# Investigating Hybrid Interactions with Nitrogen and Foliar Fungicides

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**Rationale**:

- Small-plot and field studies have shown variable yield responses to fungicides and nitrogen
- In some fields, grain yields have increased by more than 50 bu/ac with a fungicide application, especially on a susceptible hybrid in environments favorable for leaf disease
- Other studies have shown that the economic yield response of a fungicide depends on the hybrid, even in the presence of low disease (i.e., physiological effects)
- NUE may vary among stacked and conventional corn hybrids (see example Figure 2 between old and new hybrids; characterization amongst hybrids not known; screening procedures need to be developed
- Higher NUE may be partly associated with extending green leaf area; foliar fungicides tends to extend green leaf area in corn, thereore, fungicides may increase NUE (see example Figure 3)
- In summary, the return on fungicides is variable and depends on several factors including hybrid; research is needed to generate more accurate fungicide decisions, and how fungicides and hybrid affect NUE

**Objectives**:

1. To characterize a sampling of commercial hybrids (single vs multiple traits; susceptible vs tolerant foliar disease) by fungicide response, nitrogen use efficiency (NUE), and their interactions
2. To determine whether hybrids respond differently to leaf disease control only (Headline and Proline) and physiological effects (Headline only)
3. To develop hybrid screening tools for NUE
4. To develop the tools for more accurate foliar fungicide decisions

**Brief Methods**:

- 3 Locations (Ridgetown, West Lorne, Exeter) in 2010; same 3 planned for 2011
- Previous crop: Ridgetown and West Lorne: winter wheat (no red clover); Exeter: soybean
- Experimental Design: Split-Strip Plot with 4 replications
- Main plot: 5 nitrogen rates (0, 45, 90, 135, and 180 kg N/ha)
- Split plot: 12 hybrids – same hybrids all 3 locs [i.e., single trait (GT) vs stacked; disease tol vs sus]. See Table 1 for hybrid characteristics.
- Split-Strip: 3 Fungicide applied at VT-R1 (UTC, Headline, Proline)
- Total plots per location: 720
- 12 hybrids randomized within blocks; each hybrid 2-rows x 18-m in length; plots will be split with fungicide tmts applied using our JD Research Sprayer

**Activities in 2010**

- Plots were successfully established at Ridgetown, West Lorne and Exeter in early May. The stand was thinned to 80,000 plants ha-1 before V2. N was applied using UAN (28-0-0) between V3 and V4. Fungicides were applied VT-R1 depending on hybrid maturity.

- 6 hybrid-pairs were suggested by seed companies to represent a range of genetics and resistance against foliar diseases

- Saturated soil conditions in mid-May caused excessive variability in Reps 3 and 4 at Exeter, and Rep 3 at Ridgetown; therefore, the most intensive measurements were not conducted on these replications.

- Measurements and the status of sample processing are listed in Table 2.

- Key objectives to the measurements are listed in Table 3.

**Preliminary Results**

- Drought conditions occurred during the last half of the grain-fill period at all 3 locations.

- Exeter results not presented in this report

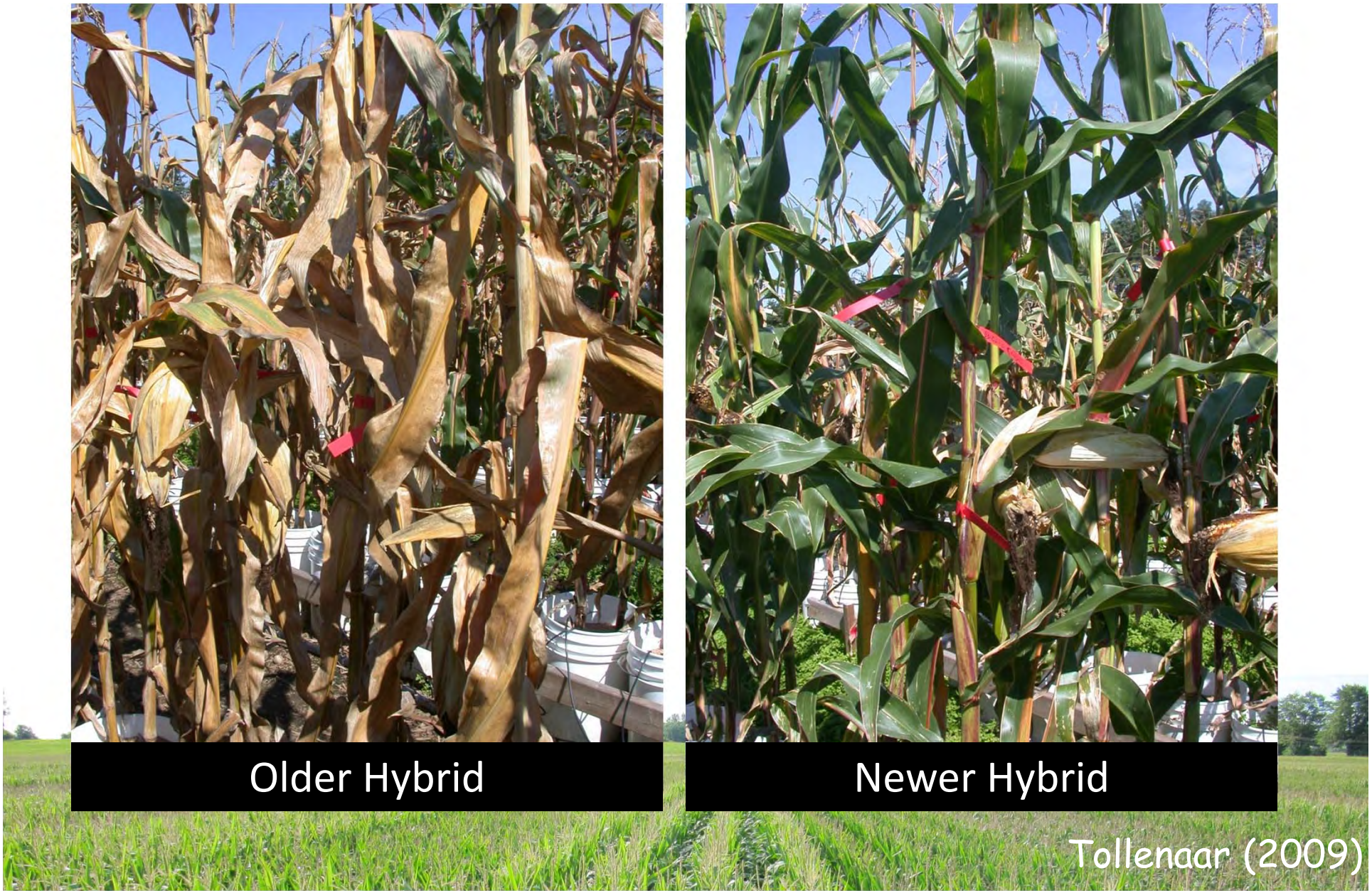
- There were few interactions between N and fungicide, probably the result of dry conditions during grain fill that caused early senescence

- Grain yield response to N was greater at West Lorne than Ridgetown (Tables 4 and 6). N interacted with hybrid at both locations (Tables 8 and 9); however, there was little evidence of yield response relationships between N response and triple-stacked vs single-traited hybrids (Tables 10 and 12). There was strong evidence that shows that N response depended on hybrid.

- Leaf disease severity was extremely low in all hybrid-locations (data not shown)
- Averaged across hybrid, hybrid response to fungicide was zero at Ridgetown and only <0.21 t $ha^{-1}$ at West Lorne (Tables 4 and 6). Effect on moisture content and test weight are presented in Tables 5 and 7. Stay green near maturity was improved at both locations with fungicide (Tables 5 and 7)
- Some evidence of differential fungicide response among hybrids, but the overall interaction was weak statistically; for example, some hybrids had a zero response, while others (e.g., DKC48-37) showed yield increases to 1.43 t $ha^{-1}$. See Figure 5 for example at West Lorne.
- There was some evidence that fungicide response was greater at the 180 kg N $ha^{-1}$ rate compared to lower N rates (see example in Figure 4).
- Results presented herein are only preliminary; N rates should be analyzed using response curves rather than as categorical variables.
- These experiments are planned for 2011

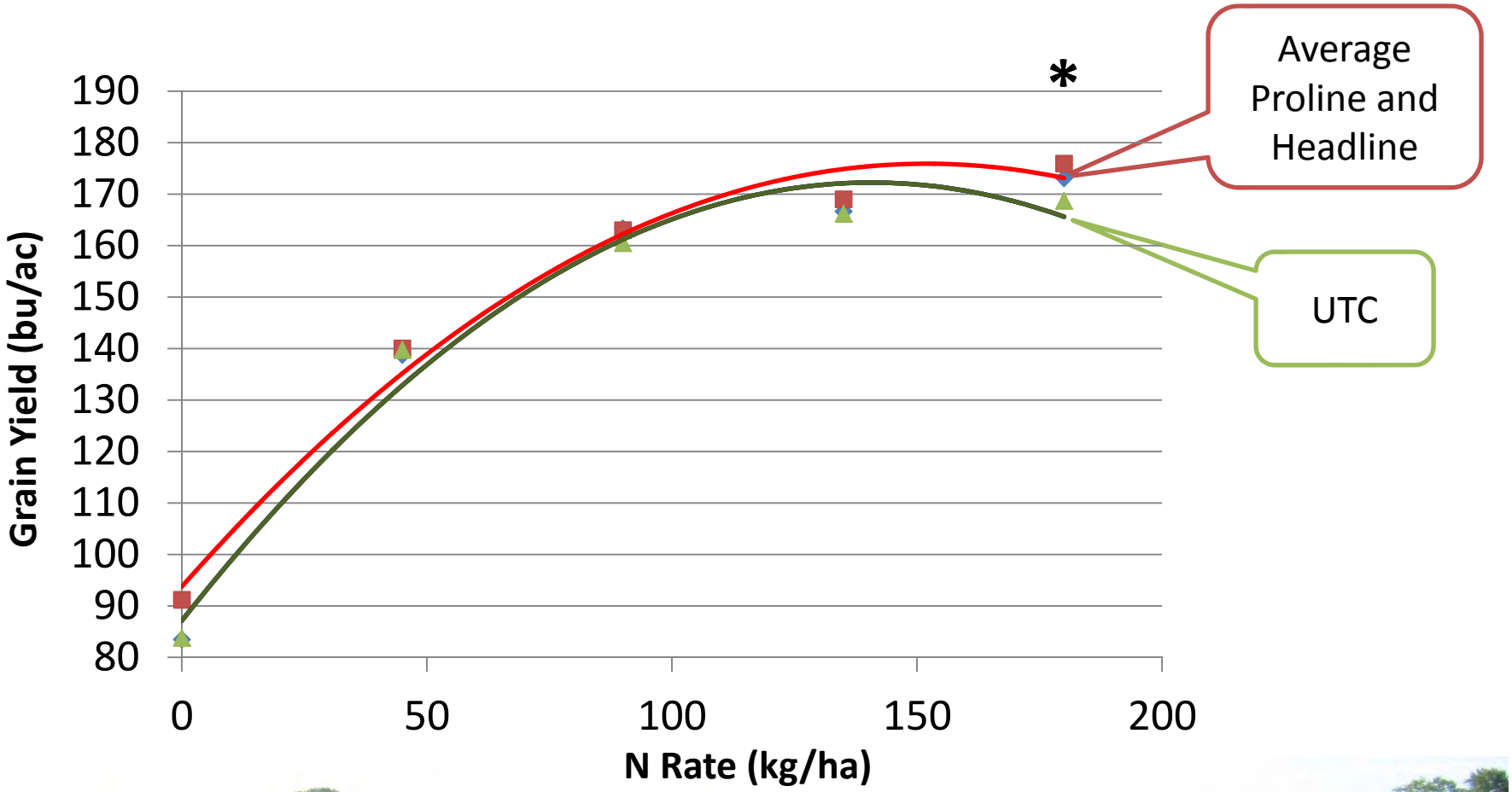
Figure 1. Sidedressing N in project using custom-built variable rate applicator.

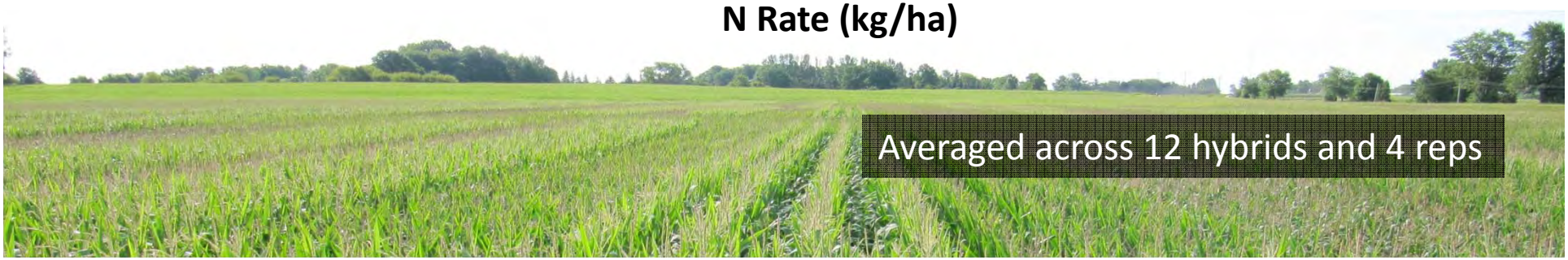
# Figure 2. Visual “stay green” vs Genetics



# Figure 3. Visual "Stay Green" in late September with a Foliar Fungicide

# Figure 4. N Rate x Fungicide in Corn – Interaction??
# West Lorne 2010



# Figure 5. Hybrid x Fungicide Interactions in Corn
## West Lorne 2010

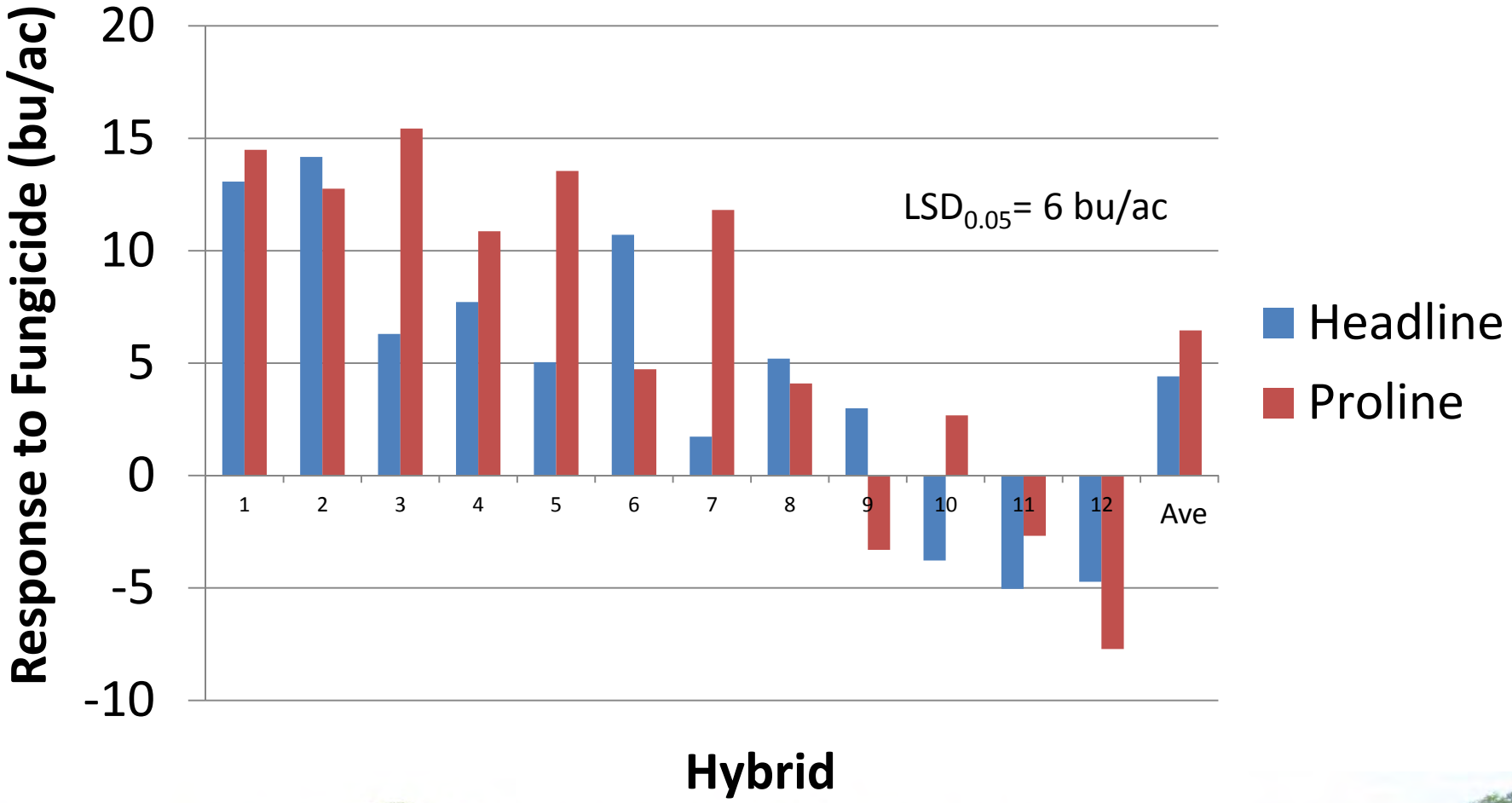



Table 1. Corn hybrid characteristics for 2010

| Hybrod-Pair | Brand | Hybrid | Trait | CHU Rating | Disease Rating |
|---|---|---|---|---|---|
| 1 | NK Seeds | N34N-GT | RR | 2900 | G |
| | | N34N-3000GT | RR/CRW/CB | | |
| 2 | Pioneer Hi-Bred | 35F37 | RR | 3150 | G |
| | | 35F44 | RR/CRW/CB | | |
| 3 | NK Seeds | N45A-GT | RR | 3100 | G-E |
| | | N45A-3000GT | RR/CRW/CB | | |
| 4 | DeKalb | DKC48-37 | RR | 2925 | E |
| | | DKC48-40 | RR/CRW/CB | | |
| 5 | Pride Seeds | A6842RR | RR | 2950 | VG |
| | | A6843G3 | RR/CRW/CB | | |
| 6 | Pioneer Hi-Bred | PO125R | RR | 3050 | G |
| | | PO125XR | RR/CRW/CB | | |

Table 2. Status of measurements of 2010 trials.

| # | STAGE | MEASUREMENT | HYBRIDS | N RATES | FUNGICIDE | LOCATIONS | Loc-Reps | SAMPLES OR PLOTS | Status as of Feb 14, 2011 |
|---|---|---|---|---|---|---|---|---|---|
| | | total number of units ---> | 12 | 5 | 3 | 3 | 12 | 2160 | |
| 1 | V6 | basic soil analysis | 1 | 1 | 1 | 3 | 12 | 12 | frozen; to be analyzed |
| 2 | V6 | PSNT 0-30 cm | 1 | 1 | 3 | 3 | 12 | 36 | frozen; to be analyzed |
| 3 | VT | final population (num plants/plot) | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 4 | VT | SPAD readings | 12 | 5 | 3 | 3 | 9 | 1620 | completed |
| 5 | VT | Greenseeker (or other canopy sensor) | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 6 | VT | whole-plant harvest (5 plants chopped/plot) | 12 | 3 | 3 | 3 | 9 | 972 | completed |
| 7 | VT | DM and N in whole-plant samples at VT | 12 | 3 | 3 | 3 | 9 | 972 | completed in March 2011 |
| 8 | VT | leaf disease % coverage by disease (upper, ear, lower) | 12 | 3 | 3 | 3 | 12 | 1296 | completed |
| 9 | end Aug/R4 | leaf disease % coverage by disease (upper, ear, lower) | 12 | 3 | 3 | 3 | 12 | 1296 | completed |
| 10 | R1 | 50% silking date | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 11 | R1 | 50% pollen shed date | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 12 | R5-LATE | Greenseeker (or other canopy sensor) | 12 | 5 | 3 | 3 | 12 | 2160 | subset tested; aborted due to poor repeatability |
| 13 | R6 | whole-plant harvest (5 plants chopped/plot) | 12 | 3 | 3 | 3 | 9 | 972 | completed |
| 14 | R6 | DM and N in aboveground stover; DM grain | 12 | 3 | 3 | 3 | 9 | 972 | completed |
| 15 | R6 | Soil N 0-30 cm | 1 | 5 | 3 | 3 | 12 | 180 | frozen; to be analyzed |
| 16 | R6 | stay green | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 17 | R6 | grain N | 12 | 3 | 3 | 3 | 12 | 1296 | in process; expected April 2011 |
| 18 | R6 | grain yield | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 19 | R6 | pushtest | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 20 | R6 | harvest mc | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 21 | R6 | test wt | 12 | 5 | 3 | 3 | 12 | 2160 | completed |
| 22 | R6 | 1000 kernel wt | 12 | 3 | 3 | 3 | 12 | 1296 | completed |
| 23 | R6 | VOMITOXIN in grain | 12 | 1 | 3 | 3 | 12 | 432 | 180 kg/ha rate only; to be completed after grain N analysis #17 |

Table 3. Objectives of measurements of 2010 trials.

| # | STAGE | MEASUREMENT | Objective |
|---|---|---|---|
| 1 | V6 | basic soil analysis | standard practice |
| 2 | V6 | PSNT 0-30 cm | N budgeting; to help explain N response curves with low fertilizer N input |
| 3 | VT | final population (num plants/plot) | differences in pops in some plots may help to explain outlier responses |
| 4 | VT | SPAD readings | indicator of N uptake and chlorophyll formation to VT across hybrids; baseline across fungicide treatments |
| 5 | VT | Greenseeker (or other canopy sensor) | NDVI=indicator of N uptake and chlorophyll formation to VT across hybrids; indicator of biomass accumulation; baseline across fungicide treatments |
| 6 | VT | whole-plant harvest (5 plants chopped/plot) | biomass determination; develop relationship with NDVI across hybrids and N tmts; determine C accumulation and N uptake efficiency to VT across hybrids; baseline across fungicide tmt |
| 7 | VT | DM and N in whole-plant samples at VT | |
| 8 | VT | leaf disease % coverage by disease (upper, ear, lower) | disease incidence and severity for developing spray decisions models |
| 9 | end Aug/R4 | leaf disease % coverage by disease (upper, ear, lower) | disease response curves vs hybrid vs weather; evaluate fungicide efficacy |
| 10 | R1 | 50% silking date | days between silk and pollen shed an indicator of stress at VT/R1; document for spraying vs hybrid and N |
| 11 | R1 | 50% pollen shed date | |
| 12 | R5-LATE | Greenseeker (or other canopy sensor) | indicator of N uptake and chlorophyll formation in R-stages as affected by hybrid and fungicide effects |
| 13 | R6 | whole-plant harvest (5 plants chopped/plot) | determine total C accumulation and N uptake across hybrids and fungicide; calc C and N accum from VT to maturity as affected by N, hybrid and fungicide; calculate harvest index; calculate N harvest index |
| 14 | R6 | DM and N in aboveground stover; DM grain | |
| 15 | R6 | Soil N 0-30 cm | for budgeting N dynamics |
| 16 | R6 | stay green | estimate duration of functional leaf area as affected by N, hybrid, and fungicide |
| 17 | R6 | grain N | N partitioning to grain across N, hybrid, and fungicide |
| 18 | R6 | grain yield | yield response across tmts |
| 19 | R6 | pushtest | aggressive method to measure stalk strength |
| 20 | R6 | harvest mc | quality response across all tmts |
| 21 | R6 | test wt | quality response across all tmts |
| 22 | R6 | 1000 kernel wt | Yield component; with plant population, yield, and kernel weight; calculate the ave # kernels per plant; determine source of yield responses |
| 23 | R6 | VOMITOXIN in grain | effect of proline across hybrids and N rates |

Table 4. Nitrogen and fungicide effects on grain corn yield and test weight across hybrids at Ridgetown, 2010.

| Hybrid | N Rate | Yield (t/ha) | | | | Test Weight (kg/hL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| 35F37 | 0 | 10.13 | 9.68 | 10.80 | 10.20 | 73.9 | 72.3 | 71.7 | 72.6 |
| | 45 | 11.51 | 11.92 | 11.11 | 11.51 | 72.6 | 73.9 | 75.7 | 74.1 |
| | 90 | 12.19 | 10.88 | 10.96 | 11.34 | 73.9 | 73.9 | 74.1 | 74.0 |
| | 135 | 13.86 | 13.22 | 13.27 | 13.45 | 74.9 | 74.9 | 73.8 | 74.5 |
| | 180 | 12.41 | 12.40 | 13.04 | 12.62 | 74.7 | 74.4 | 76.6 | 75.2 |
| 35F44 | 0 | 9.68 | 10.44 | 10.30 | 10.14 | 74.0 | 73.0 | 73.7 | 73.6 |
| | 45 | 10.64 | 11.44 | 11.96 | 11.35 | 74.2 | 73.3 | 73.1 | 73.5 |
| | 90 | 12.23 | 10.53 | 11.02 | 11.26 | 74.0 | 76.1 | 74.4 | 74.8 |
| | 135 | 14.03 | 12.48 | 13.34 | 13.28 | 72.8 | 73.1 | 73.2 | 73.1 |
| | 180 | 12.50 | 13.75 | 12.82 | 13.02 | 74.0 | 74.0 | 74.3 | 74.1 |
| A6842RR | 0 | 9.58 | 9.68 | 9.90 | 9.72 | 73.8 | 75.0 | 75.5 | 74.7 |
| | 45 | 10.18 | 11.03 | 11.11 | 10.77 | 74.5 | 74.8 | 75.5 | 74.9 |
| | 90 | 10.00 | 9.49 | 10.59 | 10.03 | 74.7 | 76.8 | 75.4 | 75.6 |
| | 135 | 12.31 | 12.45 | 12.11 | 12.29 | 75.7 | 75.8 | 74.1 | 75.2 |
| | 180 | 11.33 | 11.81 | 10.99 | 11.38 | 76.3 | 75.8 | 75.2 | 75.8 |
| A6843G3 | 0 | 8.45 | 9.54 | 9.74 | 9.24 | 74.6 | 74.6 | 75.2 | 74.8 |
| | 45 | 11.54 | 10.68 | 10.86 | 11.03 | 76.3 | 76.0 | 75.2 | 75.8 |
| | 90 | 10.54 | 10.70 | 10.86 | 10.70 | 75.5 | 75.4 | 75.1 | 75.3 |
| | 135 | 12.02 | 11.94 | 12.37 | 12.11 | 74.2 | 74.7 | 74.9 | 74.6 |
| | 180 | 11.19 | 11.68 | 12.25 | 11.71 | 74.7 | 77.3 | 76.6 | 76.2 |
| DKC48-37 | 0 | 8.39 | 9.82 | 10.44 | 9.55 | 74.8 | 76.7 | 75.1 | 75.6 |
| | 45 | 11.25 | 11.38 | 11.68 | 11.44 | 74.3 | 75.2 | 74.5 | 74.6 |
| | 90 | 10.71 | 10.73 | 10.97 | 10.80 | 75.7 | 76.2 | 77.8 | 76.6 |
| | 135 | 12.16 | 12.92 | 12.22 | 12.43 | 75.6 | 75.7 | 75.6 | 75.6 |
| | 180 | 11.55 | 11.82 | 10.36 | 11.24 | 76.7 | 76.1 | 75.3 | 76.0 |
| DKC48-40 | 0 | 9.12 | 9.76 | 9.35 | 9.41 | 75.4 | 74.6 | 74.7 | 74.9 |
| | 45 | 11.46 | 11.37 | 11.37 | 11.40 | 74.7 | 75.4 | 74.8 | 75.0 |
| | 90 | 10.93 | 9.86 | 10.24 | 10.34 | 75.9 | 77.6 | 76.3 | 76.6 |
| | 135 | 11.69 | 12.09 | 12.28 | 12.02 | 74.2 | 74.9 | 75.2 | 74.8 |
| | 180 | 11.38 | 11.70 | 11.36 | 11.48 | 75.2 | 76.2 | 77.8 | 76.4 |
| N45A-3000GT | 0 | 8.56 | 8.80 | 8.76 | 8.71 | 71.0 | 70.5 | 71.8 | 71.1 |
| | 45 | 10.84 | 11.63 | 10.67 | 11.05 | 71.6 | 72.8 | 71.9 | 72.1 |
| | 90 | 9.95 | 10.23 | 9.93 | 10.04 | 72.1 | 72.1 | 71.6 | 71.9 |
| | 135 | 12.41 | 12.57 | 11.99 | 12.32 | 73.0 | 72.5 | 71.9 | 72.5 |
| | 180 | 10.67 | 11.09 | 10.72 | 10.83 | 72.4 | 74.4 | 72.2 | 73.0 |
| N45A-GT | 0 | 9.09 | 8.83 | 9.08 | 9.00 | 70.0 | 70.8 | 71.5 | 70.8 |
| | 45 | 11.59 | 11.44 | 11.33 | 11.45 | 72.5 | 70.8 | 72.8 | 72.0 |
| | 90 | 10.98 | 10.04 | 9.95 | 10.32 | 71.9 | 71.6 | 71.5 | 71.7 |
| | 135 | 11.46 | 11.67 | 11.65 | 11.59 | 72.0 | 73.5 | 74.1 | 73.2 |
| | 180 | 11.83 | 12.57 | 11.43 | 11.94 | 71.9 | 72.3 | 71.2 | 71.8 |
| PO125R | 0 | 9.23 | 10.18 | 10.50 | 9.97 | 72.3 | 73.0 | 72.2 | 72.5 |
| | 45 | 11.78 | 11.99 | 11.36 | 11.71 | 72.1 | 73.3 | 73.6 | 73.0 |
| | 90 | 10.83 | 9.72 | 11.33 | 10.63 | 73.5 | 73.9 | 74.1 | 73.8 |
| | 135 | 12.19 | 12.64 | 12.59 | 12.47 | 73.8 | 73.3 | 72.7 | 73.2 |
| | 180 | 10.96 | 11.68 | 12.04 | 11.56 | 73.0 | 73.8 | 75.8 | 74.2 |
| PO125XR | 0 | 9.97 | 9.72 | 8.73 | 9.47 | 71.2 | 72.4 | 72.9 | 72.2 |
| | 45 | 10.45 | 11.52 | 11.03 | 11.00 | 71.9 | 72.3 | 71.5 | 71.9 |
| | 90 | 12.54 | 10.66 | 11.36 | 11.52 | 73.0 | 72.8 | 71.8 | 72.5 |
| | 135 | 12.75 | 12.27 | 12.77 | 12.60 | 72.2 | 73.0 | 73.2 | 72.8 |
| | 180 | 12.23 | 12.31 | 12.20 | 12.25 | 72.1 | 73.0 | 72.6 | 72.5 |
| Mean | | 11.10 | 11.18 | 11.18 | 11.15 | 73.7 | 74.1 | 74.0 | 73.9 |

Table 5. Nitrogen and fungicide effects on harvest grain moisture and stay green across corn hybrids at Ridgetown, 2010.

| Hybrid | N Rate | Grain MC (%) | | | | Stay Green (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| 35F37 | 0 | 18.4 | 18.8 | 18.9 | 18.7 | 3.0 | 3.3 | 3.3 | 3.2 |
| | 45 | 19.0 | 18.6 | 19.1 | 18.9 | 3.7 | 3.3 | 3.0 | 3.3 |
| | 90 | 19.0 | 18.3 | 18.8 | 18.7 | 4.3 | 2.7 | 3.0 | 3.3 |
| | 135 | 20.5 | 19.6 | 20.2 | 20.1 | 5.0 | 3.3 | 3.3 | 3.9 |
| | 180 | 19.4 | 19.2 | 18.8 | 19.1 | 3.7 | 3.7 | 3.3 | 3.6 |
| 35F44 | 0 | 19.9 | 19.7 | 19.9 | 19.8 | 3.7 | 3.3 | 3.0 | 3.3 |
| | 45 | 19.5 | 20.0 | 20.1 | 19.9 | 3.3 | 4.0 | 3.7 | 3.7 |
| | 90 | 20.4 | 19.4 | 19.3 | 19.7 | 5.0 | 4.0 | 4.0 | 4.3 |
| | 135 | 21.4 | 20.5 | 20.8 | 20.9 | 5.7 | 4.7 | 4.3 | 4.9 |
| | 180 | 21.3 | 20.5 | 20.4 | 20.7 | 5.3 | 5.0 | 4.7 | 5.0 |
| A6842RR | 0 | 17.0 | 16.9 | 17.1 | 17.0 | 2.7 | 3.3 | 3.0 | 3.0 |
| | 45 | 17.2 | 17.1 | 17.0 | 17.1 | 3.0 | 3.3 | 2.7 | 3.0 |
| | 90 | 17.7 | 16.3 | 17.1 | 17.0 | 4.0 | 3.7 | 3.0 | 3.6 |
| | 135 | 17.6 | 17.5 | 17.4 | 17.5 | 4.0 | 3.7 | 3.3 | 3.7 |
| | 180 | 17.3 | 17.1 | 17.3 | 17.2 | 3.7 | 3.7 | 3.3 | 3.6 |
| A6843G3 | 0 | 16.7 | 17.1 | 17.0 | 16.9 | 2.7 | 2.7 | 3.0 | 2.8 |
| | 45 | 17.0 | 17.8 | 17.1 | 17.3 | 3.3 | 3.7 | 3.0 | 3.3 |
| | 90 | 17.6 | 16.6 | 16.9 | 17.0 | 4.3 | 3.7 | 3.3 | 3.8 |
| | 135 | 17.9 | 17.7 | 17.4 | 17.6 | 4.3 | 3.7 | 3.3 | 3.8 |
| | 180 | 17.4 | 17.6 | 17.4 | 17.4 | 4.0 | 4.0 | 3.3 | 3.8 |
| DKC48-37 | 0 | 17.3 | 17.3 | 17.2 | 17.3 | 3.0 | 3.0 | 2.7 | 2.9 |
| | 45 | 18.0 | 18.1 | 17.8 | 18.0 | 3.7 | 3.7 | 3.7 | 3.7 |
| | 90 | 17.3 | 16.3 | 16.6 | 16.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| | 135 | 19.1 | 18.1 | 18.7 | 18.6 | 4.3 | 4.0 | 4.0 | 4.1 |
| | 180 | 17.0 | 17.5 | 16.7 | 17.1 | 2.7 | 3.3 | 2.3 | 2.8 |
| DKC48-40 | 0 | 16.7 | 17.0 | 16.7 | 16.8 | 2.7 | 3.0 | 2.3 | 2.7 |
| | 45 | 18.0 | 17.7 | 17.3 | 17.6 | 3.7 | 3.0 | 3.0 | 3.2 |
| | 90 | 17.4 | 16.0 | 16.0 | 16.5 | 4.0 | 3.0 | 3.0 | 3.3 |
| | 135 | 18.7 | 18.5 | 18.3 | 18.5 | 4.7 | 4.0 | 4.0 | 4.2 |
| | 180 | 17.7 | 18.5 | 17.8 | 18.0 | 3.7 | 4.3 | 3.3 | 3.8 |
| N45A-3000GT | 0 | 17.9 | 18.3 | 18.6 | 18.3 | 2.7 | 3.0 | 2.7 | 2.8 |
| | 45 | 17.6 | 17.8 | 17.8 | 17.8 | 3.3 | 3.3 | 3.0 | 3.2 |
| | 90 | 18.4 | 17.8 | 17.8 | 18.0 | 4.3 | 4.0 | 3.3 | 3.9 |
| | 135 | 19.2 | 18.0 | 19.2 | 18.8 | 4.0 | 3.3 | 4.0 | 3.8 |
| | 180 | 18.3 | 18.0 | 18.2 | 18.1 | 3.7 | 3.0 | 3.3 | 3.3 |
| N45A-GT | 0 | 18.0 | 17.6 | 17.5 | 17.7 | 3.0 | 2.7 | 2.7 | 2.8 |
| | 45 | 17.3 | 18.3 | 18.0 | 17.9 | 3.0 | 3.7 | 3.0 | 3.2 |
| | 90 | 17.5 | 16.7 | 17.1 | 17.1 | 3.7 | 3.7 | 3.7 | 3.7 |
| | 135 | 18.7 | 17.9 | 18.2 | 18.3 | 4.3 | 3.0 | 3.3 | 3.6 |
| | 180 | 17.9 | 18.7 | 18.8 | 18.5 | 4.0 | 4.0 | 3.7 | 3.9 |
| PO125R | 0 | 17.8 | 17.7 | 17.8 | 17.8 | 2.0 | 2.3 | 2.3 | 2.2 |
| | 45 | 17.4 | 17.6 | 17.4 | 17.5 | 3.0 | 2.3 | 2.3 | 2.6 |
| | 90 | 17.4 | 16.0 | 16.4 | 16.6 | 2.7 | 1.7 | 1.7 | 2.0 |
| | 135 | 18.2 | 17.5 | 18.5 | 18.1 | 4.3 | 3.0 | 3.3 | 3.6 |
| | 180 | 16.9 | 16.8 | 16.6 | 16.8 | 2.3 | 2.0 | 2.0 | 2.1 |
| PO125XR | 0 | 17.2 | 17.8 | 17.3 | 17.4 | 2.0 | 2.7 | 2.0 | 2.2 |
| | 45 | 17.7 | 17.7 | 17.9 | 17.8 | 2.0 | 2.3 | 2.7 | 2.3 |
| | 90 | 18.5 | 16.9 | 17.5 | 17.6 | 4.0 | 2.7 | 2.7 | 3.1 |
| | 135 | 19.0 | 18.3 | 18.7 | 18.7 | 3.7 | 3.3 | 3.7 | 3.6 |
| | 180 | 17.7 | 18.5 | 17.9 | 18.1 | 3.3 | 3.7 | 3.3 | 3.4 |
| Mean | | 18.2 | 17.9 | 18.0 | 18.0 | 3.6 | 3.4 | 3.2 | 3.4 |

Table 6. Nitrogen and fungicide effects on grain corn yield and test weight across hybrids at West Lorne, 2010.

| Hybrid | N Rate | Yield (t/ha) | | | | Test Weight (kg/hL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| 35F37 | 0 | 5.86 | 6.98 | 5.79 | 6.21 | 68.3 | 68.9 | 69.1 | 68.8 |
| | 45 | 9.79 | 9.91 | 9.75 | 9.82 | 69.9 | 70.2 | 70.8 | 70.3 |
| | 90 | 10.43 | 10.96 | 10.80 | 10.73 | 70.1 | 71.0 | 70.3 | 70.5 |
| | 135 | 11.26 | 11.87 | 11.37 | 11.50 | 68.9 | 69.5 | 69.2 | 69.2 |
| | 180 | 12.33 | 12.12 | 11.43 | 11.96 | 70.2 | 69.3 | 69.6 | 69.7 |
| 35F44 | 0 | 5.77 | 6.39 | 5.79 | 5.98 | 70.0 | 70.7 | 69.5 | 70.1 |
| | 45 | 10.01 | 10.03 | 9.96 | 10.00 | 72.1 | 72.8 | 72.2 | 72.3 |
| | 90 | 11.24 | 11.25 | 10.94 | 11.14 | 72.2 | 73.5 | 72.3 | 72.7 |
| | 135 | 11.29 | 11.77 | 11.50 | 11.52 | 70.7 | 70.4 | 70.5 | 70.6 |
| | 180 | 12.64 | 12.24 | 12.45 | 12.44 | 72.3 | 71.5 | 70.8 | 71.5 |
| A6842RR | 0 | 5.48 | 5.35 | 5.48 | 5.44 | 71.4 | 70.9 | 70.4 | 70.9 |
| | 45 | 8.86 | 9.21 | 8.98 | 9.02 | 71.5 | 72.3 | 74.0 | 72.6 |
| | 90 | 9.84 | 10.11 | 9.96 | 9.97 | 72.0 | 72.5 | 73.5 | 72.7 |
| | 135 | 10.06 | 10.22 | 10.54 | 10.27 | 70.4 | 70.8 | 70.8 | 70.7 |
| | 180 | 10.54 | 11.08 | 10.22 | 10.61 | 71.0 | 70.6 | 71.6 | 71.0 |
| A6843G3 | 0 | 6.11 | 6.47 | 6.12 | 6.23 | 70.9 | 70.9 | 70.8 | 70.9 |
| | 45 | 9.69 | 9.72 | 10.15 | 9.85 | 72.6 | 72.5 | 73.4 | 72.8 |
| | 90 | 10.76 | 10.99 | 10.60 | 10.78 | 72.4 | 72.5 | 72.8 | 72.5 |
| | 135 | 10.37 | 10.37 | 10.35 | 10.36 | 70.3 | 70.7 | 71.8 | 70.9 |
| | 180 | 10.42 | 10.35 | 10.09 | 10.29 | 70.8 | 73.1 | 71.3 | 71.7 |
| DKC48-37 | 0 | 6.09 | 6.34 | 5.65 | 6.03 | 71.9 | 72.2 | 71.8 | 71.9 |
| | 45 | 9.76 | 9.38 | 9.05 | 9.40 | 73.7 | 74.0 | 72.9 | 73.5 |
| | 90 | 9.73 | 9.95 | 10.04 | 9.91 | 73.4 | 73.1 | 73.1 | 73.2 |
| | 135 | 10.88 | 10.88 | 10.58 | 10.78 | 72.5 | 72.7 | 72.4 | 72.5 |
| | 180 | 11.42 | 11.51 | 10.59 | 11.17 | 72.7 | 74.0 | 73.5 | 73.4 |
| DKC48-40 | 0 | 6.25 | 6.08 | 6.27 | 6.20 | 72.1 | 72.2 | 72.2 | 72.1 |
| | 45 | 8.79 | 8.94 | 8.44 | 8.72 | 72.3 | 73.3 | 73.8 | 73.1 |
| | 90 | 10.55 | 10.70 | 10.46 | 10.57 | 72.0 | 73.2 | 73.9 | 73.0 |
| | 135 | 10.09 | 10.38 | 10.48 | 10.32 | 71.6 | 71.7 | 72.2 | 71.8 |
| | 180 | 10.76 | 10.38 | 10.08 | 10.41 | 71.7 | 71.8 | 72.8 | 72.1 |
| N45A-3000GT | 0 | 4.95 | 4.91 | 4.34 | 4.73 | 64.8 | 64.6 | 63.6 | 64.4 |
| | 45 | 7.75 | 7.52 | 7.92 | 7.73 | 66.8 | 66.2 | 66.7 | 66.6 |
| | 90 | 10.12 | 10.36 | 9.39 | 9.96 | 69.0 | 68.9 | 68.6 | 68.9 |
| | 135 | 11.01 | 10.92 | 11.11 | 11.01 | 68.2 | 69.1 | 68.1 | 68.4 |
| | 180 | 10.51 | 11.15 | 10.40 | 10.69 | 67.9 | 67.9 | 67.2 | 67.6 |
| N45A-GT | 0 | 4.60 | 5.19 | 4.76 | 4.85 | 65.6 | 65.8 | 66.0 | 65.8 |
| | 45 | 7.78 | 8.31 | 7.82 | 7.97 | 67.5 | 67.6 | 69.0 | 68.0 |
| | 90 | 10.51 | 10.49 | 9.92 | 10.31 | 67.7 | 67.9 | 68.1 | 67.9 |
| | 135 | 10.00 | 9.68 | 10.13 | 9.94 | 67.2 | 67.3 | 66.8 | 67.1 |
| | 180 | 10.90 | 11.10 | 10.41 | 10.80 | 68.7 | 67.9 | 69.6 | 68.7 |
| PO125R | 0 | 5.39 | 5.85 | 6.02 | 5.75 | 68.3 | 68.9 | 68.5 | 68.6 |
| | 45 | 8.95 | 9.09 | 9.22 | 9.09 | 70.3 | 70.5 | 69.6 | 70.1 |
| | 90 | 10.69 | 10.97 | 10.24 | 10.63 | 70.8 | 71.5 | 70.9 | 71.1 |
| | 135 | 10.54 | 10.91 | 11.01 | 10.82 | 69.0 | 70.3 | 69.4 | 69.6 |
| | 180 | 10.73 | 10.88 | 11.05 | 10.89 | 71.3 | 69.7 | 69.1 | 70.0 |
| PO125XR | 0 | 5.41 | 5.63 | 5.32 | 5.45 | 67.7 | 68.1 | 68.2 | 68.0 |
| | 45 | 9.24 | 9.65 | 9.83 | 9.57 | 70.1 | 68.8 | 69.5 | 69.5 |
| | 90 | 11.31 | 10.26 | 10.74 | 10.77 | 70.0 | 70.4 | 70.1 | 70.2 |
| | 135 | 11.25 | 11.04 | 11.10 | 11.13 | 68.2 | 69.7 | 69.1 | 69.0 |
| | 180 | 12.00 | 11.69 | 12.30 | 12.00 | 70.4 | 70.4 | 70.7 | 70.5 |
| Mean | | 9.41 | 9.55 | 9.34 | 9.43 | 70.2 | 70.5 | 70.4 | 70.4 |

Table 7. Nitrogen and fungicide effects on harvest grain moisture and stay green across corn hybrids at West Lorne, 2010.

| Hybrid | N Rate | Grain MC (%) | | | | Stay Green (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| 35F37 | 0 | 24.5 | 23.9 | 23.2 | 23.9 | 5.3 | 4.5 | 4.3 | 4.7 |
| | 45 | 23.4 | 23.7 | 23.2 | 23.5 | 5.0 | 5.8 | 6.0 | 5.6 |
| | 90 | 25.4 | 24.3 | 24.6 | 24.8 | 5.8 | 4.8 | 5.5 | 5.3 |
| | 135 | 29.1 | 27.8 | 28.1 | 28.3 | 6.3 | 5.8 | 6.3 | 6.1 |
| | 180 | 24.1 | 29.2 | 27.2 | 26.8 | 6.7 | 6.3 | 6.0 | 6.3 |
| 35F44 | 0 | 24.5 | 24.3 | 24.0 | 24.3 | 5.3 | 4.3 | 4.3 | 4.6 |
| | 45 | 24.3 | 23.2 | 24.0 | 23.8 | 5.8 | 5.5 | 5.0 | 5.4 |
| | 90 | 25.4 | 24.8 | 24.6 | 24.9 | 6.0 | 5.5 | 5.3 | 5.6 |
| | 135 | 29.3 | 28.9 | 28.3 | 28.8 | 6.8 | 6.8 | 6.3 | 6.6 |
| | 180 | 26.6 | 27.8 | 26.9 | 27.1 | 6.3 | 6.3 | 6.0 | 6.2 |
| A6842RR | 0 | 20.3 | 20.7 | 20.1 | 20.3 | 3.8 | 3.5 | 3.3 | 3.5 |
| | 45 | 21.0 | 19.7 | 20.0 | 20.2 | 4.8 | 4.0 | 3.8 | 4.2 |
| | 90 | 22.0 | 21.1 | 21.0 | 21.4 | 5.5 | 5.3 | 4.3 | 5.0 |
| | 135 | 23.4 | 24.1 | 23.2 | 23.6 | 6.0 | 5.8 | 5.8 | 5.8 |
| | 180 | 23.0 | 23.2 | 22.4 | 22.8 | 5.7 | 5.0 | 5.7 | 5.4 |
| A6843G3 | 0 | 20.3 | 20.8 | 20.1 | 20.4 | 4.0 | 3.8 | 3.8 | 3.8 |
| | 45 | 20.8 | 20.8 | 20.2 | 20.6 | 6.0 | 5.3 | 3.8 | 5.0 |
| | 90 | 21.4 | 21.3 | 21.1 | 21.3 | 5.3 | 4.3 | 4.3 | 4.6 |
| | 135 | 25.6 | 23.8 | 24.3 | 24.5 | 6.3 | 5.8 | 6.0 | 6.0 |
| | 180 | 24.4 | 25.5 | 23.9 | 24.6 | 6.3 | 6.0 | 5.3 | 5.9 |
| DKC48-37 | 0 | 19.4 | 19.1 | 18.6 | 19.1 | 3.8 | 3.0 | 3.3 | 3.3 |
| | 45 | 21.3 | 21.5 | 20.5 | 21.1 | 5.3 | 5.0 | 4.8 | 5.0 |
| | 90 | 21.4 | 20.9 | 20.8 | 21.0 | 5.0 | 5.0 | 4.5 | 4.8 |
| | 135 | 25.1 | 24.2 | 23.3 | 24.2 | 6.5 | 6.3 | 6.0 | 6.3 |
| | 180 | 22.6 | 23.1 | 22.0 | 22.6 | 6.3 | 6.3 | 4.7 | 5.8 |
| DKC48-40 | 0 | 19.5 | 20.6 | 19.2 | 19.8 | 4.0 | 3.8 | 3.3 | 3.7 |
| | 45 | 20.0 | 19.6 | 19.3 | 19.6 | 5.3 | 4.5 | 4.0 | 4.6 |
| | 90 | 22.0 | 21.5 | 20.7 | 21.4 | 5.5 | 4.8 | 4.0 | 4.8 |
| | 135 | 24.6 | 23.7 | 22.9 | 23.7 | 6.0 | 5.8 | 5.0 | 5.6 |
| | 180 | 23.0 | 23.8 | 23.2 | 23.3 | 5.7 | 6.0 | 5.3 | 5.7 |
| N45A-3000GT | 0 | 23.7 | 24.8 | 23.1 | 23.9 | 4.5 | 4.8 | 4.0 | 4.4 |
| | 45 | 23.6 | 23.8 | 23.0 | 23.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| | 90 | 22.7 | 23.2 | 23.3 | 23.1 | 5.8 | 5.0 | 5.5 | 5.4 |
| | 135 | 26.8 | 26.9 | 26.5 | 26.7 | 6.0 | 6.3 | 6.3 | 6.2 |
| | 180 | 27.1 | 27.5 | 27.5 | 27.4 | 6.3 | 6.3 | 5.7 | 6.1 |
| N45A-GT | 0 | 21.5 | 22.7 | 20.6 | 21.6 | 4.5 | 4.3 | 4.0 | 4.3 |
| | 45 | 22.3 | 22.7 | 22.0 | 22.3 | 5.0 | 5.8 | 5.0 | 5.3 |
| | 90 | 23.5 | 22.5 | 23.1 | 23.0 | 5.8 | 5.8 | 5.3 | 5.6 |
| | 135 | 27.7 | 28.4 | 26.2 | 27.4 | 6.3 | 5.8 | 6.0 | 6.0 |
| | 180 | 24.8 | 27.1 | 25.5 | 25.8 | 6.0 | 6.0 | 6.0 | 6.0 |
| PO125R | 0 | 20.6 | 20.2 | 20.6 | 20.4 | 4.0 | 3.8 | 3.8 | 3.8 |
| | 45 | 21.1 | 20.9 | 21.1 | 21.0 | 5.3 | 5.0 | 4.0 | 4.8 |
| | 90 | 21.7 | 21.7 | 21.4 | 21.6 | 4.8 | 5.0 | 4.3 | 4.7 |
| | 135 | 25.5 | 25.8 | 25.1 | 25.5 | 6.0 | 6.0 | 5.8 | 5.9 |
| | 180 | 23.7 | 24.5 | 23.4 | 23.9 | 6.0 | 6.0 | 4.7 | 5.6 |
| PO125XR | 0 | 21.6 | 21.0 | 20.8 | 21.1 | 3.8 | 3.8 | 3.5 | 3.7 |
| | 45 | 21.5 | 22.1 | 21.6 | 21.7 | 5.0 | 5.5 | 5.8 | 5.4 |
| | 90 | 22.3 | 21.6 | 21.5 | 21.8 | 4.8 | 4.3 | 4.8 | 4.6 |
| | 135 | 25.1 | 25.3 | 24.2 | 24.9 | 6.5 | 6.0 | 6.3 | 6.3 |
| | 180 | 23.5 | 23.6 | 23.2 | 23.4 | 6.3 | 6.3 | 6.0 | 6.2 |
| Mean | | 23.4 | 23.5 | 22.9 | 23.2 | 5.5 | 5.2 | 4.9 | 5.2 |

Table 8. Nitrogen and fungicide effects on grain corn yield, test weight, moisture content, and stay green across hybrids at Ridgetown, 2010.

| Effect | Yield (t/ha) | Test Weight (kg/hL) | Grain Harvest Moisture (%) | Stay Green (%) |
|---|---|---|---|---|
| | *p*- values | | | |
| **Nitrogen (N)** | 0.07 | 0.52 | 0.49 | 0.36 |
| **Hybrid (H)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **Fungicide (F)** | 0.87 | 0.18 | 0.12 | 0.01 |
| **N*H** | 0.00 | 0.07 | 0.00 | 0.00 |
| **N*F** | 0.31 | 0.98 | 0.04 | 0.23 |
| **H*F** | 0.28 | 0.98 | 0.97 | 0.55 |
| **N*H*F** | 0.23 | 0.41 | 1.00 | 0.96 |

Table 9. Nitrogen and fungicide effects on grain corn yield, test weight, moisture content, and stay green across hybrids at West Lorne, 2010.

| Effect | Yield (t/ha) | Test Weight (kg/hL) | Grain Harvest Moisture (%) | Stay Green (%) |
|---|---|---|---|---|
| | *p*- values | | | |
| **Nitrogen (N)** | 0.00 | 0.01 | 0.00 | 0.00 |
| **Hybrid (H)** | 0.00 | 0.00 | 0.00 | 0.00 |
| **Fungicide (F)** | 0.06 | 0.20 | 0.06 | 0.00 |
| **N*H** | 0.00 | 0.00 | 0.00 | 0.02 |
| **N*F** | 0.70 | 0.68 | 0.55 | 0.90 |
| **H*F** | 0.97 | 0.25 | 0.92 | 0.06 |
| **N*H*F** | 1.00 | 0.99 | 0.99 | 0.60 |

Table 10. Nitrogen and fungicide effects on grain corn yield and test weight within triple-stacked and their glyphosate-only-traited near-isoline, at Ridgetown, 2010.

| Trait | N rate kg/ha | Yield (t/ha) | | | | Test Weight (kg/hL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| CRW | 0 | 9.16 | 9.65 | 9.37 | 9.39 | 73.3 | 73.0 | 73.7 | 73.3 |
| | 45 | 10.99 | 11.33 | 11.18 | 11.17 | 73.7 | 73.9 | 73.3 | 73.7 |
| | 90 | 11.24 | 10.40 | 10.68 | 10.77 | 74.1 | 74.8 | 73.8 | 74.2 |
| | 135 | 12.58 | 12.27 | 12.55 | 12.47 | 73.3 | 73.7 | 73.7 | 73.5 |
| | 180 | 11.59 | 12.11 | 11.87 | 11.86 | 73.7 | 75.0 | 74.7 | 74.5 |
| | Mean | 11.11 | 11.15 | 11.13 | 11.13 | 73.6 | 74.1 | 73.8 | 73.8 |
| RR | 0 | 9.28 | 9.64 | 10.14 | 9.69 | 73.0 | 73.6 | 73.2 | 73.2 |
| | 45 | 11.26 | 11.55 | 11.32 | 11.38 | 73.2 | 73.6 | 74.3 | 73.7 |
| | 90 | 10.94 | 10.17 | 10.76 | 10.62 | 73.9 | 74.5 | 74.6 | 74.3 |
| | 135 | 12.40 | 12.58 | 12.37 | 12.45 | 74.4 | 74.6 | 74.1 | 74.4 |
| | 180 | 11.61 | 12.05 | 11.57 | 11.74 | 74.5 | 74.5 | 74.8 | 74.6 |
| | Mean | 11.10 | 11.20 | 11.23 | 11.18 | 73.8 | 74.2 | 74.2 | 74.0 |
| Hybrid Mean | 0 | 9.22 | 9.65 | 9.76 | 9.54 | 73.1 | 73.3 | 73.4 | 73.3 |
| | 45 | 11.13 | 11.44 | 11.25 | 11.27 | 73.5 | 73.8 | 73.8 | 73.7 |
| | 90 | 11.09 | 10.29 | 10.72 | 10.70 | 74.0 | 74.6 | 74.2 | 74.3 |
| | 135 | 12.49 | 12.43 | 12.46 | 12.46 | 73.8 | 74.1 | 73.9 | 73.9 |
| | 180 | 11.60 | 12.08 | 11.72 | 11.80 | 74.1 | 74.7 | 74.8 | 74.5 |
| | Mean | 11.11 | 11.18 | 11.18 | 11.15 | 73.7 | 74.1 | 74.0 | 73.9 |

| ANOVA | *p*- values | *p*- values |
|---|---|---|
| Nitrogen (N) | 0.07 | 0.52 |
| Trait (T) | 0.58 | 0.28 |
| Fungicide (F) | 0.87 | 0.22 |
| N*T | 0.34 | 0.60 |
| N*F | 0.31 | 0.99 |
| T*F | 0.86 | 0.84 |
| N*T*F | 0.64 | 0.59 |

Table 11. Nitrogen and fungicide effects on harvest grain moisture and stay green within triple-stacked and their glyphosate-only-traited near-isoline, at Ridgetown, 2010.

| Trait | N rate kg/ha | Grain MC (%) | | | | Stay Green (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| CRW | 0 | 17.7 | 18.0 | 17.9 | 17.9 | 27.3 | 29.3 | 26.0 | 27.5 |
| | 45 | 18.0 | 18.2 | 18.0 | 18.1 | 31.3 | 32.7 | 30.7 | 31.6 |
| | 90 | 18.5 | 17.3 | 17.5 | 17.8 | 43.3 | 34.7 | 32.7 | 36.9 |
| | 135 | 19.2 | 18.6 | 18.9 | 18.9 | 44.7 | 38.0 | 38.7 | 40.5 |
| | 180 | 18.5 | 18.6 | 18.3 | 18.5 | 40.0 | 40.0 | 36.0 | 38.7 |
| | Mean | 18.4 | 18.2 | 18.1 | 18.2 | 37.3 | 34.9 | 32.8 | 35.0 |
| RR | 0 | 17.7 | 17.7 | 17.7 | 17.7 | 27.3 | 29.3 | 28.0 | 28.2 |
| | 45 | 17.8 | 17.9 | 17.9 | 17.9 | 32.7 | 32.7 | 29.3 | 31.6 |
| | 90 | 17.8 | 16.7 | 17.2 | 17.2 | 36.7 | 30.7 | 30.0 | 32.5 |
| | 135 | 18.8 | 18.1 | 18.6 | 18.5 | 44.0 | 34.0 | 34.7 | 37.6 |
| | 180 | 17.7 | 17.9 | 17.7 | 17.7 | 32.7 | 33.3 | 29.3 | 31.8 |
| | Mean | 18.0 | 17.7 | 17.8 | 17.8 | 34.7 | 32.0 | 30.3 | 32.3 |
| Hybrid Mean | 0 | 17.7 | 17.8 | 17.8 | 17.8 | 27.3 | 29.3 | 27.0 | 27.9 |
| | 45 | 17.9 | 18.1 | 18.0 | 18.0 | 32.0 | 32.7 | 30.0 | 31.6 |
| | 90 | 18.1 | 17.0 | 17.3 | 17.5 | 40.0 | 32.7 | 31.4 | 34.7 |
| | 135 | 19.0 | 18.4 | 18.7 | 18.7 | 44.4 | 36.0 | 36.7 | 39.0 |
| | 180 | 18.1 | 18.2 | 18.0 | 18.1 | 36.4 | 36.7 | 32.7 | 35.2 |
| | Mean | 18.2 | 17.9 | 18.0 | 18.0 | 36.0 | 33.5 | 31.6 | 33.7 |

| ANOVA | *p*- values | *p*- values |
|---|---|---|
| Nitrogen (N) | 0.49 | 0.36 |
| Trait (T) | 0.00 | 0.00 |
| Fungicide (F) | 0.17 | 0.01 |
| N*T | 0.44 | 0.00 |
| N*F | 0.09 | 0.23 |
| T*F | 0.82 | 0.97 |
| N*T*F | 0.99 | 0.94 |

Table 12. Nitrogen and fungicide effects on grain corn yield and test weight within triple-stacked and their glyphosate-only-traited near-isoline, at West Lorne, 2010.

| Trait | N rate kg/ha | Yield (t/ha) | | | | Test Weight (kg/hL) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| CRW | 0 | 5.70 | 5.90 | 5.57 | 5.72 | 69.0 | 69.3 | 68.9 | 69.1 |
| | 45 | 9.09 | 9.17 | 9.26 | 9.17 | 70.8 | 70.7 | 71.1 | 70.9 |
| | 90 | 10.80 | 10.71 | 10.43 | 10.65 | 71.1 | 71.7 | 71.5 | 71.4 |
| | 135 | 10.80 | 10.90 | 10.91 | 10.87 | 69.8 | 70.3 | 70.3 | 70.2 |
| | 180 | 11.21 | 11.16 | 10.97 | 11.11 | 70.6 | 70.9 | 70.6 | 70.7 |
| | Mean | 9.52 | 9.57 | 9.43 | 9.51 | 70.3 | 70.6 | 70.5 | 70.4 |
| RR | 0 | 5.48 | 5.94 | 5.54 | 5.65 | 69.3 | 69.3 | 69.3 | 69.3 |
| | 45 | 9.03 | 9.18 | 8.96 | 9.06 | 70.6 | 70.9 | 71.3 | 70.9 |
| | 90 | 10.24 | 10.50 | 10.19 | 10.31 | 70.8 | 71.2 | 71.2 | 71.1 |
| | 135 | 10.55 | 10.71 | 10.73 | 10.66 | 69.6 | 70.1 | 69.7 | 69.8 |
| | 180 | 11.09 | 11.34 | 10.69 | 11.04 | 70.8 | 70.3 | 70.7 | 70.6 |
| | Mean | 9.28 | 9.53 | 9.22 | 9.34 | 70.2 | 70.4 | 70.4 | 70.3 |
| Hybrid Mean | 0 | 5.59 | 5.92 | 5.56 | 5.69 | 69.2 | 69.3 | 69.1 | 69.2 |
| | 45 | 9.06 | 9.18 | 9.11 | 9.12 | 70.7 | 70.8 | 71.2 | 70.9 |
| | 90 | 10.52 | 10.61 | 10.31 | 10.48 | 70.9 | 71.4 | 71.4 | 71.2 |
| | 135 | 10.68 | 10.81 | 10.82 | 10.77 | 69.7 | 70.2 | 70.0 | 70.0 |
| | 180 | 11.15 | 11.25 | 10.83 | 11.08 | 70.7 | 70.6 | 70.6 | 70.6 |
| | Mean | 9.40 | 9.55 | 9.33 | 9.43 | 70.2 | 70.5 | 70.5 | 70.4 |

| ANOVA | *p*- values | *p*- values |
|---|---|---|
| **Nitrogen (N)** | 0.00 | 0.01 |
| **Trait (T)** | 0.05 | 0.63 |
| **Fungicide (F)** | 0.08 | 0.55 |
| **N*T** | 0.81 | 0.82 |
| **N*F** | 0.81 | 0.98 |
| **T*F** | 0.54 | 0.92 |
| **N*T*F** | 0.99 | 0.99 |

Table 13. Nitrogen and fungicide effects on harvest grain moisture and stay green within triple-stacked and their glyphosate-only-traited near-isoline, at West Lorne, 2010.

| Trait | N rate kg/ha | Grain MC (%) | | | | Stay Green (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Headline | Proline | UTC | Mean | Headline | Proline | UTC | Mean |
| CRW | 0 | 21.9 | 22.3 | 21.4 | 21.9 | 43.0 | 40.5 | 37.5 | 40.3 |
| | 45 | 22.0 | 21.9 | 21.6 | 21.8 | 55.0 | 52.5 | 48.0 | 51.8 |
| | 90 | 22.8 | 22.5 | 22.2 | 22.5 | 54.5 | 47.5 | 47.5 | 49.8 |
| | 135 | 26.3 | 25.7 | 25.2 | 25.7 | 63.0 | 61.0 | 59.5 | 61.2 |
| | 180 | 25.0 | 25.6 | 24.9 | 25.2 | 62.0 | 62.0 | 56.7 | 60.2 |
| | Mean | 23.6 | 23.6 | 23.1 | 23.4 | 55.5 | 52.7 | 49.8 | 52.7 |
| RR | 0 | 21.2 | 21.3 | 20.6 | 21.1 | 42.5 | 38.0 | 37.0 | 39.2 |
| | 45 | 21.8 | 21.7 | 21.4 | 21.6 | 50.5 | 51.0 | 47.0 | 49.5 |
| | 90 | 22.8 | 22.1 | 22.2 | 22.4 | 53.5 | 51.5 | 47.5 | 50.8 |
| | 135 | 26.1 | 26.1 | 25.2 | 25.8 | 62.0 | 59.0 | 59.5 | 60.2 |
| | 180 | 23.7 | 25.4 | 24.1 | 24.4 | 61.3 | 59.3 | 54.0 | 58.2 |
| | Mean | 23.1 | 23.3 | 22.7 | 23.0 | 54.0 | 51.8 | 49.0 | 51.6 |
| Hybrid Mean | 0 | 21.6 | 21.8 | 21.0 | 21.5 | 42.8 | 39.3 | 37.3 | 39.8 |
| | 45 | 21.9 | 21.8 | 21.5 | 21.7 | 52.8 | 51.8 | 47.5 | 50.7 |
| | 90 | 22.8 | 22.3 | 22.2 | 22.4 | 54.0 | 49.5 | 47.5 | 50.3 |
| | 135 | 26.2 | 25.9 | 25.2 | 25.8 | 62.5 | 60.0 | 59.5 | 60.7 |
| | 180 | 24.3 | 25.5 | 24.5 | 24.8 | 61.7 | 60.7 | 55.4 | 59.2 |
| | Mean | 23.4 | 23.5 | 22.9 | 23.2 | 54.8 | 52.3 | 49.4 | 52.1 |

| ANOVA | *p*- values | *p*- values |
|---|---|---|
| Nitrogen (N) | 0.00 | 0.00 |
| Trait (T) | 0.03 | 0.08 |
| Fungicide (F) | 0.05 | 0.00 |
| N*T | 0.39 | 0.49 |
| N*F | 0.60 | 0.90 |
| T*F | 0.92 | 0.89 |
| N*T*F | 0.99 | 0.81 |