

FIELD EXPERIMENT HISTORY

Title: Using SuperU for split-applications of N

Experiment: 12Fertilizer **Trial ID:** 6054 **Year:** 2016

Personnel: Joe Lauer, Thierno Diallo, Kent Kohn

Location: Arlington, WI **County:** Columbia

Supported By: HATCH, WI Fertilizer Research Council, CSCAP

Site Information

Field: ARS374 **Previous Crop:** Soybean **Soil Type:** Silt Loam
Soil Test: Date: 10/30/16 **pH:** 6.6 **OM (%)** 2.6 **P (ppm)** 33 **K (ppm)** 179

Plot Management

Tillage Operations: No-Till

| Fertilizer: | <u>Analysis</u> | <u>Rate</u> | <u>Date</u> |
|--------------------|-----------------|-------------|-------------|
| Preplant | N/A | N/A | N/A |
| Starter | N/A | N/A | N/A |
| Post plant | See factors | See factors | See factors |
| Manure: | N/A | N/A | N/A |

Herbicide: Roundup PMax 25 oz/A 4/18/16
 Medal II EC @ 24 oz/acre 5/23/16
 Hornet 4 oz/A 5/23/16

Insecticide: N/A

Hybrid: 1) RR: Pioneer P0157 AMX
 2) SS: Dekalb DKC50-82 GENSS

Irrigation: None

Planting Date: 5/16/16 **Planting Depth:** 1.5" **Row Width:** 30"

Target Plant Density: 35000 plants per acre **Planting Method:** RTK, JD1700

Harvest Date: 10/24/16 **Harvest Method:** MF 8XP Combine

Notes:

Experimental Design RCB

Replications: 4

Plot Size Seeded: 10' x 25' **Experiment Size:** 1.2 A

Harvest Plot Size: 5' x 21' **Harvest Plant Density:** 30829 plants per acre

Factors/Treatments:

| <u>N rate (lb N/A):</u> | <u>N fertilizer (%)</u> | | <u>Hybrid:</u> |
|-------------------------|-------------------------|----------|--------------------------------|
| | Urea | Agrotain | |
| 1) 130 | 1) 0 | 0 | 1) RR (Plant only at ARL) |
| 2) 160 | 2) 100 | 0 | 2) SS (Plant at all locations) |
| 3) 190 | 3) 75 | 25 | |
| | 4) 50 | 50 | |
| | 5) 25 | 75 | |
| | 6) 0 | 100 | |

Results: Table 1612-01 & 1612-02

**Table 1612 - 01. Nitrogen Use Efficiency in Wisconsin soils.
Arlington, 2016**

| | Nitrogen Rate lb/A | SuperU:Urea Ratio % | Grain yield bu/A | Grain moisture % | Test weight lb/bu | Harvest density plants/A | *AGI \$3.44 \$/A | Dry matter yield | | | | Crude Protein | | |
|-------------------|--------------------------|---------------------------|------------------------|------------------------|-------------------------|--------------------------------|------------------------|------------------|------|-------|-------|---------------|------|-------|
| | | | | | | | | Stover | Cob | Grain | Total | Stover | Cob | Grain |
| | | | | | | | | T/A | T/A | T/A | T/A | % | % | % |
| Dekalb DKC50-82 | | | 257 | 19.45 | 59.02 | 31435 | 865 | 4.03 | 0.71 | 5.92 | 10.66 | 4.52 | 2.06 | 7.25 |
| Pioneer P0157 AMX | | | 252 | 19.51 | 57.41 | 30222 | 846 | 3.63 | 0.62 | 5.52 | 9.77 | 5.03 | 2.06 | 7.28 |
| | 0 | 130 | 203 | 19.12 | 58.63 | 30596 | 684 | 3.24 | 0.55 | 4.54 | 8.33 | 3.76 | 2.06 | 5.62 |
| | 0 | 160 | 209 | 19.28 | 57.80 | 29469 | 702 | 3.35 | 0.58 | 4.75 | 8.69 | 3.73 | 2.06 | 5.99 |
| | 0 | 190 | 199 | 19.55 | 53.99 | 32411 | 669 | 3.44 | 0.60 | 4.70 | 8.74 | 3.43 | 2.06 | 5.22 |
| | 130 | 0_100 | 262 | 19.48 | 58.59 | 30694 | 880 | 3.85 | 0.71 | 5.89 | 10.46 | 4.48 | 2.06 | 7.41 |
| | 130 | 100_0 | 254 | 19.61 | 58.22 | 29559 | 851 | 4.01 | 0.62 | 5.79 | 10.42 | 4.81 | 2.06 | 7.43 |
| | 130 | 25_75 | 264 | 19.08 | 59.32 | 30440 | 888 | 3.75 | 0.67 | 5.84 | 10.26 | 4.78 | 2.06 | 7.68 |
| | 130 | 50_50 | 274 | 19.62 | 58.54 | 31737 | 920 | 3.75 | 0.64 | 5.87 | 10.26 | 4.72 | 2.06 | 6.88 |
| | 130 | 75_25 | 256 | 19.50 | 56.64 | 29973 | 862 | 3.85 | 0.70 | 5.96 | 10.51 | 4.66 | 2.06 | 7.35 |
| | 160 | 0_100 | 262 | 19.71 | 57.97 | 31202 | 878 | 4.15 | 0.70 | 6.00 | 10.85 | 4.98 | 2.06 | 7.51 |
| | 160 | 100_0 | 256 | 19.28 | 58.36 | 31051 | 863 | 3.84 | 0.70 | 5.99 | 10.53 | 4.66 | 2.06 | 7.82 |
| | 160 | 25_75 | 271 | 19.75 | 59.36 | 31322 | 909 | 4.15 | 0.70 | 6.10 | 10.95 | 4.90 | 2.06 | 7.57 |
| | 160 | 50_50 | 267 | 19.23 | 58.02 | 31205 | 899 | 4.08 | 0.72 | 5.95 | 10.75 | 5.35 | 2.06 | 7.70 |
| | 160 | 75_25 | 268 | 19.65 | 58.84 | 31285 | 900 | 3.69 | 0.67 | 5.78 | 10.15 | 5.06 | 2.06 | 7.76 |
| | 190 | 0_100 | 274 | 19.42 | 58.31 | 30648 | 919 | 4.17 | 0.72 | 6.20 | 11.09 | 5.13 | 2.06 | 7.91 |
| | 190 | 100_0 | 273 | 19.82 | 59.22 | 30751 | 917 | 3.59 | 0.65 | 5.62 | 9.85 | 5.47 | 2.06 | 7.77 |
| | 190 | 25_75 | 258 | 19.82 | 58.26 | 31158 | 866 | 4.20 | 0.68 | 5.94 | 10.82 | 5.59 | 2.06 | 7.62 |
| | 190 | 50_50 | 270 | 19.21 | 58.80 | 31281 | 910 | 3.84 | 0.72 | 5.95 | 10.51 | 5.21 | 2.06 | 7.65 |
| | 190 | 75_25 | 264 | 19.51 | 59.01 | 30131 | 887 | 3.99 | 0.69 | 6.05 | 10.74 | 5.20 | 2.06 | 7.82 |
| Dekalb DKC50-82 | 0 | 130 | 201 | 19.27 | 59.57 | 31737 | 675 | 2.98 | 0.52 | 4.22 | 7.72 | 3.24 | 2.06 | 5.06 |
| Dekalb DKC50-82 | 0 | 160 | 226 | 19.37 | 57.50 | 31218 | 760 | 3.80 | 0.69 | 5.59 | 10.08 | 3.62 | 2.06 | 6.47 |
| Dekalb DKC50-82 | 0 | 190 | 215 | 19.85 | 49.81 | 31944 | 722 | 3.54 | 0.62 | 5.00 | 9.17 | 3.22 | 2.06 | 5.70 |
| Dekalb DKC50-82 | 130 | 0_100 | 260 | 19.26 | 60.76 | 30492 | 875 | 4.21 | 0.79 | 6.03 | 11.03 | 3.86 | 2.06 | 7.20 |
| Dekalb DKC50-82 | 130 | 100_0 | 260 | 19.75 | 59.29 | 30181 | 873 | 4.34 | 0.58 | 5.99 | 10.91 | 4.44 | 2.06 | 7.54 |
| Dekalb DKC50-82 | 130 | 25_75 | 263 | 19.20 | 59.67 | 31011 | 886 | 3.92 | 0.71 | 5.93 | 10.55 | 4.67 | 2.06 | 7.47 |
| Dekalb DKC50-82 | 130 | 50_50 | 283 | 19.63 | 59.12 | 32774 | 950 | 3.77 | 0.67 | 6.01 | 10.46 | 4.39 | 2.06 | 6.79 |
| Dekalb DKC50-82 | 130 | 75_25 | 246 | 19.04 | 55.88 | 28936 | 829 | 3.40 | 0.67 | 5.45 | 9.52 | 4.03 | 2.06 | 6.92 |
| Dekalb DKC50-82 | 160 | 0_100 | 272 | 19.70 | 59.99 | 32120 | 913 | 4.47 | 0.83 | 6.70 | 12.00 | 4.83 | 2.06 | 7.90 |
| Dekalb DKC50-82 | 160 | 100_0 | 260 | 19.24 | 59.62 | 31366 | 875 | 4.06 | 0.72 | 6.04 | 10.82 | 4.79 | 2.06 | 7.80 |
| Dekalb DKC50-82 | 160 | 25_75 | 268 | 19.91 | 61.39 | 31322 | 898 | 4.15 | 0.74 | 6.20 | 11.09 | 4.28 | 2.06 | 7.47 |
| Dekalb DKC50-82 | 160 | 50_50 | 271 | 19.46 | 59.30 | 32229 | 912 | 4.82 | 0.79 | 6.37 | 11.98 | 5.56 | 2.06 | 8.08 |
| Dekalb DKC50-82 | 160 | 75_25 | 277 | 19.17 | 60.45 | 32147 | 933 | 3.87 | 0.74 | 6.07 | 10.68 | 4.79 | 2.06 | 7.57 |

continue

Table 1612 - 01. Nitrogen Use Efficiency in Wisconsin soils.
(continued) **Arlington, 2016**

| | Nitrogen Rate lb/A | SuperU:Urea Ratio % | Grain yield bu/A | Grain moisture % | Test weight lb/bu | Harvest density plants/A | *AGI \$3.44 \$/A | Dry matter yield | | | | Crude Protein | | |
|------------------------|--------------------------|---------------------------|------------------------|------------------------|-------------------------|--------------------------------|------------------------|------------------|------|-------|-------|---------------|------|-------|
| | | | | | | | | Stover | Cob | Grain | Total | Stover | Cob | Grain |
| | | | | | | | | T/A | T/A | T/A | T/A | % | % | % |
| Dekalb DKC50-82 | 190 | 0_100 | 277 | 19.42 | 59.55 | 32981 | 931 | 4.68 | 0.82 | 6.70 | 12.20 | 4.83 | 2.06 | 7.80 |
| Dekalb DKC50-82 | 190 | 100_0 | 273 | 19.89 | 61.05 | 31944 | 914 | 3.94 | 0.68 | 5.92 | 10.55 | 5.32 | 2.06 | 7.94 |
| Dekalb DKC50-82 | 190 | 25_75 | 252 | 19.42 | 58.36 | 31514 | 848 | 4.16 | 0.70 | 5.87 | 10.72 | 5.11 | 2.06 | 7.29 |
| Dekalb DKC50-82 | 190 | 50_50 | 268 | 18.94 | 60.31 | 31529 | 905 | 4.04 | 0.79 | 6.24 | 11.07 | 5.13 | 2.06 | 7.52 |
| Dekalb DKC50-82 | 190 | 75_25 | 262 | 19.60 | 60.80 | 30392 | 879 | 4.39 | 0.75 | 6.20 | 11.35 | 5.17 | 2.06 | 7.90 |
| Pioneer P0157 AMX | 0 | 130 | 206 | 18.98 | 57.69 | 29455 | 694 | 3.50 | 0.59 | 4.85 | 8.94 | 4.29 | 2.06 | 6.18 |
| Pioneer P0157 AMX | 0 | 160 | 191 | 19.19 | 58.11 | 27720 | 644 | 2.91 | 0.47 | 3.91 | 7.29 | 3.84 | 2.06 | 5.50 |
| Pioneer P0157 AMX | 0 | 190 | 183 | 19.24 | 58.17 | 32877 | 615 | 3.34 | 0.57 | 4.40 | 8.31 | 3.64 | 2.06 | 4.73 |
| Pioneer P0157 AMX | 130 | 0_100 | 264 | 19.71 | 56.41 | 30897 | 885 | 3.50 | 0.63 | 5.75 | 9.88 | 5.09 | 2.06 | 7.63 |
| Pioneer P0157 AMX | 130 | 100_0 | 247 | 19.47 | 57.14 | 28936 | 830 | 3.69 | 0.66 | 5.60 | 9.94 | 5.19 | 2.06 | 7.31 |
| Pioneer P0157 AMX | 130 | 25_75 | 264 | 18.96 | 58.96 | 29870 | 891 | 3.58 | 0.63 | 5.75 | 9.96 | 4.88 | 2.06 | 7.88 |
| Pioneer P0157 AMX | 130 | 50_50 | 265 | 19.61 | 57.96 | 30699 | 890 | 3.72 | 0.61 | 5.72 | 10.06 | 5.06 | 2.06 | 6.98 |
| Pioneer P0157 AMX | 130 | 75_25 | 267 | 19.96 | 57.40 | 31011 | 894 | 4.30 | 0.74 | 6.47 | 11.51 | 5.28 | 2.06 | 7.78 |
| Pioneer P0157 AMX | 160 | 0_100 | 251 | 19.71 | 55.94 | 30285 | 844 | 3.82 | 0.58 | 5.30 | 9.70 | 5.12 | 2.06 | 7.12 |
| Pioneer P0157 AMX | 160 | 100_0 | 253 | 19.31 | 57.10 | 30737 | 850 | 3.62 | 0.67 | 5.95 | 10.25 | 4.54 | 2.06 | 7.85 |
| Pioneer P0157 AMX | 160 | 25_75 | 274 | 19.59 | 57.33 | 31322 | 920 | 4.16 | 0.65 | 6.00 | 10.81 | 5.51 | 2.06 | 7.68 |
| Pioneer P0157 AMX | 160 | 50_50 | 263 | 19.00 | 56.74 | 30181 | 887 | 3.33 | 0.65 | 5.53 | 9.51 | 5.14 | 2.06 | 7.31 |
| Pioneer P0157 AMX | 160 | 75_25 | 259 | 20.13 | 57.22 | 30422 | 868 | 3.52 | 0.60 | 5.50 | 9.62 | 5.32 | 2.06 | 7.94 |
| Pioneer P0157 AMX | 190 | 0_100 | 270 | 19.43 | 57.08 | 28314 | 907 | 3.65 | 0.62 | 5.71 | 9.98 | 5.43 | 2.06 | 8.02 |
| Pioneer P0157 AMX | 190 | 100_0 | 274 | 19.74 | 57.40 | 29559 | 920 | 3.24 | 0.61 | 5.32 | 9.16 | 5.62 | 2.06 | 7.60 |
| Pioneer P0157 AMX | 190 | 25_75 | 264 | 20.22 | 58.16 | 30803 | 884 | 4.24 | 0.66 | 6.01 | 10.91 | 6.07 | 2.06 | 7.94 |
| Pioneer P0157 AMX | 190 | 50_50 | 272 | 19.47 | 57.29 | 31033 | 915 | 3.64 | 0.64 | 5.66 | 9.94 | 5.30 | 2.06 | 7.79 |
| Pioneer P0157 AMX | 190 | 75_25 | 266 | 19.42 | 57.22 | 29870 | 895 | 3.59 | 0.63 | 5.91 | 10.13 | 5.23 | 2.06 | 7.73 |
| Mean | Mean | | 255 | 19.48 | 58.22 | 30828 | 856 | 3.83 | 0.67 | 5.72 | 10.22 | 4.77 | 2.06 | 7.26 |
| <u>Probability(%):</u> | | | | | | | | | | | | | | |
| Hybrid (H) | | | 24.5 | 75.4 | 16.6 | 7.5 | 21.8 | 3.8 | 1.5 | 11.8 | 3.6 | 2.7 | 90.1 | 91.6 |
| N_Treatment (T) | | | 0.0 | 43.1 | 72.6 | 44.4 | 0.0 | 5.5 | 4.2 | 0.0 | 0.0 | 0.0 | 71.2 | 0.0 |
| H x T | | | 7.9 | 39.9 | 34.2 | 30.5 | 9.3 | 6.1 | 8.2 | 4.5 | 4.4 | 15.6 | 24.1 | 9.9 |
| <u>LSD(0.10):</u> | | | | | | | | | | | | | | |
| Hybrid (H) | | | NS | NS | NS | 1065 | NS | 0.3 | 0.0 | NS | 0.6 | 0.3 | NS | 0.6 |
| N_Treatment (T) | | | 14 | NS | NS | NS | 47 | 0.5 | 0.1 | 0.6 | 1.1 | 0.5 | NS | 0.6 |
| H x T | | | 20 | NS | NS | NS | 66 | 0.7 | 0.1 | 0.8 | 1.5 | NS | NS | 0.9 |

*AGI: Adjusted Gross Income.

**Table 1612 - 02. Nitrogen Use Efficiency in Wisconsin soils.
Arlington, 2016**

| | Urea | | Nitrogen content | | | | Nitrogen uptake | | | | Nitrogen harvest index | Nitrogen recovery efficiency lb/lb | Grain Internal efficiency | Nitrogen Harvest Physiological Index efficiency | Nitrogen use efficiency lb/A | Agronomic efficiency T/lb | Agronomic efficiency bu/lb | |
|-------------------|--------------|------------|------------------|--------|------|-------|-----------------|------|-------|-------|------------------------------|---|---------------------------------|---|---------------------------------------|---------------------------------|----------------------------------|------|
| | N | SuperU | Grain | Stover | Cob | Grain | Stover | Cob | Grain | Total | | | | | | | | |
| | Rate lb/A | Ratio % | yield bu/A | % | % | % | lb/A | lb/A | lb/A | lb/A | | | | | | | | |
| Dekalb DKC50-82 | | | 250 | 0.72 | 0.33 | 1.16 | 59.6 | 4.7 | 139 | 203 | 0.56 | 0.35 | 1.28 | 0.69 | 0.67 | 0.52 | 0.008 | 0.34 |
| Pioneer P0157 AMX | | | 233 | 0.80 | 0.33 | 1.16 | 59.6 | 4.1 | 131 | 195 | 0.57 | 0.37 | 1.25 | 0.67 | 0.78 | 0.50 | 0.009 | 0.44 |
| | 0 | 130 | 192 | 0.60 | 0.33 | 0.90 | 41.0 | 3.7 | 85 | 130 | 0.54 | -- | 1.59 | 0.65 | -- | -- | -- | -- |
| | 0 | 160 | 201 | 0.60 | 0.33 | 0.96 | 41.0 | 3.8 | 97 | 142 | 0.54 | -- | 1.53 | 0.66 | -- | -- | -- | -- |
| | 0 | 190 | 199 | 0.55 | 0.33 | 0.83 | 37.6 | 3.9 | 79 | 121 | 0.54 | -- | 1.66 | 0.65 | -- | -- | -- | -- |
| | 130 | 0_100 | 249 | 0.72 | 0.33 | 1.19 | 55.3 | 4.7 | 140 | 201 | 0.57 | 0.42 | 1.26 | 0.70 | 0.73 | 0.54 | 0.010 | 0.45 |
| | 130 | 100_0 | 245 | 0.77 | 0.33 | 1.19 | 62.8 | 4.1 | 139 | 206 | 0.56 | 0.41 | 1.23 | 0.68 | 0.69 | 0.58 | 0.010 | 0.39 |
| | 130 | 25_75 | 247 | 0.76 | 0.33 | 1.23 | 57.9 | 4.4 | 143 | 206 | 0.57 | 0.45 | 1.21 | 0.70 | 0.84 | 0.58 | 0.010 | 0.46 |
| | 130 | 50_50 | 248 | 0.76 | 0.32 | 1.10 | 57.0 | 4.1 | 129 | 190 | 0.57 | 0.34 | 1.33 | 0.68 | 0.86 | 0.46 | 0.010 | 0.54 |
| | 130 | 75_25 | 252 | 0.75 | 0.33 | 1.18 | 58.2 | 4.6 | 141 | 204 | 0.57 | 0.43 | 1.26 | 0.69 | 0.75 | 0.57 | 0.011 | 0.41 |
| | 160 | 0_100 | 254 | 0.80 | 0.33 | 1.20 | 66.8 | 4.6 | 145 | 217 | 0.56 | 0.30 | 1.19 | 0.67 | 0.70 | 0.47 | 0.008 | 0.33 |
| | 160 | 100_0 | 253 | 0.75 | 0.33 | 1.25 | 58.1 | 4.6 | 150 | 212 | 0.57 | 0.33 | 1.21 | 0.71 | 0.61 | 0.44 | 0.008 | 0.30 |
| | 160 | 25_75 | 258 | 0.78 | 0.33 | 1.21 | 65.1 | 4.6 | 149 | 219 | 0.56 | 0.32 | 1.19 | 0.68 | 0.67 | 0.48 | 0.008 | 0.39 |
| | 160 | 50_50 | 251 | 0.86 | 0.33 | 1.23 | 71.5 | 4.7 | 147 | 223 | 0.56 | 0.31 | 1.16 | 0.67 | 0.75 | 0.51 | 0.007 | 0.37 |
| | 160 | 75_25 | 244 | 0.81 | 0.33 | 1.24 | 59.7 | 4.4 | 143 | 207 | 0.57 | 0.28 | 1.19 | 0.69 | 0.67 | 0.41 | 0.006 | 0.37 |
| | 190 | 0_100 | 262 | 0.82 | 0.33 | 1.27 | 69.3 | 4.7 | 158 | 232 | 0.56 | 0.41 | 1.15 | 0.69 | 0.73 | 0.58 | 0.008 | 0.39 |
| | 190 | 100_0 | 237 | 0.88 | 0.33 | 1.24 | 63.3 | 4.3 | 140 | 207 | 0.57 | 0.32 | 1.15 | 0.68 | 0.72 | 0.45 | 0.005 | 0.39 |
| | 190 | 25_75 | 251 | 0.89 | 0.33 | 1.22 | 76.7 | 4.5 | 145 | 226 | 0.55 | 0.35 | 1.14 | 0.65 | 0.65 | 0.55 | 0.007 | 0.31 |
| | 190 | 50_50 | 252 | 0.83 | 0.33 | 1.22 | 64.6 | 4.7 | 146 | 215 | 0.57 | 0.35 | 1.18 | 0.68 | 0.73 | 0.50 | 0.007 | 0.38 |
| | 190 | 75_25 | 256 | 0.83 | 0.33 | 1.25 | 67.2 | 4.6 | 151 | 223 | 0.57 | 0.38 | 1.16 | 0.68 | 0.73 | 0.54 | 0.007 | 0.34 |
| Dekalb DKC50-82 | 0 | 130 | 178 | 0.52 | 0.33 | 0.81 | 31.1 | 3.4 | 70 | 104 | 0.54 | -- | 1.73 | 0.66 | -- | -- | -- | -- |
| Dekalb DKC50-82 | 0 | 160 | 236 | 0.58 | 0.32 | 1.03 | 44.2 | 4.5 | 118 | 167 | 0.55 | -- | 1.47 | 0.70 | -- | -- | -- | -- |
| Dekalb DKC50-82 | 0 | 190 | 211 | 0.52 | 0.33 | 0.91 | 36.5 | 4.1 | 93 | 133 | 0.55 | -- | 1.61 | 0.69 | -- | -- | -- | -- |
| Dekalb DKC50-82 | 130 | 0_100 | 255 | 0.62 | 0.33 | 1.15 | 52.3 | 5.2 | 139 | 196 | 0.55 | 0.53 | 1.30 | 0.71 | 0.76 | 0.71 | 0.014 | 0.46 |
| Dekalb DKC50-82 | 130 | 100_0 | 253 | 0.71 | 0.33 | 1.21 | 62.1 | 3.8 | 145 | 211 | 0.55 | 0.58 | 1.21 | 0.69 | 0.72 | 0.82 | 0.014 | 0.46 |
| Dekalb DKC50-82 | 130 | 25_75 | 251 | 0.75 | 0.33 | 1.20 | 59.1 | 4.7 | 142 | 206 | 0.56 | 0.55 | 1.23 | 0.69 | 0.72 | 0.78 | 0.013 | 0.48 |
| Dekalb DKC50-82 | 130 | 50_50 | 254 | 0.70 | 0.31 | 1.09 | 53.5 | 4.2 | 130 | 188 | 0.58 | 0.46 | 1.39 | 0.69 | 0.73 | 0.64 | 0.014 | 0.63 |
| Dekalb DKC50-82 | 130 | 75_25 | 230 | 0.65 | 0.33 | 1.11 | 43.7 | 4.4 | 121 | 169 | 0.57 | 0.39 | 1.37 | 0.71 | 0.78 | 0.50 | 0.009 | 0.35 |
| Dekalb DKC50-82 | 160 | 0_100 | 283 | 0.77 | 0.33 | 1.26 | 69.7 | 5.5 | 169 | 244 | 0.56 | 0.32 | 1.16 | 0.70 | 0.71 | 0.48 | 0.007 | 0.29 |
| Dekalb DKC50-82 | 160 | 100_0 | 255 | 0.77 | 0.33 | 1.25 | 64.2 | 4.7 | 150 | 219 | 0.56 | 0.20 | 1.19 | 0.70 | 0.38 | 0.33 | 0.003 | 0.21 |
| Dekalb DKC50-82 | 160 | 25_75 | 262 | 0.69 | 0.33 | 1.19 | 56.4 | 4.9 | 148 | 210 | 0.56 | 0.19 | 1.25 | 0.71 | 0.71 | 0.27 | 0.004 | 0.26 |
| Dekalb DKC50-82 | 160 | 50_50 | 269 | 0.89 | 0.33 | 1.29 | 86.6 | 5.2 | 164 | 256 | 0.53 | 0.28 | 1.06 | 0.65 | 0.54 | 0.55 | 0.005 | 0.28 |
| Dekalb DKC50-82 | 160 | 75_25 | 256 | 0.77 | 0.33 | 1.21 | 60.0 | 4.9 | 147 | 212 | 0.57 | 0.18 | 1.23 | 0.70 | 0.61 | 0.28 | 0.003 | 0.32 |

continue

Table 1612 - 02. Nitrogen Use Efficiency in Wisconsin soils.

(continued)

Arlington, 2016

| | Urea | | Nitrogen content | | | Nitrogen uptake | | | | Nitrogen harvest index | Nitrogen recovery efficiency lb/lb | Grain Internal efficiency | Nitrogen Harvest Physiological Index efficiency | Nitrogen use efficiency lb/A | Agronomic efficiency T/lb | Agronomic efficiency bu/lb | | |
|------------------------|--------------|------------|------------------|--------|------|-----------------|--------|------|-------|------------------------------|---|---------------------------------|---|---------------------------------------|---------------------------------|----------------------------------|-------|------|
| | N | SuperU | Grain | Stover | Cob | Grain | Stover | Cob | Grain | | | | | | | | Total | |
| | Rate lb/A | Ratio % | yield bu/A | % | % | % | lb/A | lb/A | lb/A | | | | | | | | lb/A | |
| Dekalb DKC50-82 | 190 | 0_100 | 283 | 0.77 | 0.33 | 1.25 | 75.0 | 5.4 | 167 | 248 | 0.55 | 0.39 | 1.16 | 0.69 | 0.70 | 0.60 | 0.009 | 0.33 |
| Dekalb DKC50-82 | 190 | 100_0 | 250 | 0.85 | 0.33 | 1.27 | 68.2 | 4.5 | 150 | 223 | 0.56 | 0.30 | 1.13 | 0.68 | 0.67 | 0.47 | 0.005 | 0.30 |
| Dekalb DKC50-82 | 190 | 25_75 | 248 | 0.82 | 0.33 | 1.17 | 69.9 | 4.6 | 137 | 211 | 0.55 | 0.23 | 1.21 | 0.66 | 0.63 | 0.41 | 0.005 | 0.20 |
| Dekalb DKC50-82 | 190 | 50_50 | 264 | 0.82 | 0.33 | 1.20 | 66.7 | 5.2 | 150 | 222 | 0.57 | 0.30 | 1.19 | 0.68 | 0.67 | 0.47 | 0.007 | 0.28 |
| Dekalb DKC50-82 | 190 | 75_25 | 262 | 0.83 | 0.33 | 1.26 | 73.3 | 5.0 | 157 | 235 | 0.55 | 0.34 | 1.12 | 0.67 | 0.66 | 0.54 | 0.006 | 0.25 |
| Pioneer P0157 AMX | 0 | 130 | 205 | 0.69 | 0.33 | 0.99 | 50.9 | 3.9 | 101 | 156 | 0.54 | -- | 1.46 | 0.65 | -- | -- | -- | -- |
| Pioneer P0157 AMX | 0 | 160 | 165 | 0.61 | 0.33 | 0.88 | 37.8 | 3.1 | 76 | 117 | 0.53 | -- | 1.59 | 0.62 | -- | -- | -- | -- |
| Pioneer P0157 AMX | 0 | 190 | 186 | 0.58 | 0.33 | 0.76 | 38.8 | 3.8 | 66 | 109 | 0.53 | -- | 1.71 | 0.61 | -- | -- | -- | -- |
| Pioneer P0157 AMX | 130 | 0_100 | 243 | 0.81 | 0.33 | 1.22 | 58.3 | 4.2 | 142 | 205 | 0.58 | 0.32 | 1.22 | 0.70 | 0.71 | 0.38 | 0.007 | 0.44 |
| Pioneer P0157 AMX | 130 | 100_0 | 237 | 0.83 | 0.33 | 1.17 | 63.4 | 4.3 | 133 | 201 | 0.57 | 0.25 | 1.25 | 0.67 | 0.66 | 0.35 | 0.006 | 0.32 |
| Pioneer P0157 AMX | 130 | 25_75 | 243 | 0.78 | 0.33 | 1.26 | 56.6 | 4.1 | 145 | 206 | 0.58 | 0.34 | 1.19 | 0.71 | 0.96 | 0.39 | 0.007 | 0.45 |
| Pioneer P0157 AMX | 130 | 50_50 | 242 | 0.81 | 0.33 | 1.12 | 60.5 | 4.0 | 128 | 193 | 0.57 | 0.21 | 1.27 | 0.67 | 1.00 | 0.29 | 0.007 | 0.45 |
| Pioneer P0157 AMX | 130 | 75_25 | 274 | 0.85 | 0.33 | 1.25 | 72.7 | 4.9 | 161 | 239 | 0.56 | 0.46 | 1.15 | 0.67 | 0.72 | 0.64 | 0.012 | 0.47 |
| Pioneer P0157 AMX | 160 | 0_100 | 224 | 0.82 | 0.33 | 1.14 | 64.0 | 3.8 | 121 | 189 | 0.55 | 0.28 | 1.22 | 0.65 | 0.69 | 0.45 | 0.009 | 0.37 |
| Pioneer P0157 AMX | 160 | 100_0 | 251 | 0.73 | 0.33 | 1.26 | 51.9 | 4.4 | 149 | 205 | 0.58 | 0.46 | 1.23 | 0.73 | 0.84 | 0.55 | 0.013 | 0.38 |
| Pioneer P0157 AMX | 160 | 25_75 | 253 | 0.88 | 0.33 | 1.23 | 73.8 | 4.3 | 150 | 228 | 0.55 | 0.46 | 1.13 | 0.65 | 0.63 | 0.69 | 0.013 | 0.52 |
| Pioneer P0157 AMX | 160 | 50_50 | 234 | 0.82 | 0.32 | 1.17 | 56.3 | 4.2 | 131 | 191 | 0.58 | 0.34 | 1.26 | 0.69 | 0.96 | 0.46 | 0.010 | 0.45 |
| Pioneer P0157 AMX | 160 | 75_25 | 232 | 0.85 | 0.33 | 1.27 | 59.4 | 4.0 | 139 | 202 | 0.57 | 0.39 | 1.15 | 0.69 | 0.74 | 0.53 | 0.010 | 0.42 |
| Pioneer P0157 AMX | 190 | 0_100 | 241 | 0.87 | 0.33 | 1.28 | 63.6 | 4.1 | 148 | 216 | 0.57 | 0.43 | 1.13 | 0.68 | 0.77 | 0.56 | 0.007 | 0.46 |
| Pioneer P0157 AMX | 190 | 100_0 | 225 | 0.90 | 0.33 | 1.22 | 58.4 | 4.0 | 129 | 192 | 0.58 | 0.33 | 1.17 | 0.67 | 0.77 | 0.44 | 0.005 | 0.48 |
| Pioneer P0157 AMX | 190 | 25_75 | 254 | 0.97 | 0.33 | 1.27 | 83.4 | 4.3 | 153 | 241 | 0.55 | 0.46 | 1.07 | 0.64 | 0.67 | 0.70 | 0.009 | 0.43 |
| Pioneer P0157 AMX | 190 | 50_50 | 239 | 0.85 | 0.33 | 1.25 | 62.5 | 4.2 | 142 | 209 | 0.58 | 0.40 | 1.17 | 0.69 | 0.80 | 0.52 | 0.007 | 0.47 |
| Pioneer P0157 AMX | 190 | 75_25 | 250 | 0.84 | 0.33 | 1.24 | 61.1 | 4.2 | 146 | 211 | 0.58 | 0.42 | 1.20 | 0.69 | 0.81 | 0.54 | 0.008 | 0.44 |
| Mean | | | 242 | 0.76 | 0.33 | 1.16 | 59.6 | 4.4 | 135 | 199 | 0.56 | 0.36 | 1.27 | 0.68 | 0.72 | 0.51 | 0.008 | 0.39 |
| <u>Probability(%):</u> | | | | | | | | | | | | | | | | | | |
| Hybrid (H) | | | 11.8 | 2.7 | 34.5 | 91.6 | 98.2 | 1.6 | 38.0 | 39.0 | 44.6 | 61.0 | 52.8 | 31.1 | 4.8 | 59.7 | 52.5 | 0.7 |
| N_Treatment (T) | | | 0.0 | 0.0 | 5.6 | 0.0 | 0.0 | 3.4 | 0.0 | 0.0 | 8.2 | 24.3 | 0.0 | 1.3 | 56.2 | 85.3 | 5.2 | 0.0 |
| H x T | | | 4.5 | 15.6 | 2.5 | 9.9 | 3.2 | 7.8 | 1.0 | 1.3 | 22.3 | 0.0 | 11.4 | 2.2 | 12.9 | 0.0 | 0.0 | 0.0 |
| <u>LSD(0.10):</u> | | | | | | | | | | | | | | | | | | |
| Hybrid (H) | | | NS | 0.05 | NS | NS | NS | 0.3 | NS | NS | NS | NS | NS | NS | 0.08 | NS | NS | 0.03 |
| N_Treatment (T) | | | 24 | 0.08 | 0.00 | 0.09 | 12.1 | 0.6 | 18 | 29 | NS | NS | 0.12 | 0.03 | NS | NS | 0.003 | 0.07 |
| H x T | | | 35 | NS | 0.01 | 0.14 | 17.2 | 0.8 | 27 | 41 | NS | 0.16 | NS | 0.04 | 0.23 | 0.25 | 0.005 | 0.09 |

FIELD EXPERIMENT HISTORY

Title: Using SuperU for split-applications of N

Experiment: 12Fertilizer **Trial ID:** 6133 **Year:** 2016
Personnel: Joe Lauer, Thierno Diallo, Kent Kohn
Location: Hancock, WI **County:** Waushara
Supported By: HATCH, WI Fertilizer Research Council

Site Information

Field: C 16 **Previous Crop:** Soybean **Soil Type:** Plainfield Sand
Soil Test: Date: 11/01/13 **pH:** 6.5 **OM (%)** 0.8 **P (ppm)** 121 **K (ppm)** 85

Plot Management

Tillage Operations: Disk 25'

| Fertilizer: | Analysis | Rate | Date |
|--------------------|------------------------|-------------|-------------|
| Preplant | 0-0-60 | 100 lb/A | 4 /12/16 |
| Starter | 10-20-20-4S-2Ca+micros | 200 lb/A | 4 /19/16 |
| Post plant | See factors | See factors | See factors |
| Manure: | N/A | N/A | N/A |

Herbicide: Prowl 2 pt/A 4/27/16 **Insecticide:** N/A
Hybrid: 1) DKC46-36RIB GENSSRIB

Irrigation: Yes.
Planting Date: 4/19/16 **Planting Depth:** 1.5" **Row Width:** 30"
Target Plant Density: 32000 **plants per acre** **Planting Method:** Case IH1225
Harvest Date: 10/07/16 **Harvest Method:** MF 8XP Combine
Notes: Total Irrigation Amount: 12.5"

Experimental Design RCB

Replications: 4
Plot Size Seeded: 10' x 25' **Experiment Size:** 0.7
Harvest Plot Size: 5' x 21' **Harvest Plant Density:** 30729 **plants per acre**

Factors/Treatments:

| <u>N rate (lb N/A):</u> | <u>N fertilizer (%)</u> | |
|--------------------------------|--------------------------------|----------|
| | Urea | Agrotain |
| 1) 130 | 1) 0 | 0 |
| 2) 160 | 2) 100 | 0 |
| 3) 190 | 3) 75 | 25 |
| | 4) 50 | 50 |
| | 5) 25 | 75 |
| | 6) 0 | 100 |

Results: Table 1612-03 & 1612-04

**Table 1612 - 03. Nitrogen Use Efficiency in Wisconsin soils.
Hancock, 2016**

| N Rate lb/A | SuperU:Urea Ratio % | Grain yield bu/A | Grain moisture % | Test weight lb/bu | Harvest density plants/A | *AGI \$3.44 \$/A | Dry matter yield | | | | Crude Protein | | |
|-----------------------|---------------------------|------------------------|------------------------|-------------------------|--------------------------------|------------------------|------------------|------------|--------------|--------------|---------------|----------|------------|
| | | | | | | | Stover T/A | Cob T/A | Grain T/A | Total T/A | Stover % | Cob % | Grain % |
| 0 | (130) | 122 | 23.21 | 58.41 | 31114 | 399 | 4.34 | 0.33 | 3.29 | 7.96 | 2.62 | 2.06 | 4.95 |
| 0 | (160) | 127 | 22.73 | 55.15 | 30699 | 418 | 4.03 | 0.35 | 3.81 | 8.18 | 2.80 | 2.06 | 4.97 |
| 0 | (190) | 120 | 22.54 | 56.26 | 30077 | 396 | 4.55 | 0.38 | 3.82 | 8.74 | 3.38 | 2.06 | 5.12 |
| 130 | 0_100 | 262 | 21.68 | 56.36 | 30699 | 868 | 6.20 | 0.65 | 6.05 | 12.90 | 2.88 | 2.06 | 6.00 |
| 130 | 100_0 | 244 | 21.49 | 54.40 | 30803 | 810 | 5.83 | 0.61 | 5.67 | 12.12 | 3.11 | 2.06 | 5.75 |
| 130 | 25_75 | 244 | 21.83 | 54.88 | 29973 | 809 | 7.33 | 0.68 | 6.26 | 14.26 | 2.86 | 2.06 | 5.88 |
| 130 | 50_50 | 238 | 21.54 | 54.45 | 31425 | 788 | 5.59 | 0.53 | 5.08 | 11.19 | 3.09 | 2.06 | 5.50 |
| 130 | 75_25 | 236 | 21.51 | 54.60 | 30803 | 783 | 5.81 | 0.53 | 5.26 | 11.60 | 3.31 | 2.06 | 5.67 |
| 160 | 0_100 | 250 | 21.53 | 53.55 | 31322 | 831 | 6.05 | 0.58 | 5.61 | 12.25 | 3.53 | 2.06 | 5.54 |
| 160 | 100_0 | 236 | 21.59 | 55.48 | 30181 | 782 | 5.57 | 0.50 | 5.03 | 11.10 | 2.82 | 2.06 | 5.73 |
| 160 | 25_75 | 240 | 22.35 | 56.13 | 30077 | 793 | 6.26 | 0.60 | 5.90 | 12.76 | 3.13 | 2.06 | 5.93 |
| 160 | 50_50 | 244 | 21.76 | 54.75 | 30699 | 809 | 6.83 | 0.57 | 5.43 | 12.83 | 3.02 | 2.06 | 5.61 |
| 160 | 75_25 | 237 | 22.12 | 54.49 | 29766 | 783 | 6.17 | 0.57 | 5.37 | 12.10 | 2.49 | 2.06 | 5.89 |
| 190 | 0_100 | 265 | 22.03 | 56.00 | 31633 | 878 | 6.95 | 0.70 | 6.78 | 14.43 | 3.12 | 2.06 | 6.32 |
| 190 | 100_0 | 250 | 22.29 | 56.78 | 29144 | 828 | 6.60 | 0.70 | 6.32 | 13.61 | 2.85 | 2.06 | 6.52 |
| 190 | 25_75 | 271 | 21.79 | 55.17 | 31011 | 898 | 7.18 | 0.63 | 6.09 | 13.91 | 3.42 | 2.06 | 6.24 |
| 190 | 50_50 | 269 | 21.66 | 54.44 | 31633 | 891 | 7.18 | 1.77 | 6.69 | 15.64 | 2.78 | 2.06 | 6.55 |
| 190 | 75_25 | 250 | 21.26 | 54.18 | 32048 | 831 | 7.14 | 0.65 | 5.97 | 13.76 | 3.24 | 2.06 | 6.15 |
| Mean | | 228 | 21.94 | 55.30 | 30728 | 755 | 6.09 | 0.63 | 5.47 | 12.19 | 3.02 | 2.06 | 5.80 |
| Probability(%) | | | | | | | | | | | | | |
| N_Treatment (T) | | 0.0 | 0.2 | 12.3 | 24.7 | 0.0 | 3.7 | 11.2 | 0.0 | 0.0 | 59.4 | 54.9 | 0.0 |
| LSD(0.10) | | | | | | | | | | | | | |
| N_Treatment (T) | | 21 | 0.71 | NS | NS | 70 | 1.71 | NS | 0.90 | 2.42 | NS | NS | 0.62 |

†AGI: Adjusted Gross Income.

Table 1612 - 04. Nitrogen Use Efficiency in Wisconsin soils.**Hancock, 2016**

| N Rate | Urea | | Nitrogen content | | | Nitrogen uptake | | | | Nitrogen harvest index | Nitrogen recovery efficiency | Grain Internal efficiency | Nitrogen Harvest Index | Physiological efficiency | Nitrogen use | | Agronomic efficiency | Agronomic efficiency |
|-----------------------|--------------|-------------|------------------|------|-------|-----------------|-------|-------|-------|------------------------|------------------------------|---------------------------|------------------------|--------------------------|--------------|-------|----------------------|----------------------|
| | SuperU Ratio | Grain yield | Stover | Cob | Grain | Stover | Cob | Grain | Total | | | | | | lb/A | % | | |
| lb/A | % | bu/A | % | % | % | lb/A | lb/A | lb/A | lb/A | lb/A | | lb/lb | | | lb/A | T/lb | bu/lb | |
| 0 | (130) | 139 | 0.42 | 0.33 | 0.79 | 36.52 | 2.18 | 52.2 | 90.9 | 0.41 | -- | 1.541 | 0.577 | -- | -- | -- | -- | |
| 0 | (160) | 161 | 0.45 | 0.33 | 0.80 | 35.77 | 2.28 | 61.2 | 99.2 | 0.46 | -- | 1.607 | 0.604 | -- | -- | -- | -- | |
| 0 | (190) | 161 | 0.54 | 0.33 | 0.82 | 50.39 | 2.49 | 62.0 | 114.9 | 0.43 | -- | 1.431 | 0.548 | -- | -- | -- | -- | |
| 130 | 0_100 | 256 | 0.46 | 0.33 | 0.96 | 57.31 | 4.32 | 116.4 | 178.1 | 0.47 | 0.494 | 1.443 | 0.653 | 0.737 | 0.671 | 0.021 | 1.079 | |
| 130 | 100_0 | 240 | 0.50 | 0.33 | 0.92 | 58.43 | 4.04 | 104.2 | 166.7 | 0.47 | 0.400 | 1.453 | 0.632 | 0.721 | 0.583 | 0.018 | 0.941 | |
| 130 | 25_75 | 265 | 0.46 | 0.33 | 0.94 | 68.04 | 4.46 | 118.7 | 191.2 | 0.44 | 0.512 | 1.419 | 0.623 | 0.677 | 0.772 | 0.023 | 0.944 | |
| 130 | 50_50 | 215 | 0.49 | 0.33 | 0.88 | 55.44 | 3.48 | 89.8 | 148.7 | 0.45 | 0.289 | 1.459 | 0.606 | 0.694 | 0.445 | 0.014 | 0.892 | |
| 130 | 75_25 | 222 | 0.53 | 0.33 | 0.91 | 61.38 | 3.49 | 95.5 | 160.4 | 0.45 | 0.333 | 1.388 | 0.596 | 0.632 | 0.535 | 0.015 | 0.879 | |
| 160 | 0_100 | 237 | 0.56 | 0.33 | 0.89 | 77.12 | 3.83 | 99.8 | 180.8 | 0.50 | 0.242 | 1.487 | 0.617 | -0.044 | 0.510 | 0.011 | 0.772 | |
| 160 | 100_0 | 213 | 0.45 | 0.33 | 0.92 | 50.70 | 3.30 | 93.7 | 147.7 | 0.45 | 0.203 | 1.449 | 0.628 | 0.768 | 0.303 | 0.008 | 0.680 | |
| 160 | 25_75 | 250 | 0.50 | 0.33 | 0.95 | 62.96 | 3.93 | 112.4 | 179.3 | 0.47 | 0.320 | 1.405 | 0.631 | 0.656 | 0.500 | 0.013 | 0.708 | |
| 160 | 50_50 | 230 | 0.48 | 0.32 | 0.90 | 64.83 | 3.64 | 98.2 | 166.6 | 0.43 | 0.231 | 1.396 | 0.592 | 0.566 | 0.421 | 0.010 | 0.734 | |
| 160 | 75_25 | 227 | 0.40 | 0.33 | 0.94 | 49.14 | 3.75 | 101.1 | 154.0 | 0.44 | 0.249 | 1.480 | 0.657 | 0.744 | 0.342 | 0.010 | 0.686 | |
| 190 | 0_100 | 286 | 0.50 | 0.33 | 1.01 | 71.93 | 4.64 | 137.0 | 213.6 | 0.47 | 0.395 | 1.362 | 0.652 | 0.818 | 0.519 | 0.016 | 0.765 | |
| 190 | 100_0 | 267 | 0.46 | 0.33 | 1.04 | 60.41 | 4.62 | 131.9 | 196.9 | 0.47 | 0.367 | 1.357 | 0.670 | 0.858 | 0.431 | 0.013 | 0.687 | |
| 190 | 25_75 | 258 | 0.55 | 0.33 | 1.00 | 79.07 | 4.15 | 123.4 | 206.7 | 0.44 | 0.323 | 1.281 | 0.597 | 0.685 | 0.483 | 0.012 | 0.794 | |
| 190 | 50_50 | 283 | 0.44 | 0.33 | 1.05 | 64.95 | 11.69 | 141.0 | 217.6 | 0.43 | 0.415 | 1.321 | 0.653 | 0.810 | 0.540 | 0.015 | 0.781 | |
| 190 | 75_25 | 253 | 0.52 | 0.33 | 0.98 | 75.59 | 4.27 | 120.1 | 200.0 | 0.44 | 0.306 | 1.323 | 0.605 | 0.771 | 0.448 | 0.011 | 0.683 | |
| Mean | | 231 | 0.48 | 0.33 | 0.93 | 60.00 | 4.14 | 103.3 | 167.4 | 0.45 | 0.339 | 1.422 | 0.619 | 0.673 | 0.500 | 0.014 | 0.802 | |
| Probability(%) | | | | | | | | | | | | | | | | | | |
| N_Treatment (| 0.0 | 59.4 | 47.4 | 0.0 | 37.9 | 11.1 | 0.0 | 0.0 | 91.2 | 6.8 | 84.0 | 74.8 | 15.0 | 64.0 | 0.1 | 0.0 | | |
| LSD(0.10) | | | | | | | | | | | | | | | | | | |
| N_Treatment (| 38 | NS | NS | 0.10 | NS | NS | 25.4 | 46.4 | NS | 0.163 | NS | NS | NS | NS | NS | 0.005 | 0.133 | |

†AGI: Adjusted Gross Income.

FIELD EXPERIMENT HISTORY

Title: Using SuperU for split-applications of N

Experiment: 12Fertilizer **Trial ID:** 6134 **Year:** 2016
Personnel: Joe Lauer, Thierno Diallo, Kent Kohn
Location: Marshfield, WI **County:** Wood
Supported By: HATCH, WI Fertilizer Research Council

Site Information

Field: 790 - 4 **Previous Crop:** Soybean **Soil Type:** Withee Silt Loam
Soil Test: Date: 11/16/15 **pH:** 6.3 **OM (%)** 3.0 **P (ppm)** 37 **K (ppm)** 114

Plot Management

Tillage Operations: Field Cultivator

| Fertilizer: | <u>Analysis</u> | <u>Rate</u> | <u>Date</u> |
|--------------------|--------------------|-------------|-------------|
| Preplant | N/A | N/A | N/A |
| Starter | 6-24-6-0.25 | 5 gal/A | 5/5/16 |
| | 9-11-30, 6S, 1.3Zn | 150 lb/A | 5/5/16 |
| Post plant | See factors | See factors | See factors |
| Manure: | N/A | N/A | N/A |

Herbicide: Roundup 32 oz/A 5/13/16 **Insecticide:** N/A
Parallel 1.7 pt/A 5/13/16 **Hybrid:** 1) Great Lakes 3847 VT2PRIB
Hornet WDG 3.0 oz/A 5/13/16

Irrigation: None

Planting Date: 5/5/16 **Planting Depth:** 1.5" **Row Width:** 30"

Target Plant Density: 35000 plants per acre **Planting Method:** 6 row JD1700

Harvest Date: 10/19/16 **Harvest Method:** MF 8XP Combine

Notes:

Experimental Design RCB

Replications: 4

Plot Size Seeded: 10' x 25' **Experiment Size:** 0.7

Harvest Plot Size: 5' x 21' **Harvest Plant Density:** 33874 plants per acre

Factors/Treatments:

| <u>N rate (lb N/A):</u> | <u>N fertilizer (%)</u> | |
|-------------------------|-------------------------|----------|
| | Urea | Agrotain |
| 1) 130 | 1) 0 | 0 |
| 2) 160 | 2) 100 | 0 |
| 3) 190 | 3) 75 | 25 |
| | 4) 50 | 50 |
| | 5) 25 | 75 |
| | 6) 0 | 100 |

Results: Table 1612-05 & 1612-06

**Table 1612 - 05. Nitrogen Use Efficiency in Wisconsin soils.
Marshfield, 2016**

| N Rate lb/A | SuperU:Urea Ratio % | Grain yield bu/A | Grain moisture % | Test weight lb/bu | Harvest density plants/A | *AGI \$3.44 \$/A | Dry matter yield | | | | Crude Protein | | |
|-----------------------|---------------------------|------------------------|------------------------|-------------------------|--------------------------------|------------------------|------------------|------------|--------------|--------------|---------------|----------|------------|
| | | | | | | | Stover T/A | Cob T/A | Grain T/A | Total T/A | Stover % | Cob % | Grain % |
| 0 | (130) | 225 | 20.40 | 56.42 | 32981 | 751 | 3.21 | 0.56 | 5.24 | 9.02 | 5.48 | 2.06 | 6.67 |
| 0 | (160) | 217 | 20.53 | 54.94 | 33396 | 725 | 3.17 | 0.50 | 5.03 | 8.70 | 4.67 | 2.06 | 6.43 |
| 0 | (190) | 221 | 20.49 | 54.30 | 33603 | 740 | 3.39 | 0.62 | 5.38 | 9.39 | 5.16 | 2.06 | 6.61 |
| 130 | 0_100 | 238 | 20.39 | 56.12 | 33811 | 796 | 3.17 | 1.87 | 5.53 | 10.58 | 5.89 | 2.06 | 7.12 |
| 130 | 100_0 | 231 | 20.97 | 55.64 | 31114 | 770 | 3.55 | 0.59 | 5.60 | 9.74 | 5.51 | 2.06 | 7.81 |
| 130 | 25_75 | 238 | 20.82 | 55.32 | 33085 | 792 | 2.86 | 0.59 | 5.28 | 8.72 | 5.76 | 2.06 | 7.40 |
| 130 | 50_50 | 242 | 20.39 | 56.22 | 34433 | 809 | 3.60 | 0.66 | 5.95 | 10.21 | 5.76 | 2.06 | 7.51 |
| 130 | 75_25 | 237 | 20.79 | 55.59 | 32774 | 792 | 3.01 | 0.52 | 4.80 | 8.33 | 5.44 | 2.06 | 6.65 |
| 160 | 0_100 | 245 | 20.62 | 55.85 | 33396 | 816 | 3.61 | 0.69 | 5.93 | 10.23 | 4.89 | 2.06 | 7.94 |
| 160 | 100_0 | 239 | 20.82 | 54.81 | 33811 | 795 | 3.54 | 0.65 | 5.75 | 9.93 | 5.15 | 2.06 | 7.45 |
| 160 | 25_75 | 244 | 20.50 | 56.32 | 34329 | 814 | 3.15 | 0.70 | 5.46 | 9.31 | 4.93 | 2.06 | 7.60 |
| 160 | 50_50 | 248 | 20.97 | 55.51 | 34952 | 826 | 3.06 | 0.60 | 5.45 | 9.12 | 5.87 | 2.06 | 7.22 |
| 160 | 75_25 | 241 | 20.68 | 56.71 | 32981 | 804 | 3.37 | 0.61 | 5.56 | 9.54 | 5.32 | 2.06 | 7.94 |
| 190 | 0_100 | 246 | 20.77 | 55.15 | 35470 | 819 | 3.73 | 0.69 | 6.18 | 10.60 | 5.44 | 2.06 | 7.43 |
| 190 | 100_0 | 245 | 20.83 | 54.54 | 34744 | 818 | 3.51 | 0.63 | 5.57 | 9.70 | 5.82 | 2.06 | 7.43 |
| 190 | 25_75 | 250 | 20.53 | 56.02 | 35367 | 835 | 3.23 | 0.64 | 5.69 | 9.57 | 5.58 | 2.06 | 7.48 |
| 190 | 50_50 | 246 | 20.16 | 55.16 | 36404 | 824 | 3.83 | 0.66 | 6.06 | 10.55 | 5.27 | 2.06 | 7.96 |
| 190 | 75_25 | 245 | 21.07 | 57.10 | 33085 | 814 | 3.26 | 0.64 | 5.56 | 9.46 | 5.94 | 2.06 | 7.68 |
| Mean | | 239 | 20.65 | 55.65 | 33874 | 797 | 3.35 | 0.69 | 5.56 | 9.59 | 5.44 | 2.06 | 7.35 |
| Probability(%) | | | | | | | | | | | | | |
| N_Treatment (T) | | 5.6 | 88.1 | 31.9 | 36.7 | 6.0 | 88.2 | 45.9 | 40.7 | 67.9 | 30.5 | 53.4 | 2.5 |
| LSD(0.10) | | | | | | | | | | | | | |
| N_Treatment (T) | | 17 | NS | NS | NS | 56 | NS | NS | NS | NS | NS | NS | 0.80 |

†AGI: Adjusted Gross Income.

