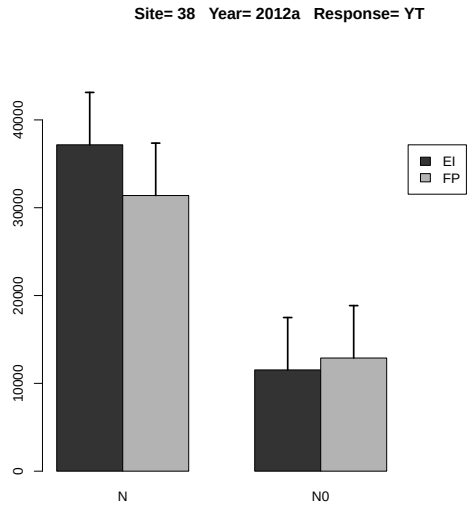

Figure 14.219: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2207.750	2983.885	12.000	0.740	-4293.577	8709.077	0.474
B N-N0	22068.500	2983.885	12.000	7.400	15567.174	28569.826	0.000
A:B EI N- FP N	5773.000	4219.850	12.000	1.370	-3421.264	14967.264	0.196
A:B EI N- EI N0	25633.750	4219.850	12.000	6.070	16439.486	34828.014	0.000
A:B EI N- FP N0	24276.250	4219.850	12.000	5.750	15081.986	33470.514	0.000
A:B FP N- EI N0	19860.750	4219.850	12.000	4.710	10666.486	29055.014	0.000
A:B FP N- FP N0	18503.250	4219.850	12.000	4.380	9308.986	27697.514	0.001
A:B EI N0- FP N0	-1357.500	4219.850	12.000	-0.320	-10551.764	7836.764	0.753

Table 14.548: Estimate of contrast in two-way ANOVA for variable YT at site 38 in year 2012a .

14.5.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.199
2	2	EI	N0	0.222
3	3	EI	N0	0.226
4	4	EI	N0	0.215
5	1	EI	N	0.248
6	2	EI	N	0.248
7	3	EI	N	0.243
8	4	EI	N	0.236
9	1	FP	N0	0.238
10	2	FP	N0	0.229
11	3	FP	N0	0.236
12	4	FP	N0	0.231
13	1	FP	N	0.231
14	2	FP	N	0.243
15	3	FP	N	0.240
16	4	FP	N	0.249

Table 14.549: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.244	0.004	54.847	0.000
A FP	0.241	0.004	54.280	0.000
A EI-FP	0.003	0.006	0.401	0.914

Table 14.550: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 38 in year 2012a .

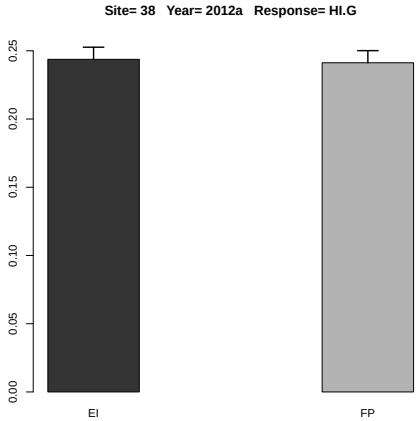

Figure 14.220: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	3.884	11.849	0.073
B	1.000	0.001	0.001	20.814	11.849	0.001
A:B	1.000	0.000	0.000	6.805	11.849	0.023

Table 14.551: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.230	0.003	11.800	82.250	0.224	0.236	0.000
2	FP		0.237	0.003	11.800	85.040	0.231	0.243	0.000
3		N	0.242	0.003	11.800	86.870	0.236	0.249	0.000
4		N0	0.224	0.003	11.800	80.420	0.218	0.231	0.000
5	EI	N	0.244	0.004	11.800	61.750	0.235	0.252	0.000
6	FP	N	0.241	0.004	11.800	61.110	0.233	0.250	0.000
7	EI	N0	0.215	0.004	11.800	54.580	0.207	0.224	0.000
8	FP	N0	0.234	0.004	11.800	59.160	0.225	0.242	0.000

Table 14.552: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.008	0.004	11.800	-1.970	-0.016	0.001	0.073
B N-N0	0.018	0.004	11.800	4.560	0.009	0.027	0.001
A:B EI N- FP N	0.002	0.006	11.800	0.450	-0.010	0.015	0.660
A:B EI N- EI N0	0.028	0.006	11.800	5.070	0.016	0.040	0.000
A:B EI N- FP N0	0.010	0.006	11.800	1.830	-0.002	0.022	0.092
A:B FP N- EI N0	0.026	0.006	11.800	4.620	0.014	0.038	0.001
A:B FP N- FP N0	0.008	0.006	11.800	1.380	-0.004	0.020	0.193
A:B EI N0- FP N0	-0.018	0.006	11.800	-3.240	-0.030	-0.006	0.007

Table 14.553: Estimate of contrast in two-way ANOVA for variable HI.G at site 38 in year 2012a .

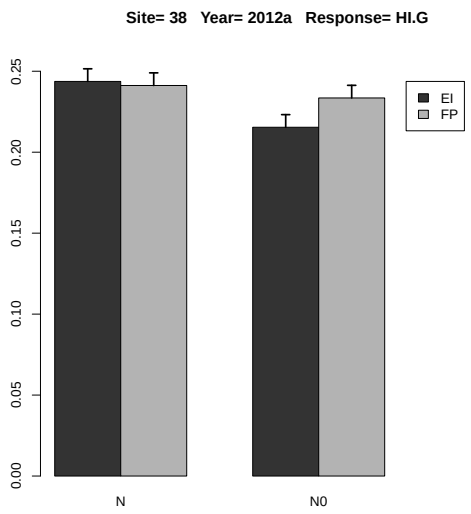

Figure 14.221: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	13.696
2	2	EI	N0	8.742
3	3	EI	N0	42.511
4	4	EI	N0	37.260
5	1	EI	N	127.915
6	2	EI	N	121.194
7	3	EI	N	108.541
8	4	EI	N	101.093
9	1	FP	N0	20.520
10	2	FP	N0	13.965
11	3	FP	N0	47.472
12	4	FP	N0	59.466
13	1	FP	N	98.185
14	2	FP	N	86.954
15	3	FP	N	88.857
16	4	FP	N	111.303

Table 14.554: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	114.686	7.069	16.223	0.001
A FP	96.325	7.069	13.625	0.001
A EI-FP	18.361	9.998	1.837	0.290

Table 14.555: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 38 in year 2012a .

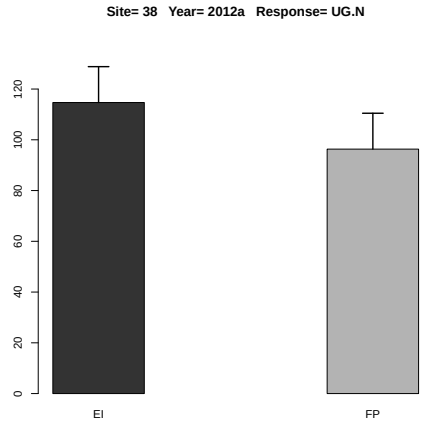

Figure 14.222: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	73.221	73.221	0.299	9.000	0.598
B	1.000	22530.670	22530.670	92.009	9.000	0.000
A:B	1.000	793.253	793.253	3.239	9.000	0.105

Table 14.556: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		70.119	5.766	8.300	12.160	56.904	83.334	0.000
2	FP		65.840	5.766	8.300	11.420	52.625	79.056	0.000
3		N	105.505	5.766	8.300	18.300	92.290	118.720	0.000
4		N0	30.454	5.766	8.300	5.280	17.239	43.669	0.001
5	EI	N	114.686	7.991	11.900	14.350	97.265	132.106	0.000
6	FP	N	96.325	7.991	11.900	12.050	78.904	113.745	0.000
7	EI	N0	25.552	7.991	11.900	3.200	8.132	42.972	0.008
8	FP	N0	35.356	7.991	11.900	4.420	17.936	52.776	0.001

Table 14.557: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 38 in year 2012a .

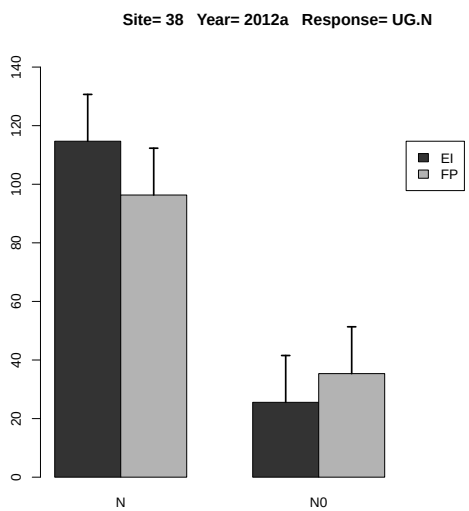

Figure 14.223: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.278	7.824	9.000	0.550	-13.421	21.978	0.598
B N-N0	75.051	7.824	9.000	9.590	57.351	92.751	0.000
A:B EI N- FP N	18.361	11.065	9.000	1.660	-6.670	43.392	0.131
A:B EI N- EI N0	89.133	11.065	9.000	8.060	64.102	114.165	0.000
A:B EI N- FP N0	79.329	11.065	9.000	7.170	54.298	104.361	0.000
A:B FP N- EI N0	70.773	11.065	9.000	6.400	45.742	95.804	0.000
A:B FP N- FP N0	60.969	11.065	9.000	5.510	35.938	86.000	0.000
A:B EI N0- FP N0	-9.804	11.065	9.000	-0.890	-34.835	15.227	0.399

Table 14.558: Estimate of contrast in two-way ANOVA for variable UG.N at site 38 in year 2012a .

14.5.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	4.475
2	2	EI	N0	2.350
3	3	EI	N0	22.329
4	4	EI	N0	8.625
5	1	EI	N	44.669
6	2	EI	N	41.066
7	3	EI	N	42.911
8	4	EI	N	38.585
9	1	FP	N0	5.046
10	2	FP	N0	2.817
11	3	FP	N0	13.055
12	4	FP	N0	16.547
13	1	FP	N	38.225
14	2	FP	N	22.107
15	3	FP	N	16.703
16	4	FP	N	42.944

Table 14.559: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	41.808	4.781	8.744	0.006
A FP	29.994	4.781	6.273	0.016
A EI-FP	11.813	6.762	1.747	0.315

Table 14.560: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 38 in year 2012a .

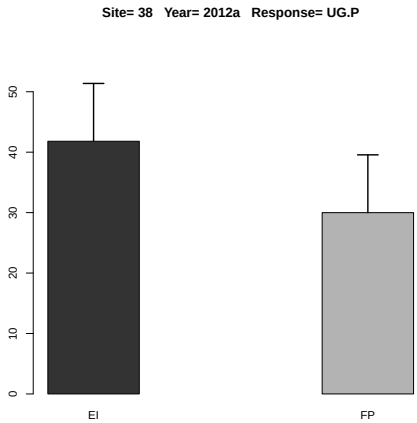

Figure 14.224: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	102.927	102.927	1.699	5.999	0.240
B	1.000	2808.054	2808.054	46.341	6.000	0.000
A:B	1.000	137.711	137.711	2.273	6.000	0.182

Table 14.561: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		25.626	3.226	6.000	7.940	17.732	33.520	0.000
2	FP		19.680	3.226	6.000	6.100	11.787	27.574	0.001
3		N	35.901	2.998	11.700	11.970	29.350	42.452	0.000
4		N0	9.405	2.998	11.700	3.140	2.854	15.957	0.009
5	EI	N	41.808	4.240	11.700	9.860	32.543	51.072	0.000
6	FP	N	29.994	4.240	11.700	7.070	20.730	39.259	0.000
7	EI	N0	9.445	4.240	11.700	2.230	0.180	18.709	0.046
8	FP	N0	9.366	4.240	11.700	2.210	0.102	18.631	0.048

Table 14.562: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.946	4.562	6.000	1.300	-5.218	17.109	0.240
B N-N0	26.495	3.892	6.000	6.810	16.972	36.019	0.000
A:B EI N- FP N	11.813	5.997	11.700	1.970	-1.289	24.915	0.073
A:B EI N- EI N0	32.363	5.504	6.000	5.880	18.895	45.832	0.001
A:B EI N- FP N0	32.441	5.997	11.700	5.410	19.339	45.543	0.000
A:B FP N- EI N0	20.550	5.997	11.700	3.430	7.448	33.652	0.005
A:B FP N- FP N0	20.628	5.504	6.000	3.750	7.159	34.097	0.009
A:B EI N0- FP N0	0.078	5.997	11.700	0.010	-13.024	13.180	0.990

Table 14.563: Estimate of contrast in two-way ANOVA for variable UG.P at site 38 in year 2012a .

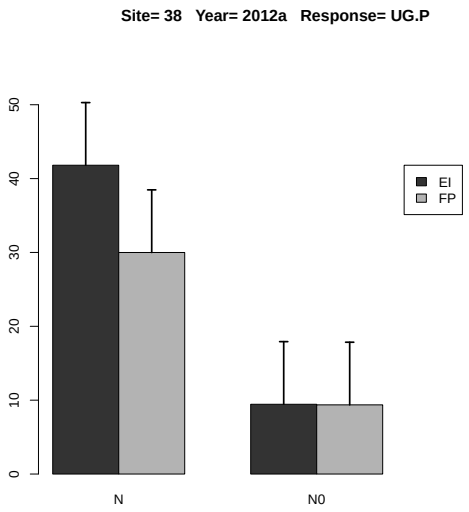

Figure 14.225: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	10.247
2	2	EI	N0	5.381
3	3	EI	N0	51.133
4	4	EI	N0	19.751
5	1	EI	N	102.292
6	2	EI	N	94.040
7	3	EI	N	98.267
8	4	EI	N	88.360
9	1	FP	N0	11.555
10	2	FP	N0	6.452
11	3	FP	N0	29.895
12	4	FP	N0	37.893
13	1	FP	N	87.534
14	2	FP	N	50.625
15	3	FP	N	38.249
16	4	FP	N	98.341

Table 14.564: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	95.740	10.949	8.744	0.006
A FP	68.687	10.949	6.273	0.016
A EI-FP	27.052	15.484	1.747	0.315

Table 14.565: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 38 in year 2012a .

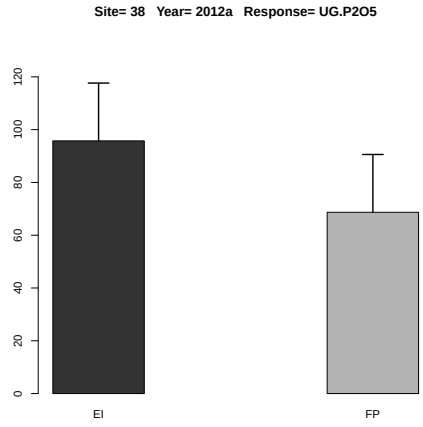

Figure 14.226: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	539.760	539.760	1.699	5.999	0.240
B	1.000	14725.716	14725.716	46.341	6.000	0.000
A:B	1.000	722.169	722.169	2.273	6.000	0.182

Table 14.566: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		58.684	7.387	6.000	7.940	40.607	76.761	0.000
2	FP		45.068	7.387	6.000	6.100	26.991	63.145	0.001
3		N	82.213	6.866	11.700	11.970	67.212	97.215	0.000
4		N0	21.539	6.866	11.700	3.140	6.537	36.540	0.009
5	EI	N	95.740	9.710	11.700	9.860	74.524	116.955	0.000
6	FP	N	68.687	9.710	11.700	7.070	47.471	89.903	0.000
7	EI	N0	21.628	9.710	11.700	2.230	0.412	42.844	0.046
8	FP	N0	21.449	9.710	11.700	2.210	0.233	42.665	0.048

Table 14.567: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 38 in year 2012a .

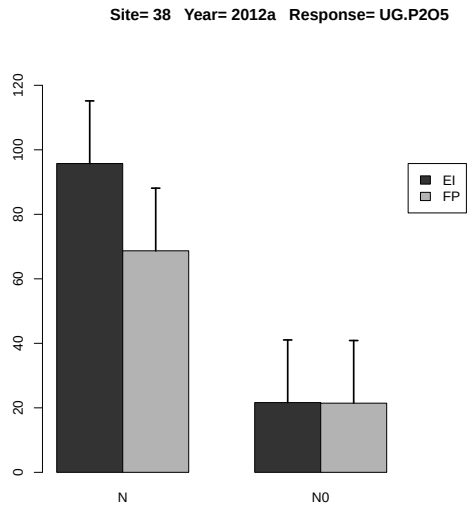

Figure 14.227: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	13.616	10.447	6.000	1.300	-11.949	39.181	0.240
B N-N0	60.675	8.913	6.000	6.810	38.865	82.484	0.000
A:B EI N- FP N	27.052	13.733	11.700	1.970	-2.951	57.056	0.073
A:B EI N- EI N0	74.111	12.605	6.000	5.880	43.268	104.955	0.001
A:B EI N- FP N0	74.291	13.733	11.700	5.410	44.287	104.294	0.000
A:B FP N- EI N0	47.059	13.733	11.700	3.430	17.055	77.062	0.005
A:B FP N- FP N0	47.238	12.605	6.000	3.750	16.395	78.082	0.009
A:B EI N0- FP N0	0.179	13.733	11.700	0.010	-29.824	30.183	0.990

Table 14.568: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 38 in year 2012a .

14.5.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	5.153
2	2	EI	N0	3.572
3	3	EI	N0	15.888
4	4	EI	N0	13.455
5	1	EI	N	28.426
6	2	EI	N	30.048
7	3	EI	N	31.973
8	4	EI	N	27.009
9	1	FP	N0	5.887
10	2	FP	N0	5.022
11	3	FP	N0	17.802
12	4	FP	N0	23.270
13	1	FP	N	23.234
14	2	FP	N	32.424
15	3	FP	N	24.720
16	4	FP	N	30.674

Table 14.569: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	29.364	1.919	15.302	0.001
A FP	27.763	1.919	14.468	0.001
A EI-FP	1.601	2.714	0.590	0.828

Table 14.570: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 38 in year 2012a .

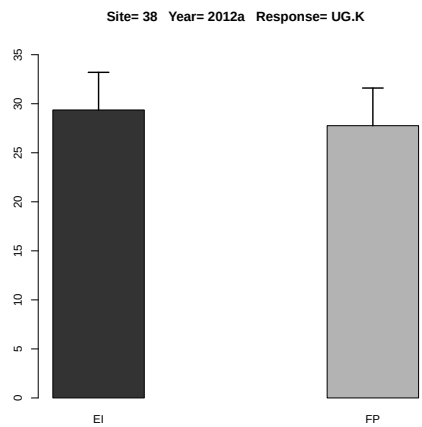

Figure 14.228: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.524	3.524	0.125	9.000	0.732
B	1.000	1198.190	1198.190	42.554	9.000	0.000
A:B	1.000	25.801	25.801	0.916	9.000	0.363

Table 14.571: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		19.441	2.318	6.100	8.390	13.800	25.081	0.000
2	FP		20.379	2.318	6.100	8.790	14.739	26.019	0.000
3		N	28.564	2.318	6.100	12.320	22.923	34.204	0.000
4		N0	11.256	2.318	6.100	4.860	5.616	16.896	0.003
5	EI	N	29.364	2.982	10.600	9.850	22.771	35.957	0.000
6	FP	N	27.763	2.982	10.600	9.310	21.170	34.356	0.000
7	EI	N0	9.517	2.982	10.600	3.190	2.924	16.110	0.009
8	FP	N0	12.995	2.982	10.600	4.360	6.402	19.588	0.001

Table 14.572: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.939	2.653	9.000	-0.350	-6.941	5.063	0.732
B N-N0	17.307	2.653	9.000	6.520	11.306	23.309	0.000
A:B EI N- FP N	1.601	3.752	9.000	0.430	-6.887	10.089	0.680
A:B EI N- EI N0	19.847	3.752	9.000	5.290	11.359	28.335	0.000
A:B EI N- FP N0	16.369	3.752	9.000	4.360	7.881	24.857	0.002
A:B FP N- EI N0	18.246	3.752	9.000	4.860	9.758	26.734	0.001
A:B FP N- FP N0	14.768	3.752	9.000	3.940	6.280	23.256	0.003
A:B EI N0- FP N0	-3.478	3.752	9.000	-0.930	-11.966	5.010	0.378

Table 14.573: Estimate of contrast in two-way ANOVA for variable UG.K at site 38 in year 2012a .

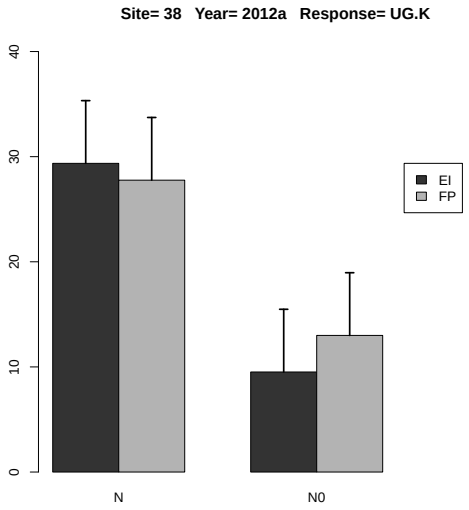

Figure 14.229: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	6.209
2	2	EI	N0	4.304
3	3	EI	N0	19.145
4	4	EI	N0	16.213
5	1	EI	N	34.253
6	2	EI	N	36.208
7	3	EI	N	38.528
8	4	EI	N	32.546
9	1	FP	N0	7.094
10	2	FP	N0	6.052
11	3	FP	N0	21.451
12	4	FP	N0	28.040
13	1	FP	N	27.998
14	2	FP	N	39.070
15	3	FP	N	29.787
16	4	FP	N	36.962

Table 14.574: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	35.384	2.312	15.302	0.001
A FP	33.454	2.312	14.468	0.001
A EI-FP	1.929	3.270	0.590	0.828

Table 14.575: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 38 in year 2012a .

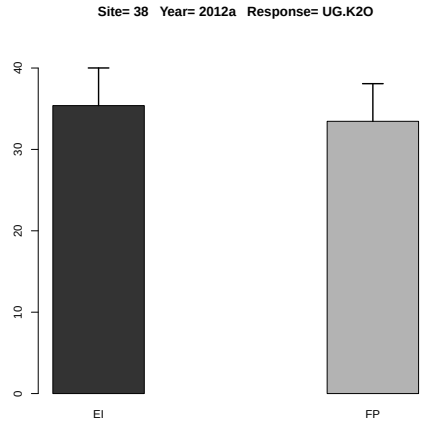

Figure 14.230: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5.117	5.117	0.125	9.000	0.732
B	1.000	1739.801	1739.801	42.554	9.000	0.000
A:B	1.000	37.464	37.464	0.916	9.000	0.363

Table 14.576: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23.426	2.793	6.100	8.390	16.629	30.222	0.000
2	FP		24.557	2.793	6.100	8.790	17.761	31.353	0.000
3		N	34.419	2.793	6.100	12.320	27.623	41.215	0.000
4		N0	13.564	2.793	6.100	4.860	6.767	20.360	0.003
5	EI	N	35.384	3.594	10.600	9.850	27.439	43.328	0.000
6	FP	N	33.454	3.594	10.600	9.310	25.510	41.399	0.000
7	EI	N0	11.468	3.594	10.600	3.190	3.523	19.413	0.009
8	FP	N0	15.659	3.594	10.600	4.360	7.715	23.604	0.001

Table 14.577: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 38 in year 2012a .

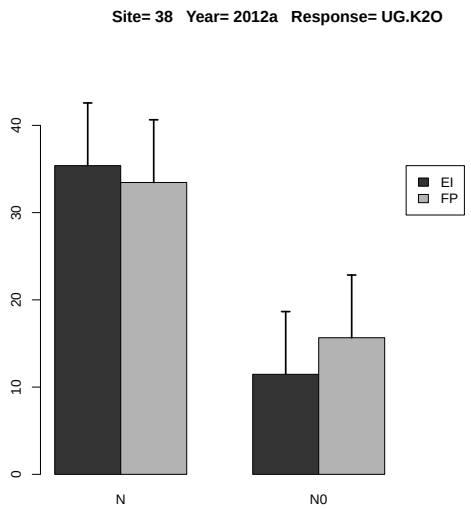

Figure 14.231: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-1.131	3.197	9.000	-0.350	-8.363	6.101	0.732
B N-N0	20.855	3.197	9.000	6.520	13.623	28.088	0.000
A:B EI N- FP N	1.929	4.521	9.000	0.430	-8.299	12.157	0.680
A:B EI N- EI N0	23.916	4.521	9.000	5.290	13.688	34.144	0.000
A:B EI N- FP N0	19.724	4.521	9.000	4.360	9.496	29.952	0.002
A:B FP N- EI N0	21.986	4.521	9.000	4.860	11.759	32.214	0.001
A:B FP N- FP N0	17.795	4.521	9.000	3.940	7.567	28.023	0.003
A:B EI N0- FP N0	-4.191	4.521	9.000	-0.930	-14.419	6.037	0.378

Table 14.578: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 38 in year 2012a
.

14.5.10 Response Variable UG.Mg

	rep	A	B	y
1	1	EI	N0	1.492
2	2	EI	N0	0.846
3	3	EI	N0	3.435
4	4	EI	N0	3.450
5	1	EI	N	8.122
6	2	EI	N	7.011
7	3	EI	N	8.414
8	4	EI	N	6.945
9	1	FP	N0	1.682
10	2	FP	N0	1.103
11	3	FP	N0	4.747
12	4	FP	N0	6.205
13	1	FP	N	6.745
14	2	FP	N	8.106
15	3	FP	N	6.681
16	4	FP	N	7.011

Table 14.579: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.Mg

	Estimate	S.E.	t-value	p-value
A EI	7.623	0.463	16.455	0.000
A FP	7.136	0.463	15.404	0.001
A EI-FP	0.487	0.655	0.744	0.749

Table 14.580: Estimate of treatment means and contrast in one-way ANOVA for variable UG.Mg at site 38 in year 2012a .

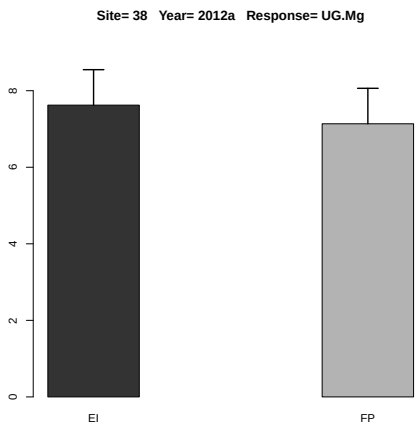

Figure 14.232: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.411	0.411	0.212	8.999	0.656
B	1.000	81.342	81.342	41.829	8.999	0.000
A:B	1.000	2.610	2.610	1.342	8.999	0.276

Table 14.581: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4.964	0.552	7.200	8.990	3.667	6.262	0.000
2	FP		5.285	0.552	7.200	9.570	3.987	6.583	0.000
3		N	7.380	0.552	7.200	13.360	6.082	8.677	0.000
4		N0	2.870	0.552	7.200	5.200	1.572	4.168	0.001
5	EI	N	7.623	0.740	11.600	10.300	6.003	9.243	0.000
6	FP	N	7.136	0.740	11.600	9.640	5.516	8.756	0.000
7	EI	N0	2.306	0.740	11.600	3.110	0.686	3.926	0.009
8	FP	N0	3.434	0.740	11.600	4.640	1.814	5.054	0.001

Table 14.582: Estimate of treatment means in tow-way ANOVA for variable UG.Mg at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.321	0.697	9.000	-0.460	-1.898	1.257	0.656
B N-N0	4.510	0.697	9.000	6.470	2.932	6.087	0.000
A:B EI N- FP N	0.487	0.986	9.000	0.490	-1.744	2.718	0.633
A:B EI N- EI N0	5.317	0.986	9.000	5.390	3.087	7.548	0.000
A:B EI N- FP N0	4.189	0.986	9.000	4.250	1.958	6.420	0.002
A:B FP N- EI N0	4.830	0.986	9.000	4.900	2.599	7.061	0.001
A:B FP N- FP N0	3.702	0.986	9.000	3.750	1.471	5.932	0.004
A:B EI N0- FP N0	-1.129	0.986	9.000	-1.140	-3.359	1.102	0.282

Table 14.583: Estimate of contrast in two-way ANOVA for variable UG.Mg at site 38 in year 2012a
.

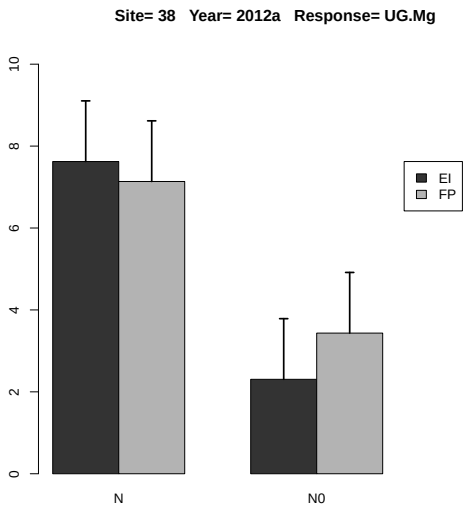

Figure 14.233: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.11 Response Variable UG.S

	rep	A	B	y
1	1	EI	N0	10.984
2	2	EI	N0	6.862
3	3	EI	N0	34.352
4	4	EI	N0	27.255
5	1	EI	N	80.201
6	2	EI	N	79.126
7	3	EI	N	76.567
8	4	EI	N	64.051
9	1	FP	N0	13.288
10	2	FP	N0	10.290
11	3	FP	N0	32.835
12	4	FP	N0	41.368
13	1	FP	N	64.457
14	2	FP	N	58.215
15	3	FP	N	59.461
16	4	FP	N	76.247

Table 14.584: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.S

	Estimate	S.E.	t-value	p-value
A EI	74.986	5.380	13.939	0.001
A FP	64.595	5.380	12.007	0.002
A EI-FP	10.391	7.608	1.366	0.446

Table 14.585: Estimate of treatment means and contrast in one-way ANOVA for variable UG.S at site 38 in year 2012a .

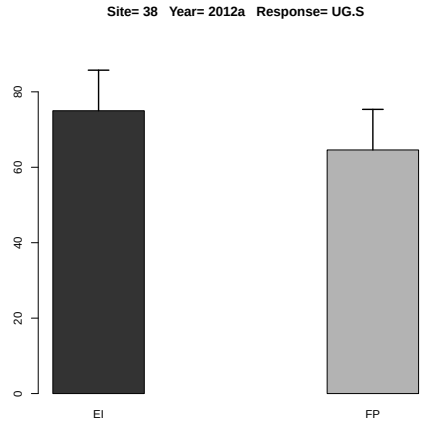

Figure 14.234: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	33.683	33.683	0.291	2.991	0.627
B	1.000	9076.959	9076.959	78.503	6.000	0.000
A:B	1.000	224.205	224.205	1.939	6.000	0.213

Table 14.586: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		47.425	4.256	5.800	11.140	36.902	57.947	0.000
2	FP		44.520	4.256	5.800	10.460	33.998	55.043	0.000
3		N	69.791	4.255	6.800	16.400	59.673	79.908	0.000
4		N0	22.154	4.255	6.800	5.210	12.037	32.272	0.001
5	EI	N	74.986	5.707	11.600	13.140	62.500	87.473	0.000
6	FP	N	64.595	5.707	11.600	11.320	52.108	77.081	0.000
7	EI	N0	19.863	5.707	11.600	3.480	7.377	32.350	0.005
8	FP	N0	24.445	5.707	11.600	4.280	11.959	36.932	0.001

Table 14.587: Estimate of treatment means in tow-way ANOVA for variable UG.S at site 38 in year 2012a .

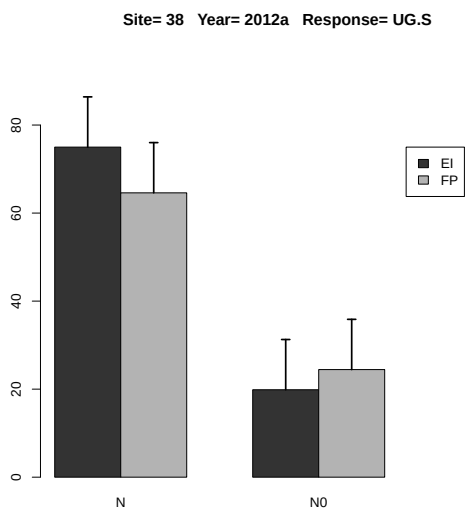

Figure 14.235: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	2.905	5.382	3.000	0.540	-14.252	20.062	0.627
B N-N0	47.636	5.377	6.000	8.860	34.481	60.792	0.000
A:B EI N- FP N	10.392	7.607	8.000	1.370	-7.156	27.939	0.209
A:B EI N- EI N0	55.123	7.604	6.000	7.250	36.519	73.728	0.000
A:B EI N- FP N0	50.541	7.607	8.000	6.640	32.994	68.089	0.000
A:B FP N- EI N0	44.732	7.607	8.000	5.880	27.184	62.279	0.000
A:B FP N- FP N0	40.150	7.604	6.000	5.280	21.545	58.755	0.002
A:B EI N0- FP N0	-4.582	7.607	8.000	-0.600	-22.130	12.966	0.564

Table 14.588: Estimate of contrast in two-way ANOVA for variable UG.S at site 38 in year 2012a .

14.5.12 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	31.875
2	2	EI	N0	19.614
3	3	EI	N0	80.303
4	4	EI	N0	70.526
5	1	EI	N	245.438
6	2	EI	N	216.624
7	3	EI	N	203.015
8	4	EI	N	186.576
9	1	FP	N0	22.811
10	2	FP	N0	22.945
11	3	FP	N0	82.785
12	4	FP	N0	87.421
13	1	FP	N	176.353
14	2	FP	N	136.975
15	3	FP	N	128.307
16	4	FP	N	166.590

Table 14.589: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	212.913	9.754	21.829	0.001
A FP	152.056	9.754	15.590	0.001
A EI-FP	60.857	13.794	4.412	0.042

Table 14.590: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 38 in year 2012a .

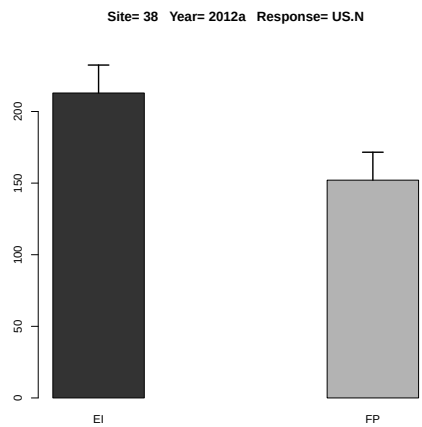

Figure 14.236: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3300.040	3300.040	3.988	12.000	0.069
B	1.000	67807.991	67807.991	81.951	12.000	0.000
A:B	1.000	4130.398	4130.398	4.992	12.000	0.045

Table 14.591: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		131.746	10.170	12.000	12.950	109.588	153.905	0.000
2	FP		103.023	10.170	12.000	10.130	80.865	125.182	0.000
3		N	182.485	10.170	12.000	17.940	160.326	204.643	0.000
4		N0	52.285	10.170	12.000	5.140	30.127	74.443	0.000
5	EI	N	212.913	14.382	12.000	14.800	181.577	244.250	0.000
6	FP	N	152.056	14.382	12.000	10.570	120.720	183.393	0.000
7	EI	N0	50.579	14.382	12.000	3.520	19.243	81.916	0.004
8	FP	N0	53.990	14.382	12.000	3.750	22.654	85.327	0.003

Table 14.592: Estimate of treatment means in tow-way ANOVA for variable US.N at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	28.723	14.382	12.000	2.000	-2.614	60.060	0.069
B N-N0	130.200	14.382	12.000	9.050	98.863	161.536	0.000
A:B EI N- FP N	60.857	20.340	12.000	2.990	16.540	105.174	0.011
A:B EI N- EI N0	162.334	20.340	12.000	7.980	118.017	206.651	0.000
A:B EI N- FP N0	158.923	20.340	12.000	7.810	114.606	203.240	0.000
A:B FP N- EI N0	101.477	20.340	12.000	4.990	57.160	145.794	0.000
A:B FP N- FP N0	98.066	20.340	12.000	4.820	53.749	142.382	0.000
A:B EI N0- FP N0	-3.411	20.340	12.000	-0.170	-47.728	40.906	0.870

Table 14.593: Estimate of contrast in two-way ANOVA for variable US.N at site 38 in year 2012a .

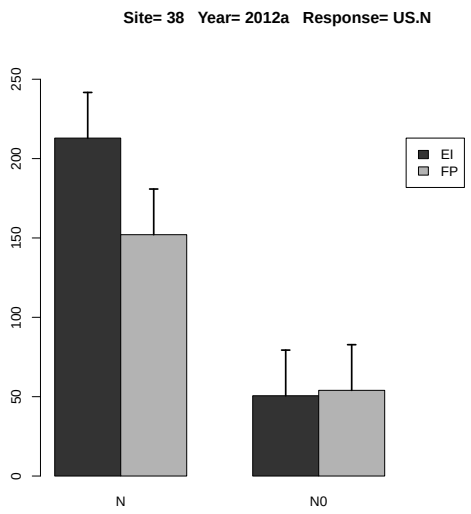

Figure 14.237: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.13 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	6.608
2	2	EI	N0	12.096
3	3	EI	N0	45.686
4	4	EI	N0	54.472
5	1	EI	N	30.916
6	2	EI	N	36.911
7	3	EI	N	21.431
8	4	EI	N	29.712
9	1	FP	N0	17.725
10	2	FP	N0	14.945
11	3	FP	N0	50.433
12	4	FP	N0	52.010
13	1	FP	N	22.393
14	2	FP	N	27.055
15	3	FP	N	37.028
16	4	FP	N	70.769

Table 14.594: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	29.743	8.496	3.501	0.075
A FP	39.311	8.496	4.627	0.037
A EI-FP	-9.569	12.016	-0.796	0.721

Table 14.595: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 38 in year 2012a .

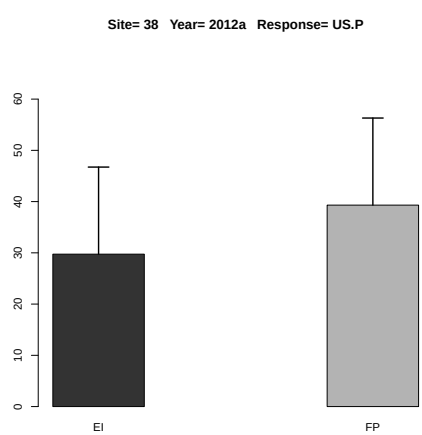

Figure 14.238: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	185.812	185.812	0.931	9.000	0.360
B	1.000	30.916	30.916	0.155	9.000	0.703
A:B	1.000	30.318	30.318	0.152	9.000	0.706

Table 14.596: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.729	8.279	4.400	3.590	7.564	51.895	0.019
2	FP		36.545	8.279	4.400	4.410	14.380	58.710	0.009
3		N	34.527	8.279	4.400	4.170	12.362	56.692	0.011
4		N0	31.747	8.279	4.400	3.830	9.582	53.912	0.015
5	EI	N	29.743	9.669	7.300	3.080	7.046	52.439	0.017
6	FP	N	39.311	9.669	7.300	4.070	16.615	62.008	0.004
7	EI	N0	29.716	9.669	7.300	3.070	7.019	52.412	0.017
8	FP	N0	33.778	9.669	7.300	3.490	11.082	56.475	0.009

Table 14.597: Estimate of treatment means in tow-way ANOVA for variable US.P at site 38 in year 2012a .

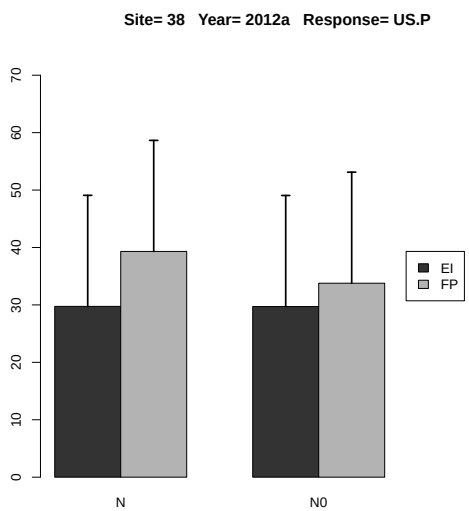

Figure 14.239: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.816	7.065	9.000	-0.960	-22.797	9.166	0.360
B N-N0	2.780	7.065	9.000	0.390	-13.201	18.762	0.703
A:B EI N- FP N	-9.569	9.991	9.000	-0.960	-32.170	13.033	0.363
A:B EI N- EI N0	0.027	9.991	9.000	0.000	-22.574	22.628	0.998
A:B EI N- FP N0	-4.035	9.991	9.000	-0.400	-26.637	18.566	0.696
A:B FP N- EI N0	9.596	9.991	9.000	0.960	-13.006	32.197	0.362
A:B FP N- FP N0	5.533	9.991	9.000	0.550	-17.068	28.134	0.593
A:B EI N0- FP N0	-4.063	9.991	9.000	-0.410	-26.664	18.539	0.694

Table 14.598: Estimate of contrast in two-way ANOVA for variable US.P at site 38 in year 2012a .

14.5.14 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	7.038
2	2	EI	N0	12.314
3	3	EI	N0	47.195
4	4	EI	N0	55.819
5	1	EI	N	33.623
6	2	EI	N	40.521
7	3	EI	N	23.756
8	4	EI	N	31.761
9	1	FP	N0	18.330
10	2	FP	N0	15.567
11	3	FP	N0	52.120
12	4	FP	N0	54.043
13	1	FP	N	24.148
14	2	FP	N	28.700
15	3	FP	N	38.961
16	4	FP	N	73.322

Table 14.599: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	32.415	8.835	3.669	0.067
A FP	41.283	8.835	4.672	0.036
A EI-FP	-8.868	12.495	-0.710	0.766

Table 14.600: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 38 in year 2012a .

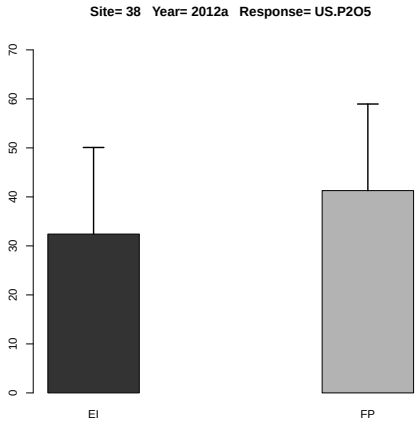

Figure 14.240: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	176.647	176.647	0.817	9.000	0.390
B	1.000	65.478	65.478	0.303	9.000	0.595
A:B	1.000	19.752	19.752	0.091	9.000	0.769

Table 14.601: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		31.503	8.468	4.500	3.720	8.943	54.064	0.017
2	FP		38.149	8.468	4.500	4.510	15.588	60.709	0.008
3		N	36.849	8.468	4.500	4.350	14.288	59.410	0.009
4		N0	32.803	8.468	4.500	3.870	10.242	55.364	0.014
5	EI	N	32.415	9.936	7.400	3.260	9.194	55.636	0.013
6	FP	N	41.283	9.936	7.400	4.150	18.062	64.504	0.004
7	EI	N0	30.591	9.936	7.400	3.080	7.370	53.812	0.017
8	FP	N0	35.015	9.936	7.400	3.520	11.794	58.236	0.009

Table 14.602: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.645	7.351	9.000	-0.900	-23.274	9.983	0.390
B N-N0	4.046	7.351	9.000	0.550	-12.583	20.674	0.595
A:B EI N- FP N	-8.868	10.396	9.000	-0.850	-32.384	14.649	0.416
A:B EI N- EI N0	1.824	10.396	9.000	0.180	-21.693	25.340	0.865
A:B EI N- FP N0	-2.599	10.396	9.000	-0.250	-26.116	20.917	0.808
A:B FP N- EI N0	10.691	10.396	9.000	1.030	-12.825	34.208	0.331
A:B FP N- FP N0	6.268	10.396	9.000	0.600	-17.248	29.785	0.561
A:B EI N0- FP N0	-4.423	10.396	9.000	-0.430	-27.940	19.093	0.680

Table 14.603: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 38 in year 2012a
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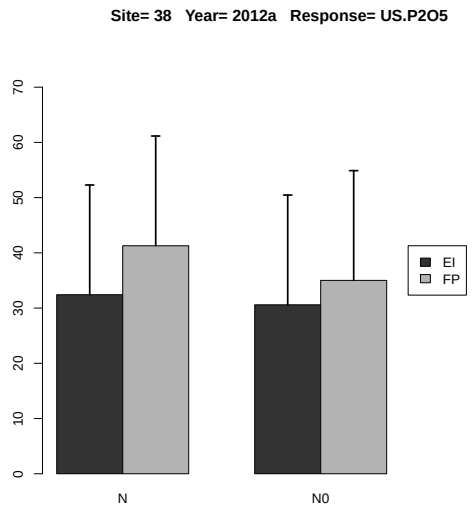

Figure 14.241: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.15 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	27.406
2	2	EI	N0	15.871
3	3	EI	N0	81.968
4	4	EI	N0	77.793
5	1	EI	N	101.754
6	2	EI	N	140.803
7	3	EI	N	106.007
8	4	EI	N	94.301
9	1	FP	N0	30.079
10	2	FP	N0	33.455
11	3	FP	N0	78.455
12	4	FP	N0	101.178
13	1	FP	N	117.312
14	2	FP	N	144.599
15	3	FP	N	96.315
16	4	FP	N	175.456

Table 14.604: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	110.716	14.252	7.769	0.009
A FP	133.420	14.252	9.362	0.005
A EI-FP	-22.704	20.155	-1.126	0.552

Table 14.605: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 38 in year 2012a .

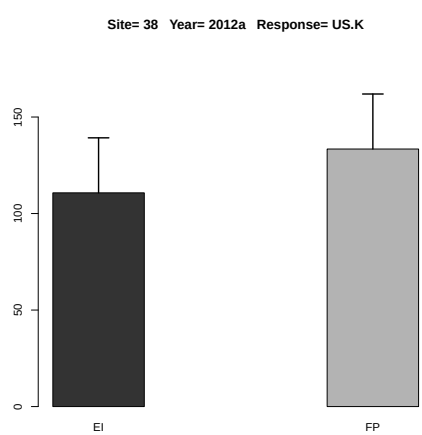

Figure 14.242: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1071.672	1071.672	1.197	9.000	0.302
B	1.000	17578.902	17578.902	19.643	9.000	0.002
A:B	1.000	160.564	160.564	0.179	9.000	0.682

Table 14.606: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		80.738	11.670	7.400	6.920	53.466	108.010	0.000
2	FP		97.106	11.670	7.400	8.320	69.835	124.378	0.000
3		N	122.068	11.670	7.400	10.460	94.797	149.340	0.000
4		N0	55.776	11.670	7.400	4.780	28.504	83.047	0.002
5	EI	N	110.716	15.750	11.700	7.030	76.291	145.142	0.000
6	FP	N	133.420	15.750	11.700	8.470	98.995	167.846	0.000
7	EI	N0	50.759	15.750	11.700	3.220	16.334	85.185	0.008
8	FP	N0	60.792	15.750	11.700	3.860	26.366	95.218	0.002

Table 14.607: Estimate of treatment means in tow-way ANOVA for variable US.K at site 38 in year 2012a .

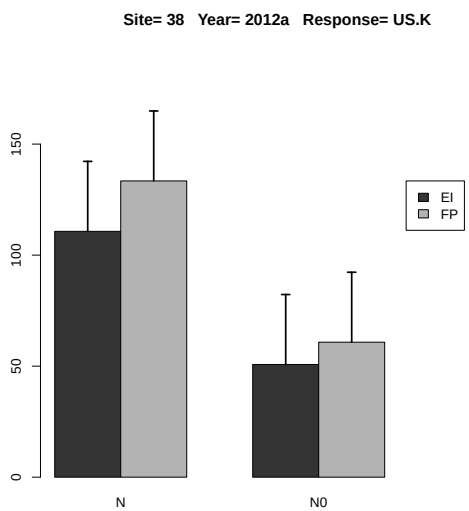

Figure 14.243: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-16.368	14.958	9.000	-1.090	-50.205	17.468	0.302
B N-N0	66.293	14.958	9.000	4.430	32.456	100.129	0.002
A:B EI N- FP N	-22.704	21.153	9.000	-1.070	-70.556	25.148	0.311
A:B EI N- EI N0	59.957	21.153	9.000	2.830	12.105	107.809	0.020
A:B EI N- FP N0	49.925	21.153	9.000	2.360	2.072	97.777	0.043
A:B FP N- EI N0	82.661	21.153	9.000	3.910	34.809	130.513	0.004
A:B FP N- FP N0	72.628	21.153	9.000	3.430	24.776	120.481	0.007
A:B EI N0- FP N0	-10.033	21.153	9.000	-0.470	-57.885	37.820	0.647

Table 14.608: Estimate of contrast in two-way ANOVA for variable US.K at site 38 in year 2012a .

14.5.16 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	27.665
2	2	EI	N0	15.971
3	3	EI	N0	82.516
4	4	EI	N0	78.406
5	1	EI	N	103.710
6	2	EI	N	142.279
7	3	EI	N	107.115
8	4	EI	N	95.375
9	1	FP	N0	30.419
10	2	FP	N0	33.743
11	3	FP	N0	79.309
12	4	FP	N0	102.242
13	1	FP	N	118.366
14	2	FP	N	145.616
15	3	FP	N	97.040
16	4	FP	N	176.673

Table 14.609: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	112.120	14.357	7.809	0.008
A FP	134.424	14.357	9.363	0.005
A EI-FP	-22.304	20.304	-1.099	0.566

Table 14.610: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 38 in year 2012a .

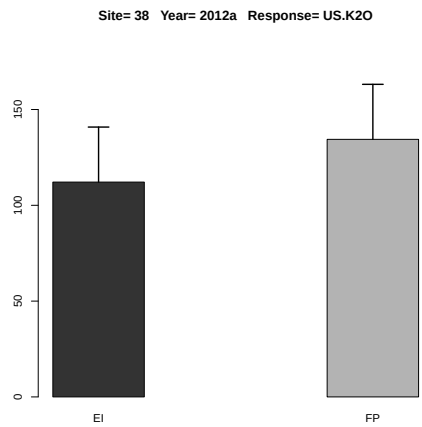

Figure 14.244: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1062.282	1062.282	1.165	9.000	0.308
B	1.000	17949.436	17949.436	19.687	9.000	0.002
A:B	1.000	144.366	144.366	0.158	9.000	0.700

Table 14.611: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		81.630	11.735	7.500	6.960	54.240	109.019	0.000
2	FP		97.926	11.735	7.500	8.340	70.537	125.316	0.000
3		N	123.272	11.735	7.500	10.500	95.882	150.661	0.000
4		N0	56.284	11.735	7.500	4.800	28.894	83.674	0.002
5	EI	N	112.120	15.864	11.700	7.070	77.451	146.788	0.000
6	FP	N	134.424	15.864	11.700	8.470	99.755	169.093	0.000
7	EI	N0	51.140	15.864	11.700	3.220	16.471	85.808	0.007
8	FP	N0	61.428	15.864	11.700	3.870	26.760	96.097	0.002

Table 14.612: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-16.296	15.097	9.000	-1.080	-50.449	17.856	0.308
B N-N0	66.988	15.097	9.000	4.440	32.835	101.140	0.002
A:B EI N- FP N	-22.304	21.351	9.000	-1.040	-70.603	25.995	0.323
A:B EI N- EI N0	60.980	21.351	9.000	2.860	12.681	109.279	0.019
A:B EI N- FP N0	50.691	21.351	9.000	2.370	2.392	98.991	0.042
A:B FP N- EI N0	83.284	21.351	9.000	3.900	34.985	131.583	0.004
A:B FP N- FP N0	72.995	21.351	9.000	3.420	24.696	121.294	0.008
A:B EI N0- FP N0	-10.289	21.351	9.000	-0.480	-58.588	38.010	0.641

Table 14.613: Estimate of contrast in two-way ANOVA for variable US.K2O at site 38 in year 2012a .

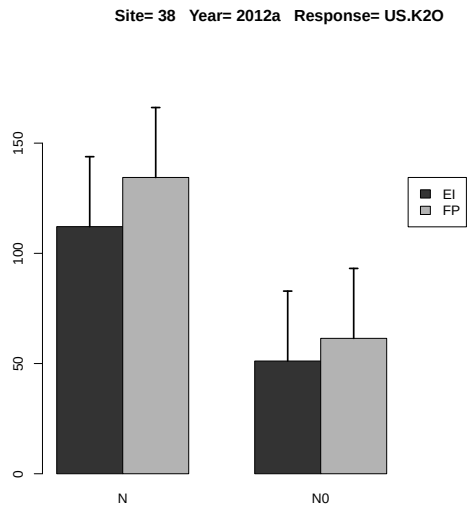

Figure 14.245: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.17 Response Variable US.Mg

	rep	A	B	y
1	1	EI	N0	5.324
2	2	EI	N0	5.711
3	3	EI	N0	19.726
4	4	EI	N0	34.710
5	1	EI	N	40.916
6	2	EI	N	29.027
7	3	EI	N	39.751
8	4	EI	N	49.694
9	1	FP	N0	12.844
10	2	FP	N0	10.295
11	3	FP	N0	29.084
12	4	FP	N0	39.416
13	1	FP	N	33.170
14	2	FP	N	26.063
15	3	FP	N	23.959
16	4	FP	N	34.935

Table 14.614: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.Mg

	Estimate	S.E.	t-value	p-value
A EI	39.847	2.145	18.580	0.000
A FP	29.532	2.145	13.770	0.002
A EI-FP	10.315	3.033	3.401	0.081

Table 14.615: Estimate of treatment means and contrast in one-way ANOVA for variable US.Mg at site 38 in year 2012a .

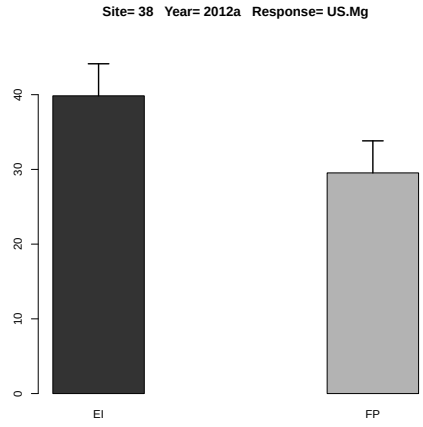

Figure 14.246: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	14.238	14.238	0.317	9.000	0.587
B	1.000	906.073	906.073	20.193	9.000	0.002
A:B	1.000	284.152	284.152	6.333	9.000	0.033

Table 14.616: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		28.107	4.970	3.800	5.660	14.011	42.204	0.006
2	FP		26.221	4.970	3.800	5.280	12.124	40.317	0.007
3		N	34.689	4.970	3.800	6.980	20.593	48.786	0.003
4		N0	19.639	4.970	3.800	3.950	5.543	33.735	0.019
5	EI	N	39.847	5.506	5.500	7.240	26.058	53.636	0.000
6	FP	N	29.532	5.506	5.500	5.360	15.743	43.321	0.002
7	EI	N0	16.368	5.506	5.500	2.970	2.579	30.157	0.028
8	FP	N0	22.910	5.506	5.500	4.160	9.120	36.699	0.007

Table 14.617: Estimate of treatment means in tow-way ANOVA for variable US.Mg at site 38 in year 2012a .

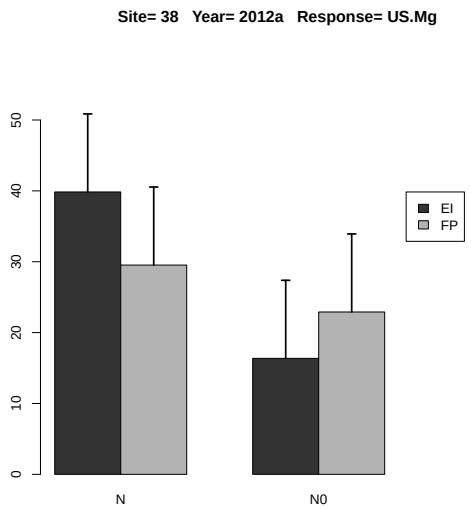

Figure 14.247: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.887	3.349	9.000	0.560	-5.690	9.463	0.587
B N-N0	15.050	3.349	9.000	4.490	7.474	22.627	0.002
A:B EI N- FP N	10.315	4.737	9.000	2.180	-0.400	21.030	0.057
A:B EI N- EI N0	23.479	4.737	9.000	4.960	12.764	34.194	0.001
A:B EI N- FP N0	16.937	4.737	9.000	3.580	6.222	27.652	0.006
A:B FP N- EI N0	13.164	4.737	9.000	2.780	2.449	23.879	0.021
A:B FP N- FP N0	6.622	4.737	9.000	1.400	-4.093	17.337	0.196
A:B EI N0- FP N0	-6.542	4.737	9.000	-1.380	-17.257	4.173	0.201

Table 14.618: Estimate of contrast in two-way ANOVA for variable US.Mg at site 38 in year 2012a .

14.5.18 Response Variable US.S

	rep	A	B	y
1	1	EI	N0	9.365
2	2	EI	N0	6.148
3	3	EI	N0	36.563
4	4	EI	N0	60.126
5	1	EI	N	47.995
6	2	EI	N	71.223
7	3	EI	N	50.227
8	4	EI	N	60.854
9	1	FP	N0	27.617
10	2	FP	N0	22.916
11	3	FP	N0	78.401
12	4	FP	N0	51.681
13	1	FP	N	61.295
14	2	FP	N	48.963
15	3	FP	N	34.918
16	4	FP	N	70.471

Table 14.619: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.S

	Estimate	S.E.	t-value	p-value
A EI	57.575	6.277	9.173	0.005
A FP	53.912	6.277	8.589	0.007
A EI-FP	3.663	8.877	0.413	0.909

Table 14.620: Estimate of treatment means and contrast in one-way ANOVA for variable US.S at site 38 in year 2012a .

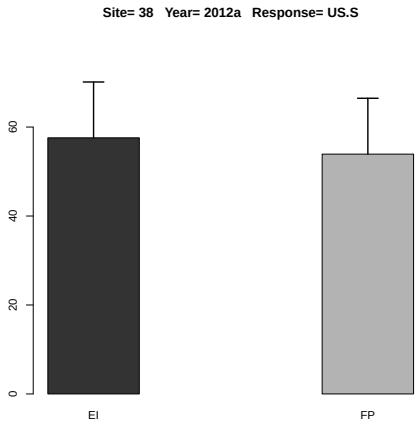

Figure 14.248: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	180.635	180.635	0.487	9.000	0.503
B	1.000	1465.554	1465.554	3.948	9.000	0.078
A:B	1.000	431.231	431.231	1.162	9.000	0.309

Table 14.621: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		42.813	7.514	7.400	5.700	25.256	60.370	0.001
2	FP		49.533	7.514	7.400	6.590	31.976	67.090	0.000
3		N	55.743	7.514	7.400	7.420	38.186	73.301	0.000
4		N0	36.602	7.514	7.400	4.870	19.045	54.160	0.002
5	EI	N	57.575	10.142	11.700	5.680	35.408	79.742	0.000
6	FP	N	53.912	10.142	11.700	5.320	31.745	76.079	0.000
7	EI	N0	28.051	10.142	11.700	2.770	5.883	50.218	0.018
8	FP	N0	45.154	10.142	11.700	4.450	22.986	67.321	0.001

Table 14.622: Estimate of treatment means in tow-way ANOVA for variable US.S at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-6.720	9.633	9.000	-0.700	-28.512	15.072	0.503
B N-N0	19.141	9.633	9.000	1.990	-2.650	40.933	0.078
A:B EI N- FP N	3.663	13.623	9.000	0.270	-27.155	34.481	0.794
A:B EI N- EI N0	29.524	13.623	9.000	2.170	-1.294	60.342	0.058
A:B EI N- FP N0	12.421	13.623	9.000	0.910	-18.397	43.239	0.386
A:B FP N- EI N0	25.861	13.623	9.000	1.900	-4.957	56.679	0.090
A:B FP N- FP N0	8.758	13.623	9.000	0.640	-22.060	39.576	0.536
A:B EI N0- FP N0	-17.103	13.623	9.000	-1.260	-47.921	13.715	0.241

Table 14.623: Estimate of contrast in two-way ANOVA for variable US.S at site 38 in year 2012a .

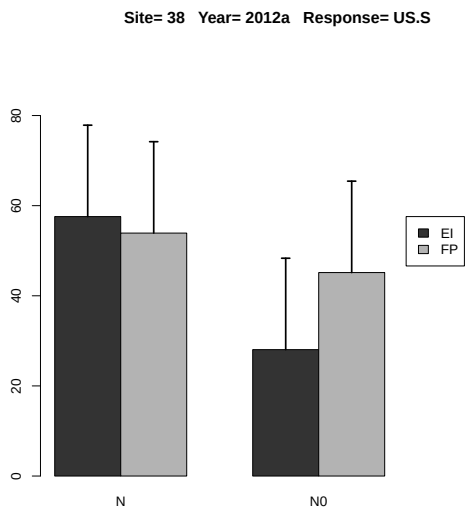

Figure 14.249: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.19 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	45.571
2	2	EI	N0	28.356
3	3	EI	N0	122.813
4	4	EI	N0	107.786
5	1	EI	N	373.353
6	2	EI	N	337.818
7	3	EI	N	311.556
8	4	EI	N	287.669
9	1	FP	N0	43.331
10	2	FP	N0	36.910
11	3	FP	N0	130.257
12	4	FP	N0	146.888
13	1	FP	N	274.537
14	2	FP	N	223.929
15	3	FP	N	217.165
16	4	FP	N	277.893

Table 14.624: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	327.599	16.632	19.697	0.000
A FP	248.381	16.632	14.934	0.001
A EI-FP	79.218	23.521	3.368	0.082

Table 14.625: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 38 in year 2012a .

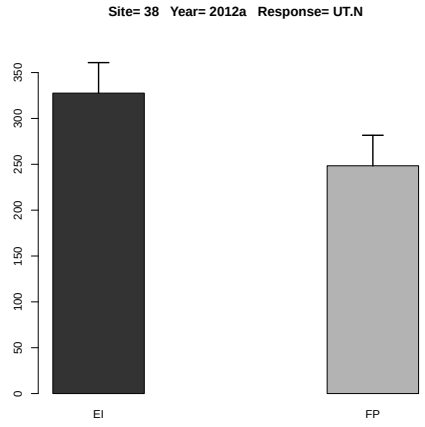

Figure 14.250: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4356.380	4356.380	2.232	12.000	0.161
B	1.000	168511.789	168511.789	86.319	12.000	0.000
A:B	1.000	8543.846	8543.846	4.377	12.000	0.058

Table 14.626: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		201.865	15.621	12.000	12.920	167.829	235.901	0.000
2	FP		168.864	15.621	12.000	10.810	134.828	202.900	0.000
3		N	287.990	15.621	12.000	18.440	253.954	322.026	0.000
4		N0	82.739	15.621	12.000	5.300	48.703	116.775	0.000
5	EI	N	327.599	22.092	12.000	14.830	279.465	375.733	0.000
6	FP	N	248.381	22.092	12.000	11.240	200.247	296.515	0.000
7	EI	N0	76.132	22.092	12.000	3.450	27.997	124.266	0.005
8	FP	N0	89.347	22.092	12.000	4.040	41.212	137.481	0.002

Table 14.627: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 38 in year 2012a .

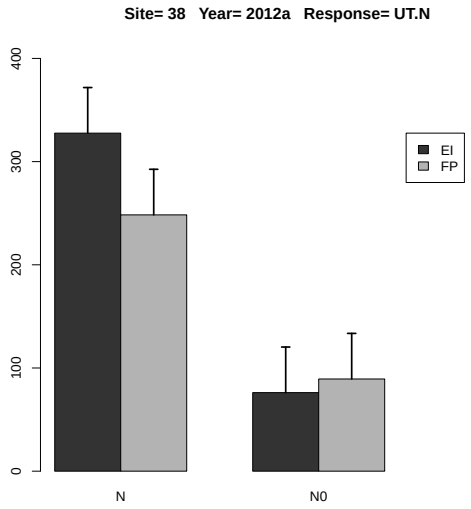

Figure 14.251: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	33.001	22.092	12.000	1.490	-15.133	81.135	0.161
B N-N0	205.251	22.092	12.000	9.290	157.117	253.385	0.000
A:B EI N- FP N	79.218	31.243	12.000	2.540	11.146	147.290	0.026
A:B EI N- EI N0	251.467	31.243	12.000	8.050	183.395	319.539	0.000
A:B EI N- FP N0	238.252	31.243	12.000	7.630	170.180	306.324	0.000
A:B FP N- EI N0	172.250	31.243	12.000	5.510	104.178	240.321	0.000
A:B FP N- FP N0	159.035	31.243	12.000	5.090	90.963	227.106	0.000
A:B EI N0- FP N0	-13.215	31.243	12.000	-0.420	-81.287	54.857	0.680

Table 14.628: Estimate of contrast in two-way ANOVA for variable UT.N at site 38 in year 2012a .

14.5.20 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	11.083
2	2	EI	N0	14.446
3	3	EI	N0	68.014
4	4	EI	N0	63.097
5	1	EI	N	75.585
6	2	EI	N	77.977
7	3	EI	N	64.343
8	4	EI	N	68.297
9	1	FP	N0	22.771
10	2	FP	N0	17.763
11	3	FP	N0	63.488
12	4	FP	N0	68.557
13	1	FP	N	60.617
14	2	FP	N	49.162
15	3	FP	N	53.731
16	4	FP	N	113.713

Table 14.629: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	71.550	11.564	6.187	0.017
A FP	69.306	11.564	5.993	0.018
A EI-FP	2.245	16.354	0.137	0.989

Table 14.630: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 38 in year 2012a .

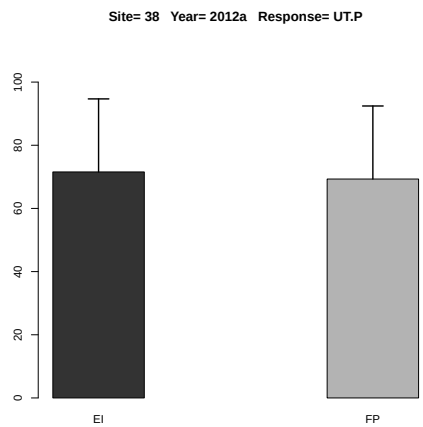

Figure 14.252: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	3.027	3.027	0.007	9.000	0.934
B	1.000	3428.249	3428.249	8.132	9.000	0.019
A:B	1.000	38.799	38.799	0.092	9.000	0.769

Table 14.631: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		55.355	10.418	5.100	5.310	28.666	82.044	0.003
2	FP		56.225	10.418	5.100	5.400	29.536	82.914	0.003
3		N	70.428	10.418	5.100	6.760	43.739	97.117	0.001
4		N0	41.152	10.418	5.100	3.950	14.463	67.842	0.011
5	EI	N	71.550	12.698	8.800	5.630	42.738	100.363	0.000
6	FP	N	69.306	12.698	8.800	5.460	40.493	98.118	0.000
7	EI	N0	39.160	12.698	8.800	3.080	10.348	67.973	0.013
8	FP	N0	43.145	12.698	8.800	3.400	14.332	71.957	0.008

Table 14.632: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.870	10.266	9.000	-0.080	-24.094	22.354	0.934
B N-N0	29.276	10.266	9.000	2.850	6.051	52.500	0.019
A:B EI N- FP N	2.245	14.519	9.000	0.150	-30.599	35.089	0.881
A:B EI N- EI N0	32.390	14.519	9.000	2.230	-0.454	65.234	0.053
A:B EI N- FP N0	28.406	14.519	9.000	1.960	-4.438	61.250	0.082
A:B FP N- EI N0	30.145	14.519	9.000	2.080	-2.699	62.989	0.068
A:B FP N- FP N0	26.161	14.519	9.000	1.800	-6.683	59.005	0.105
A:B EI N0- FP N0	-3.984	14.519	9.000	-0.270	-36.828	28.860	0.790

Table 14.633: Estimate of contrast in two-way ANOVA for variable UT.P at site 38 in year 2012a .

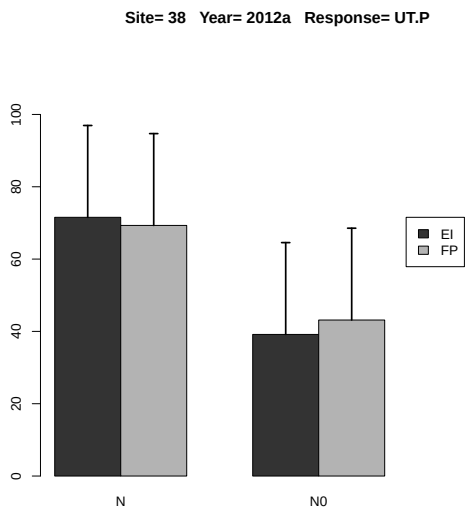

Figure 14.253: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.21 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	11.513
2	2	EI	N0	14.664
3	3	EI	N0	69.524
4	4	EI	N0	64.444
5	1	EI	N	78.292
6	2	EI	N	81.587
7	3	EI	N	66.667
8	4	EI	N	70.346
9	1	FP	N0	23.376
10	2	FP	N0	18.384
11	3	FP	N0	65.174
12	4	FP	N0	70.590
13	1	FP	N	62.373
14	2	FP	N	50.807
15	3	FP	N	55.664
16	4	FP	N	116.266

Table 14.634: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	74.223	11.895	6.240	0.016
A FP	71.277	11.895	5.992	0.018
A EI-FP	2.946	16.822	0.175	0.982

Table 14.635: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 38 in year 2012a .

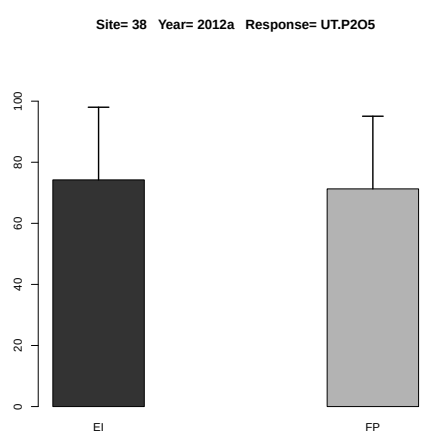

Figure 14.254: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1.958	1.958	0.004	9.000	0.949
B	1.000	3731.122	3731.122	8.390	9.000	0.018
A:B	1.000	53.154	53.154	0.120	9.000	0.737

Table 14.636: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		57.130	10.606	5.100	5.390	30.038	84.221	0.003
2	FP		57.829	10.606	5.100	5.450	30.738	84.921	0.003
3		N	72.750	10.606	5.100	6.860	45.659	99.841	0.001
4		N0	42.209	10.606	5.100	3.980	15.117	69.300	0.010
5	EI	N	74.223	12.965	8.900	5.730	44.859	103.586	0.000
6	FP	N	71.277	12.965	8.900	5.500	41.914	100.641	0.000
7	EI	N0	40.036	12.965	8.900	3.090	10.673	69.400	0.013
8	FP	N0	44.381	12.965	8.900	3.420	15.018	73.745	0.008

Table 14.637: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 38 in year 2012a .

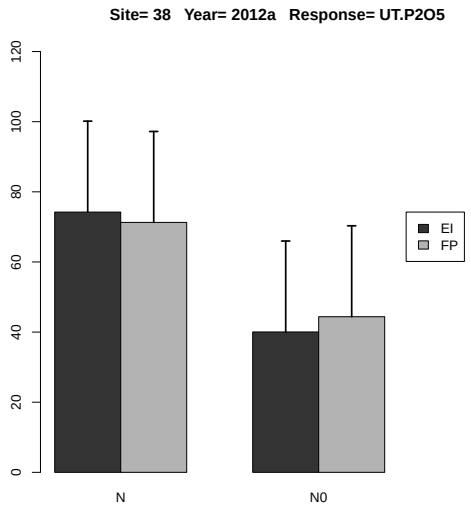

Figure 14.255: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.700	10.544	9.000	-0.070	-24.552	23.153	0.949
B N-N0	30.541	10.544	9.000	2.900	6.689	54.394	0.018
A:B EI N- FP N	2.946	14.912	9.000	0.200	-30.787	36.678	0.848
A:B EI N- EI N0	34.187	14.912	9.000	2.290	0.454	67.919	0.048
A:B EI N- FP N0	29.842	14.912	9.000	2.000	-3.891	63.575	0.076
A:B FP N- EI N0	31.241	14.912	9.000	2.100	-2.492	64.974	0.066
A:B FP N- FP N0	26.896	14.912	9.000	1.800	-6.837	60.629	0.105
A:B EI N0- FP N0	-4.345	14.912	9.000	-0.290	-38.078	29.388	0.777

Table 14.638: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 38 in year 2012a .

14.5.22 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	32.559
2	2	EI	N0	19.443
3	3	EI	N0	97.856
4	4	EI	N0	91.248
5	1	EI	N	130.180
6	2	EI	N	170.851
7	3	EI	N	137.980
8	4	EI	N	121.311
9	1	FP	N0	35.966
10	2	FP	N0	38.478
11	3	FP	N0	96.257
12	4	FP	N0	124.448
13	1	FP	N	140.546
14	2	FP	N	177.023
15	3	FP	N	121.034
16	4	FP	N	206.130

Table 14.639: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	140.081	15.607	8.976	0.006
A FP	161.183	15.607	10.328	0.004
A EI-FP	-21.103	22.071	-0.956	0.637

Table 14.640: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 38 in year 2012a .

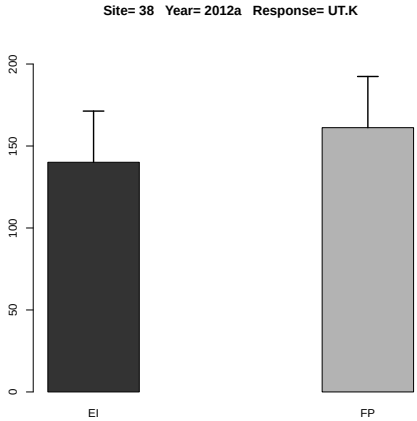

Figure 14.256: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1198.103	1198.103	1.003	9.000	0.343
B	1.000	27955.949	27955.949	23.393	9.000	0.001
A:B	1.000	57.637	57.637	0.048	9.000	0.831

Table 14.641: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		100.178	13.766	7.200	7.280	67.776	132.581	0.000
2	FP		117.485	13.766	7.200	8.530	85.083	149.888	0.000
3		N	150.632	13.766	7.200	10.940	118.229	183.035	0.000
4		N0	67.032	13.766	7.200	4.870	34.629	99.434	0.002
5	EI	N	140.081	18.409	11.500	7.610	99.784	180.377	0.000
6	FP	N	161.183	18.409	11.500	8.760	120.886	201.480	0.000
7	EI	N0	60.276	18.409	11.500	3.270	19.979	100.573	0.007
8	FP	N0	73.787	18.409	11.500	4.010	33.490	114.084	0.002

Table 14.642: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-17.307	17.285	9.000	-1.000	-56.408	21.794	0.343
B N-N0	83.600	17.285	9.000	4.840	44.499	122.701	0.001
A:B EI N- FP N	-21.103	24.444	9.000	-0.860	-76.400	34.194	0.410
A:B EI N- EI N0	79.804	24.444	9.000	3.260	24.507	135.101	0.010
A:B EI N- FP N0	66.293	24.444	9.000	2.710	10.996	121.591	0.024
A:B FP N- EI N0	100.907	24.444	9.000	4.130	45.610	156.204	0.003
A:B FP N- FP N0	87.396	24.444	9.000	3.580	32.099	142.693	0.006
A:B EI N0- FP N0	-13.511	24.444	9.000	-0.550	-68.808	41.786	0.594

Table 14.643: Estimate of contrast in two-way ANOVA for variable UT.K at site 38 in year 2012a .

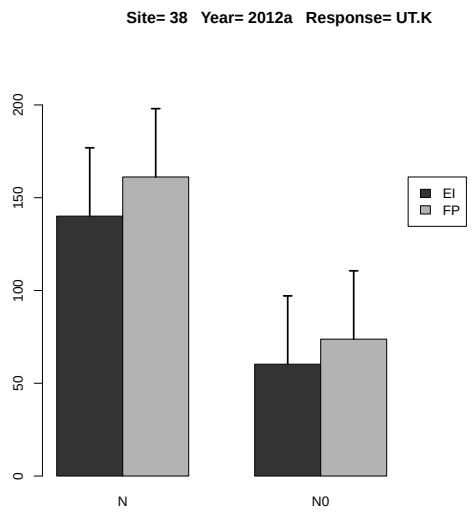

Figure 14.257: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.23 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	32.818
2	2	EI	N0	19.543
3	3	EI	N0	98.404
4	4	EI	N0	91.861
5	1	EI	N	132.136
6	2	EI	N	172.327
7	3	EI	N	139.088
8	4	EI	N	122.385
9	1	FP	N0	36.306
10	2	FP	N0	38.765
11	3	FP	N0	97.111
12	4	FP	N0	125.512
13	1	FP	N	141.600
14	2	FP	N	178.039
15	3	FP	N	121.760
16	4	FP	N	207.347

Table 14.644: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	141.484	15.714	9.003	0.006
A FP	162.187	15.714	10.321	0.004
A EI-FP	-20.703	22.224	-0.932	0.650

Table 14.645: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 38 in year 2012a .

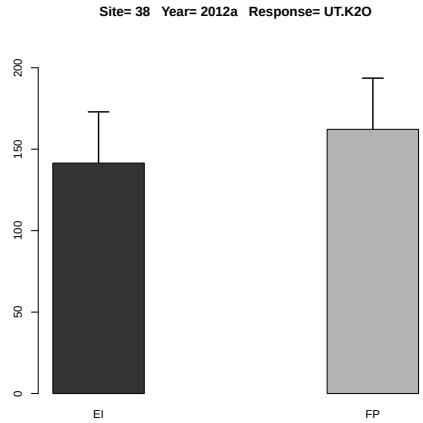

Figure 14.258: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1188.173	1188.173	0.978	9.000	0.349
B	1.000	28422.716	28422.716	23.396	9.000	0.001
A:B	1.000	48.105	48.105	0.040	9.000	0.847

Table 14.646: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		101.070	13.831	7.200	7.310	68.554	133.587	0.000
2	FP		118.305	13.831	7.200	8.550	85.789	150.821	0.000
3		N	151.835	13.831	7.200	10.980	119.319	184.352	0.000
4		N0	67.540	13.831	7.200	4.880	35.024	100.056	0.002
5	EI	N	141.484	18.524	11.500	7.640	100.945	182.023	0.000
6	FP	N	162.187	18.524	11.500	8.760	121.647	202.726	0.000
7	EI	N0	60.657	18.524	11.500	3.270	20.117	101.196	0.007
8	FP	N0	74.424	18.524	11.500	4.020	33.884	114.963	0.002

Table 14.647: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 38 in year 2012a .

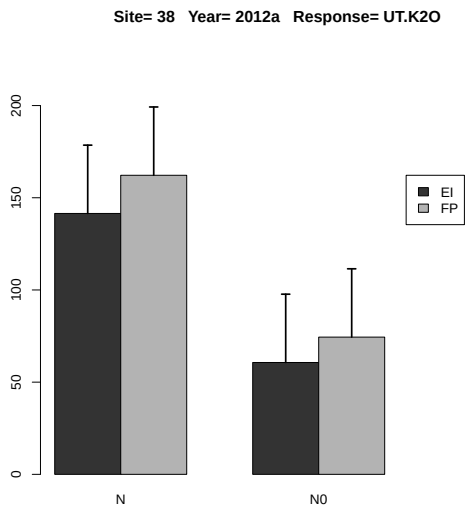

Figure 14.259: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-17.235	17.427	9.000	-0.990	-56.658	22.188	0.348
B N-N0	84.295	17.427	9.000	4.840	44.872	123.718	0.001
A:B EI N- FP N	-20.703	24.646	9.000	-0.840	-76.456	35.050	0.423
A:B EI N- EI N0	80.827	24.646	9.000	3.280	25.075	136.580	0.009
A:B EI N- FP N0	67.060	24.646	9.000	2.720	11.308	122.813	0.024
A:B FP N- EI N0	101.530	24.646	9.000	4.120	45.778	157.283	0.003
A:B FP N- FP N0	87.763	24.646	9.000	3.560	32.010	143.516	0.006
A:B EI N0- FP N0	-13.767	24.646	9.000	-0.560	-69.520	41.986	0.590

Table 14.648: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 38 in year 2012a .

14.5.24 Response Variable UT.Mg

	rep	A	B	y
1	1	EI	N0	6.816
2	2	EI	N0	6.557
3	3	EI	N0	23.161
4	4	EI	N0	38.160
5	1	EI	N	49.038
6	2	EI	N	36.038
7	3	EI	N	48.165
8	4	EI	N	56.639
9	1	FP	N0	14.526
10	2	FP	N0	11.397
11	3	FP	N0	33.831
12	4	FP	N0	45.622
13	1	FP	N	39.916
14	2	FP	N	34.169
15	3	FP	N	30.640
16	4	FP	N	41.946

Table 14.649: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.Mg

	Estimate	S.E.	t-value	p-value
A EI	47.470	2.441	19.450	0.001
A FP	36.668	2.441	15.024	0.001
A EI-FP	10.802	3.451	3.130	0.099

Table 14.650: Estimate of treatment means and contrast in one-way ANOVA for variable UT.Mg at site 38 in year 2012a .

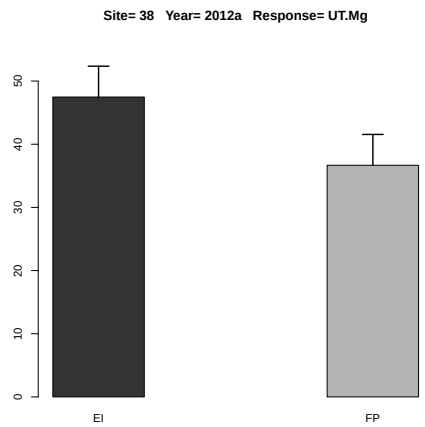

Figure 14.260: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	9.809	9.809	0.161	9.000	0.698
B	1.000	1530.378	1530.378	25.099	9.000	0.001
A:B	1.000	341.231	341.231	5.596	9.000	0.042

Table 14.651: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		33.072	5.422	3.900	6.100	17.914	48.229	0.004
2	FP		31.506	5.422	3.900	5.810	16.348	46.663	0.005
3		N	42.069	5.422	3.900	7.760	26.911	57.226	0.002
4		N0	22.509	5.422	3.900	4.150	7.351	37.666	0.015
5	EI	N	47.470	6.084	5.900	7.800	32.514	62.426	0.000
6	FP	N	36.668	6.084	5.900	6.030	21.712	51.624	0.001
7	EI	N0	18.674	6.084	5.900	3.070	3.718	33.630	0.022
8	FP	N0	26.344	6.084	5.900	4.330	11.388	41.300	0.005

Table 14.652: Estimate of treatment means in tow-way ANOVA for variable UT.Mg at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1.566	3.904	9.000	0.400	-7.266	10.398	0.698
B N-N0	19.560	3.904	9.000	5.010	10.728	28.392	0.001
A:B EI N- FP N	10.802	5.521	9.000	1.960	-1.688	23.293	0.082
A:B EI N- EI N0	28.796	5.521	9.000	5.220	16.306	41.287	0.001
A:B EI N- FP N0	21.126	5.521	9.000	3.830	8.636	33.617	0.004
A:B FP N- EI N0	17.994	5.521	9.000	3.260	5.503	30.485	0.010
A:B FP N- FP N0	10.324	5.521	9.000	1.870	-2.167	22.814	0.094
A:B EI N0- FP N0	-7.670	5.521	9.000	-1.390	-20.161	4.820	0.198

Table 14.653: Estimate of contrast in two-way ANOVA for variable UT.Mg at site 38 in year 2012a .

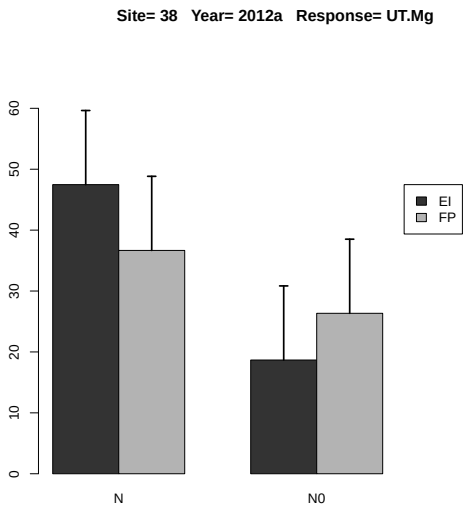

Figure 14.261: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.25 Response Variable UT.S

	rep	A	B	y
1	1	EI	N0	20.349
2	2	EI	N0	13.010
3	3	EI	N0	70.915
4	4	EI	N0	87.381
5	1	EI	N	128.196
6	2	EI	N	150.350
7	3	EI	N	126.795
8	4	EI	N	124.905
9	1	FP	N0	40.905
10	2	FP	N0	33.206
11	3	FP	N0	111.235
12	4	FP	N0	93.049
13	1	FP	N	125.752
14	2	FP	N	107.178
15	3	FP	N	94.379
16	4	FP	N	146.718

Table 14.654: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.S

	Estimate	S.E.	t-value	p-value
A EI	132.561	10.421	12.721	0.001
A FP	118.507	10.421	11.372	0.003
A EI-FP	14.054	14.737	0.954	0.638

Table 14.655: Estimate of treatment means and contrast in one-way ANOVA for variable UT.S at site 38 in year 2012a .

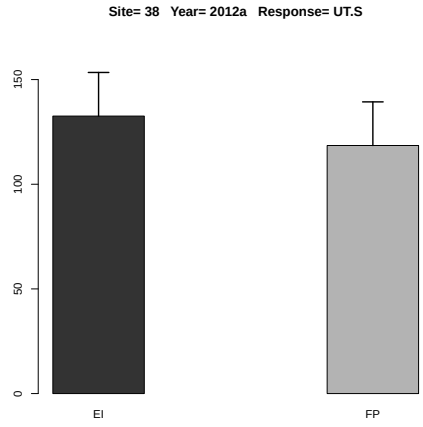

Figure 14.262: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	58.226	58.226	0.079	9.000	0.786
B	1.000	17837.105	17837.105	24.049	9.000	0.001
A:B	1.000	1277.317	1277.317	1.722	9.000	0.222

Table 14.656: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		90.238	11.210	6.800	8.050	63.538	116.937	0.000
2	FP		94.053	11.210	6.800	8.390	67.353	120.752	0.000
3		N	125.534	11.210	6.800	11.200	98.835	152.234	0.000
4		N0	58.756	11.210	6.800	5.240	32.057	85.456	0.001
5	EI	N	132.561	14.778	11.200	8.970	100.118	165.005	0.000
6	FP	N	118.507	14.778	11.200	8.020	86.063	150.951	0.000
7	EI	N0	47.914	14.778	11.200	3.240	15.470	80.358	0.008
8	FP	N0	69.599	14.778	11.200	4.710	37.155	102.043	0.001

Table 14.657: Estimate of treatment means in tow-way ANOVA for variable UT.S at site 38 in year 2012a .

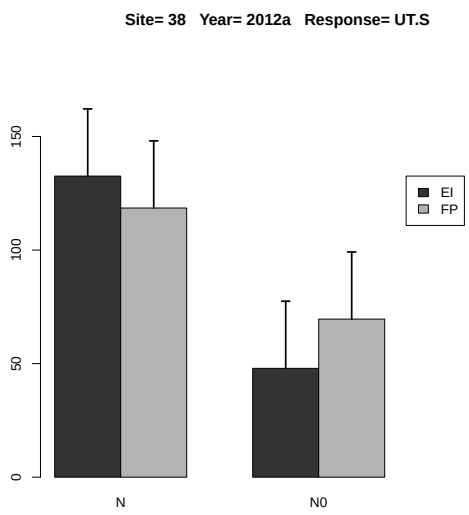

Figure 14.263: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-3.815	13.617	9.000	-0.280	-34.619	26.989	0.786
B N-N0	66.778	13.617	9.000	4.900	35.974	97.582	0.001
A:B EI N- FP N	14.055	19.258	9.000	0.730	-29.509	57.618	0.484
A:B EI N- EI N0	84.648	19.258	9.000	4.400	41.084	128.211	0.002
A:B EI N- FP N0	62.962	19.258	9.000	3.270	19.399	106.526	0.010
A:B FP N- EI N0	70.593	19.258	9.000	3.670	27.030	114.157	0.005
A:B FP N- FP N0	48.908	19.258	9.000	2.540	5.345	92.472	0.032
A:B EI N0- FP N0	-21.685	19.258	9.000	-1.130	-65.249	21.878	0.289

Table 14.658: Estimate of contrast in two-way ANOVA for variable UT.S at site 38 in year 2012a .

14.5.26 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	0.430
2	2	EI	N0	0.446
3	3	EI	N0	0.529
4	4	EI	N0	0.528
5	1	EI	N	0.521
6	2	EI	N	0.559
7	3	EI	N	0.535
8	4	EI	N	0.542
9	1	FP	N0	0.900
10	2	FP	N0	0.609
11	3	FP	N0	0.573
12	4	FP	N0	0.680
13	1	FP	N	0.557
14	2	FP	N	0.635
15	3	FP	N	0.693
16	4	FP	N	0.668

Table 14.659: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.539	0.022	5.700	24.900	0.486	0.593	0.000
A FP	0.638	0.022	5.700	29.460	0.584	0.692	0.000
A EI-FP	-0.099	0.027	3.000	-3.650	-0.185	-0.012	0.036

Table 14.660: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 38 in year 2012a .

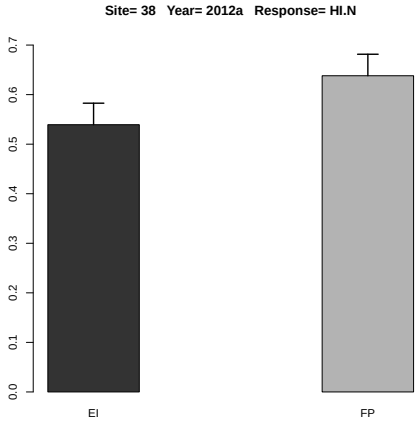

Figure 14.264: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.094	0.094	13.387	11.986	0.003
B	1.000	0.000	0.000	0.002	11.986	0.966
A:B	1.000	0.012	0.012	1.681	11.986	0.219

Table 14.661: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.511	0.030	12.000	17.290	0.447	0.576	0.000
2	FP		0.664	0.030	12.000	22.470	0.600	0.729	0.000
3		N	0.589	0.030	12.000	19.910	0.524	0.653	0.000
4		N0	0.587	0.030	12.000	19.850	0.522	0.651	0.000
5	EI	N	0.539	0.042	12.000	12.900	0.448	0.630	0.000
6	FP	N	0.638	0.042	12.000	15.260	0.547	0.729	0.000
7	EI	N0	0.483	0.042	12.000	11.560	0.392	0.574	0.000
8	FP	N0	0.690	0.042	12.000	16.510	0.599	0.782	0.000

Table 14.662: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.153	0.042	12.000	-3.660	-0.244	-0.062	0.003
B N-N0	0.002	0.042	12.000	0.040	-0.089	0.093	0.966
A:B EI N- FP N	-0.099	0.059	12.000	-1.670	-0.228	0.030	0.121
A:B EI N- EI N0	0.056	0.059	12.000	0.950	-0.073	0.185	0.362
A:B EI N- FP N0	-0.151	0.059	12.000	-2.560	-0.280	-0.022	0.025
A:B FP N- EI N0	0.155	0.059	12.000	2.620	0.026	0.284	0.022
A:B FP N- FP N0	-0.052	0.059	12.000	-0.890	-0.181	0.076	0.393
A:B EI N0- FP N0	-0.207	0.059	12.000	-3.500	-0.336	-0.078	0.004

Table 14.663: Estimate of contrast in two-way ANOVA for variable HI.N at site 38 in year 2012a .

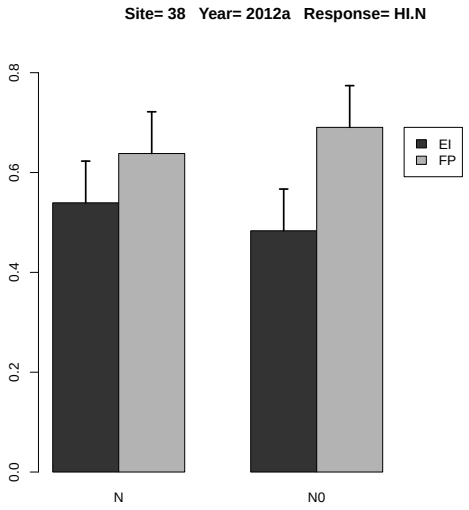

Figure 14.265: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.27 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	0.677
2	2	EI	N0	0.194
3	3	EI	N0	0.489
4	4	EI	N0	0.158
5	1	EI	N	1.445
6	2	EI	N	1.113
7	3	EI	N	2.002
8	4	EI	N	1.299
9	1	FP	N0	0.285
10	2	FP	N0	0.189
11	3	FP	N0	0.259
12	4	FP	N0	0.318
13	1	FP	N	1.707
14	2	FP	N	0.817
15	3	FP	N	0.451
16	4	FP	N	0.607

Table 14.664: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.465	0.240	6.000	6.090	0.876	2.053	0.001
A FP	0.895	0.240	6.000	3.730	0.307	1.484	0.010
A EI-FP	0.569	0.340	6.000	1.670	-0.263	1.401	0.145

Table 14.665: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 38 in year 2012a .

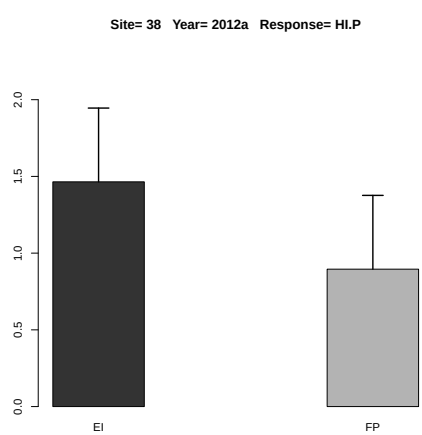

Figure 14.266: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.351	0.351	3.363	2.999	0.164
B	1.000	2.951	2.951	28.307	5.998	0.002
A:B	1.000	0.204	0.204	1.960	5.998	0.211

Table 14.666: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.922	0.141	5.900	6.540	0.576	1.268	0.001
2	FP		0.579	0.141	5.900	4.110	0.233	0.925	0.006
3		N	1.180	0.133	6.400	8.890	0.860	1.500	0.000
4		N0	0.321	0.133	6.400	2.420	0.001	0.641	0.049
5	EI	N	1.465	0.181	11.400	8.070	1.067	1.862	0.000
6	FP	N	0.895	0.181	11.400	4.940	0.498	1.293	0.000
7	EI	N0	0.380	0.181	11.400	2.090	-0.018	0.777	0.059
8	FP	N0	0.263	0.181	11.400	1.450	-0.135	0.660	0.175

Table 14.667: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 38 in year 2012a .

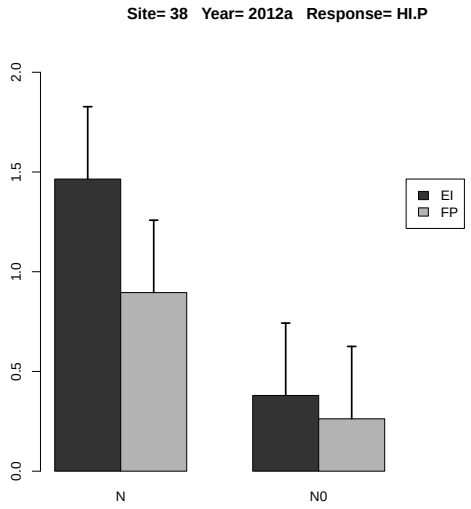

Figure 14.267: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.343	0.187	3.000	1.830	-0.252	0.938	0.164
B N-N0	0.859	0.161	6.000	5.320	0.464	1.254	0.002
A:B EI N- FP N	0.569	0.247	7.100	2.300	-0.013	1.151	0.054
A:B EI N- EI N0	1.085	0.228	6.000	4.750	0.526	1.644	0.003
A:B EI N- FP N0	1.202	0.247	7.100	4.860	0.620	1.784	0.002
A:B FP N- EI N0	0.516	0.247	7.100	2.090	-0.066	1.098	0.074
A:B FP N- FP N0	0.633	0.228	6.000	2.770	0.074	1.192	0.032
A:B EI N0- FP N0	0.117	0.247	7.100	0.470	-0.465	0.699	0.650

Table 14.668: Estimate of contrast in two-way ANOVA for variable HI.P at site 38 in year 2012a .

14.5.28 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.188
2	2	EI	N0	0.225
3	3	EI	N0	0.194
4	4	EI	N0	0.173
5	1	EI	N	0.279
6	2	EI	N	0.213
7	3	EI	N	0.302
8	4	EI	N	0.286
9	1	FP	N0	0.196
10	2	FP	N0	0.150
11	3	FP	N0	0.227
12	4	FP	N0	0.230
13	1	FP	N	0.198
14	2	FP	N	0.224
15	3	FP	N	0.257
16	4	FP	N	0.175

Table 14.669: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.270	0.019	6.000	14.550	0.225	0.316	0.000
A FP	0.213	0.019	6.000	11.500	0.168	0.259	0.000
A EI-FP	0.057	0.026	6.000	2.160	-0.007	0.121	0.074

Table 14.670: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 38 in year 2012a .

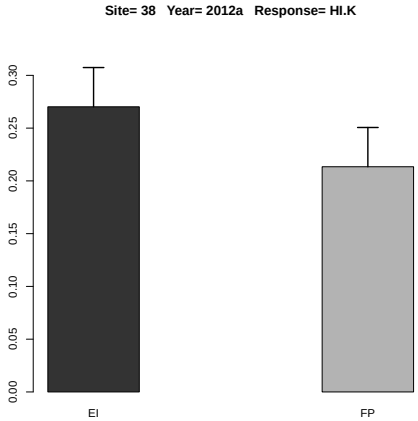

Figure 14.268: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.003	0.003	2.319	8.973	0.162
B	1.000	0.008	0.008	6.893	8.973	0.028
A:B	1.000	0.004	0.004	3.475	8.973	0.095

Table 14.671: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.233	0.012	8.500	19.120	0.205	0.260	0.000
2	FP		0.207	0.012	8.500	17.030	0.179	0.235	0.000
3		N	0.242	0.012	8.500	19.880	0.214	0.270	0.000
4		N0	0.198	0.012	8.500	16.270	0.170	0.226	0.000
5	EI	N	0.270	0.017	11.900	15.910	0.233	0.307	0.000
6	FP	N	0.213	0.017	11.900	12.570	0.176	0.250	0.000
7	EI	N0	0.195	0.017	11.900	11.480	0.158	0.232	0.000
8	FP	N0	0.201	0.017	11.900	11.820	0.164	0.238	0.000

Table 14.672: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.025	0.017	9.000	1.520	-0.012	0.063	0.162
B N-N0	0.044	0.017	9.000	2.630	0.006	0.082	0.028
A:B EI N- FP N	0.057	0.024	9.000	2.390	0.003	0.110	0.040
A:B EI N- EI N0	0.075	0.024	9.000	3.170	0.022	0.129	0.011
A:B EI N- FP N0	0.070	0.024	9.000	2.930	0.016	0.123	0.017
A:B FP N- EI N0	0.018	0.024	9.000	0.780	-0.035	0.072	0.456
A:B FP N- FP N0	0.013	0.024	9.000	0.540	-0.041	0.066	0.603
A:B EI N0- FP N0	-0.006	0.024	9.000	-0.240	-0.059	0.048	0.815

Table 14.673: Estimate of contrast in two-way ANOVA for variable HI.K at site 38 in year 2012a .

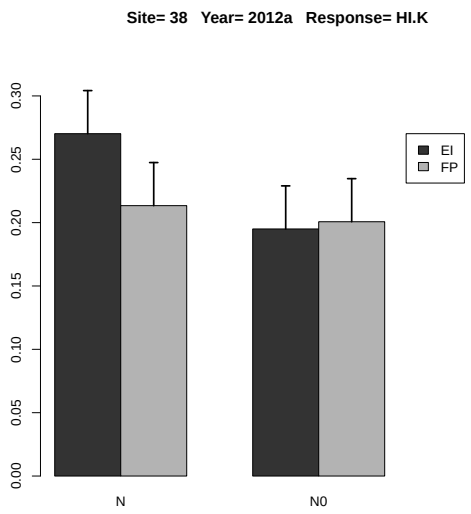

Figure 14.269: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.29 Response Variable HI.Mg

	rep	A	B	y
1	1	EI	N0	0.280
2	2	EI	N0	0.148
3	3	EI	N0	0.174
4	4	EI	N0	0.099
5	1	EI	N	0.198
6	2	EI	N	0.242
7	3	EI	N	0.212
8	4	EI	N	0.140
9	1	FP	N0	0.131
10	2	FP	N0	0.107
11	3	FP	N0	0.163
12	4	FP	N0	0.157
13	1	FP	N	0.203
14	2	FP	N	0.311
15	3	FP	N	0.279
16	4	FP	N	0.201

Table 14.674: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.Mg

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.198	0.025	3.600	8.020	0.126	0.269	0.002
A FP	0.248	0.025	3.600	10.070	0.177	0.320	0.001
A EI-FP	-0.051	0.015	3.000	-3.300	-0.100	-0.002	0.046

Table 14.675: Estimate of treatment means and contrast in one-way ANOVA for variable HI.Mg at site 38 in year 2012a .

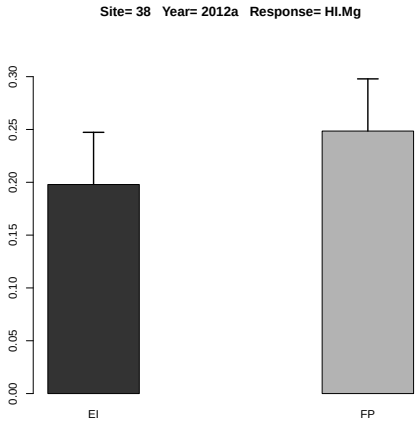

Figure 14.270: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.071	5.998	0.799
B	1.000	0.017	0.017	6.635	5.988	0.042
A:B	1.000	0.007	0.007	2.876	5.988	0.141

Table 14.676: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.187	0.020	6.000	9.490	0.139	0.235	0.000
2	FP		0.194	0.020	6.000	9.870	0.146	0.242	0.000
3		N	0.223	0.019	11.900	11.840	0.182	0.264	0.000
4		N0	0.158	0.019	11.900	8.360	0.116	0.199	0.000
5	EI	N	0.198	0.027	11.900	7.420	0.140	0.256	0.000
6	FP	N	0.248	0.027	11.900	9.320	0.190	0.307	0.000
7	EI	N0	0.175	0.027	11.900	6.580	0.117	0.234	0.000
8	FP	N0	0.140	0.027	11.900	5.240	0.082	0.198	0.000

Table 14.677: Estimate of treatment means in tow-way ANOVA for variable HI.Mg at site 38 in year 2012a .

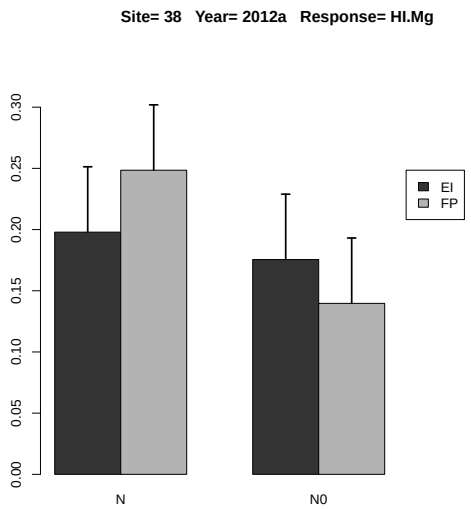

Figure 14.271: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.007	0.028	6.000	-0.270	-0.075	0.061	0.799
B N-N0	0.066	0.025	6.000	2.580	0.003	0.128	0.042
A:B EI N- FP N	-0.051	0.038	11.900	-1.340	-0.133	0.032	0.205
A:B EI N- EI N0	0.022	0.036	6.000	0.620	-0.066	0.111	0.557
A:B EI N- FP N0	0.058	0.038	11.900	1.540	-0.024	0.140	0.149
A:B FP N- EI N0	0.073	0.038	11.900	1.940	-0.009	0.155	0.077
A:B FP N- FP N0	0.109	0.036	6.000	3.020	0.021	0.197	0.023
A:B EI N0- FP N0	0.036	0.038	11.900	0.950	-0.046	0.118	0.362

Table 14.678: Estimate of contrast in two-way ANOVA for variable HI.Mg at site 38 in year 2012a .

14.5.30 Response Variable HI.S

	rep	A	B	y
1	1	EI	N0	1.173
2	2	EI	N0	1.116
3	3	EI	N0	0.940
4	4	EI	N0	0.453
5	1	EI	N	1.671
6	2	EI	N	1.111
7	3	EI	N	1.524
8	4	EI	N	1.053
9	1	FP	N0	0.481
10	2	FP	N0	0.449
11	3	FP	N0	0.419
12	4	FP	N0	0.800
13	1	FP	N	1.052
14	2	FP	N	1.189
15	3	FP	N	1.703
16	4	FP	N	1.082

Table 14.679: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.340	0.152	5.500	8.810	0.960	1.720	0.000
A FP	1.256	0.152	5.500	8.260	0.877	1.636	0.000
A EI-FP	0.083	0.181	3.000	0.460	-0.494	0.661	0.677

Table 14.680: Estimate of treatment means and contrast in one-way ANOVA for variable HI.S at site 38 in year 2012a .

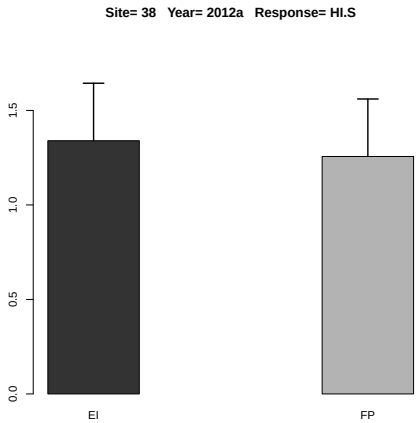

Figure 14.272: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.146	0.146	2.251	5.999	0.184
B	1.000	1.296	1.296	19.947	5.998	0.004
A:B	1.000	0.090	0.090	1.383	5.998	0.284

Table 14.681: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.130	0.110	6.000	10.280	0.861	1.399	0.000
2	FP		0.897	0.110	6.000	8.160	0.628	1.166	0.000
3		N	1.298	0.101	11.600	12.910	1.078	1.518	0.000
4		N0	0.729	0.101	11.600	7.250	0.509	0.949	0.000
5	EI	N	1.340	0.142	11.600	9.430	1.029	1.651	0.000
6	FP	N	1.256	0.142	11.600	8.840	0.945	1.567	0.000
7	EI	N0	0.920	0.142	11.600	6.480	0.609	1.232	0.000
8	FP	N0	0.537	0.142	11.600	3.780	0.226	0.848	0.003

Table 14.682: Estimate of treatment means in tow-way ANOVA for variable HI.S at site 38 in year 2012a .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.233	0.155	6.000	1.500	-0.147	0.614	0.184
B N-N0	0.569	0.127	6.000	4.470	0.257	0.881	0.004
A:B EI N- FP N	0.083	0.201	11.600	0.410	-0.356	0.523	0.686
A:B EI N- EI N0	0.419	0.180	6.000	2.330	-0.022	0.860	0.059
A:B EI N- FP N0	0.802	0.201	11.600	3.990	0.362	1.242	0.002
A:B FP N- EI N0	0.336	0.201	11.600	1.670	-0.104	0.776	0.122
A:B FP N- FP N0	0.719	0.180	6.000	3.990	0.278	1.160	0.007
A:B EI N0- FP N0	0.383	0.201	11.600	1.910	-0.057	0.823	0.082

Table 14.683: Estimate of contrast in two-way ANOVA for variable HI.S at site 38 in year 2012a .

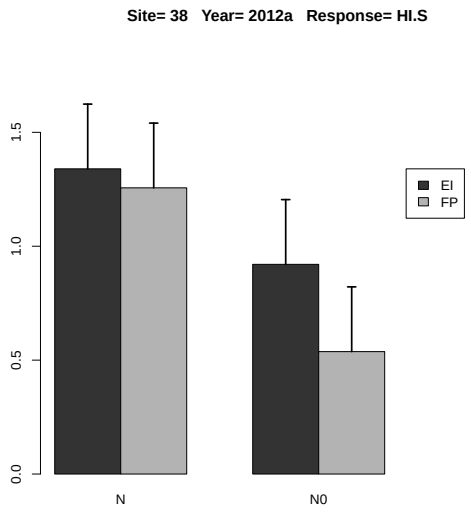

Figure 14.273: Estimated treatment means and standard error in the 2-way ANOVA.

14.5.31 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	50.760
2	2	EI	N	50.080
3	3	EI	N	42.070
4	4	EI	N	38.585
5	1	FP	N	49.967
6	2	FP	N	49.127
7	3	FP	N	44.540
8	4	FP	N	58.427

Table 14.684: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	45.374	2.949	6.000	15.390	38.158	52.589	0.000
A FP	50.515	2.949	6.000	17.130	43.300	57.730	0.000
A EI-FP	-5.141	4.170	6.000	-1.230	-15.345	5.063	0.264

Table 14.685: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 38 in year 2012a .

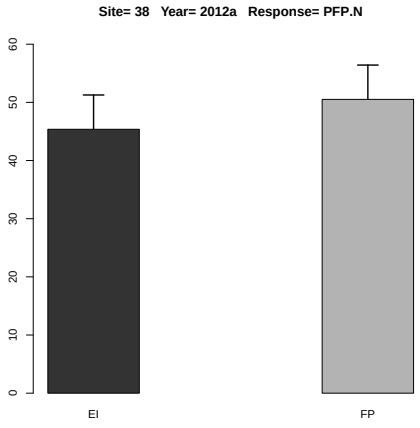

Figure 14.274: Estimated treatment means and standard error in the one-way ANOVA.

14.5.32 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	258.360
2	2	EI	N	254.899
3	3	EI	N	214.129
4	4	EI	N	196.391
5	1	FP	N	373.190
6	2	FP	N	366.916
7	3	FP	N	332.659
8	4	FP	N	436.376

Table 14.686: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	230.945	18.719	6.000	12.340	185.142	276.748	0.000
A FP	377.285	18.719	6.000	20.160	331.482	423.089	0.000
A EI-FP	-146.340	26.473	6.000	-5.530	-211.116	-81.565	0.002

Table 14.687: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 38 in year 2012a .

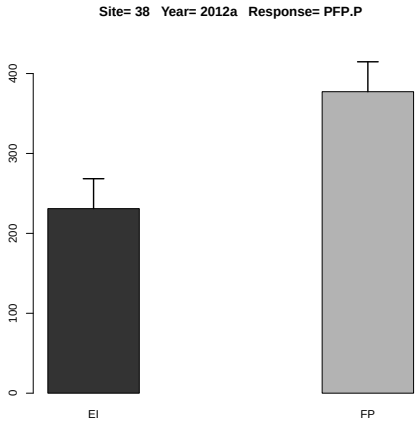

Figure 14.275: Estimated treatment means and standard error in the one-way ANOVA.

14.5.33 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	112.800
2	2	EI	N	111.289
3	3	EI	N	93.489
4	4	EI	N	85.744
5	1	FP	N	162.935
6	2	FP	N	160.196
7	3	FP	N	145.239
8	4	FP	N	190.522

Table 14.688: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	100.831	8.173	6.000	12.340	80.833	120.828	0.000
A FP	164.723	8.173	6.000	20.160	144.725	184.721	0.000
A EI-FP	-63.892	11.558	6.000	-5.530	-92.174	-35.611	0.002

Table 14.689: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 38 in year 2012a .

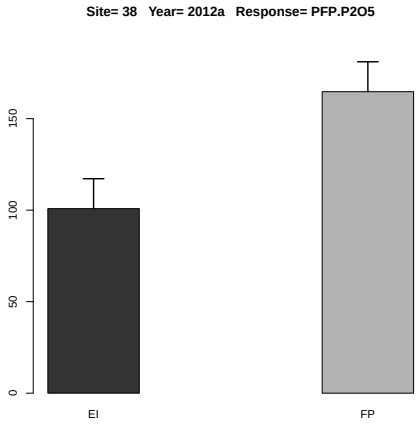

Figure 14.276: Estimated treatment means and standard error in the one-way ANOVA.

14.5.34 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	135.936
2	2	EI	N	134.115
3	3	EI	N	112.664
4	4	EI	N	103.331
5	1	FP	N	150.538
6	2	FP	N	148.008
7	3	FP	N	134.189
8	4	FP	N	176.026

Table 14.690: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	121.512	8.387	6.000	14.490	100.990	142.034	0.000
A FP	152.190	8.387	6.000	18.150	131.668	172.712	0.000
A EI-FP	-30.678	11.861	6.000	-2.590	-59.701	-1.656	0.041

Table 14.691: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 38 in year 2012a .

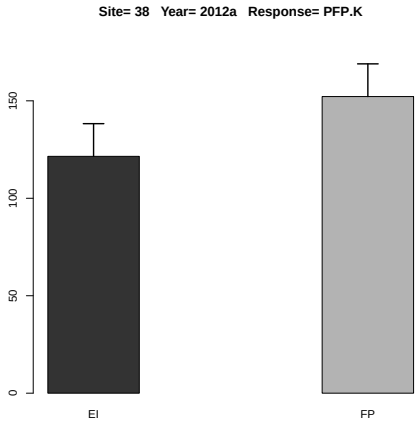

Figure 14.277: Estimated treatment means and standard error in the one-way ANOVA.

14.5.35 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	112.800
2	2	EI	N	111.289
3	3	EI	N	93.489
4	4	EI	N	85.744
5	1	FP	N	124.917
6	2	FP	N	122.817
7	3	FP	N	111.350
8	4	FP	N	146.067

Table 14.692: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	100.831	6.959	6.000	14.490	83.801	117.860	0.000
A FP	126.287	6.959	6.000	18.150	109.258	143.317	0.000
A EI-FP	-25.457	9.842	6.000	-2.590	-49.540	-1.374	0.041

Table 14.693: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 38 in year 2012a .

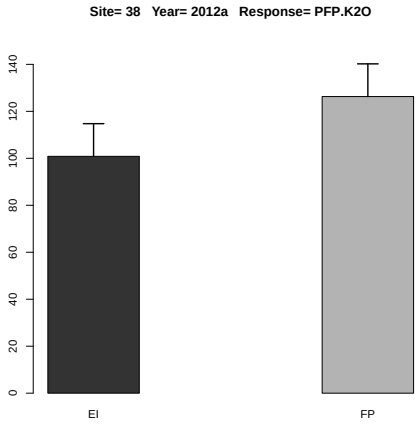

Figure 14.278: Estimated treatment means and standard error in the one-way ANOVA.

14.5.36 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	230.727
2	2	EI	N	227.636
3	3	EI	N	191.227
4	4	EI	N	175.386

Table 14.694: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

14.5.37 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	376.000
2	2	EI	N	370.963
3	3	EI	N	311.630
4	4	EI	N	285.815

Table 14.695: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

14.5.38 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	5076.000
2	2	EI	N	5008.000
3	3	EI	N	4207.000
4	4	EI	N	3858.500

Table 14.696: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

14.5.39 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	0.640
2	2	EI	N	0.606
3	3	EI	N	0.543
4	4	EI	N	0.505
5	1	FP	N	0.655
6	2	FP	N	0.580
7	3	FP	N	0.592
8	4	FP	N	0.742

Table 14.697: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.573	0.034	6.000	16.940	0.491	0.656	0.000
A FP	0.642	0.034	6.000	18.970	0.559	0.725	0.000
A EI-FP	-0.069	0.048	6.000	-1.440	-0.186	0.048	0.201

Table 14.698: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 38 in year 2012a .

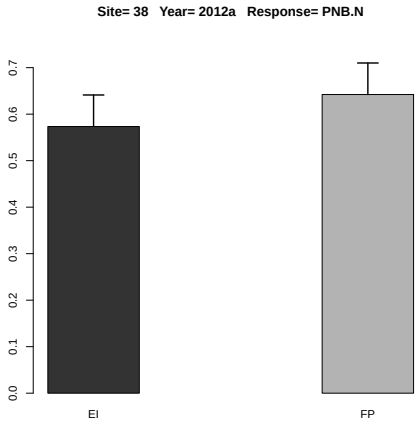

Figure 14.279: Estimated treatment means and standard error in the one-way ANOVA.

14.5.40 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	1.137
2	2	EI	N	1.045
3	3	EI	N	1.092
4	4	EI	N	0.982
5	1	FP	N	1.903
6	2	FP	N	1.101
7	3	FP	N	0.832
8	4	FP	N	2.138

Table 14.699: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.064	0.223	6.000	4.780	0.519	1.609	0.003
A FP	1.494	0.223	6.000	6.710	0.949	2.038	0.000
A EI-FP	-0.429	0.315	6.000	-1.360	-1.200	0.341	0.221

Table 14.700: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 38 in year 2012a .

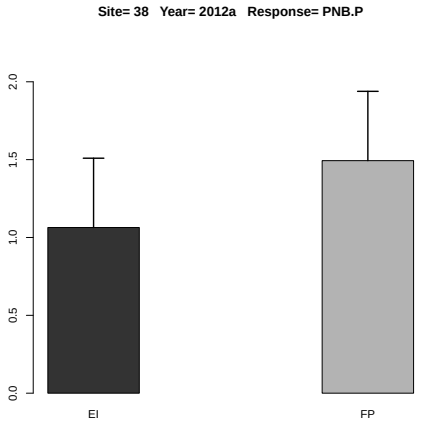

Figure 14.280: Estimated treatment means and standard error in the one-way ANOVA.

14.5.41 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	0.381
2	2	EI	N	0.402
3	3	EI	N	0.428
4	4	EI	N	0.362
5	1	FP	N	0.467
6	2	FP	N	0.651
7	3	FP	N	0.496
8	4	FP	N	0.616

Table 14.701: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.393	0.033	6.000	11.800	0.312	0.475	0.000
A FP	0.558	0.033	6.000	16.730	0.476	0.639	0.000
A EI-FP	-0.164	0.047	6.000	-3.490	-0.280	-0.049	0.013

Table 14.702: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.K at site 38 in year 2012a .

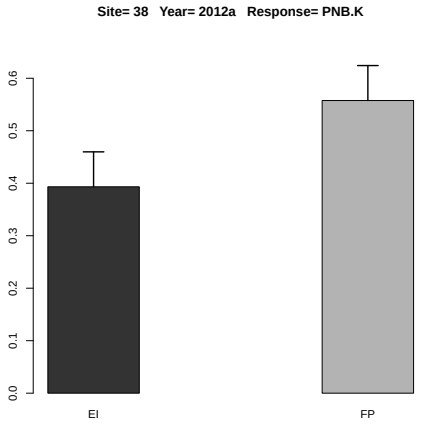

Figure 14.281: Estimated treatment means and standard error in the one-way ANOVA.

14.5.42 Response Variable PNB.Mg

	rep	A	B	y
1	1	EI	N	0.185
2	2	EI	N	0.159
3	3	EI	N	0.191
4	4	EI	N	0.158

Table 14.703: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.Mg

There is no or sufficient data for this response variable at this site and year.

14.5.43 Response Variable PNB.S

	rep	A	B	y
1	1	EI	N	2.970
2	2	EI	N	2.931
3	3	EI	N	2.836
4	4	EI	N	2.372

Table 14.704: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.S

There is no or sufficient data for this response variable at this site and year.

14.5.44 Response Variable AE

	rep	A	B	y
1	1	EI	N	43.980
2	2	EI	N	45.380
3	3	EI	N	20.600
4	4	EI	N	21.335
5	1	FP	N	38.753
6	2	FP	N	40.960
7	3	FP	N	18.167
8	4	FP	N	23.953

Table 14.705: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	32.824	1.246	26.347	0.000
A FP	30.458	1.246	24.448	0.000
A EI-FP	2.365	1.762	1.343	0.456

Table 14.706: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 38 in year 2012a .

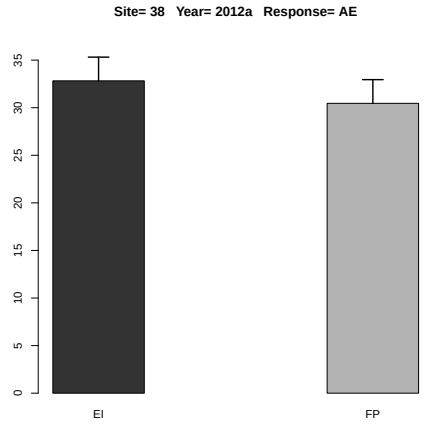

Figure 14.282: Estimated treatment means and standard error in the one-way ANOVA.

14.5.45 Response Variable RE

	rep	A	B	y
1	1	EI	N	1.639
2	2	EI	N	1.547
3	3	EI	N	0.944
4	4	EI	N	0.899
5	1	FP	N	1.541
6	2	FP	N	1.247
7	3	FP	N	0.579
8	4	FP	N	0.873

Table 14.707: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	1.257	0.057	22.079	0.000
A FP	1.060	0.057	18.618	0.001
A EI-FP	0.197	0.081	2.447	0.170

Table 14.708: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 38 in year 2012a .

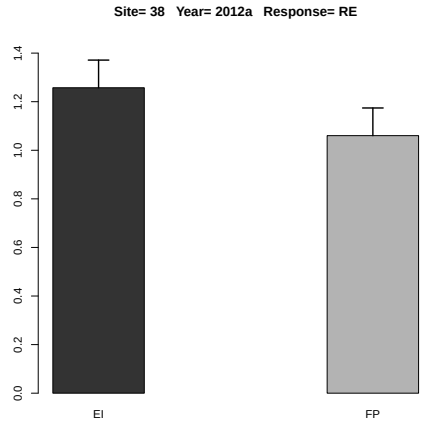

Figure 14.283: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 15

Analysis of Variance for Site 41

15.1 Year 2011

There are 60 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

15.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	6940.000
2	2	EI	N0	7040.000
3	3	EI	N0	7260.000
4	4	EI	N0	6920.000
5	1	EI	N	7330.000
6	2	EI	N	7390.000
7	3	EI	N	7560.000
8	4	EI	N	7380.000
9	1	FP	N0	6570.000
10	2	FP	N0	6730.000
11	3	FP	N0	6630.000
12	4	FP	N0	6350.000
13	1	FP	N	6860.000
14	2	FP	N	7080.000
15	3	FP	N	6760.000
16	4	FP	N	6740.000

Table 15.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	7415.000	74.861	99.050	0.000
A FP	6860.000	74.861	91.637	0.000
A EI-FP	555.000	105.869	5.242	0.026

Table 15.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 41 in year 2011 .

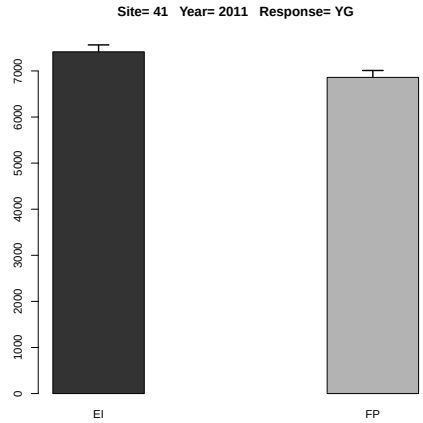

Figure 15.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	140171.928	140171.928	31.797	3.000	0.011
B	1.000	442225.000	442225.000	100.316	6.000	0.000
A:B	1.000	7225.000	7225.000	1.639	6.000	0.248

Table 15.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		7227.500	68.746	5.900	105.130	7058.631	7396.369	0.000
2	FP		6715.000	68.746	5.900	97.680	6546.131	6883.869	0.000
3		N	7137.500	54.189	3.600	131.710	6980.867	7294.133	0.000
4		N0	6805.000	54.189	3.600	125.580	6648.367	6961.633	0.000
5	EI	N	7415.000	72.644	7.300	102.070	7244.491	7585.509	0.000
6	FP	N	6860.000	72.644	7.300	94.430	6689.491	7030.509	0.000
7	EI	N0	7040.000	72.644	7.300	96.910	6869.491	7210.509	0.000
8	FP	N0	6570.000	72.644	7.300	90.440	6399.491	6740.509	0.000

Table 15.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 41 in year 2011 .

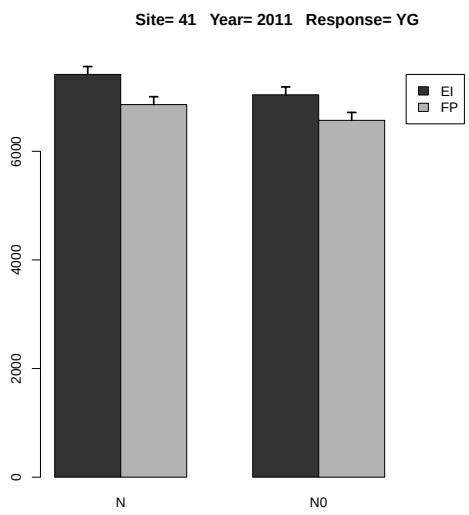

Figure 15.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	512.500	90.887	3.000	5.640	223.249	801.751	0.011
B N-N0	332.500	33.198	6.000	10.020	251.258	413.742	0.000
A:B EI N- FP N	555.000	96.760	3.800	5.740	281.275	828.725	0.005
A:B EI N- EI N0	375.000	46.949	6.000	7.990	260.106	489.894	0.000
A:B EI N- FP N0	845.000	96.760	3.800	8.730	571.275	1118.725	0.001
A:B FP N- EI N0	-180.000	96.760	3.800	-1.860	-453.725	93.725	0.140
A:B FP N- FP N0	290.000	46.949	6.000	6.180	175.106	404.894	0.001
A:B EI N0- FP N0	470.000	96.760	3.800	4.860	196.275	743.725	0.009

Table 15.5: Estimate of contrast in two-way ANOVA for variable YG at site 41 in year 2011 .

15.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	11181.000
2	2	EI	N0	10948.000
3	3	EI	N0	11088.000
4	4	EI	N0	11017.000
5	1	EI	N	9726.000
6	2	EI	N	9608.000
7	3	EI	N	9819.000
8	4	EI	N	9829.000
9	1	FP	N0	10838.000
10	2	FP	N0	10526.000
11	3	FP	N0	10596.000
12	4	FP	N0	10509.000
13	1	FP	N	10576.000
14	2	FP	N	10803.000
15	3	FP	N	10779.000
16	4	FP	N	10517.000

Table 15.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	9745.500	75.251	129.506	0.000
A FP	10668.750	75.251	141.775	0.000
A EI-FP	-923.250	106.422	-8.675	0.007

Table 15.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 41 in year 2011 .

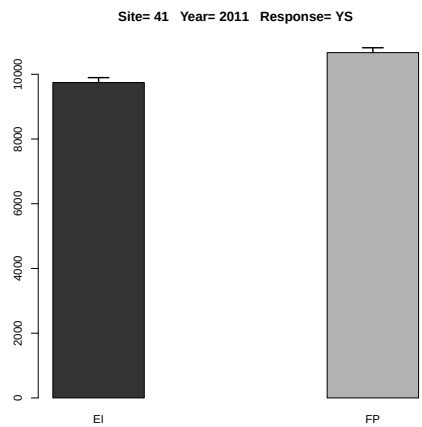

Figure 15.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	232324.000	232324.000	14.482	12.014	0.002
B	1.000	1591382.250	1591382.250	99.200	12.014	0.000
A:B	1.000	1861860.250	1861860.250	116.061	12.014	0.000

Table 15.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10402.000	44.780	12.000	232.290	10304.445	10499.555	0.000
2	FP		10643.000	44.780	12.000	237.670	10545.445	10740.555	0.000
3		N	10207.125	44.780	12.000	227.940	10109.570	10304.680	0.000
4		N0	10837.875	44.780	12.000	242.020	10740.320	10935.430	0.000
5	EI	N	9745.500	63.329	12.000	153.890	9607.537	9883.463	0.000
6	FP	N	10668.750	63.329	12.000	168.470	10530.787	10806.713	0.000
7	EI	N0	11058.500	63.329	12.000	174.620	10920.537	11196.463	0.000
8	FP	N0	10617.250	63.329	12.000	167.650	10479.287	10755.213	0.000

Table 15.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-241.000	63.329	12.000	-3.810	-378.964	-103.037	0.002
B N-N0	-630.750	63.329	12.000	-9.960	-768.713	-492.786	0.000
A:B EI N- FP N	-923.250	89.560	12.000	-10.310	-1118.360	-728.140	0.000
A:B EI N- EI N0	-1313.000	89.560	12.000	-14.660	-1508.110	-1117.890	0.000
A:B EI N- FP N0	-871.750	89.560	12.000	-9.730	-1066.860	-676.640	0.000
A:B FP N- EI N0	-389.750	89.560	12.000	-4.350	-584.860	-194.640	0.001
A:B FP N- FP N0	51.500	89.560	12.000	0.580	-143.610	246.610	0.576
A:B EI N0- FP N0	441.250	89.560	12.000	4.930	246.140	636.360	0.000

Table 15.10: Estimate of contrast in two-way ANOVA for variable YS at site 41 in year 2011 .

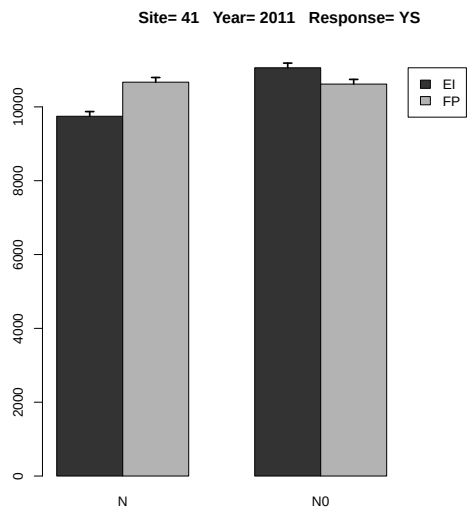

Figure 15.4: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	18121.000
2	2	EI	N0	17988.000
3	3	EI	N0	18348.000
4	4	EI	N0	17937.000
5	1	EI	N	17056.000
6	2	EI	N	16998.000
7	3	EI	N	17379.000
8	4	EI	N	17209.000
9	1	FP	N0	17408.000
10	2	FP	N0	17256.000
11	3	FP	N0	17226.000
12	4	FP	N0	16859.000
13	1	FP	N	17436.000
14	2	FP	N	17883.000
15	3	FP	N	17539.000
16	4	FP	N	17257.000

Table 15.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	17160.500	131.196	130.801	0.000
A FP	17528.750	131.196	133.607	0.000
A EI-FP	-368.250	185.539	-1.985	0.254

Table 15.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 41 in year 2011 .

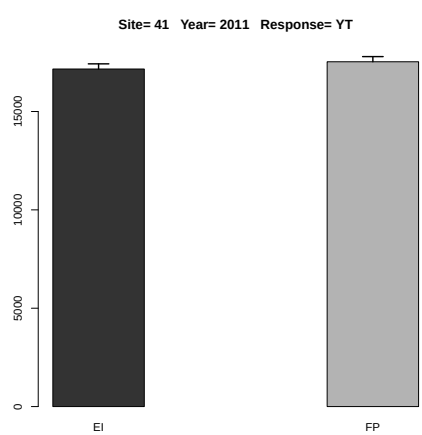

Figure 15.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	83870.796	83870.796	4.063	5.999	0.090
B	1.000	355812.250	355812.250	17.238	5.968	0.006
A:B	1.000	1637120.250	1637120.250	79.314	5.968	0.000

Table 15.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		17629.500	95.239	6.000	185.110	17396.454	17862.546	0.000
2	FP		17358.000	95.239	6.000	182.260	17124.954	17591.046	0.000
3		N	17344.625	76.323	9.200	227.250	17172.420	17516.830	0.000
4		N0	17642.875	76.323	9.200	231.160	17470.670	17815.080	0.000
5	EI	N	17160.500	107.938	9.200	158.990	16916.965	17404.035	0.000
6	FP	N	17528.750	107.938	9.200	162.400	17285.215	17772.285	0.000
7	EI	N0	18098.500	107.938	9.200	167.680	17854.965	18342.035	0.000
8	FP	N0	17187.250	107.938	9.200	159.230	16943.715	17430.785	0.000

Table 15.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 41 in year 2011 .

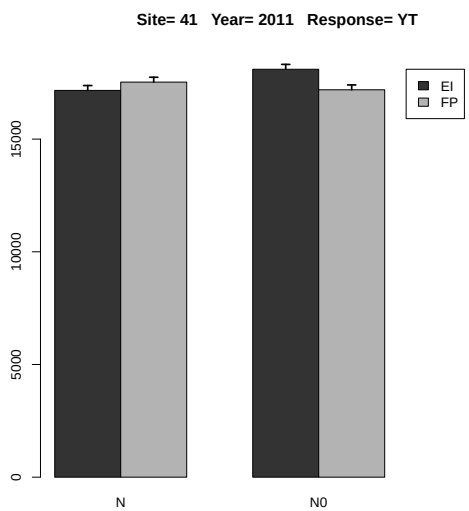

Figure 15.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	271.500	134.688	6.000	2.020	-58.077	601.077	0.090
B N-N0	-298.250	71.835	6.000	-4.150	-474.044	-122.456	0.006
A:B EI N- FP N	-368.250	152.647	9.200	-2.410	-712.661	-23.839	0.039
A:B EI N- EI N0	-938.000	101.590	6.000	-9.230	-1186.611	-689.389	0.000
A:B EI N- FP N0	-26.750	152.647	9.200	-0.180	-371.161	317.661	0.865
A:B FP N- EI N0	-569.750	152.647	9.200	-3.730	-914.161	-225.339	0.004
A:B FP N- FP N0	341.500	101.590	6.000	3.360	92.889	590.111	0.015
A:B EI N0- FP N0	911.250	152.647	9.200	5.970	566.839	1255.661	0.000

Table 15.15: Estimate of contrast in two-way ANOVA for variable YT at site 41 in year 2011 .

15.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.383
2	2	EI	N0	0.391
3	3	EI	N0	0.396
4	4	EI	N0	0.386
5	1	EI	N	0.430
6	2	EI	N	0.435
7	3	EI	N	0.435
8	4	EI	N	0.429
9	1	FP	N0	0.377
10	2	FP	N0	0.390
11	3	FP	N0	0.385
12	4	FP	N0	0.377
13	1	FP	N	0.393
14	2	FP	N	0.396
15	3	FP	N	0.385
16	4	FP	N	0.391

Table 15.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.432	0.002	204.346	0.000
A FP	0.391	0.002	185.071	0.000
A EI-FP	0.041	0.003	13.630	0.001

Table 15.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 41 in year 2011 .

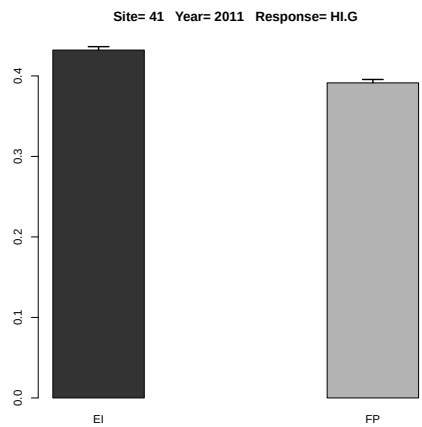

Figure 15.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.002	0.002	107.977	2.999	0.002
B	1.000	0.003	0.003	179.392	5.851	0.000
A:B	1.000	0.001	0.001	76.198	5.851	0.000

Table 15.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.410	0.002	5.100	191.840	0.405	0.416	0.000
2	FP		0.387	0.002	5.100	180.740	0.381	0.392	0.000
3		N	0.412	0.002	4.800	200.300	0.406	0.417	0.000
4		N0	0.386	0.002	4.800	187.590	0.380	0.391	0.000
5	EI	N	0.432	0.002	8.800	169.740	0.426	0.438	0.000
6	FP	N	0.391	0.002	8.800	153.730	0.386	0.397	0.000
7	EI	N0	0.389	0.002	8.800	152.790	0.383	0.395	0.000
8	FP	N0	0.382	0.002	8.800	150.150	0.376	0.388	0.000

Table 15.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.024	0.002	3.000	10.390	0.016	0.031	0.002
B N-N0	0.026	0.002	5.900	13.390	0.021	0.031	0.000
A:B EI N- FP N	0.041	0.003	7.000	13.570	0.034	0.048	0.000
A:B EI N- EI N0	0.043	0.003	5.900	15.640	0.036	0.050	0.000
A:B EI N- FP N0	0.050	0.003	7.000	16.600	0.043	0.057	0.000
A:B FP N- EI N0	0.002	0.003	7.000	0.790	-0.005	0.009	0.455
A:B FP N- FP N0	0.009	0.003	5.900	3.300	0.002	0.016	0.017
A:B EI N0- FP N0	0.007	0.003	7.000	2.240	-0.000	0.014	0.060

Table 15.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 41 in year 2011 .

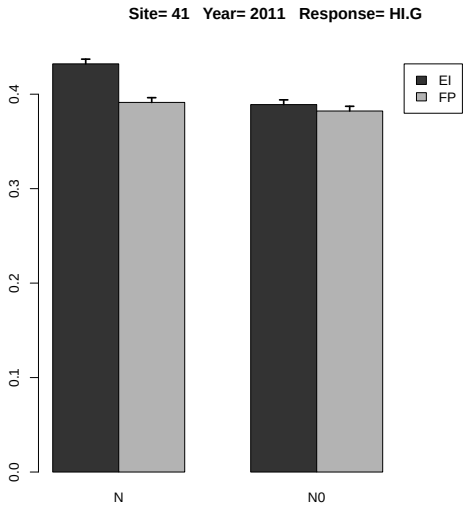

Figure 15.8: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	127.696
2	2	EI	N0	128.128
3	3	EI	N0	134.310
4	4	EI	N0	127.328
5	1	EI	N	146.600
6	2	EI	N	150.017
7	3	EI	N	156.492
8	4	EI	N	153.504
9	1	FP	N0	109.062
10	2	FP	N0	113.064
11	3	FP	N0	111.384
12	4	FP	N0	107.315
13	1	FP	N	123.480
14	2	FP	N	124.608
15	3	FP	N	121.004
16	4	FP	N	121.320

Table 15.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	151.653	2.038	74.409	0.000
A FP	122.603	2.038	60.156	0.000
A EI-FP	29.050	2.882	10.079	0.004

Table 15.22: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 41 in year 2011 .

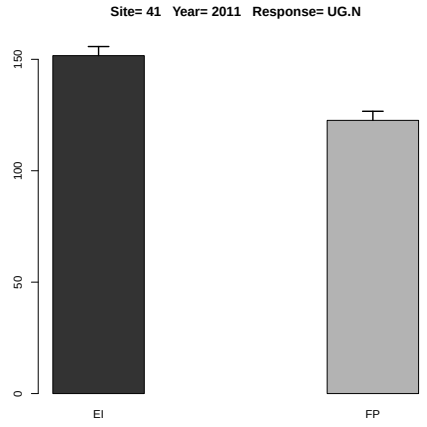

Figure 15.9: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	510.504	510.504	146.388	6.000	0.000
B	1.000	1203.015	1203.015	344.967	6.000	0.000
A:B	1.000	97.832	97.832	28.054	6.000	0.002

Table 15.23: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		140.509	1.409	6.000	99.740	137.062	143.957	0.000
2	FP		116.405	1.409	6.000	82.630	112.957	119.852	0.000
3		N	137.128	1.100	8.500	124.650	134.618	139.639	0.000
4		N0	119.786	1.100	8.500	108.890	117.275	122.296	0.000
5	EI	N	151.653	1.556	8.500	97.480	148.103	155.204	0.000
6	FP	N	122.603	1.556	8.500	78.800	119.053	126.153	0.000
7	EI	N0	129.365	1.556	8.500	83.150	125.815	132.916	0.000
8	FP	N0	110.206	1.556	8.500	70.840	106.656	113.757	0.000

Table 15.24: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 41 in year 2011 .

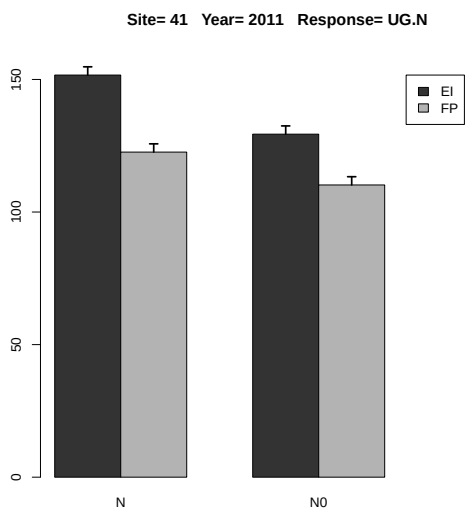

Figure 15.10: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	24.105	1.992	6.000	12.100	19.230	28.980	0.000
B N-N0	17.342	0.934	6.000	18.570	15.057	19.627	0.000
A:B EI N- FP N	29.050	2.200	8.500	13.200	24.029	34.071	0.000
A:B EI N- EI N0	22.288	1.321	6.000	16.880	19.057	25.519	0.000
A:B EI N- FP N0	41.447	2.200	8.500	18.840	36.426	46.468	0.000
A:B FP N- EI N0	-6.763	2.200	8.500	-3.070	-11.783	-1.742	0.014
A:B FP N- FP N0	12.397	1.321	6.000	9.390	9.166	15.628	0.000
A:B EI N0- FP N0	19.159	2.200	8.500	8.710	14.138	24.180	0.000

Table 15.25: Estimate of contrast in two-way ANOVA for variable UG.N at site 41 in year 2011 .

15.1.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	27.066
2	2	EI	N0	27.456
3	3	EI	N0	29.040
4	4	EI	N0	28.372
5	1	EI	N	30.053
6	2	EI	N	29.560
7	3	EI	N	31.752
8	4	EI	N	29.520
9	1	FP	N0	24.309
10	2	FP	N0	24.228
11	3	FP	N0	24.531
12	4	FP	N0	22.860
13	1	FP	N	21.952
14	2	FP	N	24.780
15	3	FP	N	23.660
16	4	FP	N	23.590

Table 15.26: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	30.221	0.584	51.775	0.000
A FP	23.496	0.584	40.252	0.000
A EI-FP	6.726	0.825	8.148	0.008

Table 15.27: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 41 in year 2011 .

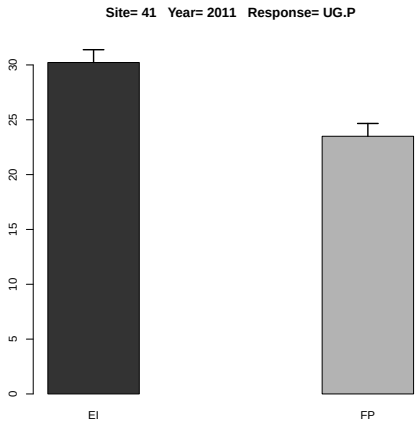

Figure 15.11: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	82.500	82.500	120.779	2.999	0.002
B	1.000	3.067	3.067	4.490	5.999	0.078
A:B	1.000	7.422	7.422	10.865	5.999	0.016

Table 15.28: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.102	0.392	5.700	74.190	28.131	30.074	0.000
2	FP		23.739	0.392	5.700	60.520	22.767	24.711	0.000
3		N	26.858	0.370	5.700	72.560	25.943	27.774	0.000
4		N0	25.983	0.370	5.700	70.200	25.067	26.898	0.000
5	EI	N	30.221	0.489	10.700	61.790	29.141	31.302	0.000
6	FP	N	23.495	0.489	10.700	48.040	22.415	24.576	0.000
7	EI	N0	27.983	0.489	10.700	57.210	26.903	29.064	0.000
8	FP	N0	23.982	0.489	10.700	49.030	22.901	25.063	0.000

Table 15.29: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.364	0.488	3.000	10.990	3.810	6.917	0.002
B N-N0	0.876	0.413	6.000	2.120	-0.136	1.887	0.078
A:B EI N- FP N	6.726	0.639	7.000	10.520	5.215	8.236	0.000
A:B EI N- EI N0	2.238	0.584	6.000	3.830	0.808	3.668	0.009
A:B EI N- FP N0	6.239	0.639	7.000	9.760	4.729	7.750	0.000
A:B FP N- EI N0	-4.488	0.639	7.000	-7.020	-5.999	-2.977	0.000
A:B FP N- FP N0	-0.486	0.584	6.000	-0.830	-1.917	0.944	0.437
A:B EI N0- FP N0	4.002	0.639	7.000	6.260	2.491	5.512	0.000

Table 15.30: Estimate of contrast in two-way ANOVA for variable UG.P at site 41 in year 2011 .

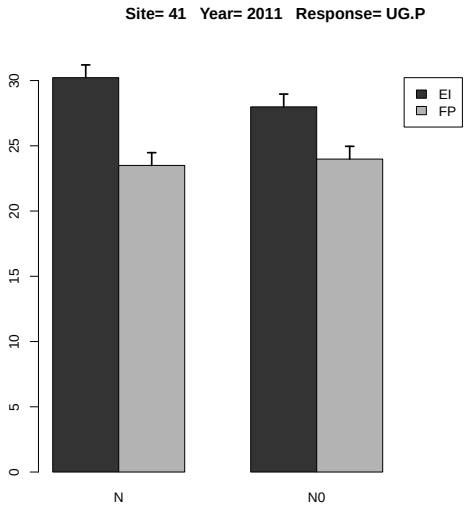

Figure 15.12: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	61.981
2	2	EI	N0	62.874
3	3	EI	N0	66.502
4	4	EI	N0	64.972
5	1	EI	N	68.821
6	2	EI	N	67.692
7	3	EI	N	72.712
8	4	EI	N	67.601
9	1	FP	N0	55.668
10	2	FP	N0	55.482
11	3	FP	N0	56.176
12	4	FP	N0	52.349
13	1	FP	N	50.270
14	2	FP	N	56.746
15	3	FP	N	54.181
16	4	FP	N	54.021

Table 15.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	69.207	1.337	51.775	0.000
A FP	53.805	1.337	40.252	0.000
A EI-FP	15.402	1.890	8.148	0.007

Table 15.32: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 41 in year 2011 .

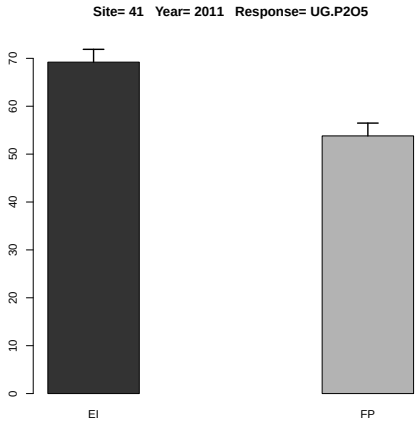

Figure 15.13: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	432.636	432.636	120.779	2.999	0.002
B	1.000	16.083	16.083	4.490	6.000	0.078
A:B	1.000	38.919	38.919	10.865	6.000	0.016

Table 15.33: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		66.644	0.898	5.700	74.190	64.419	68.870	0.000
2	FP		54.362	0.898	5.700	60.520	52.136	56.587	0.000
3		N	61.506	0.848	5.700	72.560	59.409	63.603	0.000
4		N0	59.501	0.848	5.700	70.200	57.404	61.597	0.000
5	EI	N	69.207	1.120	10.700	61.790	66.732	71.681	0.000
6	FP	N	53.805	1.120	10.700	48.040	51.330	56.279	0.000
7	EI	N0	64.082	1.120	10.700	57.210	61.608	66.557	0.000
8	FP	N0	54.919	1.120	10.700	49.030	52.444	57.393	0.000

Table 15.34: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 41 in year 2011 .

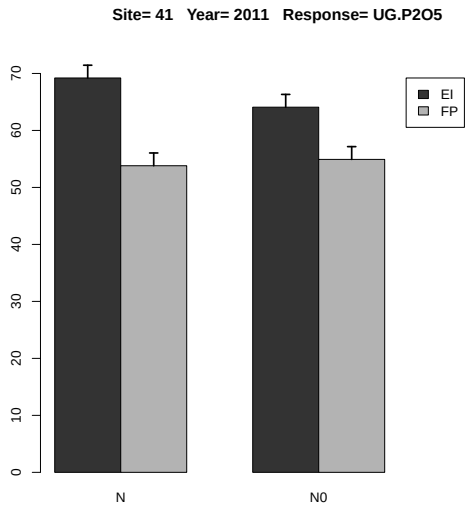

Figure 15.14: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	12.283	1.118	3.000	10.990	8.726	15.840	0.002
B N-N0	2.005	0.946	6.000	2.120	-0.310	4.321	0.078
A:B EI N- FP N	15.402	1.464	7.000	10.520	11.943	18.861	0.000
A:B EI N- EI N0	5.124	1.338	6.000	3.830	1.850	8.399	0.009
A:B EI N- FP N0	14.288	1.464	7.000	9.760	10.829	17.747	0.000
A:B FP N- EI N0	-10.277	1.464	7.000	-7.020	-13.737	-6.818	0.000
A:B FP N- FP N0	-1.114	1.338	6.000	-0.830	-4.389	2.161	0.437
A:B EI N0- FP N0	9.163	1.464	7.000	6.260	5.704	12.623	0.000

Table 15.35: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 41 in year 2011 .

15.1.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	34.700
2	2	EI	N0	35.904
3	3	EI	N0	36.300
4	4	EI	N0	35.984
5	1	EI	N	38.849
6	2	EI	N	39.167
7	3	EI	N	37.800
8	4	EI	N	42.066
9	1	FP	N0	30.879
10	2	FP	N0	30.285
11	3	FP	N0	31.824
12	4	FP	N0	30.480
13	1	FP	N	30.184
14	2	FP	N	36.108
15	3	FP	N	31.096
16	4	FP	N	33.700

Table 15.36: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	39.470	0.910	43.353	0.000
A FP	32.772	0.910	35.996	0.000
A EI-FP	6.698	1.288	5.202	0.027

Table 15.37: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 41 in year 2011 .

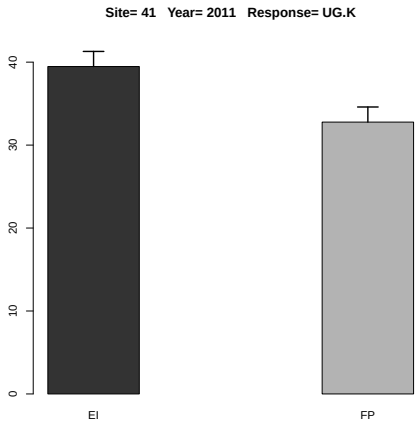

Figure 15.15: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	133.483	133.483	49.043	8.999	0.000
B	1.000	31.962	31.962	11.743	8.999	0.008
A:B	1.000	3.398	3.398	1.249	8.999	0.293

Table 15.38: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		37.596	0.613	8.100	61.300	36.186	39.006	0.000
2	FP		31.820	0.613	8.100	51.880	30.410	33.230	0.000
3		N	36.121	0.613	8.100	58.890	34.711	37.531	0.000
4		N0	33.294	0.613	8.100	54.280	31.884	34.705	0.000
5	EI	N	39.471	0.846	11.900	46.630	37.625	41.316	0.000
6	FP	N	32.772	0.846	11.900	38.720	30.926	34.618	0.000
7	EI	N0	35.722	0.846	11.900	42.200	33.876	37.568	0.000
8	FP	N0	30.867	0.846	11.900	36.470	29.021	32.713	0.000

Table 15.39: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.777	0.825	9.000	7.000	3.911	7.643	0.000
B N-N0	2.827	0.825	9.000	3.430	0.961	4.693	0.007
A:B EI N- FP N	6.699	1.167	9.000	5.740	4.059	9.338	0.000
A:B EI N- EI N0	3.748	1.167	9.000	3.210	1.109	6.388	0.011
A:B EI N- FP N0	8.604	1.167	9.000	7.380	5.965	11.242	0.000
A:B FP N- EI N0	-2.950	1.167	9.000	-2.530	-5.589	-0.311	0.032
A:B FP N- FP N0	1.905	1.167	9.000	1.630	-0.734	4.544	0.137
A:B EI N0- FP N0	4.855	1.167	9.000	4.160	2.216	7.494	0.002

Table 15.40: Estimate of contrast in two-way ANOVA for variable UG.K at site 41 in year 2011 .

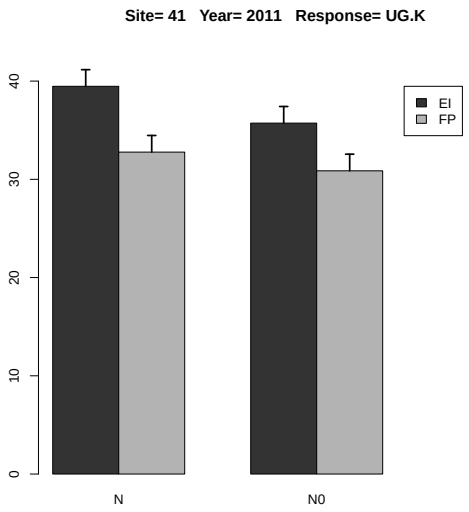

Figure 15.16: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	41.814
2	2	EI	N0	43.264
3	3	EI	N0	43.742
4	4	EI	N0	43.361
5	1	EI	N	46.813
6	2	EI	N	47.196
7	3	EI	N	45.549
8	4	EI	N	50.690
9	1	FP	N0	37.209
10	2	FP	N0	36.493
11	3	FP	N0	38.348
12	4	FP	N0	36.728
13	1	FP	N	36.372
14	2	FP	N	43.510
15	3	FP	N	37.471
16	4	FP	N	40.609

Table 15.41: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	47.562	1.097	43.353	0.000
A FP	39.490	1.097	35.996	0.000
A EI-FP	8.072	1.552	5.202	0.026

Table 15.42: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 41 in year 2011 .

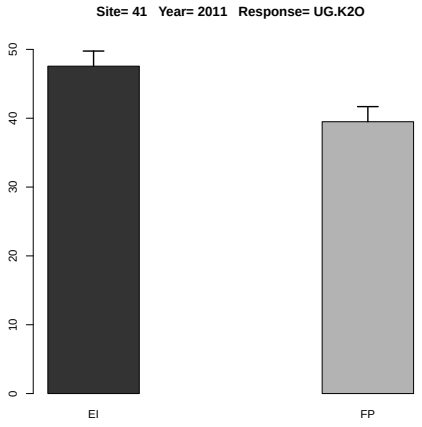

Figure 15.17: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	193.821	193.821	49.043	9.000	0.000
B	1.000	46.410	46.410	11.743	9.000	0.008
A:B	1.000	4.935	4.935	1.249	9.000	0.293

Table 15.43: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		45.303	0.739	8.100	61.300	43.604	47.002	0.000
2	FP		38.343	0.739	8.100	51.880	36.643	40.041	0.000
3		N	43.526	0.739	8.100	58.890	41.827	45.225	0.000
4		N0	40.120	0.739	8.100	54.280	38.421	41.819	0.000
5	EI	N	47.562	1.020	11.900	46.630	45.338	49.786	0.000
6	FP	N	39.490	1.020	11.900	38.720	37.266	41.714	0.000
7	EI	N0	43.045	1.020	11.900	42.200	40.821	45.269	0.000
8	FP	N0	37.195	1.020	11.900	36.470	34.971	39.419	0.000

Table 15.44: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 41 in year 2011 .

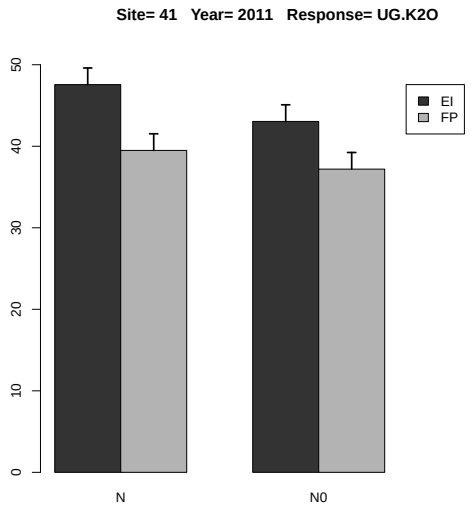

Figure 15.18: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	6.961	0.994	9.000	7.000	4.712	9.210	0.000
B N-N0	3.406	0.994	9.000	3.430	1.158	5.655	0.007
A:B EI N- FP N	8.072	1.406	9.000	5.740	4.892	11.252	0.000
A:B EI N- EI N0	4.517	1.406	9.000	3.210	1.337	7.697	0.011
A:B EI N- FP N0	10.367	1.406	9.000	7.380	7.187	13.547	0.000
A:B FP N- EI N0	-3.555	1.406	9.000	-2.530	-6.735	-0.375	0.032
A:B FP N- FP N0	2.296	1.406	9.000	1.630	-0.884	5.476	0.137
A:B EI N0- FP N0	5.850	1.406	9.000	4.160	2.670	9.030	0.002

Table 15.45: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 41 in year 2011 .

15.1.10 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	61.145
2	2	EI	N0	59.036
3	3	EI	N0	57.866
4	4	EI	N0	60.676
5	1	EI	N	56.460
6	2	EI	N	56.581
7	3	EI	N	56.983
8	4	EI	N	57.039
9	1	FP	N0	50.677
10	2	FP	N0	51.206
11	3	FP	N0	50.030
12	4	FP	N0	50.377
13	1	FP	N	53.985
14	2	FP	N	55.489
15	3	FP	N	57.289
16	4	FP	N	55.413

Table 15.46: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	56.766	0.413	137.589	0.000
A FP	55.544	0.413	134.627	0.000
A EI-FP	1.222	0.583	2.094	0.230

Table 15.47: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 41 in year 2011 .

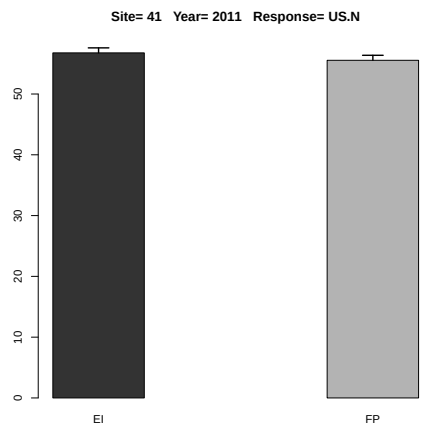

Figure 15.19: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	106.707	106.707	96.022	11.999	0.000
B	1.000	4.228	4.228	3.805	11.999	0.075
A:B	1.000	62.196	62.196	55.968	11.999	0.000

Table 15.48: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		58.223	0.373	12.000	156.220	57.411	59.035	0.000
2	FP		53.058	0.373	12.000	142.360	52.246	53.870	0.000
3		N	56.155	0.373	12.000	150.670	55.343	56.967	0.000
4		N0	55.127	0.373	12.000	147.910	54.315	55.939	0.000
5	EI	N	56.766	0.527	12.000	107.700	55.617	57.914	0.000
6	FP	N	55.544	0.527	12.000	105.380	54.395	56.692	0.000
7	EI	N0	59.681	0.527	12.000	113.230	58.532	60.829	0.000
8	FP	N0	50.573	0.527	12.000	95.950	49.424	51.721	0.000

Table 15.49: Estimate of treatment means in tow-way ANOVA for variable US.N at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.165	0.527	12.000	9.800	4.016	6.313	0.000
B N-N0	1.028	0.527	12.000	1.950	-0.120	2.176	0.075
A:B EI N- FP N	1.222	0.745	12.000	1.640	-0.402	2.846	0.127
A:B EI N- EI N0	-2.915	0.745	12.000	-3.910	-4.539	-1.291	0.002
A:B EI N- FP N0	6.193	0.745	12.000	8.310	4.569	7.817	0.000
A:B FP N- EI N0	-4.137	0.745	12.000	-5.550	-5.761	-2.513	0.000
A:B FP N- FP N0	4.971	0.745	12.000	6.670	3.347	6.596	0.000
A:B EI N0- FP N0	9.108	0.745	12.000	12.220	7.484	10.732	0.000

Table 15.50: Estimate of contrast in two-way ANOVA for variable US.N at site 41 in year 2011 .

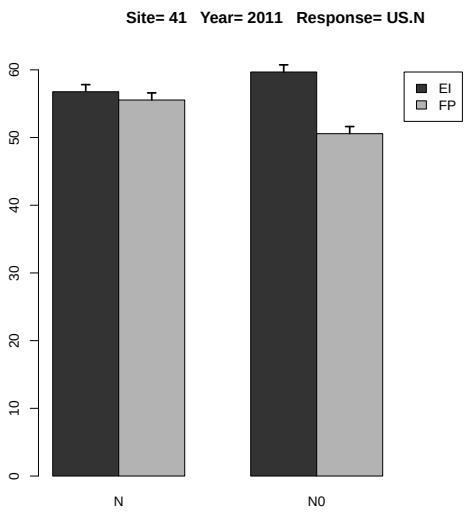

Figure 15.20: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.11 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	27.834
2	2	EI	N0	28.128
3	3	EI	N0	30.269
4	4	EI	N0	29.024
5	1	EI	N	30.352
6	2	EI	N	30.501
7	3	EI	N	31.177
8	4	EI	N	31.125
9	1	FP	N0	20.589
10	2	FP	N0	19.990
11	3	FP	N0	20.102
12	4	FP	N0	19.810
13	1	FP	N	21.867
14	2	FP	N	21.568
15	3	FP	N	23.519
16	4	FP	N	20.954

Table 15.51: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	30.789	0.371	83.014	0.000
A FP	21.977	0.371	59.256	0.000
A EI-FP	8.812	0.525	16.800	0.000

Table 15.52: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 41 in year 2011 .

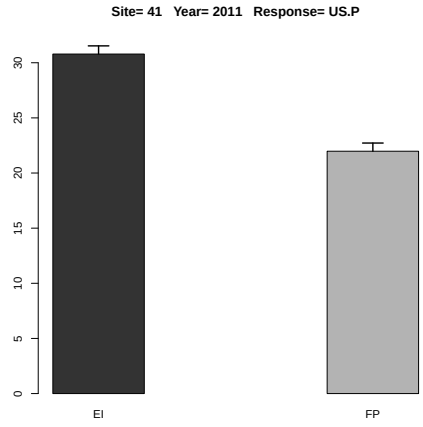

Figure 15.21: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	218.104	218.104	527.137	2.999	0.000
B	1.000	14.667	14.667	35.448	5.999	0.001
A:B	1.000	0.015	0.015	0.035	5.999	0.857

Table 15.53: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		29.801	0.341	5.300	87.380	28.937	30.665	0.000
2	FP		21.050	0.341	5.300	61.720	20.186	21.914	0.000
3		N	26.383	0.325	5.000	81.090	25.546	27.220	0.000
4		N0	24.468	0.325	5.000	75.210	23.631	25.305	0.000
5	EI	N	30.789	0.410	9.400	75.110	29.867	31.711	0.000
6	FP	N	21.977	0.410	9.400	53.610	21.055	22.899	0.000
7	EI	N0	28.814	0.410	9.400	70.290	27.892	29.735	0.000
8	FP	N0	20.123	0.410	9.400	49.090	19.201	21.045	0.000

Table 15.54: Estimate of treatment means in tow-way ANOVA for variable US.P at site 41 in year 2011 .

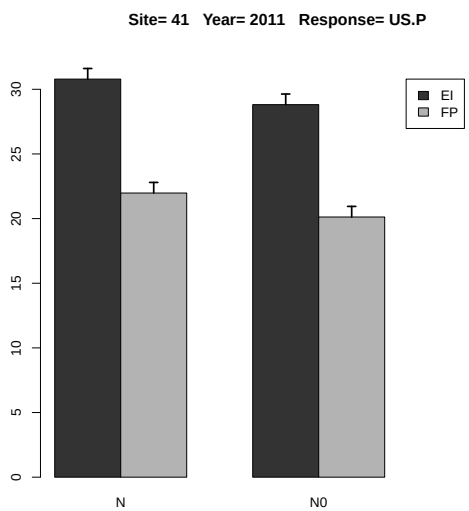

Figure 15.22: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	8.751	0.381	3.000	22.960	7.538	9.964	0.000
B N-N0	1.915	0.322	6.000	5.950	1.128	2.702	0.001
A:B EI N- FP N	8.812	0.499	7.000	17.670	7.633	9.991	0.000
A:B EI N- EI N0	1.975	0.455	6.000	4.340	0.862	3.088	0.005
A:B EI N- FP N0	10.666	0.499	7.000	21.390	9.487	11.845	0.000
A:B FP N- EI N0	-6.836	0.499	7.000	-13.710	-8.015	-5.657	0.000
A:B FP N- FP N0	1.854	0.455	6.000	4.080	0.741	2.967	0.006
A:B EI N0- FP N0	8.691	0.499	7.000	17.430	7.512	9.870	0.000

Table 15.55: Estimate of contrast in two-way ANOVA for variable US.P at site 41 in year 2011 .

15.1.12 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	30.847
2	2	EI	N0	31.268
3	3	EI	N0	33.264
4	4	EI	N0	31.739
5	1	EI	N	33.467
6	2	EI	N	33.190
7	3	EI	N	33.920
8	4	EI	N	33.943
9	1	FP	N0	22.693
10	2	FP	N0	22.045
11	3	FP	N0	22.212
12	4	FP	N0	21.714
13	1	FP	N	24.034
14	2	FP	N	23.912
15	3	FP	N	26.073
16	4	FP	N	23.326

Table 15.56: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	33.630	0.401	83.820	0.000
A FP	24.336	0.401	60.656	0.000
A EI-FP	9.294	0.567	16.379	0.001

Table 15.57: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 41 in year 2011 .

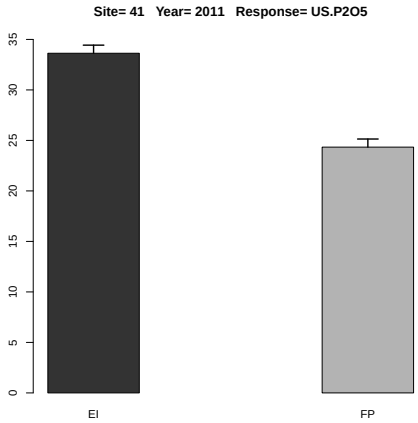

Figure 15.23: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	357.482	357.482	752.150	8.999	0.000
B	1.000	16.169	16.169	34.021	8.999	0.000
A:B	1.000	0.102	0.102	0.215	8.999	0.654

Table 15.58: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		32.705	0.344	5.100	94.980	31.827	33.582	0.000
2	FP		23.251	0.344	5.100	67.520	22.373	24.129	0.000
3		N	28.983	0.344	5.100	84.170	28.106	29.861	0.000
4		N0	26.973	0.344	5.100	78.330	26.095	27.850	0.000
5	EI	N	33.630	0.422	9.000	79.720	32.676	34.584	0.000
6	FP	N	24.336	0.422	9.000	57.690	23.382	25.291	0.000
7	EI	N0	31.779	0.422	9.000	75.330	30.825	32.733	0.000
8	FP	N0	22.166	0.422	9.000	52.540	21.212	23.120	0.000

Table 15.59: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	9.454	0.345	9.000	27.430	8.674	10.233	0.000
B N-N0	2.011	0.345	9.000	5.830	1.231	2.790	0.000
A:B EI N- FP N	9.294	0.487	9.000	19.060	8.191	10.396	0.000
A:B EI N- EI N0	1.851	0.487	9.000	3.800	0.748	2.953	0.004
A:B EI N- FP N0	11.464	0.487	9.000	23.520	10.361	12.567	0.000
A:B FP N- EI N0	-7.443	0.487	9.000	-15.270	-8.546	-6.340	0.000
A:B FP N- FP N0	2.171	0.487	9.000	4.450	1.068	3.273	0.002
A:B EI N0- FP N0	9.614	0.487	9.000	19.720	8.511	10.716	0.000

Table 15.60: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 41 in year 2011
.

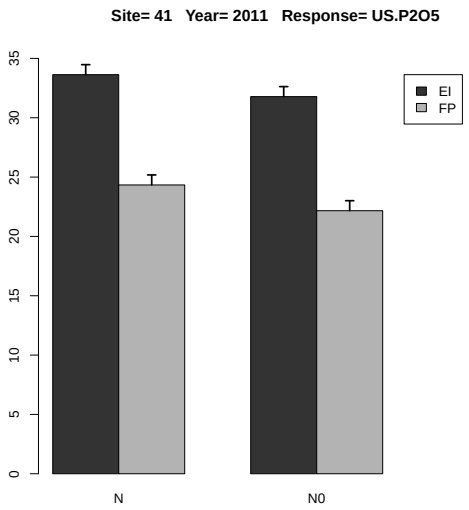

Figure 15.24: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.13 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	133.248
2	2	EI	N0	129.270
3	3	EI	N0	133.719
4	4	EI	N0	132.002
5	1	EI	N	118.624
6	2	EI	N	118.164
7	3	EI	N	121.278
8	4	EI	N	121.864
9	1	FP	N0	122.721
10	2	FP	N0	118.899
11	3	FP	N0	120.201
12	4	FP	N0	117.833
13	1	FP	N	116.289
14	2	FP	N	127.666
15	3	FP	N	123.692
16	4	FP	N	121.255

Table 15.61: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	119.983	1.846	64.983	0.000
A FP	122.225	1.846	66.198	0.000
A EI-FP	-2.243	2.611	-0.859	0.688

Table 15.62: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 41 in year 2011 .

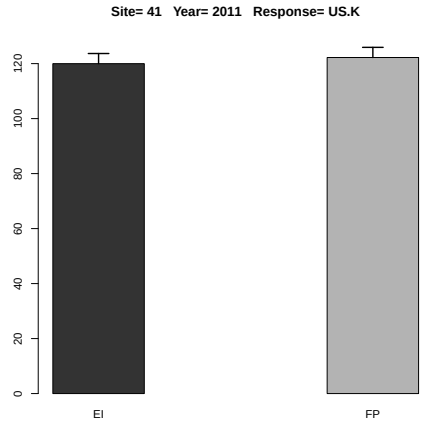

Figure 15.25: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	98.076	98.076	11.362	12.000	0.006
B	1.000	95.346	95.346	11.046	12.000	0.006
A:B	1.000	207.040	207.040	23.986	12.000	0.000

Table 15.63: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		126.021	1.039	12.000	121.320	123.758	128.284	0.000
2	FP		121.069	1.039	12.000	116.550	118.806	123.333	0.000
3		N	121.104	1.039	12.000	116.590	118.841	123.367	0.000
4		N0	125.986	1.039	12.000	121.290	123.723	128.250	0.000
5	EI	N	119.983	1.469	12.000	81.680	116.782	123.183	0.000
6	FP	N	122.225	1.469	12.000	83.200	119.025	125.426	0.000
7	EI	N0	132.059	1.469	12.000	89.900	128.859	135.260	0.000
8	FP	N0	119.913	1.469	12.000	81.630	116.713	123.114	0.000

Table 15.64: Estimate of treatment means in tow-way ANOVA for variable US.K at site 41 in year 2011 .

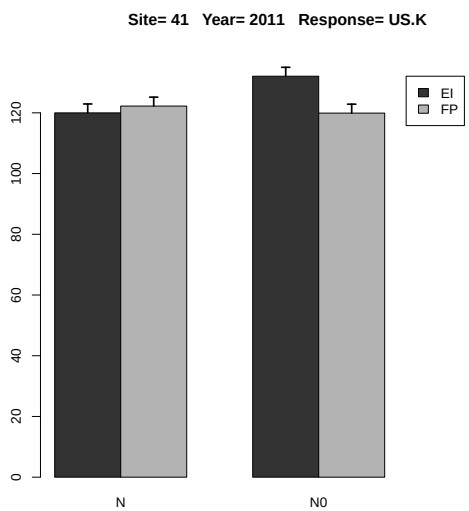

Figure 15.26: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4.952	1.469	12.000	3.370	1.751	8.152	0.006
B N-N0	-4.882	1.469	12.000	-3.320	-8.083	-1.682	0.006
A:B EI N- FP N	-2.243	2.078	12.000	-1.080	-6.769	2.284	0.302
A:B EI N- EI N0	-12.077	2.078	12.000	-5.810	-16.603	-7.550	0.000
A:B EI N- FP N0	0.069	2.078	12.000	0.030	-4.457	4.596	0.974
A:B FP N- EI N0	-9.834	2.078	12.000	-4.730	-14.360	-5.308	0.000
A:B FP N- FP N0	2.312	2.078	12.000	1.110	-2.214	6.839	0.287
A:B EI N0- FP N0	12.146	2.078	12.000	5.850	7.620	16.673	0.000

Table 15.65: Estimate of contrast in two-way ANOVA for variable US.K at site 41 in year 2011 .

15.1.14 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	136.037
2	2	EI	N0	131.970
3	3	EI	N0	136.634
4	4	EI	N0	134.820
5	1	EI	N	121.718
6	2	EI	N	121.583
7	3	EI	N	124.361
8	4	EI	N	125.318
9	1	FP	N0	124.755
10	2	FP	N0	121.021
11	3	FP	N0	122.129
12	4	FP	N0	119.814
13	1	FP	N	118.872
14	2	FP	N	129.930
15	3	FP	N	126.011
16	4	FP	N	123.719

Table 15.66: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	123.245	1.772	69.556	0.000
A FP	124.633	1.772	70.340	0.000
A EI-FP	-1.388	2.506	-0.554	0.845

Table 15.67: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 41 in year 2011 .

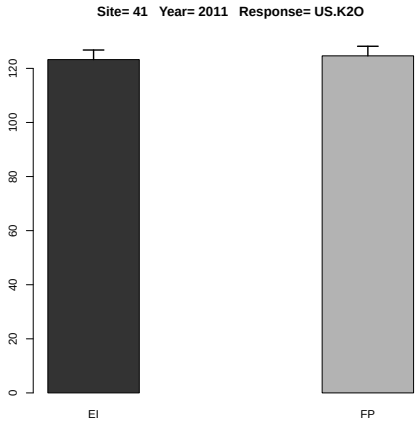

Figure 15.27: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	133.350	133.350	15.870	12.000	0.002
B	1.000	79.507	79.507	9.462	12.000	0.010
A:B	1.000	205.172	205.172	24.418	12.000	0.000

Table 15.68: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		129.055	1.025	12.000	125.930	126.822	131.288	0.000
2	FP		123.281	1.025	12.000	120.290	121.048	125.514	0.000
3		N	123.939	1.025	12.000	120.930	121.706	126.172	0.000
4		N0	128.397	1.025	12.000	125.280	126.164	130.630	0.000
5	EI	N	123.245	1.449	12.000	85.030	120.087	126.403	0.000
6	FP	N	124.633	1.449	12.000	85.990	121.475	127.791	0.000
7	EI	N0	134.865	1.449	12.000	93.050	131.707	138.023	0.000
8	FP	N0	121.929	1.449	12.000	84.130	118.772	125.087	0.000

Table 15.69: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	5.774	1.449	12.000	3.980	2.616	8.932	0.002
B N-N0	-4.458	1.449	12.000	-3.080	-7.616	-1.300	0.010
A:B EI N- FP N	-1.388	2.050	12.000	-0.680	-5.854	3.078	0.511
A:B EI N- EI N0	-11.620	2.050	12.000	-5.670	-16.086	-7.154	0.000
A:B EI N- FP N0	1.315	2.050	12.000	0.640	-3.150	5.781	0.533
A:B FP N- EI N0	-10.232	2.050	12.000	-4.990	-14.698	-5.766	0.000
A:B FP N- FP N0	2.704	2.050	12.000	1.320	-1.762	7.170	0.212
A:B EI N0- FP N0	12.936	2.050	12.000	6.310	8.470	17.402	0.000

Table 15.70: Estimate of contrast in two-way ANOVA for variable US.K2O at site 41 in year 2011 .

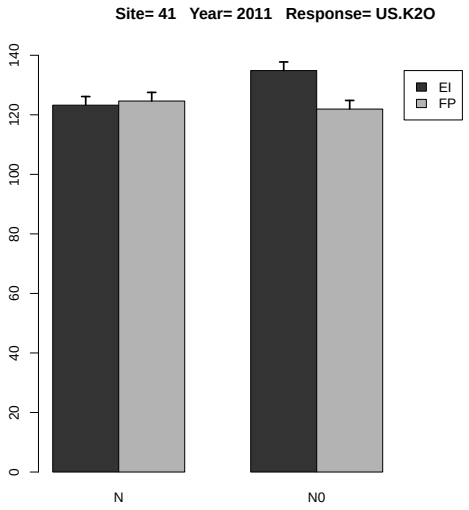

Figure 15.28: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.15 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	188.841
2	2	EI	N0	187.164
3	3	EI	N0	192.176
4	4	EI	N0	188.004
5	1	EI	N	203.060
6	2	EI	N	206.598
7	3	EI	N	213.475
8	4	EI	N	210.543
9	1	FP	N0	159.739
10	2	FP	N0	164.270
11	3	FP	N0	161.414
12	4	FP	N0	157.692
13	1	FP	N	177.465
14	2	FP	N	180.097
15	3	FP	N	178.293
16	4	FP	N	176.733

Table 15.71: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	208.419	1.741	119.732	0.000
A FP	178.147	1.741	102.342	0.000
A EI-FP	30.272	2.462	12.297	0.002

Table 15.72: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 41 in year 2011 .

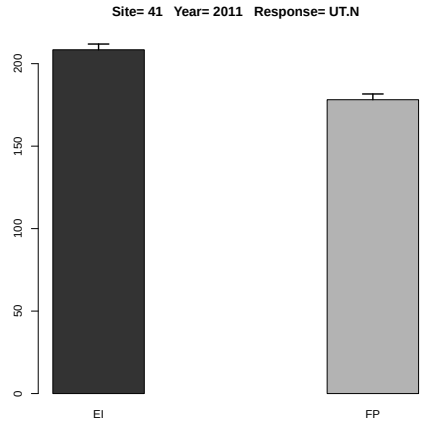

Figure 15.29: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	944.623	944.623	247.299	5.999	0.000
B	1.000	1349.881	1349.881	353.394	6.000	0.000
A:B	1.000	4.018	4.018	1.052	6.000	0.345

Table 15.73: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		198.733	1.316	6.000	151.000	195.512	201.953	0.000
2	FP		169.463	1.316	6.000	128.760	166.242	172.683	0.000
3		N	193.283	1.051	9.100	183.890	190.908	195.658	0.000
4		N0	174.912	1.051	9.100	166.410	172.538	177.287	0.000
5	EI	N	208.419	1.486	9.100	140.210	205.060	211.777	0.000
6	FP	N	178.147	1.486	9.100	119.840	174.788	181.505	0.000
7	EI	N0	189.046	1.486	9.100	127.180	185.688	192.405	0.000
8	FP	N0	160.779	1.486	9.100	108.160	157.420	164.137	0.000

Table 15.74: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 41 in year 2011 .

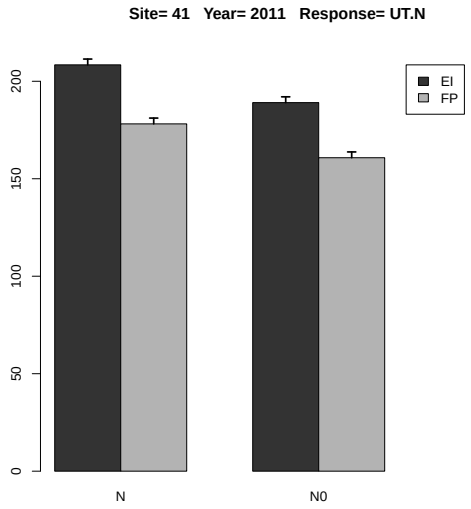

Figure 15.30: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	29.270	1.861	6.000	15.730	24.715	33.824	0.000
B N-N0	18.370	0.977	6.000	18.800	15.979	20.762	0.000
A:B EI N- FP N	30.272	2.102	9.100	14.400	25.522	35.022	0.000
A:B EI N- EI N0	19.373	1.382	6.000	14.020	15.991	22.754	0.000
A:B EI N- FP N0	47.640	2.102	9.100	22.660	42.890	52.390	0.000
A:B FP N- EI N0	-10.899	2.102	9.100	-5.180	-15.649	-6.150	0.001
A:B FP N- FP N0	17.368	1.382	6.000	12.570	13.986	20.750	0.000
A:B EI N0- FP N0	28.267	2.102	9.100	13.450	23.518	33.017	0.000

Table 15.75: Estimate of contrast in two-way ANOVA for variable UT.N at site 41 in year 2011 .

15.1.16 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	54.900
2	2	EI	N0	55.584
3	3	EI	N0	59.309
4	4	EI	N0	57.396
5	1	EI	N	60.405
6	2	EI	N	60.061
7	3	EI	N	62.929
8	4	EI	N	60.645
9	1	FP	N0	44.898
10	2	FP	N0	44.218
11	3	FP	N0	44.633
12	4	FP	N0	42.670
13	1	FP	N	43.819
14	2	FP	N	46.348
15	3	FP	N	47.179
16	4	FP	N	44.544

Table 15.76: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	61.010	0.447	136.567	0.000
A FP	45.473	0.447	101.787	0.000
A EI-FP	15.537	0.632	24.593	0.000

Table 15.77: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 41 in year 2011 .

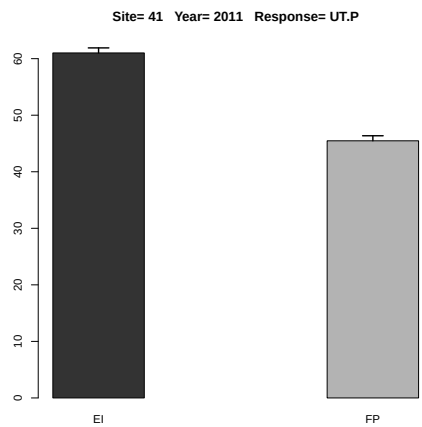

Figure 15.31: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	369.955	369.955	395.306	3.000	0.000
B	1.000	31.147	31.147	33.282	5.999	0.001
A:B	1.000	8.095	8.095	8.649	5.999	0.026

Table 15.78: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		58.904	0.669	5.000	88.100	57.189	60.618	0.000
2	FP		44.789	0.669	5.000	66.990	43.074	46.503	0.000
3		N	53.241	0.616	4.100	86.430	51.551	54.932	0.000
4		N0	50.451	0.616	4.100	81.900	48.761	52.141	0.000
5	EI	N	61.010	0.751	7.600	81.240	59.262	62.758	0.000
6	FP	N	45.473	0.751	7.600	60.550	43.724	47.221	0.000
7	EI	N0	56.797	0.751	7.600	75.630	55.049	58.545	0.000
8	FP	N0	44.105	0.751	7.600	58.730	42.356	45.853	0.000

Table 15.79: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	14.115	0.710	3.000	19.880	11.855	16.374	0.000
B N-N0	2.791	0.484	6.000	5.770	1.607	3.974	0.001
A:B EI N- FP N	15.537	0.859	5.800	18.090	13.418	17.657	0.000
A:B EI N- EI N0	4.213	0.684	6.000	6.160	2.539	5.887	0.001
A:B EI N- FP N0	16.905	0.859	5.800	19.680	14.786	19.024	0.000
A:B FP N- EI N0	-11.324	0.859	5.800	-13.180	-13.444	-9.205	0.000
A:B FP N- FP N0	1.368	0.684	6.000	2.000	-0.306	3.042	0.092
A:B EI N0- FP N0	12.692	0.859	5.800	14.770	10.573	14.812	0.000

Table 15.80: Estimate of contrast in two-way ANOVA for variable UT.P at site 41 in year 2011 .

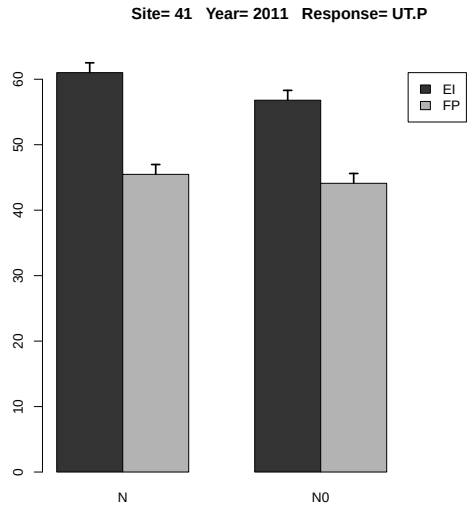

Figure 15.32: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.17 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	57.913
2	2	EI	N0	58.724
3	3	EI	N0	62.304
4	4	EI	N0	60.111
5	1	EI	N	63.520
6	2	EI	N	62.750
7	3	EI	N	65.672
8	4	EI	N	63.463
9	1	FP	N0	47.002
10	2	FP	N0	46.273
11	3	FP	N0	46.743
12	4	FP	N0	44.574
13	1	FP	N	45.986
14	2	FP	N	48.692
15	3	FP	N	49.733
16	4	FP	N	46.916

Table 15.81: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	63.851	0.517	123.411	0.000
A FP	47.832	0.517	92.449	0.000
A EI-FP	16.019	0.732	21.893	0.001

Table 15.82: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 41 in year 2011 .

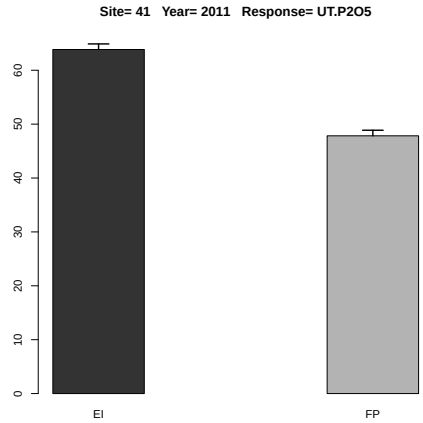

Figure 15.33: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	566.827	566.827	510.110	2.999	0.000
B	1.000	33.320	33.320	29.986	5.999	0.002
A:B	1.000	5.781	5.781	5.202	5.999	0.063

Table 15.83: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		61.807	0.667	4.700	92.630	60.063	63.551	0.000
2	FP		46.990	0.667	4.700	70.420	45.245	48.734	0.000
3		N	55.842	0.638	4.300	87.520	54.113	57.570	0.000
4		N0	52.955	0.638	4.300	83.000	51.227	54.683	0.000
5	EI	N	63.851	0.764	7.600	83.540	62.071	65.631	0.000
6	FP	N	47.832	0.764	7.600	62.580	46.052	49.612	0.000
7	EI	N0	59.763	0.764	7.600	78.200	57.983	61.543	0.000
8	FP	N0	46.148	0.764	7.600	60.380	44.368	47.928	0.000

Table 15.84: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 41 in year 2011 .

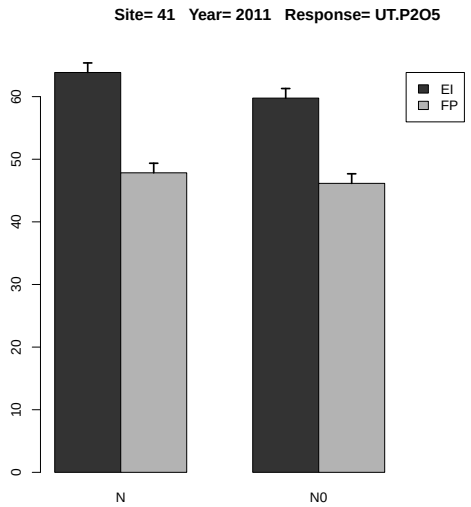

Figure 15.34: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	14.817	0.656	3.000	22.590	12.729	16.905	0.000
B N-N0	2.886	0.527	6.000	5.480	1.597	4.176	0.002
A:B EI N- FP N	16.019	0.842	6.700	19.040	14.013	18.026	0.000
A:B EI N- EI N0	4.088	0.745	6.000	5.480	2.264	5.912	0.002
A:B EI N- FP N0	17.703	0.842	6.700	21.040	15.697	19.710	0.000
A:B FP N- EI N0	-11.931	0.842	6.700	-14.180	-13.938	-9.924	0.000
A:B FP N- FP N0	1.684	0.745	6.000	2.260	-0.140	3.508	0.065
A:B EI N0- FP N0	13.615	0.842	6.700	16.180	11.608	15.622	0.000

Table 15.85: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 41 in year 2011 .

15.1.18 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	167.948
2	2	EI	N0	165.174
3	3	EI	N0	170.019
4	4	EI	N0	167.986
5	1	EI	N	157.473
6	2	EI	N	157.331
7	3	EI	N	159.078
8	4	EI	N	163.930
9	1	FP	N0	153.600
10	2	FP	N0	149.184
11	3	FP	N0	152.025
12	4	FP	N0	148.313
13	1	FP	N	146.473
14	2	FP	N	163.774
15	3	FP	N	154.788
16	4	FP	N	154.955

Table 15.86: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	159.453	2.754	57.893	0.000
A FP	154.998	2.754	56.275	0.000
A EI-FP	4.456	3.895	1.144	0.544

Table 15.87: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 41 in year 2011 .

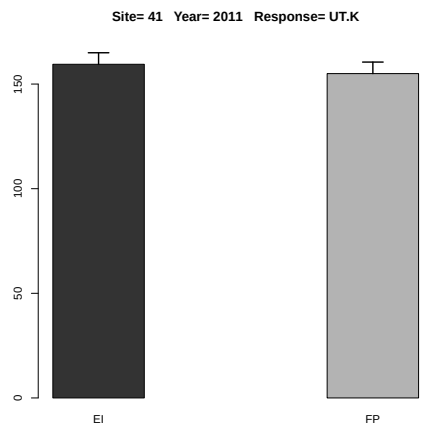

Figure 15.35: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	460.396	460.396	26.515	12.000	0.000
B	1.000	16.901	16.901	0.973	12.000	0.343
A:B	1.000	157.387	157.387	9.064	12.000	0.011

Table 15.88: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		163.617	1.473	12.000	111.060	160.407	166.827	0.000
2	FP		152.889	1.473	12.000	103.780	149.679	156.099	0.000
3		N	157.225	1.473	12.000	106.720	154.015	160.435	0.000
4		N0	159.281	1.473	12.000	108.120	156.071	162.491	0.000
5	EI	N	159.453	2.083	12.000	76.530	154.914	163.993	0.000
6	FP	N	154.998	2.083	12.000	74.390	150.458	159.537	0.000
7	EI	N0	167.781	2.083	12.000	80.530	163.242	172.321	0.000
8	FP	N0	150.780	2.083	12.000	72.370	146.241	155.320	0.000

Table 15.89: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	10.728	2.083	12.000	5.150	6.189	15.268	0.000
B N-N0	-2.055	2.083	12.000	-0.990	-6.595	2.484	0.343
A:B EI N- FP N	4.456	2.946	12.000	1.510	-1.964	10.876	0.156
A:B EI N- EI N0	-8.328	2.946	12.000	-2.830	-14.748	-1.908	0.015
A:B EI N- FP N0	8.673	2.946	12.000	2.940	2.253	15.093	0.012
A:B FP N- EI N0	-12.784	2.946	12.000	-4.340	-19.204	-6.364	0.001
A:B FP N- FP N0	4.217	2.946	12.000	1.430	-2.203	10.637	0.178
A:B EI N0- FP N0	17.001	2.946	12.000	5.770	10.581	23.421	0.000

Table 15.90: Estimate of contrast in two-way ANOVA for variable UT.K at site 41 in year 2011 .

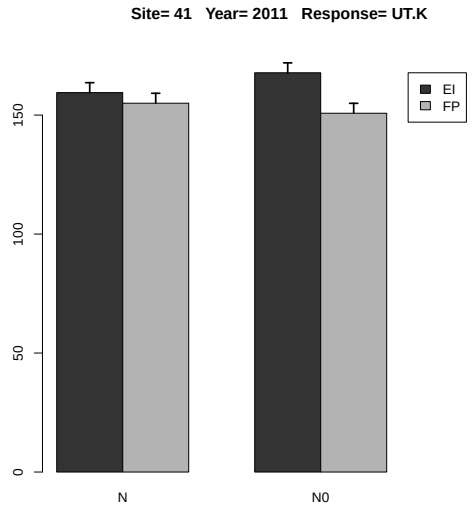

Figure 15.36: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.19 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	170.737
2	2	EI	N0	167.874
3	3	EI	N0	172.934
4	4	EI	N0	170.804
5	1	EI	N	160.567
6	2	EI	N	160.750
7	3	EI	N	162.161
8	4	EI	N	167.384
9	1	FP	N0	155.634
10	2	FP	N0	151.306
11	3	FP	N0	153.953
12	4	FP	N0	150.294
13	1	FP	N	149.056
14	2	FP	N	166.038
15	3	FP	N	157.107
16	4	FP	N	157.419

Table 15.91: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	162.715	2.681	60.691	0.000
A FP	157.405	2.681	58.711	0.000
A EI-FP	5.310	3.792	1.401	0.433

Table 15.92: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 41 in year 2011 .

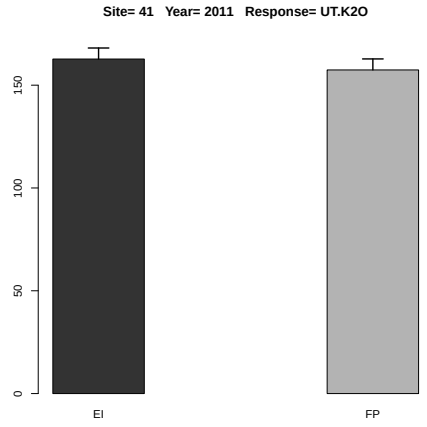

Figure 15.37: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	533.667	533.667	31.129	12.000	0.000
B	1.000	10.648	10.648	0.621	12.000	0.446
A:B	1.000	155.758	155.758	9.086	12.000	0.011

Table 15.93: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		166.651	1.464	12.000	113.840	163.462	169.841	0.000
2	FP		155.101	1.464	12.000	105.950	151.911	158.290	0.000
3		N	160.060	1.464	12.000	109.340	156.871	163.250	0.000
4		N0	161.692	1.464	12.000	110.450	158.502	164.881	0.000
5	EI	N	162.715	2.070	12.000	78.600	158.205	167.226	0.000
6	FP	N	157.405	2.070	12.000	76.030	152.894	161.916	0.000
7	EI	N0	170.587	2.070	12.000	82.400	166.077	175.098	0.000
8	FP	N0	152.796	2.070	12.000	73.810	148.286	157.307	0.000

Table 15.94: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 41 in year 2011 .

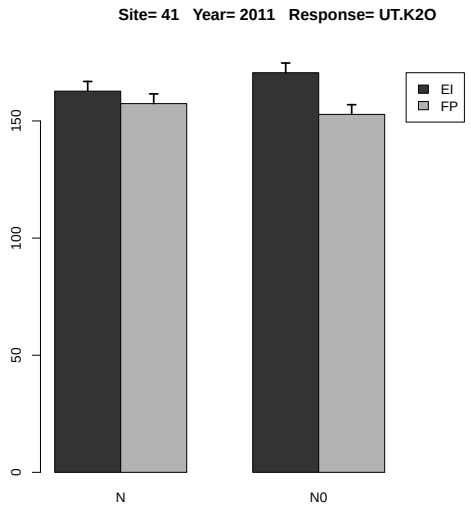

Figure 15.38: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	11.551	2.070	12.000	5.580	7.040	16.061	0.000
B N-N0	-1.632	2.070	12.000	-0.790	-6.142	2.879	0.446
A:B EI N- FP N	5.311	2.928	12.000	1.810	-1.069	11.690	0.095
A:B EI N- EI N0	-7.872	2.928	12.000	-2.690	-14.251	-1.493	0.020
A:B EI N- FP N0	9.919	2.928	12.000	3.390	3.540	16.298	0.005
A:B FP N- EI N0	-13.182	2.928	12.000	-4.500	-19.561	-6.803	0.001
A:B FP N- FP N0	4.609	2.928	12.000	1.570	-1.770	10.988	0.141
A:B EI N0- FP N0	17.791	2.928	12.000	6.080	11.412	24.170	0.000

Table 15.95: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 41 in year 2011 .

15.1.20 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	2.088
2	2	EI	N0	2.170
3	3	EI	N0	2.321
4	4	EI	N0	2.098
5	1	EI	N	2.597
6	2	EI	N	2.651
7	3	EI	N	2.746
8	4	EI	N	2.691
9	1	FP	N0	2.152
10	2	FP	N0	2.208
11	3	FP	N0	2.226
12	4	FP	N0	2.130
13	1	FP	N	2.287
14	2	FP	N	2.246
15	3	FP	N	2.112
16	4	FP	N	2.189

Table 15.96: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	2.671	0.035	6.000	76.530	2.586	2.757	0.000
A FP	2.209	0.035	6.000	63.270	2.123	2.294	0.000
A EI-FP	0.463	0.049	6.000	9.370	0.342	0.584	0.000

Table 15.97: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 41 in year 2011 .

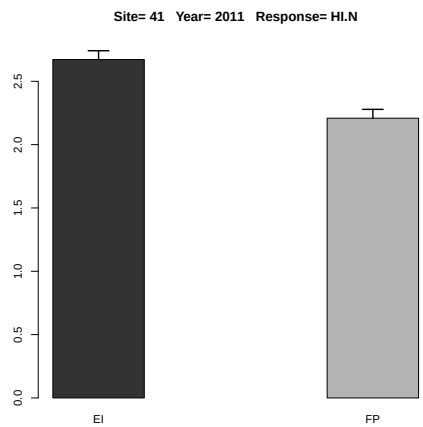

Figure 15.39: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.105	0.105	26.585	5.999	0.002
B	1.000	0.282	0.282	71.501	5.990	0.000
A:B	1.000	0.223	0.223	56.524	5.990	0.000

Table 15.98: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2.421	0.031	6.000	77.900	2.344	2.497	0.000
2	FP		2.194	0.031	6.000	70.610	2.118	2.270	0.000
3		N	2.440	0.027	10.900	90.350	2.380	2.499	0.000
4		N0	2.174	0.027	10.900	80.510	2.115	2.234	0.000
5	EI	N	2.671	0.038	10.900	69.940	2.587	2.756	0.000
6	FP	N	2.209	0.038	10.900	57.830	2.124	2.293	0.000
7	EI	N0	2.170	0.038	10.900	56.800	2.085	2.254	0.000
8	FP	N0	2.179	0.038	10.900	57.060	2.095	2.263	0.000

Table 15.99: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.227	0.044	6.000	5.160	0.119	0.334	0.002
B N-N0	0.266	0.031	6.000	8.460	0.189	0.343	0.000
A:B EI N- FP N	0.463	0.054	10.900	8.570	0.344	0.582	0.000
A:B EI N- EI N0	0.502	0.044	6.000	11.300	0.393	0.611	0.000
A:B EI N- FP N0	0.492	0.054	10.900	9.110	0.373	0.611	0.000
A:B FP N- EI N0	0.039	0.054	10.900	0.720	-0.080	0.158	0.485
A:B FP N- FP N0	0.029	0.044	6.000	0.660	-0.079	0.138	0.532
A:B EI N0- FP N0	-0.010	0.054	10.900	-0.180	-0.129	0.110	0.862

Table 15.100: Estimate of contrast in two-way ANOVA for variable HI.N at site 41 in year 2011 .

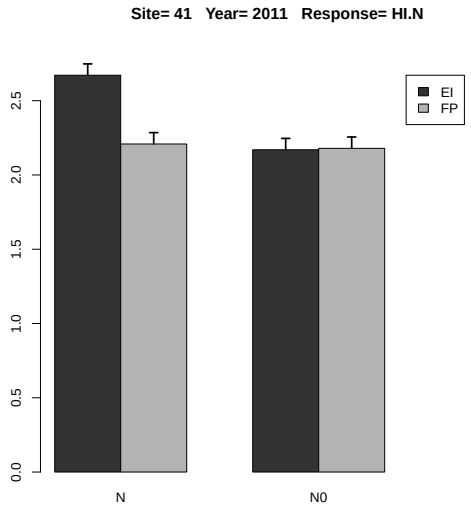

Figure 15.40: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.21 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	0.972
2	2	EI	N0	0.976
3	3	EI	N0	0.959
4	4	EI	N0	0.978
5	1	EI	N	0.990
6	2	EI	N	0.969
7	3	EI	N	1.018
8	4	EI	N	0.948
9	1	FP	N0	1.181
10	2	FP	N0	1.212
11	3	FP	N0	1.220
12	4	FP	N0	1.154
13	1	FP	N	1.004
14	2	FP	N	1.149
15	3	FP	N	1.006
16	4	FP	N	1.126

Table 15.101: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.982	0.029	6.000	33.590	0.910	1.053	0.000
A FP	1.071	0.029	6.000	36.660	1.000	1.143	0.000
A EI-FP	-0.090	0.041	6.000	-2.170	-0.191	0.012	0.073

Table 15.102: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 41 in year 2011 .

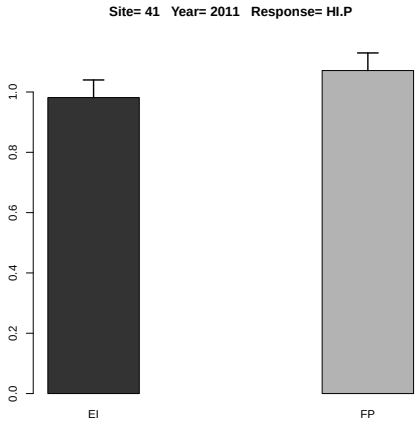

Figure 15.41: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.096	0.096	49.116	11.973	0.000
B	1.000	0.012	0.012	6.234	11.973	0.028
A:B	1.000	0.017	0.017	8.742	11.973	0.012

Table 15.103: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.977	0.016	12.000	62.440	0.942	1.010	0.000
2	FP		1.131	0.016	12.000	72.350	1.097	1.165	0.000
3		N	1.026	0.016	12.000	65.630	0.992	1.060	0.000
4		N0	1.082	0.016	12.000	69.160	1.048	1.116	0.000
5	EI	N	0.982	0.022	12.000	44.380	0.933	1.030	0.000
6	FP	N	1.071	0.022	12.000	48.440	1.023	1.119	0.000
7	EI	N0	0.971	0.022	12.000	43.920	0.923	1.020	0.000
8	FP	N0	1.192	0.022	12.000	53.890	1.143	1.240	0.000

Table 15.104: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 41 in year 2011 .

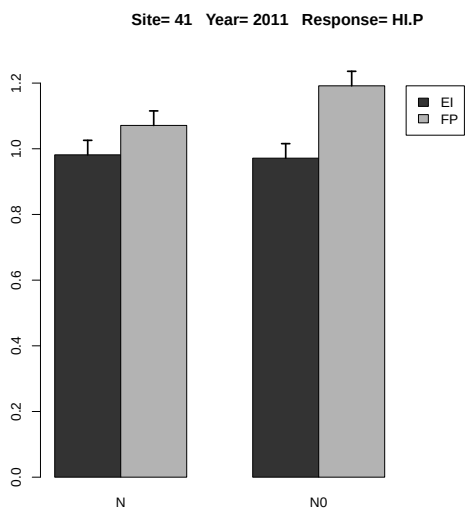

Figure 15.42: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.155	0.022	12.000	-7.010	-0.203	-0.107	0.000
B N-N0	-0.055	0.022	12.000	-2.500	-0.103	-0.007	0.028
A:B EI N- FP N	-0.090	0.031	12.000	-2.860	-0.158	-0.021	0.014
A:B EI N- EI N0	0.010	0.031	12.000	0.330	-0.058	0.078	0.751
A:B EI N- FP N0	-0.210	0.031	12.000	-6.720	-0.278	-0.142	0.000
A:B FP N- EI N0	0.100	0.031	12.000	3.190	0.032	0.168	0.008
A:B FP N- FP N0	-0.121	0.031	12.000	-3.860	-0.189	-0.052	0.002
A:B EI N0- FP N0	-0.220	0.031	12.000	-7.050	-0.288	-0.152	0.000

Table 15.105: Estimate of contrast in two-way ANOVA for variable HI.P at site 41 in year 2011 .

15.1.22 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.260
2	2	EI	N0	0.278
3	3	EI	N0	0.271
4	4	EI	N0	0.273
5	1	EI	N	0.327
6	2	EI	N	0.331
7	3	EI	N	0.312
8	4	EI	N	0.345
9	1	FP	N0	0.252
10	2	FP	N0	0.255
11	3	FP	N0	0.265
12	4	FP	N0	0.259
13	1	FP	N	0.260
14	2	FP	N	0.283
15	3	FP	N	0.251
16	4	FP	N	0.278

Table 15.106: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.329	0.007	3.600	45.850	0.308	0.350	0.000
A FP	0.268	0.007	3.600	37.340	0.247	0.289	0.000
A EI-FP	0.061	0.004	3.000	13.620	0.047	0.075	0.001

Table 15.107: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 41 in year 2011 .

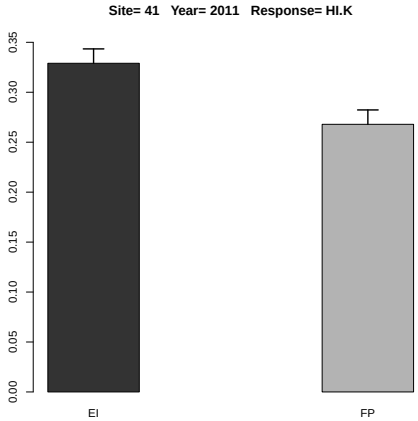

Figure 15.43: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	60.012	8.908	0.000
B	1.000	0.005	0.005	51.805	8.908	0.000
A:B	1.000	0.002	0.002	25.057	8.908	0.001

Table 15.108: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.300	0.004	5.600	67.670	0.289	0.311	0.000
2	FP		0.263	0.004	5.600	59.300	0.252	0.274	0.000
3		N	0.298	0.004	5.600	67.370	0.287	0.309	0.000
4		N0	0.264	0.004	5.600	59.600	0.253	0.275	0.000
5	EI	N	0.329	0.006	9.900	59.010	0.316	0.341	0.000
6	FP	N	0.268	0.006	9.900	48.060	0.256	0.280	0.000
7	EI	N0	0.271	0.006	9.900	48.540	0.258	0.283	0.000
8	FP	N0	0.257	0.006	9.900	46.180	0.245	0.270	0.000

Table 15.109: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 41 in year 2011 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.037	0.005	8.900	7.750	0.026	0.048	0.000
B N-N0	0.034	0.005	8.900	7.200	0.024	0.045	0.000
A:B EI N- FP N	0.061	0.007	8.900	9.020	0.046	0.076	0.000
A:B EI N- EI N0	0.058	0.007	8.900	8.630	0.043	0.074	0.000
A:B EI N- FP N0	0.071	0.007	8.900	10.570	0.056	0.087	0.000
A:B FP N- EI N0	-0.003	0.007	8.900	-0.390	-0.018	0.013	0.707
A:B FP N- FP N0	0.010	0.007	8.900	1.550	-0.005	0.026	0.156
A:B EI N0- FP N0	0.013	0.007	8.900	1.940	-0.002	0.028	0.085

Table 15.110: Estimate of contrast in two-way ANOVA for variable HI.K at site 41 in year 2011 .

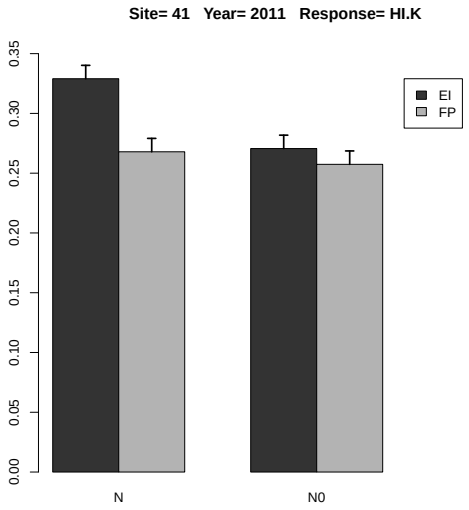

Figure 15.44: Estimated treatment means and standard error in the 2-way ANOVA.

15.1.23 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	86.235
2	2	EI	N	86.941
3	3	EI	N	88.941
4	4	EI	N	86.824
5	1	FP	N	228.667
6	2	FP	N	236.000
7	3	FP	N	225.333
8	4	FP	N	224.667

Table 15.111: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	87.235	1.883	6.000	46.340	82.629	91.842	0.000
A FP	228.667	1.883	6.000	121.470	224.060	233.273	0.000
A EI-FP	-141.431	2.662	6.000	-53.120	-147.946	-134.917	0.000

Table 15.112: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 41 in year 2011 .

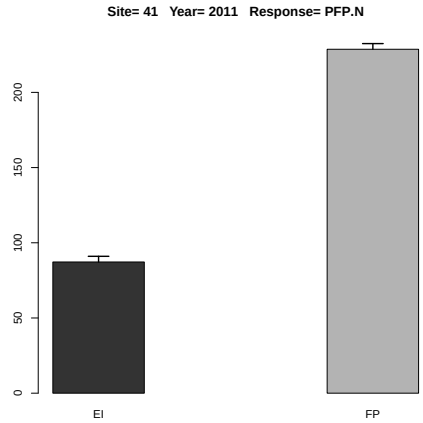

Figure 15.45: Estimated treatment means and standard error in the one-way ANOVA.

15.1.24 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	239.840
2	2	EI	N	241.804
3	3	EI	N	247.366
4	4	EI	N	241.476
5	1	FP	N	392.808
6	2	FP	N	405.405
7	3	FP	N	387.082
8	4	FP	N	385.937

Table 15.113: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	242.622	3.360	6.000	72.210	234.400	250.843	0.000
A FP	392.808	3.360	6.000	116.910	384.587	401.029	0.000
A EI-FP	-150.186	4.752	6.000	-31.610	-161.813	-138.560	0.000

Table 15.114: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 41 in year 2011 .

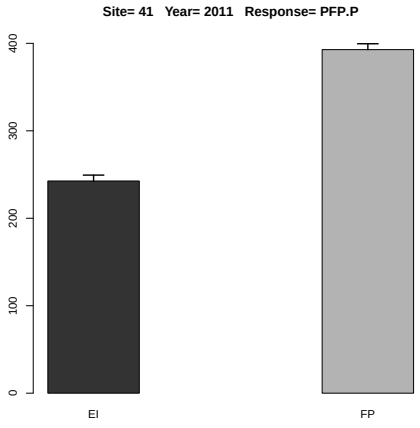

Figure 15.46: Estimated treatment means and standard error in the one-way ANOVA.

15.1.25 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	104.714
2	2	EI	N	105.571
3	3	EI	N	108.000
4	4	EI	N	105.429
5	1	FP	N	171.500
6	2	FP	N	177.000
7	3	FP	N	169.000
8	4	FP	N	168.500

Table 15.115: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	105.929	1.467	6.000	72.210	102.339	109.518	0.000
A FP	171.500	1.467	6.000	116.910	167.911	175.089	0.000
A EI-FP	-65.571	2.075	6.000	-31.610	-70.648	-60.495	0.000

Table 15.116: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 41 in year 2011 .

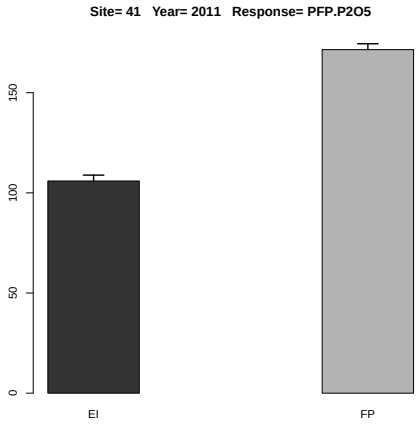

Figure 15.47: Estimated treatment means and standard error in the one-way ANOVA.

15.1.26 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	220.836
2	2	EI	N	222.644
3	3	EI	N	227.766
4	4	EI	N	222.343

Table 15.117: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

There is no or sufficient data for this response variable at this site and year.

15.1.27 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	183.250
2	2	EI	N	184.750
3	3	EI	N	189.000
4	4	EI	N	184.500

Table 15.118: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

There is no or sufficient data for this response variable at this site and year.

15.1.28 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	1.725
2	2	EI	N	1.765
3	3	EI	N	1.841
4	4	EI	N	1.806
5	1	FP	N	4.116
6	2	FP	N	4.154
7	3	FP	N	4.033
8	4	FP	N	4.044

Table 15.119: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.784	0.027	6.000	65.860	1.718	1.851	0.000
A FP	4.087	0.027	6.000	150.870	4.021	4.153	0.000
A EI-FP	-2.303	0.038	6.000	-60.110	-2.396	-2.209	0.000

Table 15.120: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 41 in year 2011 .

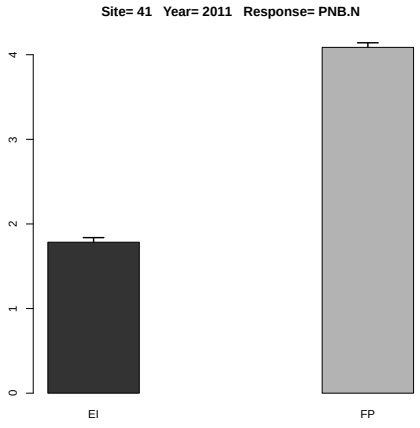

Figure 15.48: Estimated treatment means and standard error in the one-way ANOVA.

15.1.29 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.983
2	2	EI	N	0.967
3	3	EI	N	1.039
4	4	EI	N	0.966
5	1	FP	N	1.257
6	2	FP	N	1.419
7	3	FP	N	1.355
8	4	FP	N	1.351

Table 15.121: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.989	0.026	6.000	37.290	0.924	1.054	0.000
A FP	1.345	0.026	6.000	50.740	1.280	1.410	0.000
A EI-FP	-0.356	0.037	6.000	-9.510	-0.448	-0.265	0.000

Table 15.122: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 41 in year 2011 .

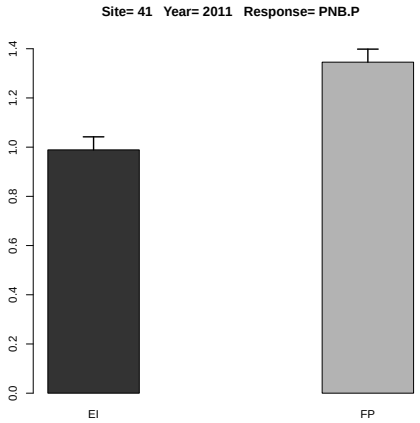

Figure 15.49: Estimated treatment means and standard error in the one-way ANOVA.

15.1.30 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	1.170
2	2	EI	N	1.180
3	3	EI	N	1.139
4	4	EI	N	1.267

Table 15.123: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

There is no or sufficient data for this response variable at this site and year.

15.1.31 Response Variable AE

	rep	A	B	y
1	1	EI	N	5.735
2	2	EI	N	5.147
3	3	EI	N	4.412
4	4	EI	N	6.765
5	1	FP	N	13.810
6	2	FP	N	16.667
7	3	FP	N	6.190
8	4	FP	N	18.571

Table 15.124: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	5.515	1.649	3.345	0.084
A FP	13.810	1.649	8.376	0.007
A EI-FP	-8.295	2.332	-3.557	0.072

Table 15.125: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 41 in year 2011 .

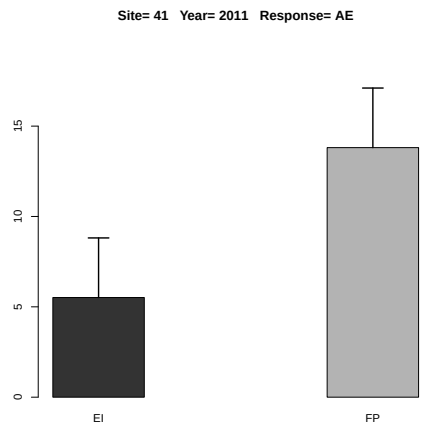

Figure 15.50: Estimated treatment means and standard error in the one-way ANOVA.

15.1.32 Response Variable RE

	rep	A	B	y
1	1	EI	N	0.209
2	2	EI	N	0.286
3	3	EI	N	0.313
4	4	EI	N	0.331
5	1	FP	N	0.844
6	2	FP	N	0.754
7	3	FP	N	0.804
8	4	FP	N	0.907

Table 15.126: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	0.285	0.027	10.433	0.004
A FP	0.827	0.027	30.287	0.000
A EI-FP	-0.542	0.039	-14.039	0.001

Table 15.127: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 41 in year 2011 .

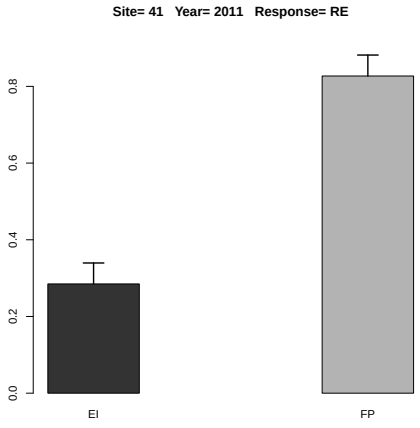

Figure 15.51: Estimated treatment means and standard error in the one-way ANOVA.

15.2 Year 2012

There are 60 variables not observed: UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn

15.2.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	6064.000
2	2	EI	N0	6056.000
3	3	EI	N0	6098.000
4	4	EI	N0	6107.000
5	1	EI	N	6400.000
6	2	EI	N	6434.000
7	3	EI	N	6330.000
8	4	EI	N	6365.000
9	1	FP	N0	5837.000
10	2	FP	N0	5897.000
11	3	FP	N0	5785.000
12	4	FP	N0	5828.000
13	1	FP	N	5914.000
14	2	FP	N	5931.000
15	3	FP	N	5888.000
16	4	FP	N	5819.000

Table 15.128: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	6382.250	15.211	419.590	0.000
A FP	5888.000	15.211	387.097	0.000
A EI-FP	494.250	21.511	22.976	0.000

Table 15.129: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 41 in year 2012 .

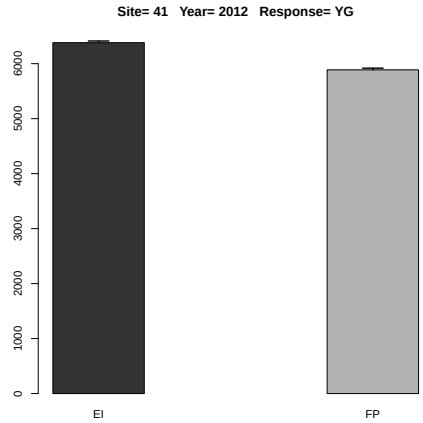

Figure 15.52: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	545751.549	545751.549	348.830	9.000	0.000
B	1.000	124080.062	124080.062	79.309	9.000	0.000
A:B	1.000	62375.062	62375.062	39.869	9.000	0.000

Table 15.130: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6231.750	15.931	7.000	391.160	6194.098	6269.402	0.000
2	FP		5862.375	15.931	7.000	367.970	5824.723	5900.027	0.000
3		N	6135.125	15.931	7.000	385.090	6097.473	6172.777	0.000
4		N0	5959.000	15.931	7.000	374.040	5921.348	5996.652	0.000
5	EI	N	6382.250	21.199	11.400	301.070	6335.803	6428.697	0.000
6	FP	N	5888.000	21.199	11.400	277.750	5841.553	5934.447	0.000
7	EI	N0	6081.250	21.199	11.400	286.870	6034.803	6127.697	0.000
8	FP	N0	5836.750	21.199	11.400	275.340	5790.303	5883.197	0.000

Table 15.131: Estimate of treatment means in tow-way ANOVA for variable YG at site 41 in year 2012 .

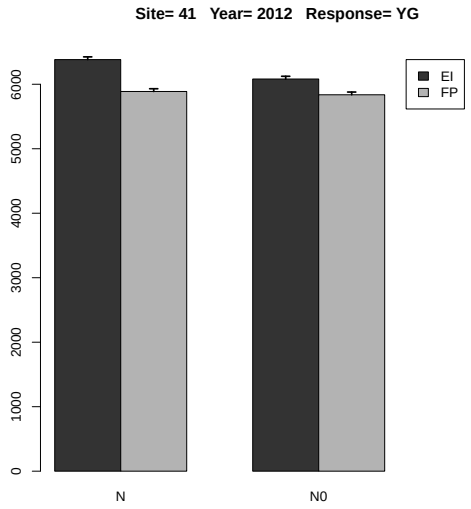

Figure 15.53: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	369.375	19.777	9.000	18.680	324.637	414.113	0.000
B N-N0	176.125	19.777	9.000	8.910	131.387	220.863	0.000
A:B EI N- FP N	494.250	27.969	9.000	17.670	430.981	557.519	0.000
A:B EI N- EI N0	301.000	27.969	9.000	10.760	237.731	364.269	0.000
A:B EI N- FP N0	545.500	27.969	9.000	19.500	482.231	608.769	0.000
A:B FP N- EI N0	-193.250	27.969	9.000	-6.910	-256.519	-129.981	0.000
A:B FP N- FP N0	51.250	27.969	9.000	1.830	-12.019	114.519	0.100
A:B EI N0- FP N0	244.500	27.969	9.000	8.740	181.231	307.769	0.000

Table 15.132: Estimate of contrast in two-way ANOVA for variable YG at site 41 in year 2012 .

15.2.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	11771.000
2	2	EI	N0	14827.000
3	3	EI	N0	14930.000
4	4	EI	N0	12977.000
5	1	EI	N	19200.000
6	2	EI	N	15752.000
7	3	EI	N	23813.000
8	4	EI	N	21309.000
9	1	FP	N0	15781.000
10	2	FP	N0	13125.000
11	3	FP	N0	13499.000
12	4	FP	N0	14986.000
13	1	FP	N	13799.000
14	2	FP	N	8897.000
15	3	FP	N	12512.000
16	4	FP	N	9494.000

Table 15.133: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	20018.500	1130.525	17.707	0.001
A FP	11175.500	1130.525	9.885	0.004
A EI-FP	8843.000	1598.803	5.531	0.022

Table 15.134: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 41 in year 2012 .

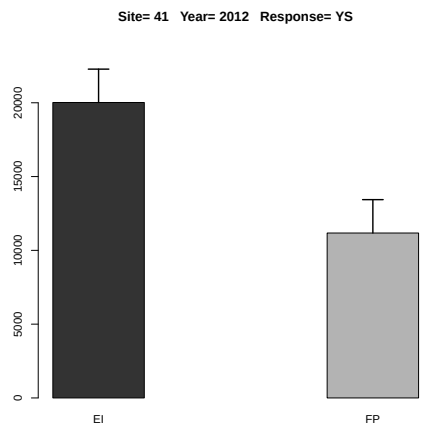

Figure 15.54: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	50826832.255	50826832.255	11.375	2.999	0.043
B	1.000	10368400.000	10368400.000	2.320	-0.000	
A:B	1.000	91479660.250	91479660.250	20.473	-0.000	

Table 15.135: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		16822.375	871.979	6.000	19.290	14687.439	18957.311	0.000
2	FP		12761.625	871.979	6.000	14.640	10626.689	14896.561	0.000
3		N	15597.000	822.924	1.700	18.950	11263.866	19930.134	0.006
4		N0	13987.000	822.924	1.700	17.000	9653.866	18320.134	0.007
5	EI	N	20018.500	1148.429	1.800	17.430	14359.462	25677.538	0.006
6	FP	N	11175.500	1148.429	1.800	9.730	5516.462	16834.538	0.016
7	EI	N0	13626.250	1148.429	1.800	11.870	7967.212	19285.288	0.011
8	FP	N0	14347.750	1148.429	1.800	12.490	8688.712	20006.788	0.010

Table 15.136: Estimate of treatment means in tow-way ANOVA for variable YS at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4060.750	1204.016	3.000	3.370	228.499	7893.002	0.043
B N-N0	1610.000	1056.921	0.300	1.520	-1874776.511	1877996.511	0.579
A:B EI N- FP N	8843.000	1602.104	1.500	5.520	-448.287	18134.287	0.054
A:B EI N- EI N0	6392.250	1494.713	0.300	4.280	-2647219.002	2660003.502	0.409
A:B EI N- FP N0	5670.750	1602.104	1.500	3.540	-3620.538	14962.038	0.103
A:B FP N- EI N0	-2450.750	1602.104	1.500	-1.530	-11742.037	6840.537	0.300
A:B FP N- FP N0	-3172.250	1494.713	0.300	-2.120	-2656783.502	2650439.002	0.519
A:B EI N0- FP N0	-721.500	1602.104	1.500	-0.450	-10012.787	8569.787	0.708

Table 15.137: Estimate of contrast in two-way ANOVA for variable YS at site 41 in year 2012 .

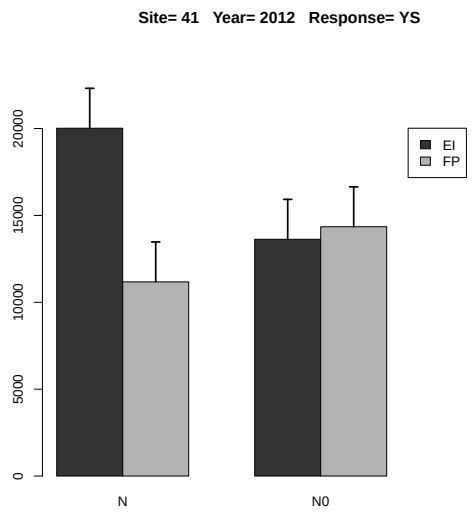

Figure 15.55: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	17835.000
2	2	EI	N0	20883.000
3	3	EI	N0	21028.000
4	4	EI	N0	19084.000
5	1	EI	N	25600.000
6	2	EI	N	22186.000
7	3	EI	N	30143.000
8	4	EI	N	27674.000
9	1	FP	N0	21618.000
10	2	FP	N0	19022.000
11	3	FP	N0	19284.000
12	4	FP	N0	20814.000
13	1	FP	N	19713.000
14	2	FP	N	14828.000
15	3	FP	N	18400.000
16	4	FP	N	15313.000

Table 15.138: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	26400.750	1131.966	23.323	0.000
A FP	17063.500	1131.966	15.074	0.001
A EI-FP	9337.250	1600.842	5.833	0.020

Table 15.139: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 41 in year 2012 .

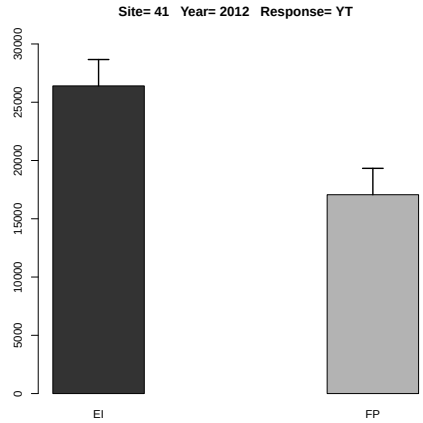

Figure 15.56: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	59130251.710	59130251.710	13.397	2.999	0.035
B	1.000	12760970.062	12760970.062	2.891	9.682	0.121
A:B	1.000	96319503.062	96319503.062	21.823	9.682	0.001

Table 15.140: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		23054.125	866.633	6.000	26.600	20933.097	25175.153	0.000
2	FP		18624.000	866.633	6.000	21.490	16502.972	20745.028	0.000
3		N	21732.125	812.815	7.600	26.740	19841.560	23622.690	0.000
4		N0	19946.000	812.815	7.600	24.540	18055.435	21836.565	0.000
5	EI	N	26400.750	1141.388	13.500	23.130	23944.536	28856.964	0.000
6	FP	N	17063.500	1141.388	13.500	14.950	14607.286	19519.714	0.000
7	EI	N0	19707.500	1141.388	13.500	17.270	17251.286	22163.714	0.000
8	FP	N0	20184.500	1141.388	13.500	17.680	17728.286	22640.714	0.000

Table 15.141: Estimate of treatment means in tow-way ANOVA for variable YT at site 41 in year 2012 .

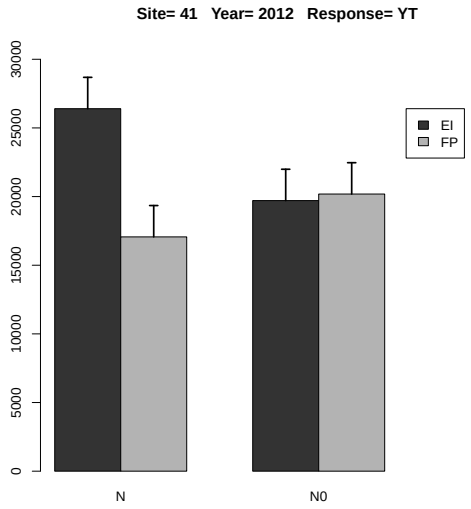

Figure 15.57: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	4430.125	1210.355	3.000	3.660	577.695	8282.555	0.035
B N-N0	1786.125	1050.441	9.700	1.700	-564.858	4137.108	0.121
A:B EI N- FP N	9337.250	1602.619	7.800	5.830	5628.435	13046.065	0.000
A:B EI N- EI N0	6693.250	1485.549	9.700	4.510	3368.458	10018.042	0.001
A:B EI N- FP N0	6216.250	1602.619	7.800	3.880	2507.435	9925.065	0.005
A:B FP N- EI N0	-2644.000	1602.619	7.800	-1.650	-6352.815	1064.815	0.138
A:B FP N- FP N0	-3121.000	1485.549	9.700	-2.100	-6445.792	203.792	0.063
A:B EI N0- FP N0	-477.000	1602.619	7.800	-0.300	-4185.815	3231.815	0.774

Table 15.142: Estimate of contrast in two-way ANOVA for variable YT at site 41 in year 2012 .

15.2.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.340
2	2	EI	N0	0.290
3	3	EI	N0	0.290
4	4	EI	N0	0.320
5	1	EI	N	0.250
6	2	EI	N	0.290
7	3	EI	N	0.210
8	4	EI	N	0.230
9	1	FP	N0	0.270
10	2	FP	N0	0.310
11	3	FP	N0	0.300
12	4	FP	N0	0.280
13	1	FP	N	0.300
14	2	FP	N	0.400
15	3	FP	N	0.320
16	4	FP	N	0.380

Table 15.143: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.245	0.015	16.807	0.001
A FP	0.350	0.015	24.010	0.000
A EI-FP	-0.105	0.021	-5.093	0.028

Table 15.144: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 41 in year 2012 .

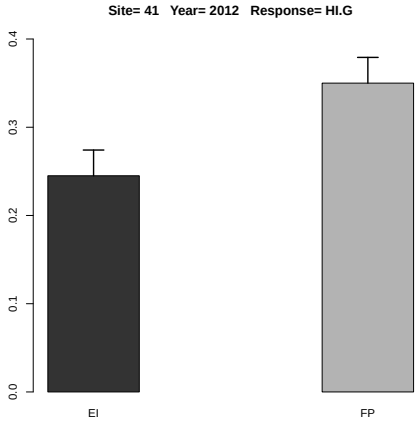

Figure 15.58: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	5.819	2.999	0.095
B	1.000	0.000	0.000	0.028	5.980	0.872
A:B	1.000	0.016	0.016	17.524	5.980	0.006

Table 15.145: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.278	0.013	6.000	21.840	0.246	0.309	0.000
2	FP		0.320	0.013	6.000	25.180	0.289	0.351	0.000
3		N	0.297	0.012	6.800	25.180	0.269	0.326	0.000
4		N0	0.300	0.012	6.800	25.390	0.272	0.328	0.000
5	EI	N	0.245	0.016	11.600	14.830	0.209	0.281	0.000
6	FP	N	0.350	0.016	11.600	21.190	0.314	0.386	0.000
7	EI	N0	0.310	0.016	11.600	18.770	0.274	0.346	0.000
8	FP	N0	0.290	0.016	11.600	17.550	0.254	0.326	0.000

Table 15.146: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.042	0.018	3.000	-2.410	-0.099	0.014	0.095
B N-N0	-0.002	0.015	6.000	-0.170	-0.039	0.034	0.872
A:B EI N- FP N	-0.105	0.023	7.000	-4.550	-0.160	-0.050	0.003
A:B EI N- EI N0	-0.065	0.021	6.000	-3.080	-0.117	-0.013	0.022
A:B EI N- FP N0	-0.045	0.023	7.000	-1.950	-0.100	0.010	0.092
A:B FP N- EI N0	0.040	0.023	7.000	1.730	-0.015	0.095	0.127
A:B FP N- FP N0	0.060	0.021	6.000	2.840	0.008	0.112	0.030
A:B EI N0- FP N0	0.020	0.023	7.000	0.870	-0.035	0.075	0.415

Table 15.147: Estimate of contrast in two-way ANOVA for variable HI.G at site 41 in year 2012 .

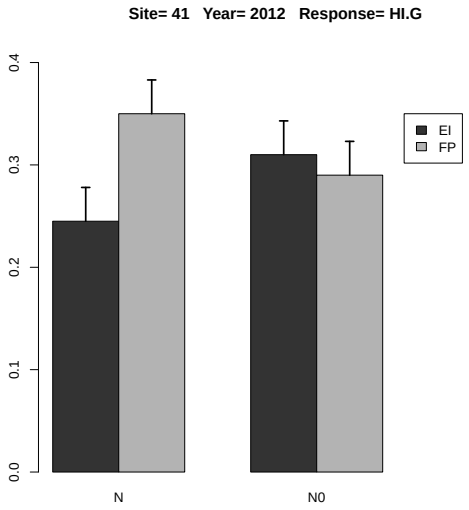

Figure 15.59: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.5 Response Variable UG.N

	rep	A	B	y
1	1	EI	N0	101.269
2	2	EI	N0	104.769
3	3	EI	N0	102.446
4	4	EI	N0	103.819
5	1	EI	N	134.400
6	2	EI	N	133.184
7	3	EI	N	131.664
8	4	EI	N	130.482
9	1	FP	N0	92.225
10	2	FP	N0	96.711
11	3	FP	N0	93.139
12	4	FP	N0	91.500
13	1	FP	N	122.420
14	2	FP	N	118.027
15	3	FP	N	119.526
16	4	FP	N	116.380

Table 15.148: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.N

	Estimate	S.E.	t-value	p-value
A EI	132.433	0.547	242.170	0.000
A FP	119.088	0.547	217.768	0.000
A EI-FP	13.344	0.773	17.255	0.000

Table 15.149: Estimate of treatment means and contrast in one-way ANOVA for variable UG.N at site 41 in year 2012 .

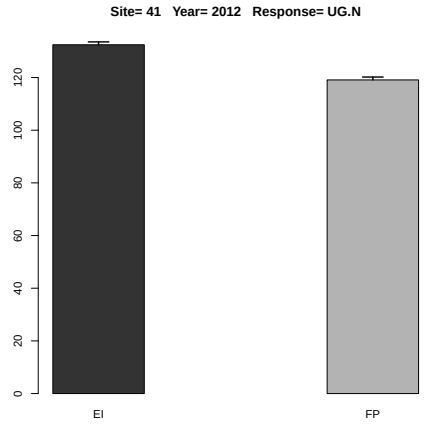

Figure 15.60: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	530.228	530.228	132.534	9.000	0.000
B	1.000	3030.692	3030.692	757.540	9.000	0.000
A:B	1.000	13.410	13.410	3.352	9.000	0.100

Table 15.150: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		117.754	0.759	7.800	155.070	115.996	119.512	0.000
2	FP		106.241	0.759	7.800	139.910	104.483	107.999	0.000
3		N	125.760	0.759	7.800	165.610	124.002	127.519	0.000
4		N0	98.235	0.759	7.800	129.360	96.477	99.993	0.000
5	EI	N	132.433	1.038	11.800	127.630	130.168	134.697	0.000
6	FP	N	119.088	1.038	11.800	114.770	116.824	121.353	0.000
7	EI	N0	103.076	1.038	11.800	99.330	100.811	105.340	0.000
8	FP	N0	93.393	1.038	11.800	90.000	91.129	95.658	0.000

Table 15.151: Estimate of treatment means in tow-way ANOVA for variable UG.N at site 41 in year 2012 .

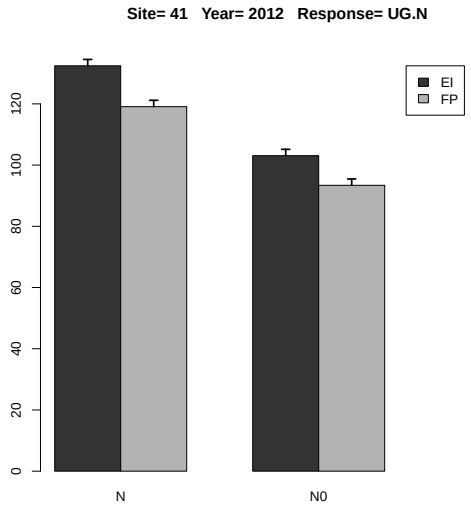

Figure 15.61: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	11.513	1.000	9.000	11.510	9.251	13.776	0.000
B N-N0	27.526	1.000	9.000	27.520	25.264	29.788	0.000
A:B EI N- FP N	13.344	1.414	9.000	9.440	10.145	16.544	0.000
A:B EI N- EI N0	29.357	1.414	9.000	20.760	26.157	32.556	0.000
A:B EI N- FP N0	39.039	1.414	9.000	27.600	35.840	42.239	0.000
A:B FP N- EI N0	16.012	1.414	9.000	11.320	12.813	19.212	0.000
A:B FP N- FP N0	25.695	1.414	9.000	18.170	22.495	28.894	0.000
A:B EI N0- FP N0	9.682	1.414	9.000	6.850	6.483	12.882	0.000

Table 15.152: Estimate of contrast in two-way ANOVA for variable UG.N at site 41 in year 2012 .

15.2.6 Response Variable UG.P

	rep	A	B	y
1	1	EI	N0	23.043
2	2	EI	N0	23.618
3	3	EI	N0	24.392
4	4	EI	N0	25.649
5	1	EI	N	30.080
6	2	EI	N	28.953
7	3	EI	N	27.219
8	4	EI	N	27.369
9	1	FP	N0	16.927
10	2	FP	N0	15.332
11	3	FP	N0	18.512
12	4	FP	N0	16.318
13	1	FP	N	20.699
14	2	FP	N	20.758
15	3	FP	N	21.786
16	4	FP	N	22.112

Table 15.153: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P

	Estimate	S.E.	t-value	p-value
A EI	28.405	0.724	39.251	0.000
A FP	21.339	0.724	29.486	0.000
A EI-FP	7.067	1.023	6.905	0.012

Table 15.154: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P at site 41 in year 2012 .

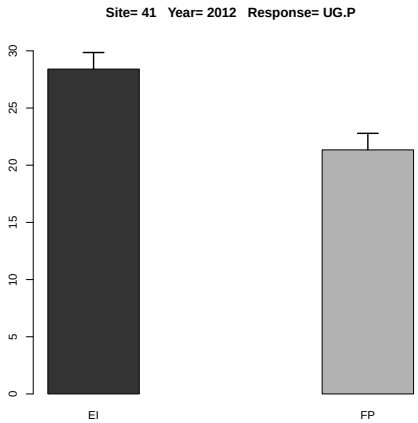

Figure 15.62: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	209.376	209.376	154.418	11.999	0.000
B	1.000	77.369	77.369	57.061	11.999	0.000
A:B	1.000	0.113	0.113	0.084	11.999	0.777

Table 15.155: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		26.291	0.412	12.000	63.860	25.394	27.188	0.000
2	FP		19.056	0.412	12.000	46.290	18.159	19.953	0.000
3		N	24.872	0.412	12.000	60.410	23.975	25.769	0.000
4		N0	20.474	0.412	12.000	49.730	19.577	21.371	0.000
5	EI	N	28.405	0.582	12.000	48.790	27.137	29.674	0.000
6	FP	N	21.339	0.582	12.000	36.650	20.070	22.607	0.000
7	EI	N0	24.176	0.582	12.000	41.520	22.907	25.444	0.000
8	FP	N0	16.773	0.582	12.000	28.810	15.504	18.041	0.000

Table 15.156: Estimate of treatment means in tow-way ANOVA for variable UG.P at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	7.235	0.582	12.000	12.430	5.966	8.504	0.000
B N-N0	4.398	0.582	12.000	7.550	3.129	5.667	0.000
A:B EI N- FP N	7.066	0.823	12.000	8.580	5.272	8.861	0.000
A:B EI N- EI N0	4.230	0.823	12.000	5.140	2.436	6.024	0.000
A:B EI N- FP N0	11.633	0.823	12.000	14.130	9.839	13.427	0.000
A:B FP N- EI N0	-2.837	0.823	12.000	-3.450	-4.631	-1.043	0.005
A:B FP N- FP N0	4.566	0.823	12.000	5.550	2.772	6.360	0.000
A:B EI N0- FP N0	7.403	0.823	12.000	8.990	5.609	9.197	0.000

Table 15.157: Estimate of contrast in two-way ANOVA for variable UG.P at site 41 in year 2012 .

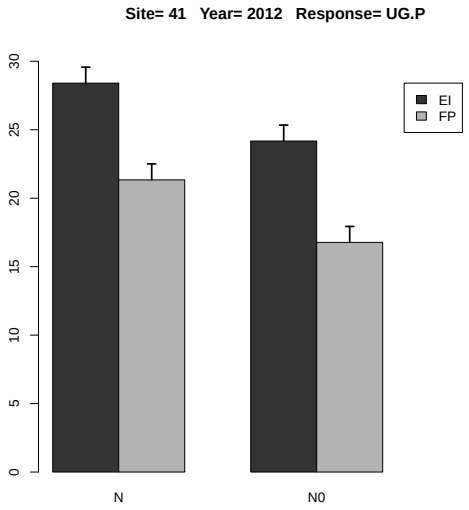

Figure 15.63: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.7 Response Variable UG.P2O5

	rep	A	B	y
1	1	EI	N0	52.769
2	2	EI	N0	54.086
3	3	EI	N0	55.858
4	4	EI	N0	58.737
5	1	EI	N	68.883
6	2	EI	N	66.302
7	3	EI	N	62.332
8	4	EI	N	62.676
9	1	FP	N0	38.764
10	2	FP	N0	35.111
11	3	FP	N0	42.392
12	4	FP	N0	37.369
13	1	FP	N	47.401
14	2	FP	N	47.537
15	3	FP	N	49.889
16	4	FP	N	50.637

Table 15.158: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.P2O5

	Estimate	S.E.	t-value	p-value
A EI	65.048	1.657	39.251	0.000
A FP	48.866	1.657	29.486	0.000
A EI-FP	16.182	2.344	6.905	0.012

Table 15.159: Estimate of treatment means and contrast in one-way ANOVA for variable UG.P2O5 at site 41 in year 2012 .

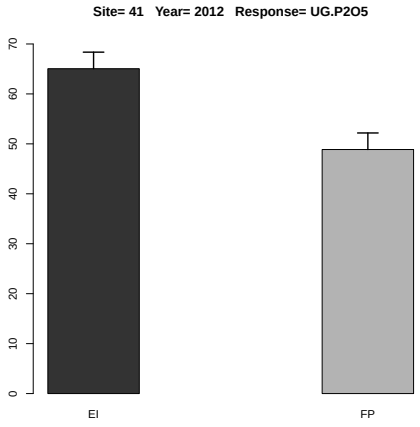

Figure 15.64: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1097.988	1097.988	154.418	12.000	0.000
B	1.000	405.732	405.732	57.061	12.000	0.000
A:B	1.000	0.595	0.595	0.084	12.000	0.777

Table 15.160: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		60.205	0.943	12.000	63.860	58.151	62.260	0.000
2	FP		43.637	0.943	12.000	46.290	41.583	45.692	0.000
3		N	56.957	0.943	12.000	60.410	54.903	59.011	0.000
4		N0	46.886	0.943	12.000	49.730	44.832	48.940	0.000
5	EI	N	65.048	1.333	12.000	48.790	62.143	67.953	0.000
6	FP	N	48.866	1.333	12.000	36.650	45.961	51.771	0.000
7	EI	N0	55.362	1.333	12.000	41.520	52.458	58.267	0.000
8	FP	N0	38.409	1.333	12.000	28.810	35.504	41.314	0.000

Table 15.161: Estimate of treatment means in tow-way ANOVA for variable UG.P2O5 at site 41 in year 2012 .

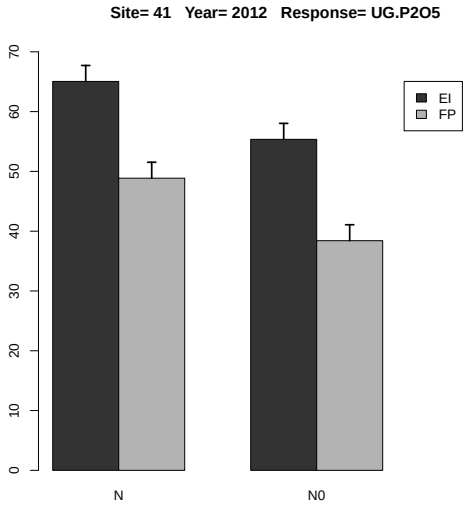

Figure 15.65: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	16.568	1.333	12.000	12.430	13.663	19.473	0.000
B N-N0	10.071	1.333	12.000	7.550	7.166	12.976	0.000
A:B EI N- FP N	16.182	1.885	12.000	8.580	12.074	20.291	0.000
A:B EI N- EI N0	9.686	1.885	12.000	5.140	5.578	13.794	0.000
A:B EI N- FP N0	26.639	1.885	12.000	14.130	22.531	30.748	0.000
A:B FP N- EI N0	-6.497	1.885	12.000	-3.450	-10.605	-2.388	0.005
A:B FP N- FP N0	10.457	1.885	12.000	5.550	6.349	14.565	0.000
A:B EI N0- FP N0	16.953	1.885	12.000	8.990	12.845	21.062	0.000

Table 15.162: Estimate of contrast in two-way ANOVA for variable UG.P2O5 at site 41 in year 2012
.

15.2.8 Response Variable UG.K

	rep	A	B	y
1	1	EI	N0	33.352
2	2	EI	N0	35.730
3	3	EI	N0	35.978
4	4	EI	N0	35.421
5	1	EI	N	35.200
6	2	EI	N	38.604
7	3	EI	N	37.347
8	4	EI	N	36.280
9	1	FP	N0	25.099
10	2	FP	N0	28.306
11	3	FP	N0	26.611
12	4	FP	N0	26.226
13	1	FP	N	27.796
14	2	FP	N	27.876
15	3	FP	N	28.262
16	4	FP	N	29.095

Table 15.163: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K

	Estimate	S.E.	t-value	p-value
A EI	36.858	0.584	63.075	0.000
A FP	28.257	0.584	48.356	0.000
A EI-FP	8.601	0.826	10.407	0.004

Table 15.164: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K at site 41 in year 2012 .

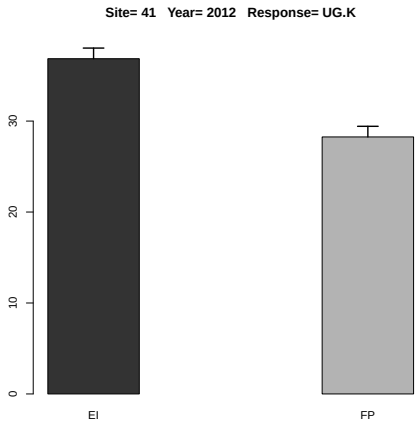

Figure 15.66: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	294.484	294.484	446.608	8.999	0.000
B	1.000	11.795	11.795	17.888	8.999	0.002
A:B	1.000	0.002	0.002	0.003	8.999	0.961

Table 15.165: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		35.989	0.522	4.100	68.900	34.555	37.423	0.000
2	FP		27.409	0.522	4.100	52.480	25.975	28.843	0.000
3		N	32.557	0.522	4.100	62.330	31.124	33.991	0.000
4		N0	30.840	0.522	4.100	59.050	29.407	32.274	0.000
5	EI	N	36.858	0.596	6.400	61.840	35.423	38.292	0.000
6	FP	N	28.257	0.596	6.400	47.410	26.823	29.692	0.000
7	EI	N0	35.120	0.596	6.400	58.930	33.686	36.555	0.000
8	FP	N0	26.560	0.596	6.400	44.560	25.126	27.995	0.000

Table 15.166: Estimate of treatment means in tow-way ANOVA for variable UG.K at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	8.580	0.406	9.000	21.130	7.662	9.499	0.000
B N-N0	1.717	0.406	9.000	4.230	0.799	2.636	0.002
A:B EI N- FP N	8.601	0.574	9.000	14.980	7.302	9.900	0.000
A:B EI N- EI N0	1.738	0.574	9.000	3.030	0.439	3.037	0.014
A:B EI N- FP N0	10.297	0.574	9.000	17.930	8.998	11.596	0.000
A:B FP N- EI N0	-6.863	0.574	9.000	-11.950	-8.162	-5.564	0.000
A:B FP N- FP N0	1.697	0.574	9.000	2.960	0.398	2.996	0.016
A:B EI N0- FP N0	8.560	0.574	9.000	14.910	7.261	9.859	0.000

Table 15.167: Estimate of contrast in two-way ANOVA for variable UG.K at site 41 in year 2012 .

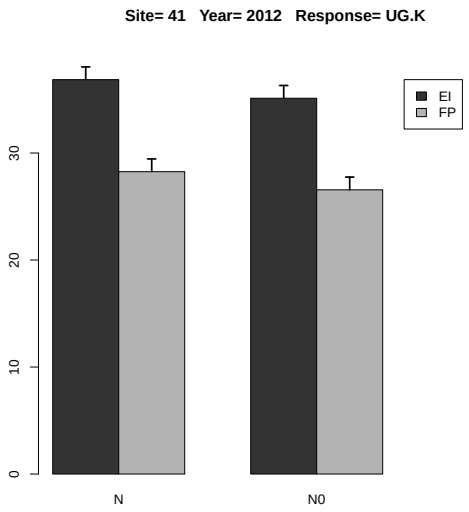

Figure 15.67: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.9 Response Variable UG.K2O

	rep	A	B	y
1	1	EI	N0	40.189
2	2	EI	N0	43.055
3	3	EI	N0	43.354
4	4	EI	N0	42.682
5	1	EI	N	42.416
6	2	EI	N	46.518
7	3	EI	N	45.003
8	4	EI	N	43.718
9	1	FP	N0	30.244
10	2	FP	N0	34.108
11	3	FP	N0	32.066
12	4	FP	N0	31.602
13	1	FP	N	33.494
14	2	FP	N	33.590
15	3	FP	N	34.056
16	4	FP	N	35.059

Table 15.168: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UG.K2O

	Estimate	S.E.	t-value	p-value
A EI	44.414	0.704	63.075	0.000
A FP	34.050	0.704	48.356	0.000
A EI-FP	10.364	0.996	10.407	0.004

Table 15.169: Estimate of treatment means and contrast in one-way ANOVA for variable UG.K2O at site 41 in year 2012 .

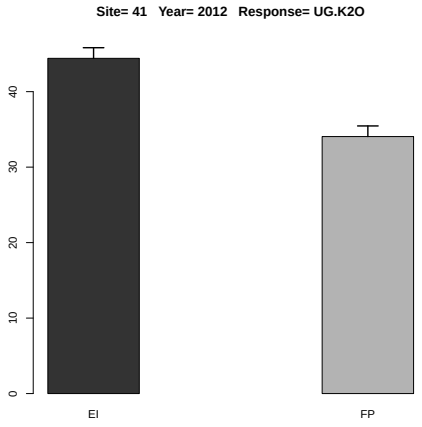

Figure 15.68: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	427.598	427.598	446.608	8.999	0.000
B	1.000	17.127	17.127	17.888	8.999	0.002
A:B	1.000	0.002	0.002	0.003	8.999	0.961

Table 15.170: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		43.367	0.629	4.100	68.900	41.639	45.095	0.000
2	FP		33.028	0.629	4.100	52.480	31.300	34.755	0.000
3		N	39.232	0.629	4.100	62.330	37.504	40.960	0.000
4		N0	37.163	0.629	4.100	59.050	35.435	38.890	0.000
5	EI	N	44.414	0.718	6.400	61.840	42.685	46.142	0.000
6	FP	N	34.050	0.718	6.400	47.410	32.322	35.778	0.000
7	EI	N0	42.320	0.718	6.400	58.930	40.592	44.048	0.000
8	FP	N0	32.005	0.718	6.400	44.560	30.277	33.734	0.000

Table 15.171: Estimate of treatment means in tow-way ANOVA for variable UG.K2O at site 41 in year 2012 .

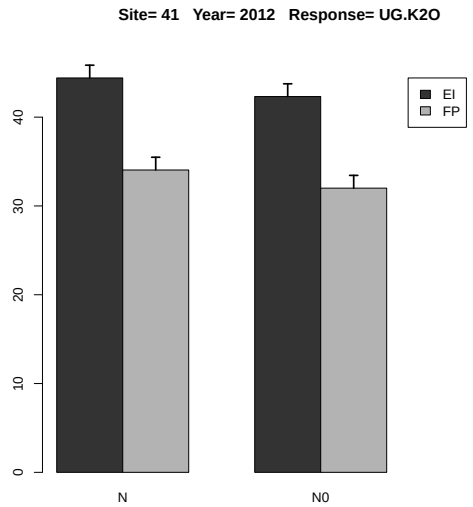

Figure 15.69: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	10.339	0.489	9.000	21.130	9.232	11.446	0.000
B N-N0	2.069	0.489	9.000	4.230	0.962	3.176	0.002
A:B EI N- FP N	10.364	0.692	9.000	14.980	8.799	11.929	0.000
A:B EI N- EI N0	2.094	0.692	9.000	3.030	0.529	3.659	0.014
A:B EI N- FP N0	12.408	0.692	9.000	17.930	10.843	13.974	0.000
A:B FP N- EI N0	-8.270	0.692	9.000	-11.950	-9.835	-6.705	0.000
A:B FP N- FP N0	2.045	0.692	9.000	2.960	0.479	3.610	0.016
A:B EI N0- FP N0	10.315	0.692	9.000	14.910	8.749	11.880	0.000

Table 15.172: Estimate of contrast in two-way ANOVA for variable UG.K2O at site 41 in year 2012 .

15.2.10 Response Variable US.N

	rep	A	B	y
1	1	EI	N0	63.844
2	2	EI	N0	81.541
3	3	EI	N0	88.848
4	4	EI	N0	74.554
5	1	EI	N	115.200
6	2	EI	N	93.392
7	3	EI	N	146.335
8	4	EI	N	133.066
9	1	FP	N0	77.791
10	2	FP	N0	63.092
11	3	FP	N0	64.576
12	4	FP	N0	76.849
13	1	FP	N	78.118
14	2	FP	N	54.691
15	3	FP	N	74.161
16	4	FP	N	55.093

Table 15.173: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.N

	Estimate	S.E.	t-value	p-value
A EI	121.998	7.639	15.970	0.001
A FP	65.516	7.639	8.576	0.007
A EI-FP	56.483	10.804	5.228	0.026

Table 15.174: Estimate of treatment means and contrast in one-way ANOVA for variable US.N at site 41 in year 2012 .

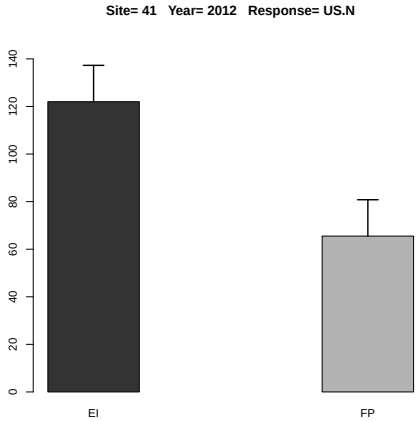

Figure 15.70: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2758.563	2758.563	16.461	2.999	0.027
B	1.000	1579.268	1579.268	9.424	6.000	0.022
A:B	1.000	2486.309	2486.309	14.836	6.000	0.008

Table 15.175: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		99.597	5.694	6.000	17.490	85.647	113.547	0.000
2	FP		68.046	5.694	6.000	11.950	54.096	81.996	0.000
3		N	93.757	5.271	6.500	17.790	81.110	106.404	0.000
4		N0	73.887	5.271	6.500	14.020	61.240	86.534	0.000
5	EI	N	121.998	7.306	11.400	16.700	105.992	138.004	0.000
6	FP	N	65.516	7.306	11.400	8.970	49.509	81.522	0.000
7	EI	N0	77.197	7.306	11.400	10.570	61.191	93.203	0.000
8	FP	N0	70.577	7.306	11.400	9.660	54.571	86.583	0.000

Table 15.176: Estimate of treatment means in tow-way ANOVA for variable US.N at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	31.551	7.777	3.000	4.060	6.800	56.303	0.027
B N-N0	19.870	6.473	6.000	3.070	4.032	35.708	0.022
A:B EI N- FP N	56.483	10.118	6.900	5.580	32.510	80.455	0.001
A:B EI N- EI N0	44.801	9.154	6.000	4.890	22.403	67.200	0.003
A:B EI N- FP N0	51.421	10.118	6.900	5.080	27.449	75.394	0.002
A:B FP N- EI N0	-11.681	10.118	6.900	-1.150	-35.654	12.291	0.286
A:B FP N- FP N0	-5.061	9.154	6.000	-0.550	-27.460	17.337	0.600
A:B EI N0- FP N0	6.620	10.118	6.900	0.650	-17.353	30.592	0.534

Table 15.177: Estimate of contrast in two-way ANOVA for variable US.N at site 41 in year 2012 .

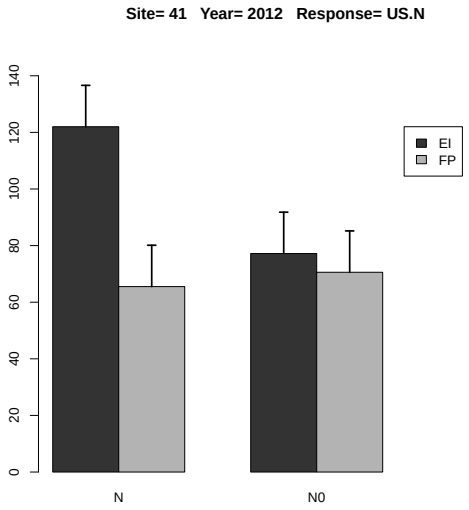

Figure 15.71: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.11 Response Variable US.P

	rep	A	B	y
1	1	EI	N0	33.696
2	2	EI	N0	42.903
3	3	EI	N0	45.903
4	4	EI	N0	37.341
5	1	EI	N	68.230
6	2	EI	N	54.625
7	3	EI	N	90.091
8	4	EI	N	76.662
9	1	FP	N0	37.556
10	2	FP	N0	28.764
11	3	FP	N0	27.688
12	4	FP	N0	36.058
13	1	FP	N	33.146
14	2	FP	N	22.556
15	3	FP	N	29.600
16	4	FP	N	24.299

Table 15.178: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P

	Estimate	S.E.	t-value	p-value
A EI	72.402	4.829	14.992	0.001
A FP	27.400	4.829	5.674	0.021
A EI-FP	45.001	6.830	6.589	0.014

Table 15.179: Estimate of treatment means and contrast in one-way ANOVA for variable US.P at site 41 in year 2012 .

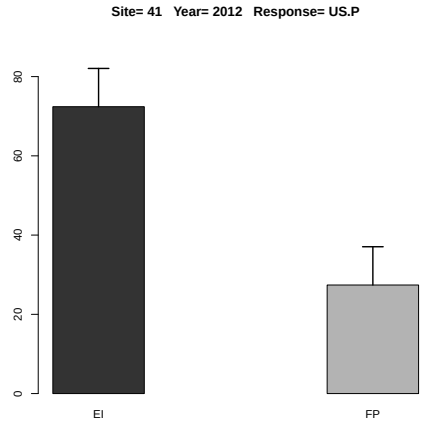

Figure 15.72: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1806.606	1806.606	30.353	5.999	0.002
B	1.000	746.652	746.652	12.545	6.000	0.012
A:B	1.000	1410.560	1410.560	23.699	6.000	0.003

Table 15.180: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		56.181	3.366	6.000	16.690	47.946	64.417	0.000
2	FP		29.959	3.366	6.000	8.900	21.723	38.194	0.000
3		N	49.901	3.063	11.500	16.290	43.195	56.607	0.000
4		N0	36.239	3.063	11.500	11.830	29.532	42.945	0.000
5	EI	N	72.402	4.332	11.500	16.710	62.918	81.886	0.000
6	FP	N	27.400	4.332	11.500	6.320	17.916	36.884	0.000
7	EI	N0	39.961	4.332	11.500	9.220	30.477	49.445	0.000
8	FP	N0	32.517	4.332	11.500	7.510	23.033	42.001	0.000

Table 15.181: Estimate of treatment means in tow-way ANOVA for variable US.P at site 41 in year 2012 .

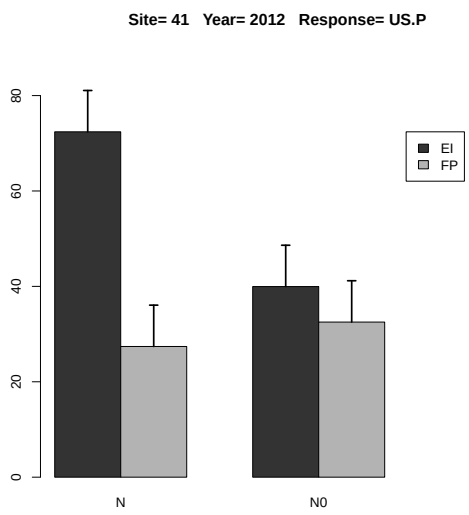

Figure 15.73: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	26.223	4.760	6.000	5.510	14.576	37.870	0.002
B N-N0	13.662	3.857	6.000	3.540	4.224	23.101	0.012
A:B EI N- FP N	45.001	6.127	11.500	7.350	31.589	58.414	0.000
A:B EI N- EI N0	32.441	5.455	6.000	5.950	19.093	45.790	0.001
A:B EI N- FP N0	39.885	6.127	11.500	6.510	26.473	53.298	0.000
A:B FP N- EI N0	-12.560	6.127	11.500	-2.050	-25.973	0.852	0.064
A:B FP N- FP N0	-5.116	5.455	6.000	-0.940	-18.465	8.232	0.385
A:B EI N0- FP N0	7.444	6.127	11.500	1.220	-5.968	20.856	0.249

Table 15.182: Estimate of contrast in two-way ANOVA for variable US.P at site 41 in year 2012 .

15.2.12 Response Variable US.P2O5

	rep	A	B	y
1	1	EI	N0	36.080
2	2	EI	N0	44.684
3	3	EI	N0	48.642
4	4	EI	N0	39.136
5	1	EI	N	71.311
6	2	EI	N	59.605
7	3	EI	N	93.498
8	4	EI	N	79.632
9	1	FP	N0	39.814
10	2	FP	N0	30.767
11	3	FP	N0	29.390
12	4	FP	N0	38.368
13	1	FP	N	35.035
14	2	FP	N	24.312
15	3	FP	N	31.600
16	4	FP	N	26.153

Table 15.183: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.P2O5

	Estimate	S.E.	t-value	p-value
A EI	76.012	4.635	16.398	0.001
A FP	29.275	4.635	6.316	0.015
A EI-FP	46.736	6.555	7.130	0.011

Table 15.184: Estimate of treatment means and contrast in one-way ANOVA for variable US.P2O5 at site 41 in year 2012 .

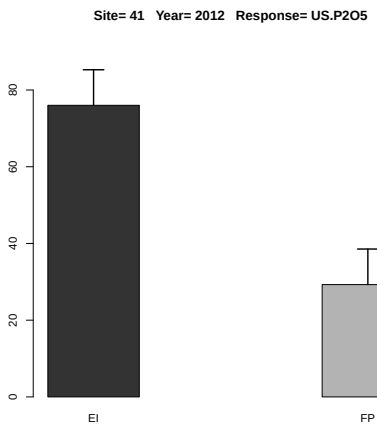

Figure 15.74: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1706.564	1706.564	32.437	5.999	0.001
B	1.000	816.046	816.046	15.511	6.000	0.008
A:B	1.000	1535.539	1535.539	29.186	6.000	0.002

Table 15.185: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		59.074	3.370	6.000	17.530	50.827	67.320	0.000
2	FP		31.930	3.370	6.000	9.470	23.683	40.176	0.000
3		N	52.643	2.994	11.200	17.580	46.067	59.219	0.000
4		N0	38.360	2.994	11.200	12.810	31.784	44.936	0.000
5	EI	N	76.012	4.235	11.200	17.950	66.711	85.312	0.000
6	FP	N	29.275	4.235	11.200	6.910	19.975	38.575	0.000
7	EI	N0	42.135	4.235	11.200	9.950	32.835	51.435	0.000
8	FP	N0	34.585	4.235	11.200	8.170	25.285	43.885	0.000

Table 15.186: Estimate of treatment means in tow-way ANOVA for variable US.P2O5 at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	27.143	4.766	6.000	5.700	15.481	38.806	0.001
B N-N0	14.283	3.627	6.000	3.940	5.409	23.157	0.008
A:B EI N- FP N	46.736	5.989	11.200	7.800	33.584	59.889	0.000
A:B EI N- EI N0	33.876	5.129	6.000	6.600	21.326	46.426	0.001
A:B EI N- FP N0	41.427	5.989	11.200	6.920	28.274	54.579	0.000
A:B FP N- EI N0	-12.860	5.989	11.200	-2.150	-26.013	0.292	0.054
A:B FP N- FP N0	-5.310	5.129	6.000	-1.040	-17.860	7.240	0.341
A:B EI N0- FP N0	7.551	5.989	11.200	1.260	-5.602	20.703	0.233

Table 15.187: Estimate of contrast in two-way ANOVA for variable US.P2O5 at site 41 in year 2012
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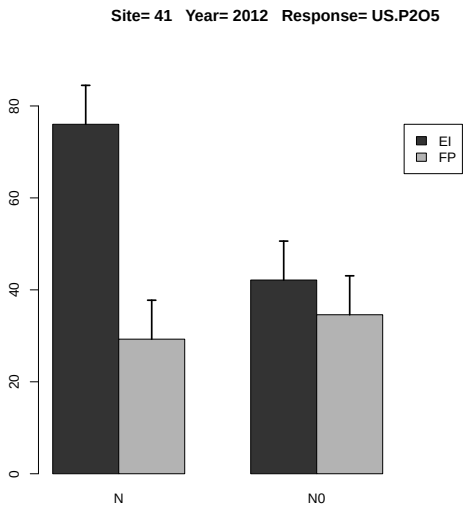

Figure 15.75: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.13 Response Variable US.K

	rep	A	B	y
1	1	EI	N0	181.175
2	2	EI	N0	225.977
3	3	EI	N0	232.011
4	4	EI	N0	204.562
5	1	EI	N	298.396
6	2	EI	N	237.959
7	3	EI	N	380.646
8	4	EI	N	344.569
9	1	FP	N0	185.260
10	2	FP	N0	157.851
11	3	FP	N0	163.243
12	4	FP	N0	181.442
13	1	FP	N	174.912
14	2	FP	N	110.321
15	3	FP	N	152.959
16	4	FP	N	118.595

Table 15.188: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K

	Estimate	S.E.	t-value	p-value
A EI	315.392	20.682	15.250	0.001
A FP	139.197	20.682	6.730	0.013
A EI-FP	176.196	29.248	6.024	0.017

Table 15.189: Estimate of treatment means and contrast in one-way ANOVA for variable US.K at site 41 in year 2012 .

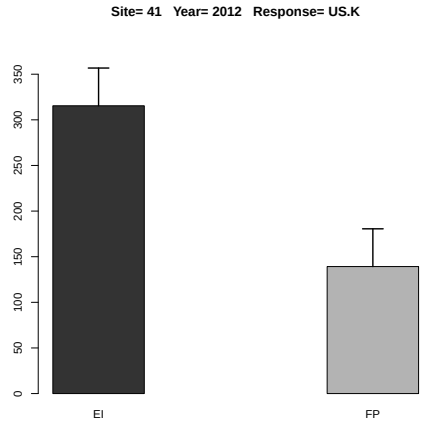

Figure 15.76: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	37617.670	37617.670	32.104	2.999	0.011
B	1.000	5142.224	5142.224	4.389	6.000	0.081
A:B	1.000	18827.545	18827.545	16.068	6.000	0.007

Table 15.190: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		263.162	13.864	6.000	18.980	229.205	297.119	0.000
2	FP		155.573	13.864	6.000	11.220	121.616	189.530	0.000
3		N	227.295	13.240	7.000	17.170	196.020	258.569	0.000
4		N0	191.440	13.240	7.000	14.460	160.165	222.714	0.000
5	EI	N	315.392	18.403	11.800	17.140	275.204	355.581	0.000
6	FP	N	139.197	18.403	11.800	7.560	99.008	179.386	0.000
7	EI	N0	210.931	18.403	11.800	11.460	170.742	251.120	0.000
8	FP	N0	171.949	18.403	11.800	9.340	131.760	212.138	0.000

Table 15.191: Estimate of treatment means in tow-way ANOVA for variable US.K at site 41 in year 2012 .

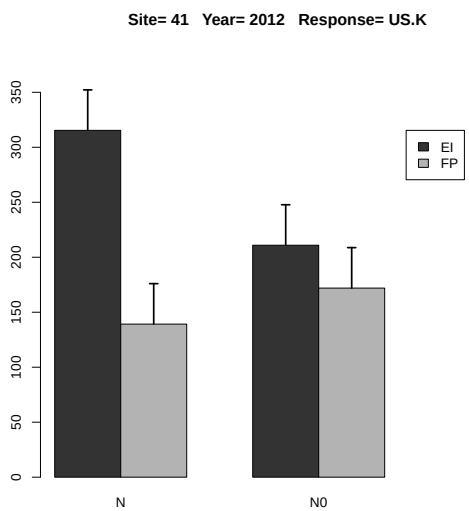

Figure 15.77: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	107.589	18.988	3.000	5.670	47.150	168.028	0.011
B N-N0	35.855	17.115	6.000	2.090	-6.025	77.735	0.081
A:B EI N- FP N	176.196	25.564	7.400	6.890	116.417	235.974	0.000
A:B EI N- EI N0	104.461	24.205	6.000	4.320	45.234	163.689	0.005
A:B EI N- FP N0	143.443	25.564	7.400	5.610	83.665	203.222	0.001
A:B FP N- EI N0	-71.734	25.564	7.400	-2.810	-131.513	-11.955	0.025
A:B FP N- FP N0	-32.752	24.205	6.000	-1.350	-91.979	26.475	0.225
A:B EI N0- FP N0	38.982	25.564	7.400	1.520	-20.797	98.761	0.169

Table 15.192: Estimate of contrast in two-way ANOVA for variable US.K at site 41 in year 2012 .

15.2.14 Response Variable US.K2O

	rep	A	B	y
1	1	EI	N0	183.495
2	2	EI	N0	228.039
3	3	EI	N0	234.699
4	4	EI	N0	206.701
5	1	EI	N	301.564
6	2	EI	N	242.583
7	3	EI	N	383.752
8	4	EI	N	347.227
9	1	FP	N0	187.713
10	2	FP	N0	159.894
11	3	FP	N0	164.788
12	4	FP	N0	183.513
13	1	FP	N	176.735
14	2	FP	N	112.017
15	3	FP	N	155.105
16	4	FP	N	120.343

Table 15.193: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable US.K2O

	Estimate	S.E.	t-value	p-value
A EI	318.782	20.445	15.592	0.001
A FP	141.050	20.445	6.899	0.012
A EI-FP	177.732	28.913	6.147	0.017

Table 15.194: Estimate of treatment means and contrast in one-way ANOVA for variable US.K2O at site 41 in year 2012 .

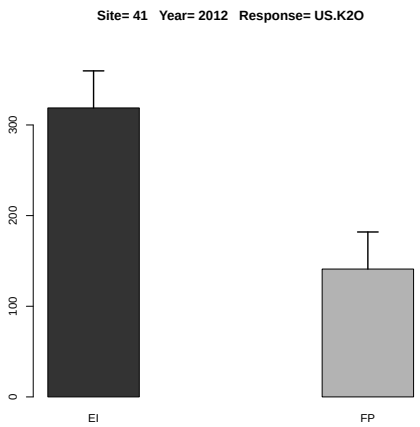

Figure 15.78: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	37173.551	37173.551	32.526	2.999	0.011
B	1.000	5273.817	5273.817	4.614	5.999	0.075
A:B	1.000	19175.311	19175.311	16.778	5.999	0.006

Table 15.195: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		266.007	13.835	6.000	19.230	232.127	299.888	0.000
2	FP		157.513	13.835	6.000	11.390	123.633	191.394	0.000
3		N	229.916	13.129	7.000	17.510	198.866	260.966	0.000
4		N0	193.605	13.129	7.000	14.750	162.555	224.655	0.000
5	EI	N	318.781	18.283	11.700	17.440	278.844	358.719	0.000
6	FP	N	141.050	18.283	11.700	7.710	101.112	180.988	0.000
7	EI	N0	213.233	18.283	11.700	11.660	173.296	253.171	0.000
8	FP	N0	173.977	18.283	11.700	9.520	134.039	213.915	0.000

Table 15.196: Estimate of treatment means in tow-way ANOVA for variable US.K2O at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	108.494	19.024	3.000	5.700	47.944	169.045	0.011
B N-N0	36.310	16.903	6.000	2.150	-5.050	77.671	0.075
A:B EI N- FP N	177.732	25.448	7.300	6.980	118.090	237.373	0.000
A:B EI N- EI N0	105.548	23.905	6.000	4.420	47.055	164.041	0.004
A:B EI N- FP N0	144.805	25.448	7.300	5.690	85.163	204.446	0.001
A:B FP N- EI N0	-72.184	25.448	7.300	-2.840	-131.825	-12.542	0.024
A:B FP N- FP N0	-32.927	23.905	6.000	-1.380	-91.420	25.566	0.218
A:B EI N0- FP N0	39.257	25.448	7.300	1.540	-20.385	98.898	0.165

Table 15.197: Estimate of contrast in two-way ANOVA for variable US.K2O at site 41 in year 2012 .

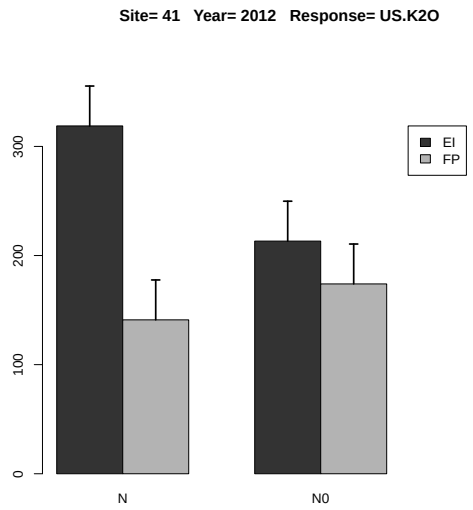

Figure 15.79: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.15 Response Variable UT.N

	rep	A	B	y
1	1	EI	N0	165.112
2	2	EI	N0	186.310
3	3	EI	N0	191.294
4	4	EI	N0	178.373
5	1	EI	N	249.601
6	2	EI	N	226.576
7	3	EI	N	277.999
8	4	EI	N	263.548
9	1	FP	N0	170.016
10	2	FP	N0	159.803
11	3	FP	N0	157.714
12	4	FP	N0	168.348
13	1	FP	N	200.538
14	2	FP	N	172.718
15	3	FP	N	193.687
16	4	FP	N	171.473

Table 15.198: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.N

	Estimate	S.E.	t-value	p-value
A EI	254.431	7.613	33.421	0.000
A FP	184.604	7.613	24.249	0.000
A EI-FP	69.827	10.766	6.486	0.015

Table 15.199: Estimate of treatment means and contrast in one-way ANOVA for variable UT.N at site 41 in year 2012 .

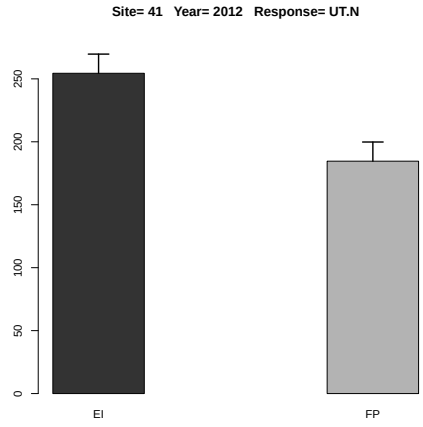

Figure 15.80: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	5616.962	5616.962	30.180	5.999	0.002
B	1.000	8985.471	8985.471	48.279	6.000	0.000
A:B	1.000	2864.907	2864.907	15.393	6.000	0.008

Table 15.200: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		217.352	5.543	6.000	39.210	203.788	230.916	0.000
2	FP		174.287	5.543	6.000	31.440	160.723	187.851	0.000
3		N	219.517	5.196	11.800	42.250	208.173	230.862	0.000
4		N0	172.121	5.196	11.800	33.130	160.777	183.466	0.000
5	EI	N	254.431	7.348	11.800	34.630	238.387	270.474	0.000
6	FP	N	184.604	7.348	11.800	25.120	168.560	200.647	0.000
7	EI	N0	180.273	7.348	11.800	24.530	164.229	196.316	0.000
8	FP	N0	163.970	7.348	11.800	22.320	147.927	180.014	0.000

Table 15.201: Estimate of treatment means in tow-way ANOVA for variable UT.N at site 41 in year 2012 .

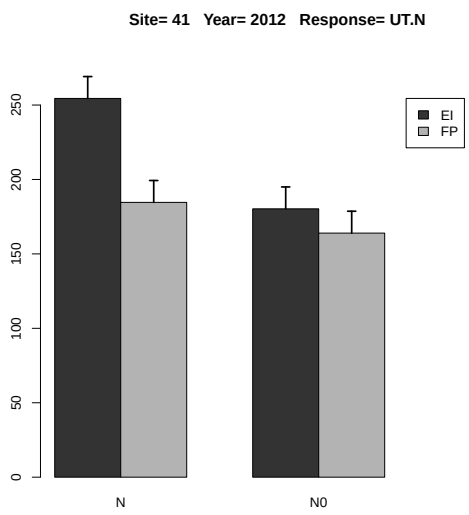

Figure 15.81: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	43.065	7.839	6.000	5.490	23.882	62.247	0.002
B N-N0	47.396	6.821	6.000	6.950	30.705	64.087	0.000
A:B EI N- FP N	69.827	10.391	11.800	6.720	47.138	92.516	0.000
A:B EI N- EI N0	74.158	9.647	6.000	7.690	50.554	97.763	0.000
A:B EI N- FP N0	90.460	10.391	11.800	8.710	67.772	113.149	0.000
A:B FP N- EI N0	4.331	10.391	11.800	0.420	-18.358	27.020	0.684
A:B FP N- FP N0	20.634	9.647	6.000	2.140	-2.971	44.238	0.076
A:B EI N0- FP N0	16.302	10.391	11.800	1.570	-6.387	38.991	0.143

Table 15.202: Estimate of contrast in two-way ANOVA for variable UT.N at site 41 in year 2012 .

15.2.16 Response Variable UT.P

	rep	A	B	y
1	1	EI	N0	56.739
2	2	EI	N0	66.522
3	3	EI	N0	70.294
4	4	EI	N0	62.990
5	1	EI	N	98.310
6	2	EI	N	83.578
7	3	EI	N	117.310
8	4	EI	N	104.031
9	1	FP	N0	54.483
10	2	FP	N0	44.096
11	3	FP	N0	46.200
12	4	FP	N0	52.376
13	1	FP	N	53.845
14	2	FP	N	43.315
15	3	FP	N	51.386
16	4	FP	N	46.411

Table 15.203: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P

	Estimate	S.E.	t-value	p-value
A EI	100.807	4.183	24.098	0.000
A FP	48.739	4.183	11.651	0.003
A EI-FP	52.068	5.916	8.801	0.006

Table 15.204: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P at site 41 in year 2012 .

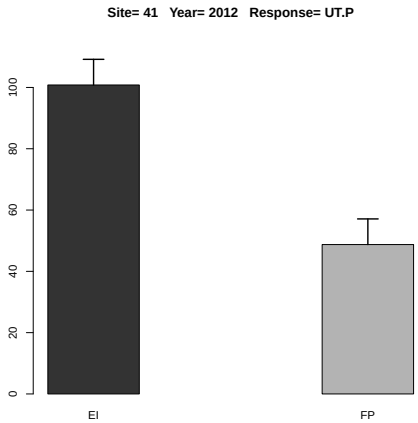

Figure 15.82: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2781.893	2781.893	55.904	2.999	0.005
B	1.000	1304.719	1304.719	26.219	6.000	0.002
A:B	1.000	1385.381	1385.381	27.840	6.000	0.002

Table 15.205: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		82.472	3.316	6.000	24.870	74.341	90.602	0.000
2	FP		49.014	3.316	6.000	14.780	40.884	57.145	0.000
3		N	74.773	3.017	6.100	24.790	67.421	82.126	0.000
4		N0	56.713	3.017	6.100	18.800	49.360	64.065	0.000
5	EI	N	100.807	4.149	11.100	24.300	91.682	109.932	0.000
6	FP	N	48.739	4.149	11.100	11.750	39.614	57.864	0.000
7	EI	N0	64.136	4.149	11.100	15.460	55.011	73.261	0.000
8	FP	N0	49.289	4.149	11.100	11.880	40.164	58.414	0.000

Table 15.206: Estimate of treatment means in tow-way ANOVA for variable UT.P at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	33.458	4.475	3.000	7.480	19.215	47.700	0.005
B N-N0	18.061	3.527	6.000	5.120	9.430	26.691	0.002
A:B EI N- FP N	52.068	5.698	6.600	9.140	38.432	65.704	0.000
A:B EI N- EI N0	36.671	4.988	6.000	7.350	24.465	48.876	0.000
A:B EI N- FP N0	51.518	5.698	6.600	9.040	37.882	65.154	0.000
A:B FP N- EI N0	-15.397	5.698	6.600	-2.700	-29.033	-1.761	0.032
A:B FP N- FP N0	-0.550	4.988	6.000	-0.110	-12.755	11.655	0.916
A:B EI N0- FP N0	14.847	5.698	6.600	2.610	1.211	28.483	0.037

Table 15.207: Estimate of contrast in two-way ANOVA for variable UT.P at site 41 in year 2012 .

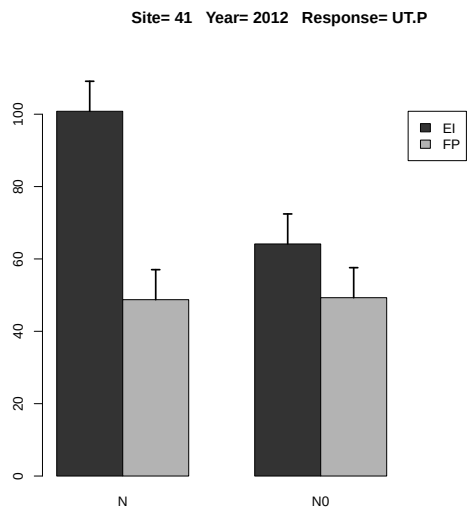

Figure 15.83: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.17 Response Variable UT.P2O5

	rep	A	B	y
1	1	EI	N0	59.123
2	2	EI	N0	68.303
3	3	EI	N0	73.034
4	4	EI	N0	64.785
5	1	EI	N	101.391
6	2	EI	N	88.558
7	3	EI	N	120.717
8	4	EI	N	107.002
9	1	FP	N0	56.742
10	2	FP	N0	46.099
11	3	FP	N0	47.902
12	4	FP	N0	54.686
13	1	FP	N	55.734
14	2	FP	N	45.070
15	3	FP	N	53.386
16	4	FP	N	48.266

Table 15.208: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.P2O5

	Estimate	S.E.	t-value	p-value
A EI	104.417	3.980	26.238	0.000
A FP	50.614	3.980	12.719	0.002
A EI-FP	53.803	5.628	9.560	0.005

Table 15.209: Estimate of treatment means and contrast in one-way ANOVA for variable UT.P2O5 at site 41 in year 2012 .

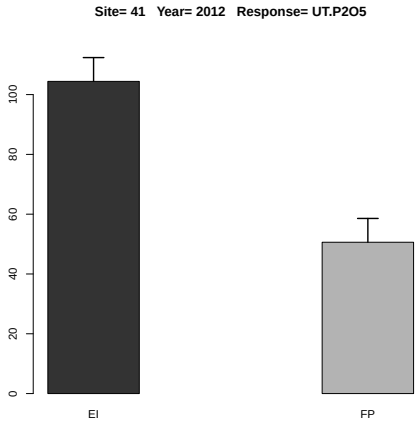

Figure 15.84: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	2436.721	2436.721	56.697	3.000	0.005
B	1.000	1395.956	1395.956	32.481	6.000	0.001
A:B	1.000	1509.263	1509.263	35.117	6.000	0.001

Table 15.210: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		85.364	3.317	6.000	25.740	77.242	93.486	0.000
2	FP		50.986	3.317	6.000	15.370	42.864	59.108	0.000
3		N	77.515	2.912	5.800	26.620	70.332	84.699	0.000
4		N0	58.834	2.912	5.800	20.210	51.651	66.018	0.000
5	EI	N	104.417	4.046	10.700	25.800	95.481	113.353	0.000
6	FP	N	50.614	4.046	10.700	12.510	41.678	59.550	0.000
7	EI	N0	66.311	4.046	10.700	16.390	57.375	75.247	0.000
8	FP	N0	51.357	4.046	10.700	12.690	42.421	60.294	0.000

Table 15.211: Estimate of treatment means in tow-way ANOVA for variable UT.P2O5 at site 41 in year 2012 .

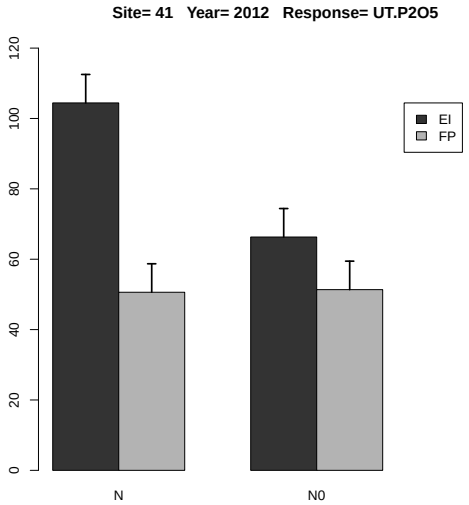

Figure 15.85: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	34.378	4.566	3.000	7.530	19.848	48.909	0.005
B N-N0	18.681	3.278	6.000	5.700	10.661	26.702	0.001
A:B EI N- FP N	53.803	5.620	6.100	9.570	40.095	67.511	0.000
A:B EI N- EI N0	38.106	4.636	6.000	8.220	26.763	49.449	0.000
A:B EI N- FP N0	53.060	5.620	6.100	9.440	39.351	66.768	0.000
A:B FP N- EI N0	-15.697	5.620	6.100	-2.790	-29.406	-1.989	0.031
A:B FP N- FP N0	-0.743	4.636	6.000	-0.160	-12.086	10.600	0.878
A:B EI N0- FP N0	14.954	5.620	6.100	2.660	1.245	28.662	0.037

Table 15.212: Estimate of contrast in two-way ANOVA for variable UT.P2O5 at site 41 in year 2012 .

15.2.18 Response Variable UT.K

	rep	A	B	y
1	1	EI	N0	214.527
2	2	EI	N0	261.707
3	3	EI	N0	267.989
4	4	EI	N0	239.982
5	1	EI	N	333.596
6	2	EI	N	276.563
7	3	EI	N	417.993
8	4	EI	N	380.849
9	1	FP	N0	210.359
10	2	FP	N0	186.157
11	3	FP	N0	189.854
12	4	FP	N0	207.668
13	1	FP	N	202.708
14	2	FP	N	138.197
15	3	FP	N	181.222
16	4	FP	N	147.690

Table 15.213: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K

	Estimate	S.E.	t-value	p-value
A EI	352.250	20.516	17.169	0.001
A FP	167.454	20.516	8.162	0.007
A EI-FP	184.796	29.015	6.369	0.015

Table 15.214: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K at site 41 in year 2012 .

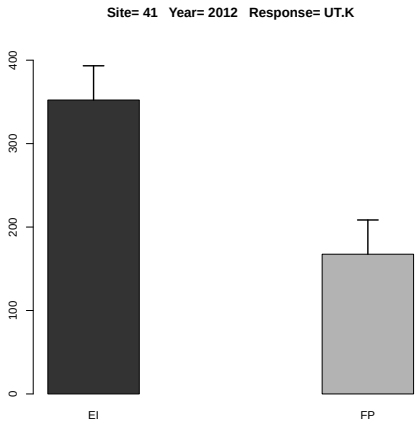

Figure 15.86: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	42050.680	42050.680	36.559	2.999	0.009
B	1.000	5646.572	5646.572	4.909	6.001	0.069
A:B	1.000	18838.736	18838.736	16.378	6.001	0.007

Table 15.215: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		299.151	13.847	6.000	21.600	265.256	333.046	0.000
2	FP		182.982	13.847	6.000	13.210	149.087	216.877	0.000
3		N	259.852	13.089	7.100	19.850	228.952	290.752	0.000
4		N0	222.280	13.089	7.100	16.980	191.380	253.180	0.000
5	EI	N	352.250	18.317	11.700	19.230	312.247	392.254	0.000
6	FP	N	167.454	18.317	11.700	9.140	127.450	207.458	0.000
7	EI	N0	246.051	18.317	11.700	13.430	206.048	286.055	0.000
8	FP	N0	198.509	18.317	11.700	10.840	158.506	238.513	0.000

Table 15.216: Estimate of treatment means in tow-way ANOVA for variable UT.K at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	116.169	19.213	3.000	6.050	55.016	177.322	0.009
B N-N0	37.572	16.957	6.000	2.220	-3.921	79.064	0.069
A:B EI N- FP N	184.796	25.626	7.300	7.210	124.675	244.917	0.000
A:B EI N- EI N0	106.199	23.982	6.000	4.430	47.520	164.878	0.004
A:B EI N- FP N0	153.741	25.626	7.300	6.000	93.620	213.862	0.000
A:B FP N- EI N0	-78.597	25.626	7.300	-3.070	-138.718	-18.476	0.017
A:B FP N- FP N0	-31.055	23.982	6.000	-1.290	-89.735	27.624	0.243
A:B EI N0- FP N0	47.542	25.626	7.300	1.860	-12.579	107.663	0.104

Table 15.217: Estimate of contrast in two-way ANOVA for variable UT.K at site 41 in year 2012 .

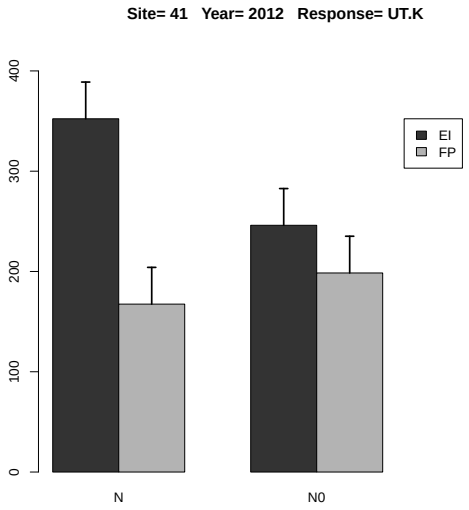

Figure 15.87: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.19 Response Variable UT.K2O

	rep	A	B	y
1	1	EI	N0	216.847
2	2	EI	N0	263.769
3	3	EI	N0	270.677
4	4	EI	N0	242.122
5	1	EI	N	336.764
6	2	EI	N	281.187
7	3	EI	N	421.099
8	4	EI	N	383.508
9	1	FP	N0	212.812
10	2	FP	N0	188.199
11	3	FP	N0	191.399
12	4	FP	N0	209.739
13	1	FP	N	204.531
14	2	FP	N	139.893
15	3	FP	N	183.367
16	4	FP	N	149.438

Table 15.218: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable UT.K2O

	Estimate	S.E.	t-value	p-value
A EI	355.639	20.285	17.532	0.001
A FP	169.307	20.285	8.346	0.006
A EI-FP	186.332	28.688	6.495	0.014

Table 15.219: Estimate of treatment means and contrast in one-way ANOVA for variable UT.K2O at site 41 in year 2012 .

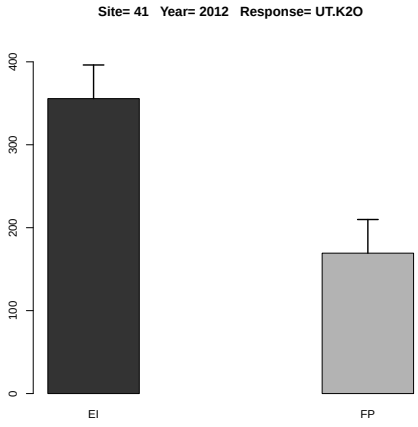

Figure 15.88: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	41486.762	41486.762	36.984	2.999	0.009
B	1.000	5784.427	5784.427	5.157	6.001	0.064
A:B	1.000	19186.605	19186.605	17.104	6.001	0.006

Table 15.220: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		301.997	13.820	6.000	21.850	268.171	335.822	0.000
2	FP		184.922	13.820	6.000	13.380	151.096	218.748	0.000
3		N	262.473	12.979	7.000	20.220	231.797	293.149	0.000
4		N0	224.446	12.979	7.000	17.290	193.769	255.122	0.000
5	EI	N	355.639	18.199	11.700	19.540	315.881	395.398	0.000
6	FP	N	169.307	18.199	11.700	9.300	129.548	209.066	0.000
7	EI	N0	248.354	18.199	11.700	13.650	208.595	288.113	0.000
8	FP	N0	200.537	18.199	11.700	11.020	160.779	240.296	0.000

Table 15.221: Estimate of treatment means in tow-way ANOVA for variable UT.K2O at site 41 in year 2012 .

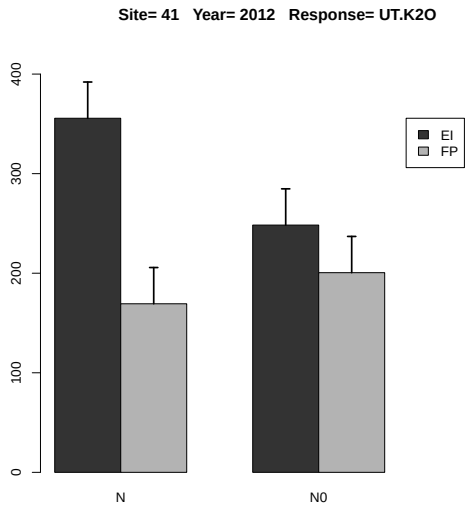

Figure 15.89: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	117.075	19.251	3.000	6.080	55.800	178.349	0.009
B N-N0	38.028	16.746	6.000	2.270	-2.948	79.003	0.064
A:B EI N- FP N	186.332	25.515	7.200	7.300	126.331	246.334	0.000
A:B EI N- EI N0	107.286	23.683	6.000	4.530	49.338	165.233	0.004
A:B EI N- FP N0	155.102	25.515	7.200	6.080	95.100	215.104	0.000
A:B FP N- EI N0	-79.047	25.515	7.200	-3.100	-139.049	-19.045	0.017
A:B FP N- FP N0	-31.230	23.683	6.000	-1.320	-89.178	26.718	0.235
A:B EI N0- FP N0	47.817	25.515	7.200	1.870	-12.185	107.819	0.102

Table 15.222: Estimate of contrast in two-way ANOVA for variable UT.K2O at site 41 in year 2012
.

15.2.20 Response Variable HI.N

	rep	A	B	y
1	1	EI	N0	1.586
2	2	EI	N0	1.285
3	3	EI	N0	1.153
4	4	EI	N0	1.393
5	1	EI	N	1.167
6	2	EI	N	1.426
7	3	EI	N	0.900
8	4	EI	N	0.981
9	1	FP	N0	1.186
10	2	FP	N0	1.533
11	3	FP	N0	1.442
12	4	FP	N0	1.191
13	1	FP	N	1.567
14	2	FP	N	2.158
15	3	FP	N	1.612
16	4	FP	N	2.112

Table 15.223: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.118	0.139	5.100	8.040	0.763	1.473	0.000
A FP	1.862	0.139	5.100	13.400	1.507	2.217	0.000
A EI-FP	-0.744	0.150	3.000	-4.960	-1.221	-0.267	0.016

Table 15.224: Estimate of treatment means and contrast in one-way ANOVA for variable HI.N at site 41 in year 2012 .

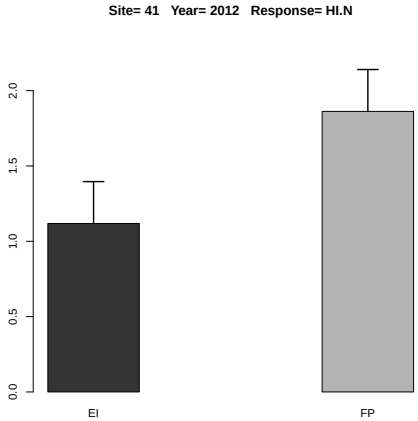

Figure 15.90: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.390	0.390	8.961	2.999	0.058
B	1.000	0.083	0.083	1.916	5.997	0.216
A:B	1.000	0.578	0.578	13.299	5.997	0.011

Table 15.225: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		1.236	0.091	5.900	13.590	1.013	1.460	0.000
2	FP		1.600	0.091	5.900	17.590	1.377	1.823	0.000
3		N	1.490	0.085	6.500	17.440	1.285	1.696	0.000
4		N0	1.346	0.085	6.500	15.750	1.141	1.551	0.000
5	EI	N	1.118	0.117	11.400	9.550	0.862	1.375	0.000
6	FP	N	1.862	0.117	11.400	15.900	1.606	2.119	0.000
7	EI	N0	1.354	0.117	11.400	11.560	1.098	1.611	0.000
8	FP	N0	1.338	0.117	11.400	11.430	1.081	1.594	0.000

Table 15.226: Estimate of treatment means in tow-way ANOVA for variable HI.N at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.364	0.122	3.000	-2.990	-0.751	0.023	0.058
B N-N0	0.144	0.104	6.000	1.380	-0.111	0.399	0.216
A:B EI N- FP N	-0.744	0.160	7.100	-4.650	-1.122	-0.367	0.002
A:B EI N- EI N0	-0.236	0.147	6.000	-1.600	-0.597	0.125	0.161
A:B EI N- FP N0	-0.220	0.160	7.100	-1.370	-0.597	0.158	0.212
A:B FP N- EI N0	0.508	0.160	7.100	3.170	0.131	0.886	0.015
A:B FP N- FP N0	0.524	0.147	6.000	3.560	0.164	0.885	0.012
A:B EI N0- FP N0	0.016	0.160	7.100	0.100	-0.361	0.394	0.922

Table 15.227: Estimate of contrast in two-way ANOVA for variable HI.N at site 41 in year 2012 .

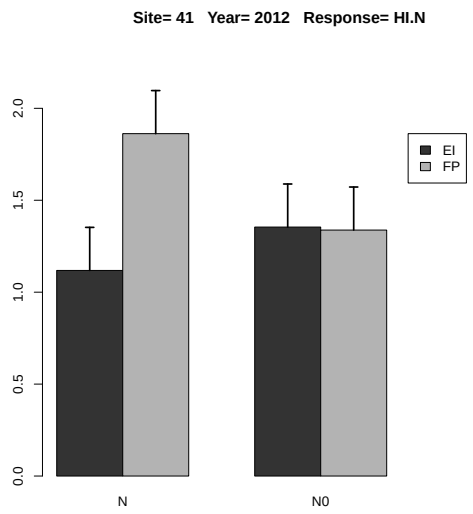

Figure 15.91: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.21 Response Variable HI.P

	rep	A	B	y
1	1	EI	N0	0.684
2	2	EI	N0	0.551
3	3	EI	N0	0.531
4	4	EI	N0	0.687
5	1	EI	N	0.441
6	2	EI	N	0.530
7	3	EI	N	0.302
8	4	EI	N	0.357
9	1	FP	N0	0.451
10	2	FP	N0	0.533
11	3	FP	N0	0.669
12	4	FP	N0	0.453
13	1	FP	N	0.624
14	2	FP	N	0.920
15	3	FP	N	0.736
16	4	FP	N	0.910

Table 15.228: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.407	0.062	5.700	6.610	0.255	0.560	0.001
A FP	0.798	0.062	5.700	12.940	0.645	0.950	0.000
A EI-FP	-0.390	0.077	3.000	-5.070	-0.635	-0.145	0.015

Table 15.229: Estimate of treatment means and contrast in one-way ANOVA for variable HI.P at site 41 in year 2012 .

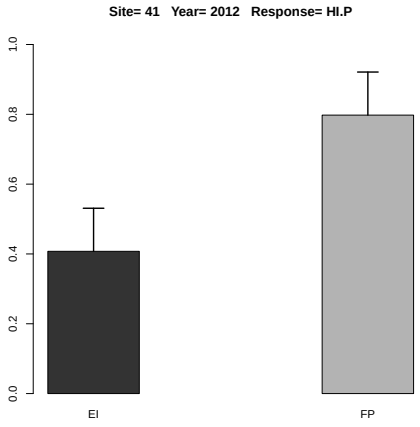

Figure 15.92: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.092	0.092	7.678	11.989	0.017
B	1.000	0.004	0.004	0.362	11.989	0.559
A:B	1.000	0.228	0.228	19.006	11.989	0.001

Table 15.230: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.510	0.039	12.000	13.190	0.426	0.595	0.000
2	FP		0.662	0.039	12.000	17.110	0.578	0.746	0.000
3		N	0.603	0.039	12.000	15.570	0.518	0.687	0.000
4		N0	0.570	0.039	12.000	14.720	0.485	0.654	0.000
5	EI	N	0.407	0.055	12.000	7.450	0.288	0.527	0.000
6	FP	N	0.798	0.055	12.000	14.580	0.678	0.917	0.000
7	EI	N0	0.613	0.055	12.000	11.210	0.494	0.732	0.000
8	FP	N0	0.526	0.055	12.000	9.620	0.407	0.645	0.000

Table 15.231: Estimate of treatment means in tow-way ANOVA for variable HI.P at site 41 in year 2012 .

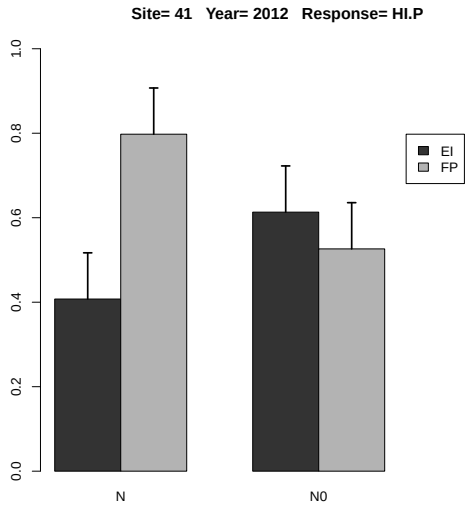

Figure 15.93: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.152	0.055	12.000	-2.770	-0.271	-0.032	0.017
B N-N0	0.033	0.055	12.000	0.600	-0.086	0.152	0.559
A:B EI N- FP N	-0.390	0.077	12.000	-5.040	-0.559	-0.222	0.000
A:B EI N- EI N0	-0.206	0.077	12.000	-2.660	-0.374	-0.037	0.021
A:B EI N- FP N0	-0.119	0.077	12.000	-1.530	-0.287	0.050	0.151
A:B FP N- EI N0	0.184	0.077	12.000	2.380	0.016	0.353	0.034
A:B FP N- FP N0	0.272	0.077	12.000	3.510	0.103	0.440	0.004
A:B EI N0- FP N0	0.087	0.077	12.000	1.120	-0.082	0.256	0.283

Table 15.232: Estimate of contrast in two-way ANOVA for variable HI.P at site 41 in year 2012 .

15.2.22 Response Variable HI.K

	rep	A	B	y
1	1	EI	N0	0.184
2	2	EI	N0	0.158
3	3	EI	N0	0.155
4	4	EI	N0	0.173
5	1	EI	N	0.118
6	2	EI	N	0.162
7	3	EI	N	0.098
8	4	EI	N	0.105
9	1	FP	N0	0.135
10	2	FP	N0	0.179
11	3	FP	N0	0.163
12	4	FP	N0	0.145
13	1	FP	N	0.159
14	2	FP	N	0.253
15	3	FP	N	0.185
16	4	FP	N	0.245

Table 15.233: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.121	0.019	5.000	6.320	0.072	0.170	0.001
A FP	0.210	0.019	5.000	10.990	0.161	0.260	0.000
A EI-FP	-0.089	0.020	3.000	-4.420	-0.154	-0.025	0.022

Table 15.234: Estimate of treatment means and contrast in one-way ANOVA for variable HI.K at site 41 in year 2012 .

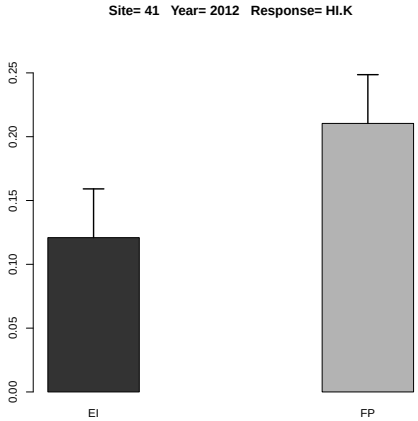

Figure 15.94: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.005	0.005	7.310	2.999	0.074
B	1.000	0.000	0.000	0.098	5.977	0.764
A:B	1.000	0.010	0.010	15.375	5.977	0.008

Table 15.235: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.144	0.012	5.700	12.430	0.116	0.173	0.000
2	FP		0.183	0.012	5.700	15.770	0.154	0.212	0.000
3		N	0.166	0.011	6.000	14.800	0.138	0.193	0.000
4		N0	0.162	0.011	6.000	14.440	0.134	0.189	0.000
5	EI	N	0.121	0.015	10.900	8.180	0.088	0.153	0.000
6	FP	N	0.210	0.015	10.900	14.230	0.178	0.243	0.000
7	EI	N0	0.168	0.015	10.900	11.340	0.135	0.200	0.000
8	FP	N0	0.156	0.015	10.900	10.530	0.123	0.188	0.000

Table 15.236: Estimate of treatment means in tow-way ANOVA for variable HI.K at site 41 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.039	0.014	3.000	-2.700	-0.084	0.007	0.074
B N-N0	0.004	0.013	6.000	0.310	-0.028	0.036	0.764
A:B EI N- FP N	-0.089	0.019	7.400	-4.630	-0.135	-0.044	0.002
A:B EI N- EI N0	-0.047	0.018	6.000	-2.550	-0.092	-0.002	0.044
A:B EI N- FP N0	-0.035	0.019	7.400	-1.800	-0.080	0.010	0.113
A:B FP N- EI N0	0.043	0.019	7.400	2.220	-0.002	0.088	0.060
A:B FP N- FP N0	0.055	0.018	6.000	2.990	0.010	0.100	0.024
A:B EI N0- FP N0	0.012	0.019	7.400	0.620	-0.033	0.057	0.552

Table 15.237: Estimate of contrast in two-way ANOVA for variable HI.K at site 41 in year 2012 .

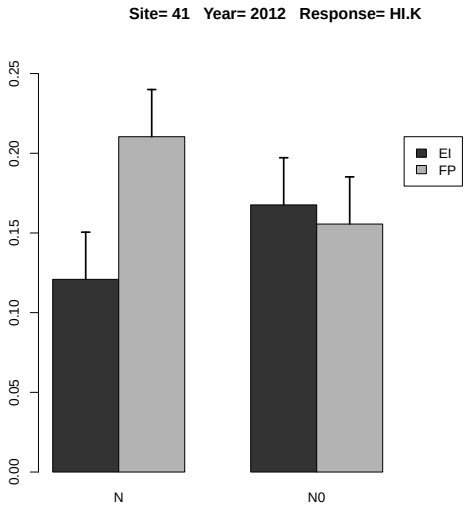

Figure 15.95: Estimated treatment means and standard error in the 2-way ANOVA.

15.2.23 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	75.294
2	2	EI	N	75.694
3	3	EI	N	74.471
4	4	EI	N	74.882
5	1	FP	N	197.133
6	2	FP	N	197.700
7	3	FP	N	196.267
8	4	FP	N	193.967

Table 15.238: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	75.085	0.610	5.400	123.100	73.550	76.621	0.000
A FP	196.267	0.610	5.400	321.780	194.731	197.802	0.000
A EI-FP	-121.181	0.701	3.000	-173.000	-123.411	-118.952	0.000

Table 15.239: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 41 in year 2012 .

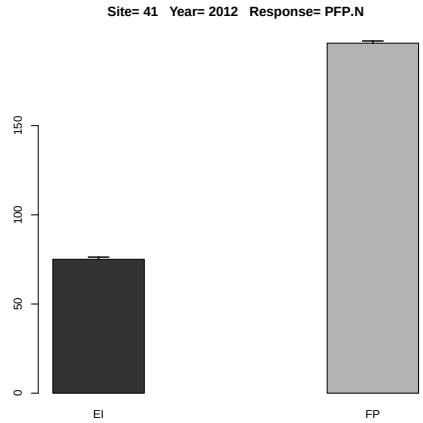

Figure 15.96: Estimated treatment means and standard error in the one-way ANOVA.

15.2.24 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	209.410
2	2	EI	N	210.523
3	3	EI	N	207.120
4	4	EI	N	208.265
5	1	FP	N	338.639
6	2	FP	N	339.613
7	3	FP	N	337.151
8	4	FP	N	333.200

Table 15.240: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	208.830	1.124	4.900	185.750	205.918	211.741	0.000
A FP	337.151	1.124	4.900	299.890	334.239	340.062	0.000
A EI-FP	-128.321	1.148	3.000	-111.800	-131.974	-124.668	0.000

Table 15.241: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 41 in year 2012 .

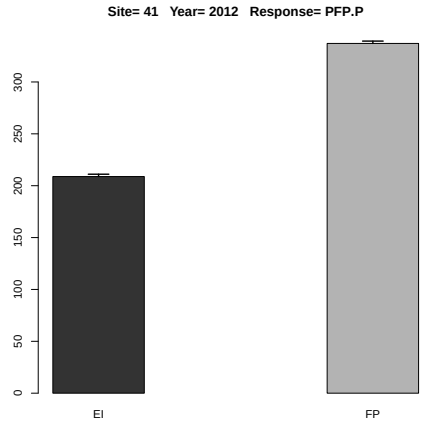

Figure 15.97: Estimated treatment means and standard error in the one-way ANOVA.

15.2.25 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	91.429
2	2	EI	N	91.914
3	3	EI	N	90.429
4	4	EI	N	90.929
5	1	FP	N	147.850
6	2	FP	N	148.275
7	3	FP	N	147.200
8	4	FP	N	145.475

Table 15.242: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	91.175	0.491	4.900	185.750	89.904	92.446	0.000
A FP	147.200	0.491	4.900	299.890	145.929	148.471	0.000
A EI-FP	-56.025	0.501	3.000	-111.800	-57.620	-54.430	0.000

Table 15.243: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 41 in year 2012 .

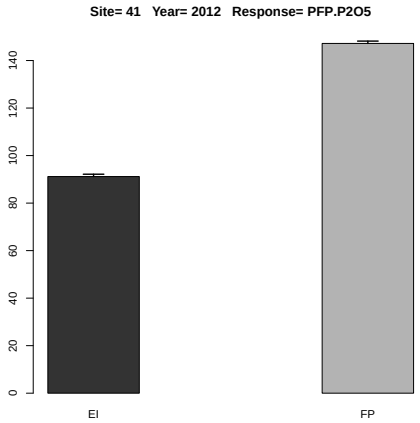

Figure 15.98: Estimated treatment means and standard error in the one-way ANOVA.

15.2.26 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	192.818
2	2	EI	N	193.842
3	3	EI	N	190.709
4	4	EI	N	191.763

Table 15.244: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

There is no or sufficient data for this response variable at this site and year.

15.2.27 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	160.000
2	2	EI	N	160.850
3	3	EI	N	158.250
4	4	EI	N	159.125

Table 15.245: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

There is no or sufficient data for this response variable at this site and year.

15.2.28 Response Variable PNB.N

	rep	A	B	y
1	1	EI	N	1.581
2	2	EI	N	1.567
3	3	EI	N	1.549
4	4	EI	N	1.535
5	1	FP	N	4.081
6	2	FP	N	3.934
7	3	FP	N	3.984
8	4	FP	N	3.879

Table 15.246: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	1.558	0.031	5.300	50.150	1.480	1.637	0.000
A FP	3.970	0.031	5.300	127.760	3.891	4.048	0.000
A EI-FP	-2.412	0.035	3.000	-68.730	-2.523	-2.300	0.000

Table 15.247: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.N at site 41 in year 2012 .

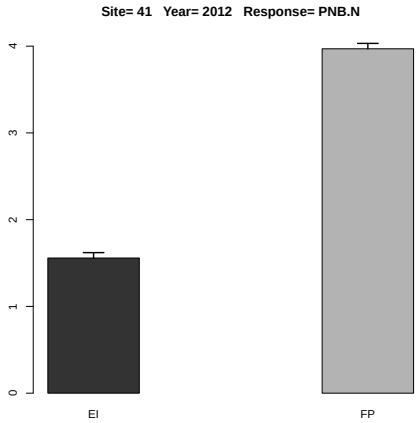

Figure 15.99: Estimated treatment means and standard error in the one-way ANOVA.

15.2.29 Response Variable PNB.P

	rep	A	B	y
1	1	EI	N	0.984
2	2	EI	N	0.947
3	3	EI	N	0.891
4	4	EI	N	0.896
5	1	FP	N	1.185
6	2	FP	N	1.189
7	3	FP	N	1.247
8	4	FP	N	1.266

Table 15.248: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	0.929	0.021	6.000	43.330	0.877	0.982	0.000
A FP	1.222	0.021	6.000	56.970	1.169	1.274	0.000
A EI-FP	-0.292	0.030	6.000	-9.640	-0.367	-0.218	0.000

Table 15.249: Estimate of treatment means and contrast in one-way ANOVA for variable PNB.P at site 41 in year 2012 .

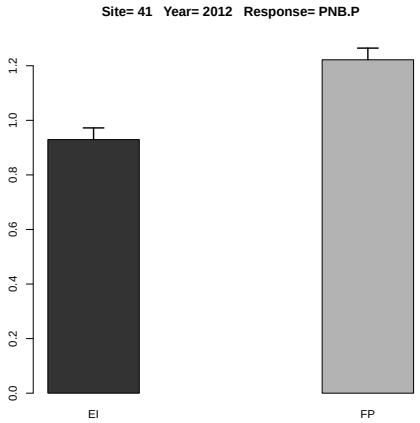

Figure 15.100: Estimated treatment means and standard error in the one-way ANOVA.

15.2.30 Response Variable PNB.K

	rep	A	B	y
1	1	EI	N	1.060
2	2	EI	N	1.163
3	3	EI	N	1.125
4	4	EI	N	1.093

Table 15.250: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PNB.K

There is no or sufficient data for this response variable at this site and year.

15.2.31 Response Variable AE

	rep	A	B	y
1	1	EI	N	4.941
2	2	EI	N	5.559
3	3	EI	N	3.412
4	4	EI	N	3.794
5	1	FP	N	3.667
6	2	FP	N	1.619
7	3	FP	N	4.905
8	4	FP	N	-0.429

Table 15.251: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	4.426	0.945	4.684	0.036
A FP	2.440	0.945	2.583	0.151
A EI-FP	1.986	1.336	1.486	0.400

Table 15.252: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 41 in year 2012 .

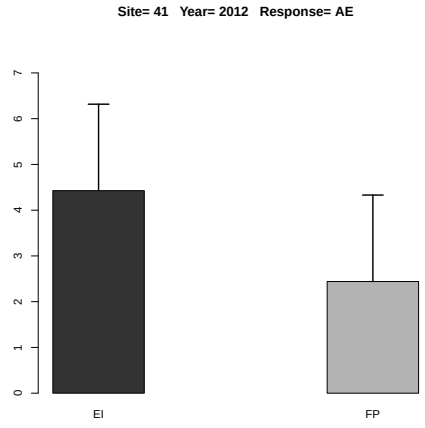

Figure 15.101: Estimated treatment means and standard error in the one-way ANOVA.

15.2.32 Response Variable RE

	rep	A	B	y
1	1	EI	N	1.242
2	2	EI	N	0.592
3	3	EI	N	1.275
4	4	EI	N	1.253
5	1	FP	N	1.453
6	2	FP	N	0.615
7	3	FP	N	1.713
8	4	FP	N	0.149

Table 15.253: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable RE

	Estimate	S.E.	t-value	p-value
A EI	1.091	0.242	4.502	0.040
A FP	0.983	0.242	4.056	0.052
A EI-FP	0.108	0.343	0.315	0.945

Table 15.254: Estimate of treatment means and contrast in one-way ANOVA for variable RE at site 41 in year 2012 .

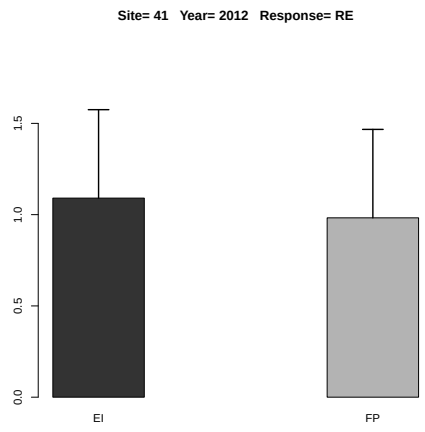

Figure 15.102: Estimated treatment means and standard error in the one-way ANOVA.

Chapter 16

Analysis of Variance for Site 45

16.1 Year 2012

There are 84 variables not observed: YS YT HI.G UG.N UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.Ca PFP.Mg PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.N PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PNB.P PNB.K

16.1.1 Response Variable YG

	rep	A	B	y
1	1	FP	N	9353.000
2	1	EI	N	10114.000
3	2	FP	N	9380.000
4	2	EI	N	10101.000
5	3	FP	N	9358.000
6	3	EI	N	10509.000
7	4	FP	N	9817.000
8	4	EI	N	11108.000

Table 16.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	10458.000	100.208	104.363	0.000
A FP	9477.000	100.208	94.573	0.000
A EI-FP	981.000	141.716	6.922	0.012

Table 16.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 45 in year 2012 .

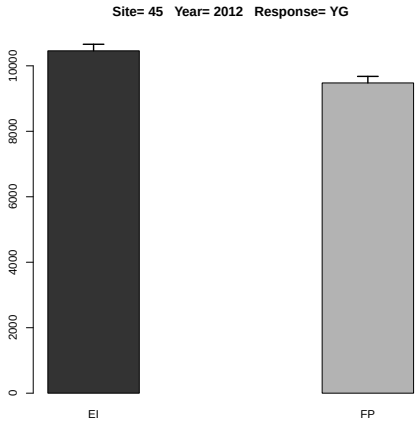

Figure 16.1: Estimated treatment means and standard error in the one-way ANOVA.

16.1.2 Response Variable PFP.N

	rep	A	B	y
1	1	FP	N	48.211
2	1	EI	N	39.663
3	2	FP	N	48.351
4	2	EI	N	39.612
5	3	FP	N	48.237
6	3	EI	N	41.212
7	4	FP	N	50.603
8	4	EI	N	43.561

Table 16.3: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	41.012	0.775	3.600	52.900	38.759	43.264	0.000
A FP	48.850	0.775	3.600	63.010	46.598	51.103	0.000
A EI-FP	-7.839	0.466	3.000	-16.810	-9.323	-6.354	0.000

Table 16.4: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 45 in year 2012 .

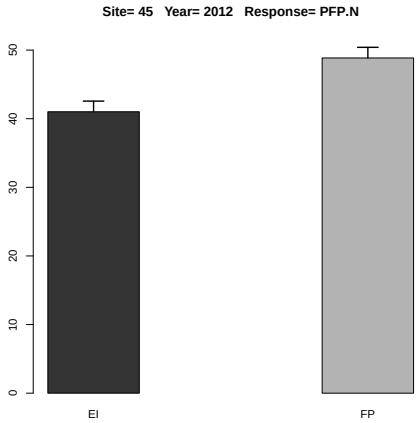

Figure 16.2: Estimated treatment means and standard error in the one-way ANOVA.

16.1.3 Response Variable PFP.P

	rep	A	B	y
1	1	FP	N	357.039
2	1	EI	N	210.594
3	2	FP	N	358.070
4	2	EI	N	210.324
5	3	FP	N	357.230
6	3	EI	N	218.819
7	4	FP	N	374.752
8	4	EI	N	231.291

Table 16.5: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	217.757	4.637	3.300	46.960	203.761	231.754	0.000
A FP	361.773	4.637	3.300	78.020	347.776	375.769	0.000
A EI-FP	-144.016	2.072	3.000	-69.490	-150.611	-137.420	0.000

Table 16.6: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 45 in year 2012 .

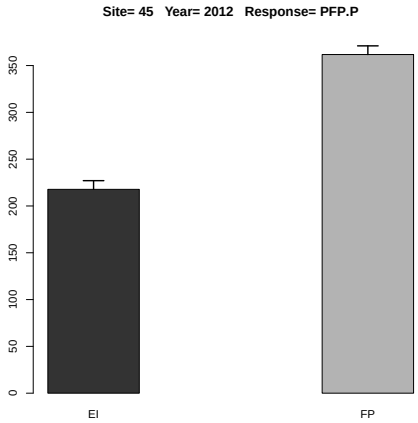

Figure 16.3: Estimated treatment means and standard error in the one-way ANOVA.

16.1.4 Response Variable PFP.P2O5

	rep	A	B	y
1	1	FP	N	155.883
2	1	EI	N	91.945
3	2	FP	N	156.333
4	2	EI	N	91.827
5	3	FP	N	155.967
6	3	EI	N	95.536
7	4	FP	N	163.617
8	4	EI	N	100.982

Table 16.7: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	95.073	2.025	3.300	46.960	88.962	101.184	0.000
A FP	157.950	2.025	3.300	78.020	151.839	164.061	0.000
A EI-FP	-62.877	0.905	3.000	-69.490	-65.757	-59.998	0.000

Table 16.8: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 45 in year 2012 .

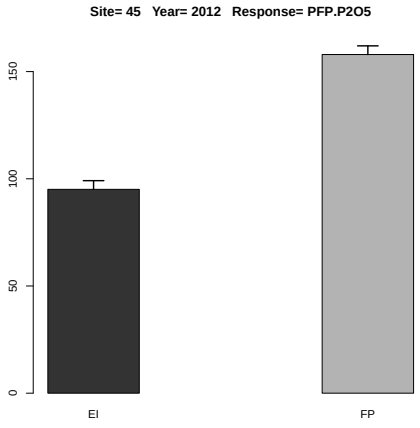

Figure 16.4: Estimated treatment means and standard error in the one-way ANOVA.

16.1.5 Response Variable PFP.K

	rep	A	B	y
1	1	FP	N	187.857
2	1	EI	N	90.285
3	2	FP	N	188.399
4	2	EI	N	90.169
5	3	FP	N	187.957
6	3	EI	N	93.811
7	4	FP	N	197.176
8	4	EI	N	99.158

Table 16.9: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	93.356	2.197	3.300	42.500	86.710	100.001	0.000
A FP	190.347	2.197	3.300	86.650	183.701	196.993	0.000
A EI-FP	-96.991	0.958	3.000	-101.210	-100.041	-93.941	0.000

Table 16.10: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K at site 45 in year 2012 .

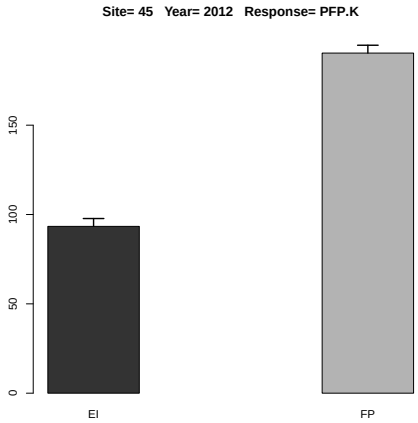

Figure 16.5: Estimated treatment means and standard error in the one-way ANOVA.

16.1.6 Response Variable PFP.K2O

	rep	A	B	y
1	1	FP	N	155.883
2	1	EI	N	74.919
3	2	FP	N	156.333
4	2	EI	N	74.822
5	3	FP	N	155.967
6	3	EI	N	77.844
7	4	FP	N	163.617
8	4	EI	N	82.281

Table 16.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	77.467	1.823	3.300	42.500	71.952	82.981	0.000
A FP	157.950	1.823	3.300	86.650	152.435	163.465	0.000
A EI-FP	-80.483	0.795	3.000	-101.210	-83.014	-77.952	0.000

Table 16.12: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.K2O at site 45 in year 2012 .

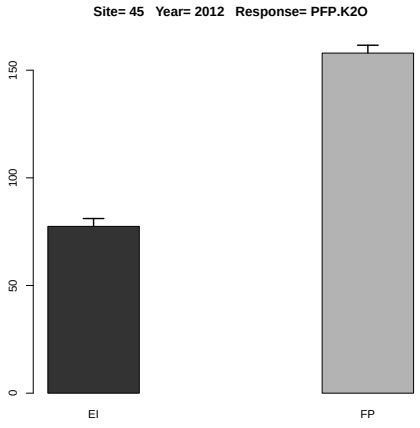

Figure 16.6: Estimated treatment means and standard error in the one-way ANOVA.

16.1.7 Response Variable PFP.S

	rep	A	B	y
1	1	FP	N	1558.833
2	1	EI	N	532.316
3	2	FP	N	1563.333
4	2	EI	N	531.632
5	3	FP	N	1559.667
6	3	EI	N	553.105
7	4	FP	N	1636.167
8	4	EI	N	584.632

Table 16.13: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	550.421	16.010	3.500	34.380	503.601	597.241	0.000
A FP	1579.500	16.010	3.500	98.660	1532.680	1626.320	0.000
A EI-FP	-1029.079	9.241	3.000	-111.360	-1058.488	-999.670	0.000

Table 16.14: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.S at site 45 in year 2012 .

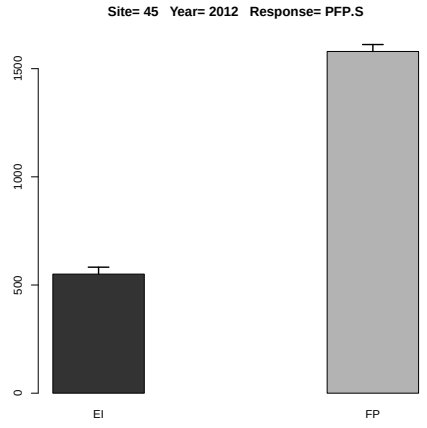

Figure 16.7: Estimated treatment means and standard error in the one-way ANOVA.

16.1.8 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	10114.000
2	2	EI	N	10101.000
3	3	EI	N	10509.000
4	4	EI	N	11108.000

Table 16.15: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

Chapter 17

Analysis of Variance for Site 46

17.1 Year 2012

There are 88 variables not observed: UG.N UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.N PFP.P2O5 PFP.K2O PFP.Ca PFP.Mg PFP.S PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PFP.Zn PNB.N PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PFP.P PFP.K PNB.P PNB.K

17.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N	7660.000
2	1	EI	N0	6363.000
3	1	FP	N	7180.000
4	1	FP	N0	6184.000
5	2	EI	N	6387.000
6	2	EI	N0	5664.000
7	2	FP	N	6869.000
8	2	FP	N0	6547.000
9	3	EI	N	6544.000
10	3	EI	N0	6810.000
11	3	FP	N	5267.000
12	3	FP	N0	7499.000
13	4	EI	N	5785.000
14	4	EI	N0	8871.000
15	4	FP	N	4850.000
16	4	FP	N0	6525.000

Table 17.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	6594.000	269.773	24.443	0.000
A FP	6041.500	269.773	22.395	0.000
A EI-FP	552.500	381.516	1.448	0.415

Table 17.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 46 in year 2012 .

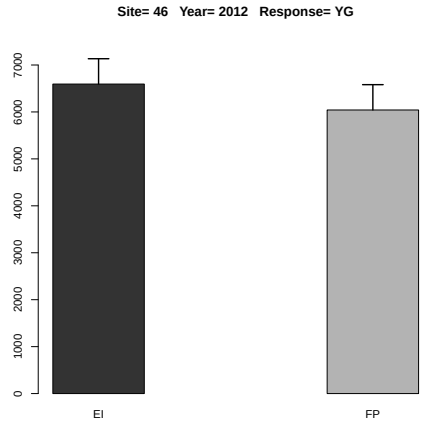

Figure 17.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	625285.562	625285.562	0.600	14.804	0.451
B	1.000	960890.062	960890.062	0.922	14.804	0.352
A:B	1.000	98753.062	98753.062	0.095	14.804	0.762

Table 17.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6760.500	360.857	14.800	18.730	5990.463	7530.537	0.000
2	FP		6365.125	360.857	14.800	17.640	5595.088	7135.162	0.000
3		N	6317.750	360.857	14.800	17.510	5547.713	7087.787	0.000
4		N0	6807.875	360.857	14.800	18.870	6037.838	7577.912	0.000
5	EI	N	6594.000	510.329	14.800	12.920	5505.004	7682.996	0.000
6	FP	N	6041.500	510.329	14.800	11.840	4952.504	7130.496	0.000
7	EI	N0	6927.000	510.329	14.800	13.570	5838.004	8015.996	0.000
8	FP	N0	6688.750	510.329	14.800	13.110	5599.754	7777.746	0.000

Table 17.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 46 in year 2012 .

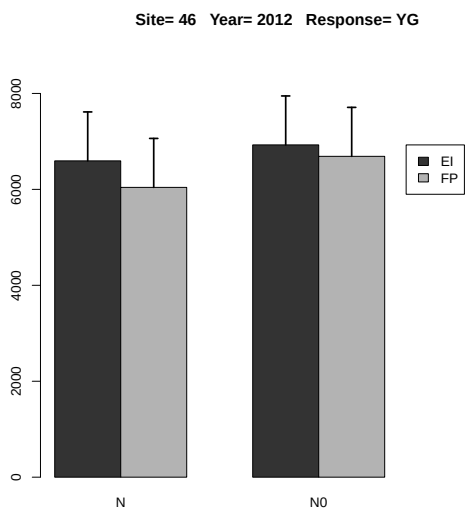

Figure 17.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	395.375	510.329	14.800	0.770	-693.621	1484.371	0.451
B N-N0	-490.125	510.329	14.800	-0.960	-1579.121	598.871	0.352
A:B EI N- FP N	552.500	721.714	14.800	0.770	-987.573	2092.573	0.456
A:B EI N- EI N0	-333.000	721.714	14.800	-0.460	-1873.073	1207.073	0.651
A:B EI N- FP N0	-94.750	721.714	14.800	-0.130	-1634.823	1445.323	0.897
A:B FP N- EI N0	-885.500	721.714	14.800	-1.230	-2425.573	654.573	0.239
A:B FP N- FP N0	-647.250	721.714	14.800	-0.900	-2187.323	892.823	0.384
A:B EI N0- FP N0	238.250	721.714	14.800	0.330	-1301.823	1778.323	0.746

Table 17.5: Estimate of contrast in two-way ANOVA for variable YG at site 46 in year 2012 .

17.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N	3252.000
2	1	EI	N0	3811.000
3	1	FP	N	3089.000
4	1	FP	N0	3378.000
5	2	EI	N	3141.000
6	2	EI	N0	2407.000
7	2	FP	N	3567.000
8	2	FP	N0	2704.000
9	3	EI	N	4220.000
10	3	EI	N0	3233.000
11	3	FP	N	3063.000
12	3	FP	N0	4438.000
13	4	EI	N	3003.000
14	4	EI	N0	3040.000
15	4	FP	N	1759.000
16	4	FP	N0	3006.000

Table 17.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	3404.000	285.151	11.938	0.002
A FP	2869.500	285.151	10.063	0.004
A EI-FP	534.500	403.265	1.325	0.463

Table 17.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 46 in year 2012 .

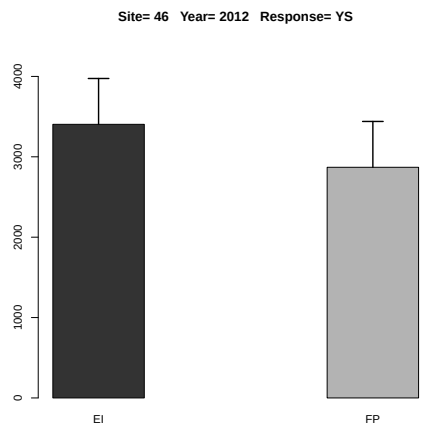

Figure 17.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	76038.063	76038.063	0.234	8.528	0.641
B	1.000	53245.562	53245.562	0.164	8.528	0.695
A:B	1.000	629245.563	629245.563	1.939	8.528	0.199

Table 17.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		3263.375	269.979	5.500	12.090	2587.668	3939.082	0.000
2	FP		3125.500	269.979	5.500	11.580	2449.793	3801.207	0.000
3		N	3136.750	269.979	5.500	11.620	2461.043	3812.457	0.000
4		N0	3252.125	269.979	5.500	12.050	2576.418	3927.832	0.000
5	EI	N	3404.000	336.819	9.700	10.110	2650.575	4157.426	0.000
6	FP	N	2869.500	336.819	9.700	8.520	2116.075	3622.925	0.000
7	EI	N0	3122.750	336.819	9.700	9.270	2369.325	3876.175	0.000
8	FP	N0	3381.500	336.819	9.700	10.040	2628.075	4134.926	0.000

Table 17.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 46 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	137.875	284.810	9.200	0.480	-504.084	779.834	0.640
B N-N0	-115.375	284.810	9.200	-0.410	-757.334	526.584	0.695
A:B EI N- FP N	534.500	402.782	9.200	1.330	-373.367	1442.367	0.216
A:B EI N- EI N0	281.250	402.782	9.200	0.700	-626.617	1189.117	0.502
A:B EI N- FP N0	22.500	402.782	9.200	0.060	-885.367	930.367	0.957
A:B FP N- EI N0	-253.250	402.782	9.200	-0.630	-1161.117	654.617	0.545
A:B FP N- FP N0	-512.000	402.782	9.200	-1.270	-1419.867	395.867	0.235
A:B EI N0- FP N0	-258.750	402.782	9.200	-0.640	-1166.617	649.117	0.536

Table 17.10: Estimate of contrast in two-way ANOVA for variable YS at site 46 in year 2012 .

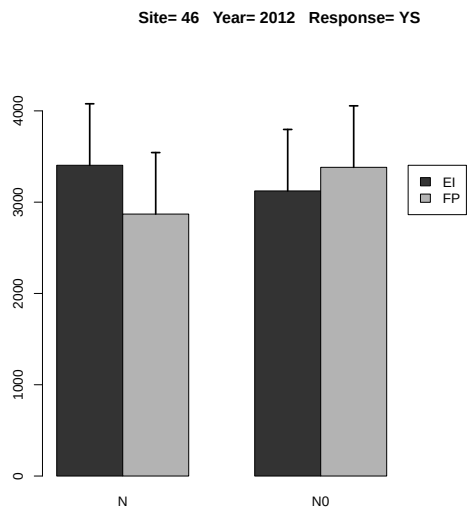

Figure 17.4: Estimated treatment means and standard error in the 2-way ANOVA.

17.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N	10912.000
2	1	EI	N0	10174.000
3	1	FP	N	10269.000
4	1	FP	N0	9562.000
5	2	EI	N	9528.000
6	2	EI	N0	8071.000
7	2	FP	N	10436.000
8	2	FP	N0	9251.000
9	3	EI	N	10764.000
10	3	EI	N0	10043.000
11	3	FP	N	8330.000
12	3	FP	N0	11937.000
13	4	EI	N	8788.000
14	4	EI	N0	11911.000
15	4	FP	N	6609.000
16	4	FP	N0	9531.000

Table 17.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	9998.000	547.115	18.274	0.000
A FP	8911.000	547.115	16.287	0.000
A EI-FP	1087.000	773.737	1.405	0.431

Table 17.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 46 in year 2012 .

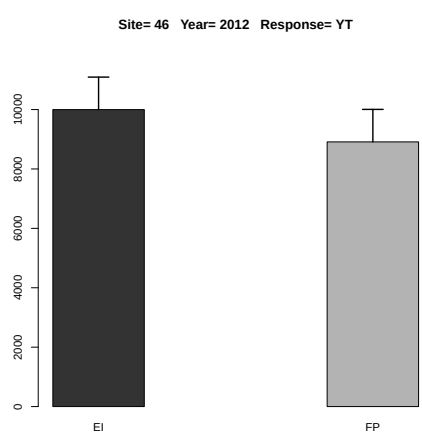

Figure 17.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1137422.250	1137422.250	0.546	11.849	0.474
B	1.000	1466521.000	1466521.000	0.704	11.849	0.418
A:B	1.000	1226556.250	1226556.250	0.588	11.849	0.458

Table 17.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		10023.875	510.452	11.800	19.640	8910.120	11137.630	0.000
2	FP		9490.625	510.452	11.800	18.590	8376.870	10604.380	0.000
3		N	9454.500	510.452	11.800	18.520	8340.745	10568.255	0.000
4		N0	10060.000	510.452	11.800	19.710	8946.245	11173.755	0.000
5	EI	N	9998.000	721.889	11.800	13.850	8422.913	11573.087	0.000
6	FP	N	8911.000	721.889	11.800	12.340	7335.913	10486.087	0.000
7	EI	N0	10049.750	721.889	11.800	13.920	8474.663	11624.837	0.000
8	FP	N0	10070.250	721.889	11.800	13.950	8495.163	11645.337	0.000

Table 17.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 46 in year 2012 .

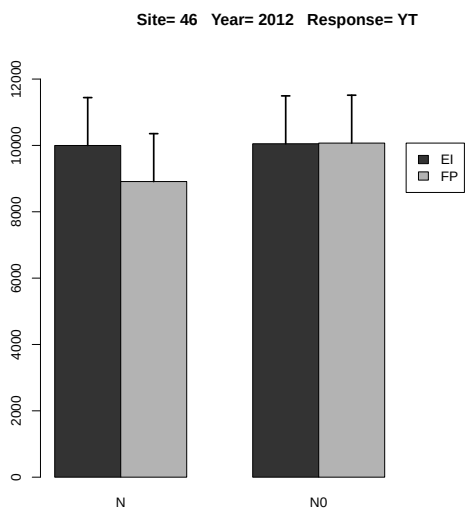

Figure 17.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	533.250	721.889	11.800	0.740	-1041.837	2108.337	0.474
B N-N0	-605.500	721.889	11.800	-0.840	-2180.587	969.587	0.418
A:B EI N- FP N	1087.000	1020.905	11.800	1.060	-1140.509	3314.509	0.308
A:B EI N- EI N0	-51.750	1020.905	11.800	-0.050	-2279.259	2175.759	0.960
A:B EI N- FP N0	-72.250	1020.905	11.800	-0.070	-2299.759	2155.259	0.945
A:B FP N- EI N0	-1138.750	1020.905	11.800	-1.120	-3366.259	1088.759	0.287
A:B FP N- FP N0	-1159.250	1020.905	11.800	-1.140	-3386.759	1068.259	0.279
A:B EI N0- FP N0	-20.500	1020.905	11.800	-0.020	-2248.009	2207.009	0.984

Table 17.15: Estimate of contrast in two-way ANOVA for variable YT at site 46 in year 2012 .

17.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N	0.702
2	1	EI	N0	0.625
3	1	FP	N	0.699
4	1	FP	N0	0.647
5	2	EI	N	0.670
6	2	EI	N0	0.702
7	2	FP	N	0.658
8	2	FP	N0	0.708
9	3	EI	N	0.608
10	3	EI	N0	0.678
11	3	FP	N	0.632
12	3	FP	N0	0.628
13	4	EI	N	0.658
14	4	EI	N0	0.745
15	4	FP	N	0.734
16	4	FP	N0	0.685

Table 17.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.660	0.014	47.379	0.000
A FP	0.681	0.014	48.905	0.000
A EI-FP	-0.021	0.020	-1.079	0.575

Table 17.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 46 in year 2012 .

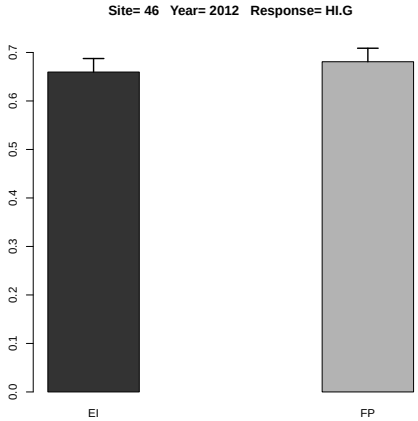

Figure 17.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.000	0.000	0.000	8.975	0.988
B	1.000	0.000	0.000	0.145	8.975	0.712
A:B	1.000	0.002	0.002	1.340	8.975	0.277

Table 17.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.674	0.017	5.500	39.400	0.631	0.716	0.000
2	FP		0.674	0.017	5.500	39.410	0.631	0.717	0.000
3		N	0.670	0.017	5.500	39.200	0.627	0.713	0.000
4		N0	0.677	0.017	5.500	39.610	0.634	0.720	0.000
5	EI	N	0.660	0.021	9.700	30.880	0.612	0.707	0.000
6	FP	N	0.681	0.021	9.700	31.870	0.633	0.729	0.000
7	EI	N0	0.688	0.021	9.700	32.180	0.640	0.735	0.000
8	FP	N0	0.667	0.021	9.700	31.210	0.619	0.715	0.000

Table 17.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 46 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	-0.000	0.018	9.000	-0.020	-0.041	0.041	0.988
B N-N0	-0.007	0.018	9.000	-0.380	-0.048	0.034	0.712
A:B EI N- FP N	-0.021	0.026	9.000	-0.830	-0.079	0.037	0.428
A:B EI N- EI N0	-0.028	0.026	9.000	-1.090	-0.086	0.030	0.305
A:B EI N- FP N0	-0.007	0.026	9.000	-0.280	-0.065	0.051	0.786
A:B FP N- EI N0	-0.007	0.026	9.000	-0.260	-0.065	0.051	0.802
A:B FP N- FP N0	0.014	0.026	9.000	0.550	-0.044	0.072	0.596
A:B EI N0- FP N0	0.021	0.026	9.000	0.810	-0.037	0.079	0.440

Table 17.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 46 in year 2012 .

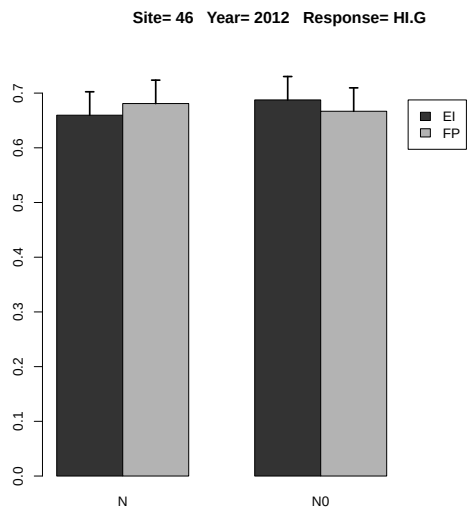

Figure 17.8: Estimated treatment means and standard error in the 2-way ANOVA.

Chapter 18

Analysis of Variance for Site 49

18.1 Year 2012

There are 78 variables not observed: UG.N UG.P UG.K UG.Ca UG.Mg UG.S UG.B UG.Cl UG.Cu UG.Fe UG.Mn UG.Mo UG.Zn US.N US.P US.K US.Ca US.Mg US.S US.B US.Cl US.Cu US.Fe US.Mn US.Mo US.Zn UT.N UT.P UT.K UT.Ca UT.Mg UT.S UT.B UT.Cl UT.Cu UT.Fe UT.Mn UT.Mo UT.Zn PFP.B PFP.Cl PFP.Cu PFP.Fe PFP.Mn PFP.Mo PNB.N PNB.P2O5 PNB.K2O PNB.Ca PNB.Mg PNB.S PNB.B PNB.Cl PNB.Cu PNB.Fe PNB.Mn PNB.Mo PNB.Zn UG.P2O5 US.K2O UT.P2O5 UT.K2O HI.N HI.P HI.K HI.Ca HI.Mg HI.S HI.B HI.Cl HI.Cu HI.Fe HI.Mn HI.Mo HI.Zn PNB.P PNB.K

18.1.1 Response Variable YG

	rep	A	B	y
1	1	EI	N0	998.000
2	1	EI	N	5115.000
3	1	FP	N0	1493.000
4	1	FP	N	3476.000
5	2	EI	N0	505.000
6	2	EI	N	3218.000
7	2	FP	N0	1581.000
8	2	FP	N	1953.000
9	3	EI	N0	2180.000
10	3	EI	N	3266.000
11	3	FP	N0	409.000
12	3	FP	N	3080.000
13	4	EI	N0	1616.000
14	4	EI	N	3403.000
15	4	FP	N0	641.000
16	4	FP	N	2670.000

Table 18.1: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YG

	Estimate	S.E.	t-value	p-value
A EI	3750.500	224.035	16.741	0.001
A FP	2794.750	224.035	12.475	0.002
A EI-FP	955.750	316.833	3.017	0.107

Table 18.2: Estimate of treatment means and contrast in one-way ANOVA for variable YG at site 49 in year 2012 .

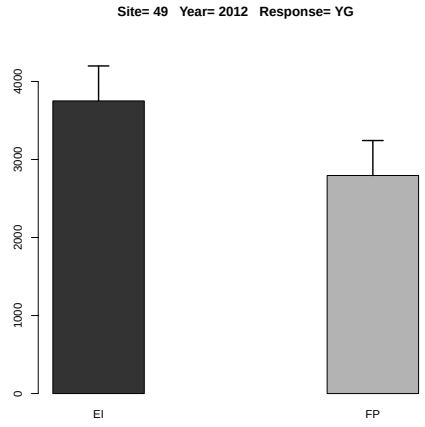

Figure 18.1: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	1561250.250	1561250.250	3.141	9.362	0.109
B	1.000	17551910.250	17551910.250	35.310	9.362	0.000
A:B	1.000	438244.000	438244.000	0.882	9.362	0.371

Table 18.3: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		2537.625	267.626	7.700	9.480	1916.531	3158.719	0.000
2	FP		1912.875	267.626	7.700	7.150	1291.781	2533.969	0.000
3		N	3272.625	267.626	7.700	12.230	2651.531	3893.719	0.000
4		N0	1177.875	267.626	7.700	4.400	556.781	1798.969	0.002
5	EI	N	3750.500	365.731	11.200	10.250	2947.452	4553.548	0.000
6	FP	N	2794.750	365.731	11.200	7.640	1991.702	3597.798	0.000
7	EI	N0	1324.750	365.731	11.200	3.620	521.702	2127.798	0.004
8	FP	N0	1031.000	365.731	11.200	2.820	227.952	1834.048	0.016

Table 18.4: Estimate of treatment means in tow-way ANOVA for variable YG at site 49 in year 2012 .

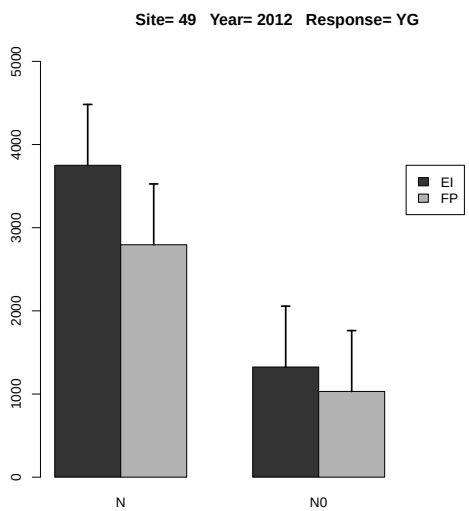

Figure 18.2: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	624.750	352.522	8.300	1.770	-183.031	1432.531	0.113
B N-N0	2094.750	352.522	8.300	5.940	1286.969	2902.531	0.000
A:B EI N- FP N	955.750	498.541	8.300	1.920	-186.625	2098.125	0.090
A:B EI N- EI N0	2425.750	498.541	8.300	4.870	1283.375	3568.125	0.001
A:B EI N- FP N0	2719.500	498.541	8.300	5.450	1577.125	3861.875	0.000
A:B FP N- EI N0	1470.000	498.541	8.300	2.950	327.625	2612.375	0.018
A:B FP N- FP N0	1763.750	498.541	8.300	3.540	621.375	2906.125	0.007
A:B EI N0- FP N0	293.750	498.541	8.300	0.590	-848.625	1436.125	0.571

Table 18.5: Estimate of contrast in two-way ANOVA for variable YG at site 49 in year 2012 .

18.1.2 Response Variable YS

	rep	A	B	y
1	1	EI	N0	2331.000
2	1	EI	N	6430.000
3	1	FP	N0	4017.000
4	1	FP	N	5617.000
5	2	EI	N0	1260.000
6	2	EI	N	6473.000
7	2	FP	N0	3000.000
8	2	FP	N	4186.000
9	3	EI	N0	3922.000
10	3	EI	N	6026.000
11	3	FP	N0	1000.000
12	3	FP	N	6099.000
13	4	EI	N0	2839.000
14	4	EI	N	5528.000
15	4	FP	N0	1442.000
16	4	FP	N	5787.000

Table 18.6: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YS

	Estimate	S.E.	t-value	p-value
A EI	6114.250	410.705	14.887	0.001
A FP	5422.250	410.705	13.202	0.002
A EI-FP	692.000	580.825	1.191	0.522

Table 18.7: Estimate of treatment means and contrast in one-way ANOVA for variable YS at site 49 in year 2012 .

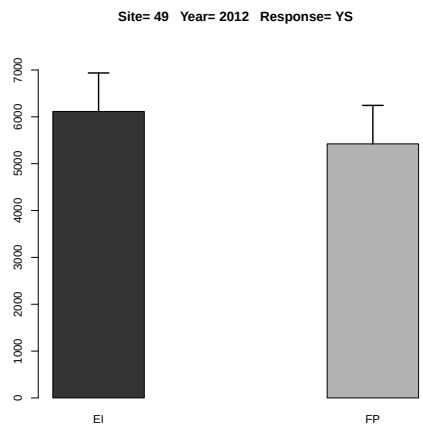

Figure 18.3: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	837682.562	837682.562	0.820	9.435	0.388
B	1.000	43345764.062	43345764.062	42.438	9.435	0.000
A:B	1.000	219726.562	219726.562	0.215	9.435	0.653

Table 18.8: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		4351.125	357.317	9.400	12.180	3548.461	5153.789	0.000
2	FP		3893.500	357.317	9.400	10.900	3090.836	4696.164	0.000
3		N	5768.250	357.317	9.400	16.140	4965.586	6570.914	0.000
4		N0	2476.375	357.317	9.400	6.930	1673.710	3279.039	0.000
5	EI	N	6114.250	505.322	9.400	12.100	4979.111	7249.389	0.000
6	FP	N	5422.250	505.322	9.400	10.730	4287.111	6557.389	0.000
7	EI	N0	2588.000	505.322	9.400	5.120	1452.861	3723.139	0.000
8	FP	N0	2364.750	505.322	9.400	4.680	1229.611	3499.889	0.001

Table 18.9: Estimate of treatment means in tow-way ANOVA for variable YS at site 49 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	457.625	505.322	9.400	0.910	-677.514	1592.764	0.388
B N-N0	3291.875	505.322	9.400	6.510	2156.736	4427.014	0.000
A:B EI N- FP N	692.000	714.634	9.400	0.970	-913.329	2297.329	0.357
A:B EI N- EI N0	3526.250	714.634	9.400	4.930	1920.921	5131.579	0.001
A:B EI N- FP N0	3749.500	714.634	9.400	5.250	2144.171	5354.829	0.000
A:B FP N- EI N0	2834.250	714.634	9.400	3.970	1228.921	4439.579	0.003
A:B FP N- FP N0	3057.500	714.634	9.400	4.280	1452.171	4662.829	0.002
A:B EI N0- FP N0	223.250	714.634	9.400	0.310	-1382.079	1828.579	0.761

Table 18.10: Estimate of contrast in two-way ANOVA for variable YS at site 49 in year 2012 .

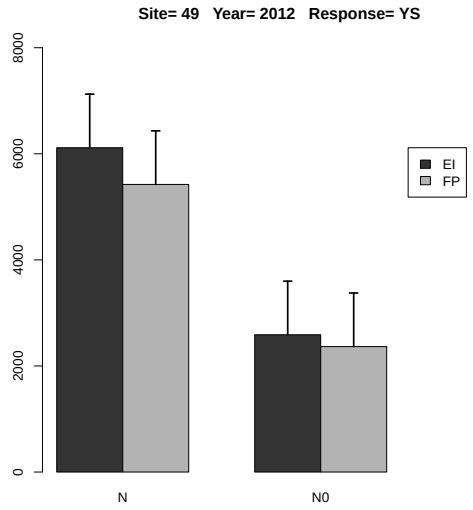

Figure 18.4: Estimated treatment means and standard error in the 2-way ANOVA.

18.1.3 Response Variable YT

	rep	A	B	y
1	1	EI	N0	3329.000
2	1	EI	N	11545.000
3	1	FP	N0	5510.000
4	1	FP	N	9093.000
5	2	EI	N0	1765.000
6	2	EI	N	9691.000
7	2	FP	N0	4581.000
8	2	FP	N	6139.000
9	3	EI	N0	6102.000
10	3	EI	N	9292.000
11	3	FP	N0	1409.000
12	3	FP	N	9179.000
13	4	EI	N0	4455.000
14	4	EI	N	8931.000
15	4	FP	N0	2083.000
16	4	FP	N	8457.000

Table 18.11: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable YT

	Estimate	S.E.	t-value	p-value
A EI	9864.750	577.572	17.080	0.001
A FP	8217.000	577.572	14.227	0.001
A EI-FP	1647.750	816.809	2.017	0.247

Table 18.12: Estimate of treatment means and contrast in one-way ANOVA for variable YT at site 49 in year 2012 .

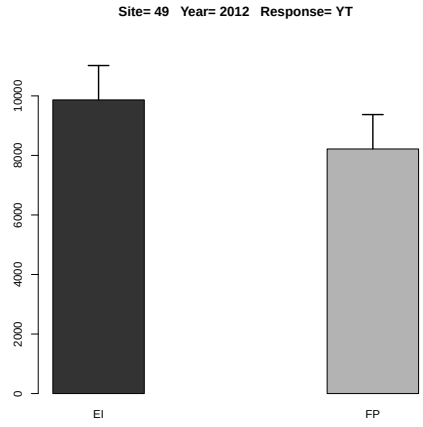

Figure 18.5: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	4686142.562	4686142.562	1.774	11.265	0.209
B	1.000	116062915.562	116062915.562	43.925	11.265	0.000
A:B	1.000	1278595.562	1278595.562	0.484	11.265	0.501

Table 18.13: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		6888.750	574.707	11.300	11.990	5627.447	8150.053	0.000
2	FP		5806.375	574.707	11.300	10.100	4545.072	7067.678	0.000
3		N	9040.875	574.707	11.300	15.730	7779.572	10302.178	0.000
4		N0	3654.250	574.707	11.300	6.360	2392.947	4915.553	0.000
5	EI	N	9864.750	812.759	11.300	12.140	8080.998	11648.502	0.000
6	FP	N	8217.000	812.759	11.300	10.110	6433.248	10000.752	0.000
7	EI	N0	3912.750	812.759	11.300	4.810	2128.998	5696.502	0.000
8	FP	N0	3395.750	812.759	11.300	4.180	1611.998	5179.502	0.002

Table 18.14: Estimate of treatment means in tow-way ANOVA for variable YT at site 49 in year 2012 .

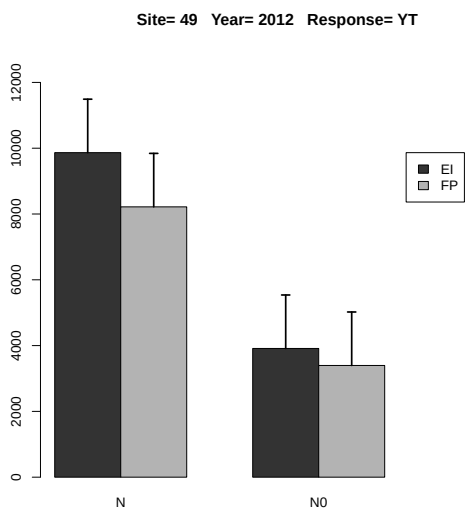

Figure 18.6: Estimated treatment means and standard error in the 2-way ANOVA.

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	1082.375	812.759	11.300	1.330	-701.377	2866.127	0.209
B N-N0	5386.625	812.759	11.300	6.630	3602.873	7170.377	0.000
A:B EI N- FP N	1647.750	1149.414	11.300	1.430	-874.856	4170.356	0.179
A:B EI N- EI N0	5952.000	1149.414	11.300	5.180	3429.394	8474.606	0.000
A:B EI N- FP N0	6469.000	1149.414	11.300	5.630	3946.394	8991.606	0.000
A:B FP N- EI N0	4304.250	1149.414	11.300	3.740	1781.644	6826.856	0.003
A:B FP N- FP N0	4821.250	1149.414	11.300	4.190	2298.644	7343.856	0.001
A:B EI N0- FP N0	517.000	1149.414	11.300	0.450	-2005.606	3039.606	0.661

Table 18.15: Estimate of contrast in two-way ANOVA for variable YT at site 49 in year 2012 .

18.1.4 Response Variable HI.G

	rep	A	B	y
1	1	EI	N0	0.300
2	1	EI	N	0.443
3	1	FP	N0	0.271
4	1	FP	N	0.382
5	2	EI	N0	0.286
6	2	EI	N	0.332
7	2	FP	N0	0.345
8	2	FP	N	0.318
9	3	EI	N0	0.357
10	3	EI	N	0.351
11	3	FP	N0	0.290
12	3	FP	N	0.336
13	4	EI	N0	0.363
14	4	EI	N	0.381
15	4	FP	N0	0.308
16	4	FP	N	0.316

Table 18.16: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable HI.G

	Estimate	S.E.	t-value	p-value
A EI	0.377	0.010	38.275	0.000
A FP	0.338	0.010	34.316	0.000
A EI-FP	0.039	0.014	2.800	0.127

Table 18.17: Estimate of treatment means and contrast in one-way ANOVA for variable HI.G at site 49 in year 2012 .

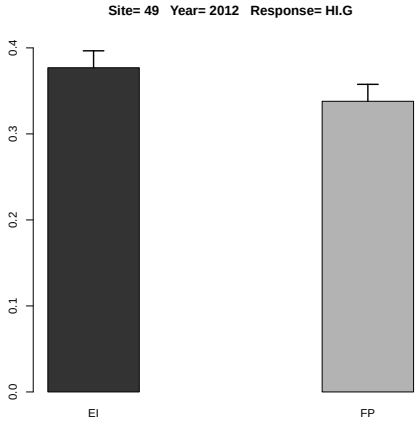

Figure 18.7: Estimated treatment means and standard error in the one-way ANOVA.

	Df	Sum Sq	Mean Sq	F value	Denom	Pr(>F)
A	1.000	0.004	0.004	2.632	11.969	0.131
B	1.000	0.007	0.007	4.936	11.969	0.046
A:B	1.000	0.000	0.000	0.176	11.969	0.682

Table 18.18: Two-way ANOVA

	A	B	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
1	EI		0.352	0.013	12.000	26.050	0.322	0.381	0.000
2	FP		0.321	0.013	12.000	23.760	0.291	0.350	0.000
3		N	0.357	0.013	12.000	26.480	0.328	0.387	0.000
4		N0	0.315	0.013	12.000	23.330	0.286	0.344	0.000
5	EI	N	0.377	0.019	12.000	19.740	0.335	0.418	0.000
6	FP	N	0.338	0.019	12.000	17.700	0.296	0.380	0.000
7	EI	N0	0.327	0.019	12.000	17.100	0.285	0.368	0.000
8	FP	N0	0.303	0.019	12.000	15.900	0.262	0.345	0.000

Table 18.19: Estimate of treatment means in tow-way ANOVA for variable HI.G at site 49 in year 2012 .

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI-FP	0.031	0.019	12.000	1.620	-0.011	0.073	0.131
B N-N0	0.042	0.019	12.000	2.220	0.001	0.084	0.046
A:B EI N- FP N	0.039	0.027	12.000	1.440	-0.020	0.098	0.174
A:B EI N- EI N0	0.050	0.027	12.000	1.870	-0.008	0.109	0.086
A:B EI N- FP N0	0.073	0.027	12.000	2.720	0.014	0.132	0.019
A:B FP N- EI N0	0.011	0.027	12.000	0.420	-0.047	0.070	0.679
A:B FP N- FP N0	0.034	0.027	12.000	1.270	-0.024	0.093	0.227
A:B EI N0- FP N0	0.023	0.027	12.000	0.850	-0.036	0.082	0.412

Table 18.20: Estimate of contrast in two-way ANOVA for variable HI.G at site 49 in year 2012 .

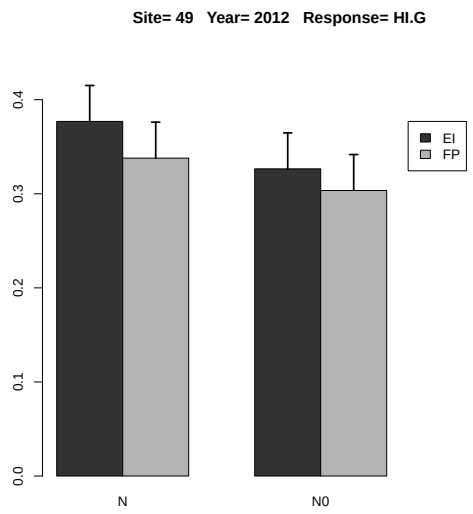

Figure 18.8: Estimated treatment means and standard error in the 2-way ANOVA.

18.1.5 Response Variable PFP.N

	rep	A	B	y
1	1	EI	N	85.250
2	1	FP	N	57.933
3	2	EI	N	53.633
4	2	FP	N	32.550
5	3	EI	N	54.433
6	3	FP	N	51.333
7	4	EI	N	56.717
8	4	FP	N	44.500

Table 18.21: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.N

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	62.508	6.606	4.100	9.460	44.343	80.674	0.001
A FP	46.579	6.606	4.100	7.050	28.414	64.744	0.002
A EI-FP	15.929	5.280	3.000	3.020	-0.876	32.734	0.057

Table 18.22: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.N at site 49 in year 2012 .

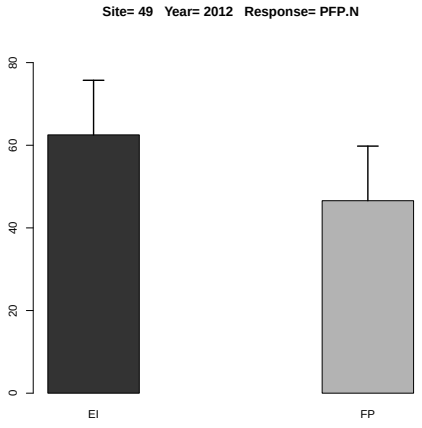

Figure 18.9: Estimated treatment means and standard error in the one-way ANOVA.

18.1.6 Response Variable PFP.P

	rep	A	B	y
1	1	EI	N	254.685
2	1	FP	N	173.077
3	2	EI	N	160.230
4	2	FP	N	97.244
5	3	EI	N	162.620
6	3	FP	N	153.359
7	4	EI	N	169.442
8	4	FP	N	132.944

Table 18.23: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	186.744	19.736	4.100	9.460	132.476	241.013	0.001
A FP	139.156	19.736	4.100	7.050	84.887	193.424	0.002
A EI-FP	47.589	15.776	3.000	3.020	-2.614	97.791	0.057

Table 18.24: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P at site 49 in year 2012 .

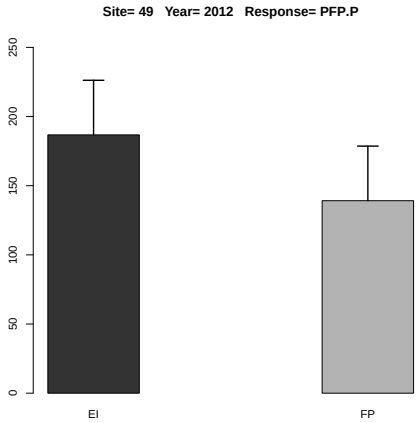

Figure 18.10: Estimated treatment means and standard error in the one-way ANOVA.

18.1.7 Response Variable PFP.P2O5

	rep	A	B	y
1	1	EI	N	111.196
2	1	FP	N	75.565
3	2	EI	N	69.957
4	2	FP	N	42.457
5	3	EI	N	71.000
6	3	FP	N	66.957
7	4	EI	N	73.978
8	4	FP	N	58.043

Table 18.25: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.P2O5

	Estimate	S.E.	DF	t-value	Lower CI	Upper CI	p-value
A EI	81.533	8.617	4.100	9.460	57.839	105.226	0.001
A FP	60.755	8.617	4.100	7.050	37.062	84.449	0.002
A EI-FP	20.777	6.888	3.000	3.020	-1.143	42.697	0.057

Table 18.26: Estimate of treatment means and contrast in one-way ANOVA for variable PFP.P2O5 at site 49 in year 2012 .

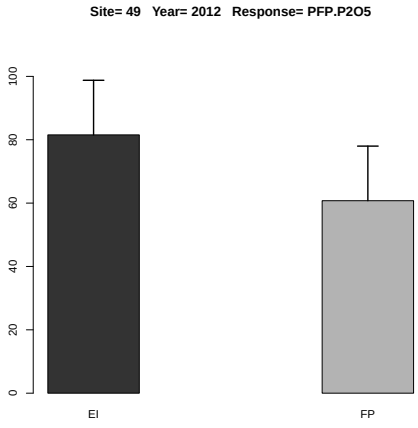

Figure 18.11: Estimated treatment means and standard error in the one-way ANOVA.

18.1.8 Response Variable PFP.K

	rep	A	B	y
1	1	EI	N	342.452
2	2	EI	N	215.447
3	3	EI	N	218.660
4	4	EI	N	227.833

Table 18.27: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K

There is no or sufficient data for this response variable at this site and year.

18.1.9 Response Variable PFP.K2O

	rep	A	B	y
1	1	EI	N	284.167
2	2	EI	N	178.778
3	3	EI	N	181.444
4	4	EI	N	189.056

Table 18.28: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.K2O

There is no or sufficient data for this response variable at this site and year.

18.1.10 Response Variable PFP.Ca

	rep	A	B	y
1	1	EI	N	284.167
2	2	EI	N	178.778
3	3	EI	N	181.444
4	4	EI	N	189.056

Table 18.29: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Ca

There is no or sufficient data for this response variable at this site and year.

18.1.11 Response Variable PFP.Mg

	rep	A	B	y
1	1	EI	N	730.714
2	2	EI	N	459.714
3	3	EI	N	466.571
4	4	EI	N	486.143

Table 18.30: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Mg

There is no or sufficient data for this response variable at this site and year.

18.1.12 Response Variable PFP.S

	rep	A	B	y
1	1	EI	N	730.714
2	2	EI	N	459.714
3	3	EI	N	466.571
4	4	EI	N	486.143

Table 18.31: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.S

There is no or sufficient data for this response variable at this site and year.

18.1.13 Response Variable PFP.Zn

	rep	A	B	y
1	1	EI	N	1705.000
2	2	EI	N	1072.667
3	3	EI	N	1088.667
4	4	EI	N	1134.333

Table 18.32: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable PFP.Zn

There is no or sufficient data for this response variable at this site and year.

18.1.14 Response Variable AE

	rep	A	B	y
1	1	EI	N	68.617
2	1	FP	N	33.050
3	2	EI	N	45.217
4	2	FP	N	6.200
5	3	EI	N	18.100
6	3	FP	N	44.517
7	4	EI	N	29.783
8	4	FP	N	33.817

Table 18.33: Experimental data used for the analysis, where A and B denote the treatment factors and y is the response variable AE

	Estimate	S.E.	t-value	p-value
A EI	40.429	11.207	3.607	0.070
A FP	29.396	11.207	2.623	0.146
A EI-FP	11.033	15.849	0.696	0.773

Table 18.34: Estimate of treatment means and contrast in one-way ANOVA for variable AE at site 49 in year 2012 .

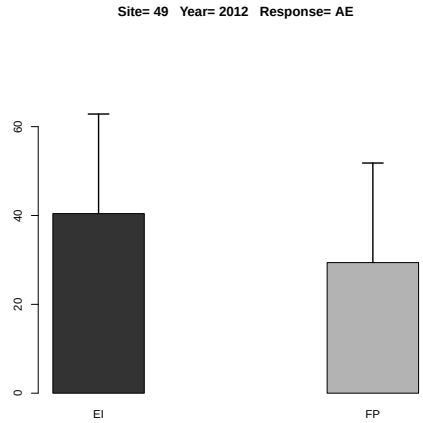

Figure 18.12: Estimated treatment means and standard error in the one-way ANOVA.

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APPENDIX E

PLOT PLANS AT EXPERIMENTAL SITES

This section contains plot plans for the various experimental sites. These plans were submitted by project scientists and are presented “as is.”

		18,2 m	18,2 m	18,2 m	18,2 m	18,2 m	
226 m	12,25 m	1.1 S/M + 0 N 818	2.4 S/M+B + 90 N 819	Serves Crop Rotation to 3 850	3.3 S/M+B + 60 N 851	Serves Crop Rotation to 3 882	49 m
	12,25 m	1.2 S/M + 30 N 817	2.1 S/M+B + 0 N 820	Serves Crop Rotation to 3 849	3.4 S/M+B + 90 N 852	Serves Crop Rotation to 3 881	
	12,25 m	1.3 S/M + 60 N 816	2.2 S/M+B + 30 N 821	Serves Crop Rotation to 3 848	3.1 S/M+B + 0 N 853	Serves Crop Rotation to 3 880	
	12,25 m	1.4 S/M + 90 N 815	2.3 S/M+B + 60 N 822	Serves Crop Rotation to 3 847	3.2 S/M+B + 30 N 854	Serves Crop Rotation to 3 879	
				10 m			
	12,25 m	Serves Crop Rotation to 3 814	1.3. S/M + 60 N 823	3.2 S/M+B + 30 N 846	2.1 S/M+B + 0 N 855	Serves Crop Rotation to 3 878	49 m
	12,25 m	Serves Crop Rotation to 3 813	1.2 S/M + 30 N 824	3.4 S/M+B + 90 N 845	2.2 S/M+B + 30 N 856	Serves Crop Rotation to 3 877	
	12,25 m	Serves Crop Rotation to 3 812	1.1 S/M + 0 N 825	3.3 S/M+B + 60 N 844	2.3 S/M+B + 60 N 857	Serves Crop Rotation to 3 876	
	12,25 m	Serves Crop Rotation to 3 811	1.4 S/M + 90 N 826	3.1 S/M+B + 0 N 843	2.4 S/M+B + 90 N 858	Serves Crop Rotation to 3 875	
				10 m			
	12,25 m	2.4 S/M+B + 90 N 810	3.1 S/M+B + 0 N 827	Serves Crop Rotation to 3 842	1.2 S/M + 30 N 859	Serves Crop Rotation to 3 874	49 m
	12,25 m	2.2 S/M+B + 30 N 809	3.3 S/M+B + 60 N 828	Serves Crop Rotation to 3 841	1.4 S/M + 90 N 860	Serves Crop Rotation to 3 873	
	12,25 m	2.3 S/M+B + 60 N 808	3.4 S/M+B + 90 N 829	Serves Crop Rotation to 3 840	1.3 S/M + 60 N 861	Serves Crop Rotation to 3 872	
	12,25 m	2.1 S/M+B + 0 N 807	3.2 S/M+B + 30 N 830	Serves Crop Rotation to 3 839	1.1 S/M + 0 N 862	Serves Crop Rotation to 3 871	
				10 m			
	12,25 m	3.4 S/M+B + 90 N 806	2.2 S/M+B + 30 N 831	1.3 S/M + 60 N 838	Serves Crop Rotation to 3 863	Serves Crop Rotation to 3 870	49 m
	12,25 m	3.1 S/M+B + 0 N 805	2.4 S/M+B + 90 N 832	1.2 S/M + 30 N 837	Serves Crop Rotation to 3 864	Serves Crop Rotation to 3 869	
	12,25 m	3.3 S/M+B + 60 N 804	2.3 S/M+B + 60 N 833	1.1 S/M + 0 N 836	Serves Crop Rotation to 3 865	Serves Crop Rotation to 3 868	
	12,25 m	3.2 S/M+B + 30 N 803	2.1 S/M+B + 0 N 834	1.4 S/M + 90 N 835	Serves Crop Rotation to 3 866	Serves Crop Rotation to 3 867	

Figure 1. Plot plan for IPNI 18: Itiquira, Brazil.

Fundação ABC para Assistência e Divulgação Técnica Agropecuária
Setor de Solos e Nutrição de Plantas
Resp. Técnicos: Eng. Agr. Gabriel Barth, Eng. Agr. Juliana Tamie Suyama, Téc Agrí. Luiz Carlos Costa e Assist. de Pesq. Adão dos Santos Lisboa

Título: **Avaliar a resposta das culturas de verão em função da cultura antecessora.**
Local: **CDE Ponta Grossa (Área Comercial)**
Safra: 2013/2013
Cultura: Aveia Branca **Cultivar:** IPR126
Duração:
Rotação de Culturas:

2013
SB13AVGMP

TABELA DE TRATAMENTOS

Desenho Estatístico:
Delineamento: Blocos casualizados, com parcelas subdivididas, com 04 blocos.
Parcela: 9,0 m x 9,5m Área: 85,5 m²

Esquema de Rotação GMP

			1º Ciclo de rotação				2º Ciclo de rotação							
	Trat.	Trat.	Ano I 2011		Ano II 2012		Ano III 2013		Ano IV 2014		Dose de N no milho			Parcelas
			Inverno	Verão	Inverno	Verão	Inverno	Verão	Inverno	Verão	Base	Cobertura	Total	
Padrão	1A.1	1	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	40	0	40	18-35-60-95
Agrícola	1A.2	2	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	40	70	110	20-33-59-94
Atual	1A.3	3	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	40	140	180	17-36-58-93
	1A.4	4	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	40	210	250	19-34-57-96
Padrão	1B.1	5	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	40	0	40	14-39-66-77
Agrícola	1B.2	6	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	40	70	110	16-37-54-79
Atual	1B.3	7	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	40	140	180	15-40-43-78
	1B.4	8	Aveia Preta	Milho	Trigo	Soja	Aveia Preta	Milho	Trigo	Soja	40	210	250	13-38-55-80
Padrão Agrícola	2A.1	9	Aveia Branca	Milho	Azevém	Soja	Aveia Branca	Milho	azevém	Soja	40	0	40	9-43-72-86
Atual com uso	2A.2	10	Aveia Branca	Milho	Azevém	Soja	Aveia Branca	Milho	azevém	Soja	40	70	110	12-44-70-87
forragem inverno	2A.3	11	Aveia Branca	Milho	Azevém	Soja	Aveia Branca	Milho	azevém	Soja	40	140	180	11-41-85-71
	2A.4	12	Aveia Branca	Milho	Azevém	Soja	Aveia Branca	Milho	azevém	Soja	40	210	250	11-42-69-88
Padrão Agrícola	2B.1	13	azevém	Soja	Aveia Branca	Milho	azevém	Soja	Aveia Branca	Milho	40	0	40	8-26-61-75
Atual com uso	2B.2	14	azevém	Soja	Aveia Branca	Milho	azevém	Soja	Aveia Branca	Milho	40	70	110	6-28-63-73
forragem inverno	2B.3	15	azevém	Soja	Aveia Branca	Milho	azevém	Soja	Aveia Branca	Milho	40	140	180	7-25-64-74
	2B.4	16	azevém	Soja	Aveia Branca	Milho	azevém	Soja	Aveia Branca	Milho	40	210	250	5-27-62-76
Intensificação	3A.1	17	Ervilha	Milho	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	40	0	40	1-47-68-82
Ecológica	3A.2	18	Ervilha	Milho	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	40	70	110	3-48-66-81
	3A.3	19	Ervilha	Milho	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	40	140	180	2-45-67-84
	3A.4	20	Ervilha	Milho	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	40	210	250	4-46-65-83
Intensificação	3B.1	21	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	Ervilha	Milho	40	0	40	24-29-51-90
Ecológica	3B.2	22	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	Ervilha	Milho	40	70	110	22-31-49-92
	3B.3	23	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	Ervilha	Milho	40	140	180	23-32-50-89
	3B.4	24	Aveia Preta	Soja	Ervilha	Milho	Trigo	Soja	Ervilha	Milho	40	210	250	21-30-52-91

Figure 2. Treatment code for IPNI 19: Ponta Grossa, Brazil.

Figure 3. Plot Plan for IPNI 19: Ponta Grossa, Brazil.

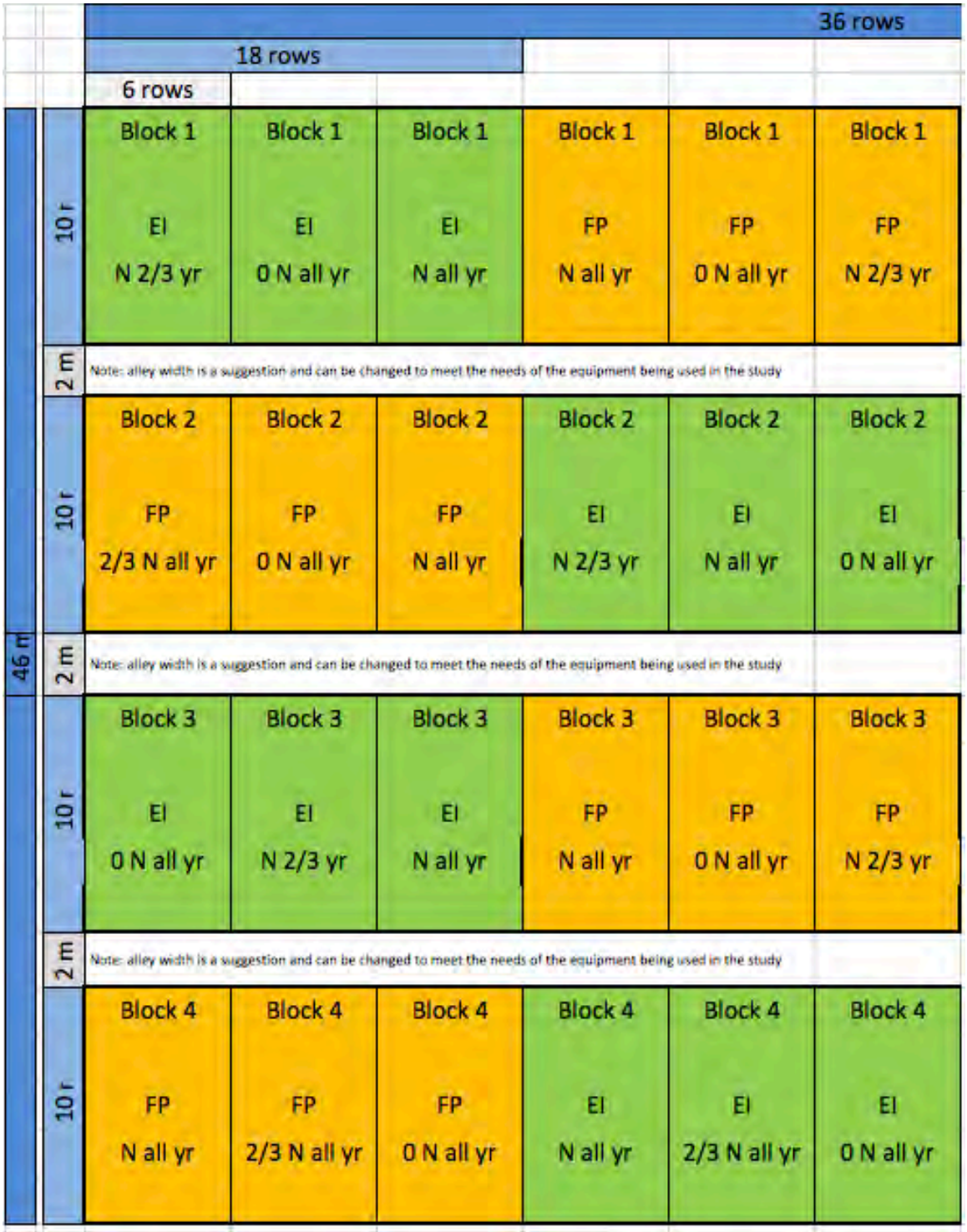

Figure 4. Plot Plan for IPNI 20: Ghongzhuling, China.

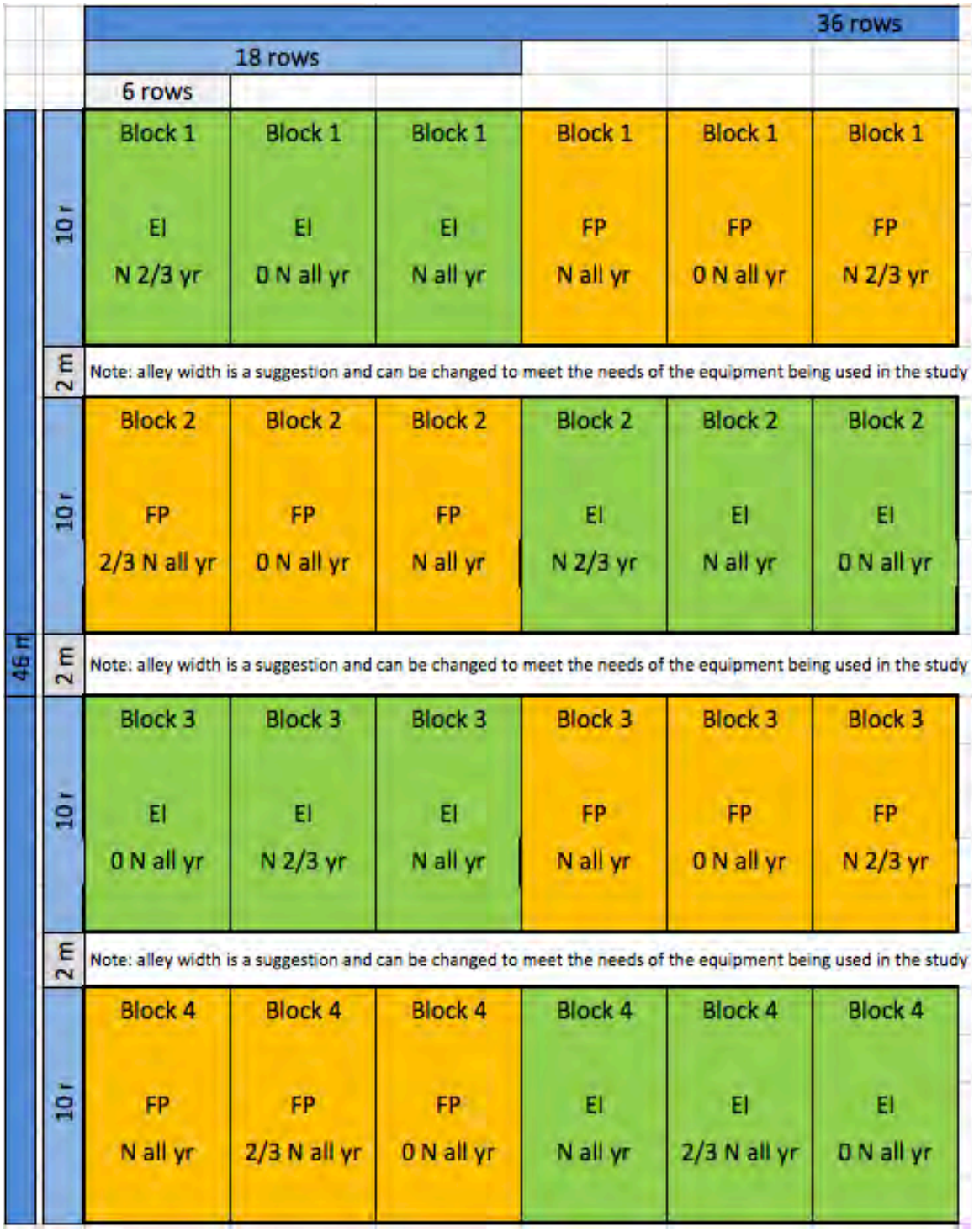

Figure 5. Plot Plan for IPNI 21: Shijiazhuang, China.

		19.2 m			
		4.8 m (8 rows)	4.8 m (8 rows)	4.8 m (8 rows)	4.8 m (8 rows)
34 m	10 m	Block 1 EI **0 kg N/ha** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 1 EI **180 kg N/ha** **50/0/50** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 1 FP **FFP**	Block 1 FP **FFP** **-N**
	2 m	Experiment A			
	10 m	Block 2 EI **180 kg N/ha** **50/0/50** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 2 EI **0 kg N/ha** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 2 FP **FFP** **-N**	Block 2 FP **FFP**
	2 m				
	10 m	Block 3 FP **FFP** **-N**	Block 3 FP **FFP**	Block 3 EI **0 kg N/ha** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 3 EI **180 kg N/ha** **50/0/50** 90 kg P_2O_5/ha 100 kg K_2O/ha

Experiment A
EI and FP: Long-term system evaluation
Duration: 3+ years

Treatments:

EI; 0 kg N/ha; 90 kg P_2O_5/ha; 100 kg K_2O/ha
EI; 180 kg N/ha (50% basal, 50% V10); 90 kg P_2O_5/ha; 100 kg K_2O/ha
FP; Farmer's Fertilization Practice without N (FFP -N)
FP; Farmer's Fertilization Practice (FFP)
EI: Maintain a population of 70000 plants/ha (60 cm X 24 cm)

Notes:
FP = farmer management practices
EI = ecological intensification management practices

Figure 6. Plot Plan for IPNI 22: Ranchi, India.

		19.2 m			
		4.8 m (8 rows)	4.8 m (8 rows)	4.8 m (8 rows)	4.8 m (8 rows)
34 m	10 m	Block 1 EI **0 kg N/ha** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 1 EI **180 kg N/ha** **50/0/50** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 1 FP **FFP**	Block 1 FP **FFP** **-N**
	2 m	Experiment A			
	10 m	Block 2 EI **180 kg N/ha** **50/0/50** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 2 EI **0 kg N/ha** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 2 FP **FFP** **-N**	Block 2 FP **FFP**
	2 m				
	10 m	Block 3 FP **FFP** **-N**	Block 3 FP **FFP**	Block 3 EI **0 kg N/ha** 90 kg P_2O_5/ha 100 kg K_2O/ha	Block 3 EI **180 kg N/ha** **50/0/50** 90 kg P_2O_5/ha 100 kg K_2O/ha

Experiment A
EI and FP: Long-term system evaluation
Duration: 3+ years

Treatments:

EI; 0 kg N/ha; 90 kg P_2O_5/ha; 100 kg K_2O/ha

EI; 180 kg N/ha (50% basal, 50% V10); 90 kg P_2O_5/ha; 100 kg K_2O/ha

FP; Farmer's Fertilization Practice without N (FFP -N)

FP; Farmer's Fertilization Practice (FFP)

EI: Maintain a population of 70000 plants/ha (60 cm X 24 cm)

Notes:

FP = farmer's practice

EI = ecological intensification

Figure 7. Plot Plan for IPNI 23: Darwad, India.

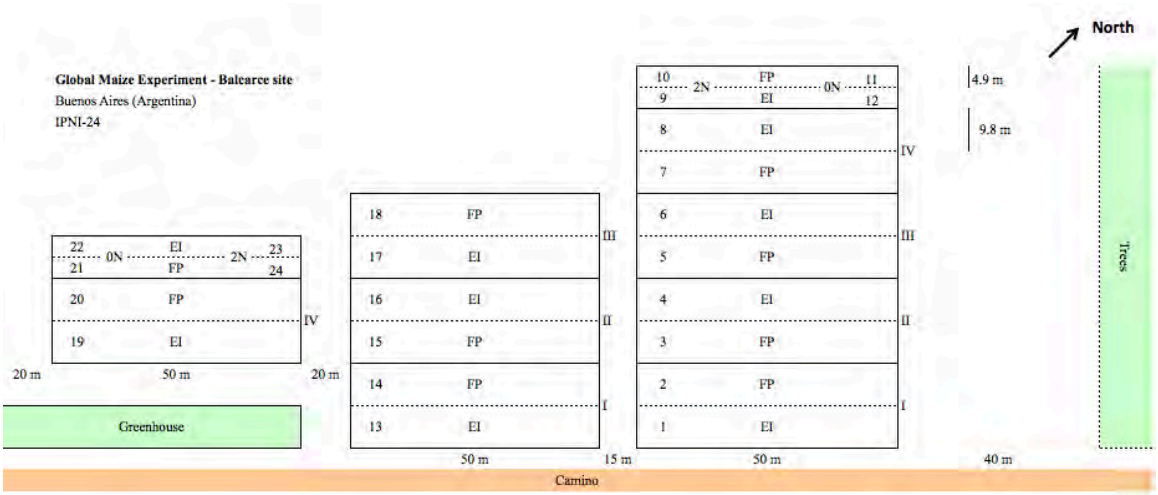

Figure 8. Plot Plan for IPNI 24: Balcarce, Argentina.

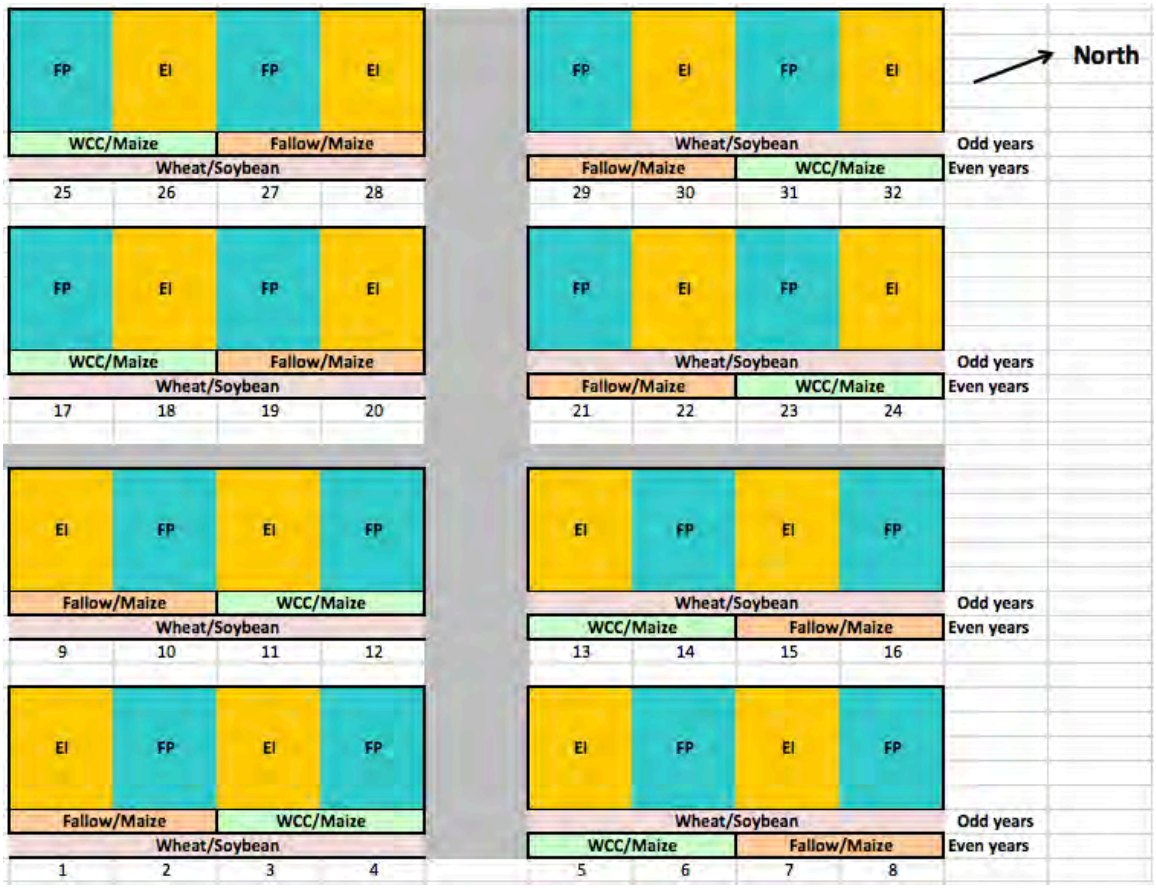

Figure 9. Plot Plan for IPNI 25: Oro Verde, Argentina.

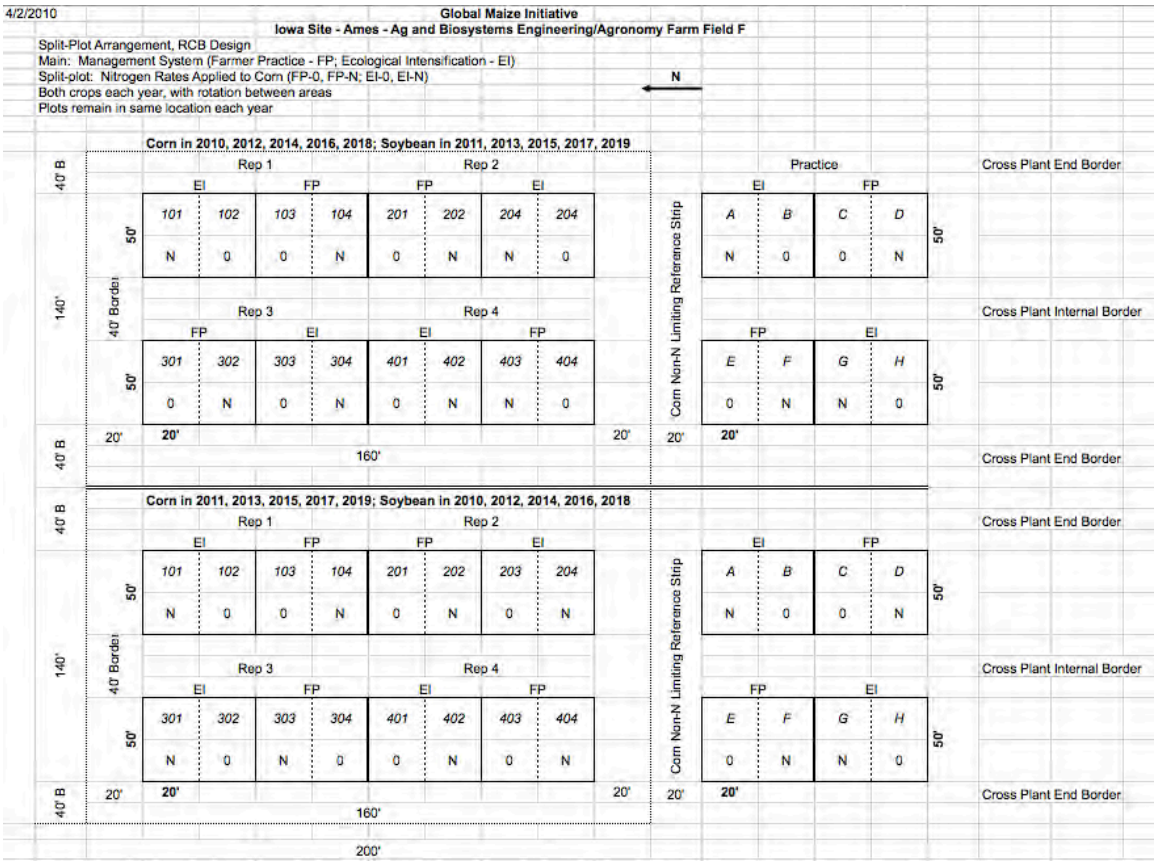

Figure 10. Plot Plan for IPNI 26: Ames, Iowa, USA.

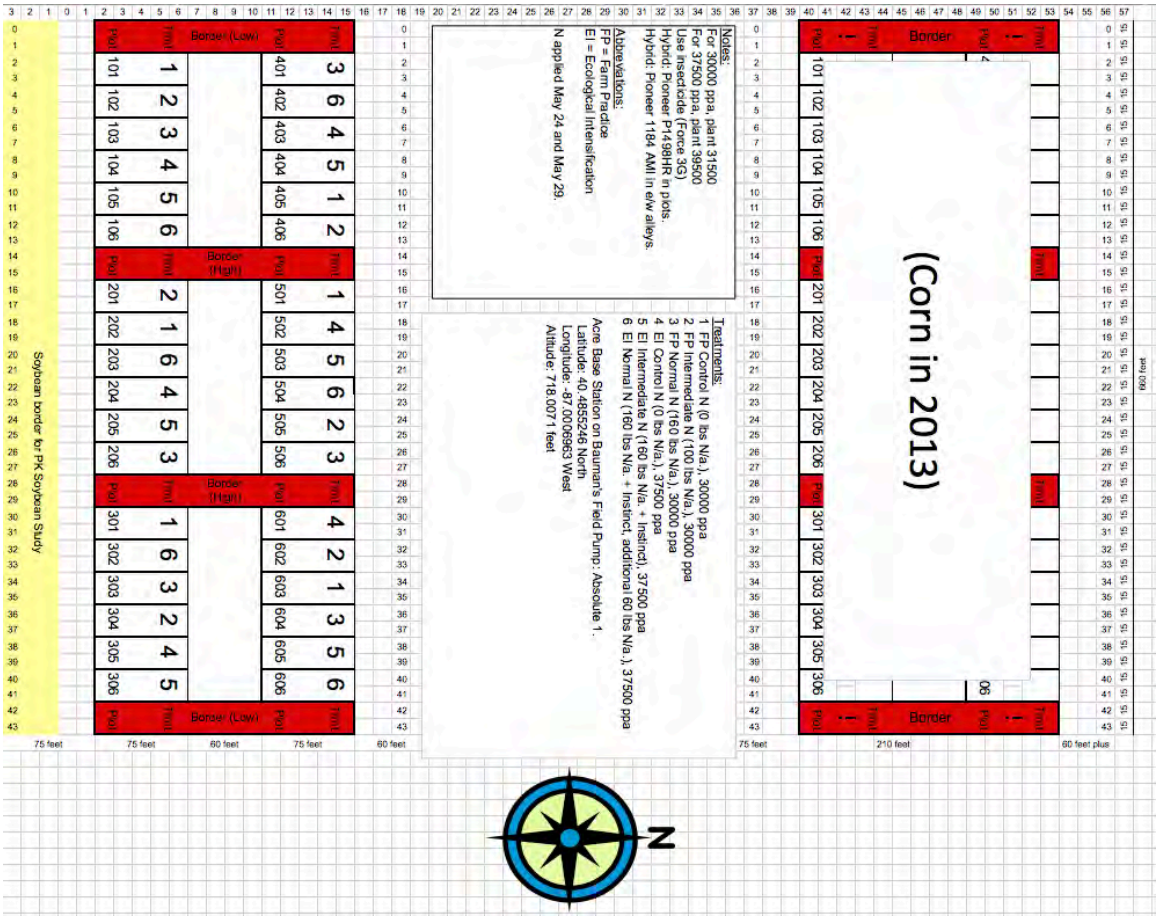

Figure 11. Plot Plan for IPNI 27: West Lafayette, Indiana, USA.

Figure 12. Plot Plan for IPNI 28: Celaya, Mexico.

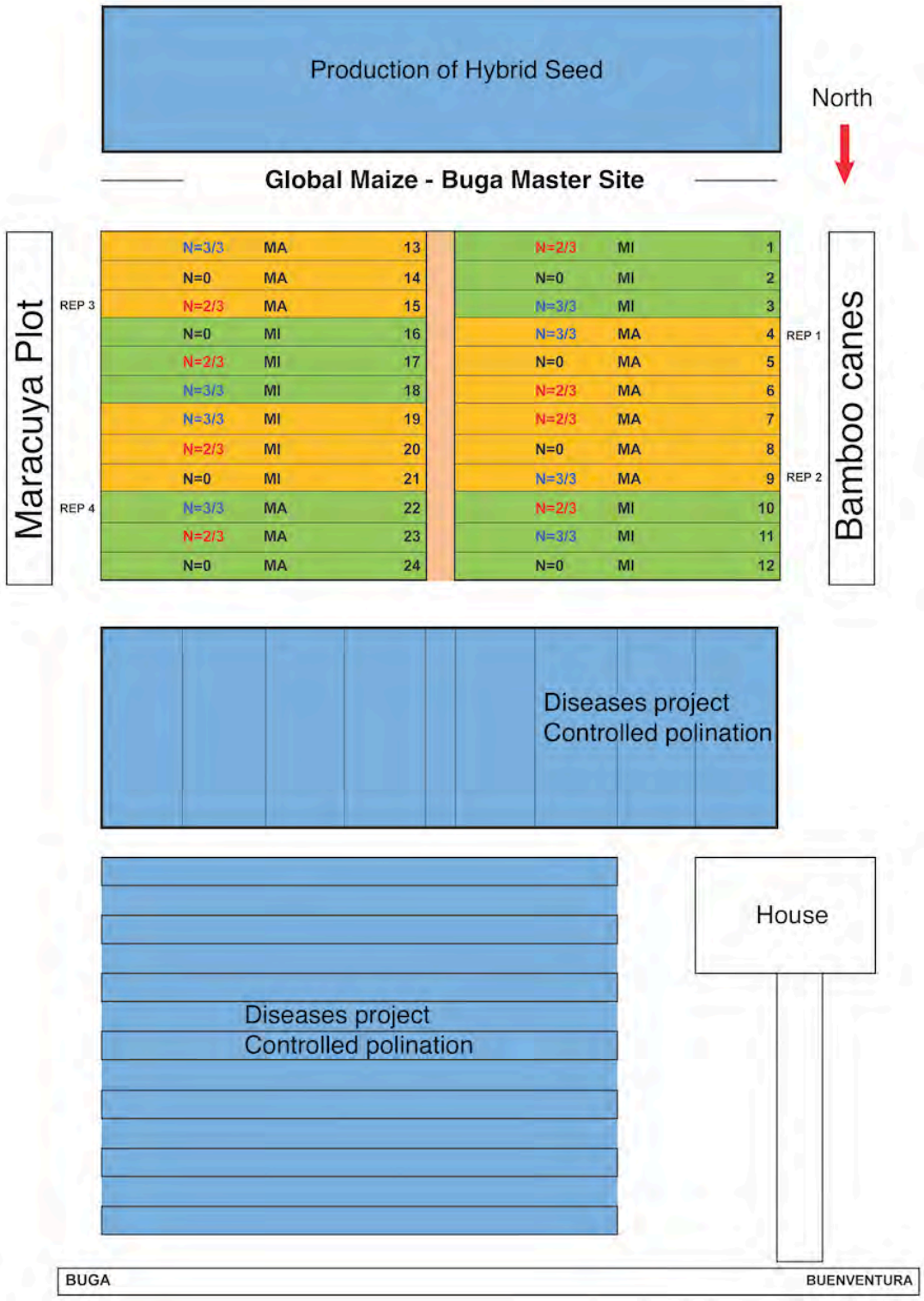

Figure 13. Plot Plan for IPNI 38: Buga, Colombia.

Block 1	Block 1	Block 1	Block 1	Block 2	Block 2	Block 2	Block 2
EI	EI	FP	FP	FP	FP	EI	EI
N	0	0	N	N	0	N	0

Block 3	Block 3	Block 3	Block 3	Block 4	Block 4	Block 4	Block 4
FP	FP	EI	EI	EI	EI	FP	FP
N	0	N	0	0	N	N	0

Figure 14. Plot Plan for IPNI 41: Novaya Tselina, Russia.

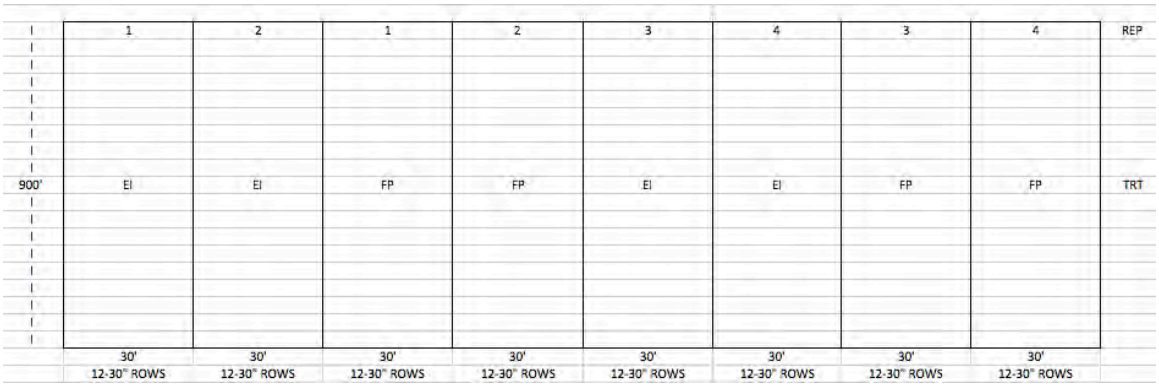

Figure 15. Plot Plan for IPNI 45: Virginia, USA.

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APPENDIX F

PHOTOGRAPHS FROM EXPERIMENTAL SITES

This section contains photographs from various experimental sites. This is a small sample of many photographs taken.

IPNI 18 –Itiquira, Brazil

IPNI 21 – Shijiazhuang, China

IPNI 23 – Darwad, India

IPNI 24 and 25 – Balcarce and Oro Verde, Argentina

IPNI 38 – Buga, Colombia

IPNI 41 – Novaya Tselina, Russia

IPNI 46 – Muguga, Kenya