



2012

Global Maize Study



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Global Maize Study Location for 2012. Corn plots are in Field 131 of the ACRE research farm near West Lafayette, IN, thus in the field directly across from the long-term Water Quality Field Station shown in top right. The corn plots for 2013 will be in the same field, but just north as is shown on the plot layout at the end of this report. This picture, taken by Dr. Darrell Schulze in early September, 2012 shows some of the soil depth variation in the extremely droughty year that resulted from ice wedges during a previous Ice Age. The more senesced corn plots are the Control (zero N) plots.

Global Maize Study, ACRE, 2012

Draft Summary

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Table 1. Cultural Practices Used, Field 131, ACRE, 2012

Field Operation	Date	Application Details
Tillage/Rotation		Fall chisel plow and spring secondary tillage for corn following corn
Plot size		12-30" rows, 75-feet long
Replications		6
Trial plan		Included at end of this report
Planted	4/27	Planted with Vyn's 6-row planter
Hybrid		Pioneer P1498HR (AQUAmax)
Seeding rate		30,000 and 37,500 seeds/acre
Weed control		Burndown: ? Pre-plant incorporated: ? Post-emergence: ?
Nitrogen UAN applications	5/24 5/29	First application as per treatment Second application as per treatment.
Harvest	10/2	Harvest with Kincaid combine.
Harvest area		4-30" rows, 75-feet

Figure 1. Monthly precipitation for March through October, 2012 compared to normal, ACRE.

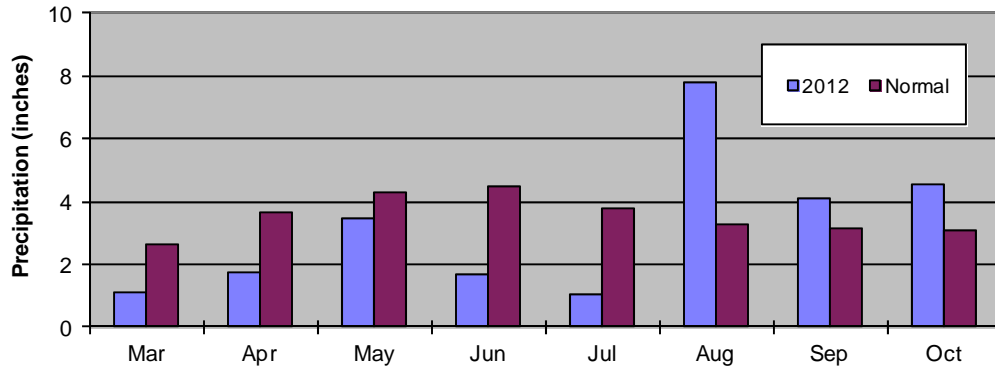


Table 2. Corn plant response to treatments, 2012.†

Trmt #	Treatment	Plant Population May 18	Plant Height July 11	Days to Silking	Grain Moist	Grain Yield @ 15%
		Ppa	in	Days	%M	Bu/ac
1	FP control N, 30000 ppa	30867b	76.8cb	74.0ab	17.4d	114.2b
2	FP Intermediate N, 30000 ppa	30767b	80.8a	71.8c	18.3c	148.3a
3	FP Normal N, 30000 pa	31133b	80.2a	72.6bc	18.8ab	153.1a
4	EI Control N, 37500 ppa	37800a	72.9c	75.2a	17.7d	98.1b
5	EI Intermediate N, 37500 ppa	37567a	78.6ab	72.6bc	18.8b	156.8a
6	EI Normal N, 37500 ppa	37733a	75.2bc	73.2bc	19.2a	146.1a
	LSD @ 5%	1084	4.3	1.7	0.4	18.0

† Average of 5 replications

Table 3. Corn plant response to treatments, 2012.†

Trmt #	Treatment	Spad July 3	Spad July 11	Spad July 25	Stalk diameter July 11	Stalk diameter July 25
					mm	mm
1	FP control N, 30000 ppa	37.4c	41.8b	39.8b	21.1b	21.0b
2	FP Intermediate N, 30000 ppa	44.3a	50.7a	50.8a	22.4a	22.1a
3	FP Normal N, 30000 pa	44.5a	51.1a	49.5a	22.0a	21.7a
4	EI Control N, 37500 ppa	33.2d	38.1b	35.1c	19.6c	19.5d
5	EI Intermediate N, 37500 ppa	41.5b	47.5a	47.3a	20.9b	20.2c
6	EI Normal N, 37500 ppa	41.7b	49.5a	48.8a	20.7b	20.2c
	LSD @ 5%	2.1	3.8	3.5	0.7	0.6

† Average of 5 replications

Table 4. Corn plant response to treatments, sample size of 10 plants per plot, 2012.†

Trmt #	Treatment	Stover DM	Stover N	Cob DM	Cob N	Grain DM	Grain N	Total DM
		kg/ha	%	kg/ha	%	kg/ha	%	kg/ha
1	FP control N, 30000 ppa	7141b	0.60c	908cd	0.73ab	5644b	1.06	13693b
2	FP Intermediate N, 30000 ppa	9074a	0.79b	1276a	0.70b	9249a	1.17	19598a
3	FP Normal N, 30000 pa	8599a	0.81ab	1233ab	0.68b	8698a	1.22	18530a
4	EI Control N, 37500 ppa	7144b	0.64c	810d	0.86a	4539b	1.18	12494b
5	EI Intermediate N, 37500 ppa	8884a	0.77b	1269a	0.81ab	10279a	1.22	20433a
6	EI Normal N, 37500 ppa	8489a	0.85a	1058bc	0.71ab	8425a	1.21	17972a
	LSD @ 5%	874	0.06	186	0.16	2498	0.16	3163

† Average of 5 replications

Table 5. Corn plant response to treatments, sample size of 20 plants, 2012.†

Trmt #	Treatment	Kernel Wt (200 kernels)	Kernels per plant	Harvest Index
		g	#	
1	FP control N, 30000 ppa	53.8b	314c	0.41bc
2	FP Intermediate N, 30000 ppa	58.9a	455a	0.47a
3	FP Normal N, 30000 pa	56.2ab	427ab	0.47a
4	EI Control N, 37500 ppa	53.3b	211d	0.36c
5	EI Intermediate N, 37500 ppa	55.0ab	377bc	0.49a
6	EI Normal N, 37500 ppa	56.0ab	345c	0.47ab
	LSD @ 5%	4.6	69	0.06

† Average of 5 replications

Table 6. Soil Fertility Analysis, 2012.†

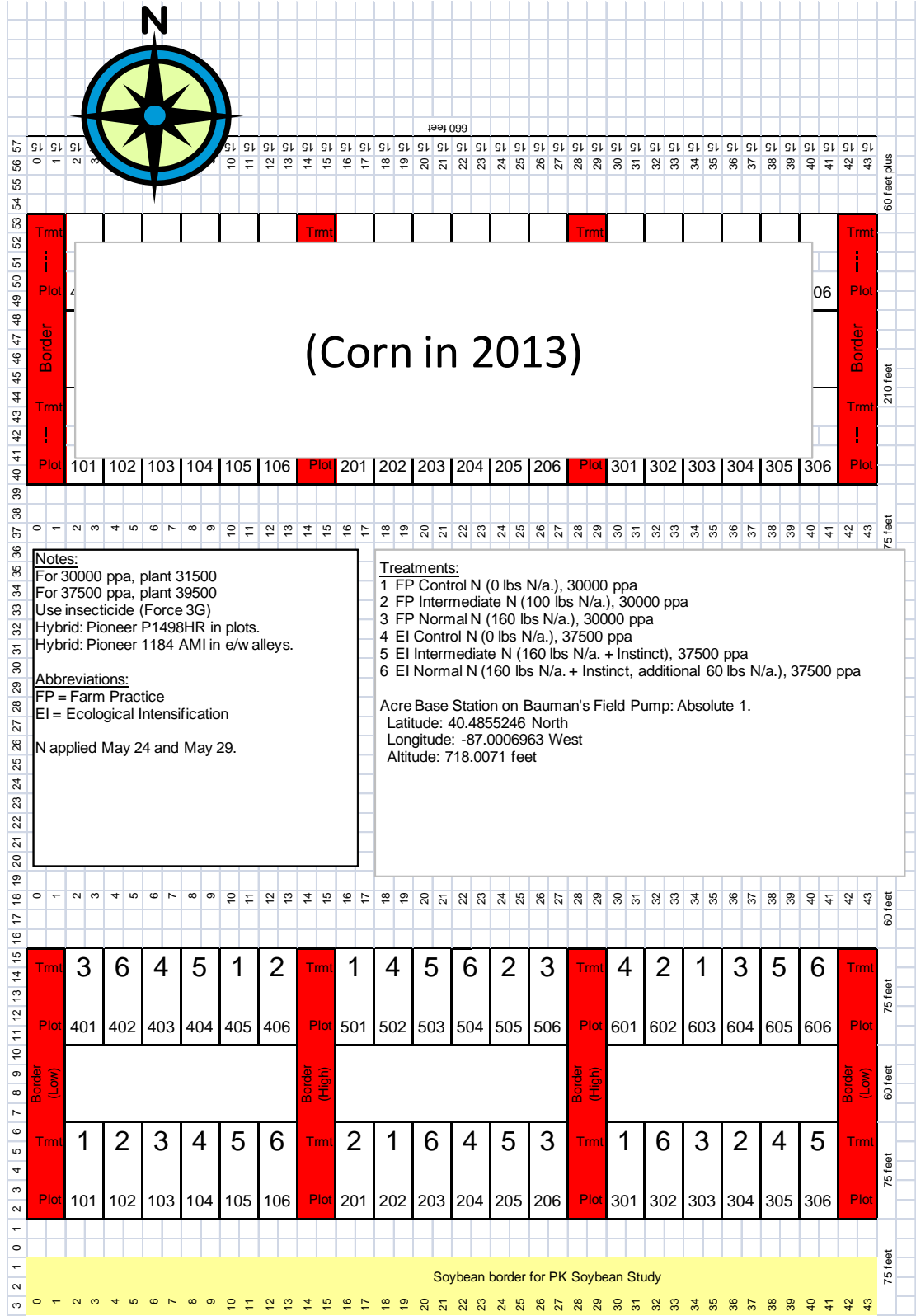
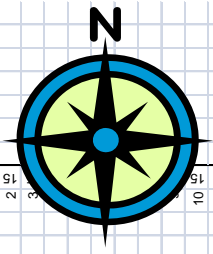
Trmt #	Treatment	pH (1:1)	OM %	P ppm	K ppm	Mg ppm	Ca ppm	CEC
1	FP control N, 30000 ppa	6.0ab	4.8	31.6	147	724ab	2897ab	25.0
2	FP Intermediate N, 30000 ppa	6.3a	4.7	31.0	166	764a	3042a	25.9
3	FP Normal N, 30000 pa	5.9b	4.5	36.2	158	664b	2734b	24.5
4	EI Control N, 37500 ppa	6.3a	4.6	30.8	153	733a	3023a	25.6
5	EI Intermediate N, 37500 ppa	6.2a	4.5	28.8	154	760a	3082a	26.3
6	EI Normal N, 37500 ppa	6.1ab	4.7	36.8	166	754a	3013a	25.9
LSD @ 5%		0.3	0.4	10.6	32	80	273	1.8

† Average of 5 replications

Table 7. Soil nitrate and ammonium analysis, 2012.†

Trmt #	Treatment	Nitrate ppm	Ammonium ppm
1	FP control N, 30000 ppa	8.2	2.6
4	EI Control N, 37500 ppa	7.4	2.4
LSD @ 5%		2.0	1.0

† Average of 5 replications



Notes:
 For 30000 ppa, plant 31500
 For 37500 ppa, plant 39500
 Use insecticide (Force 3G)
 Hybrid: Pioneer P1498HR in plots.
 Hybrid: Pioneer 1184 AMI in e/w alleys.

Abbreviations:
 FP = Farm Practice
 EI = Ecological Intensification

N applied May 24 and May 29.

Treatments:
 1 FP Control N (0 lbs N/a.), 30000 ppa
 2 FP Intermediate N (100 lbs N/a.), 30000 ppa
 3 FP Normal N (160 lbs N/a.), 30000 ppa
 4 EI Control N (0 lbs N/a.), 37500 ppa
 5 EI Intermediate N (160 lbs N/a. + Instinct), 37500 ppa
 6 EI Normal N (160 lbs N/a. + Instinct, additional 60 lbs N/a.), 37500 ppa

Acre Base Station on Bauman's Field Pump: Absolute 1.
 Latitude: 40.4855246 North
 Longitude: -87.0006963 West
 Altitude: 718.0071 feet