# TARE

## Thumb Ag Research & Education 2011 Field Trials

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## Introduction

## 2011 TARE Trial Report

This report represents the seventh year of a multi-county strategy for evaluating corn hybrids and soybean varieties as well as agronomic practices. The project is, and has been operated under the Thumb Ag Research and Education (TARE) organization. The TARE Committee, comprised of farmer and agribusiness representatives, serves as an advisory board, and provides oversight for the project's direction, finances and equipment needs. We gratefully acknowledge the committee's contributions and the support provided by our industry partners, listed on the back cover of this publication.

Each study is analyzed statistically to determine the Least Significant Difference (LSD) at the 0.05 (5%) level. The LSD represents the maximum difference between treatments (hybrid, variety, population, or evaluated input) for the difference to be attributed to the treatment rather than some external factor, like soil variability. An LSD at the 0.05, or 5% level means that statistically, we can be 95% confident with the results. Within studies any result that is **bolded** is statistically the same. Therefore, if a treatment is bolded, it yielded the same, statistically speaking, as the highest yielding treatment in that study. Any treatment result, within a study, that is not bolded yielded significantly less than the highest yielding treatment. We also include the Coefficient of Variation (CV). The CV is a measure of the variability of the data that cannot be explained by the statistics. The lower the CV, the more confident you can be that the data is good. Generally, a CV of less than 10% is good data. A CV of less than 5% is very good data.

Each of the trials contains a trait as well as a seed treatment index to assist growers. The following trait codes were used in the booklet.

| Traits Code | Treatment |
|---|---|
| RR | Glyphosate Tolerant |
| RR2 | Roundup Ready Corn 2 |
| SS | SmartStax |
| CB | Corn Borer |
| LL | Liberty Link |
| HX1 | Herculex 1 |
| VT3 | YieldGard VT Triple |
| RW | Rootworm |
| HXX | Herculex XTRA |
| GT | Agrisure GT |

We hope you find these results useful to your operation. Ultimately it is you, the grower, whom we aim to serve with this project!

Bob Battel, Project Leader


**2011 Greater Thumb Area Field Crops Team**

| | |
|---|---|
| Bob Battel, Huron County | battelro@anr.msu.edu |
| Phil Kaatz, Lapeer County | kaatz@msu.edu |
| Martin Nagelkirk, Sanilac County | nagelkir@anr.msu.edu |
| Jim Vincent, TARE Technician | vince115@msu.edu |

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Farm Cooperators:

| Name | City | County | Planting Date | Harvesting Date |
|---|---|---|---|---|
| **Corn** | | | | |
| LARACHA Farms | Reese | Saginaw | 5-07-2011 | 11-14-2011 |
| Jason Haag | Akron | Tuscola | 5-10-2011 | 11-12-2011 |
| Huron Corn Growers | Elkton | Huron | 5-11-2011 | 11-11-2011 |
| Tom Durand | Croswell | Sanilac | 5-12-2011 | 11-04-2011 |
| Don Koth | Filion | Huron | 5-13-2011 | 11-05-2011 |
| **Soybeans** | | | | |
| Rob Foster | Fairgrove | Tuscola | 5-24-2011 | 10-18-2011 |
| Randy Sturm | Pigeon | Huron | 6-01-2011 | 11-01-2011 |
| Ron Gerstenberger | Sandusky | Sanilac | 6-03-2011 | 09-30-2011 |
| Gordon Spencer | Almont | Lapeer | 6-06-2011 | 10-13-2011 |
| Zwerk & Sons | Vassar | Tuscola | | |
| **Alfalfa** | | | | |
| Mike Lauwers | Capac | St. Clair | 04/26/2010 | |
| Lynn Island Farms | Capac | St. Clair | 05/2011 | |
| Howland Farms | North Branch | Lapeer | 04/2008 | |
| **Wheat** | | | | |
| Stone Brothers Farm | Sandusky | Sanilac | 10/07/2010 | 7/15/2011 |
| Parrent Farms | Sandusky | Sanilac | 10/07/2010 | 7/20/2011 |

**TARE Committee Members:**

| | | |
|---|---|---|
| Mike Houghtailing | Saginaw | Saginaw |
| Tom VanSickle | Deckerville | Sanilac |
| Jon Oakes | St. Charles | Saginaw |
| Jay Ferguson | Brown City | St. Clair |
| Tom Durand | Croswell | Sanilac |
| Bill Hunt | Davison | Genesee |
| Jeff Krohn | Elkton | Huron |
| Dave Rupprecht | Vassar | Tuscola |
| Randy Sturm | Pigeon | Huron |
| Agribusiness Reps. | | Company |
| Jeff Leipprandt | | Pioneer Hi-Bred, International |
| Chuck Kunisch | | MAC |
| John Kohr | | Monsanto |
| Dale Kundinger | | CPS |
| Jeff Reinbold | | Great Lakes Hybrids |
| Amy Sweeney | | Star of the West Milling Company |

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# Summary of Precipitation and Growing Degree Days

## May - September 2011

### Pigeon/Bad Axe

| | Precipitation | | | GDD[1] | | |
|---|---|---|---|---|---|---|
| | 2011 | 2010 | Normal[3] | 2011 | 2010 | Normal[3] |
| May | 2.3 | 3.46 | 2.92 | 279 | 385 | 291 |
| June | 3.06 | 4.41 | 2.91 | 482 | 483 | 467 |
| July | 2.08 | 3.53 | 3.04 | 713 | 683 | 601 |
| August | 3.36 | 0.81 | 3.68 | 572 | 665 | 551 |
| Sept | 3.16 | 2.94 | 3.82 | 357 | 346 | 360 |
| TOTAL | 13.96 | 13.55 | 16.37 | 2403 | 2079 | 2,270 |

### Sandusky

| | Precipitation | | | GDD[1] | | |
|---|---|---|---|---|---|---|
| | 2011 | 2010 | Normal[3] | 2011 | 2010 | Normal[3] |
| May | 6.47 | 2.92 | 2.57 | 294 | 397 | 317 |
| June | 1.9 | 3.16 | 2.81 | 497 | 528 | 486 |
| July | 1.49 | 2.43 | 2.71 | 745 | 713 | 622 |
| August | 1.75 | 0.56 | 2.86 | 602 | 690 | 575 |
| Sept | 3.44 | 4.6 | 4.1 | 380 | 372 | 377 |
| TOTAL | 15.05 | 14.04 | 15.05 | 2518 | 2178 | 2,377 |

### Fairgrove/Caro

| | Precipitation | | | GDD[1] | | |
|---|---|---|---|---|---|---|
| | 2011 | 2010 | Normal[3] | 2011 | 2010 | Normal[3] |
| May | 3.5 | 3.68 | 2.86 | 325 | 404 | 353 |
| June | 1.79 | 3.4 | 3.3 | 526 | 539 | 519 |
| July | 1.84 | 1.65 | 2.75 | 730 | 714 | 644 |
| August | 4.74 | 1.68 | 3.26 | 594 | 697 | 594 |
| Sept | 2.68 | 3.94 | 4.22 | 380 | 376 | 402 |
| TOTAL | 14.55 | 12.56 | 16.39 | 2555 | 2266 | 2,512 |

[1]GDD is the growing degree days based on 50°F and 86°F cutoff (corn method)

[2]2010 & 2011 data are based on the MAWN system in Pigeon, Fairgrove and Sandusky

[3]"Normal" is the average precipitation from 1971—2000 and is based on data collected at Bad Axe, Caro and Sandusky

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# Corn Studies Introduction

Corn is established in 100 foot long by 15 foot wide plots. A six row 7200 John Deere planter with 30 inch row spacing is used for establishment. Plots are planted perpendicular to the tile.

Corn is planted with a starter fertilizer using 15 gallons of 10-34-0 liquid. Note that in 2011 the Croswell site there was mechanical failure, and 10-34-0 was not applied to all rows. The failure was consistent throughout the plot, so the effect on results was minimal. Corn is harvested with a 2144 Case IH combine with an attached HarvestMaster weigh system that records grain weight, moisture, and test weight. The center 10 feet (four rows) are harvested for data.

The target population is 32,000 seeds per acre. Stand counts were taken in August, and it was determined that the average plant population was 31,500 throughout the plots. Plots are established in a randomized complete block design (RCBD) with four replications. At the beginning of the season, six corn sites were planned to be planted at : Reese, Akron, Elkton, Filion, Croswell, and Capac. Due to the extremely wet spring weather, the Capac site was not planted. As it turned out, four of the five sites were planted following sugar beets. The Elkton site followed dry beans.

Studies include 85-94 RM hybrids, 95-99 RM hybrids, 100-105 RM hybrids, refuge (no Bt) hybrids, corn population by ear type, corn nitrogen, fungicides, and accolade seed treatment. The 85-94 RM study was planted at all sites but the Elkton site. It was not planted at the Elkton site due to space limitations. The 100-105 RM study was not planted at the Croswell or Filion site because they are cooler weather sites. The 100-105 RM and refuge studies were planted at all sites.

Lodging was moderate at four sites, and severe at the Filion site. Results on the 85-94 RM hybrids were erratic at the Filion site, due to the severe lodging, and results were not included in analysis.

Corn nitrogen studies were established at the Akron and Filion sites, as well as a satellite location east of Sandusky. The Filion site nitrogen studies were not included in the analysis due to severe lodging. Corn population by ear type was established at the Reese and Elkton sites. The study was planned at the Capac site. The fungicide study was established at the Elkton site. The accolade seed treatment study was established at the Reese and Elkton sites.

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**Corn Hybrid Trials**
Glyphosate Resistant
**100-105 RM Hybrids**
**Average of Locations**

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| Hybrid | RM† | Traits£ | Seed Treatment | Average of Location | | | |
|---|---|---|---|---|---|---|---|
| | | | | Moisture (%) | Test Weight | Yield Bu/A | Lodging (0-3) |
| **Pioneer P0463XR** | 104 | HXX | P250 | 22.5 | 57.6 | **205.7** | **0.8** |
| **Garst 86T82-3000 GT Brand** | 105 | GT/CB/LL/RW | Cruiser | 22.4 | 57.6 | **204.3** | **0.7** |
| **NuTech 5N-001** | 101 | Agrisure 3000GT | C250 | 20.9 | 58 | **199.5** | **0.7** |
| **G2 Genetics 5H-502** | 102 | HX1/RR2 | C250 | 21.5 | 58 | **199.0** | **0.8** |
| **Pioneer P0413 AMI** | 104 | HXX | P250 & P1250 | 22.1 | 57.8 | **193.9** | **1.3** |
| Mycogen 2A551 | 103 | SmartStax | Cruiser Max | 22.1 | 57.7 | 187.1 | 0.8 |
| Croplan 5237 | 102 | SS | Cruiser & Zinc | 21.6 | 57.9 | 183.5 | 1.1 |
| Pioneer P0115 AMI | 101 | HXX | P250 & P1250 | 20.6 | 58.4 | 183.2 | 1.4 |
| Bayside 9100 3111GT | 100 | GT/CB/RW/VIP/LL | Cruiser Extreme | 20.7 | 58.4 | 182.7 | 1.0 |
| Dyna-Gro D 43 QV 30 | 105 | Agrisure 3000 GT | Acceleron | 21.3 | 58.1 | 179.8 | 1.1 |
| Garst 87U28-3000GT Brand | 100 | | | 20.6 | 58.4 | 178.7 | 0.7 |
| Croplan 4338 | 100 | SS | Cruiser & Zinc | 21.6 | 57.9 | 177.1 | 0.8 |
| Dekalb DKC 53-78 | 103 | SS | AC 250 | 21.5 | 58 | 176.4 | 1.4 |
| G2 Genetics 5H-0101 | 101 | HX1/RR2 | C250 | 20.5 | 58.4 | 175.4 | 0.8 |
| GH H-7628-3000 GT Brand | 101 | GT/CB/LL/RW | Cruiser | 20.6 | 58.4 | 175.2 | 0.7 |
| G2 Genetics 5H-902 | 102 | HX1/RR2 | C250 | 20.9 | 58.4 | 174.9 | 0.8 |
| Croplan 5438 SS | 104 | SS | Cruiser & Zinc | 21.1 | 58.2 | 174.6 | 0.8 |
| Bayside 9100 GT | 100 | GT | Cruiser Extreme | 21.4 | 58 | 174.1 | 1.1 |
| Dekalb DKC 53-45 | 103 | SS | AC 250 | 22.1 | 57.7 | 173.5 | 0.8 |
| Specialty 8222GENSS | 102 | SmartStax | Acceleron | 21.3 | 58 | 173.5 | 1.4 |
| Dekalb DKC 52-59 | 102 | VT3 | AC 250 | 20.7 | 58.3 | 173.3 | 1.3 |
| NK N46U-3000 GT Brand | 101 | GT/CB/LL/RW | Cruiser | 20.8 | 58.3 | 171.3 | 1.1 |
| Hyland 8491 | 100 | SmartStax | 250 Poncho | 21.7 | 58 | 171.1 | 1.3 |
| Rupp XR 8088 | 101 | GT 3000 | Cruiser 250 | 21.1 | 58.2 | 170.2 | 1.1 |
| G2 Genetics 5H-501 | 102 | HX1/RR2 | C250 | 21.1 | 58.2 | 167.7 | 1.0 |
| Rupp XR 8239 | 103 | VT3Pro | Acceleron 250 | 21.2 | 58.2 | 166.1 | 1.3 |
| Great Lakes 5157VT3 | 101 | VT3 | P500 w/ Votivo | 20.7 | 58.4 | 166.0 | 0.8 |
| NuTech 5N-803 | 103 | Agrisure 3000GT | C250 | 21.6 | 57.9 | 163.2 | 1.3 |
| Dyna-Gro D 40 SS 09 | 100 | SmartStax | Acceleron | 20.6 | 58.4 | 162.4 | 1.1 |
| Specialty 4294VT3 | 102 | VT3 | Acceleron | 21.2 | 58.2 | 160.6 | 0.8 |
| GH H-8211-3000GT Brand | 105 | | | 22.2 | 57.7 | 160.4 | 0.8 |
| Dyna-Gro D 44 SS 49 | 104 | SmartStax | Acceleron | 21.1 | 58.2 | 159.5 | 0.8 |
| Specialty 8310GENSS | 101 | SmartStax | Acceleron | 20.4 | 58.6 | 159.3 | 0.8 |
| Mycogen 2P497 | 102 | SmartStax | Cruiser Max | 21 | 58.2 | 157.2 | 1.3 |
| Mycogen 2D503 | 100 | | | 20.5 | 58.5 | 153.8 | 0.7 |
| NuTech 5N-102 | 102 | Agrisure 3000GT | C250 | 19.7 | 58.9 | 151.7 | 1.3 |
| GH H-7949-3000 GT Brand | 103 | GT/CB/LL/RW | Cruiser + Avicta | 21.1 | 58.1 | 150.6 | 1.3 |
| Garst 86J49-3000 GT Brand | 101 | GT/CB/LL/RW | Cruiser | 21.2 | 58.1 | 147.9 | 0.8 |
| NuTech 5B-0205 | 102 | Agrisure GT/CB/LL | C250 | 19.9 | 58.9 | 146.6 | 0.7 |
| Average | | | | 21.2 | 58.2 | 172.6 | 1.0 |
| LSD @ 0.05 | | | | | | 12.8 | |
| C.V. % | | | | | | 9.2 | |

Lodging Scores Ratings: 0 = 0%, 1 = 5%, 2 = 10%, 3 = 20+ %

†Relative maturity

**Bold yields** are not significantly different from the highest yielding hybrid within that column

Corn Yields are adjusted to 15.5% moisture

£See Page 1 for description of traits

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**Corn Hybrid Trials**
Glyphosate Resistant
**100-105 Day RM**
**Yield By Location**

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| Hybrid | RM† | Traits£ | Seed Treatment | Yield By Location Bu/A | | |
|---|---|---|---|---|---|---|
| | | | | Elkton | Akron | Reese |
| **Pioneer P0463XR** | 104 | HXX | P250 | **206.0** | **189.6** | **192.9** |
| **Garst 86T82-3000 GT Brand** | 105 | GT/CB/LL/RW | Cruiser | **192.9** | **193.8** | **197.1** |
| **NuTech 5N-001** | 101 | Agrisure 3000GT | C250 | 176.0 | **193.2** | **200.4** |
| **G2 Genetics 5H-502** | 102 | HX1/RR2 | C250 | **195.1** | **183.0** | **191.4** |
| **Pioneer P0413 AMI** | 104 | HXX | P250 & P1250 | 171.9 | **189.1** | **192.4** |
| Mycogen 2A551 | 103 | SmartStax | Cruiser Max | 178.8 | **183.4** | 171.5 |
| Croplan 5237 | 102 | SS | Cruiser & Zinc | 170.5 | **171.2** | **183.3** |
| Pioneer P0115 AMI | 101 | HXX | P250 & P1250 | 171.6 | **172.6** | 179.5 |
| Bayside 9100 3111GT | 100 | GT/CB/RW/VIP/LL | Cruiser Extreme | 166.9 | **178.3** | 176.1 |
| Dyna-Gro D 43 QV 30 | 105 | Agrisure 3000 GT | Acceleron | 175.4 | 158.4 | **181.6** |
| Garst 87U28-3000GT Brand | 100 | | | 175.1 | 162.8 | 173.8 |
| Croplan 4338 | 100 | SS | Cruiser & Zinc | 177.1 | 158.8 | 171.6 |
| Dekalb DKC 53-78 | 103 | SS | AC 250 | 164.3 | 168.3 | 171.2 |
| G2 Genetics 5H-0101 | 101 | HX1/RR2 | C250 | 163.0 | 155.3 | **184.8** |
| GH H-7628-3000 GT Brand | 101 | GT/CB/LL/RW | Cruiser | 157.5 | 165.9 | 177.1 |
| G2 Genetics 5H-902 | 102 | HX1/RR2 | C250 | 158.6 | 164.4 | 177.2 |
| Croplan 5438 SS | 104 | SS | Cruiser & Zinc | 176.7 | 153.1 | 171.0 |
| Bayside 9100 GT | 100 | GT | Cruiser Extreme | 152.8 | **187.9** | 153.4 |
| Dekalb DKC 53-45 | 103 | SS | AC 250 | 174.5 | 145.1 | 179.3 |
| Specialty 8222GENSS | 102 | SmartStax | Acceleron | **188.8** | 138.9 | 172.0 |
| Dekalb DKC 52-59 | 102 | VT3 | AC 250 | 152.9 | 165.1 | 177.1 |
| NK N46U-3000 GT Brand | 101 | GT/CB/LL/RW | Cruiser | 154.5 | 165.7 | 168.9 |
| Hyland 8491 | 100 | SmartStax | 250 Poncho | 164.8 | 150.2 | 175.7 |
| Rupp XR 8088 | 101 | GT 3000 | Cruiser 250 | 168.7 | 147.9 | 171.8 |
| G2 Genetics 5H-501 | 102 | HX1/RR2 | C250 | 156.9 | 167.0 | 154.2 |
| Rupp XR 8239 | 103 | VT3Pro | Acceleron 250 | 169.1 | 141.4 | 166.7 |
| Great Lakes 5157VT3 | 101 | VT3 | P500 w/ Votivo | 162.3 | 143.2 | 170.9 |
| NuTech 5N-803 | 103 | Agrisure 3000GT | C250 | 155.9 | 149.6 | 161.7 |
| Dyna-Gro D 40 SS 09 | 100 | SmartStax | Acceleron | 145.1 | 153.5 | 165.6 |
| Specialty 4294VT3 | 102 | VT3 | Acceleron | 151.7 | 140.3 | 168.9 |
| GH H-8211-3000GT Brand | 105 | | | 149.5 | 160.0 | 147.8 |
| Dyna-Gro D 44 SS 49 | 104 | SmartStax | Acceleron | 146.4 | 141.5 | 169.2 |
| Specialty 8310GENSS | 101 | SmartStax | Acceleron | 150.5 | 147.1 | 158.2 |
| Mycogen 2P497 | 102 | SmartStax | Cruiser Max | 143.3 | 152.0 | 153.6 |
| Mycogen 2D503 | 100 | | | 137.1 | 137.2 | 166.4 |
| NuTech 5N-102 | 102 | Agrisure 3000GT | C250 | 142.4 | 134.0 | 158.6 |
| GH H-7949-3000 GT Brand | 103 | GT/CB/LL/RW | Cruiser + Avicta | 144.7 | 135.4 | 151.5 |
| Garst 86J49-3000 GT Brand | 101 | GT/CB/LL/RW | Cruiser | 143.6 | 138.3 | 141.1 |
| NuTech 5B-0205 | 102 | Agrisure GT/CB/LL | C250 | 149.1 | 134.2 | 136.4 |
| Average | | | | 163.6 | 159.4 | 170.8 |
| High | | | | 206.0 | 193.8 | 200.4 |
| Low | | | | 137.1 | 134.0 | 136.4 |
| LSD @ 0.05 | | | | 21.5 | 23.2 | 18.8 |
| C.V. % | | | | 9.4 | 9.1 | 9.4 |

**Bold yields** are not significantly different from the highest yielding hybrid within that column

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**Corn Hybrid Trials**
Glyphosate Resistant
**95-99 Day RM**
**Average of Locations**

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| Hybrid | RM | Traits | Seed Treatment | Average of Locations Moisture (%) | Test Weight | Yield Bu/A | Lodging |
|---|---|---|---|---|---|---|---|
| **Dekalb DKC 48-12** | 98 | SS | AC 250 | 20.8 | 58.3 | **186.6** | 0.8 |
| **Great Lakes 4727GS** | 97 | SmartStax | P250 | 21.7 | 58.1 | **184.3** | 0.8 |
| **Dyna-Gro D 38 SS 83** | 98 | SmartStax | Acceleron | 21.3 | 58.3 | **182.3** | 0.8 |
| Dekalb DKC 49-94 | 99 | SS | AC 250 | 20.9 | 58.4 | 177.8 | 0.6 |
| Dekalb DKC 46-07 | 96 | SS | AC 250 | 21.4 | 58.3 | 176.2 | 1.2 |
| Great Lakes 4646GS | 96 | SmartStax | P250 | 21.2 | 58.3 | 175.9 | 0.3 |
| G2 Genetics 5X-895 | 95 | HXT/RR2 | C250 | 20.4 | 58.6 | 174.2 | 0.8 |
| Pioneer P9855 HR | 98 | HXI | P250 | 20.9 | 58.5 | 171.9 | 1.1 |
| Dairyland ST 9799 | 99 | VT3 | yes | 20.9 | 58.5 | 171.6 | 1.3 |
| NuTech 5N-197 | 97 | Agrisure 3000GT | C250 | 21.0 | 58.4 | 170.6 | 1.1 |
| Rupp XR 8414 | 99 | Gen SSx | Acceleron 250 | 22.1 | 57.9 | 170.3 | 0.6 |
| Stine 9417 | 98 | VT3 | Acceleron | 20.8 | 58.6 | 169.9 | 1.3 |
| Great Lakes 4689G3VT3 | 96 | VT3 | P500 w/ Votivo | 20.8 | 58.5 | 169.2 | 0.3 |
| Pioneer P9807 HR | 98 | HXI | P250 | 20.7 | 58.5 | 169.0 | 1.1 |
| GH H-7044-3111 Brand | 96 | GT/CB/LL/RW/BL | Cruiser | 20.8 | 58.4 | 168.5 | 0.8 |
| Great Lakes 4689G3VT3 | 96 | VT3 | P250 | 20.7 | 58.4 | 166.5 | 1.0 |
| Specialty 4272GENVT3P | 96 | VT3P | Acceleron | 20.0 | 58.9 | 164.8 | 1.1 |
| NK N38U-3000 GT Brand | 97 | GT/CB/LL/RW | Cruiser | 21.5 | 58.1 | 164.4 | 1.0 |
| Croplan 3514 | 95 | VT3 | Cruiser & Zinc | 20.9 | 58.5 | 162.6 | 1.0 |
| Hyland 8395 SS | 96 | SmartStax | 250 Poncho | 19.8 | 58.9 | 161.6 | 1.0 |
| G2 Genetics 5H-797 | 97 | HX1/RR2 | C250 | 19.8 | 58.8 | 161.2 | 0.8 |
| Hyland HL CVR68 | 98 | VT3 | 250 Poncho | 21.1 | 58.3 | 161.1 | 1.1 |
| Rupp XR 8252 | 96 | VT3Pro | Acceleron 250 | 20.5 | 58.6 | 160.6 | 1.1 |
| Hyland 4424 | 98 | SmartStax | 250 Poncho | 20.5 | 58.5 | 158.1 | 1.8 |
| Great Lakes 4630GDP | 95 | Double Pro | P250 | 20.8 | 58.5 | 157.6 | 1.1 |
| Mycogen 2A399 | 95 | SmartStax | Cruiser Max | 19.9 | 58.9 | 157.5 | 1.3 |
| GH H-7162-3000 GT Brand | 97 | GT/CB/LL/RW | Cruiser | 21.5 | 58.1 | 155.9 | 1.3 |
| Croplan 3632 AS3/GT | 96 | AGS/GT | Cruiser & Zinc | 19.8 | 59.1 | 155.1 | 1.4 |
| Mycogen 2P486 | 97 | SmartStax | Cruiser Max | 19.6 | 59.0 | 155.0 | 1.3 |
| Croplan 3737 | 96 | VT2Pro | Cruiser & Zinc | 20.0 | 58.8 | 154.9 | 0.8 |
| Mycogen X12540GS | 99 | GT-3000 | Cruiser Max | 20.5 | 58.7 | 154.1 | 1.2 |
| Croplan 3424 VT3 | 96 | VT3 | Cruiser & Zinc | 20.1 | 58.9 | 153.1 | 0.8 |
| Rupp XR 8495 | 95 | Gen SSx | Acceleron 250 | 20.1 | 58.7 | 151.2 | 1.6 |
| Dyna-Gro D 36 SS 39 | 96 | SmartStax | Acceleron | 20.6 | 58.6 | 151.1 | 1.3 |
| NuTech 3A-9901 | 99 | Agrisure 3000GT | C250 | 20.0 | 58.8 | 144.3 | 0.8 |
| Bayside 9095 GT | 95 | GT | Cruiser Extreme | 19.9 | 58.8 | 136.4 | 1.2 |
| Average | | | | 20.6 | 58.5 | 164.0 | 1.0 |
| LSD @ 0.05 | | | | | | 7.3 | |
| C.V. % | | | | | | 7.1 | |

Lodging Scores Ratings: 0 = 0%, 1 = 5 %, 2 = 10 %, 3 = 20+ %

†Relative maturity

**Bold yields** are not significantly different from the highest yielding hybrid within that column

Corn Yields are adjusted to 15.5% moisture

£See Page 1 for description of traits

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**Corn Hybrid Trials**
Glyphosate Resistant
**95-99 Day RM**
**Yield By Locations**

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| Hybrid | RM† | Traits£ | Seed Treatment | Yield By Location Bu/A @ 15.5% MS | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Croswell | Filion | Elkton | Akron | Reese |
| **Dekalb DKC 48-12** | 98 | SS | AC 250 | **175.3** | **204.1** | **191.1** | **158.9** | **193.4** |
| **Great Lakes 4727GS** | 97 | SmartStax | P250 | **184.8** | **189.2** | **182.5** | **171.9** | **179.3** |
| **Dyna-Gro D 38 SS 83** | 98 | SmartStax | Acceleron | **182.4** | 185.4 | **179.3** | **168.0** | **183.2** |
| Dekalb DKC 49-94 | 99 | SS | AC 250 | 171.7 | 172.1 | **178.6** | **175.4** | 175.0 |
| Dekalb DKC 46-07 | 96 | SS | AC 250 | 168.7 | 180.4 | **176.1** | **170.9** | 170.4 |
| Great Lakes 4646GS | 96 | SmartStax | P250 | **173.3** | 175.0 | **178.4** | **161.8** | **177.6** |
| G2 Genetics 5X-895 | 95 | HXT/RR2 | C250 | 162.7 | 182.4 | **178.4** | 155.4 | **180.9** |
| Pioneer P9855 HR | 98 | HXI | P250 | 166.4 | 170.8 | **179.6** | **169.2** | 158.8 |
| Dairyland ST 9799 | 99 | VT3 | yes | **176.1** | 152.8 | **178.4** | **161.1** | 174.5 |
| NuTech 5N-197 | 97 | Agrisure 3000GT | C250 | **173.4** | 139.3 | **185.9** | **162.4** | 175.4 |
| Rupp XR 8414 | 99 | Gen SSx | Acceleron 250 | 161.8 | **197.0** | **173.0** | 142.8 | 169.0 |
| Stine 9417 | 98 | VT3 | Acceleron | 171.8 | 169.1 | 170.1 | 150.5 | 176.1 |
| Great Lakes 4689G3VT3 | 96 | VT3 | P500 w/ Votivo | **182.8** | 167.6 | 166.3 | 146.9 | 170.8 |
| Pioneer P9807 HR | 98 | HXI | P250 | 170.8 | 156.4 | 166.2 | **160.6** | 176.4 |
| GH H-7044-3111 Brand | 96 | GT/CB/LL/RW/BL | Cruiser | 170.3 | 160.3 | 167.4 | **162.1** | 167.6 |
| Great Lakes 4689G3VT3 | 96 | VT3 | P250 | **175.1** | 150.6 | 168.0 | 157.0 | 167.6 |
| Specialty 4272GENVT3P | 96 | VT3P | Acceleron | 163.6 | 171.3 | 169.3 | 146.6 | 162.6 |
| NK N38U-3000 GT Brand | 97 | GT/CB/LL/RW | Cruiser | 163.4 | 163.1 | 160.1 | 151.6 | 171.4 |
| Croplan 3514 | 95 | VT3 | Cruiser & Zinc | 169.9 | 155.7 | **176.4** | 137.2 | 163.3 |
| Hyland 8395 | 96 | SmartStax | 250 Poncho | 166.9 | 139.4 | 167.8 | 149.1 | 170.8 |
| G2 Genetics 5H-797 | 97 | HX1/RR2 | C250 | 161.9 | 148.6 | 169.6 | **163.3** | 146.8 |
| Hyland HL CVR68 | 98 | VT3 | 250 Poncho | **173.0** | 158.2 | 153.0 | 141.8 | 168.2 |
| Rupp XR 8252 | 96 | VT3Pro | Acceleron 250 | 171.4 | 171.0 | 166.5 | 128.4 | 158.2 |
| Hyland 4424 | 98 | 3000GT | 250 Poncho | 169.8 | 140.6 | 159.7 | 143.2 | 164.2 |
| Great Lakes 4630GDP | 95 | Double Pro | P250 | 169.1 | 147.1 | **171.4** | 124.9 | 166.1 |
| Mycogen 2A399 | 95 | SmartStax | Cruiser Max | 159.3 | 143.0 | 160.3 | 148.0 | 163.5 |
| GH H-7162-3000 GT Brand | 97 | GT/CB/LL/RW | Cruiser | 167.0 | 128.9 | 156.8 | 146.3 | 165.7 |
| Croplan 3632 AS3/GT | 96 | AGS/GT | Cruiser & Zinc | 172.4 | 149.7 | 168.8 | 121.9 | 154.4 |
| Mycogen 2P486 | 97 | SmartStax | Cruiser Max | 160.7 | 151.0 | 157.1 | 137.6 | 157.6 |
| Croplan 3737 | 96 | VT2Pro | Cruiser & Zinc | 163.3 | 153.7 | 163.1 | 128.2 | 157.0 |
| Mycogen X12540GS | 99 | GT-3000 | Cruiser Max | 168.0 | 121.6 | 169.0 | 129.5 | 170.3 |
| Croplan 3424 VT3 | 96 | VT3 | Cruiser & Zinc | 166.3 | 140.6 | 157.3 | 129.7 | 161.1 |
| Rupp XR 8495 | 95 | Gen SSx | Acceleron 250 | 163.8 | 126.6 | 149.1 | 157.9 | 141.7 |
| Dyna-Gro D 36 SS 39 | 96 | SmartStax | Acceleron | 169.3 | 135.6 | 143.0 | 135.6 | 160.2 |
| NuTech 3A-9901 | 99 | Agrisure 3000GT | C250 | 154.0 | 131.8 | 156.1 | 124.7 | 144.4 |
| Bayside 9095 GT | 95 | GT | Cruiser Extreme | 154.3 | 104.7 | 142.7 | 108.2 | 156.3 |
| Average | 97 | | | 168.7 | 156.5 | 167.7 | 148.0 | 166.7 |
| High | | | | 184.8 | 204.1 | 191.1 | 175.4 | 193.4 |
| Low | | | | 154.0 | 104.7 | 142.7 | 108.2 | 141.7 |
| LSD @ 0.05 | | | | 11.8 | 15.7 | 20.4 | 16.5 | 10.6 |
| C.V. % | | | | 5.9 | 7.9 | 8.3 | 7.1 | 5.6 |

**Bold yields** are not significantly different from the highest yielding hybrid within that column

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**Corn Hybrid Trials**
Glyphosate Resistant
**85-94 Day RM**
**Average of Locations**

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| Hybrid | RM† | Traits£ | Seed Treatment | Average of Location | | | |
|---|---|---|---|---|---|---|---|
| | | | | Moisture (%) | Test Weight | Yield Bu/ A | Lodging (0-3) |
| **Bayside 3090 GT CB LL** | 90 | GT/CB/LL | Cruiser Extreme | 19.1 | 59.3 | **185.6** | 1.1 |
| **Stine 9207** | 89 | GT/CB/LL | Acceleron | 19.2 | 59.2 | **182.1** | 1.0 |
| **Dekalb DKC 42-72** | 92 | VT3 | AC 250 | 19.4 | 59.2 | **181.7** | 1.0 |
| **Specialty 4210GENVT2P** | 94 | VT2P | Acceleron | 19.4 | 59.1 | **179.6** | 1.3 |
| **Stine 9311** | 94 | VT3 Pro | Acceleron | 19.9 | 59.0 | **178.8** | 0.8 |
| **Dekalb DKC 43-10** | 93 | VT2P | AC 250 | 18.8 | 59.5 | **178.7** | 1.0 |
| **Great Lakes 4457VT3Pro** | 94 | DP | P500 w/Votivo | 19.7 | 59.1 | **177.4** | 0.8 |
| Dyna-Gro D 32 VP 29 | 92 | VT triple Pro | Acceleron | 19.1 | 59.3 | 177.0 | 0.8 |
| Dairyland ST 9594 | 94 | VT3 | yes | 19.9 | 59.0 | 175.0 | 0.8 |
| Croplan 3390 VT3P | 92 | VT3P | Cruiser & Zinc | 19.3 | 59.2 | 172.4 | 0.8 |
| Great Lakes 4282VT3Pro | 92 | VT3 | P500 w/Votivo | 19.3 | 59.3 | 170.5 | 1.3 |
| Rupp XR 8267 | 92 | VT3Pro | Acceleron 250 | 19.2 | 59.3 | 170.4 | 1.4 |
| Mycogen 2J337 | 92 | | | 19.2 | 59.3 | 170.2 | 1.3 |
| Masters Choice MCT-493 | 93 | CB/RW/RR/LL | Poncho 250 | 19.5 | 59.1 | 168.9 | 1.4 |
| Specialty 4121GENVT3P | 92 | VT3P | Acceleron | 20.1 | 58.8 | 168.2 | 1.6 |
| G2 Genetics 5X-9101 | 91 | HXT/RR2 | C250 | 18.3 | 59.6 | 166.7 | 1.5 |
| Hyland 8454 | 93 | SmartStax | 250 Poncho | 19.1 | 59.3 | 165.9 | 1.6 |
| Dairyland ST 9395S SX | 92 | VT3 | yes | 19.0 | 59.3 | 165.5 | 1.1 |
| Dyna-Gro D 27 GC 19 | 87 | GT CB LL | Acceleron | 18.8 | 59.5 | 164.9 | 1.6 |
| Rupp xr 8002 | 94 | VT3 | Cruiser 250 | 18.9 | 59.4 | 164.5 | 1.3 |
| Great Lakes 4041G3VT3 | 90 | VT3 | P250 | 19.3 | 59.2 | 164.4 | 1.1 |
| NuTech 5B-290 | 90 | Agrisure GT/CB/LL | C250 | 19.0 | 59.3 | 164.4 | 1.4 |
| Hyland 8386 | 92 | SmartStax | 250 Poncho | 18.5 | 59.7 | 163.0 | 1.3 |
| NK N33R-3000 GT Brand | 94 | GT/CB/LL/RW | Cruiser | 18.8 | 59.5 | 161.5 | 1.1 |
| Garst 88R16-3000 GT Brand | 94 | GT/CB/LL/RW | Cruiser | 18.7 | 59.5 | 160.7 | 1.0 |
| NK N29T-3000 GT Brand | 92 | GT/CB/LL/RW | Cruiser | 18.5 | 59.6 | 160.3 | 1.3 |
| Garst 89T43-3000 GT Brand | 92 | GT/CB/LL/RW | Cruiser | 18.5 | 59.6 | 159.2 | 1.3 |
| GH H-6816-3000 GT Brand | 94 | GT/CB/LL/RW | Cruiser | 18.7 | 59.5 | 159.2 | 1.3 |
| GH H-6629-3000 GT Brand | 92 | GT/CB/LL/RW | Cruiser | 18.7 | 59.5 | 156.8 | 1.0 |
| G2 Genetics 5H-492 | 92 | HX1/RR2 | C250 | 19.0 | 59.4 | 147.5 | 1.6 |
| Average | | | | 19.1 | 59.3 | 168.7 | 1.2 |
| LSD @ 0.05 | | | | | | 8.5 | |
| C.V. % | | | | | | 6.3 | |

Lodging Scores Ratings: 0 = 0%, 1 = 5%, 2 = 10%, 3 = 20+ %

†Relative maturity

**Bold yields** are not significantly different from the highest yielding hybrid within that column

Corn Yields are adjusted to 15.5% moisture

£See Page 1 for description of traits

MICHIGAN STATE UNIVERSITY | Extension

**Corn Hybrid Trials**
Glyphosate Resistant
**85-94 Day RM**
**Yield By Location**

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| Hybrid | RM† | Traits£ | Seed Treatment | Yield by Location Bu/A Croswell | Akron | Reese |
|---|---|---|---|---|---|---|
| **Bayside 3090 GT CB LL** | 90 | GT/CB/LL | Cruiser Extreme | **180.4** | **196.0** | **166.9** |
| **Stine 9207** | 89 | GT/CB/LL | Acceleron | **179.6** | **189.0** | **164.6** |
| **Dekalb DKC 42-72** | 92 | VT3 | AC 250 | **172.5** | **193.1** | **166.3** |
| **Specialty 4210GENVT2P** | 94 | VT2P | Acceleron | 167.0 | **198.3** | **160.8** |
| **Stine 9311** | 94 | VT3 Pro | Acceleron | 169.4 | **190.7** | **163.3** |
| **Dekalb DKC 43-10** | 93 | VT2P | AC 250 | 168.8 | **197.9** | **156.9** |
| **Great Lakes 4457VT3Pro** | 94 | DP | P500 w/Votivo | 166.6 | **189.7** | **162.8** |
| Dyna-Gro D 32 VP 29 | 92 | VT triple Pro | Acceleron | 163.2 | **189.5** | **165.0** |
| Dairyland ST 9594 | 94 | VT3 | yes | **173.4** | **192.0** | 147.8 |
| Croplan 3390 VT3P | 92 | VT3P | Cruiser & Zinc | 154.3 | **187.9** | **162.1** |
| Great Lakes 4282VT3Pro | 92 | VT3 | P500 w/Votivo | 162.9 | 176.4 | **159.4** |
| Rupp XR 8267 | 92 | VT3Pro | Acceleron 250 | 165.3 | **180.4** | **153.3** |
| Mycogen 2J337 | 92 | | | 163.3 | **180.7** | **154.3** |
| Masters Choice MCT-493 | 93 | CB/RW/RR/LL | Poncho 250 | **173.2** | 166.2 | **155.0** |
| Specialty 4121GENVT3P | 92 | VT3P | Acceleron | 163.8 | **192.5** | 137.2 |
| G2 Genetics 5X-9101 | 91 | HXT/RR2 | C250 | 160.6 | 178.7 | 149.0 |
| Hyland 8454 | 93 | SmartStax | 250 Poncho | 162.5 | 168.7 | **154.2** |
| Dairyland ST 9395S SX | 92 | VT3 | yes | 164.5 | 165.3 | **154.3** |
| Dyna-Gro D 27 GC 19 | 87 | GT CB LL | Acceleron | 154.0 | 175.8 | 152.7 |
| Rupp XR 8002 | 94 | VT3 | Cruiser 250 | 161.1 | 169.0 | 151.3 |
| Great Lakes 4041G3VT3 | 90 | VT3 | P250 | 159.0 | 170.4 | 151.8 |
| NuTech 5B-290 | 90 | Agrisure GT/CB/LL | C250 | 155.1 | **182.7** | 144.0 |
| Hyland 8386 | 92 | SmartStax | 250 Poncho | 151.9 | 178.3 | 147.0 |
| NK N33R-3000 GT Brand | 94 | GT/CB/LL/RW | Cruiser | 168.3 | 163.7 | 141.2 |
| Garst 88R16-3000 GT Brand | 94 | GT/CB/LL/RW | Cruiser | **170.6** | 164.3 | 136.2 |
| NK N29T-3000 GT Brand | 92 | GT/CB/LL/RW | Cruiser | 162.8 | 175.0 | 132.5 |
| Garst 89T43-3000 GT Brand | 92 | GT/CB/LL/RW | Cruiser | 156.8 | 172.7 | 137.2 |
| GH H-6816-3000 GT Brand | 94 | GT/CB/LL/RW | Cruiser | 155.9 | 165.7 | 144.4 |
| GH H-6629-3000 GT Brand | 92 | GT/CB/LL/RW | Cruiser | 162.6 | 163.8 | 133.5 |
| G2 Genetics 5H-492 | 92 | HX1/RR2 | C250 | 145.7 | 148.9 | 137.0 |
| Average | | | | 163.8 | 178.8 | 151.4 |
| High | | | | 180.4 | 198.3 | 166.9 |
| Low | | | | 145.7 | 148.9 | 132.5 |
| LSD @ 0.05 | | | | 10.6 | 18.9 | 14.1 |
| C.V. % | | | | 5.6 | 7.5 | 6.2 |

†Relative maturity

**Bold yields** are not significantly different from the highest yielding hybrid within that column

Corn Yields are adjusted to 15.5% moisture

£See Page 1 for description of traits

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**Corn Hybrid Trials**
Glyphosate Resistant
**Refuge Hybrids (No Bt)**
**Average of Locations**

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| Hybrid | RM | Traits | Seed Treatment | Average of Locations Moisture (%) | Test Weight | Yield Bu/A | Lodging |
|---|---|---|---|---|---|---|---|
| **Hyland HL R265** | 98 | RR | P250 | 20.4 | 58.6 | **185.3** | 0.7 |
| **Great Lakes 5245RR** | 102 | RR | P250 | 21.2 | 58.2 | **180.7** | 0.7 |
| Great Lakes 4840RR | 98 | RR | P500 w/Votivo | 20.9 | 58.5 | 174.5 | 0.8 |
| Croplan 4022 RR | 99 | RR | Cruiser & Zinc | 20.5 | 58.7 | 169.4 | 0.8 |
| Croplan 3337 RR | 93 | RR | Cruiser & Zinc | 19.9 | 58.9 | 165.3 | 1.0 |
| Dyna-Gro D 35 RR 40 | 95 | RR2 | Acceleron | 19.7 | 58.9 | 165.1 | 0.6 |
| Rupp XR 8502 | 94 | RR | Cruiser 250 | 19.3 | 59.1 | 155.8 | 1.4 |
| Average | | | | 20.3 | 58.7 | 170.9 | 0.9 |
| LSD @ 0.05 | | | | | | 7.6 | |
| C.V. % | | | | | | 7.0 | |

Lodging Scores Ratings: 0 = 0%, 1 = 5 %, 2 = 10 %, 3 = 20+ %

[†]Relative maturity

**Bold yields** are not significantly different from the highest yielding hybrid within that column

Corn Yields are adjusted to 15.5% moisture

[£]See Page 1 for description of traits

MICHIGAN STATE UNIVERSITY | Extension

**Corn Hybrid Trials**
Glyphosate Resistant
**Refuge Hybrids (No Bt)**
**Yield By Location**

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| Hybrid | RM† | Traits £ | Seed Treatment | Yield by Location Bu/A | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Croswell | Filion | Elkton | Akron | Reese |
| **Hyland HL R265** | 98 | RR | P250 | **186.5** | **171.9** | **186.0** | **207.9** | **163.1** |
| **Great Lakes 5245RR** | 102 | RR | P250 | **183.1** | **165.6** | **174.4** | **203.7** | **165.0** |
| Great Lakes 4840RR | 98 | RR | P500 w/Votivo | **181.7** | **161.1** | **169.8** | **190.9** | **158.1** |
| Croplan 4022 RR | 99 | RR | Cruiser & Zinc | 177.7 | 156.0 | 158.5 | 185.2 | **158.5** |
| Croplan 3337 RR | 93 | RR | Cruiser & Zinc | 170.8 | 153.8 | 153.5 | 173.3 | **163.5** |
| Dyna-Gro D 35 RR 40 | 95 | RR2 | Acceleron | **185.3** | 147.4 | 153.5 | 184.8 | 144.5 |
| Rupp XR 8502 | 94 | RR | Cruiser 250 | 166.1 | 126.8 | 146.6 | 162.2 | **164.4** |
| Average | | | | 178.7 | 154.7 | 163.2 | 186.8 | 159.6 |
| High | | | | 186.5 | 171.9 | 186.0 | 207.9 | 165.0 |
| Low | | | | 166.1 | 126.8 | 146.6 | 162.2 | 144.5 |
| LSD @ 0.05 | | | | 8.5 | 11.3 | 23.6 | 21.4 | 19.3 |
| C.V. % | | | | 5.2 | 6.1 | 9.7 | 7.7 | 7.4 |

† Relative Maturity

Corn yields have been adjusted to 15.5% moisture

**Bold yields** are not significantly different from the highest yielding hybrid within that column

£ See Page 1 for description of traits

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# Corn Hybrid Study
# Population by Ear Type

The purpose of this study is to evaluate three corn hybrids with differing ear types, determinant vs. semi determinant vs. flex at various planting populations.

**Methods:**

Three corn hybrids were planted. The "determinant" hybrid was Great Lakes 5245. The "semi determinant" hybrid was Great Lakes 5306. The "flex" hybrid was Great Lakes 5339. Targeted populations ranged from 29,000 seeds per acre to 38,000 seeds per acre in increments of 3,000 seeds per acre.

**Results:**

There was a mechanical failure, and the intended 38,000 seeds per acre were actually planted at a population that resulted in 13,000 plants per acre (44.8% of the next lowest target population, 29,000 seeds per acre). The remaining treatments ranged from 94.2% of their target to 104.3% of their target, with an average of 98.3% of target.

There was no statistical difference in yield between the 29,000 and 35,000 target populations. Corn ear type also had no significant difference on yield.

There was, as would be expected, a significant decrease in yield in the mis-planted 38,000/13,000 population. Note that the yield, however, on the 13,000 plant per acre population was 79% of the average of the greater populations.

| Ear Type | Target Population | Actual Population | Moisture (%) | Test Weight | Yield Bu/A | † |
|---|---|---|---|---|---|---|
| Determinant | 35,000 | 34,750 | 20.4 | 58.6 | 176.8 | a |
| Semi Determinant | 35,00 | 34,750 | 21.6 | 58.1 | 176.4 | a |
| Flex | 35,000 | 33,000 | 22.2 | 57.9 | 174.6 | a |
| Flex | 32,000 | 32,250 | 22.5 | 57.8 | 171.9 | a |
| Determinant | 32,000 | 31,250 | 20.4 | 58.6 | 171.7 | a |
| Semi Determinant | 32,000 | 31,000 | 21.9 | 57.7 | 171.5 | a |
| Semi Determinant | 29,000 | 30,250 | 22.3 | 57.9 | 170.2 | a |
| Flex | 29,000 | 28,250 | 22.3 | 57.8 | 168.2 | a |
| Determinant | 29,000 | 27,500 | 20.5 | 58.6 | 167.8 | a |
| Semi Determinant | 38,000 | 13,000 | 22.2 | 57.9 | 140.6 | b |
| Flex | 38,000 | 13,000 | 21.6 | 58.3 | 136.0 | b |
| Determinant | 38,000 | 13,000 | 21.2 | 58.3 | 131.0 | b |
| Average | | | 21.6 | 58.1 | 163.1 | |
| LSD @ 0.05 | | | | | 11.5 | |
| C.V. % | | | | | 7.2 | |

† Yields with the same letter are not significantly different from each other

Determinant—Great Lakes 5245

Semi Determinant—Great Lakes 5306

Flex—Great Lakes 5339

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# Corn Sidedress Nitrogen Rate Study

Michigan State University nitrogen fertilizer recommendations are based on applying economic optimum nitrogen rates rather than fertilizing to meet a yield goal. The purpose of this study is to further evaluate these recommendations due to the continued improvements to corn hybrids.

**Methods:**

Sidedress nitrogen application rates of 0, 40, 80, 120, 160, 200, and 240 lbs. per acre were applied using a randomized complete block design. Plots were 15 feet by 100 feet. Each plot is combined with a six row 2144 Case IH combine with an attached HarvestMaster weigh system that records grain weight, moisture, and test weight.

**Results:**

The following table details the results of the study. There was no statistical difference in yield above 200 lbs. of nitrogen per acre. Comparing results from previous years shows an increase in the amount of nitrogen needed to produce maximum yields in 2011.

| Nitrogen Rate lbs/A | Yield Bu/A | Sig |
|---|---|---|
| 0 | 131.4 | d |
| 40 | 150.2 | c |
| 80 | 164.1 | c |
| 120 | 185.3 | b |
| 160 | 189.9 | b |
| 200 | 206.6 | a |
| 240 | 198.7 | ab |
| Average | 175.2 | |
| LSD @ 0.05 | 14.5 | |
| C.V. % | 5.6 | |

Sidedress nitrogen was applied on June 29, 2011

| | |
|---|---|
| County: | Tuscola |
| Cooperator: | Jason Haag |
| Nearest Town: | Akron |
| Previous Crop: | Sugarbeets |
| Planting Date: | 5/10/2011 |
| Row Width: | 30 inch |
| Fertilizer: | No starter |
| Hybrid: | Croplan 388TS |
| Harvest Population: | 31,500 |
| Harvest Date: | 11/12/2011 |
| Experimental Design: | RCBD |

# Corn Hybrid Study
# Instinct Nitrogen Stabilizer Trial

The purpose of this study was to evaluate the use of Instinct (*nitrapyrin) a* nitrogen stabilizer to optimize the yield potential of corn by ensuring nitrogen (N) is available in the root zone during key stages of corn growth.

## Methods

| | |
|---|---|
| Cooperators: | Larry and Craig Miller Farm, Sandusky |
| Seeding Rate: | 32,000 seeds per acre |
| Hybrid: | Dekalb DKC 4551 |
| Soil Type: | Parkhill Loam |
| Planting Date: | 8-May-11 |
| Harvest Date: | 3-Nov-11 |

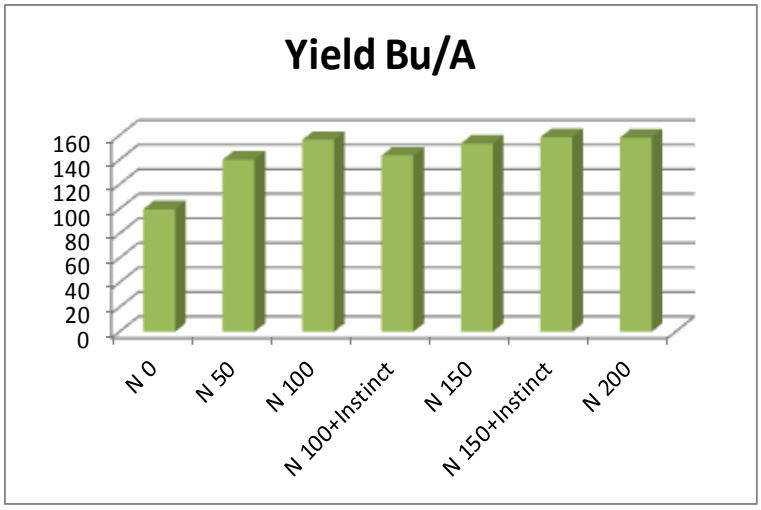
Nitrogen was surface applied as 28% UAN via streamers on May 10, 2011. Seven treatments were replicated in a randomized complete block design. Treatments included N/A rates of 0, 50lbs, 100 lbs, 150 lbs, 200 lbs , 100 lbs + Instinct, and 150 lbs + Instinct. Instinct was applied at the labeled rate of 35 oz/A. Plots were 15 feet by 100 feet and harvested using a Case IH 2144 equipped with a HarvestMaster weigh system that records grain weight, moisture % and test weight. The center 4 rows of each plot were harvested and weighed.

## Results

Within the seven days following the application of nitrogen, the Sandusky MSU weather station (approximately four miles away), recorded 4 inches of rain.

Yields with N rates of 100, 150, and 200 lbs/A were statistically similar. The nitrogen stabilizer had no statistical effect on yield at this site in 2011.

| Treatment | Moisture (%) | Test Weight | Yield Bu/A |
|---|---|---|---|
| N 0 | 20.8 | 58.6 | 99.8 c |
| N 50 | 20.8 | 58.6 | 140.2 b |
| N 100 | 21.1 | 58.5 | 156.2 a |
| N 100+Instinct | 21.1 | 58.5 | 143.5 ab |
| N 150 | 22.1 | 58.0 | 153.3 a |
| N 150+Instinct | 22.0 | 58.1 | 158.5 a |
| N 200 | 22.1 | 58.1 | 158.1 a |
| Average | 21.4 | 58.3 | 144.2 |
| LSD @ 0.05 | | | 15.7 |
| C.V. % | | | 7.0 |



## Corn Hybrid Study
## Accolade Seed Treatment

The product Accolade, a microbial rhizobacteria seed treatment, is labeled as a biological growth enhancer for corn, small grains, grain sorghum and other non-legume forage grasses. The purpose of this study is to evaluate the effectiveness of the seed treatment on corn yield.

| Treatment | Moisture (%) | Test Weight | Yield Bu/A |
|---|---|---|---|
| UTC | 18.7 | 59.4 | 163.2 |
| Accolade | 18.9 | 59.3 | 162.9 |
| Average | 18.8 | 59.4 | 163.0 |
| LSD @ 0.05 | | | NS |
| C. V. % | | | 5.4 |

**Methods:**

Accolade-P was applied to seed corn and applied evenly to the seed coat. Two treatments consisted of an untreated control (UTC) and the Accolade treated seed. Plots were 15 feet by 100 feet and replicated four times at the Huron County Corn Growers and at the LARACHA sites.

**Results:**

There was no significant difference between the treatments. This coincides with the studies conducted in 2010 at five different locations.

## Corn Hybrid Study
## Fungicide Treatments on Corn Yield

A trial was conducted to observe and quantify the effect of fungicide treatments on corn yield. Growers have been observing varying degrees of success on the use of fungicides. The purpose of this study is to evaluate the effectiveness of fungicide treatments.

| Treatment | Moisture (%) | Test Weight | Yield Bu/A |
|---|---|---|---|
| Quadris | 18.2 | 59.7 | 166.8 |
| Stratego | 18.4 | 59.6 | 163.9 |
| UTC | 18.4 | 59.6 | 159.7 |
| Average | 18.3 | 59.7 | 163.5 |
| LSD @ 0.05 | | | NS |
| C.V. % | | | 5.9 |

**Methods:**

Three different treatments were used in the study. Two different fungicides were used along with an untreated check (UTC) using four replications using a randomized complete block design. Plots were 15 feet by 100 feet and the location of the plots was at the Huron County Corn Growers site in Elkton. The corn hybrid used was Croplan 388TS. Fungicides were applied at the V-11 growth stage. Quadris was applied at a rate of 6 oz/A and Stratego was applied at a rate of 10 oz/A. The plots were combined with a Case IH 2144 equipped with a HarvestMaster weigh system that records grain weight, % moisture, and test weight.

**Results:**

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# Soybean Studies Introduction

Soybean studies are established in 100 foot long by 15 foot wide plots. A six row 7200 John Deere planter with 30 inch row spacing is used for establishment. Plots are planted perpendicular to the tile. Soybean is planted with HiStick inoculant. Soybean is harvested with a 2144 Case IH combine with an attached HarvestMaster weigh system that records grain weight, moisture, and test weight. The entire plot is harvested for data. The target population is 160,000 seeds per acre. Stand counts were taken in August, and it was determined that the average plant population was 132,000 throughout the plots.

Plots are established in a randomized complete block design with four replications. Four soybean sites were planted. Due to the extremely wet spring weather, planting took place over a full two weeks. Three of the four sites were planted following corn. The Pigeon site followed dry beans. Studies include conventional varieties, group 2.2 or less varieties, group 2.3 and greater varieties, population, inoculant, foliar fertilizer, and a ramp-up study.

Due to the nature of controlling weeds in conventional soybean, the conventional varieties study was planted only at the Sandusky site. Group 2.2 and less and group 2.3 and greater studies were planted at all four sites. The population study was not planted at the Fairgrove site due to space limitations. The inoculant study was not planted at the Fairgrove or Almont sites due to space limitations. The foliar fertilizer study was not planted at the Fairgrove site due to space limitations. The ramp-up study was not planted at the Fairgrove site due to space limitations.

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**Soybean Variety Trials**
Conventional
**Specialty Soybeans**
**Sandusky, MI**

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| Variety | Maturity Group | SCN Resist. | Trait# | Seed Trt | Hilum Type | Protein % DM | Oil % DM | Moisture (%) | Test Weight | Yield Bu/A |
|---|---|---|---|---|---|---|---|---|---|---|
| **DF155F** | 2.5 | | | CM+ | Clear | 37.50 | 19.03 | 17.5 | 57.8 | **47.7** |
| **ZF SELECT 728 LL** | 2.6 | | LL | Cruiser | Black | 38.75 | 19.49 | 14.5 | 58.7 | **47.0** |
| **DF9231N** | 2.3 | P88788 | LB | CM+ | Black | 37.42 | 20.27 | 15.5 | 58.4 | **46.0** |
| **DF230N** | 2.3 | P88788 | | CM+ | Buff | 40.07 | 20.09 | 14.5 | 58.6 | **44.4** |
| **ZF SELECT 1125** | 2.5 | R3, MR14 | HP | Cruiser | Buff | 40.84 | 18.87 | 14.7 | 58.6 | **43.5** |
| **ZF SELECT 725LS** | 2.5 | | LL | Cruiser | Black | 41.94 | 20.13 | 15.2 | 58.3 | **43.2** |
| ZF SELECT 823 LL | 2.3 | | LL | Cruiser | Black | 40.16 | 20.02 | 14.4 | 58.8 | 41.3 |
| ZF SELECT 1122 LS | 2.2 | | LS | | Buff | 37.95 | 19.42 | 14.1 | 58.9 | 41.1 |
| ZF SELECT 251 LS | 2.5 | | LS | Cruiser | Black | 35.74 | 20.42 | 14.3 | 58.8 | 41.0 |
| ZF SELECT AQ 2020 | 2.0 | | LS | Cruiser | Black | 36.23 | 19.93 | 16.6 | 58.0 | 40.7 |
| ZF SELECT 923 LS | 2.3 | | LS | Cruiser | Black | 36.95 | 19.91 | 14.7 | 58.6 | 36.9 |
| Average | | | | | | | | 15.1 | 58.5 | 43.0 |
| LSD @ 0.05 | | | | | | | | | | 4.6 |
| C.V. % | | | | | | | | | | 8.6 |

Soybean yields are adjusted to 13% moisture

**Bolded yields** are not significantly different from the highest yielding variety

# Specialty Quality Abbreviations: LS = Low Saturated Fat, LL = Low Linolenic, LB = Liberty Link, HP = High Protein

Percent DM protein and oil are from a single sample.

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**Soybean Variety Trials**
Glyphosate Resistant
**Late Maturity 2.3 or more**
**Average of Locations**

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| Variety | Maturity Group | Traits | Seed Treatment | SCN Source Resistance | Test Weight | Moisture % | Yield Bu/A | Lodging (0-3) |
|---|---|---|---|---|---|---|---|---|
| **Great Lakes 2345** | 2.3 | R2Y | Acceleron | none | 58.6 | 16.3 | **56.7** | 0.7 |
| **Asgrow AG2632** | 2.6 | RR2Y | Acceleron | PI88788 | 57.7 | 21.3 | **56.1** | 0.7 |
| **Hyland HS 24RY05** | 2.4 | RR2Y | CM | no | 58.8 | 15.8 | **56.0** | 1.0 |
| **DF Seeds DF 8244** | 2.4 | RR-1 | CM+ | Tolerance | 57.1 | 15.7 | **55.4** | 1.0 |
| **Specialty 2444R2** | 2.4 | RR2Y | Acceleron | none | 58.6 | 16.1 | **55.2** | 1.0 |
| **Asgrow AG2430** | 2.4 | RR2Y | Acceleron | PI88788 | 58.7 | 15.7 | **54.8** | 1.0 |
| **Asgrow AG2431** | 2.4 | RR2Y | Acceleron | no | 58.5 | 16.9 | **54.6** | 0.3 |
| **Hyland HS 26RYS16** | 2.6 | RR2Y | CM | PI88788 | 57.9 | 19.8 | **54.6** | 1.7 |
| **Rupp RS 4259** | 2.5 | RR1 | Cruiser Maxx | PI88788 | 58.6 | 16.0 | **54.2** | 1.3 |
| Great Lakes 2729 | 2.6 | N R2Y | Acceleron | | 57.9 | 19.3 | 53.7 | 1.7 |
| DF Seeds DF 5242R2Y | 2.4 | R2Y | CM+ | | 58.5 | 16.8 | 53.5 | 0.3 |
| Dyna-Gro V25N9 | 2.5 | RR | Amaxx | PI88788 | 58.8 | 15.4 | 53.2 | 1.0 |
| Pioneer 92M61 | 2.6 | RR | Trilex 6000 | PI88788 | 58.3 | 17.1 | 53.0 | 1.0 |
| Rupp RS 7240N | 2.4 | R2Y | Cruiser Maxx | PI88788 | 58.2 | 17.2 | 52.9 | 1.0 |
| Mycogen 5N240R2 | 2.4 | RR | | | 58.1 | 18.4 | 52.5 | 1.0 |
| Mycogen 5N241R2 | 2.4 | RR | | | 58.7 | 15.9 | 51.9 | 1.0 |
| Hyland HS 24RYS15 | 2.4 | RR2Y | CM | PI88788 | 58.4 | 16.9 | 51.9 | 1.3 |
| Specialty 2621CR2 | 2.6 | RR2Y | Acceleron | PI88788 | 58.3 | 17.6 | 51.7 | 0.7 |
| NK Syngenta S24-M5 | 2.4 | RR | Cruiser Maxx | none | 58.4 | 16.8 | 51.6 | 0.3 |
| Great Lakes 2555 | 2.5 | RR | Acceleron | none | 58.5 | 16.2 | 51.4 | 1.0 |
| Stine 2420-4 | 2.4 | RR1 | | PI88788 | 58.9 | 15.3 | 51.4 | 1.0 |
| Great Lakes 2449 | 2.4 | N R2Y | Acceleron | PI88788 | 58.3 | 16.8 | 51.2 | 0.7 |
| Asgrow AG2330 | 2.3 | RR2Y | Acceleron | PI88788 | 58.5 | 16.2 | 50.8 | 1.3 |
| Croplan R2C 2360 | 2.3 | RR2 | | PI88788 | 58.5 | 16.3 | 50.2 | 1.7 |
| Croplan R2C 2550 | 2.5 | RR2 | | PI88788 | 58.6 | 15.9 | 50.2 | 1.0 |
| Pioneer 92Y53 | 2.5 | RR | Trilex 6000 | Peking | 58.1 | 17.7 | 49.7 | 1.0 |
| Dairyland DSR-2560RR | 2.4 | RR | CM | | 58.6 | 15.8 | 49.2 | 1.0 |
| Pioneer 92Y51 | 2.5 | RR | Trilex 6000 | PI88788 | 58.6 | 16.2 | 48.6 | 1.0 |
| Nk Syngenta S26-E9 | 2.6 | RR | Cruiser Maxx | PI88788 | 57.9 | 20.0 | 47.6 | 1.0 |
| Average | | | | | 58.4 | 16.9 | 52.5 | 1.0 |
| LSD @ 0.05 | | | | | | | 2.6 | |
| C.V. % | | | | | | | 7.1 | |

Soybean yields are adjusted to 13% moisture

Lodging scores: 0 = 0%, 1 = 5%, 2 = 10%, 3 = 20+ %

**Bolded yields** are not significantly different from the highest yielding variety

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**Soybean Variety Trials**
Glyphosate Resistant
**Late Maturity 2.3 and above**
**Yield by Location**

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| Variety | Maturity Group | Traits | Seed Treatment | SCN Source Resistance | Yield Bu/A Sandusky | Almont | Fairgrove | Pigeon |
|---|---|---|---|---|---|---|---|---|
| **Great Lakes 2345** | 2.3 | R2Y | Acceleron | | 52.2 | **61.8** | **55.5** | **57.4** |
| **Asgrow AG2632** | 2.6 | RR2Y | Acceleron | PI88788 | **56.4** | **58.8** | **56.9** | 52.2 |
| **Hyland HS 24RY05** | 2.4 | RR2Y | CM | | **54.7** | 55.3 | **55.8** | **58.1** |
| **DF Seeds DF 8244** | 2.4 | RR-1 | CM+ | Tolerance | 52.0 | **56.0** | **55.0** | **58.7** |
| **Specialty 2444R2** | 2.4 | RR2Y | Acceleron | | 51.1 | **60.2** | **54.9** | **54.6** |
| **Asgrow AG2430** | 2.4 | RR2Y | Acceleron | PI88788 | 52.8 | 54.2 | **52.7** | **59.5** |
| **Asgrow AG2431** | 2.4 | RR2Y | Acceleron | | 52.9 | 50.9 | **55.1** | **59.4** |
| **Hyland HS 26RYS16** | 2.6 | RR2Y | CM | PI88788 | **57.0** | 53.1 | 51.6 | **56.6** |
| **Rupp RS 4259** | 2.5 | RR1 | Cruiser Maxx | PI88788 | 50.5 | 54.6 | **55.0** | **56.7** |
| Great Lakes 2729 | 2.6 | N R2Y | Acceleron | | **57.6** | 51.8 | **53.0** | 52.6 |
| DF Seeds DF 5242R2Y | 2.4 | R2Y | CM+ | | **53.6** | **56.7** | 47.0 | **56.7** |
| Dyna-Gro V25N9 | 2.5 | RR | Amaxx | PI88788 | 47.5 | 55.5 | **55.8** | **53.9** |
| Pioneer 92M61 | 2.6 | RR | Trilex 6000 | PI88788 | 50.7 | 54.5 | **53.3** | 53.5 |
| Rupp RS 7240N | 2.4 | R2Y | Cruiser Maxx | PI88788 | 50.6 | 55.1 | **52.6** | 53.3 |
| Mycogen 5N240R2 | 2.4 | RR | | | 47.6 | **56.5** | **54.4** | 51.3 |
| Mycogen 5N241R2 | 2.4 | RR | | | 48.6 | 52.7 | **54.0** | 52.1 |
| Hyland HS 24RYS15 | 2.4 | RR2Y | CM | PI88788 | 49.6 | 52.6 | **52.3** | 53.0 |
| Specialty 2621CR2 | 2.6 | RR2Y | Acceleron | PI88788 | 46.7 | 53.2 | **54.3** | 52.3 |
| NK S24-M5 | 2.4 | RR | Cruiser Maxx | | 51.9 | 51.1 | 51.3 | 52.4 |
| Great Lakes 2555 | 2.5 | RR | Acceleron | | 46.3 | 55.3 | 50.2 | **53.8** |
| Stine 2420-4 | 2.4 | RR1 | | PI88788 | 45.7 | 53.6 | **55.6** | 50.7 |
| Great Lakes 2449 | 2.4 | N R2Y | Acceleron | PI88788 | 49.7 | 50.5 | **52.6** | 51.9 |
| Asgrow AG2330 | 2.3 | RR2Y | Acceleron | PI88788 | 47.6 | 51.1 | **52.0** | 52.3 |
| Croplan R2C 2360 | 2.3 | RR2 | | PI88788 | 49.2 | 54.7 | **53.4** | 43.6 |
| Croplan R2C 2550 | 2.5 | RR2 | | PI88788 | 49.1 | 53.5 | 51.4 | 46.7 |
| Pioneer 92Y53 | 2.5 | RR | Trilex 6000 | Peking | 42.9 | 51.4 | **52.5** | 51.9 |
| Dairyland DSR-2560RR | 2.4 | RR | CM | | 44.3 | 48.9 | **55.1** | 48.5 |
| Pioneer 92Y51 | 2.5 | RR | Trilex 6000 | PI88788 | 43.2 | 51.0 | **52.0** | 48.1 |
| NK S26-E9 | 2.6 | RR | Cruiser Maxx | PI88788 | 50.3 | 49.6 | 46.7 | 43.9 |
| Average | | | | | 50.1 | 53.9 | 53.2 | 53.0 |
| High | | | | | 57.6 | 61.8 | 56.9 | 59.5 |
| Low | | | | | 42.9 | 48.6 | 46.7 | 43.6 |
| LSD @ 0.05 | | | | | 4.0 | 5.9 | 5.1 | 5.8 |
| C.V. % | | | | | 5.7 | 7.8 | 6.9 | 7.8 |

Soybean yields adjusted to 13% moisture

**Bolded yields** are not significantly different from the highest yielding variety within each column

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**Soybean Variety Trials**
Glyphosate Resistant
**Early Maturity 2.2 or less**
**Average of Locations**

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| Variety | Maturity Group | Traits | Seed Treatment | SCN Source Resistance | Moisture (%) | Test Weight | Yield Bu/A | Lodging (0-3) |
|---|---|---|---|---|---|---|---|---|
| **Specialty 2033 CR2** | 2.0 | RR2Y | Acceleron | PI88788 | 15.1 | 58.4 | **57.1** | 0.7 |
| **Dyna-Gro 34RY17** | 1.7 | RR2Y | Acceleron | PI88788 | 16.0 | 58.2 | **55.9** | 0.7 |
| **Dyna-Gro 38B21** | 2.1 | RR | Amaxx | | 16.5 | 58.0 | **55.8** | 0.7 |
| **Croplan R2C 2120** | 2.1 | RR2 | | PI88788 | 15.9 | 58.1 | **55.6** | 0.7 |
| **Great Lakes 2019** | 2.0 | N R2Y | Acceleron | PI88788 | 15.7 | 58.1 | **55.5** | 1.0 |
| **Croplan R2T 2221** | 2.2 | RR2 | | PI88788 | 17.7 | 57.6 | **55.1** | 1.0 |
| **Specialty 2218 CR2** | 2.2 | RR2Y | Acceleron | PI88788 | 15.1 | 58.5 | **54.9** | 1.0 |
| **Stine 16RA02** | 1.6 | RR2 | | PI88788 | 14.9 | 58.5 | **54.7** | 0.3 |
| **Rupp RS 7201N** | 2.0 | R2Y | Cruiser Maxx | PI88788 | 14.8 | 58.5 | **54.6** | 1.7 |
| Great Lakes 1929 | 1.9 | N R2Y | Acceleron | | 15.4 | 58.3 | 54.1 | 0.7 |
| DF Seeds DF 8225 | 2.2 | RR-1 | CM+ | Tolerance | 15.8 | 58.1 | 54.1 | 0.7 |
| Hyland HS 18RYS13 | 1.8 | RR2Y | CM | PI88788 | 14.5 | 58.6 | 54.0 | 1.0 |
| Hyland HS 18RY09 | 1.8 | RR2Y | CM | no | 15.4 | 58.3 | 53.9 | 1.0 |
| Croplan R2C 1840 | 1.8 | RR2 | | PI88788 | 16.8 | 57.9 | 53.8 | 1.3 |
| NK S19-A6 | 1.9 | RR | Cruiser Maxx | PI88788 | 16.1 | 58.1 | 53.5 | 1.3 |
| DF Seeds DF 5221N | 2.2 | R2Y | CM+ | P88788 | 19.2 | 57.5 | 53.5 | 1.0 |
| NK S20-Y2 | 2.0 | RR | Cruiser Maxx | PI88788 | 15.3 | 58.3 | 53.4 | 1.0 |
| Hyland HS 22RYS03 | 2.2 | RR2Y | CM | PI88788 | 16.5 | 57.9 | 53.4 | 0.3 |
| Asgrow AG1931 | 1.9 | RR2Y | Acceleron | PI88788 | 14.5 | 58.6 | 52.9 | 1.0 |
| Asgrow AG1832 | 1.8 | RR2Y | Acceleron | PI88788 | 15.1 | 58.4 | 52.7 | 1.3 |
| Mycogen 5N180R2 | 1.8 | RR | | | 14.7 | 58.6 | 52.7 | 0.3 |
| Asgrow AG2031 | 2.0 | RR2Y | Acceleron | PI88788 | 15.3 | 58.4 | 52.6 | 1.0 |
| NK S21-N6 | 2.1 | RR | Cruiser Maxx | none | 17.2 | 57.9 | 52.6 | 1.0 |
| Mycogen 5N210R2 | 2.1 | RR | | | 16.4 | 58.0 | 52.6 | 0.0 |
| Asgrow AG2232 | 2.2 | RR2Y | Acceleron | PI88788 | 16.4 | 58.1 | 52.3 | 1.0 |
| Croplan R2C 2070 | 2.0 | RR2 | | PI88788 | 15.6 | 58.3 | 52.3 | 1.0 |
| Specialty 1822 CR2 | 1.8 | RR2Y | Acceleron | PI88788 | 16.3 | 58.0 | 52.3 | 1.0 |
| Dyna-Gro 35RY21 | 2.1 | RR2Y | Acceleron | PI88788 | 16.1 | 58.0 | 52.2 | 1.0 |
| Great Lakes 1401 | 1.4 | R2Y | Acceleron | None | 14.8 | 58.6 | 51.5 | 0.7 |
| DF Seeds DF 5191 STS | 1.9 | R2Y-STS | CM+ | Tolerance | 15.4 | 58.3 | 51.4 | 0.3 |
| Dyna-Gro 36 RY19 | 1.9 | RR2Y | Acceleron | PI88788 | 15.9 | 58.2 | 51.4 | 0.7 |
| Dyna-Gro 31RY20 | 2.0 | RR2Y | Acceleron | PI88788 | 15.6 | 58.2 | 51.3 | 0.7 |
| Dairyland DSR-1807R24 | 1.8 | R2 | CM | | 15.2 | 58.3 | 50.8 | 1.0 |
| Stine 19RA02 | 1.9 | RR2 | | PI88788 | 14.6 | 58.6 | 50.6 | 1.0 |
| Hyland HS 11RY07 | 1.1 | RR2Y | CM | no | 14.5 | 58.6 | 50.0 | 0.7 |
| Dyna-Gro 37R17 | 1.7 | RR | Amaxx | | 15.4 | 58.3 | 49.8 | 0.7 |
| Hyland HX R2Y37 | 2.1 | RR2Y | | PI88788 | 16.6 | 58.0 | 49.8 | 0.7 |
| Mycogen 5N205R2 | 2.0 | RR | | | 16.2 | 58.1 | 49.4 | 0.7 |
| Great Lakes 1609 | 1.6 | N R2Y | Acceleron | PI88788 | 15.2 | 58.3 | 48.4 | 1.0 |
| Average | | | | | 15.7 | 58.2 | 52.9 | 0.8 |
| LSD @ 0.05 | | | | | | | 2.5 | |
| C.V. % | | | | | | | 6.9 | |

Lodging scores: 0 = 0%, 1 = 5 %, 2 = 10 %, 3 = 20+ %
Soybean yields are adjusted to 13% moisture
**Bolded yields** are not significantly different from the highest yielding variety

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**Soybean Variety Trials**
Glyphosate Resistant
**Early Maturity 2.2 or less**
**Yield by Location**

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| Variety | Maturity Group | Traits | Seed Treatment | SCN Source Resistance | Yield | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sandusky | Almont | Fairgrove | Pigeon |
| **Specialty 2033 CR2** | 2.0 | RR2Y | Acceleron | PI88788 | **51.2** | **56.8** | **55.4** | **62.0** |
| **Dyna-Gro 34RY17** | 1.7 | RR2Y | Acceleron | PI88788 | **51.7** | **56.8** | 50.2 | **61.7** |
| **Dyna-Gro 38B21** | 2.1 | RR | Amaxx | | **52.1** | **54.6** | **52.9** | **60.5** |
| **Croplan R2C 2120** | 2.1 | RR2 | | PI88788 | **51.1** | **53.6** | **53.2** | **61.8** |
| **Great Lakes 2019** | 2.0 | N R2Y | Acceleron | PI88788 | **51.2** | **53.7** | **53.1** | **61.0** |
| **Croplan R2T 2221** | 2.2 | RR2 | | PI88788 | **49.9** | 52.1 | **57.2** | **58.6** |
| **Specialty 2218 CR2** | 2.2 | RR2Y | Acceleron | PI88788 | **51.2** | **53.6** | **52.9** | **59.1** |
| **Stine 16RA02** | 1.6 | RR2 | | PI88788 | **51.1** | 52.0 | 51.8 | **61.1** |
| **Rupp RS 7201N** | 2.0 | R2Y | Cruiser Maxx | PI88788 | **50.9** | 47.7 | **57.4** | **60.1** |
| Great Lakes 1929 | 1.9 | N R2Y | Acceleron | | **47.9** | **54.4** | 50.4 | **60.7** |
| DF Seeds DF 8225 | 2.2 | RR-1 | CM+ | Tolerance | **50.1** | **52.6** | 51.9 | **59.0** |
| Hyland HS 18RYS13 | 1.8 | RR2Y | CM | Yes | **46.3** | **53.2** | **52.6** | **61.1** |
| Hyland HS 18RY09 | 1.8 | RR2Y | CM | | **48.0** | 52.0 | 50.3 | **62.4** |
| Croplan R2C 1840 | 1.8 | RR2 | | PI88788 | **48.1** | **54.4** | **53.9** | 55.8 |
| NK S19-A6 | 1.9 | RR | Cruiser Maxx | PI88788 | 44.8 | **52.7** | **54.2** | **59.7** |
| DF Seeds DF 5221N | 2.2 | R2Y | CM+ | P88788 | **46.4** | **52.2** | **53.9** | **58.7** |
| NK S20-Y2 | 2.0 | RR | Cruiser Maxx | PI88788 | **49.1** | **53.9** | 46.4 | **61.3** |
| Hyland HS 22RYS03 | 2.2 | RR2Y | CM | PI88788 | **47.1** | 51.5 | **52.8** | **59.5** |
| Asgrow AG1931 | 1.9 | RR2Y | Acceleron | PI88788 | **49.4** | 49.2 | 50.1 | **60.3** |
| Asgrow AG1832 | 1.8 | RR2Y | Acceleron | PI88788 | **46.1** | 49.9 | 50.4 | **61.7** |
| Mycogen 5N180R2 | 1.8 | RR | | | 45.5 | **52.2** | 50.7 | **59.5** |
| Asgrow AG2031 | 2.0 | RR2Y | Acceleron | PI88788 | 44.7 | **52.8** | 49.2 | **61.0** |
| NK S21-N6 | 2.1 | RR | Cruiser Maxx | | **47.3** | 47.7 | **52.5** | **60.4** |
| Mycogen 5N210R2 | 2.1 | RR | | | **49.4** | 51.6 | 50.3 | 56.4 |
| Asgrow AG2232 | 2.2 | RR2Y | Acceleron | PI88788 | **46.7** | 48.9 | 50.6 | **60.6** |
| Croplan R2C 2070 | 2.0 | RR2 | | PI88788 | 44.0 | 49.8 | 51.3 | **61.6** |
| Specialty 1822 CR2 | 1.8 | RR2Y | Acceleron | PI88788 | 44.2 | **52.9** | 51.8 | 57.4 |
| Dyna-Gro 35RY21 | 2.1 | RR2Y | Acceleron | PI88788 | **47.1** | 49.5 | 50.5 | **59.0** |
| Great Lakes 1401 | 1.4 | R2Y | Acceleron | | **47.1** | 50.1 | 46.5 | **59.5** |
| DF Seeds DF 5191 STS | 1.9 | R2Y-STS | CM+ | Tolerance | 44.3 | **53.3** | 46.7 | **58.7** |
| Dyna-Gro 36 RY19 | 1.9 | RR2Y | Acceleron | PI88788 | 42.1 | 50.8 | 49.9 | **60.3** |
| Dyna-Gro 31RY20 | 2.0 | RR2Y | Acceleron | PI88788 | **46.7** | 49.3 | 48.0 | **58.4** |
| Dairyland DSR-1807R24 | 1.8 | R2 | CM | | 45.1 | 50.7 | 49.1 | 55.5 |
| Stine 19RA02 | 1.9 | RR2 | | PI88788 | 41.5 | 49.9 | 50.9 | 57.5 |
| Hyland HS 11RY07 | 1.1 | RR2Y | CM | | 42.5 | 47.7 | 48.4 | **59.0** |
| Dyna-Gro 37R17 | 1.7 | RR | Amaxx | | 42.9 | 50.3 | 44.5 | **59.1** |
| Hyland HX R2Y37 | 2.1 | RR2Y | | PI88788 | **47.4** | 49.7 | 41.0 | **58.7** |
| Mycogen 5N205R2 | 2.0 | RR | | | 43.6 | 50.4 | 45.8 | 55.0 |
| Great Lakes 1609 | 1.6 | N R2Y | Acceleron | PI88788 | 40.8 | 45.5 | 47.1 | 57.9 |
| Average | | | | | 47.1 | 51.5 | 50.7 | 59.5 |
| High | | | | | 52.1 | 56.8 | 57.4 | 62.4 |
| Low | | | | | 40.8 | 45.5 | 41.0 | 55.0 |
| LSD @ 0.05 | | | | | 6.2 | 6.2 | 5.3 | 4.1 |
| C.V. % | | | | | 9.5 | 9.4 | 7.5 | 4.2 |

Soybean yields are adjusted to 13% moisture

**Bolded yields** are not significantly different from the highest yielding variety

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**Soybean Ramp-Up Trials**
**Average of Locations**

The purpose of this study was to evaluate the effects of several input practices on soybean.

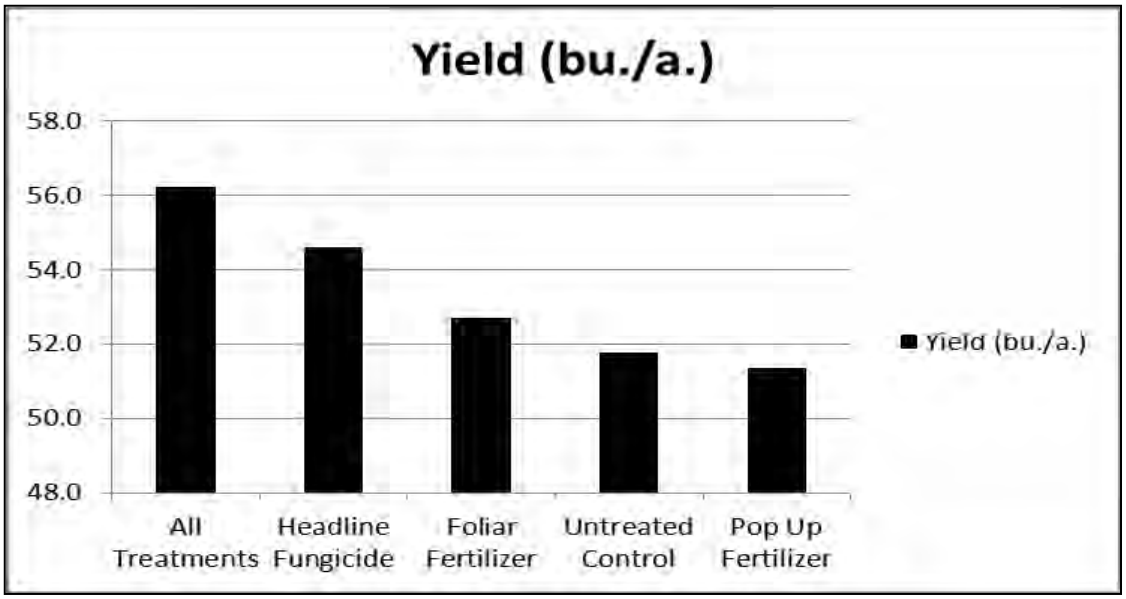
**Methods:**

Soybeans were planted at three sites. The variety NK S19-A6 was planted at one site and Pioneer 92Y51 was planted at three sites at a target population of 160,000 seeds per acre. Treatments included: an untreated check, a pop up fertilizer treatment of Alpine 2-20-18 applied at 2 gallons per acre on the seed, a foliar fertilizer treatment of Wilbur Ellis NDemand – HIGHEND at 1 gallon per acre at the R3 growth stage, a foliar fungicide treatment of Headline applied at 10 ounces per acre at the R3 growth stage, and a final treatment that received the same pop up fertilizer, foliar fertilizer at R3, and fungicide at R3 treatments.

**Results:**

Soybean yields with "All Treatments" and fungicide treatment yielded significantly higher than the untreated check. There was no significant difference between the fungicide treated soybeans and the foliar fertilizer treated soybeans. There was no significant difference between the foliar fertilizer and the untreated check, and there was no significant difference between the pop up fertilizer and the untreated check.

| Treatment | Moisture (%) | Test Weight | Yield Bu/A | Sig |
|---|---|---|---|---|
| All Treatments | 19.3 | 57.7 | 56.2 | a |
| Headline Fungicide | 18.5 | 57.9 | 54.6 | ab |
| Foliar Fertilizer | 18 | 58 | 52.7 | bc |
| UTC | 17.9 | 57.9 | 51.8 | c |
| Pop Up Fertilizer | 18.2 | 57.9 | 51.3 | c |
| Average | 18.4 | 57.9 | 53.3 | |
| LSD @ 0.05 | | | 1.9 | |
| C.V. % | | | 4.3 | |



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TARE Thumb Ag Research & Education

# Soybean Fertility Trial
# Manganese Foliar Fertilizer Study

The purpose of this study is to evaluate different manganese foliar fertilizer solutions to soybeans in a high organic matter field for manganese deficiency symptoms.

## Methods:

Three manganese foliar fertilizer products (Mn-EDTA, Blackjack Mn, and Max-In Mn) were used with and without SoySoap as an additive for a total of six treatments. Each treatment was replicated four times in a randomized complete block design (RCBD). Each treatment was sprayed in 30 feet by 2,500 feet strips with 15 gallons of water. The foliar products were sprayed at R3. Yield measurements were taken from the center 15 feet of each strip.

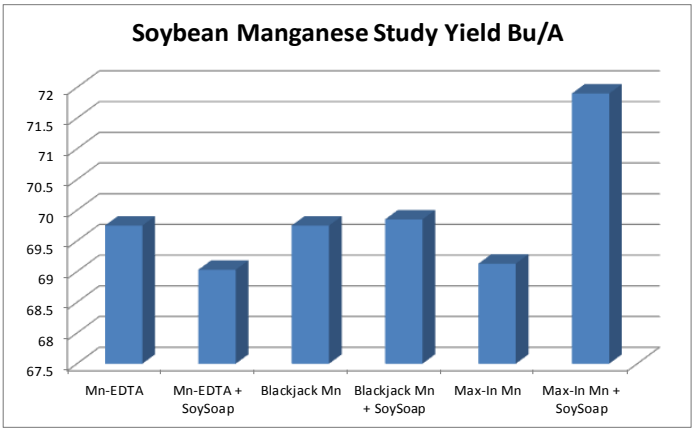
## Results and Conclusions:

Each treatment contains the yield and % moisture. The results indicate a statistical yield response with the Max-In Mn + SoySoap treatment. The yield response of the soybeans in this field suggests that there was a slight manganese deficiency. No leaf tissue sampling was done to verify the level of manganese.

| | |
|---|---|
| County: | St. Clair |
| Cooperator: | Don Koning |
| Nearest Town: | Capac |
| Soil Type: | Parkhill Loam |
| Tillage: | Conventional |
| Previous Crop: | Corn |
| Planting Date: | 6/2/2011 |
| Fertilizer: | 200 # 0-0-60 |
| Herbicide: | 2 pt. Pursuit |
| Row Width: | 20 inch |
| Variety: | Dyna-Gro |
| Harvest Population: | 165,000 |
| Harvest Date: | 10/8/2011 |
| Experimental Design: | RCBD |

| Treatment | Moisture % | Yield Bu/A | † |
|---|---|---|---|
| Mn-EDTA | 13.54 | 69.75 | AB |
| Mn-EDTA + SoySoap | 13.73 | 69.03 | A |
| Blackjack Mn | 13.81 | 69.75 | AB |
| Blackjack Mn + SoySoap | 13.41 | 69.85 | AB |
| Max-In Mn | 13.76 | 69.13 | AB |
| Max-In Mn + SoySoap | 13.58 | 71.90 | B |
| Average | 13.64 | 69.90 | |
| LSD @0.05 | | 2.80 | |
| CV % | | 2.66 | |

† Yields with the same letter are not significantly different from each other



## Soybean Fertility Trial
## Foliar Fertilizer Study

The purpose of this study was to evaluate the use of three foliar fertilizer products on soybean at the R3 growth stage.

**Methods:**

Three products, Max-In ZMB (containing Zinc, Manganese, and Boron), Max-In Mn (containing manganese), and Max-In S (containing sulfur) were applied to soybean at the R3 growth stage. An untreated check was also included. All products were applied at labeled rates, or 2 qt/A. The variety at one site was NK S19-A6, the variety at two sites was Pioneer 92Y51. Each treatment was in a RCBD and replicated four times in 15 feet by 100 feet plots.

**Results:**

Two products, Max-In ZMB and Max-In Mn resulted in yields statistically greater than the untreated check. The Max-In S treated soybeans yielded statistically similar to the untreated check, when all three sites were averaged together. Soybeans at the Sandusky site were showing signs of Manganese deficiency at the time of application.

| | Sandusky | Almont | Pigeon | Average Yield Bu/A |
|---|---|---|---|---|
| Max-In ZMB | 45.4 | 59.2 | 61.5 | 55.4 a |
| Max-In Mn | 46.6 | 55.8 | 61.2 | 54.5 ab |
| Max-In S | 40.5 | 58.4 | 60.1 | 53.0 bc |
| UTC | 38.9 | 57.8 | 61.5 | 52.7 c |
| Average | 42.8 | 57.8 | 61.1 | 53.9 |
| LSD @ 0.05 | | | | 1.5 |
| C.V. % | | | | 3.4 |

## Soybean Seed Trial
## Primo Seed Inoculant

Primo is a product labeled for as a growth promoter and liquid inoculant. The purpose is to evaluate the effect of Primo on soybean yield in comparison to an untreated control (UTC) and other similar products.

**Methods:**

Soybean seed was treated according to label instructions with Primo, Optimize, and Hi-Stick Inoculant. These treatments and the UTC were replicated four times in plots of 15 feet by 100 feet in a RCBD at the TARE locations sites in Pigeon and Sandusky.

| | | | Average of Sites | | | |
|---|---|---|---|---|---|---|
| | | | Moisture | Test | Yield Bu/A | |
| Treatment | Sturm | Gerstenberger | (%) | Weight | 2011 | 2010 |
| UTC | 56.7 | 48.4 a | 17.9 | 57.7 | 52.5 | 48.4 |
| Primo | 58.3 | 46.2 a | 18.2 | 57.6 | 52.2 | 48.5 |
| Optimize | 55.7 | 46.9 a | 18.1 | 57.6 | 51.3 | 46.7 |
| Hi Stick | 57.1 | 43.4 b | 18.4 | 57.6 | 50.3 | 47.8 |
| Average | 57.6 | 46.2 | 18.1 | 57.6 | 51.6 | 47.8 |
| LSD @ 0.05 | NS | 4.8 | | | NS | NS |
| C.V. % | 3.9 | 6.5 | | | 5.1 | 5.8 |

Variety Planted at all 2011 sites - Hyland HS22RY503

**Results:**

The table shows the average yield of each treatment by location as well as the average yield, moisture % and test weights of the two locations.

There was no statistical yield differences between the UTC and the three seed treatments when averaged across locations. This data is consistent with the results in 2010.

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# Use of Contans for reducing white mold in soybeans

Sandusky MI, 2010 and 2011

Contans from SipcamAdvan is a biofungicide containing spores of a naturally occurring soil fungus (Coniothyrium minitans). Multiple observations were made in a two year trial where Contans was applied on the John Anton Farm near Sandusky, MI in an attempt to measure the product's effect on white mold. The 14 acre trail area was divided into 4 separate studies, each having four replications.

The individual studies entailed the application of Contans at a rate of 3 lbs/ac. with 20 gal/ac. of water using a 70 foot boom section. The applications were applied by by Crop Production Services of Sandusky and were made in the fall or spring prior to the 2010 and/or 2011 soybean crops. In study #1, Contans was applied during the fall of 2009 or in the spring of 2010, and sampled during the following August. Study #2 simply represents a retesting of study #1 in the subsequent year (August, 2011). In study #3, plots received a double application, i.e. they received a treatment in fall, 2009 and spring, 2010 and then retreated one year later. Finally, in study #4, the Contans was applied in the fall or spring prior to the 2011 crop.

During both the 2010 and 2011 seasons, the trial experienced little or no white mold. Therefore, the only data shown is the average number of live sclerotia found in soil samples taken from each plot (sampling and testing conducted by Dr. Jianjun Hao, MSU). The results show no statistically significant differences between treatments. Nevertheless, the use of Contans appears to have decreased the number of sclerotia to some extent. When averaged across all four trials, the Fall applied Contans had 23 percent fewer sclerotia and the spring application had 33 percent fewer sclerotia compared to the untreated plots.

| Number of sclerotia per liter of soil | | | | |
|---|---|---|---|---|
| **Application timing of Contans @ 3 lbs/ac** | **Sample date** | **Fall application** | **Spring application** | **untreated control** |
| #1: Fall, 09 or Spring '10 | Aug, 2010 | 2.7 | 2.9 | 2.9 |
| #2: Fall, 09 or Spring '10 | Aug, 2011 | 2.0 | 1.4 | 2.8 |
| #3: Fall, '10 & '11 or Spring '10 & '11 | Aug, 2011 | 2.0 | 1.3 | 2.3 |
| #4: Fall, '10 or Spring '11 | Aug, 2011 | 2.0 | 1.4 | 2.8 |
| *average* | --- | *2.2* | *1.8* | *2.7* |

*We acknowledge with gratitude the assistance provided the MI Soybean Promotion Committee; John Anton, Sandusky, MI; SipcamAdvan; and Crop Production Services, Sandusky.*

*For additional information, contact Martin Nagelkirk ( nagelkirk@msu.edu)*

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# Soybean Study
# Population by Planting Date

The Michigan Soybean Promotion Committee supported a study to evaluate the effect of soybean planting date in addition to the effect of plant populations. Hyland Seeds supplied the seed for the study and Zwerk & Sons Farms provided the farm location for the study to be done. The purpose of the study was to determine the optimum yield due to population and planting date.

**Methods:**

The soybean variety Hyland 24RY05 was planted in population treatments of 80K, 120K, 160K, 200K and 240K seeds/A in 20 inch rows using a Monosem planter. Three plantings were established in the same field in a randomized complete block design (RCBD) at two week intervals (May 10, May 24, and June 7). Each plot was 18 feet by 100 feet and replicated three times. The center 15 feet was harvested for each plot using a 2144 Case IH combine with an attached HarvestMaster weigh system that records grain weight, moisture, and test weight.

| | |
|---|---|
| County: | Tuscola |
| Cooperator: | Zwerk & Sons Farms |
| Nearest Town: | Richville |
| Soil Type: | Tappan-Londo loam |
| Tillage: | Conventional |
| Previous Crop: | Corn |
| Planting Date: | Various |
| Fertilizer: | None |
| Herbicide: | Roundup |
| Row Width: | 20 inch |
| Variety: | Hyland 24RY05 |
| Harvest Population: | Various |
| Harvest Date: | Nov. 2, 2011 |
| Experimental Design: | RCBD |

**Results:**

The next page lists the details for the study along with the data and statistical analysis for the study. For the population studies, each planting date was analyzed separately for evaluation. The harvest populations for the 240K ranged from 232K-225K and averaged 228K; the 200K harvest populations ranged from 231K-210K and averaged 217K; the 160K harvest populations ranged from 173K-159K and averaged 167K; the 120K harvest populations ranged from 135K-139K and averaged 136K; and the 80K harvest population ranged from 90-84K and averaged 87K. Test weight and moisture were consistent for the entire plot. Yields for the planting dates were significantly different with the mid and late plantings resulting in reductions of 8.4% and 15.2% in yield.

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# Soybean Study
# Population by Planting Date

Early Planting May 10, 2011

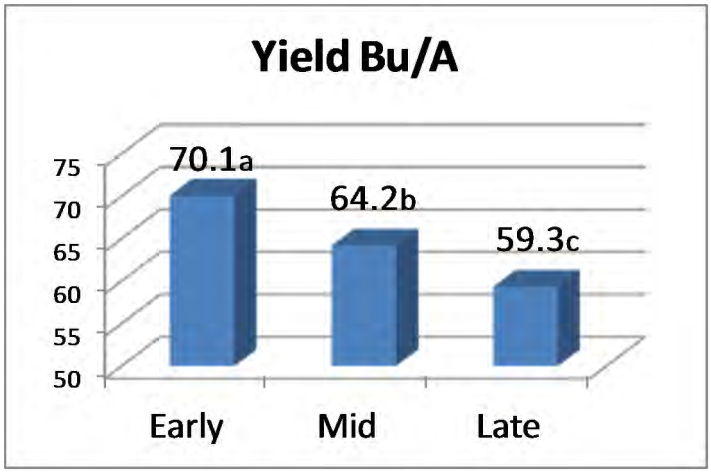
| | Moisture % | Test Weight | Yield Bu/A | † |
|---|---|---|---|---|
| 80K | 13.8 | 59.4 | 66.5 | a |
| 120K | 13.7 | 59.4 | 69.3 | ab |
| 160K | 13.7 | 59.4 | 70.2 | ab |
| 200K | 13.5 | 59.5 | 72.3 | b |
| 240K | 13.5 | 59.6 | 72.1 | b |
| Average | 13.6 | 59.5 | 70.1 | |
| LSD @ 0.05 | | | 4.50 | |
| CV % | | | 3.41 | |

† Yields with the same letter are not significantly different from each other.

Mid-season Planting May 24, 2011

| | Moisture % | Test Weight | Yield Bu/A | † |
|---|---|---|---|---|
| 80K | 13.3 | 59.6 | 62.2 | |
| 120K | 13.7 | 59.4 | 65.1 | |
| 160K | 13.4 | 59.6 | 64.9 | |
| 200K | 13.6 | 59.5 | 66.2 | |
| 240K | 13.3 | 59.6 | 62.5 | |
| Average | 13.5 | 59.6 | 64.2 | |
| LSD @ 0.05 | | | NS | |
| CV % | | | 4.16 | |

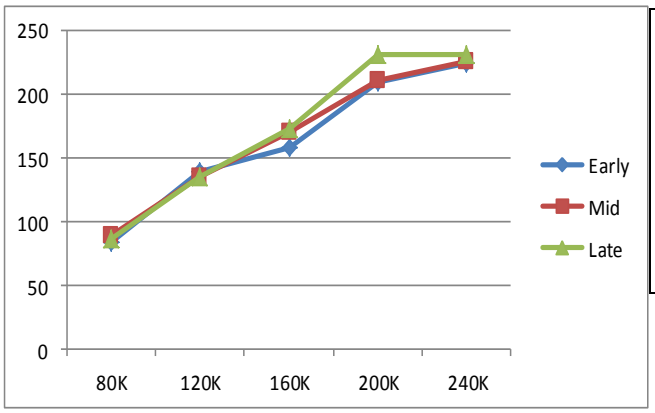
† No statistical difference between treatments




Late Planting June 7, 2011

| | Moisture % | Test Weight | Yield Bu/A | † |
|---|---|---|---|---|
| 80K | 13.4 | 59.6 | 58.7 | |
| 120K | 13.3 | 59.7 | 59.5 | |
| 160K | 13.2 | 59.7 | 59.5 | |
| 200K | 13.2 | 59.7 | 59.5 | |
| 240K | 13.3 | 59.7 | 59.6 | |
| Average | 13.3 | 59.7 | 59.3 | |
| LSD @ 0.05 | | | NS | |
| CV % | | | 2.80 | |

† No statistical difference between treatments




| | Final stand population (000's) | | | | |
|---|---|---|---|---|---|
| | 80 | 120 | 160 | 200 | 240 |
| Early May 10, 2011 | 84 | 139 | 159 | 210 | 225 |
| Mid-season May 24, 2011 | 90 | 135 | 170 | 211 | 226 |
| Late-season June 7, 2011 | 87 | 135 | 173 | 231 | 232 |
| Average | 87 | 136 | 167 | 217 | 228 |

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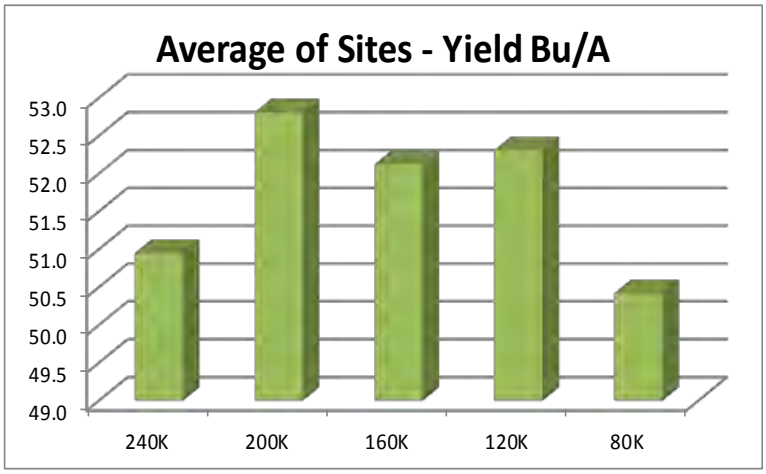
# Soybean Study
# Population Study

TARE Thumb Ag Research & Education

The purpose of this study is to evaluate the effect of planting populations in 30 inch rows.

**Methods:**

Soybeans were planted in five populations (80K, 120K, 160K, 200K, and 240K) in three locations. Plots were established in a RCBD with four replications at the Almont, Pigeon, and Sandusky sites. Population counts were also measured at each plot. The plots were 15 feet by 100 feet and planted across tile lines. The plots were harvested with a Case IH 2144 combine equipped with a HarvestMaster weigh system that records grain weight, moisture percent, and test weight.




**Results:**

The soybean populations were measured and reported as a % of the target planted population. The range was from a low of 83% for the 160K treatment to a high of 98% for the 200K treatment.

There was no significant yield increase over the 120K population when averaged across all sites. The results for this study were similar to the results from 2010.

| | | | | Average of Sites | | | |
|---|---|---|---|---|---|---|---|
| Treatment | Almont | Sandusky | Pigeon | % of Target Population | Moisture (%) | Test Weight | Yield Bu/A |
| 240K | 54.9 ab | 38.7 | 59.2 | 90 | 20.0 | 57.3 | 50.9 ab |
| 200K | 56.3 a | 40.7 | 61.5 | 90 | 18.4 | 57.7 | 52.8 a |
| 160K | 55.1 ab | 40.4 | 60.9 | 83 | 19.1 | 57.5 | 52.1 ab |
| 120K | 55.3 ab | 40.5 | 61.1 | 98 | 18.9 | 57.6 | 52.3 ab |
| 80K | 51.0 b | 39.8 | 60.5 | 91 | 19.3 | 57.5 | 50.4 b |
| Average | 54.5 | 40.0 | 61.1 | | 18.2 | 57.7 | 51.7 |
| LSD @ 0.05 | 5.2 | NS | NS | | | | 2.2 |
| C.V. % | 4.4 | 3.8 | 5.5 | | | | 5.2 |

Variety Planted at Pigeon site - NK S19-A6

Variety Planted at Almont and Sandusky sites - Pioneer 92Y51

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# Michigan State University
# Alfalfa Variety Trial Yield
# North Branch, Lapeer County

**North Branch, Lapeer Co.**
Sown Apr 2008
Non-irrigated

| Entry | 2009 | 2010 | 6-Jun | 30-Jun | 2-Aug | 30-Aug | 2011 | total |
|---|---|---|---|---|---|---|---|---|
| Pioneer 55V48 | 8.44 | 8.31 | 2.41 | 1.44 | 1.89 | 1.23 | 6.96 | 23.71 |
| FSG505 | 8.16 | 8.22 | 2.60 | 1.49 | 1.93 | 1.28 | 7.30 | 23.67 |
| Ameristand 407TQ | 8.45 | 8.07 | 2.33 | 1.53 | 1.97 | 1.19 | 7.01 | 23.53 |
| PGI 459 | 7.80 | 8.33 | 2.23 | 1.49 | 2.02 | 1.28 | 7.02 | 23.14 |
| Garst 6552 | 7.95 | 8.12 | 2.18 | 1.52 | 1.94 | 1.21 | 6.84 | 22.91 |
| WL343HQ | 7.92 | 7.84 | 2.49 | 1.51 | 1.91 | 1.21 | 7.12 | 22.88 |
| WL363HQ | 7.96 | 8.03 | 2.31 | 1.50 | 1.87 | 1.20 | 6.88 | 22.86 |
| Ascend | 7.97 | 7.81 | 2.16 | 1.48 | 1.96 | 1.22 | 6.81 | 22.59 |
| Genoa | 7.57 | 7.91 | 2.33 | 1.54 | 1.91 | 1.15 | 6.93 | 22.41 |
| FSG406 | 7.93 | 7.43 | 2.41 | 1.38 | 2.02 | 1.16 | 6.96 | 22.31 |
| Garst 6417 | 7.76 | 7.53 | 2.23 | 1.42 | 1.81 | 1.11 | 6.56 | 21.85 |
| FSG351 | 7.93 | 7.57 | 2.02 | 1.27 | 1.79 | 1.25 | 6.33 | 21.83 |
| Velocity | 7.73 | 7.43 | 2.18 | 1.45 | 1.78 | 1.14 | 6.55 | 21.72 |
| DKA43-13 | 7.61 | 7.64 | 2.17 | 1.46 | 1.68 | 1.02 | 6.33 | 21.58 |
| FSG528SF | 7.86 | 7.52 | 2.08 | 1.32 | 1.68 | 1.10 | 6.17 | 21.55 |
| DK140 | 7.95 | 7.24 | 2.21 | 1.29 | 1.70 | 1.09 | 6.29 | 21.47 |
| FSG408DP | 7.36 | 7.50 | 2.27 | 1.26 | 1.84 | 1.19 | 6.56 | 21.42 |
| 5312 | 7.53 | 7.07 | 2.14 | 1.10 | 1.45 | 1.07 | 5.76 | 20.36 |
| PLH-resistant check | 7.53 | 6.32 | 2.06 | 0.97 | 1.52 | 0.79 | 5.33 | 19.18 |
| Vernal | 6.90 | 6.66 | 2.02 | 0.83 | 1.31 | 0.97 | 5.13 | 18.69 |
| Mean | 7.81 | 6.95 | 2.24 | 1.36 | 1.80 | 1.14 | 6.54 | 21.98 |
| CV% | 8 | 8 | 11 | 12 | 12 | 15 | 10 | 8 |
| LSD 5% | 0.84 | 0.89 | 0.38 | 0.22 | 0.30 | 0.25 | 0.94 | 2.44 |

| | |
|---|---|
| Location: | Chris Howland Farm |
| Design: | RCB, plot size 3 x 25' (3 x 22' harvested) |
| Seeded: | 4/24/2008 |
| Cuttings: | Four cuttings in 2009, five in 2010 |
| Soil Type: | Brookston Loam |
| Fertility: | 0-78-234 + 3 boron lbs/acre |
| Insects: | Dimethoate applied after cut 1 |

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TARE Thumb Ag Research & Education

# Alfalfa/Grass Winter Hardiness & Heaving Trial
## Mineral Clay Soils & Muck
Capac, MI

Due to the soil structure of many farms in the Thumb, heaving and winterkill are frequently the cause of stand losses for alfalfa growers and graziers.
The research in these plots will help to identify if different grass species help keep alfalfa stands in rotation longer in non-tiled mineral and muck soils.

**Methods and Purpose**

- Educate growers about the potential opportunities for growing alfalfa and grass varieties together and the management for high quality stands.
- Identify types of alfalfa and grass combinations that will maintain forage stands in rotation.
- Provide an analysis on quality (Relative Feed Value (RFV)) for each treatment.

In the plots, there are two different types of alfalfa planted in combination with different species of grass. There is a laterally branched alfalfa and a predominantly tap rooted alfalfa planted alone and with the following grasses in replicated plots:

**Seeding Rates lbs/A**

| | | | |
|---|---|---|---|
| ▪ Orchard grass | 6 | Alfalfa | 10 |
| ▪ Meadow Fescue | 15 | Alfalfa | 10 |
| ▪ Perennial ryegrass | 15 | Alfalfa | 10 |
| ▪ Tall fescue | 15 | Alfalfa | 10 |
| ▪ Reed canary grass | 6 | Alfalfa | 10 |
| ▪ No grass | - - - | Alfalfa | 18 |

**Results**

There was no significant difference between the two alfalfa varieties without grass in the mineral soils, however, the muck soils did show a significant difference. There were significant yield differences in the grass/alfalfa variety mixes. This is year 1 of a 3 year study.

| | |
|---|---|
| Location: | Mike Lauwers<br>Capac, MI |
| County: | St. Clair |
| Soil Type: | Blount Loam |
| Soil pH: | 5.9 |
| Soil P & K: | 64 & 169 ppm |
| Plot area: | 3 X 25 ft. |
| Replications: | Four |
| Prev. Crop: | Soybeans |
| Planting Date: | 4/23/2010 |
| Lime Rate: | 2.2 ton/A |
| Fert. Rate: | None |
| Herbicide: | none |
| Tillage: | Conventional |
| Exp. Design: | RCB, 4 reps |

| | |
|---|---|
| Location: | Mike Lauwers<br>Capac, MI |
| County: | St. Clair |
| Soil Type: | Linwood Muck |
| Soil pH: | 6.8 |
| Soil P & K: | 85 & 171 ppm |
| Plot area: | 3 X 25 ft. |
| Replications: | Four |
| Prev. Crop: | Soybeans |
| Planting Date: | 4/23/2010 |
| Lime Rate: | None |
| Herbicide: | 2, 4DB |
| Rate: | 2 quart/A |
| Tillage: | Conventional |
| Exp. Design: | RCB, 4 reps |

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**Alfalfa/Grass Winter Hardiness & Heaving Trial**
**Mineral Clay Soils & Muck**
Capac, MI

| **Mineral Soils** | | | 2010 | 6-Jun | 30-Jun | 2-Aug | 30-Aug | 2011 | Total | Alf Cont.* |
|---|---|---|---|---|---|---|---|---|---|---|
| *Grass Variety* | *Grass Species* | *Alfalfa Variety* | *dry matter tons/acre* | | | | | | | 1-5 |
| Pradel | Meadow fescue | WL 348 AP | 2.93 | 2.69 | 1.01 | 1.48 | 1.09 | 6.27 | 9.20 | 3 |
| Pradel | Meadow fescue | Magnum VI WET | 2.85 | 2.71 | 1.06 | 1.36 | 1.14 | 6.26 | 9.11 | 2.8 |
| Intensiv | Orchardgrass | WL 348 AP | 2.53 | 2.32 | 0.88 | 1.35 | 1.09 | 5.63 | 8.17 | 2.5 |
| Intensiv | Orchardgrass | Magnum VI WET | 2.86 | 2.62 | 1.09 | 1.19 | 1.03 | 5.93 | 8.79 | 2.5 |
| Remington | Perennial ryegrass | WL 348 AP | 2.47 | 2.36 | 0.84 | 1.19 | 1.19 | 5.58 | 8.05 | 2 |
| Remington | Perennial ryegrass | Magnum VI WET | 2.84 | 2.61 | 0.99 | 1.21 | 1.33 | 6.14 | 8.98 | 2 |
| Palaton | Reed canarygrass | WL 348 AP | 2.91 | 2.05 | 0.98 | 1.37 | 1.11 | 5.50 | 8.41 | 5 |
| Palaton | Reed canarygrass | Magnum VI WET | 2.95 | 2.26 | 1.16 | 1.43 | 1.03 | 5.88 | 8.83 | 5 |
| STF43 | Tall fescue | WL 348 AP | 2.82 | 2.41 | 1.07 | 1.40 | 1.25 | 6.13 | 8.95 | 2.3 |
| STF43 | Tall fescue | Magnum VI WET | 3.04 | 2.67 | 1.04 | 1.39 | 1.30 | 6.40 | 9.44 | 2.8 |
| none | | WL 348 AP | 3.17 | 2.22 | 1.09 | 1.55 | 1.25 | 6.11 | 9.28 | 5 |
| none | | Magnum VI WET | 3.25 | 2.46 | 1.16 | 1.54 | 1.26 | 6.42 | 9.67 | 5 |
| Mean | | | 2.88 | 2.45 | 1.03 | 1.37 | 1.17 | 6.02 | 8.91 | 3.33 |
| LSD (0.05) | | | 0.32 | 0.22 | 0.11 | 0.12 | 0.12 | 0.47 | 0.65 | 0.48 |
| | | | | | | | | | | |
| **Muck Soils** | | | | | | | | | | |
| Pradel | Meadow fescue | WL 348 AP | 2.93 | 2.53 | 1.00 | 1.17 | 0.95 | 5.65 | 8.58 | 2.5 |
| Pradel | Meadow fescue | Magnum VI WET | 2.85 | 2.56 | 1.12 | 1.27 | 1.20 | 6.14 | 8.99 | 3.3 |
| Intensiv | Orchardgrass | WL 348 AP | 2.92 | 2.40 | 0.99 | 1.34 | 1.05 | 5.78 | 8.70 | 3 |
| Intensiv | Orchardgrass | Magnum VI WET | 3.15 | 2.35 | 1.16 | 1.30 | 1.14 | 5.96 | 9.11 | 2.8 |
| Remington | Perennial ryegrass | WL 348 AP | 3.05 | 2.65 | 0.88 | 1.29 | 1.09 | 5.91 | 8.96 | 2.5 |
| Remington | Perennial ryegrass | Magnum VI WET | 3.06 | 2.40 | 1.04 | 1.31 | 1.09 | 5.84 | 8.91 | 2.5 |
| Palaton | Reed canarygrass | WL 348 AP | 2.98 | 2.08 | 1.12 | 1.42 | 1.24 | 5.86 | 8.84 | 5 |
| Palaton | Reed canarygrass | Magnum VI WET | 3.18 | 2.12 | 1.18 | 1.50 | 1.55 | 6.35 | 9.53 | 5 |
| STF43 | Tall fescue | WL 348 AP | 2.96 | 2.55 | 1.04 | 1.27 | 1.15 | 6.01 | 8.96 | 1.5 |
| STF43 | Tall fescue | Magnum VI WET | 3.34 | 3.06 | 1.11 | 1.52 | 1.28 | 6.97 | 10.31 | 1.8 |
| none | | WL 348 AP | 3.28 | 1.83 | 1.10 | 1.55 | 1.31 | 5.79 | 9.06 | 5 |
| none | | Magnum VI WET | 3.63 | 2.15 | 1.27 | 1.46 | 1.46 | 6.33 | 9.96 | 5 |
| Mean | | | 3.11 | 2.39 | 1.08 | 1.37 | 1.21 | 6.05 | 9.16 | 3.33 |
| LSD (0.05) | | | 0.31 | 0.25 | 0.14 | 0.15 | 0.12 | 0.50 | 0.7 | 0.58 |

* Visual rating of alfalfa content on 4/15/2011, 1 to 5, 5= 81-100% alfalfa, 4= 61-80%, 3= 41-60%, 2= 21-40, 1= 0-20%

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# Michigan State University
# Alfalfa Variety Trial Yield
# Capac, St. Clair County

**Methods:**

Plant breeders, developers, and marketers submit both commercial and experimental alfalfa varieties to MSU for testing. Varieties in these trials are evaluated for yield, persistence and forage quality for at least three years after the seeding year.

**Results:**

Yield is expressed in dry matter tons per acre as an average over years. A percentage of the check variety (Vernal) is presented in each table as a means for comparison. Vernal is an old variety with fall dormancy of 2 and has little disease resistance, but many producers are familiar with it, and it is often the lowest price seed available.

Sown May 2011
Non-irrigated

| Entry | 15-Jul | 22-Aug | 2011 |
|---|---|---|---|
| 5312 | 1.69 | 1.62 | 3.31 |
| Pioneer 54Q32 | 1.61 | 1.39 | 3.00 |
| PLH-resistant check | 1.68 | 1.44 | 3.12 |
| Pioneer 55V12 | 1.62 | 1.40 | 3.02 |
| Pioneer 55v50 | 1.76 | 1.44 | 3.20 |
| AmeriSta | 1.77 | 1.51 | 3.28 |
| DG4210 | 1.89 | 1.58 | 3.47 |
| Gunner | 1.75 | 1.40 | 3.16 |
| HybriF | 2.06 | 1.47 | 3.53 |
| Legendar | 1.92 | 1.42 | 3.33 |
| Prolific | 2.18 | 1.70 | 3.88 |
| Rebound6 | 2.09 | 1.44 | 3.53 |
| Sonic | 2.09 | 1.50 | 3.59 |
| Vernal | 2.01 | 1.62 | 3.63 |
| WL354HQ | 1.71 | 1.45 | 3.16 |
| WL363HQ | 1.72 | 1.40 | 3.12 |
| Mean | 1.85 | 1.49 | 3.33 |
| CV% | 13 | 15 | 12 |
| LSD 5% | 0.33 | 0.31 | 0.59 |

| | |
|---|---|
| Location: | Lynn Island Farm |
| Design: | RCB, plot size 3 x 25' (3 x 22' harvested) |
| Seeded: | 5/7/2011 |
| Soil Type: | Miami-Dighton sandy loam |
| Insects: | Warrior applied prior to cut 1 |

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# Response of winter wheat varieties to fungicides use, 2011

***Trial Background***

| | |
|---|---|
| Location: | Parrent Farms, Sandusky, MI |
| Collaborators: | MCIA |
| Soil type: | Capac silt loam |
| Tillage: | no-till |
| Replications: | 3 |
| Previous crop: | soybeans |
| Treatmt area: | 15 x 70 ft. |
| Harvest area: | 15 x 65 ft. |
| Planting date: | Oct 7, 2010 |
| Harvest date: | July 20, 2011 |
| Seeding rate: | 1.4 mil/ac. |
| Fert N rate: | 100 lbs/ac |
| Fungicide: | various |
| Herbicide: | Affinity Brdspec |

With the support of MCIA, several varieties were planted to observe their response to selected fungicide treatments.

The varieties included three soft white winter varieties: Coral, D8006, and Jupiter; and three soft red varieties: Red Devil, Red Ruby and Hopewell. The fungicide treatments, including rates and timing, are listed in table 1. All applications included a nonionic surfactant.

The wheat did not exhibit extensive disease development until milk stage. By early senescence, diseases including Septoria leaf spot, powdery mildew, Stagonospora leaf blotch, leaf rust, and stem rust could be found.

There was considerable variability in the trial area due, in part, to excessive rains during April and May. One replication was considered lost. Therefore, the data only represents two replications and cannot be properly analyzed. Nevertheless, these results are consistent with those of past years.

**Table 1: Response of wheat to fungicide treatments, 2011**

| treatment | tst wt (lbs/ac) | moist % | yield (bu/ac) | pow.* mildew | Leaf* spot |
|---|---|---|---|---|---|
| **UTC** | 61.8 | 12.9 | 82.3 | 1.2 | 5.6 |
| **Tilt 4oz @ tillering** | 61.8 | 12.9 | 83.3 | 0.5 | 4.6 |
| **Prosaro (6.5 oz) @ flower** | 61.5 | 13.4 | 88.7 | 0.0 | 1.5 |
| **Twinlne (9oz) @ flag & Prosaro @ flower** | 61.5 | 13.5 | 90.9 | 0.0 | 0.8 |

**Disease ratings represent the percent of disease on the flag leaf at early dough*

As summarized in table 1, the application of Prosaro at flowering boosted yields by 6 bushels and was the only cost effective treatment under the conditions of this trial. The addition of Twinline prior to the Prosaro application further improved yields, but by only a couple bushels. Applying Tilt at tillering was not effective. Test weights were unaffected by fungicides, while grain moistures tended to be higher in those plots that received the later applications.

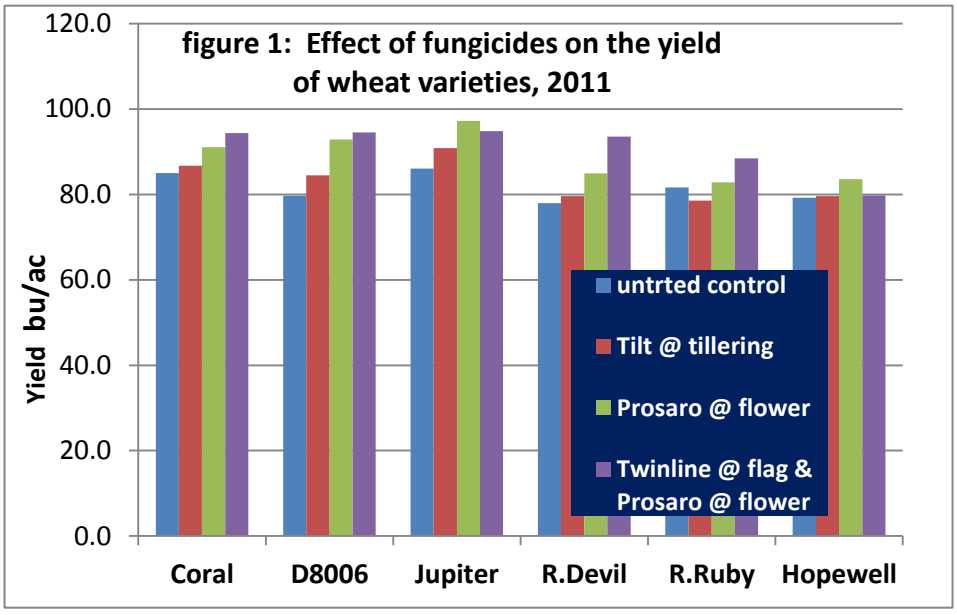


Figure 1 illustrates each variety's yield response to the various fungicide treatments. The responses of the varieties are similar with the possible exception of Hopewell.

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# Effect of fungicides and nitrogen rates on the performance of winter wheat

A field trial was conducted to measure the effect of selected fungicides and two rates of fertilizer nitrogen (N) on wheat performance.

Fungicide products were applied to plots that received 100 and 150 lbs/ac of fertilizer N. The fungicide treatments were:

1) Untreated control;
2) Caramba (13.5 oz/ac) applied at flowering; and
3) Priaxor (2 oz/ac), Twinline (9 oz/ac.), and Caramba (13.5 oz/ac.) applied at first node, early boot, and flowering, respectively.

Despite excessive rainfall during April and May, development of foliar diseases was limited prior to heading. Leaf spot (Septoria tritici) was the most significant disease, but it not did develop significantly on the flag leaves until the third week of June. There were trace amounts of leaf rust and Fusarium head blight found just prior to senescence. Tests for DON levels revealed no differences.

Increasing the rate of fertilizer N from 100 to 150 lbs/ac improved yields by over 10 bushels when averaged across fungicide treatments. At the elevated rate of N, both the Caramba and the Caramba with the Priaxor and Twinline treatments significantly improved yields over the untreated control. The use of fungicides tended to be slightly more advantageous at the higher rate of N than at the lower rate, but these differences were not statistically significant. Test weights were higher in wheat where no fungicide was used.

*Martin Nagelkirk*
*MSU Extension Educator*
nagelkir@msu.edu

## Trial Background

| | |
|---|---|
| Location: | Stone Brothers Farm Sandusky, MI |
| Collaborator: | BASF |
| Soil Type | Parkhill silt loam |
| Soil pH: | 6.5 |
| Previous crop: | soybeans |
| Variety | Pioneer 25R47 |
| Plot area: | 20 x 45 ft |
| Treatment area: | 18 x 45 ft |
| Harvest area: | 17 x 40 ft |
| Planting date: | Oct 7 |
| Harvest date: | July 15 |
| Seeding rate: | 1.8 m/ac |
| Herbicide: | none |
| Insecticide: | none |

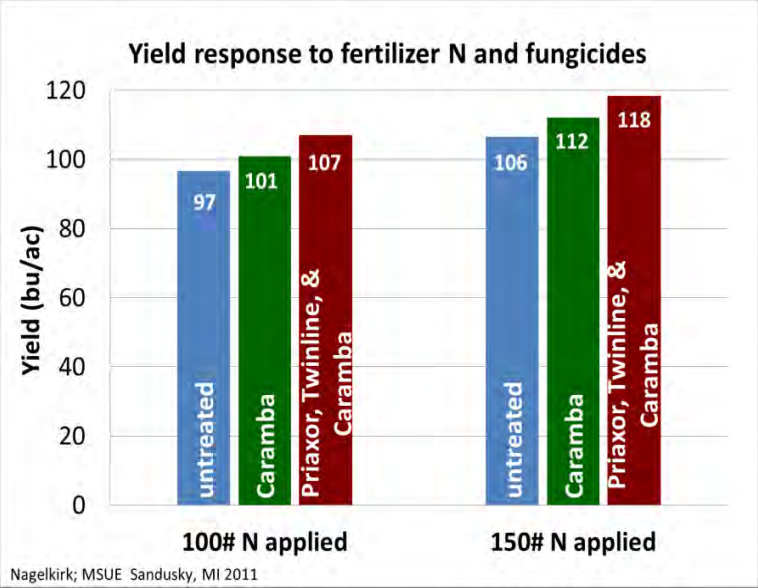


**Table 1: The effect of fungicides and fertilizer N winter wheat performance, Sandusky, MI, 2011**

| treatment | yield[1] 13% M (bu/ac) | harv.[1] moist (%) | test[1] weight (lbs) |
|---|---|---|---|
| **untreated control** w/ **100 lbs**. N /ac. | 96.7 c | 16.0 c | 60.2 a |
| **untreated control** w/ **150 lbs** N /ac. | 106.5 b | 16.0 c | 60.3 a |
| **Caramba** w/ **100 lbs**. N /ac. | 100.9 bc | 16.6 bc | 59.9 a |
| **Caranba** w/ **150 lbs.** N/ac. | 112.1 a | 19.7 a | 58.5 b |
| **Priaxor, Twinline, & Caramba** w/ **100 lbs**. N /ac | 107.0 ab | 18.6 ab | 59.0 b |
| **Priaxor, Twinline, Caramba w/ 150 lbs**. N /ac | 118.3 a | 21.4 a | 57.9 b |

[1] Values within a column followed by the same letter are not significantly different (P=.05)

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# Response of wheat varieties to nitrogen fertilizer, 2011

As in past years, the response of selected winter wheat varieties to increasing rates of fertilizer nitrogen (N) was measured. The soft winter wheat varieties are listed in table 1. The N was applied as 28 % UAN in mid-April using streamer nozzles at rates of: 0, 50, 100, and 150 lbs N/ac.

The grain yields of the six varieties were relatively similar (table 1). There were no significant differences in test weights or harvest moistures when compared against varieties or N rate. Grain yields of all varieties responded significantly and similarly to the incremental increases in N. Consequently, the yield response to N rate is presented as an average in figure 1.

There was an average increase of 10 bu/ac when N rates were increased from 50 to 100 lbs/ac and 7 bushels increased when the N rates were increased from 100 to 150 lbs/ac.
In this trial, lodging did not occur due, in part, to poor N use efficiency under excessive soil moisture conditions during April and May.

Results from this trial suggest that wheat can respond favorably to N rates in excesses of 100 lbs/ac. This response is consistent with the results of trials conducted during past years (figure 2). However, the rate of 150 lbs of N is not recommended, as it would likely lead to plant lodging.

Martin Nagelkirk,
MSU Extension Educator

***Trial Background***

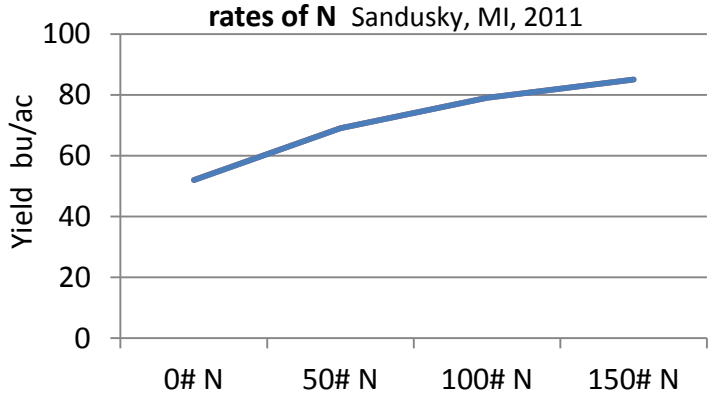
| | |
|---|---|
| Location: | Parrent Farms, Sandusky, MI |
| Collaborators: | MCIA |
| Soil type: | Capac silt loam |
| Tillage: | no-till |
| Replications: | 3 |
| Previous crop: | soybeans |
| Treatmt area: | 15 x 65 ft. |
| Harvest area: | 15 x 60 ft. |
| Planting date: | Oct 7, 2010 |
| Harvest date: | July 20, 2011 |
| Seeding rate: | 1.4 mil/ac. |
| Fert N rate: | various |
| Fungicide: | Tilt @ tillering |
| Herbicide: | Affinity Brdspec |

**Table 1: The test weight, grain moisture and grain yield of six varieties of winter wheat**

| variety | tst wt (lbs) | moisture % | yield (bu/ac) |
|---|---|---|---|
| Coral | 61.7 | 12.9 | 72 |
| D8006 | 62.1 | 12.3 | 70 |
| Jupiter | 62.0 | 12.4 | 71 |
| Hopewell | 61.8 | 12.8 | 69 |
| Red Devil | 62.0 | 12.4 | 71 |
| Red Ruby | 61.9 | 12.6 | 70 |

*averaged across four rates of fertilizer N

**Figure 1: Response of wheat to increasing rates of N** Sandusky, MI, 2011



## Effect of Accolade on the performance of winter wheat,

A trial was conducted to observe the effect of Accolade P, an INTX Microbials formulation of rhizobacteria (*Azospirillum brasilinse*), as a seed treatment on soft red winter wheat. The trial was established on G.Burgess Farms, Brown City, Michigan. On October 13, cv. DynaGro V9723A soft red winter wheat was planted using a Great Plains no-till drill. The planting crossed areas having either conventional tillage, minimum tillage or no-till. The individual plots measured 15 by 75 feet. There were four replications in the conventional zone, and two replications in the minimum tillage and no-till zones.

**Effect of Accolade seed treatment on the performance of soft red winter wheat, Brown City, MI 2011**

| tillage | test wt (lbs) | moisture (%) | yield (bu/ac) |
|---|---|---|---|
| **conventional** | | | |
| with Accolade | 60.1 | 16.3 | 75.7 |
| without Accolade | 60.4 | 15.7 | 76.4 |
| **min. tillage** | | | |
| with Accolade | 60.4 | 15.6 | 78.7 |
| without Accolade | 60.7 | 15.2 | 79.5 |

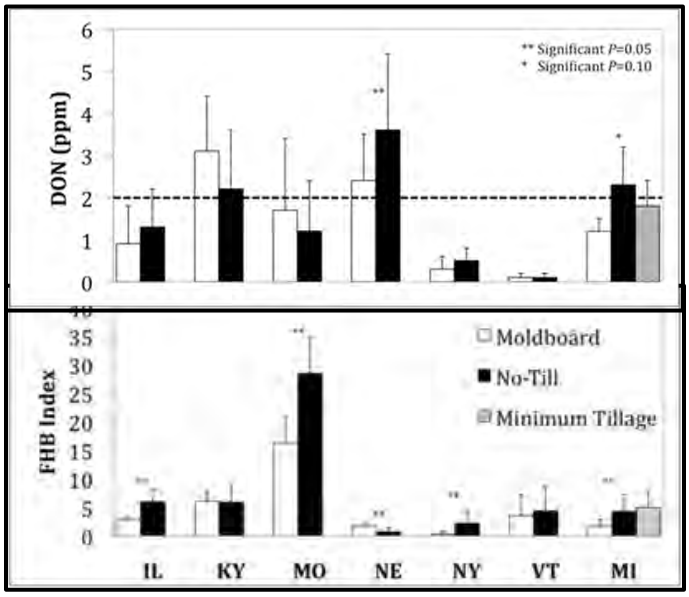
There were no apparent differences between treatments relative to seedling emergence or populations. The trial was harvested on July 22 using an International 2144 combine equipped with a Juniper HarvestMaster system that provided grain yield, test weight, and moisture. The results are summarized in the table below. The data from the no-till area was discarded as poor weed control resulted in erratic yields.

*M. Nagelkirk, MSU Extension*

## Effect of corn residue on Fusarium head blight and DON of wheat,

Brown City, MI 2011

A multi-state study, under the U.S. Wheat and Barley Scab Initiative, was initiated to measure the effect of corn residue on Fusarium head blight (scab). This two-year project involves planting wheat in a field that was harvested for corn grain. The trial site included areas that were moldboard plowed, minimum tilled (chiseled) or undisturbed (no-till). The individual plots measured 60 by 75 feet. There were four replications.




The results were inconsistent across states. At Michigan's site in Brown City, the visual evidence of scab expressed as FHD Index was significantly higher where corn stalks were not incorporated (no-till). The DON levels were 1.2 ppm for the plowed areas; 1.8 ppm for minimum till; and 2.3 for no-till.

*M. Nagelkirk, MSU Extension*

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# Custom Machine and Work Rate Estimates

Edited by: Dennis Stein, Extension Educator, District Farm Business Management, Michigan State University Extension
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## *2011- 2012 Production Season Costs*

***Updated 11.08.11***

| | | | |
|---|---|---|---|
| **Farm Labor Unskilled [7]= $ per hour** | $12.48 | $3.24 | per gallon of fuel |
| ***Farm Labor skilled [7] = $ per hour*** | $16.13 | $3.60 | per gallon lube & fuel cost |

| **TRACTORS ONLY:** | | Custom Rate $/ Hour | Machine Cost $/Hour | Est. Fuel Gal. / Hour | Est. Fuel Cost per Hour |
|---|---|---|---|---|---|
| ***No driver or fuel cost*** | 4WD - 260 hp. | $ 47.10 | $97.84 | 9.95 | $35.82 |
| | MFWD - 200 hp. | $ 42.32 | $56.51 | 7.04 | $25.34 |
| | MFWD - 130 hp. | $ 35.59 | $49.12 | 5.72 | $20.59 |
| ***Est. Tractor Cost $0.24/hp/hr.*** | 2- WD - 75 hp. | $ 32.76 | $22.55 | 3.3 | $11.88 |
| ***Est. Fuel use .044 gal. diesel/PTO hp / hour*** | 2- WD - 40 hp. | $ 20.00 | $11.41 | 1.76 | $6.34 |
| ***Auto Steer systems charge per acre*** | | $ 2.29 | | | |

| **TILLAGE OPERATIONS:** | Custom $/Acre [1] | Total Machine Cost/ Ac [3] | Machine Rate per Hour [4] | Acres/Hr. [5] | Est. Fuel Gal./Acre [6] |
|---|---|---|---|---|---|
| ***Plowing: Moldboard (6 bottom)*** | $17.85 | $20.54 | $85.65 | 4.17 | 1.32 |
| ***Chisel Plow (23 ft.)*** | $14.84 | $10.34 | $134.73 | 13.03 | 0.60 |
| ***Chisel – front disk (16.3 ft.)*** | $14.88 | $12.84 | $118.26 | 9.21 | 0.97 |
| ***Disk-V.Ripper combo (17.6 ft. +15" deep)*** | $18.90 | $19.16 | $172.82 | 9.02 | 1.47 |
| ***Subsoiler 30" - 10ft (12-15")*** | $18.63 | | | | |
| ***Discing - tandem (21 ft)*** | $12.86 | $9.27 | $113.28 | 12.22 | 0.58 |
| ***Field Cultivator (23 ft.) + incorp.*** | $11.50 | $7.35 | $121.94 | 16.59 | 0.38 |
| ***Field Cultivator (23 ft.)*** | $10.39 | $5.93 | $98.38 | 16.59 | 0.32 |
| ***Harrow*** | $10.32 | | | | |
| ***Soil Finisher*** | $11.14 | | | | |
| ***Strip tillage*** | $15.54 | | | | |
| ***Row Cultivate (12 rows)*** | $10.76 | $6.64 | $102.59 | 15.45 | 0.46 |
| ***Row Cultivate-high residue (12rows)*** | $13.35 | | | | |
| ***Stalk Shredder (20 ft.)*** | $12.11 | $12.55 | $97.39 | 7.76 | 0.74 |
| ***Rotary Hoe (21 ft.)*** | $7.53 | $2.53 | $65.68 | 25.96 | 0.18 |
| ***Land Rolling*** | $6.55 | | | | |
| ***Highboy spraying*** | $7.00 | | | | |
| ***Boom Sprayer-self-Prop.80ft.*** | $7.55 | $7.30 | $322.08 | 44.12 | 0.14 |
| ***Boom Sprayer-pull type 50ft.*** | $5.46 | $2.55 | $65.31 | 25.61 | 0.10 |
| ***Spraying- road ditches / hr*** | 52.04 /hr. | | | | |

| **PLANTING:** | Custom $/Acre [1] | Total Machine Cost/ Ac [3] | Machine Rate per Hour [4] | Acres/Hr. [5] | Est. Fuel Gal./Acre [6] |
|---|---|---|---|---|---|
| ***Planter - conventional (12row) w/fert 30" corn-soys*** | $15.03 | $10.28 | $143.92 | 14.00 | 0.32 |
| ***Planter - soybean 15" rows*** | $16.45 | | | | |
| ***Planter - No Till w/fert (12 row)*** | $16.60 | | | | |
| ***Planter - Min Till (12 row)*** | $16.83 | $13.80 | $175.67 | 12.73 | 0.53 |
| ***GPS mapping addition to planting*** | $2.25 | | | | |
| ***Air Seeder Drill w/cart 52ft*** | | $19.96 | $440.32 | 22.06 | 0.45 |
| ***Drill Soybeans Conventional*** | $16.73 | | | | |
| ***Drill - No Till (15 ft.)*** | $15.72 | $18.30 | $116.39 | 6.36 | 0.81 |
| ***Drill - No Till - drill only no tractor*** | $10.28 | | | | |
| ***Drill press wheels - (20 ft)*** | $15.05 | $11.88 | $100.74 | 8.48 | 0.61 |
| ***Grain drill - only*** | $9.80 | | | | |
| ***Pest Control - scouting*** | $5.00 | | | | |

| **SUGAR BEETS:** | Custom $/Acre [1] | Total Machine Cost/ Ac [3] | Machine Rate per Hour [4] | Acres/Hr. [5] | Est. Fuel Gal./Acre[6] |
|---|---|---|---|---|---|
| ***Sugar Beets - Planting (12 row)*** | $21.37 | $27.91 | $130.34 | 4.67 | 0.99 |
| ***Sugar Beet Cultivation*** | $13.00 | $14.19 | $79.46 | 5.60 | 0.81 |
| ***Sugar Beet Topper (8 rows)*** | $12.50 | $15.55 | $110.87 | 7.13 | 0.56 |
| ***Sugar Beet Harvester (6 rows)*** | $75.00 | $78.86 | $238.95 | 3.03 | 2.22 |
| ***Sugar Beet Cart ( 20 ton)*** | $25.00 | $31.27 | $162.60 | 5.20 | 1.80 |
| **HARVESTING:** | Custom $/Acre [1] | Total Machine Cost/ Ac [3] | Machine Rate per Hour [4] | Acres/Hr. [5] | Est. Fuel Gal./Acre[6] |
| ***Combine - (Corn -8 row head)*** | $29.73 | $39.07 | $265.29 | 6.79 | 2.35 |
| ***Combine - stalk chopper head*** | $33.45 | | | | |
| ***Combine Small grains (20 ft head)*** | $25.29 | $29.02 | $197.05 | 6.79 | 1.49 |
| ***Combine Soybeans (25 ft. head)*** | $28.46 | $29.35 | $217.78 | 7.42 | 1.95 |
| ***Combine Soybeans - air reel*** | $32.10 | | | | |
| ***Combine & Cart, haul to storage - Corn*** | $48.97 | | | | |
| ***Combine & Cart, haul to storage - Soybeans*** | $38.15 | | | | |
| ***GPS mapping addition to harvesting*** | $2.25 | | | | |
| ***Picker 2 row- Ear Corn + 3 wagons*** | $26.72 | | | | |
| ***Combine Field Beans (belt pickup)*** | $29.80 | $31.96 | $213.81 | 6.69 | 1.81 |
| ***Pulling Dry Beans (knife 6 row)*** | $9.00 | $10.29 | $89.83 | 8.73 | 0.66 |
| ***Pulling Dry Beans (rod 6 row)*** | $8.00 | $9.04 | $78.92 | 8.73 | 0.66 |
| ***Dry Bean – windrowing (6 row)*** | $9.50 | $13.88 | $121.17 | 8.73 | 0.66 |
| ***Grain Cart - corn / acre*** | $6.33 | $19.97 | $137.19 | 6.87 | 1.44 |
| ***Chopping Forage - Pull type (2R corn hd)/ton*** | $4.83 per Ton | $55.21 | $76.19 | 1.38 | 3.35 |
| ***Chopping Forage - w/kernel processor*** | $4.50-$5.75 per Ton | | | | |
| ***Chopping Forage - Pull type Pickup head-12ft*** | $5.50 -$7.13 per Ton | $25.53 | $103.91 | 4.07 | 1.40 |
| ***Chopping Forage - Self-propelled (6 row corn head)*** | $6.97 per Ton | $47.00 | $64.86 | 1.38 | 2.35 |
| ***Silo Filling -Tower silo: 1Tractor, 1Chopper & Driver, 2 Wagons*** | $9.60 per Ton | | | | |
| ***Bunker: Chopper and 3 forage wagons or 2 trucks & packer*** | $8.07 per Ton | | | | |
| ***Silage Bagging per ft. (9 ft diameter)*** | $4.65-$6.95 per ft. | | | | |
| ***Mowing*** | $12.57 | | | | |
| ***Raking – Hay 9ft.*** | $6.35 | $5.83 | $20.35 | 3.49 | 0.50 |
| ***Tedding*** | $5.90 | | | | |
| ***Windrowing - hay or straw*** | $12.25 | | | | |
| ***Mower -Conditioner Pull - type (9 ft.)*** | $13.49 | $12.73 | $55.88 | 4.39 | 0.40 |
| ***Mower -Conditioner - Self Propelled (16ft)*** | $16.00 | $21.46 | $166.53 | 7.76 | 0.64 |
| ***Mower - Conditioner - Rotary (12ft)*** | $10.50 | $8.85 | $68.68 | 7.76 | 0.38 |
| ***Small Square Baling - Hay*** | $0.66 per bale | $12.92 | $45.22 | 3.50 | 0.40 |
| ***Small Square Baling - Straw*** | $0.63 per bale | | | | |
| ***Mow, Rake, Baler & Handle - small sqr.*** | $1.76 per bale | | | | |
| ***Baler, Rake & Handle: Lrg Round*** | $10.50-$13.50/bale | | | | |
| ***Complete Hay Harvesting per ton*** | $36.61 | | | | |
| ***Baling Round - 600 to 800 # per bale*** | $8.99 per bale | | | | |
| ***Baling Round - 1200 to 1500 # per bale*** | $10.94 per bale | | | | |
| ***Baler 1000# Round/ with wrapper*** | $10-$12.50 per bale | $8.52 | $25.65 | 3.01 | 0.35 |
| ***Baling - 1500 # - Lrg. Round-stalks/straw*** | $11.20 per bale | | | | |
| ***Baling - 1500 # - Lrg. Round-stalks/straw- with wrap*** | $13.48 per bale | $13.35 | $40.58 | 3.04 | 0.49 |
| ***Baling - Lrg Sqr. Hay 4x3x6*** | $10.50-$12.75/bale | $12.03 | $140.03 | 11.64 | 0.49 |
| ***Baling - Lrg Sqr. Hay 4x3x8*** | $12-$13.50 per bale | | | | |

| **FERTILIZER:** | Custom $/Acre [1] | Total Machine Cost/ Ac [3] | Machine Rate per Hour [4] | Acres/Hr. [5] | Est. Fuel Gal./Acre[6] |
|---|---|---|---|---|---|
| ***Fertilizer Dry Bulk: Spreading*** | $6.21 | | | | |
| ***Lime application*** | $10.29 | | | | |
| ***Fertilizer - Liquid-Knifed In*** | $10.90 | | | | |
| ***Liquid-Sprayed:*** | $6.80 | | | | |
| ***Fertilizer - Anhydrous: 21 ft.*** | $11.25 | | | | |
| ***Fertilizer - Anhydrous: NoTill 32 ft.*** | $11.48 | | | | |
| ***Manure Hauling - semi solid - Load & Spread / hr.*** | 61.10 per hr | $38.89 | $77.78 | 2.00 | 2.31 |
| ***Liquid Manure Injected Spreader/ 1000 gal.*** | 11.00 per 1000 gal. | $62.12 | $124.24 | 2.00 | 2.86 |
| ***Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.) per hour*** | $82 / hour | | | | |
| ***Manure Pump, Hauling, Injecting - 1000 gal. liquid (9500 gallon cap.)*** | $12.50 per 1000 gal. | | | | |
| ***Bobcat / Skid Loader / day*** | $75 to $130 per day | | | | |
| ***Ditch Mowing*** | $58.35 per hour | | | | |
| ***Brush Hogging*** | $22.08 | | | | |
| ***Grain Drying - continuous flow / point / bu.*** | $0.05/pt./bu. | | | | |
| ***Grain Drying - inbin dryer / point / bu.*** | $0.056/pt/bu. | | | | |
| ***Grain Auger / bu.*** | $0.050 per bu. | | | | |
| ***Grain Storage / mo.*** | $0.04/bu./mo. | | | | |
| ***Grain Storage / yr*** | $ 0.158 per bu. | | | | |
| ***Grain Haul - per bu. - field to farmstead*** | $0.098/ up to 10 miles | | | | |
| ***Rock picking*** | $12.40 | | | | |
| ***Custom Farming - Corn*** | $108.95 | (all machine operations for growing & harvest) | | | |
| ***Custom Farming - Soybeans*** | $96.40 | (all machine operations for growing & harvest) | | | |
| ***Custom Farming - Sm Grains*** | $81.45 | (all machine operations for growing & harvest) | | | |

**Fuel cost is calculated by adding fuel, oil and lube, calculated by adding 10% to the power fuel cost.**

***$3.24 Diesel Price ==>*** **$3.600** **** base fuel & lube price used**

**1 Custom $ per acre: Represents the rate obtained from surveys of actual farm data surveys for 2010 & 2011 from Universities listed below to do this type of machine work for another farm on a general basis. Higher or lower rates apply in each situation depending on crop conditions, soil conditions, size of fields and there locations. These numbers include the machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above.**

**3 Total Machine Cost/Acre: Includes tractor, fuel cost, lubricants, repairs, maintenance, labor and overhead costs including depreciation. This could be considered as an estimate of the ownership cost and operation of this machine on a per acre basis. No profit or return to management, which would be necessary for on going enterprises were included in this number. Values are based on "Farm Machinery Economic Cost Estimates for 2010", from the University of Minnesota.**

**4 Machine Rate per Hour: This number takes the Total Machine Cost per Acre and factors in the estimated Acres per Hour to give a value of represents an estimate of the hourly operational and ownership cost of machinery supported by ©University of Minnesota, Machinery Economic cost estimates for 2010. If the machine is run at full capacity (or engine clock hours) this per acre rate should be in the custom work value generated.**

**5 Acres/ Hour: This is an estimate of the acres this machine should average on a per hour basis with normal down time.**

**6 Gal./ Acre: This is an estimated machine use of fuel consumed to do this activity and is based on a factor of 0.044 gallons of diesel fuel per PTO hoursepower-hour on an average. Your individual machine's fuel use may vary from this number.**

**7 Labor cost ; Charged for this table at a rate of $14.00 per hour unskilled tasks and $17.50 per hour for skilled labor (planter, sprayer, harvester).**

**Costs were developed as an adjusted estimate of common rates being used by farms in this area to cover their cost of operation. The references listed below were used collectively to build the summary information listed above:**

- **Michigan State University Extension: *E-2131 Custom Work Rates in Michigan* . 10/2002 at http://www.aec.msu.edu/agecon/aecreports/aec613.pdf**
- **University of Minnesota: *Machinery Economic cost estimates for 2010* © --2010 at http://www.apec.umn.edu/faculty/wlazarus/documents/machdata.pdf**
- **Iowa State University: *2011 Iowa Farm Custom Rate Survey - Ag Decision Maker* at http://www.extension.iastate.edu/Publications/FM1698.pdf**
- **Kansas State University: *2009 Kansas Farm Custom Rates* at http://www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Custom_Rates/custom09.pdf**
- **Texas A&M University: *Texas Agricultural Custom Rates* at http://agecoext.tamu.edu/resources/library/publications/2011-texas-agricultural-custom-rates.html**
- **NASS- USDA & Pennsylvania Department of Ag: *2011 Machinery Custom Rates* ; Adam Pike, March 2011 at http://www.nass.usda.gov**
- **The Ohio State University: 2010 Ohio Farm Custom Rates© at http://ross.osu.edu/topics/agriculture-and-natural-resources/news/ohio-farm-custom-rates-2010**
- **University of Illinois: *Machinery Cost Estimates© 4-2010,* at http://www.farmdoc.illinois.edu/manage/machinery/machinery%20summary%202010.pdf**
- **University of Nebraska Lincoln: *2010 Nebraska Farm Custom Rates* at http://www.agecon.unl.edu/resource/2010Partl.pdf**

*** This report is a summary of information extracted from various sources. Your actual cost may vary greatly from the numbers presented. It is recommended that you calculate your own cost and economic returns necessary for the operation of machinery and equipment on your individual farm.**

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**Major shifts in power fuel cost during the past few year has had an impact on and has changed the cost of machine operational cost. As a thumb rule it is estimated that each $1.00 increase in fuel cost, will increase most machine operations by an additional 15%.**

# *HOW TO FIGURE YOUR MACHINE WORK RATES*

***If you are hiring or doing custom work, the following will help you determine the custom rate. Custom rates are based on tradition or usual rates set in the community, the bargaining positions of both parties (i.e., availability of machinery services and demand for machinery services in your local area) and cost of operating the machines on your farm.***

***Cost of ownership and operation can be determined as follows:***

***Ownership cost per unit (e.g., acre, bushel, ton, hour)using the DIRTI 5:***

| | | |
|---|---|---|
| *1. **D**epreciation: <u>original cost - salvage value</u> years of use* | | $ _____ |
| *2. **I**nterest: interest rat x AIV[a]* | | $ _____ |
| *3. **R**epairs: estmated 2 to 5 % of original cost* | | $ _____ |
| *4. **T**axes: (0 in Michigan -i.e., no taxes on personal property used in agriculture)* | | $ _____ |
| *5. **I**nsurance: (estimated 0.5% x AIV for insurance premium)* | | $ _____ |
| *6. Total ownership cost per year (add lines 1 thru 5)* | | $ _____ |
| *A. Ownership cost per unit: total ownership cost ÷ estimated annual use (acre, hour, bushel, ton)* | (A) | $ _____ |
| *Operating Cost per (acre, hour, bushel, ton)* | | |
| *1. Tractor: fuel (gallon fuel per unit x price/gallon) x 1.15[b]* | | $ _____ |
| *2. Machine: gas or fuel gallons per unit x 1.15[b]* | | $ _____ |
| *3. Labor: hours per unit x wage rate (if labor wage unit is per acre, bushel or ton multiply this wage by acres bushels or tons per hour to determine wage/hour)* | | $ _____ |
| *B. Total operating cost per unit* | (B) | $ _____ |
| *C. Total ownership and **operating cost** per unit* | (A+B) | $ _____ |
| *D. Desired profit margin and / or risk premium* | % | |
| *E. Custom Rate (per acre, hour, bushel, ton) Line C x [1+(Line D/100)]* | | $ _____ |

*a Average investment value (AIV) = (original cost basis = salvage value) ÷ 2.*
*b The addition of 15 percent above fuel cost is for oil & lube maintenance.*

A Custom Machine rate calculator is available online on The Ohio State University web site located at:
http://aede.osu.edu/Programs/FarmManagement/Budgets/download.htm#MachFin



FIRM team
Farm Information Resource Management

# 2011 Participating Seed Companies:

**BAYSIDE**
Bayside Seeds, LLC
259 Bowker Rd
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www.baysideseeds.com

**ASGROW / DEKALB**
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www.monsanto.com

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www.croplangenetics.com

**D.F. SEEDS**
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Dansville, MI 48819
www.dfseeds.com

**DAIRYLAND**
Dairyland Seed Company
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West Bend, WI 53095
www.dairylandseed.com

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Marysville, OH 43040
www.dyna-groseed.com

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www.syngentaseeds.com

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www.zfsinc.com

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