

2013 Results

# BRANDT Research and Development Farm





**208 BRANDT Total Acre<sup>SM</sup> Trials**

**20 inch corn  
4 Hybrid Groups  
4 N Rates  
3 P&K Rates  
2 Populations**

**Cover Crops  
& Treatments**

**Soybean  
Plant  
Stimulant  
Trials**

**Soybean  
Population  
Insecticide  
P&K  
Response**

**Plant  
Stimulant  
Trials**

**30"  
Hybrid  
Performance  
Trials  
"C/C"**

**20" vs 30"  
Hybrid  
Trials**

**Nitrogen  
Rate: 0  
100  
200**

**Soybean Seed  
Treatment  
Trials  
"Nematode"**

**BRANDT IS PROUD TO PRESENT THE 2013 RESULTS FROM OUR RESEARCH AND DEVELOPMENT FARMS IN PLEASANT PLAINS AND LEXINGTON.**

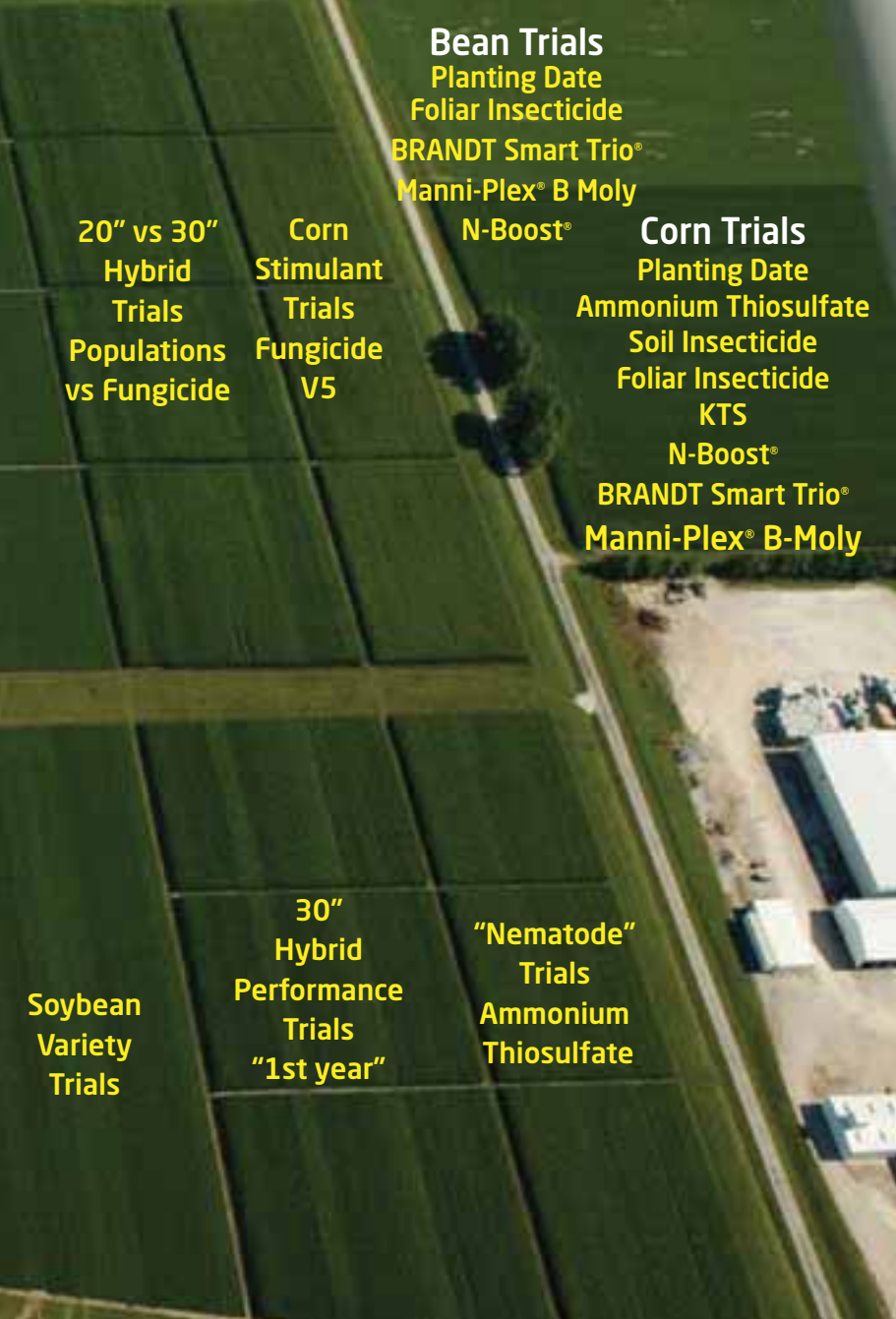
This is the ninth year for the farm at Pleasant Plains and the second year at Lexington. The 2013 crop turned out to be one of the highest yielding we have recorded at the research farms in both corn and soybean production. The elevated yields made harvest very enjoyable and gave us all cause to reflect on the conditions that created the bumper crop.

The drought of 2012 began the process for first-class 2013 yields through three

primary roles. Dry conditions fractured the soils by producing cracks that went deep into the soil profile. The fracturing began the release of nutrients like potassium that are trapped between the soil colloids. This increase in potassium availability assisted the plant to meet high demand stages of growth. The 2013 trials saw a reduced effect from applied potassium in comparison with previous year's trials. Secondly the drought reduced corn yields in 2012 which reduced the amount of residue. Reduced residue immobilized fewer nutrients such as nitrogen and also meant a smaller amount of disease was carried to the next crop. Thirdly the un-

used nitrogen from the droughty yields of 2012 carried over into the 2013 crop providing additional nitrogen for corn and soybean production.

After a normal winter of moderate cold temperatures and moistures a few acres were planted in early April as soils warmed to 50 degrees. Spring rains then began the second week of April which stopped planting and slowed the emergence of planted crops. The rains quickly moved through the fractured soil and carried the mobile nutrients such as nitrate, sulfate and boron deep into the soil profile. The movement of nutrients out of the root zone affected the April and May planted corn



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## Legend



by creating a “transient” (short term) nutrient deficiency of these mobile nutrients. The applications of nitrogen at planting time assisted the young corn plants through this phenomenon which increased the growth and yields. Foliar products also proved beneficial to combat the transient deficiencies. Products that contained nutrients or stimulants like plant growth regulators (PGR) were applied at a timely manner thereby improving plant health.

A drying weather pattern began in early summer and continued into the fall of 2013. This pattern wicked the moisture and nutrients from the deep soil profile

up into the root zone which removed the transient deficiency and provided all the nutrition needed for grain fill. Insects and diseases were very minimal except for a few hot spot outbreaks in a few fields. Scattered outbreaks of Diplodia ear rot did materialize in some non-GMO geographies and stemmed from the outbreaks of earworm and western bean cutworm. Many of the newest hybrid corn traits have good tolerance to those two insects.

Everyone began to estimate having a first-rate corn crop during the latter part of August, but most local specialists were not so optimistic about soybean

yields. Our predictions in late August of a solid yielding bean crop turned out to be right on track.

Our goal in producing this book is to provide you with meaningful local data to assist you with decisions on your own farm. Please review the data to draw your own conclusions. For economic analysis and return/acre we used the fall crop insurance prices of \$4.39 bu. for corn and \$12.87 bu. for soybeans.

**Ed Corrigan, Technical Agronomist**  
**Pat Schaddel, Technical Support Manager**

# Nitrogen Study



## Methods to Improve Nitrogen Efficiency

1

Ammonia with N-Serve

2

192 Trial Average

3

Ammonium Thiosulfate at Planting

4

Fall ammonia with N-Serve



We strive to bring you science-based information to increase your farming operation's return on investment and be better stewards. Our nitrogen study takes a closer look at the best management practices for the growing crop as well as the environment. The top four practices of corn production in 2013 were...

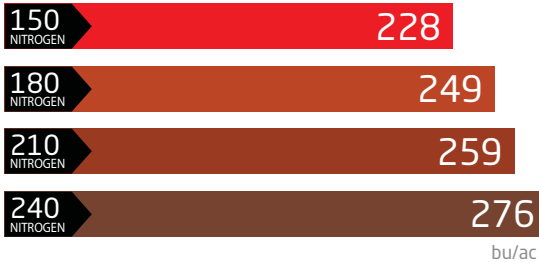
- N-Serve added to fall applied NH3
- Split applying nitrogen (fall and spring)
- Addition of ammonium thiosulfate at plant

- P and K applications improve N efficiency in the plant and also in the applied P & K

We asked ourselves - What were the conditions like the first 21 days after corn was planted? How does our nutrient management plan impact soil applied nitrogen? Can we do a better job of managing applied nitrogen? The corresponding data on the next page takes a look at those questions.

1

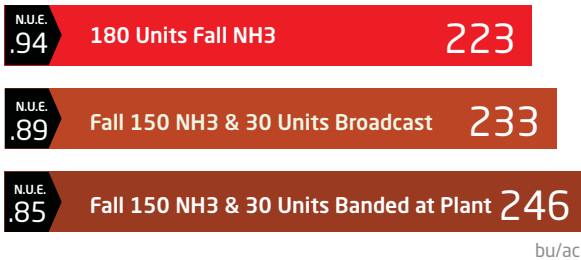
### FALL AMMONIA WITH N-SERVE



2

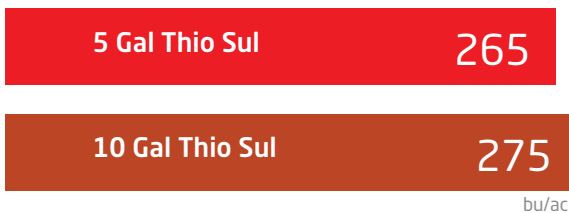
### 192 TRIAL AVERAGE

N.U.E. + Nitrogen Use Efficiency Rating (unit N per bu corn)



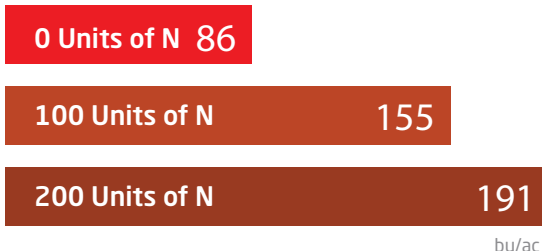
3

### AMMONIUM THIOSULFATE AT PLANTING



4

### FALL AMMONIA WITH N-SERVE



## Methods

- Relieving some early deficiency
- The non N-Serve fields converted NH3 into the 'nitrate form' due to some heavy April rains
- Split applying N (fall NH3 and then Spring 28% in a weed/feed application) provided the plant with an available source early in the plants lifecycle.
- P and K application improve N efficiency in the plant.
- Optimum nitrogen levels increase the plants ability to absorb phosphorus, potassium and sulfur.
- The greater N efficiency means less N loss to the environment.
- Ammonium thiosulfate at planting was the key to supplying early and late sulfur to the corn crop.
- Thiosulfate is composed of two different forms of S. Half of which is readily available to the growing plant and the other half in the elemental form.
- The supply of S to the corn crop maximized the chlorophyll production and amino acid formation.
- Nitrate testing revealed that fall applied NH3 moved to the second foot of soil (deeper than normal) due to heavy May rains.
- Split applying nitrogen reduced the transient N deficiency in the early stages of corn production.
- Nitrate testing indicated a 90% retention of N in the ammonia form where N-Serve was used, dropping to under 50% without N-Serve.

## CORN

# BRANDT Total Acre<sup>SM</sup>

### CROPPING HISTORY:

8th and 10th year corn

### TILLAGE:

Conventional Tillage

### PLANTING DATE:

May 15, 2013

### HARVEST DATE:

September 23, 2013

### HERBICIDE:

3 qt Lexar EZ Pre-emerge  
(S-Metolachlor, Atrazine,  
Mesotrione)

### POST HERBICIDE:

40 oz of Roundup  
WeatherMax (Glyphosate)  
with 1 qt/ac BRANDT  
Smart Trio

### POPULATION:

36,000 / 39,000

### FUNGICIDE:

Quilt Xcel 14 oz/ac  
(Azoxystrobin &  
Propiconazole)  
N-Boron 1qt/ac  
Hero 5 oz at R1

### CROP NUTRITION:

Various combinations  
of nitrogen, phosphorus,  
and potash: fall applied  
P & K suspension with  
Princep, ammonia with  
N-Serve (Nitrapyrin)



- Increasing plant populations per acre was a huge element of high performance yields
- Solid nitrogen rates drove yields higher
- Soil insecticide provided the least response compared to the last 3 years
- Additional nitrogen at plant revved up early stage plant growth
- Phosphorus and potassium applications had a reduced role in this year's corn production

The BRANDT Total Acre is an omission style trial system that is focused on exposing the differences between hybrid phenotypes. The "omission design" is based on providing all the treatments and then removing one to see what value each practice has on yield of that phenotype. This creates an environment where the yield responses are reflective of the total high management system rather than a limited response due to lack

of some or all the parts of the system. Phenotype is defined as observable characteristics or traits (such as plant height, ear girth, root size and is it a fibrous or taproot system etc.).

We have sorted hybrids into 5 phenotypic groups and assigned a color to each group. A hybrid from each group is then chosen to represent each color group. Next, various trials are chosen to evaluate the phenotypes response to high yield management practices such as population, N rate, fungicide, phosphorous and potassium applications etc. We expect each phenotype to respond a little different to management / treatments. This demonstrates the variation in yield we witness in each of our field trials. You can expect to see very similar responses in your own fields. BRANDT understands phenotype group responses to management practices and can thereby effectively place hybrids into a more successful cropping system depending on the management that you use on each field.

TOTAL ACRE POLE POSITIONS	2011	2012	2013	3 YEAR	
				AVERAGE YIELD	ROI
1 Hybrid Variance	56.2 bu/ac	39.3 bu/ac	18.1 bu/ac	37.9 bu/ac	\$\$\$
2 Nitrogen Rate	18.3 bu/ac	16.3 bu/ac	47.8 bu/ac	27.4 bu/ac	3.0
3 Strobilurin/N-Boron	14.1 bu/ac	51.7 bu/ac	13.4 bu/ac	26.4 bu/ac	3.8
4 P&K Rate	27.4 bu/ac	23.3 bu/ac	10.7 bu/ac	20.4 bu/ac	1.2
5 Population Rate	13.9 bu/ac	3.7 bu/ac	32.5 bu/ac	16.7 bu/ac	6.6
6 Soil Insecticide	20.6 bu/ac	12.3 bu/ac	8.1 bu/ac	13.6 bu/ac	2.5
7 Zinc (1qt/ac)	10.9 bu/ac	8.1 bu/ac	4.6 bu/ac	7.9 bu/ac	8.6
8 Starter (28% at plant)	4.5 bu/ac	4.0 bu/ac	11.1 bu/ac	6.5 bu/ac	2.8

THE CHART ABOVE POINTS TO THE IMPORTANCE OF GETTING NITROGEN RATE AND POPULATION MATCHED CORRECTLY IN 2013 for high yields and return on investment (ROI). Raising populations (ear count) on each acre was one of the most economical ways to increase yields and gave one of the best ROI dollars. The application of zinc at plant is still lead-

ing the ROI (three year average) across all treatments at \$8.60 return for every dollar invested.

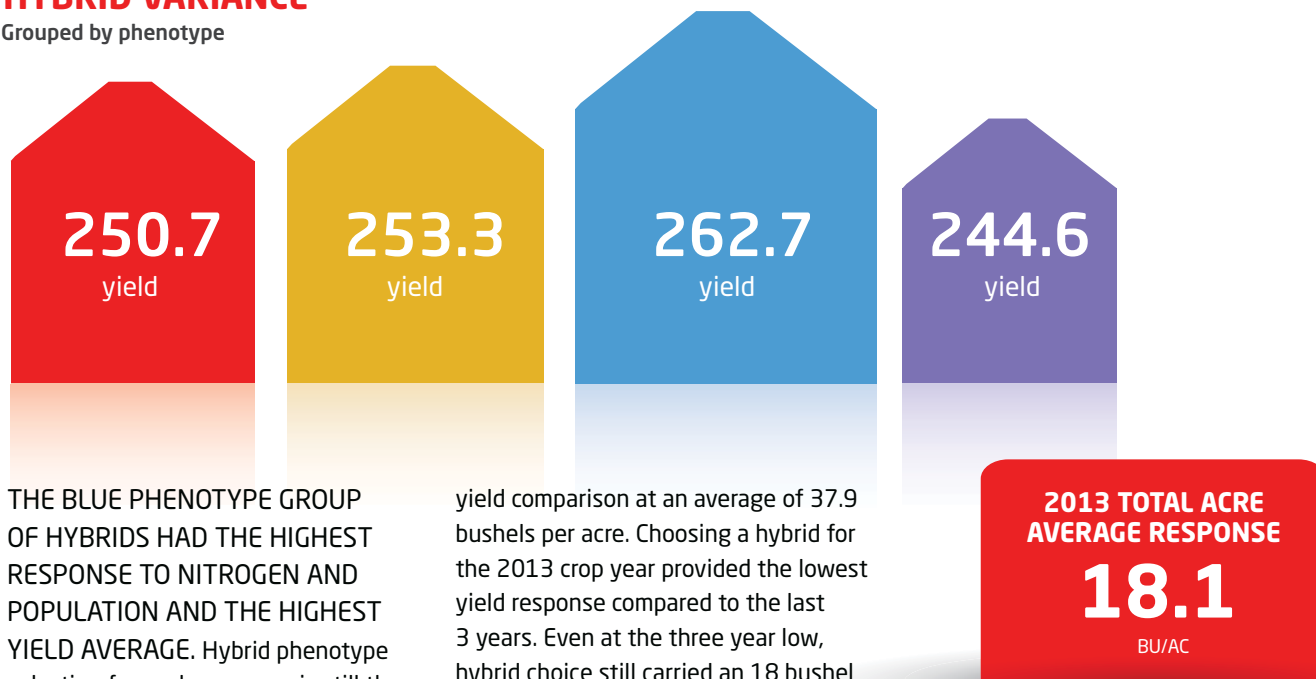
Given the significant yield responses to population and nitrogen in 2013, the focus for 2014 for population and nitrogen timing and rate will be expanded to further define their relationship to phenotype response.

2013 was the first year that the 208 trials of the BRANDT Total Acre corn on corn were planted in 20 inch row width. 2011 and 2012 were in the more traditional 30 inch row width. Please keep this in mind while reviewing these comparisons.

1

## HYBRID VARIANCE

Grouped by phenotype

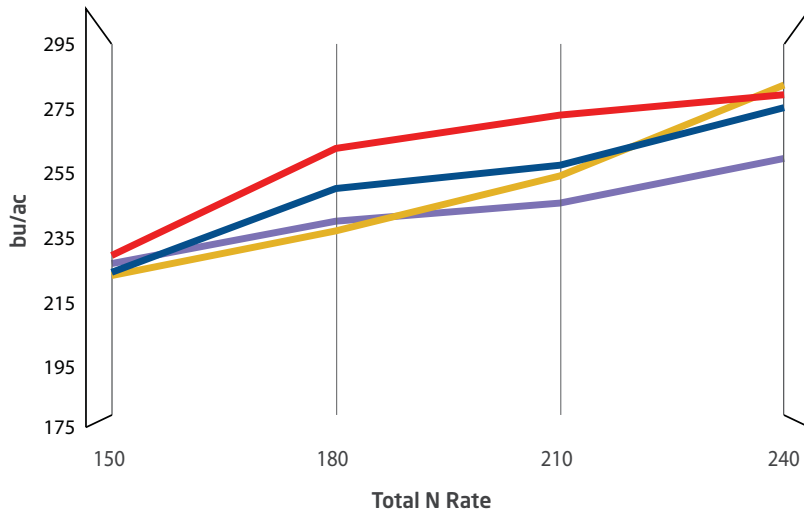


THE BLUE PHENOTYPE GROUP OF HYBRIDS HAD THE HIGHEST RESPONSE TO NITROGEN AND POPULATION AND THE HIGHEST YIELD AVERAGE. Hybrid phenotype selection for each crop year is still the leading input factor over a three year

yield comparison at an average of 37.9 bushels per acre. Choosing a hybrid for the 2013 crop year provided the lowest yield response compared to the last 3 years. Even at the three year low, hybrid choice still carried an 18 bushel per acre influence.

2

## NITROGEN RATE



NITROGEN RATE IN 2013 HAD THE MOST DIRECT RELATIONSHIP TO YIELD that we have experienced in the Pleasant Plains plots. The majority of the nitrogen in the BRANDT Total Acre trials is applied variable rate as NH<sub>3</sub> with N-Serve in the fall. The overall 252.8 bushel per acre average over these 208 trials calculates to .77 lbs of N per bushel NUE (nitrogen unit efficiency). This means that it only required an average of .77 lbs of N applied to produce each bushel of corn. NUE efficiency is significantly enhanced by split application timing and the use of nitrogen stabilizers.

2013 TOTAL ACRE AVERAGE RESPONSE

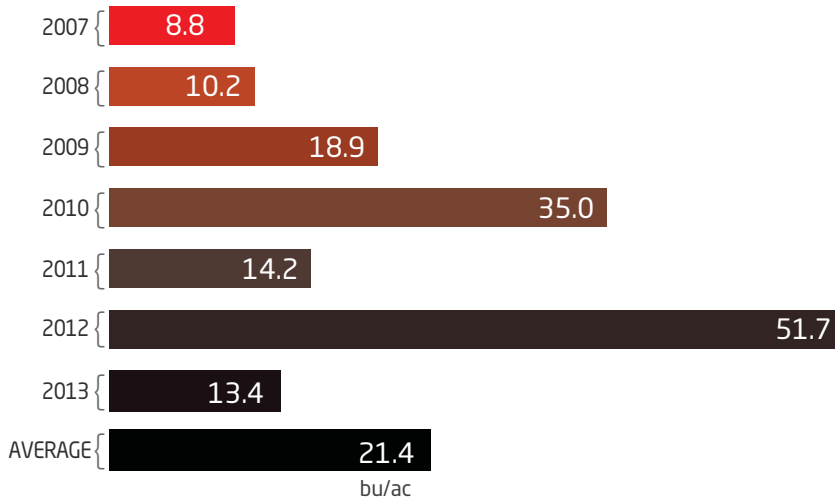
47.8

BU/AC

3

## 7-YEAR STROBILURIN FUNGICIDE WITH N-BORON<sup>®</sup>

Yield Response Tassel Stage Corn  
(Average increase over untreated)



THE 2013 GROWING SEASON WAS A LOW DISEASE PRODUCTION ENVIRONMENT for the Pleasant Plains area. Even with this low disease environment, the application of a Strobilurin containing fungicide with N-Boron at tassel did have an overall positive effect on the yields with a 13.4 bushel per acre average increase. 83% of the trials had a positive yield response! The greatest yield responses were recorded on the lower yielding areas of the trials where nutrition was limited most. This indicates the Strobilurin portion of the fungicide was able to effect (reduce) the ethylene gas within the plant allowing the corn to metabolize nutrients more efficiently.

2013 TOTAL ACRE AVERAGE RESPONSE

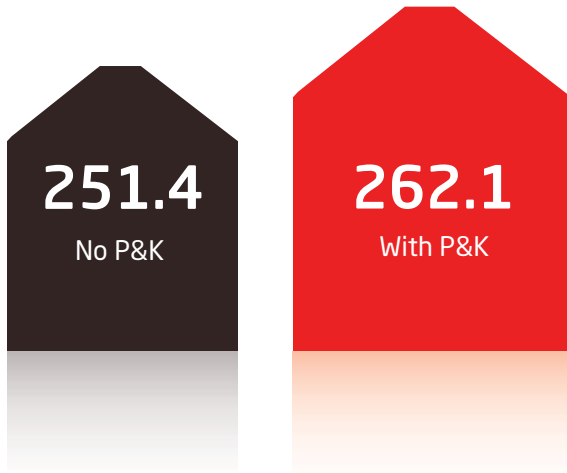
13.4

BU/AC



4

## P&K RESULT



THE RESPONSE OF PHOSPHORUS AND POTASSIUM APPLICATIONS FROM OUR TOTAL ACRE MANAGEMENT TRIALS AVERAGED 10.7 BUSHEL PER ACRE. This was the lowest response of the last 3 years of trials from the removal of P&K application. The fracturing of soils from the drought of 2012 loosened soils and this coupled with ample moisture during the V5 to tassel stage allowed the corn plants to take full advantage of soil available nutrition. The phenotype response to applications of P&K was very significant as in the past trials. Yield response to applications of P&K increased as nitrogen rates were reduced.

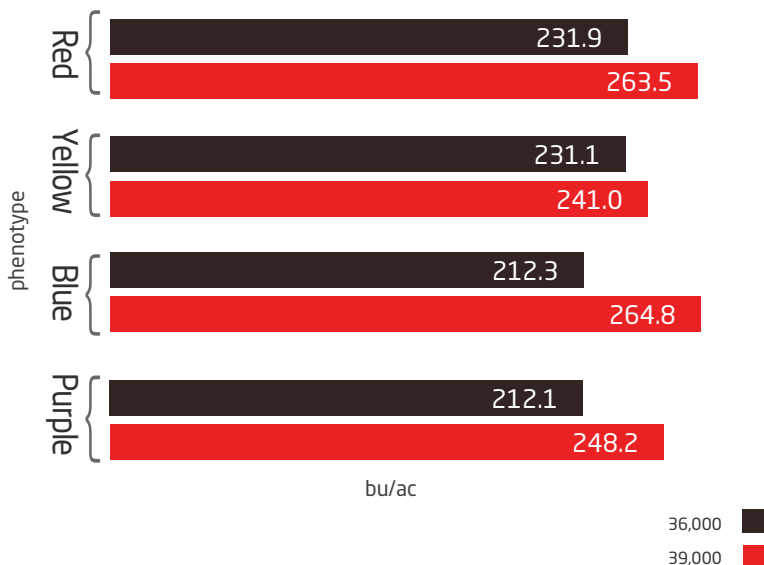
2013 TOTAL ACRE AVERAGE RESPONSE

10.7

BU/AC

5

## POPULATION RATE



POPULATION DROVE YIELDS ON THE BLUE, PURPLE, AND RED PHENOTYPE HYBRID GROUPS. The yellow hybrid group averaged the lowest yield response to population in these trials with a 9.9 bushel response. The highest population in the BRANDT Total Acre trials was 39,000 plants per acre in 2013. By comparing the 20 inch vs 30 inch row population trials on page 15 this was not near enough population for 20 inch rows. To properly evaluate population in high management systems each of next year's hybrid phenotypes will be tested from 33,000 to 48,000 plants per acre.

2013 TOTAL ACRE AVERAGE RESPONSE

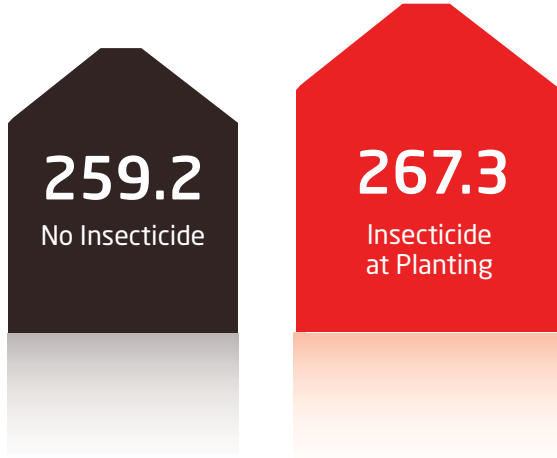
32.5

BU/AC

6

## SOIL INSECTICIDE

At Planting



A SOIL INSECTICIDE AT PLANTING STILL GAVE A POSITIVE ROI even though the insect pressure in Pleasant Plains was one of lightest in the last 7 years. There was a very late hatch of rootworms that were evident from the beetles flying around after pollination during August. A few "hot spots" of high numbers of rootworms in continuous corn fields in the Springfield area does indicate a need to monitor fields in the future.

2013 TOTAL ACRE AVERAGE RESPONSE

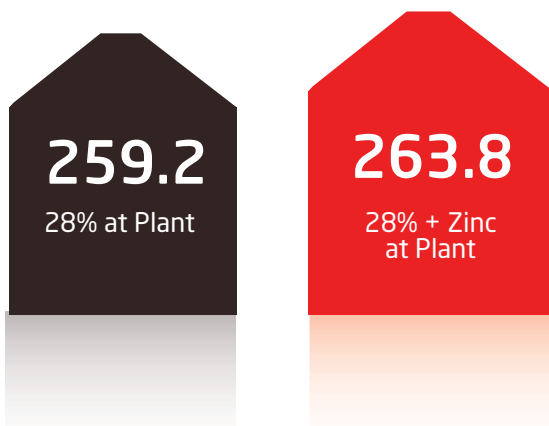
8.1

BU/AC

7

## ZINC RESPONSE

1qt/ac rate at plant



THE ADDITION OF ZINC AT PLANTING PRODUCED THE LOWEST YIELD RESPONSE of the last 3 years of trials even though the 3 year average ROI is the highest at \$8.60 per dollar invested. A planting date of May 15 was later than previous years planting date trials, thus reducing the influence that zinc had on overall yield. Zinc is not a very mobile nutrient in the soil and was not moved out of the root zone in comparison to nitrogen, sulfur, and boron.

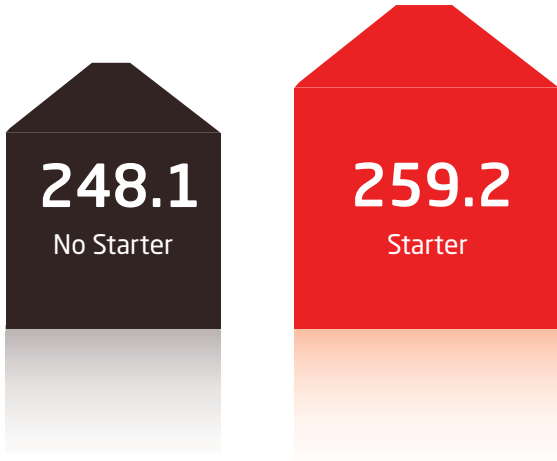
2013 TOTAL ACRE AVERAGE RESPONSE

4.6

BU/AC

## STARTER

10 gal of 28% N at planting

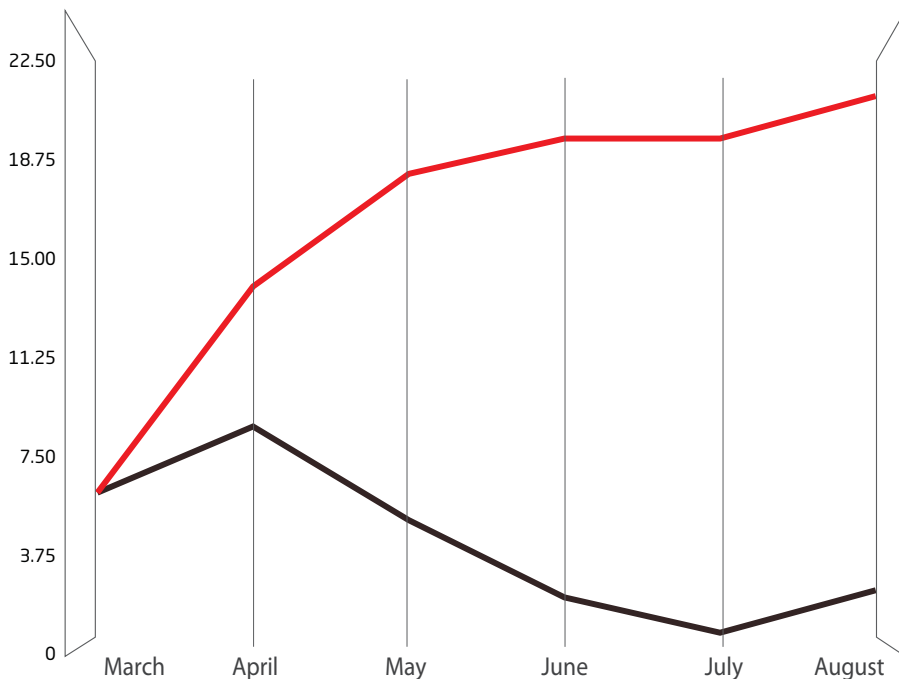


NITROGEN HAS BEEN USED AS A STARTER ON OUR CORN ON CORN TRIALS and this year was a very significant contributor in achieving top yields. Transient nitrogen deficiency was greatly reduced by the starter application at planting. The wet spring drove the fall applied nitrogen a little out of reach for small root systems. This small amount of nitrogen had an NUE of 1.0 bushel of corn for every lb applied.



## RAINFALL

2013 Pleasant Plains



**PROVEN**  
BRANDT Total Acre solutions lead the yield pack.

■ Monthly Rainfall  
■ Total Rainfall

## CORN

# 20 Inch vs 30 Inch Row Width Trials

### CROPPING HISTORY:

1st year corn on beans  
10th year corn on corn

### TILLAGE:

Conventional Tillage

### PLANTING DATE:

May 15, 2013

### HARVEST DATE:

September 23, 2013

### HERBICIDE:

3 qt Lexar EX pre-emerge  
(S-Metolachlor, Atrazine,  
Mesotrione)

### POST HERBICIDE:

40 oz of Roundup  
WeatherMAX  
(Glyphosate) with  
1qt/ac BRANDT Smart Trio

### POPULATION:

33,000 / 36,000 / 39,000  
42,000 / 45,000 / 48,000

### FUNGICIDE:

Quilt Xcel 14 oz/ac  
(Azoxystrobin &  
Propiconazole) plus  
N-Boron 1qt/ac  
Hero 5 oz at R1  
(Zeta-Cypermethrin &  
Bifenthrin)

### CROP NUTRITION:

210-90-180  
(30-90-180 fall applied  
suspension, 180 units of  
ammonia with N-Serve).



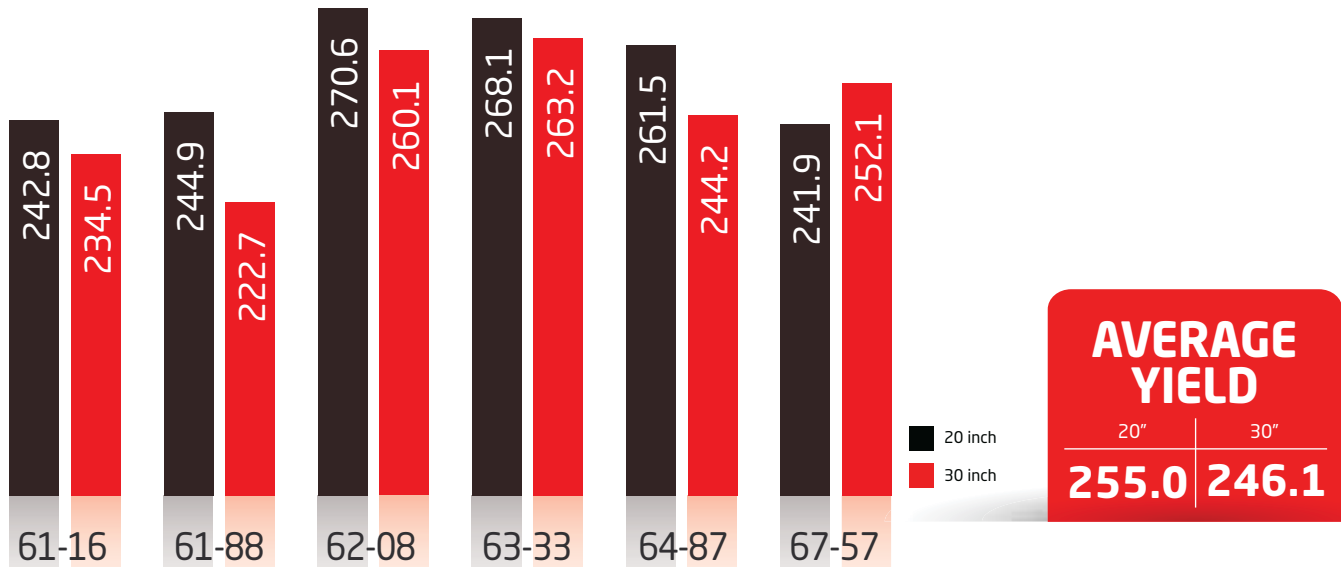
- Narrow rows were a clear winner in 2013 by producing 12 additional bushels per acre over the wider 30 inch rows when comparing all trials.
- Both row widths had very similar emergence, growth and first-class stand ability to finish with strong yields at harvest.
- The 20 inch row width began to widen the yield advantage over 30 inch rows at 39,000 plants per acre and continued to gain yield up to 45,000 plants per acre.
- Strobilurin and N-Boron applied at tassel provided the major yield response in conjunction with lower yielding environments.
- Increasing the population from 33,000 to 42,000 plants per acre boosted yields 52.1 bushel per acre.

This is the fourth year that BRANDT has evaluated 20 inch row widths compared to 30 inch rows. Narrow inch rows were the clear winner this year! In a continuous corn rotation the narrow rows provided 10.2 additional bushels per acre. The corn following soybeans rotation supplied an extra 13.9 bushels per acre over the wider 30 inch row spacing.

Narrow rows had a distinct advantage over the standard 30 inch row width once the population was raised above the 39,000 population. Strangely enough, the yields at 36,000 plants per acre averaged a near identical 254 bushel per acre in the 1st year rotation corn trials.

## 20" vs 30"

39,000 DeKalb® Continuous Corn Trial



BOTH ROW WIDTHS HAD GOOD EMERGENCE DUE TO A NEAR PERFECT WEATHER PATTERN AFTER PLANTING. At the 3 to 4 leaf stage the 20 inch row trials did begin to develop yellowing plant stress on 4 rows of each 12 row trial. The planter tractor tire

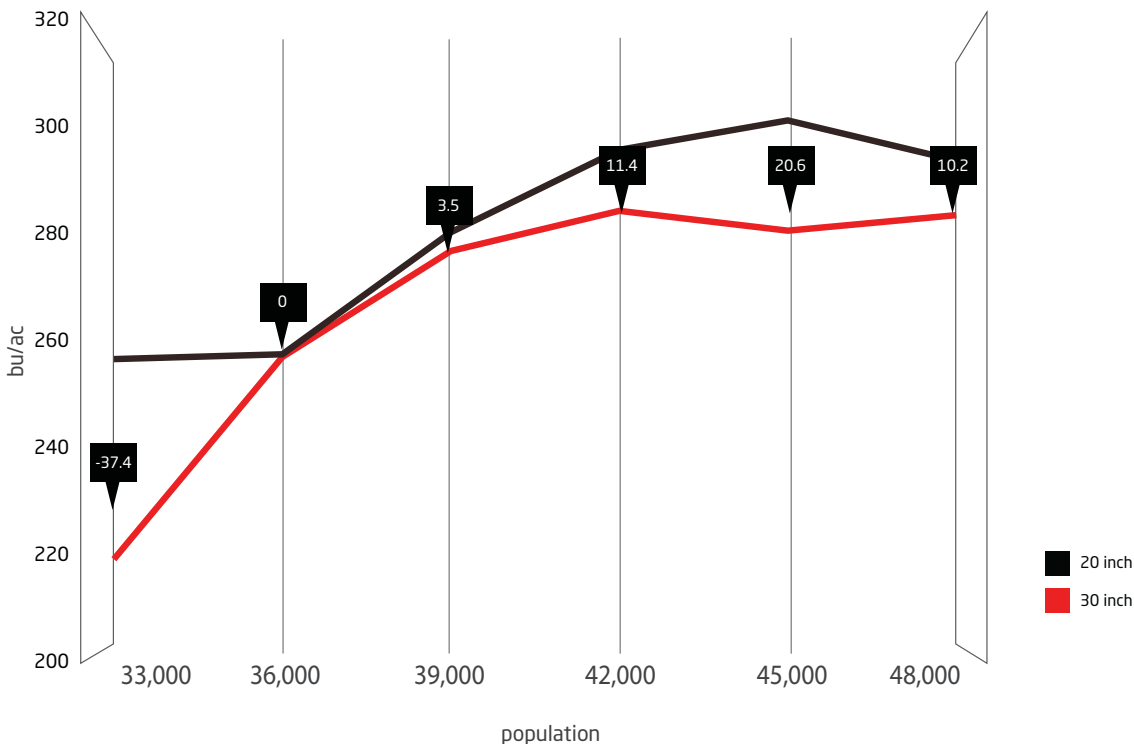
compressed the soil slightly and the 4 rows in each trial that was planted into this area displayed some stress due to the reduced rooting (pinched row syndrome). The damaged rows recovered once the roots grew beyond the 6 inch depth. The symptoms disappeared

although I feel some damage to those rows was reflected in the ending yield. The 30 inch rows displayed no problem with "pinched row syndrome".

Due to the small size of the block, only one population of corn on corn row width trials could be evaluated.

## 20" vs 30"

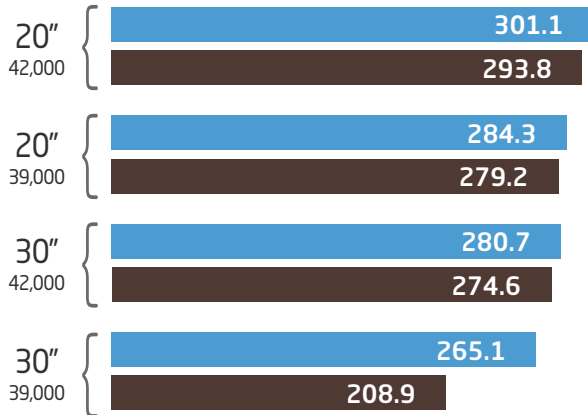
1st Year Corn



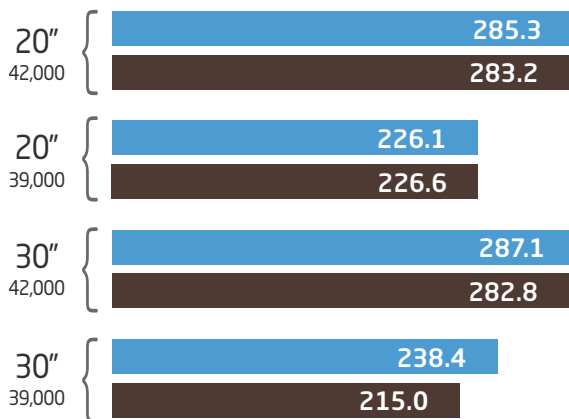
# STROBILURIN / N-BORON® HYBRID RESULTS

Tassel Stage Application

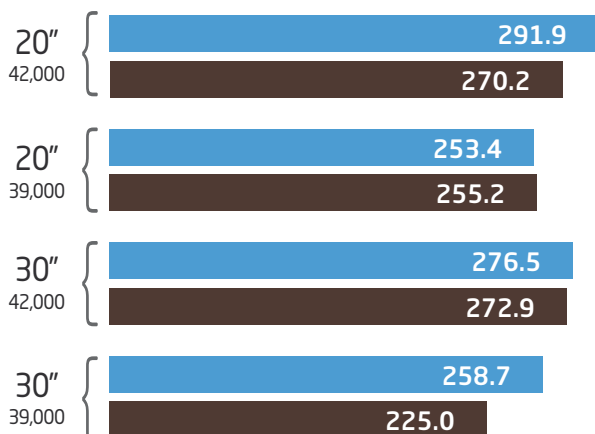
## DKC 63-33



## DKC 62-08



## DKC 67-57



THIS YEAR'S APPLICATIONS WERE MADE AT THE R 1 STAGE WITH ALMOST NO INSECT PRESENCE AND VERY SMALL AMOUNTS OF DISEASE.

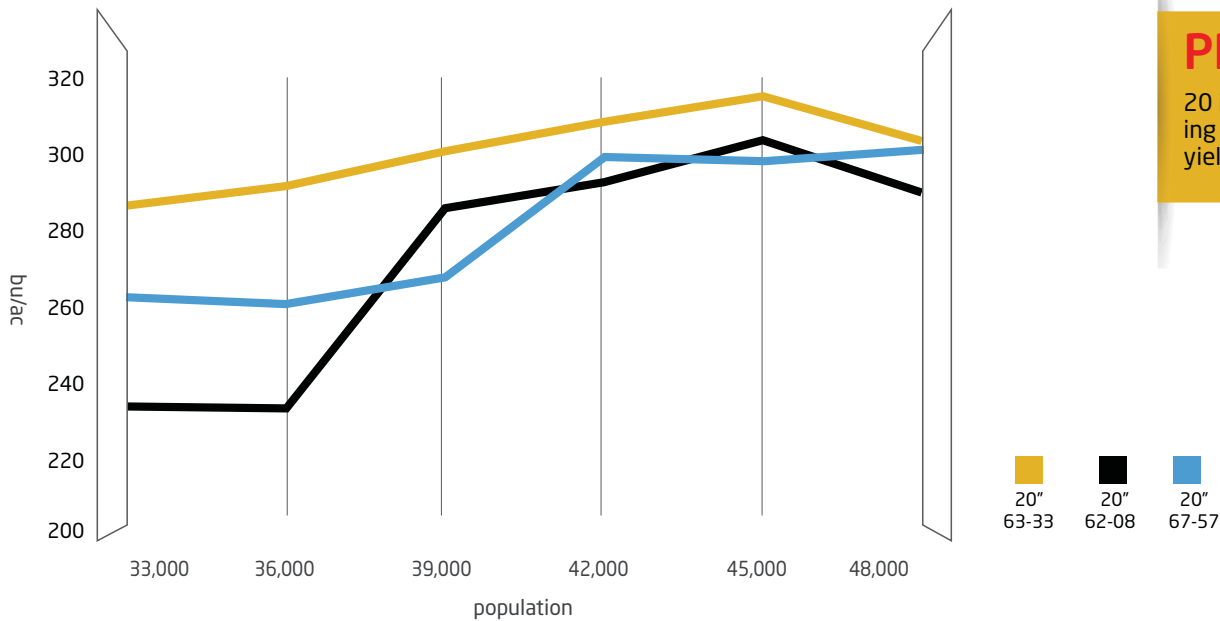
The corn crop was in good shape for moisture and temperature with only moderate stress during the early reproductive stages. With these conditions in mind, the average yield response to a Strobilurin and N-Boron application was still recorded at 13.4 bushels per acre. As you can see from the side by side trials in the graphs to the left the yield response varied by 3 factors. The average hybrid yield response varied from 7.3 bushels per acre for the 62-08 hybrid to 18.7 bushels per acre for the 63-33 hybrid. The lower populations in combination with the wider row widths (lowest yielding environments) tended to give the best return for the investment.

**PROVEN**  
Year in year out Strobilurin and N-Boron work to improve yields.

■ Strobilurin in Fungicide at Tassel  
■ No Strobilurin Fungicide at Tassel

## 20 INCH ROW CORN

Population Response bu/a

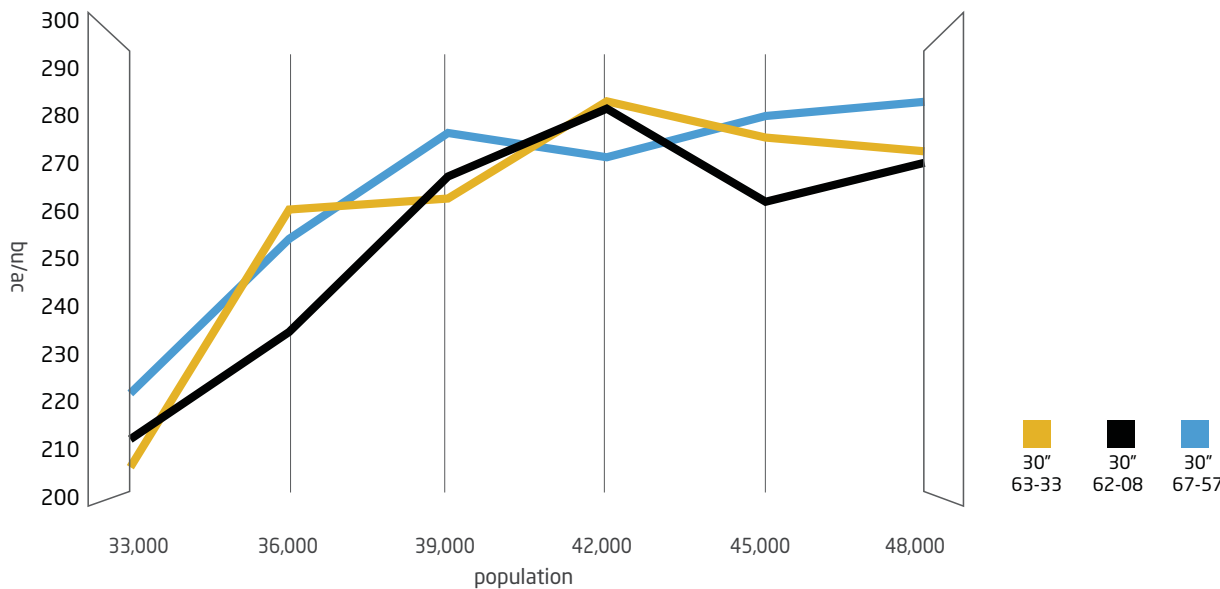


### PROVEN

20 inch row corn is paving the way for higher yields.

## 30 INCH ROW CORN

Population Response bu/a



AS THESE GRAPHS ABOVE DEMONSTRATE, THE RESPONSE TO POPULATION (52 BU/AC) OVERSHADOWS THE YIELD RESPONSE TO NARROWER ROWS (12 BU/AC). Both high and low populations were a distinct advantage for narrow rows. This year's production was all about plant population and minimizing the nutrient deficiencies during all growth stages of the corn. The 63-33 hybrid was amazing in the

narrow row environment. Without a doubt, this hybrid was able to take full advantage of the increase in rooting and sunlight that the narrow rows can deliver. The highest plot yield of 307 bushels per acre was accomplished at the 45,000 planting rate. This data continues to point to the value of matching your population to nutrition and taking advantage of narrower rows as the population is increased.

The last 4 years of row width trials has taught us that narrower rows require an improved level of seedbed preparation and planter operation over the simpler 30 inch row width. With that said, we have had a number of grower inquires about strip till 20 inch corn and could we do it? So this fall we created this same plot of 1st year corn in a strip till environment comparing 30s to 20s. Should be interesting! We will let you know the results next year.

## CORN

# Stimulants and Stress Mitigation

### CROPPING HISTORY:

1st year corn on beans  
10th year corn on corn

### TILLAGE:

Conventional Tillage

### PLANTING DATE:

May 1, 2013

### HARVEST DATE:

September 23, 2013

### HERBICIDE:

3 qt Lexar EZ pre-emerge  
(S-Metolachlor, Atrazine,  
Mesotrione)

### POST HERBICIDE:

40 oz of Roundup  
WeatherMax  
(Glyphosate)

### POPULATION:

39,000

### FUNGICIDE:

Quilt Xcel 14 oz/ac  
(Azoxystrobin &  
Propiconazole) plus  
N-Boron 1qt/ac  
Hero 5 oz at R1

### CROP NUTRITION:

240-90-180  
(30-90-180 fall applied  
suspension, 180 units of  
ammonia with N-Serve  
(nitropryrin)

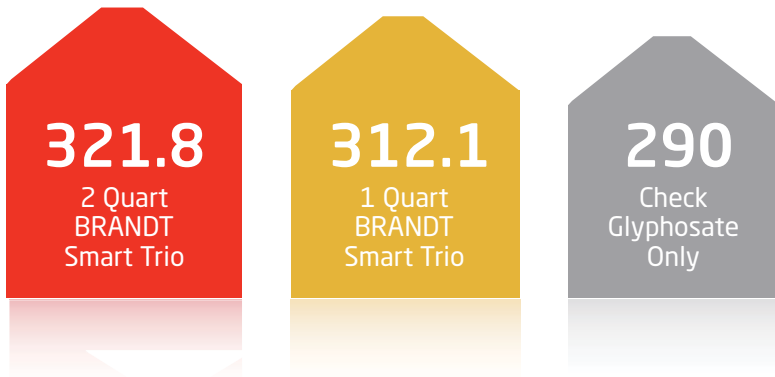


- 10th year corn out yielded the corn/soybean rotation by 27.4 bu/ac in these trials.
- Glyphosate post at V5 created the least amount of plant stress at 290 bu/ac. Adding a second herbicide mode of action to the glyphosate at V5 stage of application *without BRANDT Smart Trio* reduced yield by an average of 11.2 bu/ac.
- Ryzup (plant growth regulator) enhanced yields of V5 applications in our trials. BRANDT Smart Trio in combination with Ryzup produced the highest yield increase over the check.

Corn plants were nutrient stressed during early growth stages by cool wet conditions during May of 2013. Mid April rains moved the mobile nutrients (nitrogen, sulfur, and boron) beyond the reach of young roots. These mobile nutrients, in most cases, were not lost but did create a “transient” (short term) nutrient deficiency in young plants. As soils dried in June, the mobile nutrients moved upward (with the water) through the soil profile to the growing roots to supply nutrition for later reproductive stages of growth. BRANDT Smart Trio applied with the post herbicide during this early stage of growth reduced this “transient” nutrient deficiency stress. BRANDT Smart Trio provides sulfur, zinc, manganese and boron to stimulate plant growth and increase metabolism of post applied herbicides.

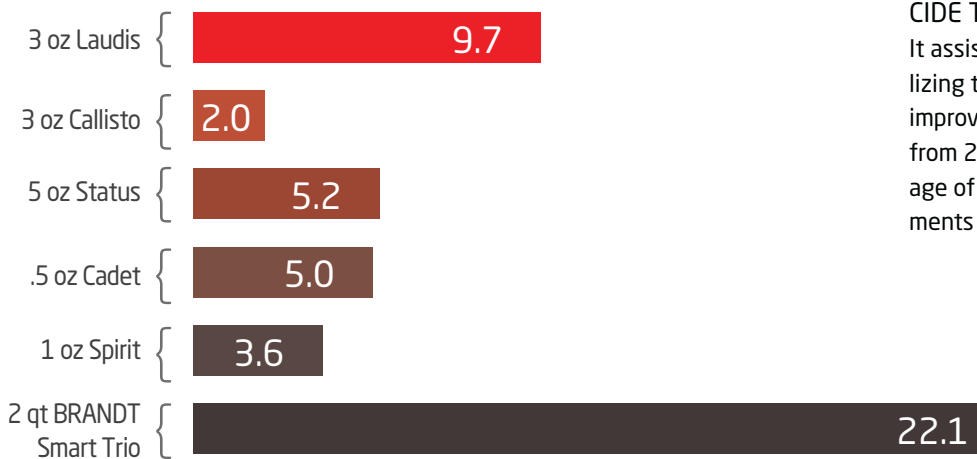


## BRANDT SMART TRIO 2013 YIELD RESPONSE



HIGH POPULATIONS COUPLED WITH SOUND NUTRITION AND A FIRST-CLASS SEEDBED LEAD TO A 290 BUSHEL PER ACRE YIELD IN OUR CORN ON CORN. Adding BRANDT Smart Trio to the post glyphosate treatment stimulated early growth in our 10th year corn trials giving us a new record at Pleasant Plains. Continuous corn provided some of the highest yields in 2013 for many fields. The unused nitrogen from 2012 coupled with low amounts of residue from the previous crop equipped fields for record yields.

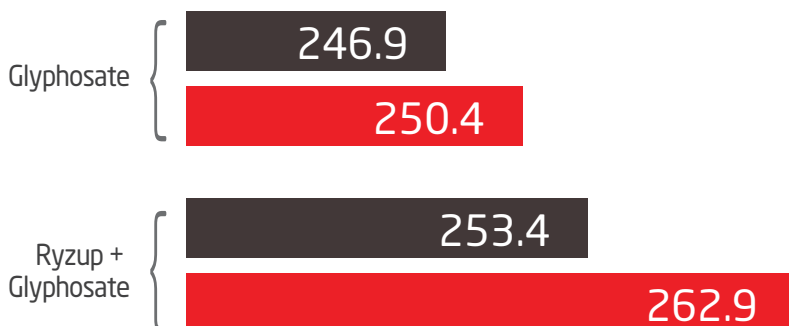
## SMART TRIO YIELD INCREASE BY PRODUCT



THE BRANDT SMART TRIO MIXED WELL IN TRIALS WHERE WE ADDED A SECOND MODE OF ACTION HERBICIDE TO THE GLYPHOSATE. It assisted the corn plant with metabolizing the higher load of herbicide and improved the side by side yield trials from 2 to 9.7 bushels per acre (an average of 5.1 bu/ac over herbicide treatments without BRANDT Smart Trio).

## V5 STAGE YIELD RESPONSES

Additives to Glyphosate



RYZUP IS A NEW PLANT GROWTH REGULATOR (PGR) THAT WE EXPERIMENTED WITH IN OUR PLOTS AT PLEASANT PLAINS. Corn plants treated with Ryzup demonstrated a noticeably faster rate of growth 3 days after application via measuring the distance between leaf nodes. The overall height of the corn was the same at tassel stage, indicating a reduced distance between nodes during late vegetative stages of growth.

 Check  
 Plus 1 qt BRANDT Smart Trio

## CORN

### HYBRID RESPONSE TO

# Crop Rotation And Population

#### CROPPING HISTORY:

1st year corn on beans  
10th year corn on corn

#### TILLAGE:

Conventional Tillage

#### PLANTING DATE:

May 1, 2013

#### HARVEST DATE:

September 23, 2013

#### HERBICIDE:

3 qt Lexar EZ pre-emerge  
(S-Metolachlor, Atrazine,  
Mesotrione)

#### POST HERBICIDE:

40 oz of Roundup  
WeatherMax  
(Glyphosate)

#### POPULATION:

33,000 / 36,000 / 39,000

#### FUNGICIDE:

Quilt Xcel 14 oz/ac  
(Azoxystrobin &  
Propiconazole) plus  
N-Boron 1qt/ac  
Hero 5 oz at R1

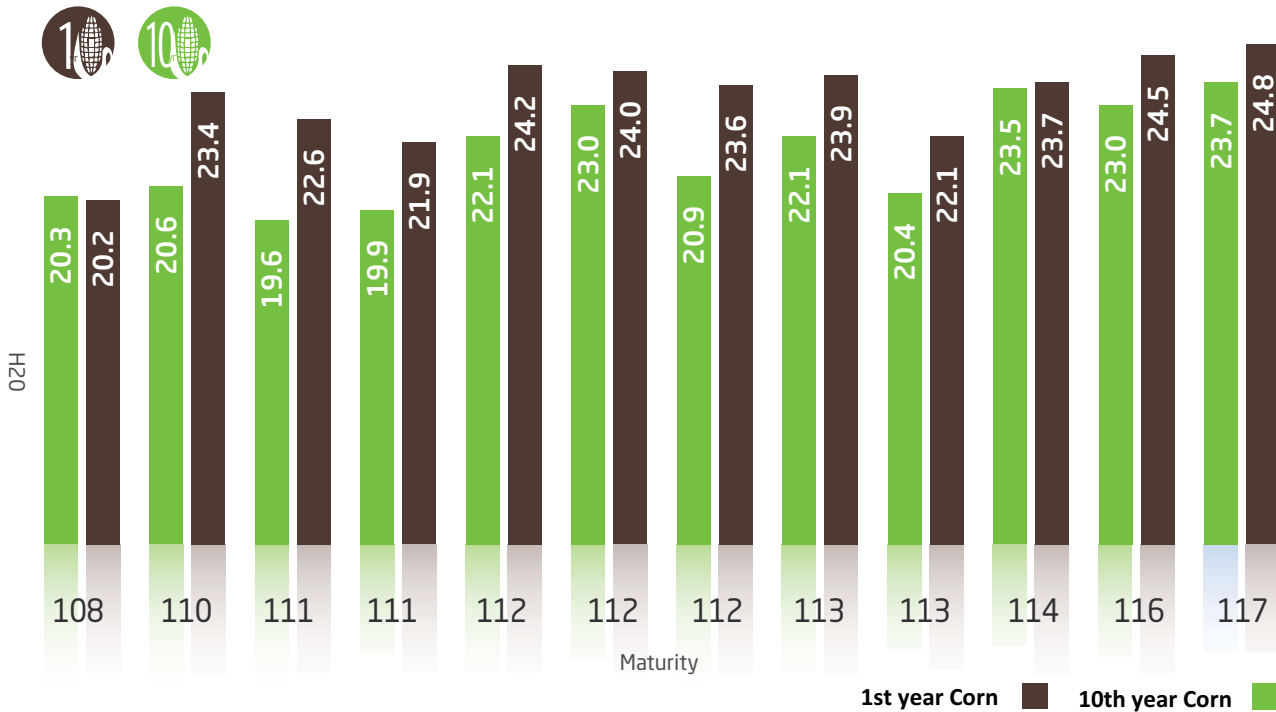
#### CROP NUTRITION:

240-90-180  
(30-90-180 fall applied  
suspension, 180 units of  
ammonia with N-Serve  
(nitropryrin)



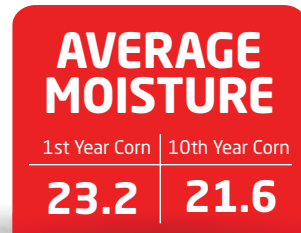
- Moisture played an important role for the return on investment for corn followed by corn.
- Higher plant populations hit a home run this year with 39,000 averaging a 32.5 bushels per acre (\$142.67 per acre) increase over 33,000.
- The corn followed by soybeans in 2013 averaged 6.3 bushel per acre better than corn followed by corn when analyzed strictly based on a yield.
- Yields and profitability run side by side in corn rotation trials.

## GRAIN MOISTURE VS ROTATION



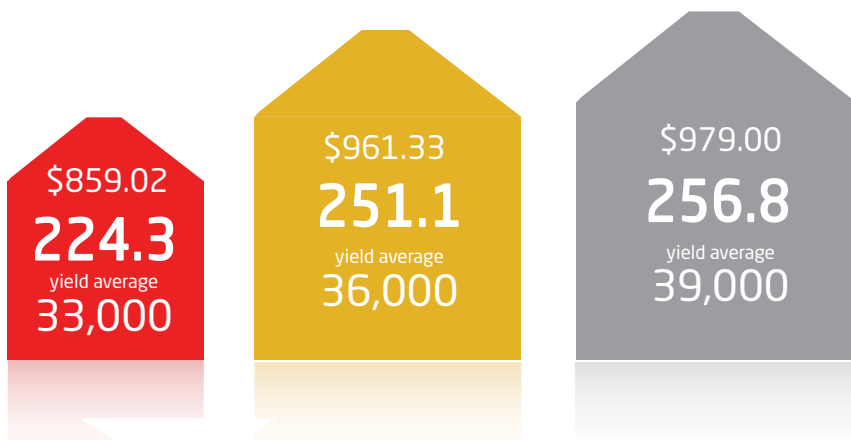
**TIME TO DO SOME MATH.** Here's a strong message about crop rotation that may not be on everyone's radar. Overall corn followed by corn was 1.6% drier than corn followed by soybeans which would indicate a higher return on investment in our crop rotation trials. Ad-

ditionally, the majority of seed planted in our market ranges in maturity from 110 to 113 days. Hybrids in this range paid greater dividends in a corn followed by corn rotation with a 2.2% moisture advantage. That's money in the bank!



## 2013 AVERAGE YIELD RESPONSE TO POPULATION

bu/ac

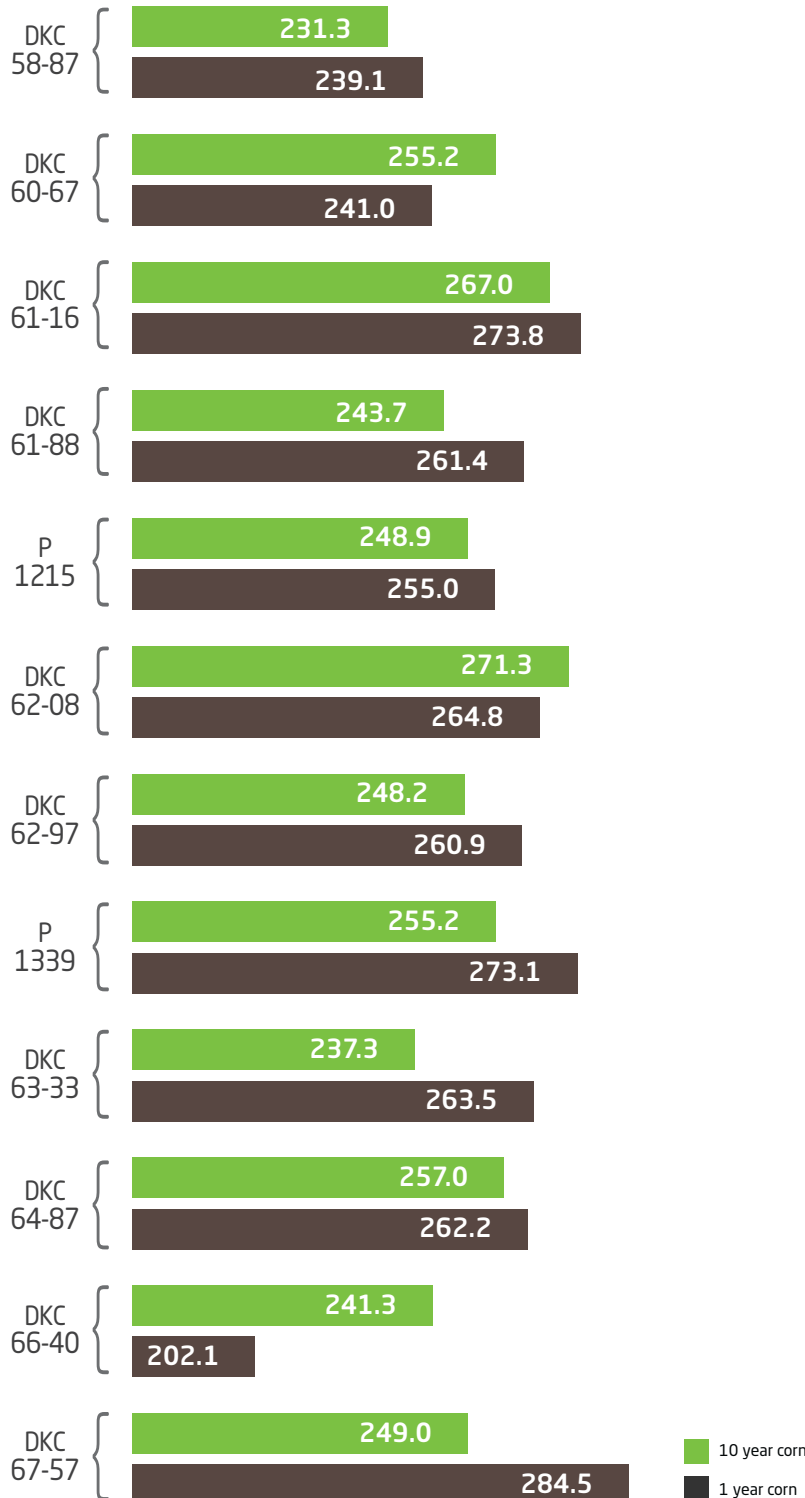


**POPULATION MATTERS...** As you can see from the graph to the left as we increased our average population in our 30 inch rows we increased yield. Our analysis tells us that 2013 provided the perfect opportunity to maximize crop production. Once the corn plants made it through the early transient deficiency it was left with an abundant amount of mineralized nutrients. Resulting in a positive yield increase where growers used optimum plant populations.

## CROP ROTATION



at 39,000



OUR CORN YIELDS WERE BACK ON PAR WITH PAST YEARS. As in 2007, 2008 and 2009 this year's yields in our crop rotation trials averaged better than 250 bushels per acre. Year after year corn followed by soybeans has shown a slight yield advantage to corn followed by corn. The Research Farm Blog documented the weather we experienced in early May. It provided us an indication that the crop experienced a delayed emergence (approximately 21 days) due to two consecutive weekends of heavy rains that totaled more than 4.8 inches. Many fields planted the end of April or first part of May needed a hoe to help push them through the crusted top layer.

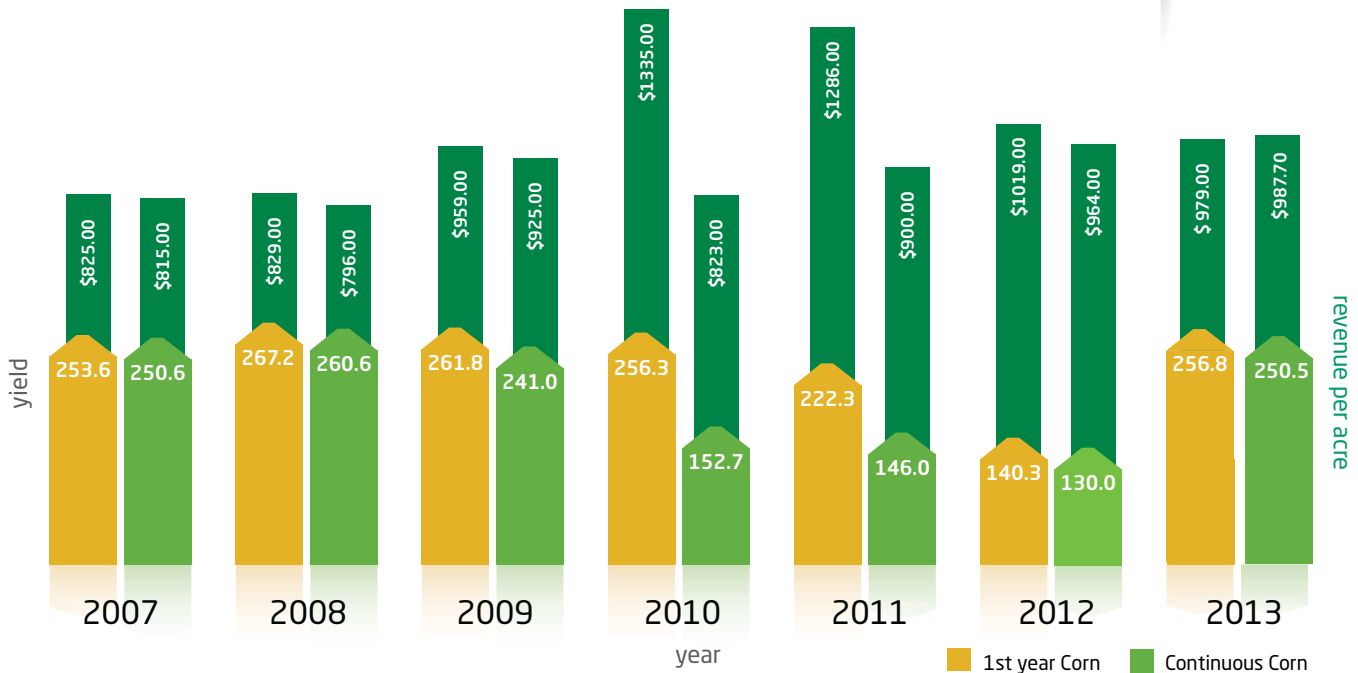
The performance of first year corn consistently out yielded continuous in most all ranges of maturity. As it states in the graph on *page 21*, 1st year corn margin of victory was 6.3 bushels per acre, however, when you factor in the moisture comparison from *page 19*... did corn followed by soybeans really win out?

## CROP ROTATION RESULTS OF HYBRID TRIAL AVERAGES

Data was collected from the past seven years of plot book hybrid trials using the crop prices from that year.

**PROVEN**

Soybean rotation shows a strong ROI.



BY THE NUMBERS... Our graphical representation for the past 7 years shows us that with the exception of 2010 and 2011 the return on investment for crop rotation has run neck and neck. The question last year was "Would continuous corn be back in the lead position in 2013?" Based on the environment (lack of insect feeding), optimal mineralization, sufficient nutrient uptake and excellent plant stands/ear count corn followed by corn was able to carve out extra profitability with less bushels.

"A soybean-to-corn price ratio of 2.3 or greater favors more soybeans in the rotation; that appears to be the trend in 2013 and 2014. University of Illinois 2014 crop budgets suggest a profit advantage for a corn-soybean rotation over both corn-corn-soybean and continuous corn. An average corn-to-soybean yield ratio of 3.3 or greater favors more corn in the rotation, while a lower yield ratio favors a traditional corn-soybean rotation." Run the numbers on your own farm and see the difference.

**AVERAGE YIELD**

1st Year	10th Year
<b>256.8</b>	<b>250.5</b>

**CORN  
NORTH**

# Lexington Results

**CROPPING HISTORY:**  
Corn/Beans Rotation

**TILLAGE:**  
Conventional Tillage

**PLANTING DATE:**  
May 8, 2013

**HARVEST DATE:**  
October 14, 2013

**HERBICIDE:**  
Dual followed by Roundup  
WeatherMax with 1 qt  
BRANDT Smart Trio

**POPULATION:**  
37,500

**FUNGICIDE:**  
Strobilurin plus N-Boron  
at VT



This year the Lexington Research Farm grew to 17 acres. The farm is built around one main principle, only do trials on projects that a grower would actually utilize on his or her operation. Nothing fancy just good old common sense, and as the farm continues to grow we will hold to that principle. Some results from these trials did not surprise us while others did. We did not expect to see the kind of reaction to inoculants included in soybean seed treatments that we got,

but we did expect to see the value that we received by adding BRANDT Smart Trio to our post emerge spray treatments. The plot was planted on May 8 in good conditions and was harvested in a timely manner this fall. The corn across the entire farm averaged 240 bu/ac and the soybeans averaged just over 70 bu/ac. We also excited to announce that the farm will double in size for 2014 and we look forward to sharing that with all of you next summer.

## P&K RESULTS

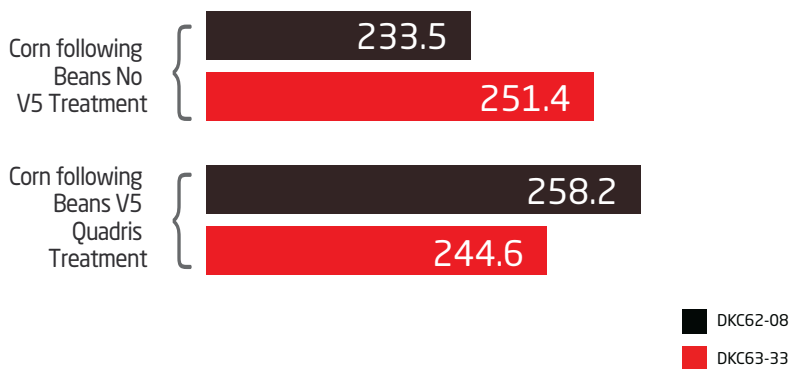


EVER WONDER IF YOU REALLY NEED TO SPREAD FERTILIZER ON YOUR HIGH FERTILITY GROUND? That's what our "applied fertilizer" study is all about. This trial is done in an area of the Lexington Research Farm where the soil test readings are at a level where growers sometimes ask "Do I really need to apply fertilizer this year?" P1 readings are 65+ and K readings are 400+. We

have known for years that phosphate can be tied up in the soil and unavailable for crop uptake but now there is new research out of Iowa State University being carried out by Dr. Antonio Mallarino where he is finding that potassium also goes through some unavailability stages and this makes you wonder what does that soil test really tell us. They are working on new soil testing procedures

but it will be some time before they are available. For the past 2 years we have ran this test at Lexington and the results have been consistent. Our trials will be expanded for 2014. We have averaged a 10 bu/ac benefit by applying fertilizer.

## STROBILURIN FUNGICIDE



GROWERS HAVE BEEN DISCUSSING V5 FUNGICIDE TREATMENTS ON CORN, SO WE ADDED THIS TRIAL IN LEXINGTON THIS YEAR. We did not see any disease issues but the thinking is that the V5 treatment helps in other ways such as helping with leaf necrosis from herbicide application. This trial received a VT fungicide treatment on the entire plot as well. It appears that at least some hybrids would benefit from a V5 fungicide treatment, it is not definite, but it does merit further investigation in 2014.

**SOYBEANS  
NORTH**

# Lexington Results

**CROPPING HISTORY:**  
Corn/Beans Rotation

**TILLAGE:**  
Conventional Tillage

**PLANTING DATE:**  
May 8, 2013

**HARVEST DATE:**  
October 14, 2013

**HERBICIDE:**  
Dual followed by Roundup  
WeatherMax with 1 qt/ac  
BRANDT Smart Trio

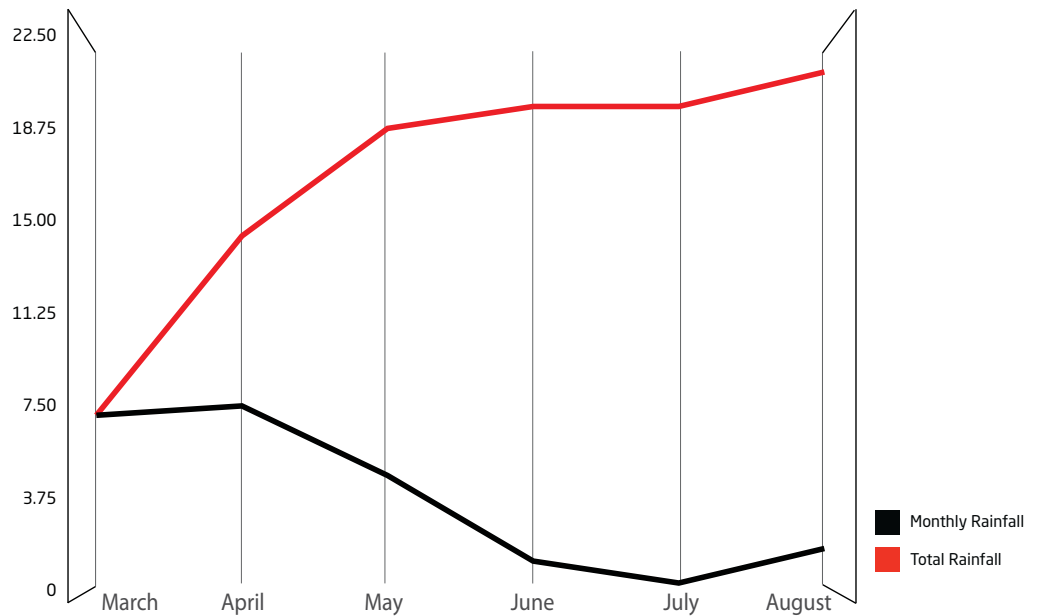
**POST HERBICIDE:**  
40 oz of Roundup  
PowerMAX  
(Glyphosate)  
with 1 qt/ac BRANDT  
Smart Trio

**POPULATION:**  
130,000

**FUNGICIDE:**  
Strobilurin plus Manni-Plex  
B-Moly and Hero at R3



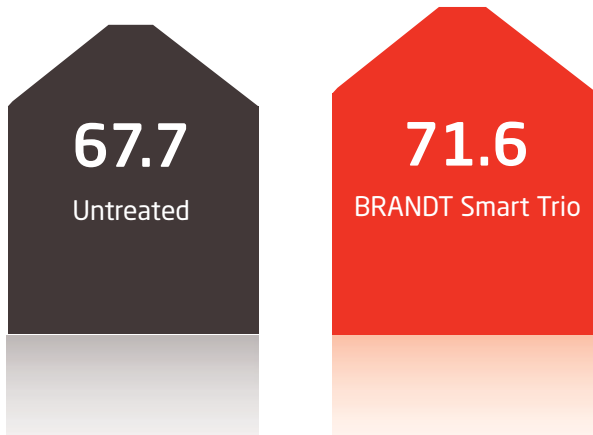
## Lexington Rainfall



- The Research Farm experienced heavy rains in late April and early May.
- Protecting nitrogen and/or having the proper program was critical.
- Rainfall totals tracked very similarly across the state.

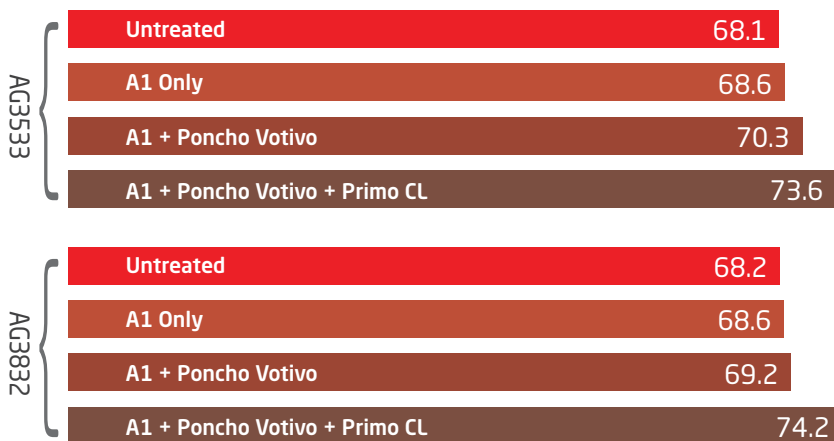


## BRANDT SMART TRIO



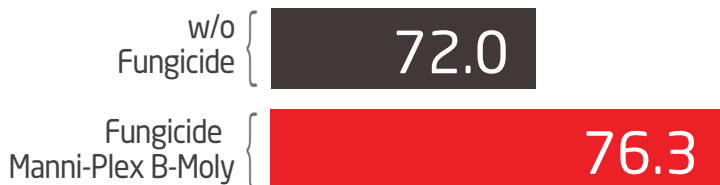
BRANDT SMART TRIO REDUCES STRESS IN THE PLANT AND HELPS IT METABOLIZE THE HERBICIDE QUICKER. What that means for you is a crop that never slows down, is quick to recover from stress, and better able to reach that full yield potential. In this year's study BRANDT Smart Trio yielded an extra 4 bu/ac more than the untreated check. That's a \$52 per acre return on a \$4 per acre investment, it is like a booster shot for your crop.

## SOYBEAN SEED TREATMENT



AT THE LEXINGTON RESEARCH FARM WE INCLUDED INOCULANTS AS THEY ARE QUICKLY PICKING UP INTEREST AT THE FARM GATE. Poncho Votivo again proved to give consistent protection and benefits for growers. We saw improved emergence, darker color, and a healthier plant overall. The biggest surprise of the plot was the response to inoculants. These plots clearly looked healthier throughout the year but we were not expecting the yield response to be as dramatic as it was averaging almost 6 bu/ac over the untreated entry for a overall ROI of \$73.80 per acre. Needless to say this will get a closer and more intense look in 2014.

## STROBILURIN/MANNI-PLEX B-MOLY



PRIAXOR WAS APPLIED AT R3 WITH MANNI-PLEX B-MOLY AND ADDED HERO TO ADD INSECT CONTROL. While we never saw a visible difference in the trial we definitely had a difference at harvest. As margins get tighter we will need to look closely and find ways to get those extra bushels out of the field for maximum profit potential. This may prove to be one the things we strongly consider that has been overlooked in the past. The fungicide treatment added an average of 4.2 bu/ac for a return of an extra \$54.49 per acre.

## SOYBEANS

# Total Acre

**CROPPING HISTORY:**  
Corn/Bean Rotation

**TILLAGE:**  
Conventional Tillage

**PLANTING DATE:**  
May 15, 2013

**HARVEST DATE:**  
October 2, 2013

**POST HERBICIDE:**  
1.5 qt Warrant (acetochlor)  
32 oz of Roundup  
WeatherMax  
(Glyphosate) with  
1qt/ac Manni-Plex B Moly

**POPULATION:**  
120,000 / 140,000 / 160,000

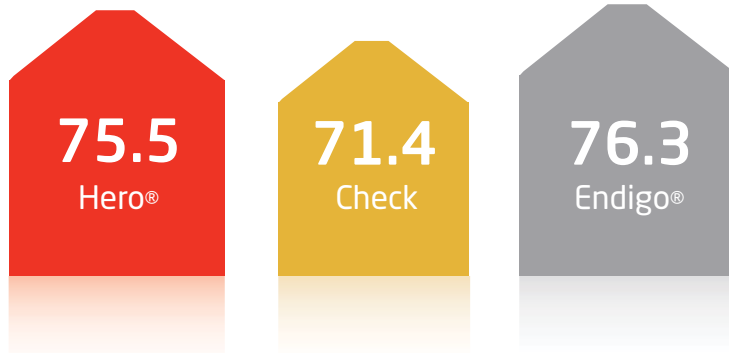
**FUNGICIDE:**  
Quadris 6 oz/ac plus  
Manni-Plex B Moly 1qt/ac,  
Hero 5 oz (Zeta-Cypermethrin & Bifenthrin)

**CROP NUTRITION:**  
20-60-120 suspension  
Applied in the fall



At Pipeline

## FOLIAR INSECTICIDE TRIALS



- Two thirds of the high yield soybean management practices have little or no cost per acre (variety, maturity, planting date, population).
  - BRANDT Smart Trio and a foliar insecticide treatment have returned the largest amount of yield for the investment dollar over the last 3 years of trials.
  - Getting beans off to a good start with a top seed treatment has been a real key to high yield production.
- HIGH SOYBEAN PRICES COUPLED WITH HIGH YIELDS HAVE DRIVEN A NUMBER OF GROWERS TO INQUIRE AS TO WHAT MANAGEMENT PRACTICES HAVE CONTRIBUTED TO INCREASING SOYBEANS YIELD AND AT WHAT COST OR RATE OF RETURN ON INVESTMENT. This question has lead BRANDT to evaluate our past 3 years of soybean management trials for yield and return on investment (ROI). The chart on the following page contains 9 keys that we found for improving soybean yields and ranked them by 3

TOTAL ACRE POLE POSITIONS	2011	2012	2013	3 YR AVERAGE	ROI
Variety	25.6 bu/ac	14.6 bu/ac	19.3 bu/ac	19.8 bu/ac	\$\$\$
Maturity	17.0 bu/ac	10.2 bu/ac	13.0 bu/ac	13.4 bu/ac	\$\$\$
Seed Treatment	6.1 bu/ac	11.9 bu/ac	7.4 bu/ac	8.5 bu/ac	7.1
Planting Date	N/A	6.8 bu/ac	8.3 bu/ac	7.5 bu/ac	\$\$\$
Foliar Insecticide	3.5 bu/ac	5.7 bu/ac	4.9 bu/ac	4.7 bu/ac	11.0
BRANDT Smart Trio	3.2 bu/ac	3.9 bu/ac	3.4 bu/ac	3.5 bu/ac	11.2
Strobilurin	N/A	4.0 bu/ac	3.1 bu/ac	3.5 bu/ac	2.0
P&K Rate	1.6 bu/ac	3.5 bu/ac	4.0 bu/ac	3.0 bu/ac	0.8
Population Rate	2.5 bu/ac	2.8 bu/ac	3.6 bu/ac	3.0 bu/ac	\$\$\$

year average yield. Obviously this is not a total list of all soybean management that could be implemented, however the ranking and the ROI turned out to be very significant metrics to consider. Your own experience could produce a different ranking given your soils and style of management so please take this into account when evaluating changes to your management system.

The rankings indicate that a high yield soybean system begins by choosing a top variety with a long maturity to take advantage of nutrition and stress management treatments through the growing season. Matching the population to an early planting date and protecting the soybeans from insects, diseases, and nematodes through the use of a seed treatment is critical. The system must contain a solid nutrition and weed prevention program that maximizes moisture and sunlight to the soybean plant during critical reproductive stages. Diseases and viruses must be minimized especially during late pod fill to maximize sugar production and protein manufacturing. Products that stimulate photosynthesis, flowering and nodule production are most responsive between the R2 to R6 stage, however

treatments may enhance yield at any stage of growth.

The environment in which a soybean variety grows is extremely influential upon the plant's development and yield. Environmental stress occurring at any stage of soybean development will reduce yields. Stress such as nutrient deficiencies, inadequate moisture, frost damage, hail damage, insect damage, or lodging cause greatest yield reductions when occurring between the R4 to shortly after R6 stages. Within these stages, the R4.5 to R5.5 period is especially sensitive to stress. As the soybean plant matures past R6, the potential amount of yield reduction caused by stress gradually decreases until R7 when yield is unaffected by stress.

Nutrients that have reduced mobility within the soybean plant during reproductive stages are beneficial as foliar treatments. Calcium has least mobility of the nutrients from old growth to new growth leaves, however is generally not deficient in our soils or yield limiting due to efficient root uptake. Manganese, boron, zinc, and molybdenum have reduced mobility and are often times

deficient in the midwestern soils. These can easily be applied though foliar products to meet the transient needs of the soybean plant by stimulating growth and increasing yield. Only a few varieties of soybeans are deficient in Iron and only these cultivars tend to respond to foliar iron treatments.

The availability of phosphorus and potassium in many soils is not adequate for optimum yields so fertilizers and/or manure to supply these nutrients should be soil applied where needed to meet demand. Depending on soil pH, lime also may be needed to make favorable conditions for nitrogen fixation. Well nodulated soybeans will fix all the nitrogen the plant requires.

## PROVEN

High yielding soybeans start with choosing the best variety

## SOYBEANS

# Maturity and Variety Response

**CROPPING HISTORY:**  
Corn/Bean Rotation

**TILLAGE:**  
Conventional Tillage

**PLANTING DATE:**  
May 15, 2013

**HARVEST DATE:**  
October 2, 2013

**POST HERBICIDE:**  
1.5 qt Warrant (acetochlor)  
32 oz of Roundup  
WeatherMax  
(Glyphosate) with  
1qt/ac Manni-Plex B Moly

**POPULATION:**  
140,000

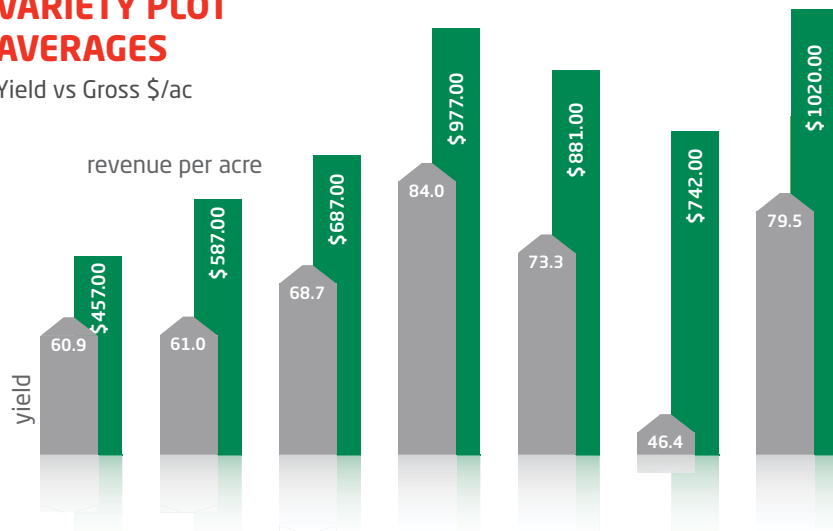
**FUNGICIDE:**  
Quadris 6 oz/ac plus  
Manni-Plex B Moly 1qt/ac,  
Hero 5 oz (Zeta-Cypermethrin & Bifenthrin)

**CROP NUTRITION:**  
20-60-120 suspension  
Applied in the fall



## 7-YEAR SOYBEAN VARIETY PLOT AVERAGES

Yield vs Gross \$/ac



The 7 year chart above continues to reinforce the value soybeans can have to your operation when you optimize yield. In addition, we realized a 4.5 bushel advantage RR2Y had over the straight RR trait. The data continues to show us

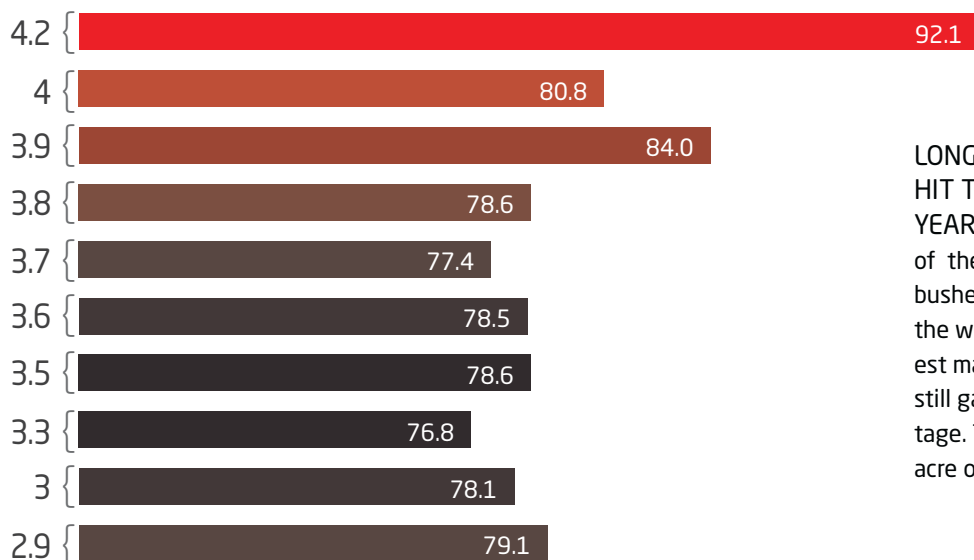
that planting a later maturing variety does not mean you'll harvest wetter soybeans. Our later maturities came in at or below the average moisture for the whole trial.

## VARIETY RESPONSE TO CROP ROTATION AND POPULATION

BRAND	VARIETY	TRAITS	MATURITY	HARVEST MOISTURE	AVERAGE YIELD @ 13% MOISTURE	AVERAGE GROSS INCOME@ \$12.87/BU
Asgrow	AG2933	RR2Y	2.9	14.8	79.1	\$1,012.85
Asgrow	AG3034	RR2Y	3.0	15.4	78.1	\$997.98
Asgrow	AG3334	RR2Y	3.3	14.3	76.8	\$984.52
Asgrow	AG93Y40	RR	3.4	14.5	72.8	\$932.14
Asgrow	AG3533	RR2Y	3.5	13.4	78.6	\$1,009.85
Asgrow	AG3634	RR2Y	3.6	13.1	78.5	\$1,010.29
Asgrow	AG3734	RR2Y	3.7	13.8	77.4	\$994.09
Asgrow	AG3832	RR	3.8	14.2	78.6	\$1,007.69
Pioneer	93Y60	RR	3.6	13.9	77.0	\$988.36
Asgrow	AG3934	RR2Y	3.9	13.4	84.0	\$1,079.84
Asgrow	AG4033	RR2Y	4.0	13.9	80.8	\$1,037.60
Asgrow	AG4232	RR2Y	4.2	12.2	92.1	\$1,185.02
<b>Total Average</b>				<b>13.9</b>	<b>79.5</b>	<b>\$1,020.00</b>

## SOYBEAN MATURITY

Yield vs Maturity



LONGER MATURING VARIETIES HIT THE SWEET SPOT AGAIN THIS YEAR. The difference between one end of the spectrum to the other was 13 bushels per acre. Even if you calculated the weighted average of the three latest maturities vs the three earliest you still gained a 7.6 bushel per acre advantage. That put an additional \$97.81 per acre of gross revenue in this trial.

## SOYBEANS

# Seed Treatment

**CROPPING HISTORY:**  
Corn/Bean Rotation

**TILLAGE:**  
Conventional Tillage

**PLANTING DATE:**  
May 15, 2013

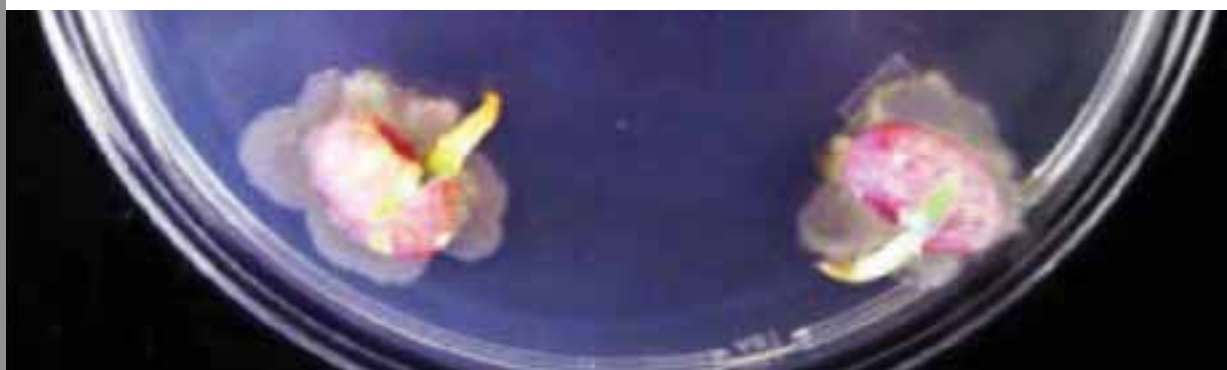
**HARVEST DATE:**  
October 2, 2013

**POST HERBICIDE:**  
1.5 qt Warrant (acetochlor)  
32 oz of Roundup  
WeatherMax  
(Glyphosate) with  
1qt/ac Manni-Plex B Moly

**POPULATION:**  
140,000

**FUNGICIDE:**  
Quadris 6 oz/ac plus  
Manni-Plex B Moly 1qt/ac,  
Hero 5 oz (Zeta-Cypermethrin & Bifenthrin)

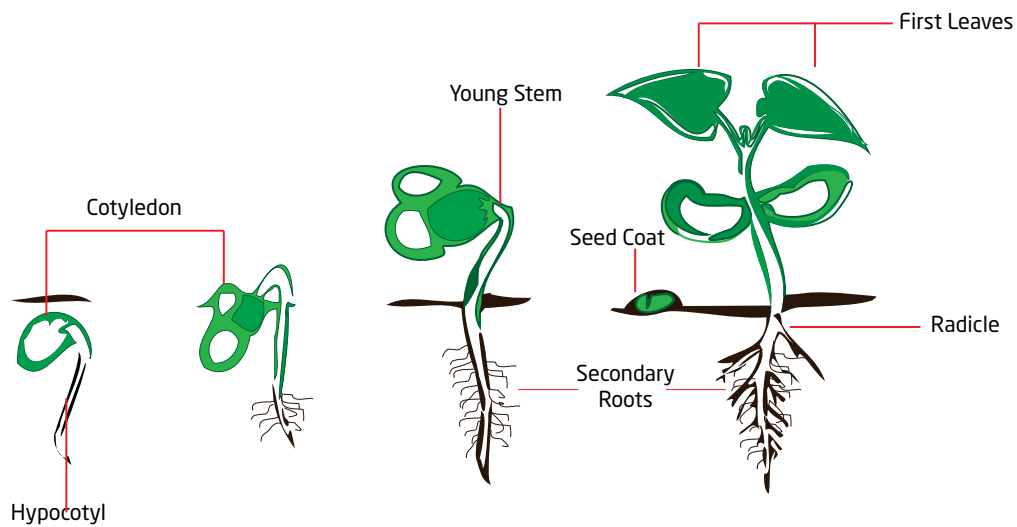
**CROP NUTRITION:**  
20-60-120 suspension  
Applied in the fall



Seed treatments have become an effective way to control pest [diseases and insects] and also start off the growing season with a more vigorous crop. In today's high yielding environments (*high amounts of surface residue*) it's very important to keep up with the latest information on what's available and how seed treatments are performing.

Since we can't predict what the weather will be like for the spring of 2014 we need to look at past performance as an indicator of future success. Our research farm data demonstrates seed treat-

ments such as Poncho/Votivo, Acceleron, Cruiser Maxx and Clariva all have a positive impact on yield. On the average over the past 3 years seed treatments have returned \$3.3 dollars for every \$1 dollar invested. That's something you can bank on. Just as with the other treatments listed in our 'pole positions' chart - seed treatments are one of many management strategies. It goes without saying that seed treatments work on all levels of maturity, however, a longer maturing variety tends to benefit more. Keep this practice at the top of your list.



AN EARLY PLANTING DATE BASED UPON OUR DATA CAN INCREASE SOYBEAN YIELD POTENTIAL AND IS RECOMMENDED FOR SOYBEAN PRODUCTION WITH HIGH YIELD POTENTIAL. A key to improving soybean yield is to improve root health and seedling vigor. Soybean yields can be compromised by environmental stresses and a complex of soil-borne pathogens. Pathogens invade plant roots

causing tissue decay, pre-emergence damping off and early post emergence seedling death.

The unpredictability of soil-borne pathogens have led us to continue testing the value of soybean seed treatments. We have seen a very positive result for the past three years and will continue to examine seed treatments, inoculants, and soil insecticides.

## PROVEN

Protect your investment with seed treatments.

## SEED TREATMENT TRIALS

Treatments	Yield
Check	79.9
Check + S/Zn	84.0
CruiserMaxx + S/Zn	82.1
CruiserMaxx	87.0
Acceleron + S/Zn	82.7
Acceleron	84.9
Clariva	82.7
Clariva + S/Zn	86.1
Clariva High Mgmt	89.7
Poncho/Votivo	85.5
Poncho/Votivo + S/Zn	91.4
Poncho Votivo High Mgmt	99.0

WHAT A YEAR FOR SOYBEAN PRODUCTION. As you read in the soybean BRANDT Total Acre section we hit on some very positive aspects this year that produced outstanding results. Seed treatments continue to demonstrate they are part of a standard operating procedure for high yield. All of this year's seed treatments performed better than the check. The range was from 2.2 bushel per acre better to a whopping 19.1 bushels per acre. Additionally, the use of a S/Zn combination at plant through our starter system benefited the early vigor. This year the response was increased due to the transient deficiency all crops experienced early in their growth stage.

## SOYBEANS

# Stress Mitigation

**CROPPING HISTORY:**  
Corn/Bean Rotation

**TILLAGE:**  
Conventional Tillage

**PLANTING DATE:**  
May 15, 2013

**HARVEST DATE:**  
October 2, 2013

**POST HERBICIDE:**  
1.5 qt Warrant (acetochlor)  
32 oz of Roundup  
WeatherMax  
(Glyphosate) with  
1qt/ac Manni-Plex B Moly

**POPULATION:**  
140,000

**FUNGICIDE:**  
Quadris 6 oz/ac plus  
Manni-Plex B Moly 1qt/ac,  
Hero 5 oz (Zeta-Cypermethrin & Bifenthrin)

**CROP NUTRITION:**  
20-60-120 suspension  
Applied in the fall



- We reduced the yield by 3 bushels per acre in our trials of Cobra applied at the 1st trifoliolate stage. This is a practice that was supposed to stimulate additional yield by causing the bean to branch out.
- Glyphosate and Flexstar Gt applied at the R2 stage created the least amount of stress compared to all other treatment products. BRANDT Smart Trio added an average of 2.6 bushels per acre over the 7 products.
- We reduced soybean yields 4 bushels per acre when we omit-

ted the maintenance phosphorus and potassium applications.

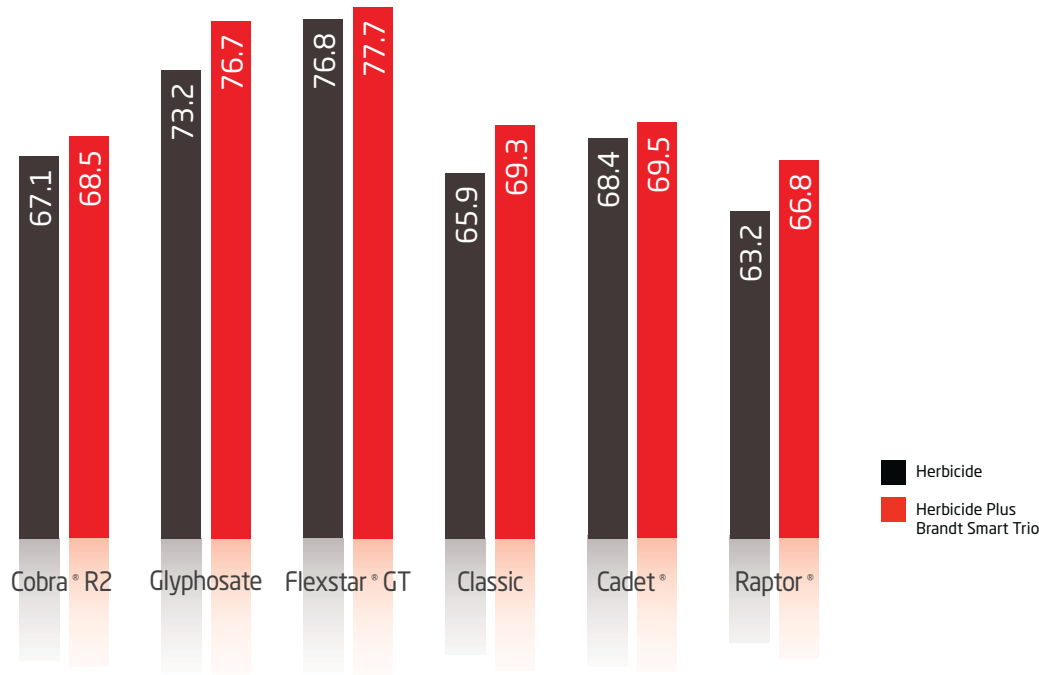
- Fungicide yield response ranged from 1.4 to 3.1 bushels per acre depending on the product trial.  
*Page 33*

The stress mitigation trials are demonstrations designed to evaluate the value that a product may have on reducing plant stress and increasing the yield. The low incidence of disease and insect damage to the soybeans this year at Pleasant Plains presented only small yield responses in comparison to past



## STRESS MITIGATION SOYBEAN TRIALS

bu/ac



trials. Nutrition did influence the yield of soybeans in our trials. We reduced the yields by an average of 4 bushels per acre by omitting the application of phosphorus and potassium (soil maintenance rate).

The increasing threat of weed resistance has meant that glyphosate alone may not give satisfactory or economic weed control. Additional modes of action may need to be used to increase

weed control to an acceptable level. In each of the 2013 trials where a 2nd herbicide was added to the glyphosate post application the yield was reduced. In previous trial years, the addition of an additional stress (such as a post herbicide) actually increased the soybean yields. The soybean treatments produced very small amounts of visual response in this year's trials. Glyphosate and Flexstar Gt applica-

tions applied at the R2 stage created the least amount of stress compared to all other treatment products. In each of the treatments, BRANDT Smart Trio assisted the plant to metabolize the herbicides though increased photosynthesis and growth. The reduced plant stress improved soybean yields from 1 to 3.6 bushels per acre depending on the post herbicide mode of action.

## FUNGICIDE TRIALS

Variety: AG4033



FUNGICIDE YIELD RESPONSE WAS POSITIVE IN ALL OUR TRIALS COMPARING THE TREATMENT TO THE UNTREATED CHECK. We evaluated 3 products and fungicide yield response ranged from 1.4 to 3.1 bushels per acre depending on the trial. The addition of a foliar insecticide makes the most of a fungicide application by protecting the healthy growth from insect damage. Please note that an insecticide was not included in these fungicide trials.

## SOYBEANS

# Planting Date/Population

**CROPPING HISTORY:**  
Corn/Bean Rotation

**TILLAGE:**  
Conventional Tillage

**PLANTING DATE:**

April 6  
May 1  
May 15  
June 6

**HARVEST DATE:**  
October 21, 2013

**HERBICIDE:**  
3 oz Valor XLT (flumioxazin & Chorimuron ethyl)

**POST HERBICIDE:**  
40 oz of Roundup WeatherMax (Glyphosate) with 1qt/ac BRANDT Smart Trio 1qt/ac Manni-Plex B Moly

**POPULATION:**  
120,00, 140,000, 160,000

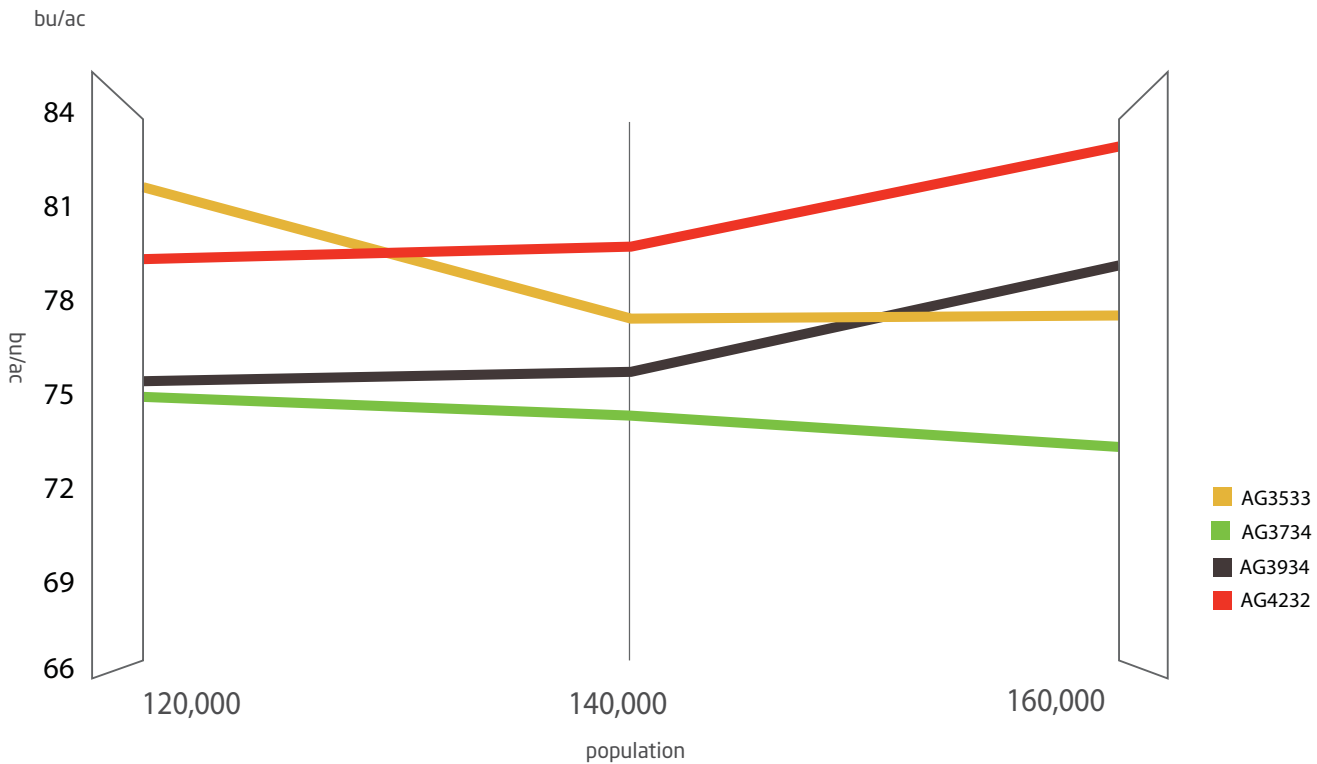
**FUNGICIDE:**  
Quadris 6 oz/ac (Azoxystrobin) plus Manni-Plex B Moly 1qt/ac, Hero 5 oz (Zeta-Cypermethrin & Bifenthrin)

**CROP NUTRITION:**  
20-60-120 suspension Applied in the fall



- The planting date of May 15 gave us the best yield at 77.8 bushels per acre. We planted all these "date trials" at 140,000 plants per acre.
  - Shorter maturity beans yielded better at lower populations while the longer maturity variety's tended to yield more at the higher population settings.
  - Please note the April 6 and May 1 planting date trials did experience some weed pressure from Henbit that did not die quickly from the burn down treatment.
- The planting date trials are some of the most watched side by sides in the Pleasant Plains trials. It is not uncommon to see a number of vehicles each day either slow down or stop at these trials. We had even emergence on each of the planting dates with good growing conditions that began growing slowly and then finished strong.

## PLANTING POPULATION TRIALS

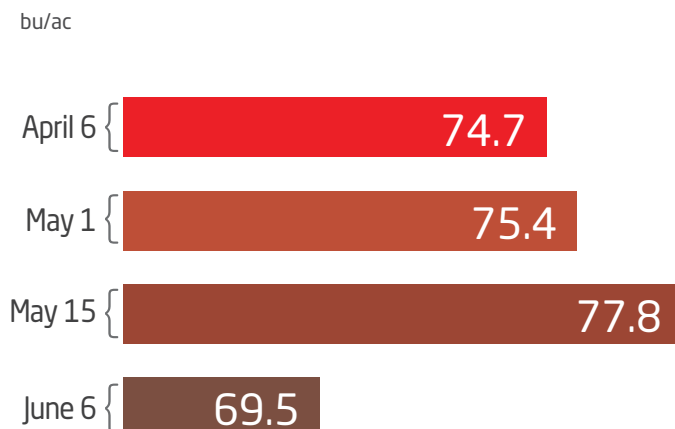


IN THIS YEAR'S TRIALS, POPULATION HAD A VERY MIXED YIELD INFLUENCE. Yield of the shorter maturity varieties improved at lower populations while the longer maturity varieties tended to yield more at the

elevated population settings. The typical response to population is driven by planting date. We would expect the early planted beans to respond to lower populations and the later planted beans would yield best at higher populations.

The late maturing soybean varieties chosen did have some reduced stand ability at harvest even though they did yield more at higher populations. The early maturing varieties maintained a good stand at all populations.

## PLANTING DATE TRIALS



THE INFLUENCE OF INSECT DAMAGE DID NOT MATERIALIZE THIS YEAR DURING THE EARLY FLOWERING STAGES as it did last year, however we did experience some winter annual weed pressure that reduced yield on some of the first 2 planting dates. The cool temperatures in early April did not allow the burn down herbicides to quickly eradicate the Henbit. Harvest of these plots was delayed a couple weeks to October 21 as we waited for the June planted beans to drop their leaves. The grain moisture recorded on all planting dates was near 12% even though the stems on the June planting were a touch green harvest.

## CORN

# Pipeline Research

### CROPPING HISTORY:

1st year corn on beans

### TILLAGE:

Conventional Tillage

### PLANTING DATE:

May 1, 2013

### HARVEST DATE:

September 23, 2013

### HERBICIDE:

3 qt Lexar EZ pre-emerge  
(S-Metolachlor, Atrazine,  
Mesotrione)

### POST HERBICIDE:

40 oz of Roundup  
PowerMax (Glyphosate)  
with 1qt/ac BRANDT  
Smart Trio

### POPULATION:

39,000

### FUNGICIDE:

Quilt Xcel 14 oz/ac  
(Azoxystrobin &  
Propiconazole) plus  
N-Boron 1qt/ac  
Hero 5 oz at R1  
(Zeta-Cypermethrin  
& Bifenthrin)

### CROP NUTRITION:

240-90-180 (30-90-180  
fall applied suspension,  
180 units of ammonia with  
N-Serve (Nitropryrin)

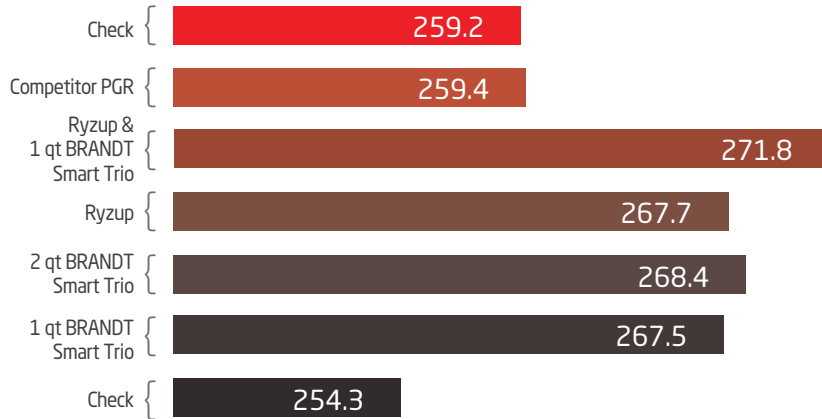


- All the experimental products demonstrated promise when applied at the V5 stage.
  - The combination of Ryzup plus BRANDT Smart Trio stimulated a yield of 271.8 bushels per acre. The combination also produced a deep green and faster growing plant compared to other treatments.
  - Corn planting date trials indicate that planting early and shallower gave us an opportunity for the highest yield.
  - Soil insecticides on 1st year corn gave a small yield increase and the addition of sulfur at planting time was a positive for high yields.
- The pipeline research trial system is focused on evaluating proprietary BRANDT products, experimental products, and production practices that will improve grower yield and profits. As a leading manufacturer of foliar nutritionals, these trials will assist BRANDT with product development for the future.

## V5 STAGE

### STIMULANT TRIALS

bu/ac

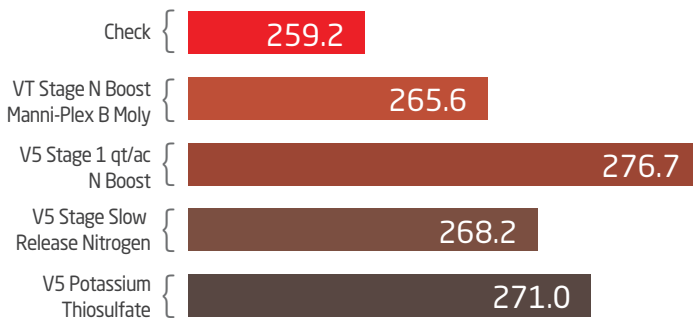


RYZUP IS A NEW PLANT GROWTH REGULATOR (PGR) that was compared to the competitive PGR sold in the market currently. The Ryzup provided a good plant growth response and improved the yield by 8.5 bushels per acre when added to the glyphosate at the V5 growth stage.

The combination of Ryzup and BRANDT Smart Trio produced an additional 12.6 bushel per acre over the untreated check. The addition of BRANDT Smart Trio by itself produced 267.5 bushel per acre at the 1 quart per acre rate for a 14.2 return on investment (ROI).

### FOLIAR NUTRIENT TIMINGS

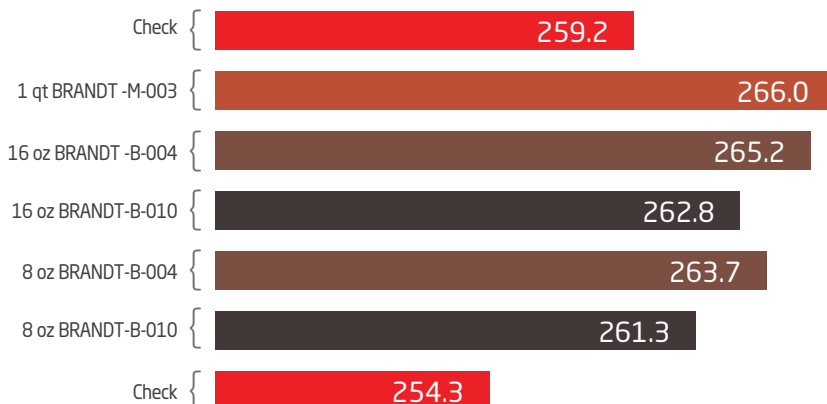
bu/ac



THE WET CONDITIONS CREATED A TRANSIENT NUTRIENT STRESS THAT BEGAN A COUPLE DAYS AFTER PLANTING. This short term nutrient stress during the V5 stage of growth permitted all the treatments at that time to improve yield. The N-Boost product actually produced the leading yield increase in these set of trials at 17.5 bushel per acre. The VT stage corn (early tassel) had very limited stress as the soils dried and moved the nutrition up into the root zone which almost eliminated nutrient stress. The VT application timings created reduced influence on yield trials.

### EXPERIMENTAL PRODUCT TRIALS

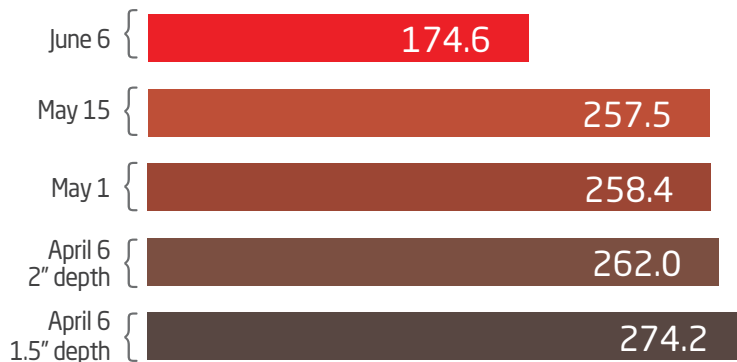
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ALL THE EXPERIMENTAL PRODUCTS HAD A POSITIVE YIELD EFFECT ON THE CORN TRIALS THIS YEAR. We recorded positive yield responses throughout all the U.S. trials and the Eastern seaboard trial system. The experimental products contained some emerging non-nutrient technology's that can be used on multiple plant species. The rate and timing as well as synergistic effect of the new compounds with current products will be focused on in 2014 trials.

## CORN PLANTING DATE TRIALS

bu/ac



CORN PLANTING DATE TRIALS INDICATE THAT PLANTING EARLY AND SHALLOWER GAVE US AN OPPORTUNITY FOR THE HIGHEST YIELD.

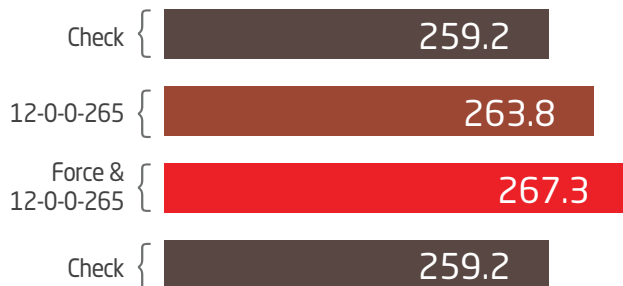
The soils dried and warmed in early April enough to allow for planting to begin in the Pleasant Plains area. The cool and wet conditions that followed did not let us plant again until May 1. Both of these planting dates put a lot of stress on the emerging plants in comparison to the May 15 and June 6 planting dates. Many of the fields planted in late May or June had improved emergence and improved nutrition through its early stages of growth which preserved high yield levels. The late planted corn did swell harvest moistures which increased drying expense.

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## SOIL INSECTICIDE TRIAL

Planter insecticide on Triple Pro Hybrid

bu/ac



SOIL INSECTICIDE TRIALS IN OUR 1ST YEAR CORN PRODUCED ONLY LIMITED YIELD RESPONSE. Rootworm pressure in the Pleasant Plains area for 2013 was minimized by the heavy rains during the egg hatch in late May and early June. A flurry of rootworm beetle adult activity in late August indicates the late hatch of eggs survived and will be laying eggs for next year's corn.



## SUMMARY

*At BRANDT, we take great pride in being a leader in agronomy in central Illinois. One source of that pride is the Pleasant Plains and Lexington Research Farms. These 2013 BRANDT Research Farm results are the culmination of many months of planning, execution, analysis and plain old hard work. We hope you enjoyed it and found some value.*

*At our locations we are blessed with some very good soils and our yields are outstanding. Whereas we only use production practices that you could use, we understand questions about these practices in different soils and environments in achieving similar results.*

*The answer is in the trends and relationships. For example, our data shows a trend toward higher populations in corn*

*for maximum success. The data also shows a close relationship between hybrid choice and fertility and N management. This data can be applied to any cropping system. Look at the Total Acre omission plot to identify these trends and relationships that can apply to your operation. We welcome you to meet with your BRANDT Advisor to discuss implementation.*

*It looks like crop budgets could be tighter in 2014. Good choices become more important than ever and the economics of each choice has to work. That is one of the reasons we operate these farms, to give our customers insight and data to make these decisions. We hope we accomplished this. Here's to farming for success and profit in 2014.*

**Tim McArdle,**  
General Manager

## GOOD CHOICES

*become more important than ever and the economics of each choice has to work.*

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