

BRANDT

Professional Agriculture®

2010 Results

Brandt Research and Development Farm



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*Research and
Development Farm*

Agronomy Day

August 4

Preface

Brandt is proud to present the 2010 results from our Research and Development Farm in Pleasant Plains. This is the sixth year for the farm and we hope you will again find value in our analysis. Every year when we plan this farm we challenge ourselves to provide information that is relevant and actionable for you. We design these trials with that singular theme in mind.

This year our corn trials averaged 179.1 bu. /acre over the whole plot while our first year corn averaged 252 bu. /acre. Pretty good numbers for 2010 even in a plot! We are proud of this success, but we want you to know that we do not use extraordinary measures to achieve these yields. We use good management practices that are economically sound and can be utilized by our customers to enhance their profitability.

Every farm magazine I pick up is loaded with articles about plant populations and row spacing. Brandt has been evaluating these practices on the farm for several years. We continue to find that a plant population of 36,000 is providing the best corn yields. This year we evaluated 20 inch corn and have some key advice on page 10. There are many yield enhancement opportunities within these pages. We have a 5 year average of 20.3 bu. /acre yield increase with fungicide application to corn. Many of our customers have seen these results on their own farms. Fungicides should be a fundamental component of your production strategy. Brandt Trio is performing well and is being recognized across the Midwest as a new and improved way to deliver cost-effective nutrition and stress mitigation with post herbicide applications. Soybean seed treatments have arrived! Check out the results on pages 14 through 16.

Please review the data to draw your own conclusions. Ed Corrigan, Technical Agronomist, has also provided a summary of results for your consideration. We value your feedback, questions and suggestions. For economic analysis and return/acre we have used the crop insurance October values for corn at \$5.45/bushel and soybeans at \$11.63/bushel.

Planning and executing the Brandt Research Farm is a major undertaking and requires work and dedication from our staff. This year we held our annual plot day on August 4 and although it was hotter than blazes, we had a great program and turn out. We want to pay a special tribute to Ed Corrigan who has done much of the design and execution and has been a tremendous asset. We also want to recognize and thank the following employees for the success of the project: Kevin Heideman, Dave Wallner, Pat Schaddel, John Allen, Julie Reynolds, Mark Powell, Steve Clement, Rich Sapp, Chris Becker, Barney Stock, Ross Brockhouse, Glenn Fuchs, Tommy Kimes and Gary Adair.

Finally, several of our customers helped us with equipment, time and expertise. We could not have done it without you. Thanks.

Tim McArdle

General Manager

There are some real gems here:

- We continue to find that a plant population of 36,000 is providing the best corn yields. (Page 4)
- We have a 5 year average of 20.3 bu. /acre yield increase with fungicide application to corn. (Page 10)
- Soybean seed treatments have arrived! (Page 16)
- Brandt Trio is performing well and is being recognized across the Midwest as a new and improved way to deliver cost-effective nutrition and stress mitigation with post herbicide applications. (Pages 6 & 15)



Variety, Tillage and Population

Hybrid, Population and Crop Rotation

Brandt Community Hybrids

Corn Stress Mitigation

Hybrid, Crop Rotation

20" vs 30" Rows

Variety, Fungicide and N-Boron®

Soybean Seed Treatments

20" vs 30" Rows
Population, Fertility and Fungicide

Hybrid Group Response to Population and Nitrogen

Soybean Stress Mitigation

Variety, Population and Crop Rotation

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HYBRID RESPONSE TO CROP ROTATION AND POPULATION

Cropping History	1st year corn on beans/7th year corn on corn
Tillage	Conservation
Planting Date	April 13, 2010
Harvest Date	September 9, 2010
Herbicides	2 qt Degree XTRA® pre-emerge, 26 oz Roundup WeatherMAX™ post with 1 qt Smart System™ Trio
Population	33,000 / 36,000 / 39,000
Plant Health	6 oz Headline and 1 qt N-Boron® with 1.9 oz Warrior applied at R-2 Tassel
Crop Nutrition	240-90-180 (30-90-180 fall applied suspension, 180 units Ammonia with N-Serve, 30 units of nitrogen pre-emerge with Agrotain)



Objective

Evaluate the yield response of each of the 14 hybrids to 3 populations and 2 crop rotations (1st year & 7th year corn).

Comments/Conclusions

There was only one population of corn on corn planted in 2010 due to the dimensions of the block. The corn following soybeans (1st yr) was planted in a block long enough to allow for three populations of each hybrid. Each hybrid had a different yield response to population, with a number of the hybrids yielding the best at higher populations. Given the yield data from the last 3 years, the most profitable and consistent population is 36,000. The yield responses of each hybrid to population and soil fertility continues to be the focus of Brandt research so we can assist our customers with proper hybrid placement.

The corn on corn averaged 1.4% higher moisture and 100 bushels per acre less yield than the corn following soybeans. The lower yields of the 7th year corn was primarily due to the immobilization of nitrogen into the residue from the previous year's crop. This reduced the amount of nitrogen available to the corn following corn. A normal harvest time with a dry fall and winter is more favorable for corn on corn to outyield a 1st year corn rotation.

The residue of a previous corn crop can easily immobilize up to 120 units of nitrogen by the bacteria that convert the residue to organic matter. In most years, the rich prairie soils in central Illinois provide the nutrients needed by the bacteria for residue break down. Without fall tillage, the corn stalk residue also reduced the soil temperature compared to the corn following soybeans. This slowed the evaporation of moisture from the soil and reduced the mineralization of micronutrients like sulfur and zinc that are needed by young corn plants for early growth.

Corn Residue: Friend or Foe?

For most producers in 2010, the corn stalk residue from 2009 was definitely one of the foe's that reduced yields in corn on corn fields by immobilizing soil surface nitrogen and delaying early plant growth due to allelopathy (chemicals leaching out of crop residues). At the Brandt Research Farm this year, the absence of crop residue on yield measured 86 bushels per acre more. The plot received a total of 150 units of nitrogen and was in a 5th year corn rotation. The residue immobilized the nitrogen that was intended for the corn plants. (See plot photo at top of next page)

The late harvest of 2009 coupled with a wet winter and cool spring reduced the oxygen in the soil. This shut down the normal process of residue breakdown in the fall. The process does not take place when the soil is cold, compacted, too wet or dry, or too acid or alkaline. The process of decaying residue into organic matter requires nitrogen, phosphorus and sulfur, which are taken from the soil. The residue-decaying process works best in the top four or five inches of soil where aeration is better, and when the soil is warm, moist, and has a neutral pH.

Bacteria literally rob plants of nutrients during times of residue breakdown during the growing season. This process is referred to as immobilization of nutrients. These immobilized nutrients will be available to future crops during the summer as soils mineralize the organic matter. The mineralization process can provide tremendous reserves of nitrogen, phosphorus and other nutrients to feed crops in July and August when demand is heaviest.

With residue from last year's crop
108 bu/ac



No residue from last year's crop
194 bu/ac



With residue
from last year's
crop, 108 bu/ac



Recipe for Residue Breakdown:

1. Shred the stalks to reduce the size.
2. Apply a small amount of nitrogen and phosphorous to the stalks (100 lbs. per acre of DAP will supply food for the bacteria that break down the residue).
3. Apply lime to raise pH (6.0 to 6.5).
4. Use tillage to add oxygen to the soil and put the residue in contact with the soil.
5. Harvest and till early to allow for breakdown of residue in fall.

Residue should be considered an asset, not a problem. Managing residue properly is the key to soil productivity and high yields. In every acre of land as many as 10 billion microorganisms live, work, and die. These tiny organisms make up the "microscopic society" beneath the soil. They devour and digest plant residue. They need warmth, moisture, and oxygen from the air. They release tremendous quantities of carbon dioxide. Without these bacteria and fungi, the best ground would become useless. We can help these organisms convert residue to organic matter by using proper tillage, sizing the residue and by providing some initial food for the bacteria to get the process started.

Hybrid Response to Crop Rotation and Population

PREVIOUS CROP	VARIETY	TRAITS	MATURITY	HARVEST MOISTURE	YIELD AT 33,000	YIELD AT 36,000	YIELD AT 39,000	AVG. YIELD AT 15% MOISTURE	AVG. GROSS AT \$5.45 BU
1st yr corn	DKC 61-21	SS	110	16.5	252.6	265.1	239.9	252.5	\$1,353.40
7th yr corn	DKC 61-21	SS		19.9		176.7		176.7	\$911.25
1st yr corn	DKC 57-50	VT3	107	16.5	243.6	253.2	245.8	247.5	\$1,326.64
7th yr corn	DKC 57-50	VT3		18.2		197.5		197.5	\$1,038.66
1st yr corn	DKC 58-83	VT3P	108	15.7	241.0	246.4	244.3	243.9	\$1318.94
7th yr corn	DKC 58-83	VT3P		17.9		179.1		179.1	\$944.73
1st yr corn	DKC 59-35	VT3	109	18.5	254.8	263.8	237.2	252.0	\$1,320.65
7th yr corn	DKC 59-35	VT3		17.2		173.0		173.0	\$920.08
1st yr corn	DKC 61-06	SS	111	17.2	249.2	254.1	237.0	246.8	\$1,312.53
7th yr corn	DKC 61-06	SS		19.5		177.6		177.6	\$920.07
1st yr corn	DKC 61-21	SS	111	17.2	244.0	251.3	240.5	245.2	\$1,303.85
7th yr corn	DKC 61-21	SS		19.0		140.8		140.8	\$733.76
1st yr corn	DKC 62-54	VT3	112	16.4	248.2	258.4	254.5	253.7	\$1,361.23
7th yr corn	DKC 62-54	VT3		18.0		156.3		156.3	\$823.87
1st yr corn	P 1184XR	HXXLLRR2	111	18.1	247.2	237.1	240.2	241.5	\$1,271.16
7th yr corn	P 1184XR	HXXLLRR2		19.1		145.2		145.2	\$755.55
1st yr corn	DKC 62-97	VT3P	112	19.2	260.7	277.3	269.0	269.0	\$1,398.34
7th yr corn	DKC 62-97	VT3P		20.7		164.9		164.9	\$842.27
1st yr corn	DKC 63-84	VT3	113	18.7	249.2	253.7	260.6	254.5	\$1,330.58
7th yr corn	DKC 63-84	VT3		19.6		125.1		125.1	\$647.15
1st yr corn	P 1395XR	HXXLLRR2	113	18.1	258.9	262.3	258.8	260.0	\$1,368.54
7th yr corn	P 1395XR	HXXLLRR2		18.9		121.2		121.2	\$632.28
1st yr corn	DKC 64-69	VT3P	114	20.4	258.9	253.6	244.2	252.2	\$1,292.94
7th yr corn	DKC 64-69	VT3P		19.1		187.1		187.1	\$973.87
1st yr corn	DKC 65-63	VT3	115	18.0	264.1	253.6	257.3	258.3	\$1,361.35
7th yr corn	DKC 65-63	VT3		20.9		133.5		133.5	\$680.37
1st yr corn	DKC 66-96	VT3P	116	20.2	258.2	251.0	243.2	250.8	\$1,288.49
7th yr corn	DKC 66-96	VT3P		19.6		133.7		133.7	\$691.57
1st yr corn	NK 74R	3000GT	113	20.2	280.8	276.8	259.0	272.2	\$1,398.60
7th yr corn	NK 74R	3000GT		21.6		141.1		141.1	\$713.11
1st yr corn	DKC 61-21	SS	111	16.2	245.1	242.4	210.7	232.7	\$1,251.39
7th yr corn	DKC 61-21	SS		19.7		90.6		90.6	\$468.38
1st yr corn	Total Average			17.9	253.5	256.3	246.4	252.1	\$1,328.66
7th yr corn	Total Average			19.3		152.7		152.7	\$793.56

CORN HERBICIDE STRESS MITIGATION

Cropping History	5th year corn
Tillage	Conservation
Planting Date	April 15, 2010
Harvest Date	September 7, 2010
Herbicides	2 qt Degree XTRA® pre-emerge, 26 oz Roundup WeatherMAX™ and Prolec post with various tank mix partners
Population	38,000
Stress Mitigation	Smart System™ Trio at 1 qt per acre
Plant Health	6 oz Headline and 1 qt N-Boron® with 1.9 oz Warrior applied at R-2 Tassel
Crop Nutrition	240-90-180 (30-90-180 fall applied suspension, 180 units Ammonia with N-Serve, 30 units of Nitrogen pre-emerge with Agrotain)

Objective

Evaluate the timely tank mix application of specific micronutrients with crop protection products to minimize or eliminate unwanted crop stress without reducing the effectiveness of the crop protection products.

Comments/Conclusion

Weed resistance management is a necessity in Illinois and may lead to multiple herbicides applied post. Recognize that applications of crop protection products to growing crops can create unwanted stress which can limit yields.

The weed control in all trials was excellent. The addition of Smart System™ Trio mitigated the stress from the Roundup and additional tank mix partners which resulted in higher yields. In the Roundup alone trials, the addition of Smart System™ Trio increased yields by 22.3 bushels at 38,000 population. The yield increases in the Roundup and various tank mix partners ranged from -5.7 to 31.9 bushels. Due to the low mineralization rate in 2010, Smart System™ Trio provided essential micronutrients to assist the corn with plant growth and metabolism of the applied chemistry.

Smart System™ Trio is a combination of nitrogen, sulfur, manganese, zinc, and boron that was developed by Brandt Specialty Formulations. Historically, the tank mix of micronutrient products and herbicides has compromised weed control. The unique characteristic of Smart System™ Trio is the ability to mix it with various crop protection chemicals and get synergistic results as compared to historical antagonism. Roundup and Roundup tank mixes with and without Smart System™ Trio were applied at labeled rates on corn at V6 stage.

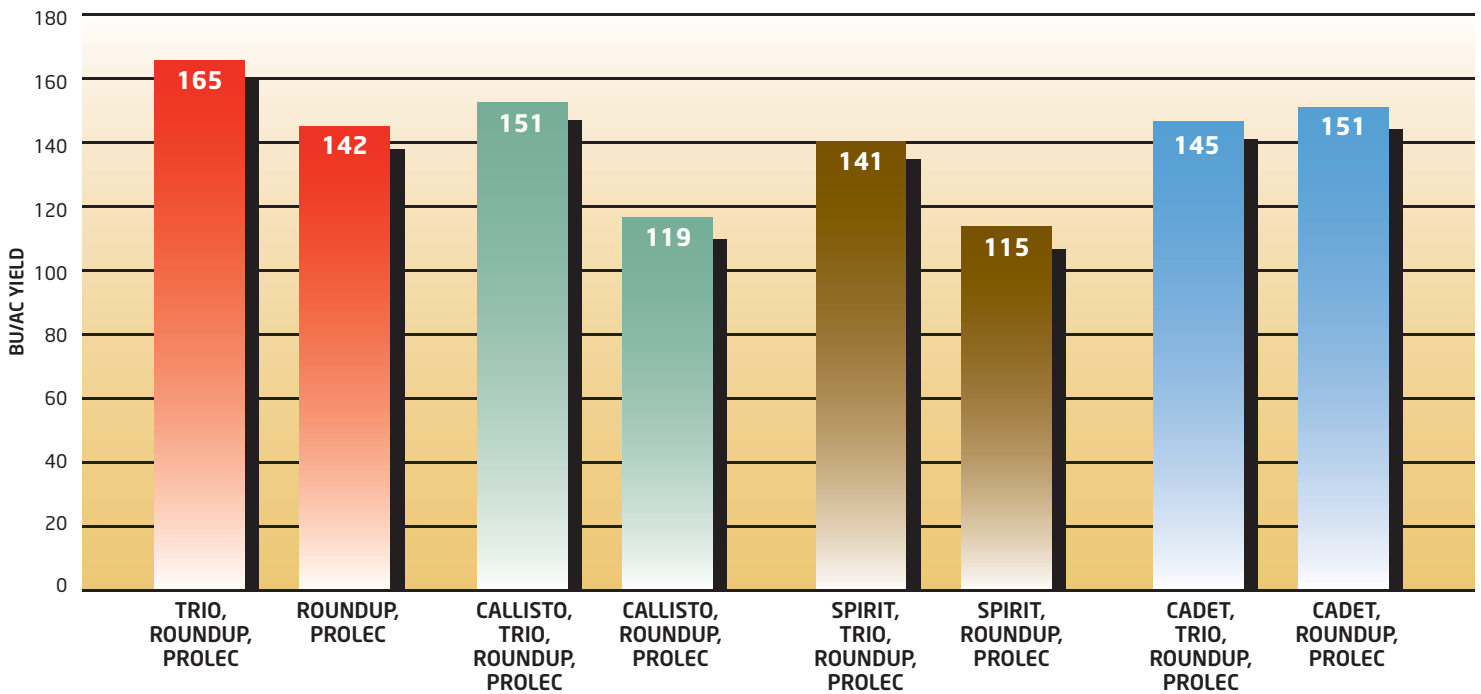


The proprietary adjuvant used in the trials was Prolec which lifts the cuticle on the plant leaf, allowing more penetration of the applied nutrients and crop protection products.

In conclusion, Smart System™ Trio and Prolec performed in the field with the same positive results created in the lab. Smart System™ Trio can increase yield by providing nutrients and reducing antagonism. Prolec can enhance the tank mix by improving the uptake of nutrition by the crop and increasing the chemical uptake into the weeds while providing spray drift deposition.

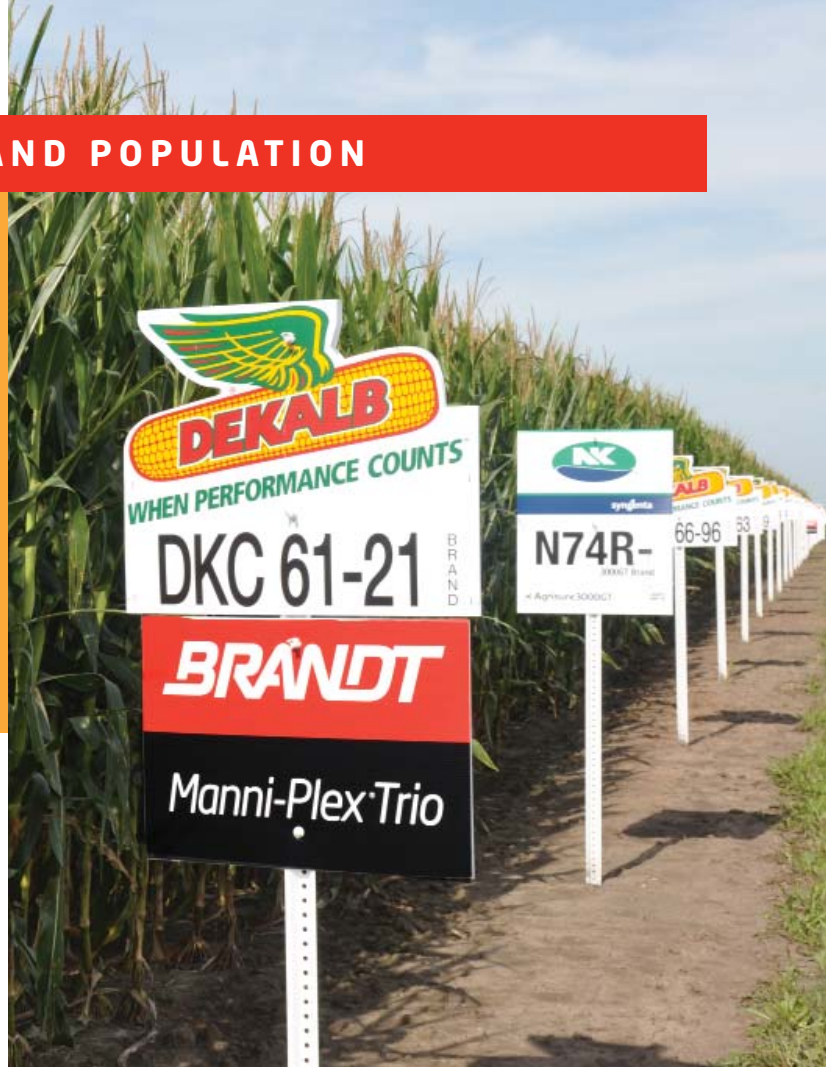


Corn Herbicide Stress Mitigation with Smart System™ Trio and Prolec



CORN RESPONSE TO NITROGEN AND POPULATION

Cropping History	5th and 7th year corn on corn
Tillage	Conservation
Planting Date	April 13, 2010
Harvest Date	September 9, 2010
Herbicides	2 qt Degree XTRA® pre-emerge, 26 oz Roundup WeatherMAX™ post with 1 qt Smart System™ Trio
Population	30,000 / 33,000 / 36,000 / 39,000
Plant Health	6 oz Headline and 1 qt N-Boron® with 1.9 oz Warrior applied at R-2 Tassel
Nitrogen Rate	90, 120, 150, 180 units Ammonia with N-Serve in fall, 30 units of nitrogen pre-emerge with Agrotain
P&K Rate	30-90-180 build or 32-92-60 maintenance



Objective

Measure 4 hybrids yield response to 4 rates of nitrogen and 4 populations in a corn on corn environment.

Comments/Conclusions

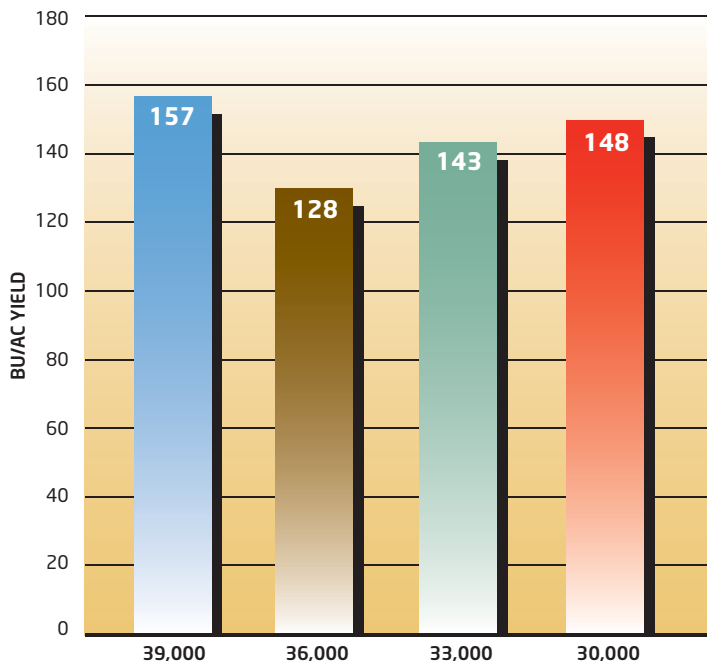
Corn yields in the 2010 corn on corn nitrogen trials were dismal. Yields ranged from a low of 68 bu. /acre to a high of 223 bu. /acre. The response to nitrogen in 2010 was similar to 2009 with a 38 bu. /acre yield increase over the lowest rates of nitrogen used in the trial.

The corn emerged very evenly in the trials; however, the plants soon began to show signs of stress from compaction, nutrient deficiencies, and autotoxicity stress (chemicals leaching out of corn crop residues). Residue from the 2009 crop immobilized the nitrogen in the top 4 to 6 inches of soil that was intended for the young corn plants. Rains in May and June limited the development of fine root hair and minimized the uptake of non-mobile nutrients. Fall applied nitrogen was out of reach of the young roots unless the corn row was planted directly over the ammonia knife. With the corn plants already low on nutrition and a reduced root system, Mother Nature turned up the heat to above 70° at night. Corn plants that are exposed to high night time heat have less time to fill the kernels.

Damp conditions and spotty drainage combined to diminish the significance of the population trials for 2010. The high and low yield did not have any statistical value. The data merely suggests that corn, if heavily stressed through all stages of growth, does not respond to population. Corn however, did respond to nutrition and placement of the nutrition.

Response to Population, Corn on Corn

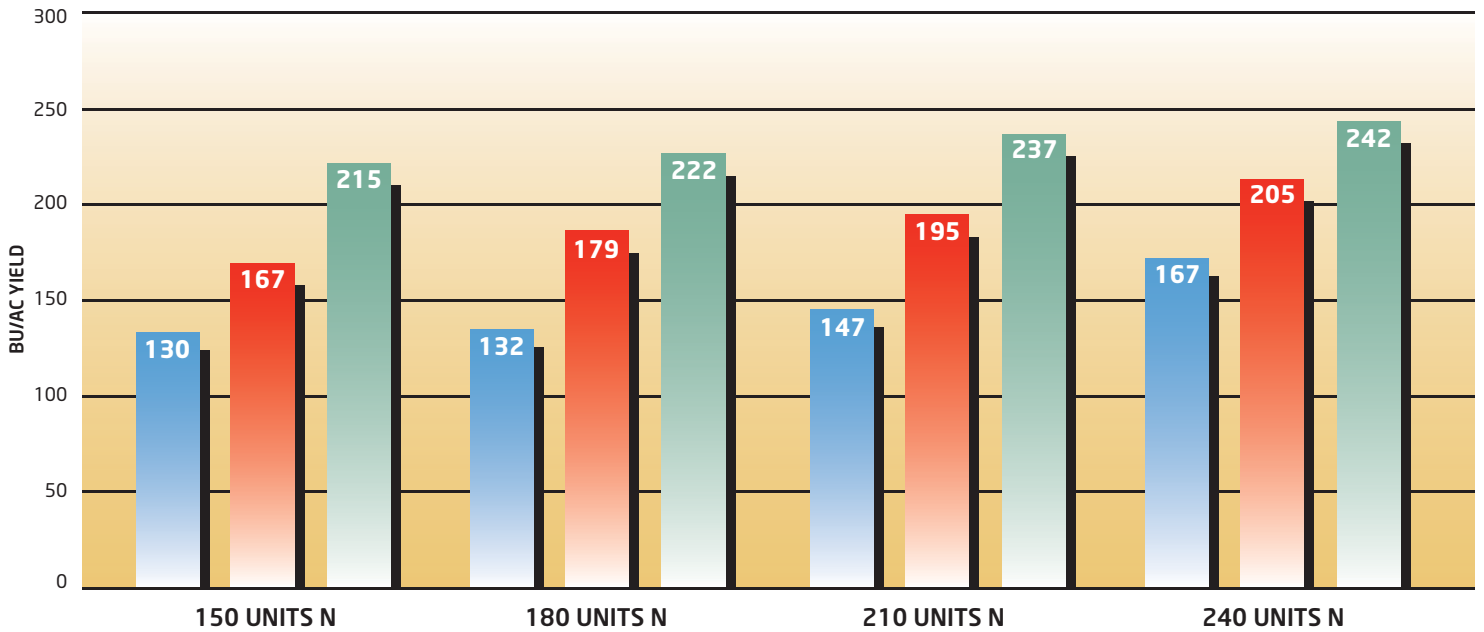
Average of 5 hybrid groups, 4 N rates, 256 trials per year



3 Year Response to Nitrogen Rate

Average of 5 hybrid groups, 4 populations, 256 trials per year, corn on corn.

2010 2009 2008



20 INCH VS. 30 INCH CORN

Cropping History	Corn following soybeans
Tillage	Conservation
Planting Date	April 14, 2010
Harvest Date	September 7, 2010
Herbicides	Degree XTRA® pre-emerge, 26 oz Roundup WeatherMAX™ post with 1 qt Smart System™ Trio
Population	33,000 / 36,000 / 39,000 / 42,000 / 45,000 / 48,000
Plant Health	6 oz Headline and 1 qt N-Boron® applied at R-2 Tassel
Crop Nutrition	30-90-180 fall applied suspension, 180 units Ammonia with N-Serve, 30 units of Nitrogen pre-emerge with Agrotain)



Objective

Evaluate the yield response of 20" wide corn rows vs. 30" wide rows. Compare population response, fungicide response to a two year maintenance fertilizer rate vs. none applied.

Comments/Conclusions

The row width trials were primarily designed to evaluate the yield impact of row width vs. population. As the corn emerged in the trials, an unexpected comparison became evident. The 30" rows were emerging evenly with almost perfect plant spacing while the 20" rows were emerging slower with a lot of variability in the plant spacing. The 30" row planter had been tuned up with precision finger units with floating Yetter row cleaners. The 20" row was a vacuum planter with rigid mount row cleaners. I feel this gave the 30" rows a clear advantage over the 20" rows by having better seed placement and emergence. Please take this into consideration as you view the results.

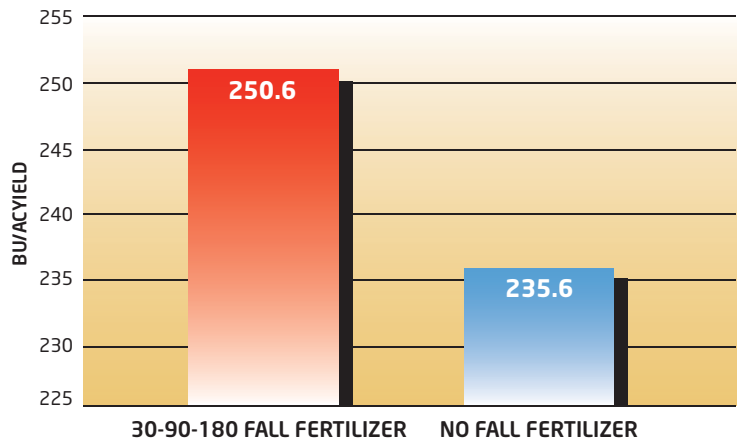
Statistically, the 20" wide rows were not any better or worse in yield than the 30" wide rows. We did see a better performance of the 20" rows in the higher populations over 39,000 plants per acre. The 20" wide rows clearly did not provide any advantage in yield below the 39,000 population in 2010. **This population response to row width plainly points to not investing in narrow rows unless your populations are north of 39,000 with today's hybrids.**

At harvest, all the population trials were standing well. Each hybrid did respond differently to the higher populations with some stalks beginning to break above the ear.

The row width trials did reveal some trends of high populations. To take advantage of the higher populations, you must provide the fertility of phosphorus and potassium to stimulate vegetative growth and reduce nutrient imbalances. The addition of a 2 year maintenance of P & K provided an average of 15 more bushels

Fertility Trials

Corn following soybeans, N-Boron® added to fungicide at R2 stage. Average of 20" rows and 30" rows, 3 hybrids at 6 populations each



per acre when compared to no addition of P & K. This trial was conducted on a soil testing "very high" in P & K and I would expect a larger response on a soil with lower readings.

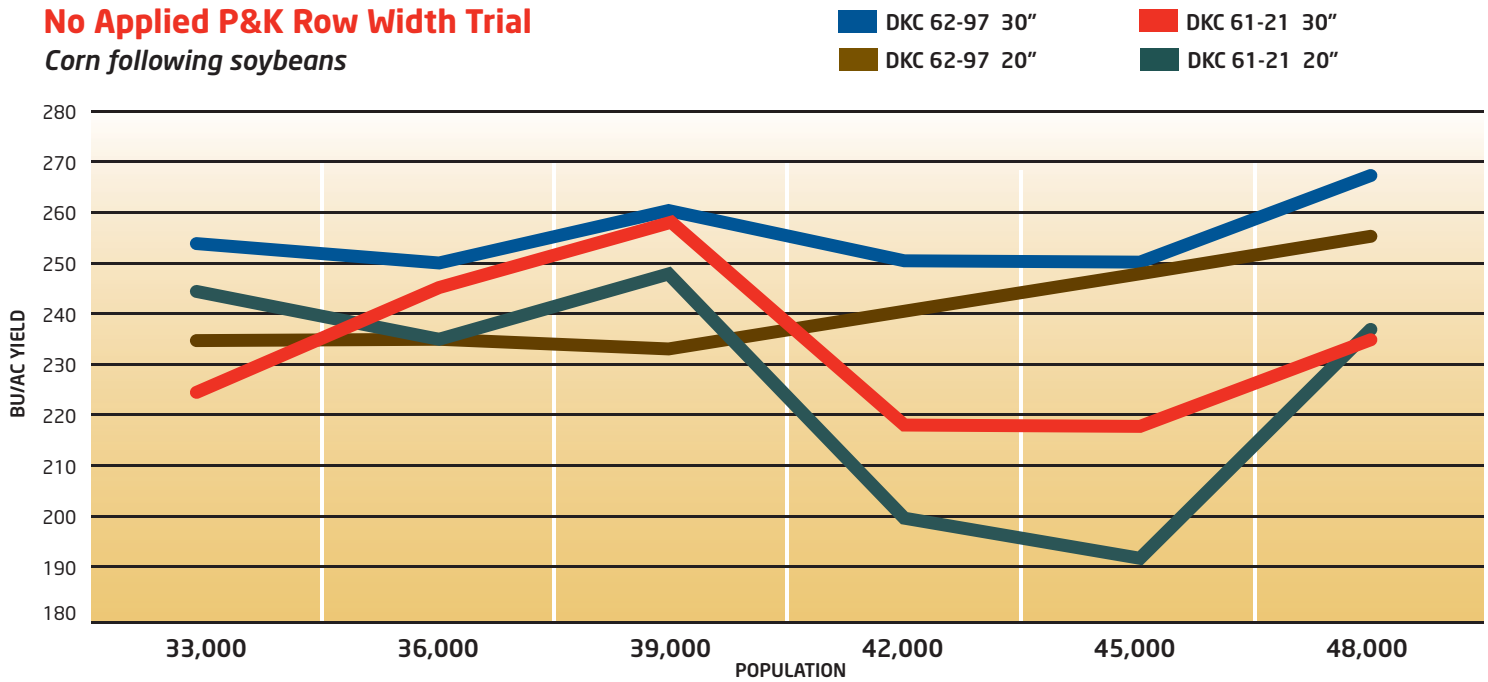
The response to fungicide and N-Boron® at R2 stage of growth in 2010 turned out to be the management practice that influenced corn yields more than all other practices. We measured a 35 bu. / acre average over the 24 trials. This treatment of fungicide and N-Boron® provided a means for the corn plant to deal with the high evening temperatures allowing the corn to fill the kernel. The kernels were noticeably larger and the stalks were in much better shape than the untreated corn. There was an average of 48 bu. / acre advantage to fungicide treatment on the trials which had P & K applied. The better balanced fertility of those trials allowed the corn to take full advantage of the stress relief provided by the fungicide and N-Boron®.

Fungicide treatments over the last 5 years of trials to corn have averaged an additional 20.3 bu. / acre yield at the Research Farm.

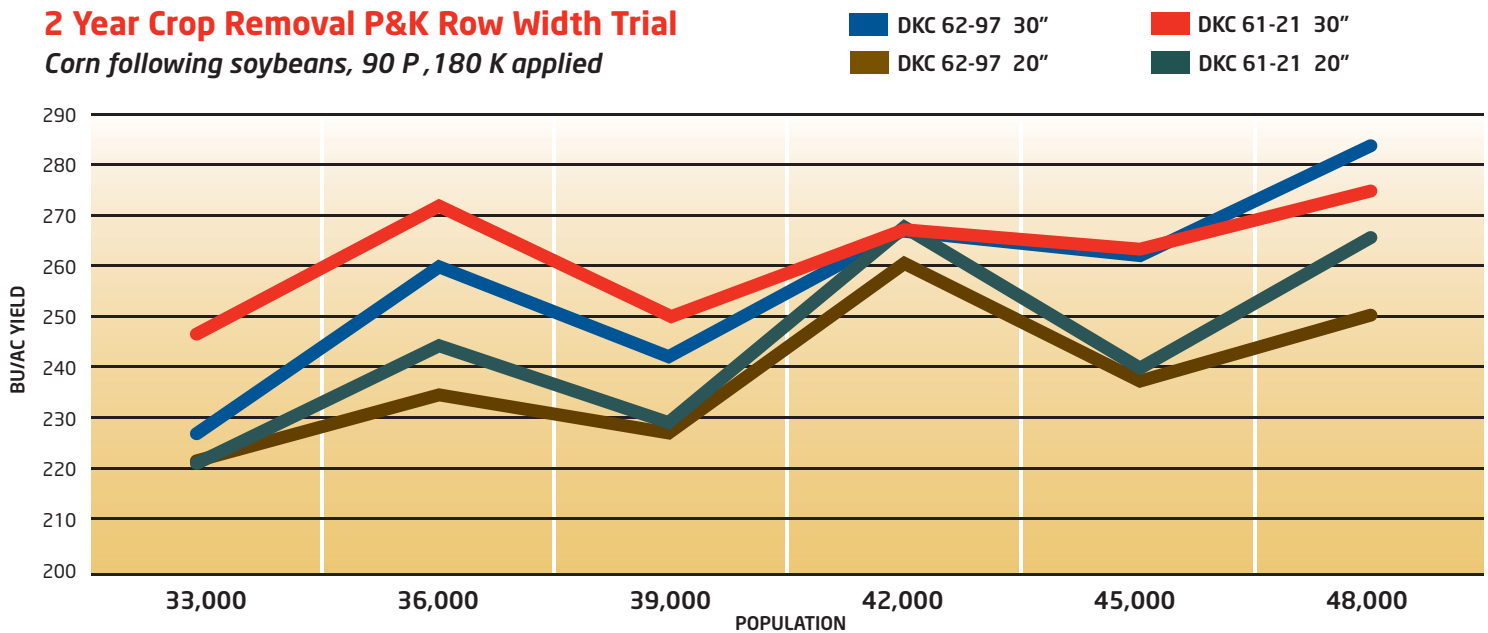
Fungicide and N-Boron® Response to Fertility Treatments by Row Width

2 YEAR MAINTENANCE APPLIED (90 P, 180 K)	HARVEST MOISTURE	YIELD AVERAGE	AVERAGE GROSS INCOME @ \$5.45/BU	HARVEST MOISTURE	YIELD AVERAGE	AVERAGE GROSS INCOME @ \$5.45/BU
FUNGICIDE AND N-Boron®	19.3	254.6	\$1,321.76	21.3	255.2	\$1,294.22
NO FUNGICIDE	18.7	212.5	\$1,110.69	19.6	200.3	\$1,036.29
TOTAL		42.1	\$211.07		54.9	\$257.93
NO P & K APPLIED	20" Rows			30" Rows		
FUNGICIDE AND N-Boron®	18.7	230.8	\$1,206.85	19.1	247.0	\$1,285.29
NO FUNGICIDE	18.4	201.1	\$1,054.97	18.3	233.9	\$1,228.39
TOTAL		29.7	\$151.88		13.1	\$56.90

No Applied P&K Row Width Trial Corn following soybeans



2 Year Crop Removal P&K Row Width Trial Corn following soybeans, 90 P, 180 K applied



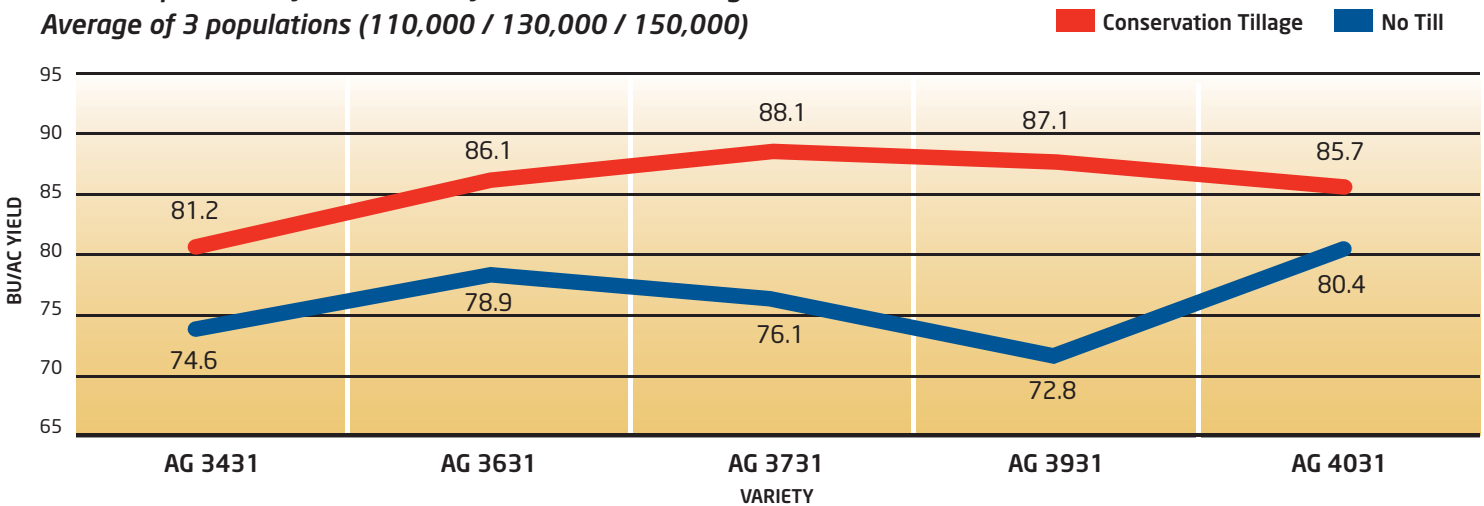


SOYBEAN TILLAGE SYSTEM

Cropping History Soybeans following 1 year of corn
Tillage No Till and Conservation
Planting Date April 21, 2010
Harvest Date October 1, 2010
Herbicides 1.6 qt Prefix, 12 oz WeatherMAX™, 1 pt 24D pre-plant, 26 oz Roundup WeatherMAX™, 4 oz Fusilade with 3.5 oz Indigo and Smart System™ Trio post at R2 stage.
Population 110,000 / 130,000 / 150,000
Plant Health 6 oz Quadris, 1 qt N-Boron® at R4 stage
Crop Nutrition 14-42-84 applied in fall as suspension.

Soybean Yield Response to Tillage System

Planted April 21, Salford RTS used for conservation tillage
 Average of 3 populations (110,000 / 130,000 / 150,000)



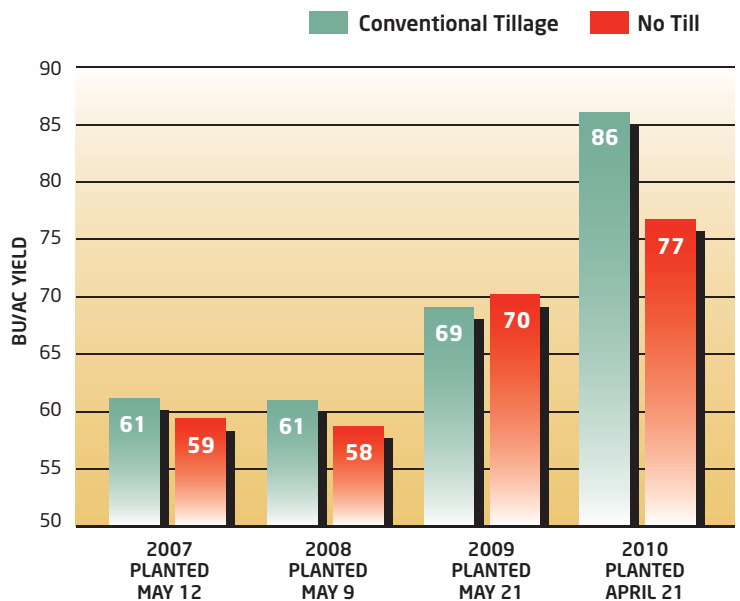
Objective

Evaluate the yield response of each soybean variety to three different populations and two crop rotations.

Comments/Conclusions

Soybean tillage system trials revealed some very dramatic results for 2010. By using a Salford 2 days prior to planting, an average of 9 bu./acre was recorded compared with no till soybeans. This is the largest yield increase that has been recorded in the last 4 years of tillage trials at the Pleasant Plains Research Farm. I would attribute a large portion of the yield difference to the early planting date. If the soybeans had been planted later in the spring the soil temperature and warmer evenings would have been more conducive to no till and the difference would not have been as great. That said, the data still points to early planting for top yields.

4 Year Tillage System Trials



SOYBEAN FUNGICIDE AND N-BORON®

Cropping History	Soybeans following 3 years of corn
Tillage	Conservation
Planting Date	April 21, 2010
Harvest Date	October 1, 2010
Herbicides	1.6 qt Prefix, 12 oz WeatherMAX™, 1 pt 24D pre-plant, 26 oz Roundup WeatherMAX™, 4 oz Fusilade with 3.5 oz Indigo and Smart System® Trio post at R2 stage.
Population	110,000
Plant Health	6 oz Quadris, 1 qt N-Boron® at R4 stage
Crop Nutrition	14-42-84 applied in fall as suspension.



Objective

Evaluate the yield response of each soybean variety to fungicide and N-Boron®.

Comments/Conclusions

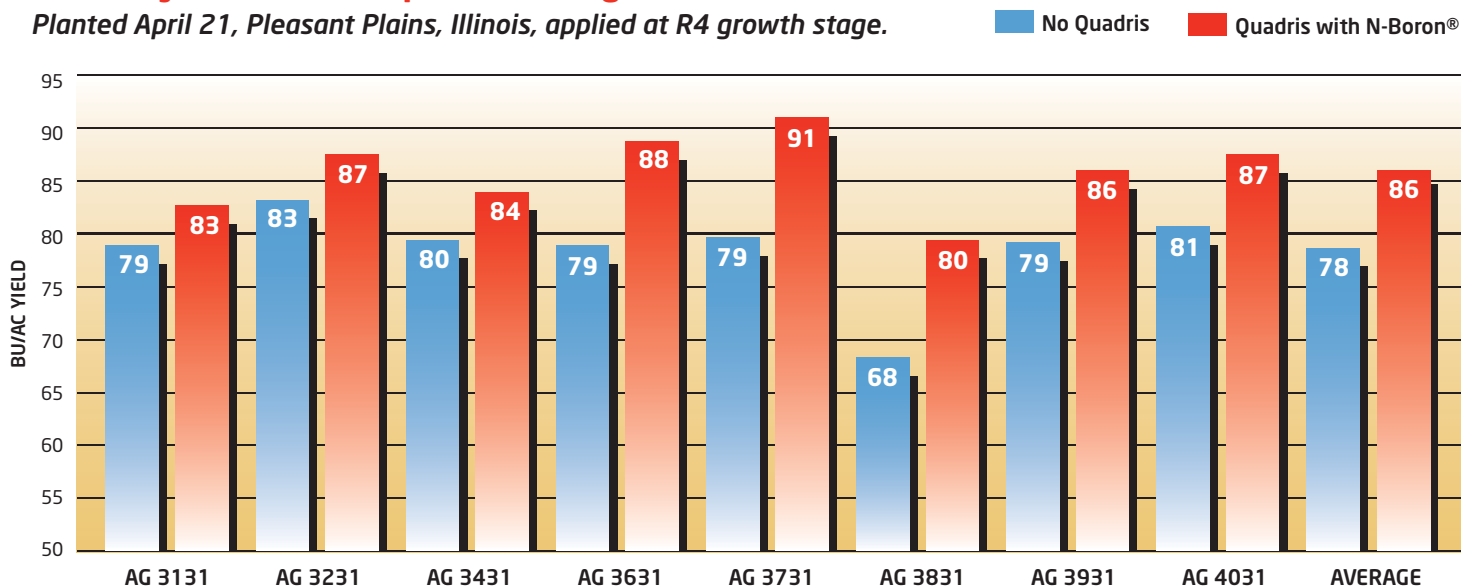
Yield response to fungicide and N-Boron® applications at R4 stage of growth averaged 7.2 bu. /acre across 8 varieties. At \$11.63 per bushel soybeans, the fungicide net profit was \$55.74 /ac.

N-Boron® is added to the fungicide treatment primarily to stimulate the soybeans nitrogen nodules. This increases the production of nitrogen. The fungicide improves the photosynthesis of the soybean as well as regulates the respiration of the soybean for an extended seed fill period. The soybean's nitrogen production and photosynthesis are now operating at a higher rate which improves pod fill and yield.

In years of heavy rainfall, the soils ability to provide enough boron is limited due to leaching. Boron is one of the most soluble nutrients and moves quickly out of the root zone during rains. Heavy rain events are also when air borne diseases are at a higher risk of infecting soybeans. Additional trials are planned for next year with the addition of molybdenum.

2010 Soybean Yield Response to Fungicide and N-Boron®

Planted April 21, Pleasant Plains, Illinois, applied at R4 growth stage.



SOYBEAN POPULATION AND CROP ROTATION

Cropping History	Soybeans following 1 year and 3 years of corn
Tillage	Conservation
Planting Date	April 21, 2010
Harvest Date	October 1, 2010
Herbicides	1.6 qt Prefix, 12 oz WeatherMAX™, 1 pt 24D pre-plant, 26 oz Roundup WeatherMAX™, 4 oz Fusilade with 3.5 oz Indigo and Smart System™ Trio post at R2 stage
Population	110,000 / 130,000 / 150,000
Plant Health	6 oz Quadris, 1 qt N-Boron® at R4 stage
Crop Nutrition	14-42-84 applied in fall as suspension



Objective

Evaluate the yield response of each soybean variety to three different populations and two crop rotations.

Comments/Conclusions

All trials were planted in 30" rows. Yield response to lower populations was expected when planting the soybeans in late April. The 130,000 population had the highest yield in 9 out of 16 trials. On average, 1 year rotation showed a larger response to higher populations and an additional 3.2 bu. /acre over the low population.

The wet growing season did not increase the amount of disease that is normally expected by planting in early spring. This was due in part by the good soil conditions in late April. The soybeans

emerged and got a good start before the rains began in early May. Early planted soybeans are able to canopy in late June and this allows the seed fill to be extended. Acceleron seed treatment was instrumental in allowing the soybeans to be planted in April. The treatment got the beans out of the ground and flowering by mid June. The April planting averaged 19 bu. /acre more when compared with the same set of varieties planted June 1 at Pleasant Plains.

Fertilizing the ground prior to soybeans with a maintenance rate of P & K has also been one of the common factors with high yielding soybeans the last 3 years. Trials will be established next year at Pleasant Plains to try to measure this response.

Variety Response to Population and Crop Rotation

PREVIOUS CROP	VARIETY	TRAITS	MATURITY	HARVEST MOISTURE	YIELD AT 110,000	YIELD AT 130,000	YIELD AT 150,000	AVG. YIELD AT 13% MOISTURE	AVG. GROSS AT \$11.63 BU
1st yr corn	AG3131	RR2Y	3.1	11.6	73.3	77.9	81.2	77.5	\$900.82
3rd yr corn	AG3131	RR2Y		11.1	82.5	83.8	81.9	82.7	\$962.24
1st yr corn	AG3231	RR2Y	3.2	11.8	85.3	85.0	83.1	84.5	\$983.19
3rd yr corn	AG3231	RR2Y		10.9	87.3	87.1	82.4	85.6	\$995.63
1st yr corn	AG3431	RR2Y	3.4	11.3	79.3	82.3	82.1	81.2	\$944.53
3rd yr corn	AG3431	RR2Y		10.6	84.4	82.4	84.9	83.9	\$976.08
1st yr corn	AG3631	RR2Y	3.6	11.6	85.6	86.4	86.2	86.1	\$1,000.91
3rd yr corn	AG3631	RR2Y		11.0	87.6	88.0	85.8	85.8	\$998.11
1st yr corn	AG3731	RR2Y	3.7	11.3	85.5	89.2	89.7	88.1	\$1,024.64
3rd yr corn	AG3731	RR2Y		10.5	90.5	92.9	88.6	88.6	\$1,030.26
1st yr corn	AG3831	RR2Y	3.8	11.6	77.9	83.1	85.0	82.0	\$953.25
3rd yr corn	AG3831	RR2Y		10.9	79.6	81.6	80.2	80.5	\$936.78
1st yr corn	AG3931	RR2Y	3.9	11.4	87.2	87.8	86.4	87.1	\$1,012.73
3rd yr corn	AG3931	RR2Y		11.1	85.8	89.4	88.8	88.0	\$1,023.35
1st yr corn	AG4031	RR2Y	4.0	11.5	82.0	87.2	87.8	85.7	\$996.68
3rd yr corn	AG4031	RR2Y		10.9	87.3	87.9	82.6	85.9	\$999.23
1st yr corn	Total Average			11.5	82.0	84.9	85.2	84.0	\$976.99
3rd yr corn	Total Average			10.9	85.6	86.6	84.4	85.1	\$989.62

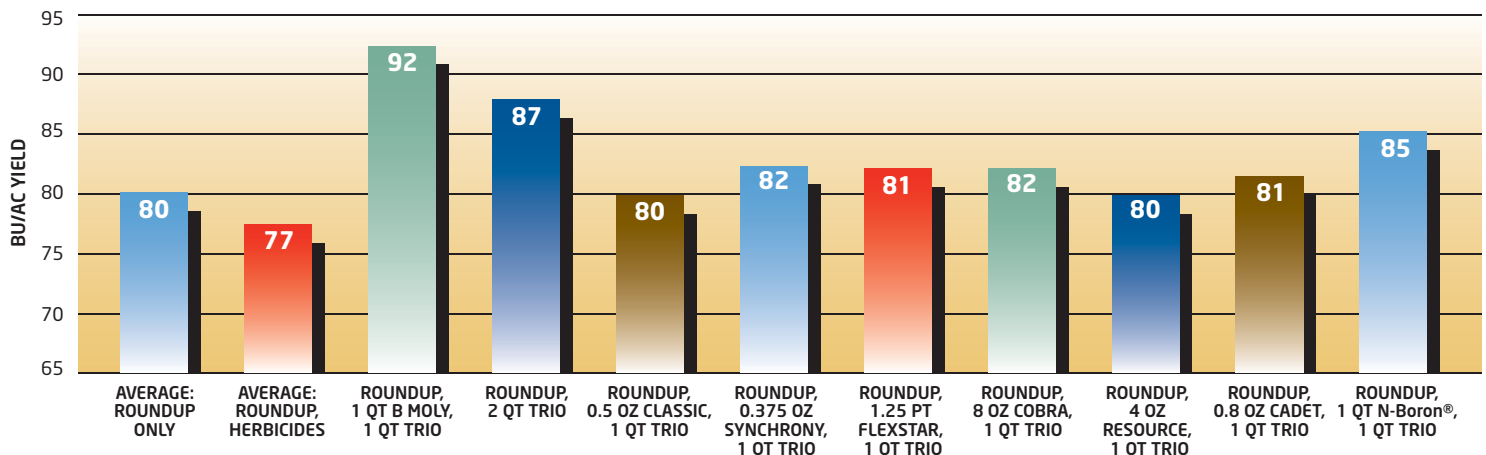
SOYBEAN HERBICIDE STRESS MITIGATION

Cropping History	Soybeans following 3 years of corn
Tillage	No Till
Planting Date	April 21, 2010
Harvest Date	October 1, 2010
Herbicides	1.6 pt Prefix, 12 oz WeatherMAX™, 1 pt 24D pre-plant, 26 oz Roundup WeatherMAX™, with Prolec post at R2 stage with various tank mix partners
Population	130,000
Stress Mitigation	1 qt Smart System™ Trio at V3 stage
Plant Health	6 oz Quadris with 1.9 oz Warrior at R4 stage
Crop Nutrition	14-42-84 applied in fall as suspension



2010 Soybean Yield Response to Stress Mitigation

Asgrow AG 3803, Planted April 21, Pleasant Plains, Treatments applied at R2 with foliar insecticide and Prolec.



Objective

Measure the stress mitigation of Smart System™ Trio, Manni-Plex B Moly, and N-Boron® when included with applications of post herbicides with various modes of action.

Comments/Conclusions

Weed pressure and weed resistance is one of the pressing issues that soybean growers face in Illinois. Uses of multiple modes of action are necessary to maintain the value of current herbicides used today. Brandt is very supportive of this process. The addition of a soil applied product is one of the best ways to add an additional mode of action, however this may not always be an option due to poor weather. These trials were established to investigate the value of stress mitigation products like Smart System™ Trio, designed to provide nutrition to the plant without sacrificing efficacy of the herbicide.

The addition of Smart System™ Trio to the traditional mix of Roundup and Prolec increased soybean yields by 6.3 bu. /acre when applied at R2 stage of growth. Trio improved the recovery of the soybean from the application of Roundup by providing zinc

to stimulate growth, manganese to improve photosynthesis and plant metabolism, and boron to improve nitrogen nodule production.

As expected, the soybeans trials with the 2nd mode of action added to the traditional Roundup mix reduced the yield 3.7 bu. / acre compared - on average - to the Roundup alone. Additional chemical load has to be broken down and metabolized by the soybean plant. This takes energy away from the production of flowering and pod fill. By adding Trio to the mix, the soybean has additional nutrition available to assist with metabolizing the chemistry. The graph on this page shows how Smart System™ Trio improved soybean yield when compared with Roundup plus herbicide alone. **The highest yielding trial was a mixture of Smart System™ Trio, Manni-Plex B Moly, Roundup and Prolec.**

In conclusion, the soybean stress mitigation trials proved the significance of Smart System™ Trio as a valuable tool to increase yields without sacrificing herbicide performance during a post application.

SOYBEAN YIELD RESPONSE TO SEED TREATMENTS

Cropping History	Soybeans following 3 years of corn
Tillage	No Till
Planting Date	April 21, 2010
Harvest Date	October 1, 2010
Herbicides	1.6 qt Prefix, 12 oz WeatherMAX™, 1 pt 24D pre-plant, 26 oz Roundup WeatherMAX™, and Prolec post at R2 stage
Population	130,000
Plant Health	6 oz Quadris with 1.9 oz Warrior at R4 stage
Crop Nutrition	14-42-84 applied in fall as suspension

Objective

To evaluate the value of seed treatments to improve germination, plant vigor, and yield.

Comments/Conclusions

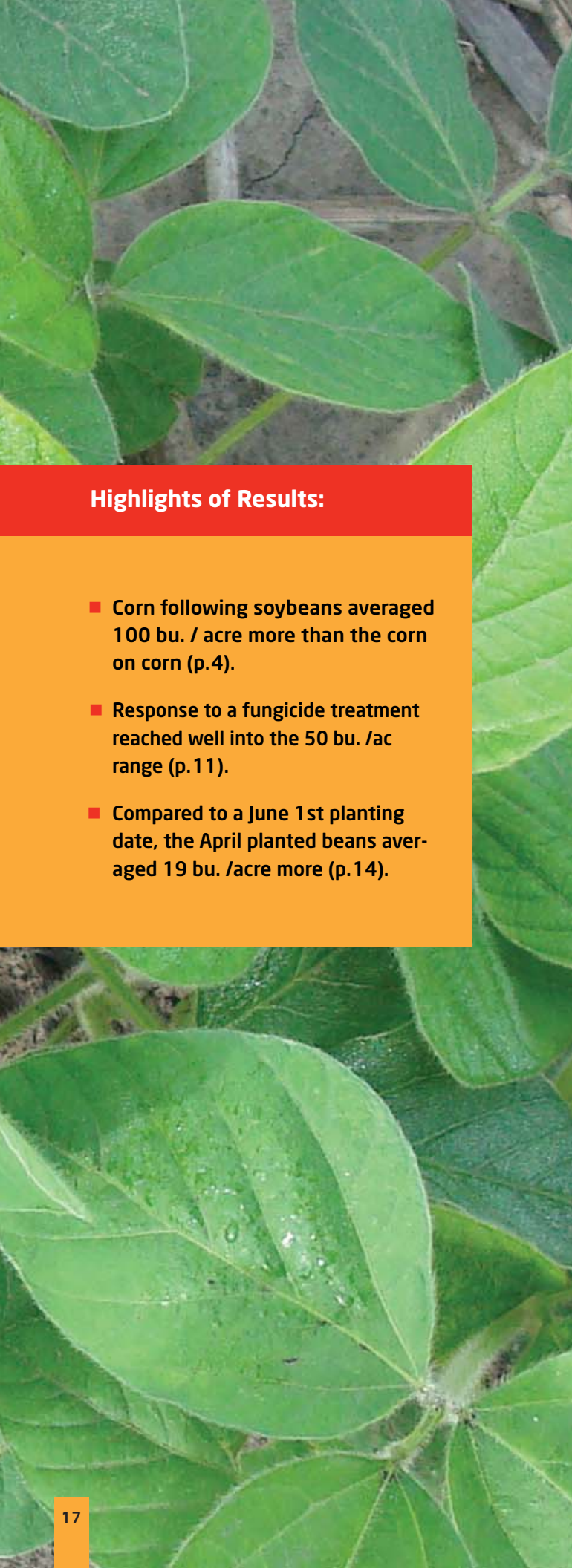
Seed treatment results were very positive in 2010 at the Pleasant Plains trials. We witnessed an average of 4.25 bu./acre yield response compared to the untreated seed. This was a \$38.42 net profit per acre return using an average per acre seed treatment cost of \$11.00 per unit.

Seed treatments primary significance lies with the ability to plant earlier in the spring when soil conditions are correct. Taking advantage of the early growth coupled with insect protection for the young plants means healthier plants all season. Chris Becker, Brandt Seed Specialist, measured a 7.1% stand increase and a plant mass increase of 39.6% for treated soybeans vs. the untreated on July 14. Treated beans had similar plant height with larger stem diameter and root mass. Chris reported the treated beans were aggressively setting pods, while the non-treated were not.

Seed Treatment Response

Treatment	Variety	Trait	Maturity	Harvest Moisture	Yield at 130,000	Avg. Gross Income \$11.63 bu
No treatment	AG3803	RR	3.8	10.5	79.4	\$922.89
Cruiser Max	AG3803	RR	3.8	10.7	82.0	\$953.33
Inovate™	AG3803	RR	3.8	10.4	85.3	\$991.55





Highlights of Results:

- Corn following soybeans averaged 100 bu. / acre more than the corn on corn (p.4).
- Response to a fungicide treatment reached well into the 50 bu. /ac range (p.11).
- Compared to a June 1st planting date, the April planted beans averaged 19 bu. /acre more (p.14).

Summary of 2010 Results

Corn averaged 179.1 bu. /acre over the 468 trials in 2010. The corn trials ranged from a high of 285.7 bu. /acre to a low of 68 bu. /acre.

Crop rotation definitely had the biggest impact on yield in 2010 at the Pleasant Plains Research Farm. Corn following soybeans averaged 100 bu. /acre more than the corn on corn. A late harvest and wet fall of 2009 did not allow us to get tillage accomplished in the fall. Soils started out in the spring collapsing from the wet winter with very little oxygen and heavy residue on the surface of the corn on corn. In early April, shallow vertical tillage was chosen to reduce the residue size and add oxygen to the soils. Corn was planted the second week of April and had very good emergence and spacing. Lack of soil mineralization in combination with the tight soils and continual rains in May, put a tremendous early season stress on the corn plants and reduced root mass. Next, residue in the corn on corn immobilized a large percent of the nitrogen that was intended for the young corn plants creating additional stress.

The top yield response to corn was led by the profitability of fungicide and N-Boron® treatments in 2010. By changing the row width, population, and fertility the response to a fungicide treatment reached well into the 50 bu. /acre range. Corn stress mitigation trials continued to demonstrate the value of managing early season corn plant health with the addition of Smart System™ Trio to a post application of herbicide with an average of 18.7 bushels at 38,000 population.

The soybeans were planted on April 21 and averaged 82.7 bu. /acre over the 111 trials.

Early planting, good moisture and warm nights in August combined to produce the highest yielding soybeans ever grown at the Pleasant Plains Research Farm. Soybean seed treatments were a very significant part of the decision to plant early and the decision paid off. Compared to a June 1st planting date, the April planted beans averaged 19 bu. /acre more.

The most yield responsive soybean trials started with tillage trials which averaged 9 bu. /acre increase. The second was fungicide and N-Boron® treatments that increased yields by 7.2 bu. /acre. Stress Mitigation Trials using Smart System™ Trio added an additional 3.7 bu. /acre on average and seed treatment trials averaged an additional 4.25 bu. /acre.

You must have good 'local information' to have improved farming practices. We value your input and look forward to the opportunity to assist you with your farming operation.

Ed Corrigan

Brandt Technical Agronomist

Brandt Consolidated, Inc.

2935 South Koke Mill Road
Springfield, Illinois 62711 USA
www.brandt-inc.com
217 547 5800

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