

Pennsylvania On-Farm Network Reports 2009-2015



Supported and directed by the PA Soybean Board

Prepared by: Del Voight – Senior Extension Agent – Penn State Extension



PennState Extension



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Cover photos: Carlyn Krall, 2015; the USDA Agricultural Research Service Photos, 2015.
Inside photo: Carlyn Krall, 2015.

Field Trial Report

Development of an On-Farm Soybean Management Network

Delbert G. Voight, Ronald Hoover and Greg W. Roth

In 2009, we initiated a project to develop an On-Farm Soybean Management Network in Pennsylvania to help producers, their advisors and ag industry representatives make more informed and research based decisions regarding soybean management. For the first year of the project, we established four objectives for the project:

1. Develop an on farm product testing network for soybean production in Pennsylvania.
2. Evaluate the influence of soybean at planting population on yield and final plant populations.
3. Conduct a survey of the Bean Leaf Beetle infestations and Bean Pod Mottle Virus to help establish appropriate thresholds for treatment.
4. Develop a fly over survey of representative soybean fields in conjunction with the Iowa Soybean Associations On-Farm Network.

Development of the On-Farm Network

We selected seven soybean producers as cooperators for the On-Farm Network. Each was selected because of their experience with soybean production and willingness to participate in the project.

1. Chris and Andrew Kimmel – Armstrong County: Extension Coordinator Kevin Fry
2. Glen Krall – Lebanon County: Extension Coordinator Del Voight
3. Melvin Leshner – Franklin County Extension Coordinator Jon Rotz
4. Troy Alderfer -Berks County Extension Coordinator Mena Hautau
5. Adam, Tom and Tim Rabenold and Adam Snyder - Dauphin County Extension Coordinator Paul Craig
6. Bill Behm -Chester County Extension Coordinator Jeff Graybill
7. Ralph Mcneal- Bradford County Extension Coordinator Mark Madden

We feel we have develop an excellent network in our first year. Each of the cooperators was able to establish a replicated strip trial and at six of the seven sites we were able to collect good yield data. Yields averaged over 67 bushels per acre across all sites, which indicates we have an excellent group for assessing treatments under high yield production conditions.

Field Trial Report

Cooperator Photos:



Mena Hautau and Troy Alderfer



Del Voight and Glen Krall



Melvin Leshar and Jon Rotz



Kevin Fry and Andrew Kimmel



Adam, Tom and Tim Rabenold and Adam Snyder



Bill Beam and Jeff Graybill

Not Pictured: Mark Madden and Ralph McNeal

Field Trial Report

Soybean Yield Response to Reduced Seeding Rates

This study was initiated to assess the potential impact of reducing soybean seeding rates from 175,000 to 140,000. Similar research in Iowa with the On Farm Network has shown limited benefits to seeding rates above 140,000 seeds per acre. Depending on conditions, Iowa State University recommends between 125,000 and 140,000 seeds per acre <http://extension.agron.iastate.edu/soybean/decisiontree.html>. These recommendations are considerably lower than Penn State recommendations and those seeding rates used by many soybean producers in Pennsylvania. With increasing soybean seed costs, there is more potential interest in reducing soybean seeding rates.

Objectives:

In 2009, the objectives of the program were to assess the potential for reducing seeding rate of soybean while maintaining maximum yield and to estimate the average final stands as a percentage of planted populations.

Population Protocol:

On Farm Cooperators established soybeans at two different planting rates that were calibrated by the local On Farm coordinator. Field length plots were established with 2 seeding rates of soybean, 140 K and 170 K, at each farm. Plots were replicated within each site similar to the diagram on the right. The width of plots were wide enough to so as the platform head on the combine to be used for harvest, to ensure a full pass during harvest. All combines were equipped with a yield monitor to assess yield variation.

170,000 seeds/ac
140,000 seeds/ac
140,000 seeds/ac
170,000 seeds/ac
140,000 seeds/ac
170,000 seeds/ac
140,000 seeds/ac
170,000 seeds/ac

Results and Discussion:

In our 2009 soybean network evaluation, cooperators planted populations of 175,000 and 140,000. Averaged across the six growers who completed the study, they achieved final populations of 138,000 and 113,000 final stands. (Figure 1). In every case except one, final stands were at or above 100,000 plants per acre. The trial also indicated that in this season, on average, Soybean Network cooperators achieved stands that were approximately 80% of planted populations (Figure 2). Final stands ranged from 60% to 95% of the planted populations. If soybean producers can consistently achieve this level of emergence and survival, they should be able to adopt the lower seeding rates with minimal impact on yield.

Field Trial Report

Figure 1. Final plant populations for the high and low treatments.

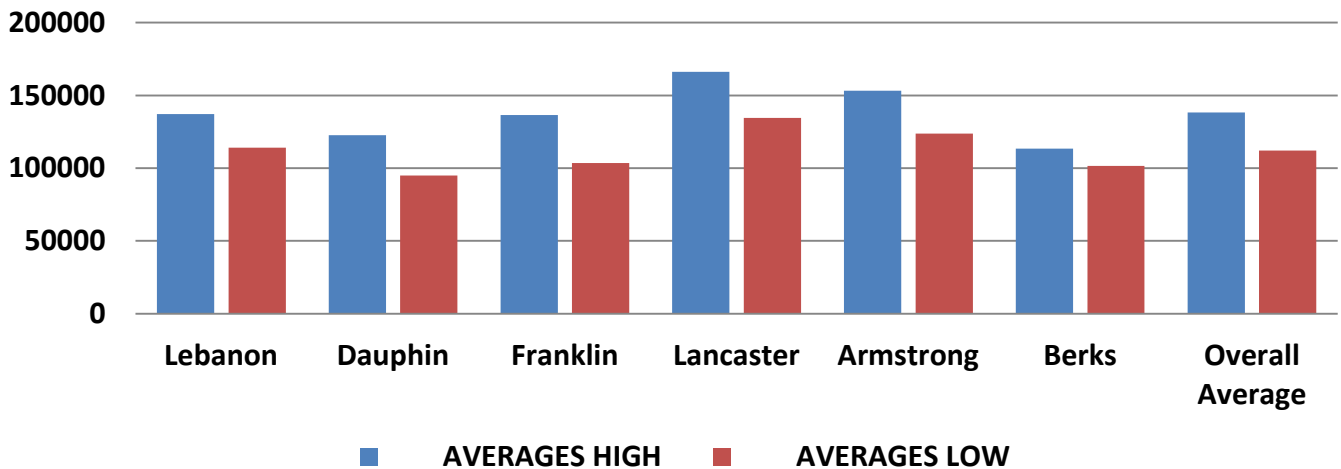
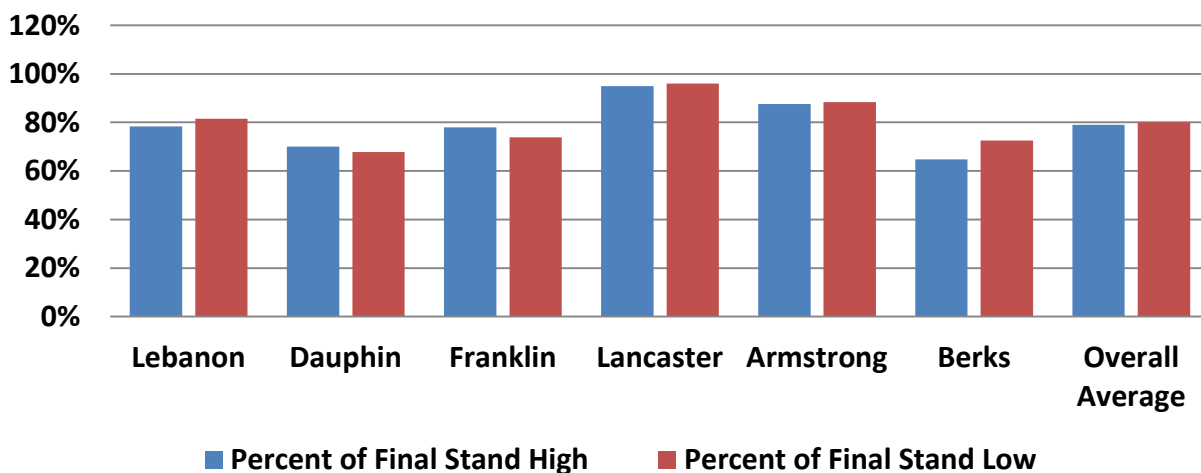


Figure 2. Final stands (% of planted) at each location.

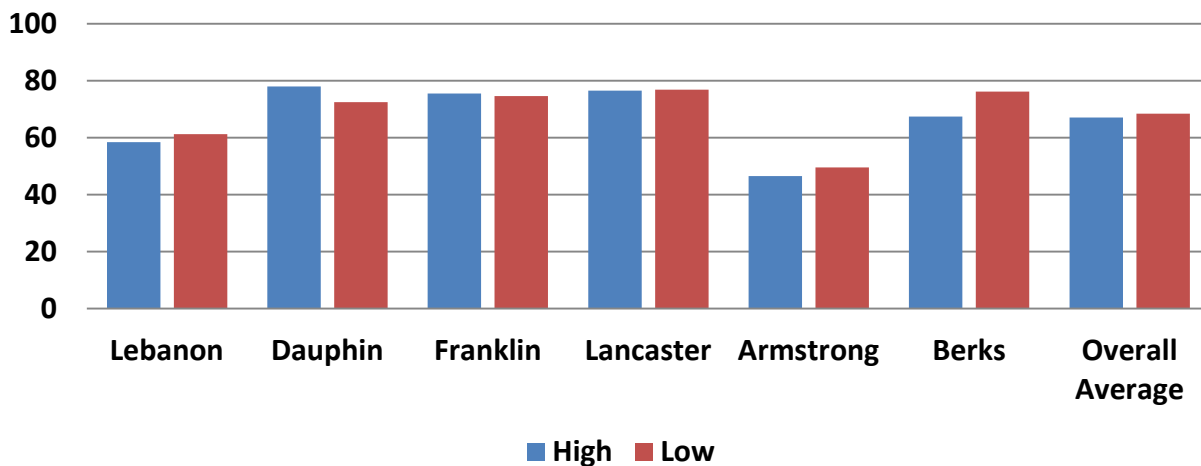


Yields were nearly identical for the high and low populations, averaging 67.5 bu/acre for the high population and 67.3 bu/acre for the lower plant population (Figure 3). These results are consistent with the Iowa State recommendations that plant populations of 100,000 are adequate for high soybean yields. Yields were equivalent or higher with the lower seeding rates at all locations except the Dauphin location.

At an approximate seed cost of \$65 for 140,000 count bag, reducing seeding rates would result in a \$16.25 savings per acre. We also learned that all of the producers in the network achieved very high yields and likely are a good resource for testing products under high yield conditions in the future..

Field Trial Report

Figure 3. Yield response to high and low seeding rates.



Previous research has indicated that soybeans can tolerate a wide range of plant populations with minimal impact on final yield. Penn State research as well as Iowa State and industry research confirm that final stands of about 100,000 plants per acre are adequate for high yields in production environments. This study suggests that in many cases with modern equipment, good quality seed and careful seeding practices, these plant populations could be achieved with seeding rates lower than 170,000 seeds per acre and probably 140,000 seeds per acre. In less than ideal conditions or seasons, reduced plant populations may lead to less than ideal stands and an increased need for replanting.

The decision to use lower seeding rates is best probably a field to field discussion, based on planting date, field conditions, and seed quality, but this study suggests that often a 140,000 seed drop will be adequate. There could also be some conditions where the lighter seeding rate may have some advantages where lodging or foliar diseases are common problems.



Field Trial Report

2015 Response to Population Trial

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Background: Some growers have suggested that lower plant stands near 100,000 may actually promote more pod development, reduce the potential for white mold and reduce seed costs, especially with full season soybeans and full season maturity soybeans. This study is designed to validate the population response at the lower end of traditional soybean seeding rates.

Treatments

1. Conventional – Seed Drop of 150,000 ppa
2. Low Population – seed drop of 125,000 ppa
3. Low Population- seed drop of 100,000 ppa

Results

Overall	100,000	125,000	150,000	Significant	CV
Population	77857	93494	114837		
Growth	29.5	30.4	32		
Yield	59.1	65.8	59.4		



Cooperator			Site Background Data				Harvest Data				Population			Final Height (inches)	
			County	Reps	Planting Date	Drill	Planter or	Row Width	Variety	Yield bu/acre	100,000 pop	125,000 pop.	150,000	100000pop	125000pop
Shearer	Lancaster	4	NR	NR	5/8/2015	NR	NR	NR	RR 93Y84	89.8	89.4	89.4	14.3	75368	91883
Bradford	NR	NR	NR	NR	NR	NR	NR	NR	NR	32.1	NR	32.2	13.14	NR	NR
Kreider	Lebanon	3	NR	NR	NR	NR	NR	NR	Pioneer 93M11	64.13	65.4	66.4	12.20	NR	NR
Anchor	Union	4	5/13/2015	NR	NR	NR	NR	NR	Stine 24R303	NR	NR	NR	NR	NR	NR
Cotner	Union	4	5/19/2015	NR	NR	NR	NR	NR	DF5242	70.0	70.0	73.0	NR	90750	101312
Madden	Bradford	4	6/5/2015	NR	NR	NR	NR	NR	NR	32.1	32.1	32.1	13.14	55408	78582
Aldefer	Berks	4	6/10/2015	NR	NR	NR	NR	NR	NK S27-J7	71.3	71.8	70.3	NR	89900	102200
Overall Averages				23						59.9	65.7	60.6	13.2	77857	93494
														29.5	30.4
															32.0

*Sig. @ P=0.10

Comments:



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2012 Planting Date Study

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: Z

Acres: 15

2011 Crop: Corn

Tillage: No-till

Planting Date: Varied

Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucha

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180,000

Herbicide: Glyphosate plus Canopy f/b Glyphosate plus Arrow

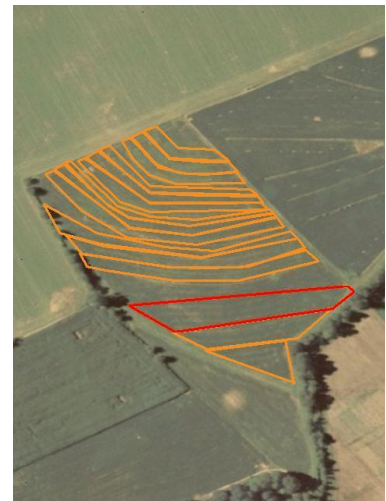
Harvest Date: 10/9/2012

Plot size: 20 x 600 feet

Replications: 6

Treatments

1. March 28
2. April 11
3. April 26
4. May 14



Results

	Yield	Moisture	Nodulation	Early Height	Final Height	Plant pop.
	Bu/ac	%	no./plant	in.	in.	plants/acre
March 28	49.5	15.3	12.7	11.8	22.7	91626
April 11	52.5	15.2	18.9	10.8	23.2	105478
April 26	54.5	16.4	15.3	10.4	23.8	117328
May 14	44.5	15.6	11.5	7.9	28.3	99136
Significance	P=0.01	ns	P=0.004	P=0.003	P=0.01	ns
CV	9.0	3.0	17.0	13.0	15.0	19.0
LSD	5.1	-	3.0	1.6	2.3	-

Comments

Stands in this study were somewhat erratic due to less than ideal emergence, especially in the first and fourth planting. Conditions were ideal for emergence and nodule development in the April plantings. Yields were highest with the late April planting, likely due to the good emergence, nodulation, and early season growth. The final planting was noticeably delayed in maturity compared to the other three and was impacted more by the dry weather. These results support some of the observations from the soybean yield contest in this region that late April is an ideal time to plant soybeans. We did not see a yield response from the ultra early March planting date due to stressful conditions for the soybeans.



Field Trial Report

2014 Northern PA Soybean Planting Study

Conducted by: J Craig Williams and Nicole Carutis and the Crop Management Extension Team

Field Information:

Cultural Practices: 3 New fields and 3 repeat soybean fields	Planted with 2 JD 1590 grain drills and 4 corn planters	4 No-till and 2 Tillage fields
Participating growers: 6 in Tioga and Potter Cty.	3 farms used commercial or manure fertilizer and 3 did not.	

Farm Treatments Evaluated:

1. Monitor and document the field events to identify what factors are limiting yield.
2. All farms had the same exact varieties so all differences should be cultural practices?

Tioga Soybean plots	Farmer Fields and Yields											
Variety	A Notill G. Drill No Fert Repeat Field		A till, C. Planter w/ Fert New Field		B notill C. Planter w/ Fert New Field		B Notill C. Planter w/ Hog Fert. Repeat Field		A Notill G. Drill No Fert Repeat Field		Rank Average	Yield Average
	Farm 1		Farm 2		Farm 3		Farm 4		Farm 5			
Doebler 1713	43.	3	25.2	4	35.	6	30.2	7	45.3	7	5.4	30.1
TA Seeds 1719	47.9	2		7	22.9	7	37.2	6	56.	2	4.8	30.3
Seedway 1932	43.6	5	18.	6	46.7	1	42.	2	53.3	3	3.4	34.1
Seedway 2013	51.	1	18.2	5	45.8	2	39.5	5	58.	1	2.8	35.6
Chemgro 2146	26.0	7	32.2	3	41.5	4	42.5	3	47.3	6	4.6	31.6
Doebler 2212	43.	4	33.0	2	42.6	3	47.2	1	54.5	5	3	36.8
Pioneer 22T41	42.	6	42.4	1	40.9	5	42.0	4	55.2	4	4	37.2
Ave Yield of 7 Plot only	42.8		26.7		39.5		40.2		52.9			33.7

"A" fields planted May 13-June 4 while "B" fields planted June 16-20

Observations:

Earlier fields planted "A" fields produced ~5 more bushel than the later planted "B" fields but one of earlier planted fields never recovered from Inoculation problems. (Farm 1,5,2)

Fields generally yielded better with 12-32 lbs of N fertilizer applied (commercial or manure) on the later planted fields. (Farm 3,4)

Pre inoculated seed still needs more inoculate on new soybean fields in northern tier.

Plot elevation ranged from 1200 to 2200 Feet.



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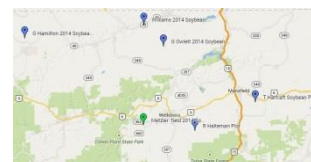
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Pre inoculated seed still needs more inoculate on new soybean fields in northern tier.

Plot elevation ranged from 1200 to 2200 Feet.



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2015 Pennsylvania Soybean Performance Report

Soybean tests are conducted annually to provide information regarding the performance of soybeans grown in Pennsylvania. This report summarizes performance results for 2015. The shorter season varieties (Groups II and III) were tested at the Russell E. Larson Agricultural Research Center at Rock Springs in Centre County and on a private farm near Martinsburg in Blair County. The longer maturing varieties (Groups III and IV) were tested at the Southeast Agricultural Research and Extension Center located in Lancaster County. Both Glyphosate-resistant (Roundup Ready) varieties as well as non-Roundup Ready varieties were tested at the Centre and Lancaster County locations. At the Blair County location, only Roundup Ready varieties were tested. The following soybean variety trials were implemented for the 2015 season: Early (MG 3.3 and earlier) full-season Roundup Ready in Lancaster County; Late (MG 3.4 and later) full-season Roundup Ready in Lancaster County; full-season non-Roundup Ready in Lancaster County; Double-Crop in Lancaster County; Early (MG 3.0 and earlier) full-season Roundup Ready in Centre and Blair Counties; late (MG 3.1 and later) full-season Roundup Ready in Centre and Blair Counties; full-season non-Roundup Ready in Centre County. Both non-Roundup Ready trials had non-traited entries, Liberty Link entries, and at least one commonly grown Roundup Ready entry which was used as a check for comparison against the other varieties. Individual trial results were measured separately and therefore it is highly recommended that comparisons among varieties be limited to within-trial comparisons and not across the different trials.

Procedures

The private seed company entries in this test were those chosen by the companies for testing. The plots in all locations had 5 rows, each planted 20 feet long. Rows were spaced 15 inches apart. Each plot was trimmed to 18 feet and the 3 middle rows were harvested. The trials in Lancaster and Centre Counties were planted in tilled ground and the Blair County trial was no-tilled. The Lancaster County full-season trials were planted on May 14th and the double-crop trial was planted on July 7th. The Blair County trials were planted on May 20th and the Centre County trials were planted on May 22nd. The seeding rate for all the full-season trials was 170,000 seeds per acre and the double crop trial was planted at 220,000 seeds per acre. Varieties in each trial were replicated four times.

The following observations were made for some or all of the trials:

Yield was based on 60 lbs. per bushel and adjusted to 13 percent moisture.

Maturity is the date when approximately 95 percent of pods had reached their mature color.

Height is the average length of plants from the ground to the tip of the main stem.

Lodging was rated in all tests as follows:

- 0 = no lodging
- 1 = almost all plants erect.
- 2 = all plants leaning slightly or a few plants down.
- 3 = all plants leaning moderately, or 25-50 percent of the plants down.
- 4 = all plants leaning considerably, or 50-80 percent of the plants down.
- 5 = almost all plants down.

Crude Protein (CP) is expressed as a percent of the soybean at 13% moisture.

Oil is expressed as a percent of the soybean at 13% moisture.



Interpretation of results

Variety performance differences are caused partially by genetic differences and partially by soil variation and other environmental variations which cannot be adequately controlled. Thus, small differences in performance may have no significance. Multiple-year averages are a more valid indication of the performance of a specific variety than are data for a single year.

Statistical procedures have been used for the most important characteristics to allow meaningful comparisons of variety averages at a particular location. A standard least significant difference (LSD) value is provided for comparing varieties. Any difference between two variety averages that exceeds the LSD value is considered significant and not simply a result of uncontrolled environmental variation.

Traditionally, LSD values have been calculated at the 0.05 level of confidence, which means that when differences between varieties exceed the LSD, we can be 95% confident that the differences are not due to chance. The downside of this approach is that it leads to the conclusion that many varieties in the test have similar yield performance, when there really may be differences in the yield potential. Many universities have switched to a less conservative 0.25 level for the LSD, thus reducing the chance of concluding that varieties are not different, when a true difference exists among the lines. In this report, we present the LSD values at both the 0.05 level and the 0.25 level for your consideration.

The value of coefficient of variation (CV) is a measure of relative variation useful in evaluating the precision achieved in an experiment. In grain and forage trials, for example, the CV value for yield is often between 5 and 15 percent. Confidence in the reliability of the experimental results declines as the CV value increases. Uncontrollable or immeasurable variations in soil fertility, soil drainage, and other environmental factors contribute to increased CV values.

Growing Conditions

All three locations received above normal rainfall during the first half of the growing season. The Centre and Blair County trials experienced drier weather during the second half of the season, especially the Blair County site, which did not receive any measureable rainfall from mid-July through mid-September. As a result of the dry late-season weather, the yields were markedly lowered in Blair County and to a lesser degree, reduced in Centre County. The Lancaster County site received abundant rainfall throughout the season, totaling in excess of 25 inches from June through September. This generous rainfall contributed to the high yields in all the Lancaster trials.

Results

During the 2015 season, the average yield of the 25 entries in the Centre County Roundup Ready Late MG trial was 57.7 bushels per acre, which was nearly identical to the 2014 yields in the same trial. The Early MG trial consisted of 20 entries and averaged 58.3 bushels per acre, which was slightly higher than 2014. The non-Roundup Ready trial in Centre County averaged 57.9 bushels per acre which was slightly higher when compared to 2014.

In Blair County, the Roundup Ready Late MG trial, which consisted of 23 entries, averaged 38.6 bushels per acre. The Roundup Ready Early MG trial in Blair County had 18 entries and averaged 38.8 bushels per acre. These yields were down significantly from the 2014 yields in Blair County, due primarily to the dry conditions during mid-July to mid-September.

In Lancaster County, the Roundup Ready Late MG trial averaged 77.1 bushels per acre, across 39 varieties. The Early MG trial, which had 16 entries, averaged 67.6 bushels per acre. The non-Roundup Ready trial consisted of 19 different varieties and had an average yield of 69.9 bushels per acre. Yields in all 3 trials were up considerably from the 2014 yields in the same trials.

Source of Entries

<u>Company</u>	<u>Brand</u>	<u>Company</u>	<u>Brand</u>
Channel Bio Corp. https://www.channelbio.com	Channel Brand	Mid Atlantic Seeds, Inc. Mas-office@comcast.net	Mid Atlantic
Chemgro Seeds http://chemgroseeds.com	Chemgro	Mycogen Seeds http://mycogen.com	Mycogen
Doebler's PA Hybrid: Doebler's http://doeblers.com	Doebler's	Schillinger Genetics http://emergegenetics.com/	eMerge
Dyna-Gro Seed (CPS) http://dynagroseed.com	Dyna-Gro	Seedway LLC http://seedway.com/	Seedway
Growmark FS http://home.growmarkfs.com	Hisoy	Syngenta Seeds Inc. http://syngenta.com	NK Brand
Hubner Seed https://www.hubnerseed.com	Hubner	T.A. Seeds Inc. http://taseeds.com	T.A. Seeds
Bayer Crop Sciences https://www.bayercropscience.us/crops/soybean	Bayer		

Prepared by: Mark Antle, Austin Kirt, and Greg Roth, Professor of Agronomy.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Cooperative Extension is implied.

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This research was supported in part by funds supplied by The Pennsylvania Soybean Promotion Board.



Table 1. Late Roundup Ready Soybean Variety Performance in Centre County, 2015 (MG 3.1 and later)

Source	Entry	Seed Treatment	Yield, bu/A	Height (in.)	Maturity Date	Lodging (0-5, 0=best)	2 Yr Avg. Yield, bu/A (2014-15)	3Yr Avg. Yield, bu/A (2013-15)
Bayer Crop Sciences	CZ 3560RY	Poncho VOTIVO + ILeVO	63.5	38	24-Sep	1.5		
NK Brand	S34-N3	CruiserMaxx Vibrance	62.7	36	21-Sep	1.0		
NK Brand	S35-C3	CruiserMaxx Vibrance	62.2	39	25-Sep	0.0	63.4	61.8
Hubner Seed	H35-16R2	Acceleron	61.3	36	23-Sep	0.0		
Seedway	SG3322	CruiserMaxx	61.0	35	25-Sep	0.0	59.0	
Hubner Seed	H32-13R2	Acceleron	60.7	37	22-Sep	0.0	58.9	
Channel	3207R2	Acceleron/VOTIVO	59.8	37	22-Sep	0.0		
T.A. Seeds	TS3169R2	Cruiser	59.6	35	23-Sep	0.5		
T.A. Seeds	TS3449R2	Cruiser	58.4	36	21-Sep	0.5	57.8	
Bayer Crop Sciences	CZ 3383RY	Poncho VOTIVO + ILeVO	58.2	32	23-Sep	0.0		
Dyna-Gro Seed	S31RY86	CruiserMaxx Vibrance	57.8	35	22-Sep	0.5		
Hisoy	HS33A44	CruiserMaxx Vibrance	57.5	39	24-Sep	0.0		
Dyna-Gro Seed	S32RY95	CruiserMaxx Vibrance	57.4	34	21-Sep	0.0	60.1	
Seedway	SG3144	CruiserMaxx	57.4	34	21-Sep	0.0		
Chemgro Seeds	C3449R2		57.2	34	22-Sep	0.5		
NK Brand	S34-P7	CruiserMaxx Vibrance	57.1	33	23-Sep	0.0		
Chemgro Seeds	C3346R2	Encase	56.7	35	24-Sep	0.0	57.8	59.8
Channel	3408R2	Acceleron/VOTIVO	56.6	32	24-Sep	0.0		
Dyna-Gro Seed	S33RY76	CruiserMaxx Vibrance	56.1	34	24-Sep	1.0		
Mycogen Seeds	5N312R2	Clariva-Cruiser-Maxim-Apron	55.7	34	24-Sep	0.5	62.2	62.0
Mycogen Seeds	5N343R2	Clariva-Cruiser-Maxim-Apron	54.9	36	23-Sep	0.0		
Bayer Crop Sciences	CZ 3991RY	Poncho VOTIVO + ILeVO	52.9	31	27-Sep	0.0		
Chemgro Seeds	C3649R2S		52.5	35	27-Sep	0.5		
Doebler's PA Hybrids Inc.	RPM® DB3516R™	DPH Boost	52.3	31	24-Sep	0.0		
Mycogen Seeds	5N387R2	Clariva-Cruiser-Maxim-Apron	52.2	35	27-Sep	0.0		
Mean			57.7	35	23-Sep	0.3	59.8	61.2
LSD (.05)			5.5					
LSD (.25)			3.2					
CV %			6.8					

Table 2. Early Roundup Ready Soybean Variety Performance in Centre County, 2015 (MG 3.0 and earlier)

Source	Entry	Seed Treatment	Yield, bu/A	Height (in.)	Maturity Date	Lodging (0-5, 0=best)	2 Yr Avg. Yield, bu/A (2014-15)	3Yr Avg. Yield, bu/A (2013-15)
Doebler's PA Hybrids Inc.	RPM® DB2616R™	DPH Boost	63.0	36	16-Sep	0.0		
Seedway	SG3011	CruiserMaxx	62.7	39	21-Sep	0.5	62.6	58.4
Bayer Crop Sciences	CZ 2788RY	Poncho VOTIVO + ILeVO	61.1	35	17-Sep	0.5		
Channel	2808R2	Acceleron/VOTIVO	60.7	36	21-Sep	0.0	59.3	
Dyna-Gro Seed	S27RY66	CruiserMaxx Vibrance	60.2	34	18-Sep	0.0		
Seedway	SG2816	CruiserMaxx	60.1	36	19-Sep	0.5		
Hisoy	HS 30A42	CruiserMaxx Vibrance	59.8	35	19-Sep	0.0		
Mycogen Seeds	5N286R2	Clariva-Cruiser-Maxim-Apron	59.1	34	18-Sep	0.0		
Channel	2908R2	Acceleron/VOTIVO	59.0	38	19-Sep	1.5	57.0	57.0
NK Brand	S25-L9	CruiserMaxx Vibrance	58.6	37	18-Sep	0.5		
Hubner Seed	H26-16R2	Acceleron	58.5	45	18-Sep	1.5		
Channel	3009R2	Acceleron/VOTIVO	57.7	38	22-Sep	0.0		
Chemgro Seeds	C3049R2		57.6	39	21-Sep	0.5		
Hubner Seed	H30-16R2	Acceleron	57.4	38	21-Sep	0.0		
Doebler's PA Hybrids Inc.	RPM® DB3016R™	DPH Boost	57.4	36	20-Sep	0.0		
NK Brand	S29-G4	CruiserMaxx Vibrance	56.0	39	19-Sep	0.5	54.2	54.2
Dyna-Gro Seed	S26RS75	CruiserMaxx Vibrance	55.7	34	18-Sep	0.0		
Channel	2609R2	Acceleron/VOTIVO	54.9	42	16-Sep	1.0		
Dyna-Gro Seed	S29RY46	CruiserMaxx Vibrance	54.3	33	18-Sep	0.0		
Bayer Crop Sciences	CZ 3060RY	Poncho VOTIVO + ILeVO	53.1	32	20-Sep	0.0		
Mean			58.3	37	18-Sep	0.4	58.2	56.5
LSD (.05)			5.3					
LSD (.25)			3.1					
CV %			6.5					





Table 3. Late Roundup Ready Soybean Variety Performance in Blair County, 2015 (MG 3.1 and later)

Source	Entry	Seed Treatment	Yield, bu/A	Height (in.)	Lodging (0-5, 0=best)	2 Yr Avg. Yield, bu/A (2014-15)	3Yr Avg. Yield, bu/A (2013-15)
Hubner Seed	H32-13R2	Acceleron	46.2	35	0	53.1	
Chemgro Seeds	C3346R2	Encase	45.7	36	0	55.0	54.1
Hubner Seed	H35-16R2	Acceleron	41.5	32	0		
Bayer Crop Sciences	CZ 3560RY	Poncho VOTIVO + ILeVO	40.6	33	0		
Dyna-Gro Seed	S33RY76	CruiserMaxx Vibrance	40.5	35	0		
Channel	3207R2	Acceleron/VOTiVO	40.4	34	0		
Bayer Crop Sciences	CZ 3991RY	Poncho VOTIVO + ILeVO	40.3	35	0		
Dyna-Gro Seed	S32RY95	CruiserMaxx Vibrance	40.3	33	0	51.2	
Channel	3509R2	Acceleron/VOTiVO	40.1	34	0		
Hisoy	HS33A44	CruiserMaxx Vibrance	39.5	34	0		
Bayer Crop Sciences	CZ 3383RY	Poncho VOTIVO + ILeVO	39.4	34	0		
Doebler's PA Hybrids Inc.	RPM® DB3516R™	DPH Boost	37.9	33	0		
Seedway	SG3144	CruiserMaxx	37.8	31	0		
Mycogen Seeds	5N343R2	Clariva-Cruiser-Maxim-Apron	37.7	33	0		
T.A. Seeds	TS3449R2	Cruiser	37.0	34	0	49.5	
Mycogen Seeds	5N312R2	Clariva-Cruiser-Maxim-Apron	36.9	33	0		
Mycogen Seeds	5N387R2	Clariva-Cruiser-Maxim-Apron	36.3	33	0		
Chemgro Seeds	C3449R2		36.2	31	0		
Dyna-Gro Seed	S31RY86	CruiserMaxx Vibrance	35.8	30	0		
T.A. Seeds	TS3169R2	Cruiser	35.1	34	0		
Chemgro Seeds	C3649R2S		35.0	34	0		
NK Brand	S35-C3	CruiserMaxx Vibrance	34.3	35	0		
NK Brand	S34-P7	CruiserMaxx Vibrance	33.8	33	0		
Mean			38.6	33	0	52.2	54.1
LSD (.05)			ns				
LSD (.25)			4.2				
CV %			13.5				

Table 4. Early Roundup Ready Soybean Variety Performance in Blair County, 2015 (MG 3.0 and earlier)

Source	Entry	Seed Treatment	Yield, bu/A	Height (in.)	Lodging (0-5, 0=best)	2 Yr Avg. Yield, bu/A (2014-15)
Channel	2908R2	Acceleron/VOTiVO	44.1	36	0.0	50.8
Doebler's PA Hybrids Inc.	RPM® DB3016R™	DPH Boost	43.9	30	0.0	
Chemgro Seeds	C3049R2		43.1	34	0.0	
Channel	2808R2	Acceleron/VOTiVO	42.5	33	0.0	53.2
Dyna-Gro Seed	S26RS75	CruiserMaxx Vibrance	42.1	32	0.0	51.9
Bayer Crop Sciences	CZ 2788RY	Poncho VOTIVO + ILeVO	41.7	32	0.0	
Doebler's PA Hybrids Inc.	RPM® DB2616R™	DPH Boost	40.7	32	0.0	
NK Brand	S25-L9	CruiserMaxx Vibrance	39.1	29	0.0	
Channel	3009R2	Acceleron/VOTiVO	37.6	31	0.0	
Hisoy	30A42	CruiserMaxx Vibrance	37.5	32	0.0	
Bayer Crop Sciences	CZ 3060RY	Poncho VOTIVO + ILeVO	37.2	29	0.0	
Dyna-Gro Seed	S29RY46	CruiserMaxx Vibrance	37.1	31	0.0	
Hubner Seed	H30-16R2	Acceleron	37.1	31	0.0	
Mycogen Seeds	5N286R2	Clariva-Cruiser-Maxim-Apron	36.9	34	0.0	
Hubner Seed	H26-16R2	Acceleron	35.6	40	0.5	
Channel	2609R2	Acceleron/VOTiVO	35.5	36	0.0	
Dyna-Gro Seed	S27RY66	CruiserMaxx Vibrance	33.4	31	0.0	
Seedway	SG2816	CruiserMaxx	33.2	30	0.0	
Mean			38.8	32	0.0	52.0
LSD (.05)			ns			
LSD (.25)			4.0			
CV %			12.5			



Table 5. Late Roundup Ready Soybean Variety Performance in Lancaster County, 2015 (MG 3.4 and later)

Source	Entry	Seed Treatment	Yield, bu/A	Height (in.)	Maturity Date	Lodging (0-5, 0=best)	2 Yr Avg. Yield, bu/A (2014-15)	3Yr Avg. Yield, bu/A (2013-15)
Mycogen Seeds	5N387R2	Clariva-Cruiser-Maxim-Apron	93.3	42	9-Oct	0.0		
Bayer Crop Sciences	CZ 3991RY	Poncho VOTIVO + ILeVO	87.3	39	13-Oct	0.5		
Hubner Seed	H37-14R2STS	Acceleron	86.1	47	15-Oct	0.0	74.7	69.7
Seedway	SG3963	CruiserMaxx	82.6	42	11-Oct	0.0	68.1	66.9
NK Brand	S35-C3	CruiserMaxx Vibrance	82.2	41	3-Oct	1.0		
T.A. Seeds	TS3759R2	Cruiser	81.4	42	8-Oct	0.5		
Dyna-Gro Seed	S40RY25	CruiserMaxx Vibrance	81.3	38	12-Oct	0.5	69.5	
Channel	3707R2/SR	Acceleron/VOTIVO	80.9	42	9-Oct	0.0	66.7	
Hubner Seed	H42-16R2	Acceleron	80.7	42	12-Oct	0.5		
T.A. Seeds	TS3959R2S	Cruiser	80.4	37	8-Oct	0.0	69.9	
Doebler's PA Hybrids Inc.	RPM® DB3815RTM	DPH Boost	80.2	41	9-Oct	1.0	66.3	
Hubner Seed	H42-13R2	Acceleron	80.1	41	11-Oct	1.5	68.6	
Dyna-Gro Seed	S39RY65	CruiserMaxx Vibrance	79.0	41	12-Oct	0.0	67.4	
Channel	3709R2	Acceleron/VOTIVO	78.9	38	8-Oct	1.0		
Hubner Seed	H35-16R2	Acceleron	78.5	41	10-Oct	0.5		
Mycogen Seeds	5N343R2	Clariva-Cruiser-Maxim-Apron	78.2	41	3-Oct	1.0		
Channel	3509R2	Acceleron/VOTIVO	78.1	43	7-Oct	1.5		
Mid-Atlantic Seed	MAS4355RR2	MAS ProShield	77.9	48	14-Oct	3.5		
Seedway	SG3644	CruiserMaxx	77.6	41	6-Oct	1.0		
Dyna-Gro Seed	S37RS96	CruiserMaxx Vibrance	77.1	42	13-Oct	2.0		
Chemgro Seeds	C3449R2		77.1	39	4-Oct	1.5		
Doebler's PA Hybrids Inc.	RPM® DB3516RTM	DPH Boost	76.9	38	26-Sep	0.5		
NK Brand	S38-W4	CruiserMaxx Vibrance	76.3	43	11-Oct	2.0	65.7	65.8
NK Brand	S39-C4	CruiserMaxx Vibrance	76.3	43	8-Oct	0.5		
NK Brand	S34-P7	CruiserMaxx Vibrance	76.2	33	7-Oct	0.0		
Mid-Atlantic Seed	MAS3815NRR2	MAS ProShield	75.4	39	11-Oct	0.5	71.6	
Channel	4009R2	Acceleron/VOTIVO	74.9	41	9-Oct	1.5		
NK Brand	S34-N3	CruiserMaxx Vibrance	74.8	40	30-Sep	1.0	63.9	63.6
Bayer Crop Sciences	CZ 4181RY	Poncho VOTIVO + ILeVO	74.4	43	13-Oct	0.0		
Seedway	SG3764	CruiserMaxx	73.6	44	10-Oct	0.5		
Mid-Atlantic Seed	MAS3889NRR2/STS	MAS ProShield	73.0	41	5-Oct	1.0	67.7	66.0
Mid-Atlantic Seed	MAS3516NRR2	MAS ProShield	73.0	40	10-Oct	1.0		
Dyna-Gro Seed	S38RY56	CruiserMaxx Vibrance	72.9	42	11-Oct	2.0		
Chemgro Seeds	C3948R2	Encase	72.5	38	10-Oct	0.0	62.5	
Mid-Atlantic Seed	MAS3415NRR2	MAS ProShield	70.0	38	6-Oct	1.0		
Bayer Crop Sciences	CZ 3560RY	Poncho VOTIVO + ILeVO	69.6	40	5-Oct	1.5		
Channel	3408R2	Acceleron/VOTIVO	69.1	37	3-Oct	0.5	63.3	
Mycogen Seeds	5N343R2	Clariva-Cruiser-Maxim-Apron	66.7	38	30-Sep	1.0		
Chemgro Seeds	C3649R2S		64.1	41	10-Oct	1.0		
Mean			77.1	41	8-Oct	0.8	67.5	66.4
LSD (.05)			10.7					
LSD (.25)			6.3					
CV %			9.9					



Table 6. Early Roundup Ready Soybean Variety Performance in Lancaster County, 2015 (MG 3.3 and earlier)

Source	Entry	Seed Treatment	Yield, bu/A	Height (in.)	Maturity Date	Lodging (0-5, 0=best)	2 Yr Avg. Yield, bu/A (2014-15)	3Yr Avg. Yield, bu/A (2013-15)
Bayer Crop Sciences	CZ 3060RY	Poncho VOTIVO + ILeVO	73.2	36	22-Sep	0.5		
Seedway	SG3322	CruiserMaxx	72.7	41	24-Sep	2.5	63.8	
Dyna-Gro Seed	S33RY76	CruiserMaxx Vibrance	72.0	38	24-Sep	0.5		
Hubner Seed	H32-13R2	Acceleron	70.7	40	22-Sep	1.0	63.8	
Dyna-Gro Seed	S31RY86	CruiserMaxx Vibrance	70.4	38	22-Sep	1.0		
Dyna-Gro Seed	S37RY33	CruiserMaxx Vibrance	69.4	41	26-Sep	0.0	60.6	63.4
Mycogen	5N312R2	Clariva-Cruiser-Maxim-Apron	68.2	37	21-Sep	1.0		
Hubner Seed	H30-16R2	Acceleron	67.5	40	25-Sep	0.0		
Doebler's PA Hybrids Inc.	RPM® DB3016R™	DPH Boost	67.1	37	24-Sep	0.0		
Seedway	SG3144	CruiserMaxx	66.6	37	24-Sep	0.0		
Chemgro Seeds	C3346R2	Encase	66.4	40	25-Sep	1.5	58.1	61.3
Bayer Crop Sciences	CZ 3383RY	Poncho VOTIVO + ILeVO	65.9	38	25-Sep	0.5		
Bayer Crop Sciences	CZ 2788RY	Poncho VOTIVO + ILeVO	65.7	37	22-Sep	0.5		
Chemgro Seeds	C3049R2		64.8	39	23-Sep	0.5		
Dyna-Gro Seed	S29RY46	CruiserMaxx Vibrance	63.7	37	23-Sep	0.0		
Hubner Seed	H26-16R2	Acceleron	57.5	42	20-Sep	2.0		
Mean			67.6	38	23-Sep	0.7	61.5	62.4
LSD (.05)			7.6					
LSD (.25)			4.4					
CV %			7.9					

Table 7. Non-RR Soybean Variety Performance in Centre County, 2015

Source	Entry	Traits*	Seed Treatment	Yield, bu/A	Height (in.)	Maturity Date	Lodging (0-5, 0=best)	2 Yr Avg. Yield, bu/A (2014-15)
T.A. Seeds	TS3150	Conv	Cruiser	64.0	36	22-Sep	0.5	
Bayer Crop Sciences	CZ 2915LL	LL	Poncho VOTIVO + ILeVO	63.7	38	20-Sep	0.0	
Bayer Crop Sciences	CZ 3737LL	LL	Poncho VOTIVO + ILeVO	61.8	38	23-Sep	2.0	
Schillinger Genetics	e3494	Conv	CruiserMaxx Vibrance	61.2	34	27-Sep	0.0	59.4
Hisoy	33A44	RR	CruiserMaxx Vibrance	60.5	36	24-Sep	0.5	
T.A. Seeds	TS3660	Conv	Cruiser	60.2	35	25-Sep	0.5	
Bayer Crop Sciences	CZ 3841LL	LL	Poncho VOTIVO + ILeVO	58.4	35	24-Sep	0.5	
Chemgro Seeds	C3346R2	RR	Encase	57.9	35	24-Sep	0.0	
Mycogen Seeds	5N312R2	RR	Clariva-Cruiser-Maxim-Apron	57.0	34	21-Sep	1.5	
Bayer Crop Sciences	CZ 3945LL	LL	Poncho VOTIVO + ILeVO	56.6	37	27-Sep	0.5	
Bayer Crop Sciences	CZ 2510LL	LL	Poncho VOTIVO + ILeVO	56.5	32	17-Sep	0.5	
Bayer Crop Sciences	CZ 3233LL	LL	Poncho VOTIVO + ILeVO	55.6	36	18-Sep	2.5	
Bayer Crop Sciences	CZ 3443LL	LL	Poncho VOTIVO + ILeVO	54.2	36	19-Sep	2.0	
Schillinger Genetics	e3553	Conv	CruiserMaxx Vibrance	53.4	37	25-Sep	0.5	51.8
Schillinger Genetics	e3192	Conv	CruiserMaxx Vibrance	53.4	38	21-Sep	0.0	52.8
Schillinger Genetics	e2993	Conv	CruiserMaxx Vibrance	52.1	32	18-Sep	0.5	53.1
Mean				57.9	36	22-Sep	0.8	54.3
LSD (.05)				5.7				
LSD (.25)				3.3				
CV %				6.9				

*Conv=non-traited variety; LL=Liberty Link variety; STS=Sulfonylurea-tolerant; RR=Roundup Ready (used as check variety)

Table 8. Non-RR Soybean Variety Performance in Lancaster County, 2015

Source	Entry	Traits*	Seed Treatment	Yield, bu/A	Height (in.)	Lodging (0-5, 0=best)	Maturity Date	2 Yr Avg. Yield, bu/A (2014-15)	3Yr Avg. Yield, bu/A (2013-15)
Schillinger Genetics	e3494	Conv	CruiserMaxx Vibrance	75.8	44	0.0	14-Oct	63.7	
Schillinger Genetics	e3553	Conv	CruiserMaxx Vibrance	74.0	43	1.0	13-Oct	61.5	63.9
Dyna-Gro Seed	S40LL35	LL	CruiserMaxx Vibrance	73.6	37	2.0	7-Oct	64.1	
Dyna-Gro Seed	S38LL54	LL	CruiserMaxx Vibrance	73.2	43	0.0	13-Oct	64.0	65.0
Bayer Crop Sciences	CZ 4044LL	LL	Poncho VOTIVO + ILeVO	72.0	37	2.0	7-Oct		
Schillinger Genetics	e3782S	Conv	CruiserMaxx Vibrance	71.5	36	0.5	6-Oct	63.7	65.9
T.A. Seeds	TS3150	Conv	Cruiser	70.8	39	1.0	9-Oct		
T.A. Seeds	TS3660	Conv	Cruiser	70.3	41	0.0	11-Oct		
Hisoy	39A22	RR	CruiserMaxx Vibrance	70.0	40	0.5	10-Oct	63.5	
Dyna-Gro Seed	S35LS15	LL/STS	CruiserMaxx Vibrance	70.0	43	0.0	13-Oct	59.6	
Bayer Crop Sciences	CZ 3443LL	LL	Poncho VOTIVO + ILeVO	69.9	31	1.5	1-Oct		
Bayer Crop Sciences	CZ 4105LL	LL	Poncho VOTIVO + ILeVO	69.7	43	0.0	13-Oct		
Dyna-Gro Seed	S3805N	Conv	CruiserMaxx Vibrance	69.7	38	2.5	8-Oct		
Schillinger Genetics	389F.YC	Conv	CruiserMaxx Vibrance	69.7	33	1.0	3-Oct		
Bayer Crop Sciences	CZ 3841LL	LL	Poncho VOTIVO + ILeVO	69.2	43	2.5	13-Oct		
Schillinger Genetics	e3692S	Conv	CruiserMaxx Vibrance	68.1	41	0.0	11-Oct	59.5	64.1
Bayer Crop Sciences	CZ 3737LL	LL	Poncho VOTIVO + ILeVO	66.9	31	0.5	1-Oct		
Bayer Crop Sciences	CZ 3945LL	LL	Poncho VOTIVO + ILeVO	66.1	41	1.5	11-Oct		
Bayer Crop Sciences	CZ 3233LL	LL	Poncho VOTIVO + ILeVO	58.4	32	2.5	2-Oct		
Mean				69.9	38	1.0	8-Oct	62.4	64.7
LSD (.05)				7.3					
LSD (.25)				4.2					
CV %				7.3					

*Conv=non-traited variety; LL=Liberty Link variety; STS=Sulfonylurea-tolerant; RR=Roundup Ready (used as check variety)

Table 9. Double Crop Roundup Ready Soybean Variety Performance in Lancaster County, 2015

Source	Entry	Seed Treatment	Yield, bu/A	Height (in.)	Lodging (0-5, 0=best)	Maturity Date	2 Yr Avg. Yield, bu/A (2014-15)
Hubner Seed	H42-16R2	Accelaron	54.6	35	0.5	28-Oct	
Mycogen Seeds	X55388NR2	Clariva-Cruiser-Maxim-Apron	54.4	32	0.5	28-Oct	
Dyna-Gro Seed	S38RY56	CruiserMaxx Vibrance	54.3	30	0.0	28-Oct	
Dyna-Gro Seed	S39RY65	CruiserMaxx Vibrance	53.9	31	0.5	28-Oct	57.8
Mid-Atlantic Seed	MAS3889NRR2/STS	MAS ProShield	53.3	35	0.5	28-Oct	56.3
Dyna-Gro Seed	S37RS96	CruiserMaxx Vibrance	53.2	32	0.5	23-Oct	
Hubner Seed	H42-13R2	Accelaron	53.0	33	0.0	26-Oct	55.8
Mycogen Seeds	5N387R2	Clariva-Cruiser-Maxim-Apron	52.5	28	0.5	28-Oct	
Bayer Crop Sciences	CZ 4181RY	Poncho VOTIVO + ILeVO	52.3	36	1.0	28-Oct	
Hubner Seed	H35-16R2	Accelaron	52.3	29	0.5	21-Oct	
Mid-Atlantic Seed	MAS4355RR2	MAS ProShield	51.3	41	2.5	28-Oct	
Mycogen Seeds	X55424NR2	Clariva-Cruiser-Maxim-Apron	51.1	25	0.0	26-Oct	
Channel	3707R2/SR	Accelaron/VOTIVO	50.6	33	0.5	23-Oct	
Mid-Atlantic Seed	MAS3516NRR2	MAS ProShield	50.4	32	0.5	28-Oct	
Hubner Seed	H37-14R2STS	Accelaron	49.4	33	1.0	23-Oct	51.3
Doebler's PA Hybrids Inc.	RPM® DB3815R™	DPH Boost	49.4	32	0.5	28-Oct	52.5
Mycogen Seeds	X55414NR2	Clariva-Cruiser-Maxim-Apron	49.1	36	0.5	26-Oct	
Mid-Atlantic Seed	MAS3415NRR2	MAS ProShield	48.5	29	0.0	20-Oct	
Mid-Atlantic Seed	MAS3815NRR2	MAS ProShield	47.5	32	0.5	28-Oct	51.3
Mean			51.6	32	0.6	26-Oct	54.1
LSD (.05)			ns				
LSD (.25)			3.1				
CV %			7.3				



Field Trial Report

2015 On-Farm Harvest Report Summary

Product Tested: **2015 Soybean plots -**
 Site Location: **McKean County – Miles Farm**
 Harvest Coordinator: **J Craig Williams / Nicole Carutis**
 Method of Harvest: **Weigh Wagon**
 Date of Harvest: **October 30, 2015**

Harvest Summary							
Rep	Description(UT,T)	Yield	Moisture	Test Weight	Final Height(soil to outstretch top of pod)	Final Plants Per Acre	Final Pod Count Per Acre
1	Doeblers 2215	23.71	13.9	60	25	131,000	2,751,000
2	Nk S 18 C2	29.75	13.9	60	22	135,000	2,520,000
3	Seedway 1932	31.29	13.4	60	24	139,000	2,409,333
4	Pioneer 22T41	30.75	13.9	60	24	225,000	4,125,000
5	Chemgrow 2445	24.73	13.1	60	24	124,000	2,314,666
6	Pioneer 24T05	30.82	13.1	60	29	164,000	4,974,666
7	Mycogen 5N26	26.61	13.1	60	25	85,000	2,096,666

Observations/Notes:

- Planted 5-21-15 Harvested 10-28-2015
- First Year soybean Field Plot that was Conventional tilled, corn planter planted.
- Fertilizer , 6 gallons of 7-25-3 as starter and 25 gallons liquid 30N
- Some pods looks like drought suffer



Field Trial Report



Bruce Miles

Prepared By: j craig on 11/06/2015

Crop	Soybean	Previous Crop	Corn	Tillage	Conventional
Plot Location	Keating, PA	Planting Date	05/21/2015	Harvest Date	10/28/2015

Rank (by yield)	Product	Supplier	Length (ft)	Width (in)	Weight (lb)	Test Weight (lb/bu)	Moisture (%)	Yield (bu/acre)
7	Doebler's 2215	Doebler's	1000.0	240	660	60.0	13.9	23.71
4	NK S18 - C2	DeKalb	1000.0	240	828	60.0	13.9	29.75
1	Sw 1932	Seedway	1000.0	240	866	60.0	13.4	31.29
3	P 22T41	DuPont Pioneer	1000.0	240	856	60.0	13.9	30.75
6	Chemgro 2445	Chemgro	1000.0	240	682	60.0	13.1	24.73
2	P 24T05	DuPont Pioneer	1000.0	240	850	60.0	13.1	30.82
5	Mycogen Sn26	Mycogen	1000.0	240	734	60.0	13.1	26.61
-	Seedway 1776 untreated	Seedway	-	-	-	-	-	-
-	seedway 1776 treated	Seedway	-	-	-	-	-	-



PennState Extension



Field Trial Report

2015 On-Farm Harvest Report Summary

Product Tested: **2015 Soybean plots -**
 Site Location: **Tioga County – Hartranft Farm**
 Harvest Coordinator: **J Craig Williams / Nicole Carutis**
 Method of Harvest: **Weigh Wagon**
 Date of Harvest: **October 22, 2015**

Harvest Summary							
Rep	Description(UT,T)	Yield	Moisture	Test Weight	Final Height(soil to outstretch top of pod)	Final Plants Per Acre	Final Pod Count Per Acre
1	Pioneer 22T41	58.19	10.9	60	29	216,000	4,752,000
2	Asgrow 2134	45.29	10.6	60	28.5	141,000	3,807,000
3	Seedway 1932	46.64	11	60	26	140,000	3,640,000
4	Pioneer 24T05	55.16	10.8	60	28	220,000	3,960,000
5	Chemgro 2445	65.62	10.3	60	36	186,000	3,968,000
6	Mycogen 5N26	59.29	10.8	60	31	172,000	3,612,000
7							
8							

Observations/Notes:

- Planted 5-21-15 Harvested 10-22-2015
- Repeat soybean Field Plot that was corn planter planted
- No Fertilizer , Just 2014 soybean residue
- Chemgro very tall with first pod at 10inches above ground
- Very Small stems in this high population , P22T41, SW 1932, P24T05



Field Trial Report



Travis Hartranft 2015

Prepared By: AgPlots on 10/23/2015

Crop	Soybean	Previous Crop	Soybean	Tillage	No-Till
Plot Location	Richmond, PA	Planting Date	05/21/2015	Harvest Date	10/22/2015

Rank (by yield)	Product	Supplier	Length (ft)	Width (in)	Weight (lb)	Test Weight (lb/bu)	Moisture (%)	Yield (bu/acre)
3	P22T41	DuPont Pioneer	828.0	180	972	60.0	10.9	58.19
6	Asgrow 2134	Asgrow	828.0	360	1508	60.0	10.6	45.29
5	Seedway 1932	Seedway	828.0	360	1560	60.0	11.0	46.64
4	P24T05	DuPont Pioneer	565.0	360	1256	60.0	10.8	55.16
1	Chemgro 2445	Chemgro	565.0	360	1486	60.0	10.3	65.62
2	Mycogen 5N26	Mycogen	565.0	360	1350	60.0	10.8	59.29



Field Trial Report

2015 On-Farm Harvest Report Summary

Product Tested: **2015 Soybean plots -**
 Site Location: **Tioga County – Owlett Farm**
 Harvest Coordinator: **J Craig Williams / Nicole Carutis**
 Method of Harvest: **Weigh Wagon**
 Date of Harvest: **October 30, 2015**

Harvest Summary							
Rep	Description(UT,T)	Yield	Moisture	Test Weight	Final Height(soil to outstretch top of pod)	Final Plants Per Acre	Final Pod Count Per Acre
1	Asgrow 2035	52.45	10.1	56	34	114,000	3,952,000
2	Mycogen 5N263	48.13	10.2	56	33	125,000	4,041,666
3	Pioneer 24T05	49.10	10.2	57	29	133,000	3,280,666
4	Chemgro 2445	49.75	10	57	29	119,000	3,689,000
5	Pioneer 22T41	51.65	10	57	28.5	139,000	3,336,000
6	Seedway 2125	43.73	10	57	33.5	118,000	3,304,000
7	Mycogen 5N206	52.99	10.2	57	32	92,000	3,036,000
8	Seedway 2115	46.41	10	57	29	125,000	5,416,666
9	Seedway 1932	45.01	10	57	29	116,00	3,789,333

Observations/Notes:

- Planted 5-22-15 Harvested 10-30-2015
- Repeat soybean Field Plot that was no-till corn planter planted in rocky field
- Fertilizer , Broadcast 20-20-20 preplant, Planter 10-40-40 with Helena Micro Nutrient
- All plots were very tall
-



Field Trial Report



Gilbert Owlett

Prepared By: j craig williams on 11/05/2015

Crop	Soybean	Previous Crop	Soybean	Tillage	No-Till
Plot Location	Farmington, PA	Planting Date	05/22/2015	Harvest Date	10/30/2015

Rank (by yield)	Product	Supplier	Length (ft)	Width (in)	Weight (lb)	Test Weight (lb/bu)	Moisture (%)	Yield (bu/acre)
2	Asgrow 2035	Asgrow	884.0	240	1236	56.0	10.1	52.45
6	Mycogen 5N263	Mycogen	875.0	240	1124	56.0	10.2	48.13
5	P 24T05	DuPont Pioneer	870.0	240	1140	57.0	10.2	49.10
4	Chemgro 2445	Chemgro	865.0	240	1146	57.0	10.0	49.75
3	P 22t41	DuPont Pioneer	855.0	240	1176	57.0	10.0	51.65
9	SW 2125	Seedway	845.0	240	984	57.0	10.0	43.73
1	Mycogen 5N206	Mycogen	840.0	240	1188	57.0	10.2	52.99
7	Sw 2115	Seedway	835.0	240	1032	57.0	10.0	46.41
8	Sw 1932	Seedway	821.0	240	984	57.0	10.0	45.01



PennState Extension



Field Trial Report

2015 On-Farm Harvest Report Summary

Product Tested: **2015 Soybean plots -**
 Site Location: **Tioga County – Halteman Farm**
 Harvest Coordinator: **J Craig Williams / Nicole Carutis**
 Method of Harvest: **Weigh Wagon**
 Date of Harvest: **October 19, 2015**

Harvest Summary							
Rep	Description(UT,T)	Yield	Moisture	Test Weight	Final Height(soil to outstretch top of pod)	Final Plants Per Acre	Final Pod Count Per Acre
1	Pioneer 22T41	45.22	11.5	60	20	95,000	2,628,333
2	Pioneer 24T05	50.42	11.5	60	22	80,000	2,266,666
3	Seedway 1932	47.9	11.5	60	23.5	75,000	1,900,000
4	Mycogen 5N26	52.18	11.5	60	25	91,000	3,913,000
5							
6							
7							
8							

Observations/Notes:

- Planted 5-11-15 Harvested 10-19-2015
- New Field Plot that was corn planter planted
- Fertilizer was 20-40-80 broadcast preplant
- Field suffered frost damage 5-23-15
-

Field Trial Report



Richard halteman 2015

Prepared By: AgPlots on 11/06/2015

Crop	Soybean	Previous Crop	Wheat	Tillage	No-Till
Plot Location	Delmar, PA	Planting Date	05/11/2015	Harvest Date	10/19/2015

Rank (by yield)	Product	Supplier	Length (ft)	Width (in)	Weight (lb)	Test Weight (lb/bu)	Moisture (%)	Yield (bu/acre)
6	nkt2036	A.E.S -State Unknown	336.0	180	330	60.0	11.6	48.30
1	p27t47	DuPont Pioneer	335.0	180	410	60.0	11.5	60.26
3	my5n26	Mycogen	334.0	180	354	60.0	11.5	52.18
8	sw1932	Seedway	333.0	180	324	60.0	11.5	47.90
5	p24t05	DuPont Pioneer	332.0	180	340	60.0	11.5	50.42
10	p22t41	DuPont Pioneer	331.0	180	304	60.0	11.5	45.22
9	p92y51	DuPont Pioneer	329.0	180	314	60.0	11.5	46.99
2	p92y91	DuPont Pioneer	327.0	180	360	60.0	11.5	54.20
7	p93m11	DuPont Pioneer	325.0	180	318	60.0	11.5	48.17
4	p33t27	DuPont Pioneer	320.0	180	328	60.0	11.5	50.47

Field Trial Report

2015 On-Farm Harvest Report Summary

2015 Soybean research data summary, NE Soybean summary. Tioga/ McKean County.

Our Goal was to document Soybean yields in the Northern Tier of Pa. The November 2015 NASS reports that the Pa Soybean Yield average is 46 Bushels. The 2015 plots had 5 farms across two counties. The 2015 PA Soybean plot included 4 varieties were repeated from the 2014 year on 5 farms across two counties. Pioneer, Seedway, Chemgro, and Mycogen were repeated on all 5 farms. A total of (4 planted with corn planter & 1 grain drill, 2 virgin fields and 3 repeat soybean fields). All 5 planted earlier than the 2014 year and from May 10- May 22. All five were harvested in October and matured naturally.

August nodulation counts were Hartranft 134 Nodules per plant, G Owlett 229, Williams, 196

2015 Tioga/McKean Soybean plots									
2015 CONFIR MED									
Farmer Fields and Yields				SB variety on all 5 farms					
Farmer Fields and Yields				Pioneer 22T41 & SD 1932 Second year yields					
phone	Field Notes	2yr SB Grain Drill	1st yr SB Corn Planter	2yr SB, Corn Planter	2yr SB, Corn Planter	1st sy SB, Corn planter	7-25-3 plus 30N		
	Fertilizer	None		30-40-40	None	Bruce Miles McKean Cty			
Variety	J Craig Williams		RH At Clevelands	Gilbert Owlett	Travis Hartranft				Yield Average
plant date	5/9/2015		5/11/2015	5/22/2015	5/21/2015	5/21/2015			
Harvest Date	10/19/2015		10/19/2015	10/30/2015	10/22/2015	10/22/2015			
Pioneer 22T41	52.55		45.22	51.65	58.19	30.75			39.73
Pioneer 24T05	56.59		50.42	49.1	55.16	30.82			40.35
Seedway 1932	60.63		47.9	45.01	46.64	31.29			38.58
Asgrow 2035				52.45					
Seedway 2013	56.6								
Mycogen 5N263R2	56.59		52.18	48.13	59.29	26.61			40.47
Mycogen 5N206R2				52.99					
Chemgro 2445				49.75	65.62	24.73			46.70
Ave Yield of Farm	56.59		48.93	49.87	56.98	28.84			41.16

2014 data Research continuation into 2015 : The 2014 PA Soybean plot completed 7 varieties on 6 farms across two counties. (4 planted with corn planter & 2 grain drill, 3 virgin fields and 3 repeat soybean fields. 3 planted early in June and 3 farms late June) Many factors were identified including Soil type, Drill/planter planting technique, Planting date and soil conditions. Our farmers want to repeat part of the trial with learning from each other about soybeans in our area

Tioga Soybean plots 2014									
Farmer Fields and Yields									
Variety	A Notill G. Drill No Fert Repeat	A till, C. Planter w/ Fert New Field	B notill C. Planter w. Fert New Field	B Notill C. Planter w Hog Manure Repeat	A Notill G. Drill No Fert Repeat	Rank Average	Yield Average		
Farm 1	Farm 2	Farm 3	Farm 4	Farm 5					
Doeblers 1713	43.76	25.17	35.89	30.22	45.28	5.4	30.05		
TA Seeds 1719	47.92	18.02	22.91	37.15	56.06	4.8	30.34		
Seedway 1932	43.63	18.07	46.72	42.65	53.33	3.4	34.07		
Seedway 2013	51.67	18.21	45.81	39.46	58.67	2.8	35.64		
Chemgro 2146	25.98	32.23	41.51	42.53	47.29	4.6	31.59		
Doeblers 2212	43.69	33.03	42.64	47.18	54.46	3	36.83		
Pioneer 22T41	42.71	42.38	40.9	41.94	55.15	4	37.18		
Ave Yield of 7 Plot only	42.77	26.73	39.48	40.16	52.89		33.67		

Field Trial Report

The Effects of Manure Application on Soybeans 2012



Investigators:
Jennifer Bratthauer,
Dr. Doug Beegle,
Dr. Greg Roth,
Del Voight and
Paul Craig,
Penn State Extension



Field Information

Location #	Average Plot Size (acres)	Predominant Soil Types	Type of Manure Applied	Manure Application Rate	Manure Analysis (Total Nitrogen)	Nitrate-N in Treated (Manure-Applied) Plots pre-application	Nitrate-N in Untreated (Non-manure) Plots pre-application	Plant Population
1	0.27	HaA, CsA	Liquid Dairy	7200 gal/acre	25.5 lbs/1000 gal	0.15	0.17	125,729
2	0.9	AgB, BuB, MoB	Liquid Swine	3,000 gal/acre	44.4 lbs/1000 gal	0.13	0.12	167,619
3	0.95	HaA, HaB, HcB, CsA	Poultry (turkey)	2 tons/acre	54.8 lbs/ton	0.16	0.16	134,134
Plot Design: Replicated strip trials in each field for a total of 18 plots (9 treated and 9 untreated).								

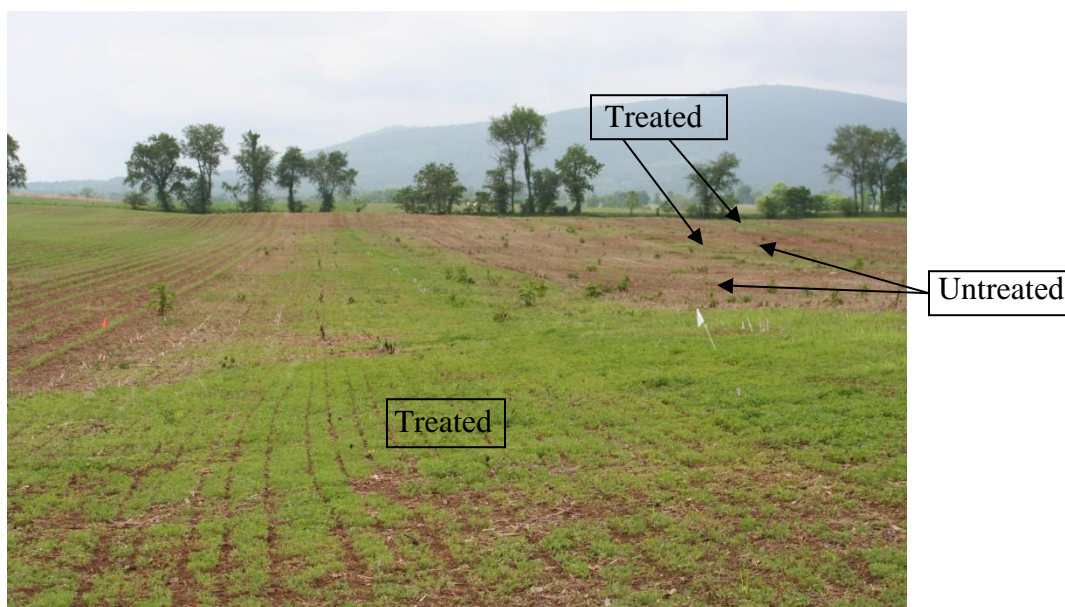
OBSERVATIONS

Weeds



Field Trial Report

All the plots were scouted on a regular basis (approximately every 7 to 10 days) throughout the growing season to determine if there was a higher incidence of weeds and diseases in the plots that had received manure applications versus the plots that did not receive manure. Shortly after planting, the location with poultry manure showed a noticeable difference in the incidence of weeds between the treated and untreated plots. The weeds in the treated plots were larger and more numerous than the weeds in the untreated plots (see picture 1). As the growing season progressed, the weeds in the untreated plots at the location that received poultry manure caught up in growth and numbers to the weeds in the untreated plots. The locations that had received liquid dairy and liquid swine manure showed no noticeable difference in the incidence of weeds between the treated and untreated plots. The incidence and growth of the weeds may have more to do with the operators' herbicide program than the actual manure applications.



Picture 1. Incidence of weeds after planting in the treated vs. untreated plots in the location with poultry manure applications.

Diseases

The incidence of plant diseases did not seem to be affected by manure applications. The plant diseases that were identified occurred in all 18 of the plots (9 treated and 9 untreated). As in many soybean fields, the first occurrence of disease was Septoria brown spot in all three locations in all of the plots. When the diseases did appear, they appeared at the same time throughout the plots. Manure applications did not seem to cause a difference in the timing and severity of the diseases. Some of the other diseases identified as the growing season progressed were downy mildew, frogeye leaf spot and soybean vein necrosis virus.

One of the concerns with applying manure to soybeans is the increased incidence of white mold (Sclerotinia stem rot). No evidence of white mold was found during scouting of the plots. However, it is important to note that the three fields in this study did not have a history of white mold.

Field Trial Report

RESULTS

The following parameters were investigated in each plot: pre-manure application soil tests for total nitrogen and nitrate nitrogen, nodulation (at V2 and R2-R3), tissue samples for nitrogen (V2 and R2-R3), yield and end of the growing season soil tests for total nitrogen and nitrate nitrogen. When all locations were analyzed together, there was not a statistically significant difference in any of the tested parameters. However, when the plots were analyzed separately by manure type, the location with dairy manure plots showed a statistically significant difference in tissue samples (V-2), nodulation (R2-R3), yields and the soil nitrate-N tests at the end of the growing season. The plots that had received a dairy manure application showed a higher %N in the V-2 tissue samples, lower nodulation at R2-R3, lower yields (approximately 1.5 bu/acre average) and higher Nitrate-N levels in the soil tests completed at the end of the growing season. There were no differences due to the swine or poultry manure applications when these locations were analyzed separately.

Results

Plots	Pre-manure Soil Test (Total N %)	Pre-manure Soil Test (Nitrate N ppm)	Nodulation (V-2)	Tissue Samples (V-2, % dry weight basis)	Nodulation (R2-R3)	Tissue Samples (R2-R3, % dry weight basis)	Yield (bu/acre)	End of Growing Season Soil Test (Total N %)	End of Growing Season Soil Test (Nitrate N ppm)
Combined									
No Manure	0.1467	19.73	16.49	5.91	51.24	6.69	73.79	0.1367	9.90
Manure	0.1456	15.56	17.13	6.11	38.67	6.87	72.86	0.1567	11.18
P value	0.9226	0.1836	0.9205	0.1148	0.2837	0.4446	0.8766	0.2980	0.4665
Dairy									
No Manure	0.1667	25.73	9.07	6.18	63.27	7.27	86.70	0.1533	12.70
Manure	0.1500	18.87	7.20	6.29	22.20	7.29	85.27	0.1567	16.13
P value	0.5598	0.4149	0.6914	0.0399	0.0425	0.8869	0.0148	0.8075	0.0063
Swine									
No Manure	0.1167	13.37	32.47	5.91	61.87	6.43	60.23	0.1033	9.97
Manure	0.1267	16.30	32.53	6.15	71.00	6.96	59.00	0.1133	9.97
P value	0.2254	0.4503	0.9934	0.0949	0.3675	0.2888	0.7620	0.2254	1.0000
Poultry									
No Manure	0.1567	20.10	7.93	5.64	28.60	6.36	74.43	0.1533	7.03
Manure	0.1600	11.50	11.67	5.89	22.80	6.37	74.30	0.2000	7.43
P value	0.4226	0.0306	0.2975	0.3480	0.3780	0.9874	0.9727	0.1663	0.5653

P value of 0.05 = significant



The Effects of Manure Application on Soybean Ground 2013



Investigators:
Jennifer Bratthauar,
Dr. Doug Beegle,
Dr. Greg Roth,
Del Voight and
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Penn State Extension



Introduction

Soybeans are becoming an integral part of crop rotations throughout Pennsylvania, whether it is in a two-crop rotation or a double-cropping system after small grains. According to the 2007 Agriculture Census, Franklin County is ranked 2nd in the state of Pennsylvania for livestock, which means Franklin County farmers utilize a great deal of manure. Many farmers rely on their soybean ground to provide the amount of land needed for their manure applications. Application of manure to soybeans based on crop uptake of N is allowed under PA nutrient management regulations.

While there has been some research done on this topic in the Midwest, little research has been done in Pennsylvania to determine if manure land applications positively or negatively affect soybean yields. Some farmers claim that too much manure makes soybeans lodge. Several of the Midwest studies indicate higher yields due to manure applications, while some studies cite increased incidence of disease (particularly white mold) due to manure applications. It is also said that if manure (or any other nitrogen source) is applied to soybeans that they will not nodulate and therefore will not yield as well.

This goal of this study was to see if manure applications to soybean ground had any effect of the incidence of disease, weed pressure, soil nitrate levels, nodulation and yields. This study looked at three separate field locations, each applying a different type of manure. Location #1 utilized liquid dairy manure, location #2 utilized liquid swine manure and location #3 spread poultry (turkey) manure. Each location consisted of replicated strip trials, 3 treated (manure applied) and 3 untreated. All three types of manure were applied with the broadcast method.



Field Trial Report

Table 1. Field and Treatment Information for the Trial.

Plot Information					Pre-Manure Application									
Location #	Average Plot Size (acres)	Predominant Soil Types	Type of manure applied	Manure application rate	Manure Analysis (Total Nitrogen)	Nitrate-N in Treated (Manure-Applied) Plots Pre-Application (ppm)	Nitrate-N in Untreated (Non-Manure) Plots Pre-Application (ppm)	Soil pH in Treated Plots	Soil pH in Untreated Plots	Phosphorus in Treated Plots	Phosphorus in Untreated Plots	Potassium in Treated Plots	Potassium in Untreated Plots	Plant Population (plants/acre)
1	0.16	HeA, Ck	Liquid Dairy	7140 gal/acre	32.28 lbs/1000 gal	4.93	4.47	7.00	6.90	54.30	49.70	108.70	127.70	124,465
2	0.9	AgB, BuB	Liquid Swine	3,000 gal/acre	35.17 lbs/1000 gal	5.17	6.33	6.80	6.80	87.00	74.00	166.70	163.70	136,081
3	0.61	HbC, HaB, Fu, CsA	Poultry (turkey)	2 tons/acre	48.25 lbs/ton	10.87	11.8	7.00	7.00	69.70	75.00	130.70	127.00	176,668

Plot Design: Replicated strip trials in each field for a total of 18 plots (9 treated and 9 untreated).



OBSERVATIONS

Weeds

All the plots were scouted on a regular basis (approximately every 7 to 10 days) throughout the growing season to determine if there was a higher incidence of weeds and diseases in the plots that had received manure applications versus the plots that did not receive manure. This was the second year this research was conducted. In 2012, shortly after planting, the weeds in the poultry manure plots were larger and more numerous than the weeds in the untreated plots. However, in 2013, there were no noticeable differences in the growth and prevalence of weeds at any of the locations.

Diseases

The incidence of plant diseases did not seem to be affected by manure applications. The plant diseases that were identified occurred in all 18 of the plots (9 treated and 9 untreated). As in many soybean fields, the first occurrence of disease was Septoria brown spot in all three locations in all of the plots. Some of the other diseases identified throughout the plots were downy mildew, frogeye leaf spot and Phytophthora stem rot. When the diseases did appear, they appeared at the same time throughout the plots. Manure applications did not seem to cause a difference in the timing and severity of the diseases. Phytophthora stem rot was more prevalent (but not a significant cause of damage in the research plots) in two of the plots (1 manure and 1 non-manure) at the dairy manure location, most likely due to a lower lying soil that remained wet for a longer period of time during the spring.

One of the concerns with applying manure to soybeans is the increased incidence of white mold (*Sclerotinia stem rot*). No evidence of white mold was found during scouting of the plots. However, it is important to note that the three fields in this study did not have a history of white mold.



Field Trial Report

Table 2. Results and Statistics for N Related Data and Yield at Each Trial Location.

Plots	Pre-manure Application Soil Test (Total N %)	7 to 11 Days After Application Soil Test (Total N %)	End of Growing Season Soil Test (Total N %)	Pre-manure Application Soil Test (Nitrate-N ppm)	7 to 11 Days After Application Soil Test (Nitrate-N ppm)	End of Growing Season Soil Test (Nitrate-N ppm)	V-2 Nodulation (# of nodules)	R2-R3 Nodulation (# of nodules)	Tissue Samples (V-2, % dry weight basis)	Tissue Samples (R2-R3, % dry weight basis)	Yield (bushels/acre)
All Plots											
No Manure	0.1356	0.1178	0.1389	7.53	6.80	9.55	31.45	63.16	3.93	6.11	63.08
Manure	0.1345	0.1200	0.1355	6.99	11.02	8.92	28.35	71.31	4.28	6.14	62.79
P value	0.911	0.813	0.731	0.740	0.033	0.596	0.493	0.571	0.032	0.724	0.898
Dairy											
No Manure	0.1300	0.1100	0.1367	4.47	2.57	10.63	22.67	69.67	3.99	6.12	57.96
Manure	0.1300	0.1200	0.1300	4.93	8.77	8.93	19.73	65.13	4.19	6.04	58.59
P value	1.000	0.548	0.692	0.662	0.003	0.621	0.594	0.791	0.057	0.511	0.890
Swine											
No Manure	0.1200	0.1067	0.1200	6.33	5.80	10.33	41.20	79.07	3.90	6.04	66.19
Manure	0.1167	0.1033	0.1233	5.17	12.37	9.80	35.20	107.67	4.10	6.05	66.46
P value	0.768	0.778	0.643	0.096	0.080	0.756	0.414	0.291	0.081	0.777	0.903
Poultry											
No Manure	0.1567	0.1367	0.1600	11.80	12.03	7.70	30.47	40.73	3.90	6.18	65.09
Manure	0.1567	0.1367	0.1533	10.87	11.93	8.03	30.13	41.13	4.54	6.34	63.31
P value	1.000	1.000	0.609	0.665	0.959	0.624	0.934	0.953	0.002	0.528	0.347

P value of 0.1 or less = significant at 90%



Field Trial Report

RESULTS

The following parameters were investigated in each plot: pre-manure application soil tests for total nitrogen and nitrate nitrogen, soil tests for total nitrogen and nitrate nitrogen 7 to 11 days after manure application, nodulation (at V2 and R2-R3), tissue samples for nitrogen (V2 and R2-R3), yield and end of the growing season soil tests for total nitrogen and nitrate nitrogen (Table 2). When all locations and manure types were analyzed together, there was a statistically significant increase in the soil nitrate nitrogen 7 to 11 days after manure application and also an increase in V-2 tissue nitrogen levels (Table 2). Even though there was a significant difference in the nitrate-nitrogen levels between the manure and non-manure plots 7 to 11 days after manure application, by the end of the growing season there was no longer a significant difference in soil nitrate nitrogen between the manure and non-manure plots. There was no significant difference in yields due to the manure treatments.

When the plots were analyzed separately by manure type, the results were similar with several exceptions. All three locations showed a statistically significant increase in V-2 tissue nitrogen when manure was applied. The soil tests for nitrate nitrogen taken 7 to 11 days after manure application were significantly higher when manure was applied at the swine and dairy manure locations, but not at the poultry manure location. There was also a significant difference in the pre-application soil nitrate-N levels between the manure and non-manure plots before the treatments were applied. The plots that were planned to receive manure had lower soil nitrate-N levels. There is no explanation for this, but it could have had a slight impact on the magnitude of the increase in soil nitrate-N following swine manure application. There was no significant difference in the yields between the manure and non-manure plots at any of the locations.

CONCLUSIONS

The results indicate that applying manure at lower rates to soybeans will result in neither a positive or negative impact on the crop. Yields in these trials were good at over 60 bushels/acre, and there was no impact of manure application on yield. There was no apparent increase in weeds or diseases. There was an increase in soil nitrate nitrogen and consequently in early season plant nitrogen where manure was applied as might be expected, but this did not carry through to have any impact later in the season. There has been concern that manure (nitrogen) applications on soybeans will negatively impact their nodulation. However, this was not observed in this trial. At the end of the season, there was no difference in residual soil nitrate-nitrogen due to the manure applications, and the soil nitrate-nitrogen levels were at typical background levels for soil nitrate-nitrogen in PA.

Based on these three studies in one year, there would appear to be no management advantage to applying manure to soybeans. The fact that the soybeans in this trial were not impacted positively or negatively from the manure N indicates that manure could be applied if necessary to supply phosphorus and potassium to soybeans. The phosphorus and potassium levels were not below optimum at these sites, so the effect of the P and K in the manure was not evaluated. Finally, the lower residual nitrate-nitrogen levels at the end of the growing season indicate little increased potential for nitrogen loss to the environment through leaching if manure is applied to soybeans.

Field Trial Report

2015 Response to Fall/Spring Cover Crop

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth,
Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: 7N

Acres:

2014 Crop: Wheat?

Tillage: No-till

Planting Date:

Variety:

Seed Treatment:

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180 k

Herbicide: Gramazone plus Canopy f/b Credit Extra+ Pursuit
6/22/2013

Harvest Date:

Plot size: 10 x 30 Feet

Replications: 6

Treatments

- 1 Untreated
- 2 Rye
- 3 Rye + Herb
- 4 Herb

Results

	Pop Up Population	Emergence Height	Mid-Season Height	Final Height
Control	126777.3 a	4.6	20.1 a	31.4
Rye	126444.2 a	3.3 c	18.3 c	31.6 c
Rye + Herb	125999.8 a	4.1 a	19.6 b	32.6 b
Herb	127549.8 a	3.9 b	19.5 b	33.8 a
Average	126692.8	3.8	19.4	32.6
CV	2.46	4.39	1.5	2.1
LSD	3154.6	.17	.29	.72

	Weed Density	
	Wet Density in grams	Dry Density in grams
Control	58.2 a	6.2 a
Rye	48.9 a	6.1 a
Rye + Herb	32.9 a	3.8 a
Herb	40.3 a	4.6 a
Average	45.07	4.4 a
CV	54.5	27.4
LSD	24.9	.218



Field Trial Report

Results

	Soil Temperature						
	Date: 3-27-2015	Date: 4-3-2015	Date: 4-10-2015	Date: 4-20-2015	Date: 4-24-2015	Date: 5-1-2015	Date: 5-8-2015
Control	41.2 a	49.3 a	43.0 a	57.7	51.3 a	56.7 c	72.8 a
Rye	41.2 a	48.8 a	43.2 a	58.2 a	52.4 a	58.1 a	71.5 a
Rye + Herb	40.9	48.9 a	43.2 a	57.7 a	52.3 a	57.6 ab	73.2 a
Herb	41.3 a	49.4 a	43.2 a	58 a	52.4 a	57.2 bc	72.6 a
Average	41.2	49.1	43.1	58	52.1	57.4	72.6
CV	1.1	2.4	1.3	1.2	2.3	1.4	2.1
LSD	.45	1.2	.58	.71	1.22	.79	1.55

	Yield			
	Pod Count	Bushels/Acre	Moisture in %	Test Weight
Control	69.7	59.2 a	11.4 a	52.9
Rye	94.3 a	59.4 a	11.45 a	53.5 b
Rye + Herb	64.7 c	63.5 a	11.43 a	54.5 a
Herb	68.6 b	63.9 a	11.5 a	53.9 ab
Average	75.83	61.5	11.45	53.98
CV	3.3	8.2	2.9	1.1
LSD	2.6	5.1	.3	.6

Comments:



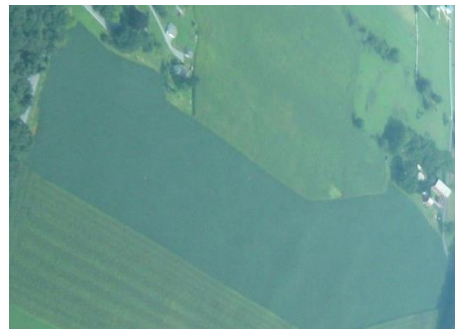
Field Trial Report

2010 Molybdenum Seed Treatment Evaluation: Lebanon County



Participating Grower:
Krall Farms - Glenn Krall
Lebanon, PA

Site coordinator – Del Voight
Penn State CMEG



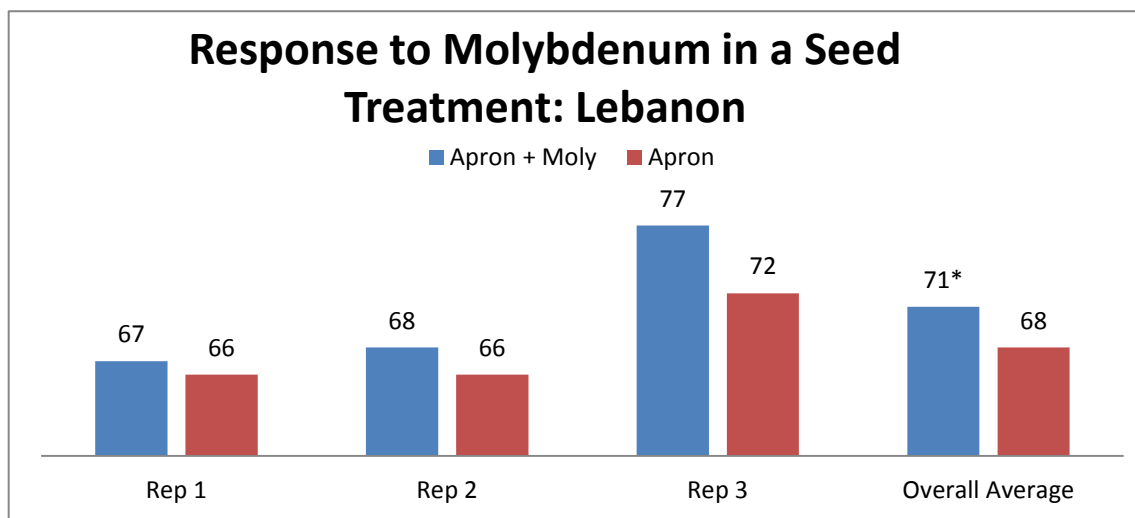
FIELD INFORMATION

Field Name: Brubaker	Acres: 30	2009 Crop: Corn	2008 Crop: Soybeans
Soil type: Duffield	Field Length: 1200	Tillage: minimum	Planting Date: 5/7/10
Soybean Variety: 93Y13	Seed Treatment: Cruiser Max	Inoculants: Optimize	Planting Depth: 1 inch
Planter/Drill and width: 11 Row 15 inch Kinze		Herbicide: Extreme	
Sprayer/width: 80	Combine/width: 20	Yield Monitor: Yes	GPS capability: Yes
Guidance system: No			

TREATMENTS EVALUATED

1. Apron Max RTA 4 oz/50lb
2. Apron Max RTA plus Moly 4oz/50lb

RESULTS



*Significantly different ($p=0.05$) than the check.



Field Trial Report

2010 Molybdenum Seed Treatment Evaluation: Lancaster



Participating Grower:
Bill Beam
Elverson, PA

Site coordinator: Jeff Graybill
Penn State CMEG



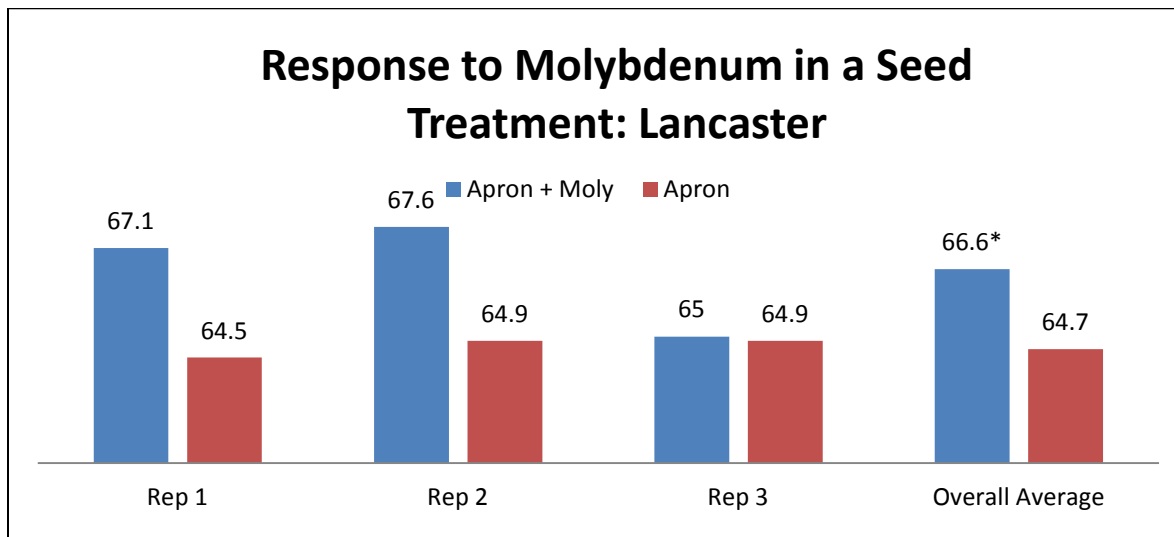
FIELD INFORMATION

Field Name: Swamp Rd Farm	Acres: 21	2009 Crop: various	2008 Crop: various
Soil type: Duffield	Field Length:	Tillage: No-till	Planting Date: 5/20/10
Soybean Variety: 93M11	Seed Treatment: Cruiser Max	Inoculants: Optimize	Planting Depth: 1 – 1.25"
Planter/Drill and width: JD 1560 15 foot		Herbicide: Credit Extra twice at 1 Qt/acre	
Sprayer/width: 80"	Combine/width: JD 625/ 25'	Yield Monitor: Green Star II	GPS capability: Yes
Guidance system: 9570sts			

TREATMENTS EVALUATED

1. Apron Max RTA 4 oz/50lb
2. Apron Max RTA plus Moly 4oz/50lb

RESULTS



*Significantly different ($p=0.05$) than the check.

Field Trial Report

2010 Molybdenum Seed Treatment Evaluation: Combined Results



Conducted by: Del Voight, Greg Roth, Jeff Graybill

County Locations: Lancaster, Lebanon

Collaborators: Glenn Krall, Bill Beam

Research Objective: Conduct a pilot study to evaluate the impact of molybdenum on soybean yield.

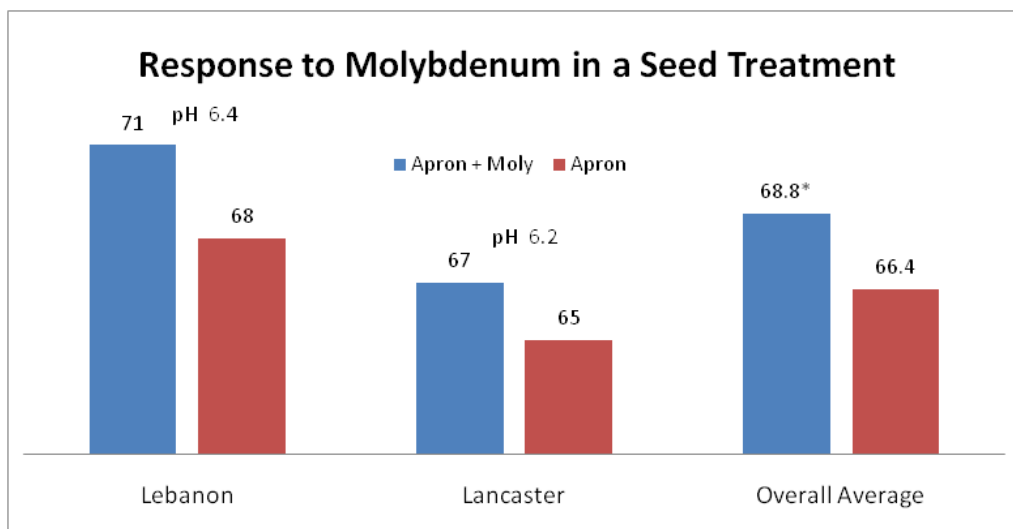
Background: Research data from the southern US has shown a yield advantage from the use of molybdenum as a seed treatment in low pH soils. Little information exists on the response to molybdenum on Pennsylvania soils. This field trial was designed to assess the need for further study on the impact of molybdenum in Pennsylvania soils.

Study Description: A replicated strip test comparison with three replications at each site was utilized. Fields were planted by the cooperators. Two treatments were used in this study: Apron Max RTA and Apron Max RTA plus Moly. For each treatment, 5 oz/100lb of seed were applied directly to the seed prior to planting. Yield was collected by the use of a calibrated yield monitor. Soil pH levels were 6.2 in Lancaster and 6.4 in Lebanon.

RESULTS

The yield response to the addition of molybdenum as a seed treatment is shown in Figure 1. We found a 2.4 bu/acre advantage of using the molybdenum treated seed. This response was statistically significant and occurred in each of the 6 replications of the study. Further studies should be conducted to assess the factors that allow for this improvement in yield.

Figure 1



Field Trial Report

2011 Molybdenum Source Study: SEAREC



Investigators –Del Voight,
Greg Roth, John Bray
and Alyssa Collins
Penn State Extension



FIELD INFORMATION

Field Name: Y2	Acres: 5	2010 Crop: corn	2011 Crop: Soybeans
Soil type: Duffield	Field Length: 800	Tillage: No till	Planting Date: 5/10/11
Soybean Variety: 93M11	Seed Treatment: Trilex plus Gaucho	Inoculants: Optimize	Planting Depth: 1 inch
Planter/Drill and width: 10 foot 7 inch JD1250 drill		Herbicide: Glyphosate+ Canopy f/b Glyphosate	
Sprayer/width: 20	Combine/width: 15	Yield Monitor: No	GPS capability: N
Guidance system: No	Soil Test K (ppm):	Design: Replicated Block	4 reps

TREATMENTS EVALUATED

1. Untreated Control: Apron Max RTA
2. Apron Max RTA plus Moly
3. Seed Treatment: 2.5 oz. per 50 pounds of seed; this rate will result in the application of 5 oz. actual molybdenum per 60 pounds of seed. Foliar: 6 oz. per acre; this rate will result in the application of 1 oz. actual molybdenum per acre

RESULTS

Treatment	Yield	Moisture	Test Wt.
	Bu/ac	%	Lb/bu
Control: Apron Max RTA	54.2	16.4	53.0
Apron Max RTA Plus Moly	53.7	16.4	53.6
Moly and water on seed	54.7	16.2	52.9
CV (%)	4.6	0.9	1.3
Significant	NS	NS	NS

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low.



Field Trial Report

2011 On Farm Molybdenum Source Study: Lebanon



Participating Grower:
Krall Farms -Glenn Krall
Lebanon, PA

Site coordinators –
Del Voight and John Bray
Penn State Extension



FIELD INFORMATION

Field Name: Home Farm across from Tice	Acres: 30	2009 Crop: corn	2010 Crop: Soybeans
Soil type: Duffield	Field Length: 1200	Tillage: minimum	Planting Date: 5/7/10
Soybean Variety: 93Y13	Seed Treatment: Cruiser Max	Inoculants: Optimize	Planting Depth: 1inch
Planter/Drill and width: 11 Row 15 inch Kinze	Herbicide: Round Up		
Sprayer/width: 80	Combine/width: 20	Yield Monitor: Yes	GPS capability: Yes
Guidance system: No	Soil Test K (ppm):	Design: Strip Pair Comparison	4 reps

TREATMENTS EVALUATED

- 1 Apron Max RTA 5 ounce/100lb of seed
- 2 Apron Max RTA plus Moly 5 ounce/100lb of seed

RESULTS

Treatment	Yield	Moisture	Test Wt.
	Bu/ac	%	Lb/bu
Control: Apron Max RTA	58.2	14.0	54.1
Apron Max RTA plus Moly	58.6	13.8	54.0
LSD (0.10)	0.1	NS	NS

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low.



Field Trial Report

2012 On-Farm Moly Response Study



Investigators –Del Voight,
John Bray, Alyssa Collins,
and Greg Roth
Penn State Extension



FIELD INFORMATION

Soil type, seed variety and management practices: Variable

Participating growers: 1 Counties represented: Lebanon

Design: Replicated strip trial: 1 location 5 reps

TREATMENTS EVALUATED

1 Control- Apron Maxx RTU 5oz/100lb

2. Moly- Apron Maxx plus Moly 5 oz/100lb of seed

INDIVIDUAL SITE RESPONSES

<u>Cooperator</u>	<u>County</u>	<u>Reps</u>	<u>Apron Maxx RTU</u>	<u>Apron Max RTU plus Moly</u>	<u>Significance*</u>
			Bu/acre	Bu/acre	
Darren Grumbine	Lebanon	5	90.8	93.1	P=.24
Mean (1 site)			90.8	93.1	CV=2.9%

*Statistical differences: ns= not significant, 0.20=80%, 0.10=90%, 0.01=99% confidence level.

In this trial we asked cooperators to assess the potential of molybdenum containing seed treatment. In the past we have observed some visual differences with the use of molybdenum seed treatments and small 1-3 bu/acre yield responses. On this field the molybdenum treated strips were apparent in aerial photography (upper right, compliments of Google Earth) throughout the season. Over the five replications of this very high yielding study, we measured a 2.3 bu/acre yield difference, which was significant at the 0.24 level. These results are consistent with other field scale and small plot studies that we have conducted and suggest that in some environments there may be small advantages to using a molybdenum seed treatment.



Field Trial Report

2012 Molybdenum Study

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: Z Acres: 15

2011 Crop: Corn Tillage: No-till

Planting Date: 4/26/2012 Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucha Planter: JD 1250 Drill

Planting Depth: 1 inch Seeding rate: 180,000

Herbicide: Glyphosate plus Canopy f/b Extreme plus Dakota

Harvest Date: 10/05/2012 Plot size: 20 x 100 feet

Design: Randomized Complete Block Replications: 4



Treatments

1. Untreated
2. MolyPower and water 5 oz/100 lb seed
3. MolyPower and water 5 oz/acre @V2

Results

	Yield	Moisture	Nodulation	pH	Final Height	Plant N	Plant Mo
	Bu/ac	%	no./plant		in.	%	mg/kg
Untreated	55.8	16.1	17.0	5.0	26.4	5.5	<0.15
Moly on seed	59.0	16.2	19.8	5.1	26.8	5.2	<0.15
Moly at V2	57.7	15.9	24.0	4.9	26.7	5.8	0.17
Significance	ns	ns	ns	ns	ns	P=0.10	-
CV	15.0	2	17.0	13.0	15.0	2	-
LSD	-	-	-	-	-	0.4	-

Comments

This study was conducted to assess the need for Mo in seed treatments following small but significant responses in 2010 and 2011. This study was conducted on field with soil pH values between 4.9 and 5.1. Yields tended to be higher with Moly treatments in this study but were not statistically significant. When we contrasted between the moly treatments combined and untreated, we found a 2.5 bushel/acre difference which was significant at the p=0.1 level. Differences in plant Mo, N, nodulation and height were not consistent among treatments. This study suggests there may be small benefits to Mo addition on acid soils but continued research is needed at more sites to confirm this.



PennState Extension

2014 Pennsylvania On Farm Network Seed Treatment Trials

D.G. Voight, Penn State Extension

Background: This study was initiated to assess the response to commercial seed and fungicide treatments across Pennsylvania in 2014. Cooperators were supplied with treated and untreated seeds from one of several sources. They established on farm replicated strip trials at each location with 2 or more replications. Sites were evaluated for a final plant population, Bean Leaf Beetle damage, and growth early and late in the season. Yield and grain moisture were assessed at harvest. Seed treatments consisted of Cruiser Maxx, Acceleron, and Pioneer Premium, depending on the brand of seed used. Sites with significant yield or plant population responses are highlighted in yellow.



Site Background Data				Treated		Untreated		Plant Populations		Bean Leaf Beetle Assessment				Growth Assessment			
Cooperator	County	Rep	Planting	Variety	Yield bu/acre	Moisture %	Yield bu/acre	Moisture %	Treat. plants/acre	Untreat plants/acre	Treated % leaf area damaged	Untreated insects/sweep	Treated inches	Untreated inches	Treated	Untreated	
Dick Kreider	Lebanon	6	4/4/2014	Syngenta	73.6	12.9	70.2	13.3	162624	140222	15.0	20.0	0.0	1.2	12.3	11.6	
Leshor Poultry	Franklin	3	4/28/2014	Asgrow	71.5	14.9	67.1	15.2	99317	85029	0.0	0.0	0.0	0.0	12.0	10.0	
Dave Wolfskill	Berks	3	5/2/2014	Pioneer	83.6	13.8	77.0	13.4	147059	138347	0.0	0.0	0.0	0.0	--	--	
PSU SEARC	Lancaster	6	5/5/2014	Asgrow	61.8	13.9	43.2	13.9	133003	99317	9.2	9.4	0.8	2.4	7.1	7.3	
Bixler	Berks	2	5/10/2014	Asgrow	67.8	13.9	62.4	14.1	125453	112908	10.0	10.0	0.0	1.0	14.5	14.2	
Halabura	Schuylkill	3	5/10/2014	Syngenta	70.3	13.3	65.6	13.8	106286	79453	0.0	0.0	0.0	0.0	15.6	14.7	
Average Early Planted					71.4	13.8	64.2	14.0	128957	109213	5.7	6.6	0.1	0.8	12.3	11.6	
Jeff Graybill	Lancaster	4	5/12/2014	Hi-Soy	62.5	13.5	62.0	13.3	142180	137301	22.8	23.0	12.8	8.0	5.7	5.6	
Joe Anchor	Union	24	5/14/2014	Multiple	54.6	13.4	54.6	13.4	92127	92794	0.0	0.0	0.0	0.0	--	--	
Oberholzer	Union	5	5/15/2014	Syngenta	75.4	13.5	71.9	13.6	131932	105395	5.0	5.0	0.0	0.0	--	--	
Richard Brukhart	Lebanon	4	5/19/2014	Mid-Atlantic	60.8	13.6	54.4	13.7	123710	122316	20.0	25.0	0.0	0.0	7.9	8.4	
Dean Miller	York	5	5/23/2014	Syngenta	68.8	16.1	69.2	15.5	110259	106914	8.5	0.0	2.5	0.0	4.9	4.8	
Jim Biddle	Blair	3	5/23/2014	Pioneer	65.7	13.0	67.6	13.0	115192	121194	9.0	0.0	0.0	0.0	--	--	
Average Mid Season Planted					64.6	13.9	63.3	13.8	119233	114319	10.9	8.8	2.5	1.3	6.1	6.2	
Koch	Schuylkill	4	5/27/2014	Mid-Atlantic	57.4	13.0	53.9	13.0	74400	74400	0.0	0.0	0.0	0.0	11.1	10.3	
Bob Buser	York	3	5/28/2014	Mid-Atlantic	44.6	9.9	46.1	10.2	56686	61100	15.0	13.5	0.0	15.0	6.8	6.2	
Carl Shaffer	Columbia	3	6/2/2014	Seedway	68.3	13.0	67.6	13.0	110652	97968	20.0	40.0	1.0	2.0	3.2	3.1	
Kulp	Montgomery	3	6/2/2014	Pioneer	40.2	10.8	40.9	10.8	114534	123362	0.0	0.0	0.0	0.0	--	--	
Frankenfield	Montgomery	3	6/3/2014	Asgrow	50.1	12.3	47.1	12.3	102304	104544	0.0	0.0	0.0	0.0	--	--	
Scattered Acres	Berks	3	6/1/204	Mid-Atlantic	43.6	13.0	44.1	13.0	147500	110133	10.0	10.0	0.0	0.0	11.5	11.3	
Stubrick	Armstrong	4	5/25/2014	Seedway	51.9	15.2	51.0	15.6	119180	139915	5.0	10.0	0.0	0.0	--	--	
Average Late Season Planted					50.9	12.5	50.1	12.6	103608	101632	7.1	10.5	0.1	2.4	8.1	7.7	
Overall Averages					61.7	13.3	58.7	13.4	116547	108032	7.9	8.7	0.9	1.6	9.4	8.9	
*Sig. @ P=0.10															27.1	26.8	

Conclusions: Seed treatments resulted in a significant yield increase at 5 locations and a significant increase in plant populations at five locations. Locations with significant yield responses were mostly in the early planted sites, planted in late April or early May.

Plant populations at responsive sites were generally not impacted by the seed treatment at the responsive sites, except at the PSU SEARC site. At this location, the large yield response was likely due to a fungicide response rather than an insecticide response since conditions were good for seedling blights. Bean Leaf Beetle damage was high (>10%) at several locations, but this did not translate into higher yields with treatment. Averaged over all of the early planted sites, the yield response to seed treatments was 7.2 bu/ac. At the mid planted sites, the yield response averaged 1.3 bu/ac. At the later planted sites, the yield response averaged 0.8 bu/ac. These yield responses are likely due to a combination of fungicide and insecticide responses. Plant populations responses showed a similar response, with the highest increase due to seed treatments in the earliest plantings.



Field Trial Report

2015 Response to Seed Treatment Trial

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth,
Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: 3N

Acres: 2

2014 Crop: Corn

Tillage: No-till

Planting Date: April 24, 2015

Variety: Various

Seed Treatment:

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 170 k

Herbicide: Gramazone plus Canopy f/b Credit Extra+ Pursuit

Harvest Date:

Plot size: 10 x 50

Replications: 6

Treatments

- 1 Asgrow untreated seed- 3735
- 2 Asgrow treated seed
- 3 Doeblers untreated seed
- 4 Doeblers treated seed
- 5 MidAtlantic untreated seed
- 6 MidAtlantic treated seed
- 7 Seedway untreated seed
- 8 Seedway treated seed
- 9 Syngenta untreated seed
- 10 Syngenta treated seed



Results

Overall	Treated	Untreated	Significance	LSD	CV
Population	132816	114800	Yes	3971	3.2
Growth	35.2	34.1	NS		
Pod	93.4	73	Yes	18	9
Yield	62.02	61.24	NS		

Results Continued

	Population							
	1wk		5wk		Mid-Season		Final	
	TRT	UTRT	TRT	UTRT	T	UTR	T	UTRT
Asgrow	138666 a	100333 c	137333 a	126000 b	134000 a	120000 cd	134000 a	119000 cd
Doebler	119666 b	115333 bc	133333 a	118000 c	132333 a	117666 d	132333 a	116333 d
Mid Atlantic	126333 ab	71666 d	138000 a	98666 d	134666 a	99666	134666 a	99666
Seedway	143000 a	116000 bc	114333	126000 b	132333 a	123000 bc	132333 a	121000 bc
Syngenta	132333 ab	126333 ab	138000 a	132000 ab	134333 a	126000 b	134333 a	123333 b
Average	132000	105933	132199.8	120133	133533	117266	133533	115866
CV	14.82		4.8		3.4		3.2	
LSD	17143.8		6700.6		4203.9		3971.4	



Field Trial Report

	Growth			
	Mid Height		Final Height	
	T	UTRT	T	UTRT
Asgrow	31.5 d	33 c	34.6 c	32.6 d
Doebler	35.6 b	30.7 e	38 a	32.6 d
Mid Atlantic	35.9 ab	35.7 b	38.7 a	36.2 b
Seedway	31.5 d	33 c	35 c	33 d
Syngenta	36.5 a	36 ab	34.7 c	38.5 a
Average	34.2	33.68	36.2	34.58
CV	1.8		2.1	
LSD	.66		.79	

	Yield							
	Pod Count		Bu/A		Moisture		TW	
	TRT	UTRT	TRT	UTRT	TRT	UTRT	TRT	UTRT
Asgrow	100 b	71 f	55.3 c	54.2	13.9 a	13.5	56 cd	56 abc
Doebler	129 a	93 c	68.9 a	70.5 a	13.7 a	13.7 a	57 a	57 ab
Mid Atlantic	80 e	87 d	62.2 b	59 bc	13.8 a	13.8 a	56 de	56 bcd
Seedway	86 e	59 g	61.5	61.6 b	13.5 a	13.6 a	55 e	55 de
Syngenta	72 f	55 g	62.2 b	60.9 b	13.5 a	13.5 a	56 cde	56 de
Average	93.4	73	62.02	61.24	13.68	13.62	56	56
CV	2.6		8.4		1.9		2.4	
LSD	.23		5.1		1.0		.3	

Comments:

There were significant responses to population in this year's trials. There were no significant differences in yield across all varieties and within comparisons of varieties due to a seed treatment this season.





Field Trial Report

2015 Response to Seed Treatment Trial

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Background: Seed applied insecticide/fungicides can improve yield and plant stands under some situations. This study is designed to provide additional data on the frequency and magnitude of these responses under Pennsylvania conditions.

Treatments

1. Untreated
2. Treated(Cruzer, Gaucho)
 - 1) Asgrow untreated seed- 3735
 - 2) Asgrow treated seed
 - 3) Doeblers untreated seed
 - 4) Doeblers treated seed
 - 5) MidAtlantic untreated seed
 - 6) MidAtlantic treated seed
 - 7) Seedway untreated seed
 - 8) Seedway treated seed
 - 9) Syngenta untreated seed
 - 10) Syngenta treated seed



Results

Overall	Treated	Untreated	Significance
Population	124209.0	103672	Yes
Growth	35	33	No
Yield	59	57	No



PennState Extension





Field Trial Report

Results Continued

Site Background Data					Planting				Treated		Untreated		Plant Populations		Economics	Bean Leaf Beetle Assessment		Growth Assessment					
Cooperator	County	Reps	Dropped	Date	Variety	Yield bu/acre	Moisture %	Yield bu/acre	Moisture %	Treat. Pop.	Untreated Pop.	Gain or Loss	Treated	Untreated	BLB. leaf damage %	Treated	Untreated	Mid-Season Heights (inches)	Treated	Untreated	Final Height (inches)	Treated	Untreated
SEAREC	Lancaster	6	170000	4/24/2015	AG, DB, MA, SW, NK	62.05	13.6	61.46	13.8	132816	114800	-10	NR	NR	NR	NR	NR	33.1	33.8	35.4	34.5		
Leshar	Franklin	3	140000	4/27/2015	Asgrow	NR	NR	NR	NR	116000	97000	NR	1.0	2.0	2.0	14.5	11.5	14.5	11.5	NR	NR		
Detweiler	Lebanon	3	160000	4/29/2015	Seedway	58.8	0.0	52.5	0.0	110000	96000	41	5.0	20.0	20.0	15.0	11.0	15.0	11.0	NR	NR		
Zook	Berks	4	160000	5/1/2015	Seedway	66.8	NR	63.4	NR	140000	114000	16	5.0	20.0	20.0	13.5	12.5	13.5	12.5	NR	NR		
Bruckhart	Lancaster	3	158000	5/5/2015	Mid-Atlantic	67.0	NR	64.3	NR	123000	121000	9	0.5	1.0	1.0	14.0	11.0	14.0	11.0	NR	NR		
Keisers	Montgomery	4	140000	5/7/2015	Doebiers	51.8	11.3	47.65	11.3	132726	133613	22	NR	NR	NR	NR	NR	NR	NR	NR	41.7	36.4	
Buser	York	4	192000	5/8/2015	AG 3735	83.3	16.9	85.6	16.6	148220	97110	-36	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Miles	McKean	4	180000	5/21/2015	Seedway	32.7	13.4	30.15	13.4	147499	97499	8	0.9	1.0	1.0	NR	NR	NR	NR	NR	31.3	29.6	
Miller	York	6	155000	5/8/2015	NK S-38-W4	50.8	9.7	51.3	9.1	101175	80449	-20	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Average Early Planted						59.2	10.8	57.1	10.7	127937.4	105719.0	3.9	2.5	8.8	18.0	16.0	16.0	18.0	16.0	33.5	33.5		
Kreider	Lebanon	3	160000	5/11/2015	Asgrow	56.4	11.87	51.96	11.75	133000	84000	25	0.0	1.0	1.0	15.0	14.5	15.0	14.5	NR	NR		
Anchor	Union	4	65000	5/13/2015	DF5242	65.0	NR	60.1	NR	50500	50875	30	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Anchor	Union	4	128000	5/13/2015	TA2659R25	66.6	NR	73.2	NR	100875	91750	-75	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Anchor	Union	4	128000	5/13/2015	Stine 24R303	66.6	NR	65.6	NR	101625	84125	-7	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Wolfskil	Berks	4	180000	5/13/2015	Doebiers	86.8	10.5	82.95	11.0	159000	149000	20	1.0	3.0	3.0	10.5	9.0	10.5	9.0	NR	NR	NR	
Hess	Berks	7		5/14/2015	SG3144	NR	13.6	NR	13.7	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Bicksler	Berks	4	180000	5/21/2015	Mid-Atlantic	60.7	11.3	56.4	11.8	130000	90000	24	5.0	10.0	10.0	8.0	6.5	8.0	6.5	NR	NR	NR	
Kulp	Montgomery	3	180000	5/21/2015	NK S-38-W4	51.7	12.2	50.6	12.2	175193	118373	-5	NR	NR	NR	NR	NR	NR	NR	NR	42.1	40.3	
Koch	Schuylkill	4	175000	5/28/2015	Seedway	41.05	11.7	45.14	11.65	187308	190966	-52	NR	NR	NR	NR	NR	NR	NR	NR	26.25	25.8	
Average Mid Season Planted						61.9	11.9	60.7	12.0	129687.6	107386.1	-5.0	2.0	4.7	11.2	10.0	10.0	11.2	10.0	34.2	33.1		
MHS	Hershey	4		6/6/2015	Mid-Atlantic	53.8	14.4	51.1	14.8	89533	79033	9	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Kurtz	Berks	4	170000	6/19/2015	SG3144	25.76	11.5	26.12	11.45	81500	80166	-18	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Oberholtzer	Union	3				70.0	NR	69.0	NR	85516.5	79599.5	-6	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
Overall Averages						49.9	13.0	48.7	13.1	85516.5	79599.5	-5.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
*Sig. @ P=0.10						59	12	57	12	124209	103672	-1	2	7	15	14	14	15	14	35	35	33	

Comments:

There were significant responses to population in this year's trials. There were no significant differences in yield across all varieties and within comparisons of varieties due to a seed treatment this season.



PennState Extension



Bean Leaf Beetles Assessment

Bean leaf beetle population levels have grown over the last few years to economic levels in the state and region, yet little has been documented on the spread and population levels within Pennsylvania. In addition, the distribution of bean pod mottle virus, which was first identified and confirmed using lab analysis in 4 fields by Del Voight in Lebanon County, is not well understood in Pennsylvania. By surveying fields in Pennsylvania for the spread and determining the link to the virus a more proactive approach to management can be developed so that growers will be able to determine the best management practice to manage the pest. The threshold for treatment of the bean leaf beetle is a function of the presence of the Bean Pod Mottle virus. This virus causes discolored soybeans and green stems at harvest. Iowa State recommendations suggest that if the virus is present, growers should consider treatment, if not they should scout and treat only the beetles reach established thresholds. (Bradshaw et al., 2003). Consequently understanding in the virus is present or not is important in cost effective soybean management

Objective

The objective of this study was to identify fields with bean leaf beetle feeding and then assess samples for the presence of the bean pod mottle virus through testing at a private laboratory.

Bean Leaf Beetle Protocol

Extension educators evaluated numerous fields throughout the region for the presence of Bean Leaf Beetles. In fields where significant feeding was detected, soybean leaf samples were collected and sent to the Ag Dia Laboratory in Elkhart, Indiana. Results were then tabulated by project personnel.

Results and Discussion

Bean leaf beetle populations crashed in the region in 2009, presumably because of the cold winter in 2008-2009. It was difficult to find Bean Leaf Beetle populations that were causing enough injury to potentially transmit the Bean Pod Mottle virus. A limited number of fields were sample and the results are shown in Table 1. A total of 16 samples were collected, but none of the samples tested positive for the Bean Pod Mottle Virus. Apparently the low levels of Bean Leaf Beetles this year may have reduced the transmission of this disease. Transmission of the disease is a function of beetle populations. If beetle populations rebound in the future, monitoring for the virus should be resumed.



Field Trial Report

Table 1. Number samples and results of testing for the Bean Pod Mottle Virus in 2009 in Pennsylvania.

Site	Samples	Positive	Negative
Franklin	4	0	4
Lebanon	4	0	4
York	4	0	4
Armstrong	1	0	1
Lancaster	1	0	1
Berks	2	0	2

Aerial imagery of selected soybean fields.

Aerial imagery can be an effective tool to diagnose field level production problems. The On Farm Network sponsored by the Iowa Soybean Association has used this technique to provide growers management information and to provide examples of common crop management problems. There is potential for this approach to be used in Pennsylvania.

Objective:

Gain experience with the acquisition and interpretation of aerial imagery.

Results:

The network was successful in utilizing scribble maps (<http://scribblemaps.com/>), a technology that allows for the identification of fields that then can be geo referenced and placed into shape files, and was able to get all the necessary information to the Iowa group. The shape files were put together and sent to the Iowa Soybean Board to gather the information over Pennsylvania Fields. The network is awaiting the results of the fly over and once available will utilize them for diagnostics. At this time we have identified qualified personnel at Penn State that are able to assist the group in achieving this goal for the 2010 planting season without reliance on an outside group. This connection, by itself, is a success allowing for timely results in Pennsylvania.

Field Trial Report

2010 Fungicide and Insecticide Evaluation: Berks County



Grower Information
Troy Alderfer Farms
652 Covered Bridge
Rd Oley, PA 19547

Site coordinator – Mena Hautau
Penn State CMEG



Field Information

Acres: 12	2009 Crop: Corn	2010 Crop: Soybeans
Field Length:	Tillage: NT	Planting Date: 5/13/10
Seed Treatment: Cruiser	Inoculants: Dry	Planting Depth: 1.5 in.
Planter/Drill and width: Kinze 2500 11 row, 15"		Herbicide: pre-plant – 1 qt/A credit Xtra, 2.25 oz/A Canopy, 1 pt/A 2,4-D LV-4 post- 1.25 qt/A Credit Xtra
Combine/width: JD9400/18'		Yield Monitor: Yes - Greenstar
Guidance system: Raven Cruiser		GPS capability: Yes, sprayer only

TREATMENTS EVALUATED

1. Untreated Control
2. Insecticide: Respect 4 ounce/acre @R3
3. Fungicide: Headline 6 ounce/acre + NIS .25% v/V @ R3
4. Insecticide/Fung. Comb.: Headline 6 oz/a +Respect 4 oz/a + NIS .25% v/V @ R3

RESULTS

Treatment	Yield
	Bu/ac
Control	71
Insecticide	72
Fungicide	75
Insect/Fung.	74
Mean	73
Significant	NS

Notes: Conditions were very dry in Late July and August. Disease and insect pressure was low. The most prevalent disease was Downy Mildew, but was present at low levels.

Field Trial Report

2010 Fungicide and Insecticide Evaluation: Bradford County



Participating Grower:
Ralph McNeal, Towanda

Site coordinator:
Mark Madden
Penn State CMEG



FIELD INFORMATION

Field Name: Airport	Acres:	2009 Crop: corn	2010 Crop: Soybeans
Soil type: Pope	Field Length: 900	Tillage:	Planting Date:
Soybean Variety: 93Y13	Seed Treatment: Cruiser Max	Inoculant:	Planting Depth:
Planter/Drill and width: 11 Row 15 inch Kinze	Herbicide:		
Sprayer/width:	Combine/width:	Yield Monitor:	GPS:
Harvest Date:	Guidance system:		

TREATMENTS EVALUATED

5. Untreated Control
6. Insecticide: Endigo 3.5 oz./acre @R3
7. Fungicide: Quadris 6.2 oz. /acre + NIS .25% v/V @ R3
8. Insecticide/Fung. Comb.: Endigo 3.5 oz./acre + Quadris 6.2 oz./acre + NIS .25% v/V @ R3

RESULTS

Treatment	Yield
	Bu/ac
Control	71
Insecticide	72
Fungicide	75
Insect/Fung.	74
Mean	73
Significant	NS

Notes: Good growing season, disease pressure moderate to low.

Field Trial Report

2010 Fungicide and Insecticide Evaluation: Fayette County



Participating Grower:
Bob Dorazio
Lake Lynn, PA

Site coordinator:
Greg Roth,
Department of Crop and Soil
Sciences, Penn State



FIELD INFORMATION

Field Name: Bobs Field	Acres: 9	2009 Crop: Corn	2008 Crop: Soybeans
Soil type: Clarkson/Guernsey	Field Length: 900	Tillage: No-till	Planting Date: 4/30/10
Soybean Variety: 93Y20	Seed Treatment: Cruiser Max	Inoculant: Cell-Tech	Planting Depth: 1.5 inch
Planter/ width: 6 Row 30 inch John Deere 7000	Herbicide: Touchdown		
Sprayer/width: 45	Combine/width: 20	Yield Monitor: Yes	GPS: No
Harvest Date: 9/25/10	Guidance system: No		

TREATMENTS EVALUATED

1. Untreated Control
2. Insecticide: Endigo 3.5 oz./acre @R3
3. Fungicide: Quadris 6.2 oz. /acre + NIS .25% v/V @ R3
4. Insecticide/Fung. Comb.: Endigo 3.5 oz./acre + Quadris 6.2 oz./acre + NIS .25% v/V @ R3

RESULTS

Treatment	Yield	Moisture	Height
	Bu/ac	%	In.
Control	56.2	12.7	44
Insecticide	55.5	12.3	43
Fungicide	52.9	12.3	44
Insect/Fung.	55.7	12.4	44
Mean	55.1	12.4	44
Significant	NS	-	-

Notes: Conditions were very dry in Late July and August. Disease and insect pressure was low. The most prevalent disease was Downy Mildew, but was present at low levels.



Field Trial Report

2010 Fungicide and Insecticide Evaluation: Franklin County



Participating Grower:
Leshier Poultry Farms
Chambersburg, PA

Site coordinator: John Bray
Penn State CMEG



FIELD INFORMATION

Field Name: Melvin #1	Acres: 102	2009 Crop: Corn	2008 Crop: Wheat
Soil type: Hagerstown	Field Length: 700 feet	Tillage: No-Till	Planting Date: April 15
Soybean Variety: 94Y01	Seed Treatment: Cruiser	Inoculants: N-Take Liquid	Planting Depth: 1.5"
Planter/Drill and width: Case IH 1200 40' split planter		Herbicide: Round-up / Prowl (burn down)	
Sprayer/width: Case IH 90'	Combine/width: 35'	Yield Monitor: Case IH Pro 600	GPS capability: Yes
Guidance system: Case IH/Trimble			

TREATMENTS EVALUATED

1. Untreated Control
2. Insecticide: Endigo 3.5 oz./acre @R3
3. Fungicide: Quadris 6.2 oz. /acre + NIS .25% v/V @ R3
4. Insecticide/Fung. Comb.: Endigo 3.5 oz./acre + Quadris 6.2 oz./acre + NIS .25% v/V @ R3

RESULTS

Treatment	Yield
	Bu/ac
Control	44
Insecticide	45
Fungicide	45
Insect/Fung. Comb.	45
Mean	45
Significant	NS

Notes: Conditions were very dry in Late July and August. Disease and insect pressure was low.



Field Trial Report

2010 Fungicide and Insecticide Evaluation: Lancaster



Participating Grower:
Bill Beam
Elverson, PA

Site coordinator: Jeff Graybill
Penn State CMEG



FIELD INFORMATION

Field Name: Swamp Rd Farm	Acres: 21	2009 Crop: various	2008 Crop: various
Soil type: Duffield	Field Length:	Tillage: No-till	Planting Date: 5/20/10
Soybean Variety: 93M11	Seed Treatment: Cruiser Max	Inoculants: Optimize	Planting Depth: 1 – 1.25"
Planter/Drill and width: JD 1560 15 foot		Herbicide: Credit Extra twice at 1 Qt/acre	
Sprayer/width: 80"	Combine/width: JD 625/ 25'	Yield Monitor: Green Star II	GPS capability: Yes
Guidance system: 9570sts			

TREATMENTS EVALUATED

1. Untreated Control
2. Insecticide: Respect 4 oz./acre @ R3
3. Fungicide: Headline 6 oz./acre + NIS .25% v/V @ R3
4. Insecticide/Fung. Comb.: Headline 6 oz./a + Respect 4 oz./a + NIS .25% v/V @ R3

RESULTS

Treatment	Yield
	Bu/ac
Control	-
Insecticide	80.2
Fungicide	84.4
Insect/Fung.	86.0
Mean	83.5
Significant	NS

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low.



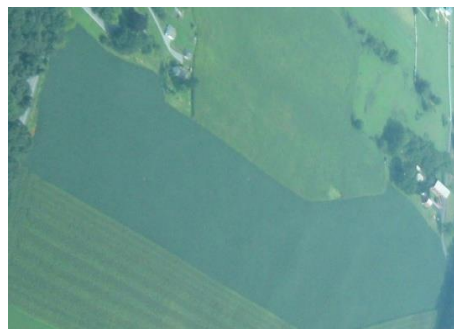
Field Trial Report

2010 Fungicide and Insecticide On Farm Evaluation: Lebanon County



Participating Grower:
Krall Farms - Glenn Krall
Lebanon, PA

Site coordinator – Del Voight
Penn State CMEG



FIELD INFORMATION

Field Name: Home Farm across from Tice	Acres: 30	2009 Crop: Corn	2008 Crop: Soybeans
Soil type: Duffield	Field Length: 1200	Tillage: minimum	Planting Date: 5/7/10
Soybean Variety: 93Y13	Seed Treatment: Cruiser Max	Inoculants: Optimize	Planting Depth: 1 inch
Planter/Drill and width: 11 Row 15 inch Kinze	Herbicide: Extreme		
Sprayer/width: 80	Combine/width: 20	Yield Monitor: Yes	GPS capability: Yes
Guidance system: No			

TREATMENTS EVALUATED

1. Untreated Control
2. Insecticide: Endigo 3.5 oz./acre @R3
3. Fungicide: Quadris 6.2 oz. /acre + NIS .25% v/V @ R3
4. Insecticide/Fung. Comb.: Endigo 3.5 oz./acre + Quadris 6.2 oz./acre + NIS .25% v/V @ R3

RESULTS

Treatment	Yield
	Bu/ac
Control	67
Insecticide	69
Fungicide	67
Insect/Fung.	68
Mean	68
Significant	NS

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low.



Field Trial Report

2010 Fungicide and Insecticide Evaluation: York County



Participating Grower:
Wolf Farms, Inc.
Stewartstown, PA

Site coordinator: John Row
Penn State CMEG



FIELD INFORMATION

Field Name: Brubaker	Acres: 9	2009 Crop: Corn	2008 Crop: Corn
Soil type: Chester	Field Length: 700	Tillage: No-till	Planting Date: 5/31/10
Soybean Variety: Asgrow 4303	Seed Treatment: none	Inoculant: HI Stick NT	Planting Depth: 1.5 inch
Planter/ width: JD 750, 15" w/SI belt meter		Herbicide: pre-plant – 3 oz. Authority First, 2 pt. Gramoxone, 2/3 pt 2,4-D post- 2 pt Traxion, 1/12 oz Unity, 1.25 pt Alliance	
Sprayer/width: 75 feet	Combine/width: Case IH 2577 w/1020 Case 25'	Yield Monitor: Ag Leader	GPS: Mapping only
Harvest Date: 10/23/10	Guidance system: No		

TREATMENTS EVALUATED

9. Untreated Control
10. Insecticide: Respect 4 oz./acre @ R3
11. Fungicide: Headline 6 oz./acre + NIS .25% v/V @ R3
12. Insecticide/Fung. Comb.: Headline 6 oz./a + Respect 4 oz./a + NIS .25% v/V @ R3

RESULTS

Treatment	Yield
	Bu/ac
Control	56
Insecticide	62
Fungicide	61
Insect/Fung.	64
Mean	61
Significant	*



Field Trial Report

2010 Fungicide and Insecticide Evaluation: Combined Results



Conducted by: Del Voight, Greg Roth, John Bray, Mena Hautau, Mark Madden, Jeff Graybill, John Rowehl and Alyssa Collins

County Locations: Lancaster, Lebanon, York, Franklin, Fayette, Berks

Collaborators: Glenn Krall, Bill Beam, Bob Dorazio, Dan Wolf, Leslie Bowman, Ralph McNeal

Research Objective: To assess the impact of fungicide and insecticide applications on soybean yield under Pennsylvania

Background: Yield responses to fungicides and soybeans have been variable and not well understood.

Description: Replicated strip trials were utilized to evaluate the products under production conditions. Fields were planted managed by the cooperators. Four treatments were evaluated in this study containing either BASF or Syngenta product.

Stratego 3.5 oz./acre R3 timing

Quadris 6.2 oz./acre + NIS .25% v/v R 3 timing

Stratego 3.5 oz./acre + Quadris 6.2 oz./acre + NIS .25% v/v

Respect 4 oz./acre BASF

Twiline 6 oz./acre

Twiline 6oz./acre + Respect 4 oz./acre

RESULTS

Responses to fungicide and insecticide applications in 2010 were small, probably due to the lack of aphid pressure at all sites and has also due to the lack of disease development at most locations. Our typical average response to a fungicide in other as been 3-4 bu/acre. Insecticide responses have varied depending on insect pressure from 0-10 bu/acre.

Treatment	Bradford	Fayette	Franklin	Lancaster	Lebanon	York	Mean
				Bu/ac			
Control	71	56	44	-	67	56	58.8
Insecticide	72	56	45	80	69	62	60.8
Fungicide	75	53	45	84	67	61	60.2
Insect/Fung.	74	56	45	86	68	64*	61.4
Mean	73	55	45	84	68	61	60.4
Significant	NS	NS	NS	NS	NS	*	NS

*Significant Difference (P=0.05) from check



PennState Extension



Field Trial Report

2011 On-Farm Fungicide Response Study



Investigators –Del Voight,
John Bray, Alyssa Collins
and Greg Roth
Penn State Extension



FIELD INFORMATION

Soil type, seed variety and management practices: Variable

Participating growers: 6 Counties represented: Berks, Dauphin, Franklin, Lancaster, York

Design: Paired comparison trial 20 reps

TREATMENTS EVALUATED

1 Untreated

2. Stratego® YLD @ R3 at 4.65 oz./acre applied at R3

Level of disease was evaluated at three selected farms. Each plot was rated for % trifoliolate leaf area affected in the lower, middle and upper canopies. Predominant diseases observed included Septoria brown spot in the lower canopy and Cercospora leaf blight in the upper canopy.

COMBINED RESULTS

Treatment	Lower Canopy Disease	Mid Canopy Disease	Upper Canopy Disease	Combined Disease	Yield
	% leaf area affected				Bu/ac
Control:	41.4	20.7	24.2	28.8	62.5
Fungicide:	12.1	7.1	20.7	13.3	65.2
Significance	sig	ns	ns	sig	sig

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low

Yield in the fungicide treated plots was significantly higher than that in the untreated plots. This is likely due to some control of Septoria leaf spot in the lower plant canopy.



Field Trial Report

INDIVIDUAL SITE RESPONSES

Location	Treatment	Combined Disease	Yield
Berks	Control:	--	66.8
	Fungicide:	--	70.5
	Significance	--	yes
Dauphin	Control:	--	46.1
	Fungicide:	--	51.2
			Yes
Franklin	Control:	17.2	68.6
	Fungicide:	5.5	69.0
	Significance	yes	no
Lancaster 1	Control:	--	81.6
	Fungicide:	--	82.7
	Significance	--	no
Lancaster 2	Control:	--	62.0
	Fungicide:	--	61.3
	Significance	--	no
York 1	Control:	37.5	57.1
	Fungicide:	19.1	60.8
	Significance	yes	no
York 2	Control:	--	55.7
	Fungicide:	--	58.7
	Significance	--	no

Yield responses varied across the trials depending on disease severity, growing conditions and varieties.



Field Trial Report

2011 SEAREC Fungicide Response Study



Investigators –Del Voight,
John Bray, Alyssa Collins
and Greg Roth
Penn State Extension



FIELD INFORMATION

Field Name: YS	Acres: 5	2010 Crop: corn	2011 Crop: Soybeans
Soil type: Duffield	Field Length: 366 feet	Tillage: No till	Planting Date: 5/10/11
Soybean Variety: 93M11	Seed Treatment: Trilex plus Gaucho	Inoculants: Optimize	Planting Depth: 1inch
Planter/Drill and width: 11 Row 15 inch JD1250		Herbicide: Glyphosate+ Canopy f/b Glyphosate f/b Arrow	
Sprayer/width: 20	Combine/width: 15	Yield Monitor: yes	GPS capability: No
Guidance system: No	Design: Randomized Complete Block	4 reps	

TREATMENTS EVALUATED

- 1 Untreated (Trilex + Gaucho base)
2. Stratego® YLD @ R3 at 4.65 oz./acre

In this study on the Penn State SEREC research station, disease pressure was very low due to the drought. Under these conditions, the fungicide treatment had no significant impact on yield.

RESULTS

Treatment	Yield	Moisture	Test Wt.
	Bu/ac	%	Lb/bu
Control:	62.0	15.3	51.2
Fungicide:	61.3	15.4	51.4
Significant	NS	NS	NS

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low.



Field Trial Report

2013 On-Farm Fungicide/Insecticide Response Study



Investigators –Del Voight,
John Bray, Alyssa Collins
and Greg Roth
Penn State Extension



FIELD INFORMATION

Soil type, seed variety and management practices: Variable

Participating growers: 10 Counties represented: Berks, Armstrong, Franklin, Lancaster, York

Design: Paired comparison trial 44 reps

TREATMENTS EVALUATED

1 Untreated

2. Priaxor 4 ounces/acre plus Endigo 4 ounces/acre applied at R3

COMBINED RESULTS

<u>Cooperator</u>	<u>County</u>	<u>Priaxor+ Endigo</u>	<u>Untreated</u>	<u>Reps</u>
Jeff Fry	Lancaster	64	-	3
Leshar Poultry	Franklin	72.8	69	4 +
Jim Hershey	Lancaster	65.1	63.1	4
Wolf Farms	York	64.4	58.4	6 +
Troy Alderfer	Berks	78.3	76	3
Norman Kurtz	Berks	87	79.6	3 +
Harold Miller	York	66.2	58	3 +
Marty Greenleaf	Lancaster	77.4	70.3	10 +
Andrew Kimmel	Armstrong	61.7	60.8	4
Richard Bruckhart	Lancaster	73.1	70.3	4 +
Totals		71	67.3 +	44

Notes: Conditions were wet in Late July and August. Disease levels were high and insect levels low.

Yield in the fungicide/insecticide treated plots were significantly higher than that in the untreated plots. This is likely due to some control of Septoria leaf spot in the lower plant canopy.



PennState Extension



Field Trial Report

2014 On-Farm White Mold Response to Fungicide/Insecticide Study



Conducted by: Del Voight, Alyssa Collins and John Bray

Field Information

Cultural Practices: Variable		
Participating growers: 3	Counties represented: Lebanon, Franklin	
Design: Paired comparison trial		18 reps

Treatments Evaluated

- 1 Untreated
2. Aproach 9 oz/acre + Asana 5 oz/acre R3 f/b Aproach 9 oz/acre 2 weeks after first app

Site specifics

Krall Site:

Plot 1 & 2

Pioneer 93Y84 planted 6/7/2014 No till 15" corn planter, Harvest Date 10/25 applied
Aproach 6 oz Asana xl 5 oz on 8/7/14

Plot 3

Pioneer 93M70 planted 6/25/2014 No till 15" corn planter, Harvest date 10/25 applied
Aproach 6 oz Asana xl 5 oz on 8/7/14

Horst site date of Applications: 18 July 2014 and 7 August 2014 7.5 inch rows planted
5/10/2014 93Y84

Martin Site Date of Applications:

Plot 1 & 2

Pioneer 93Y84 planted 6/7/2014 No till 15" corn planter, Harvest Date 10/25 applied
Aproach 6 oz Asana xl 5 oz on 8/7/14

Plot 3

Pioneer 93M70 planted 6/25/2014 No till 15" corn planter, Harvest date 10/25 applied
Aproach 6 oz Asana xl 5 oz on 8/7/14

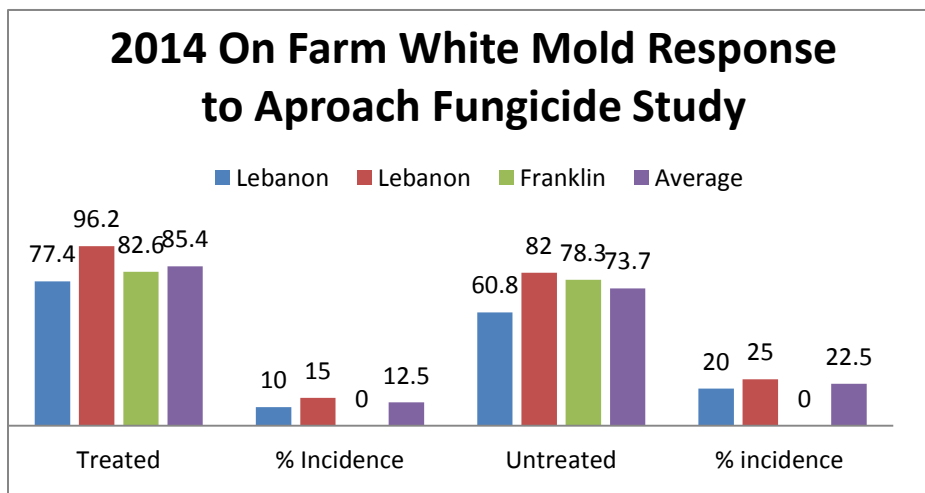


Field Trial Report

Combined Results:									
Cooperator	County	Treatment #	Reps	Treated	% Incidence	Untreated	% Incidence	Bu/acre Difference	Significance
Mervin Horst	Lebanon	Two applications	3	77.4	10	60.8	20	16.6	P=.10 LSD= 6.5
Glen Krall	Lebanon	Single Pass at R3	3	96.2	15	82	25	14.2	P=.10 LSD= .8
Kent Martin	Franklin	Single Pass	12	82.6	-	78.3	-	4.3	No
Average			18	85.4	12.5	73.7	22.5	11.7	P=.10 LSD= 10.3

Observations:

Above average moisture this season offered ideal infection for the infection of white mold pathogens. It appears that there is a fungicidal effect by the application of a single or double application of Aproach fungicide at the 9 oz/acre rate. Over 18 replications there was a significant improvement in yield (11.75 bu/acre).



Field Trial Report

2014 On-Farm Fungicide/Insecticide Response Study

Conducted by: Del Voight, John Bray and the Penn State Crop Management Team

Field Information:

Cultural Practices: Variable		
Participating Growers: 5	Counties represented: Franklin, Armstrong, Lancaster	
Design: Paired comparison trial		Reps 18

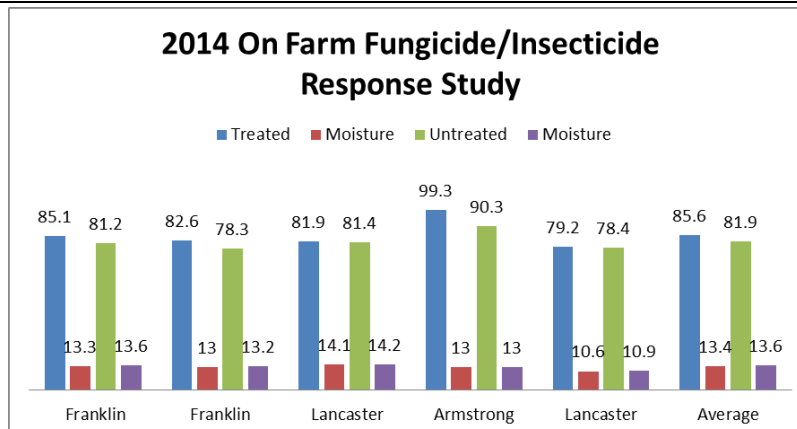
Treatments Evaluated:

- 1 Untreated
6. Approach Prima 6.8oz + 9oz. Asana - Applied at R3

Combined Results:				Treated		Untreated			
	Cooperator	County	Reps	Yield	Moisture	Yield	Moisture	Difference	Significance
1	Kent Martin	Franklin	4	85.1	13.3	81.2	13.6	3.9	no
2	Kent Martin	Franklin	4	82.	13	78.4	13.2	4.3	no
3	Marty Greenleaf	Lancaster	6	81.9	14.1	81.4	14.2	.5	no
4	Andrew Kimmel	Armstrong	4	99.4	13	90.3	13	9.	P=.10 LSD=8.9
5	Searec	Lancaster	6	79.3	10.	78.5		.8	no
	Average		18	85.	13.5	2.0	13.	3.	no

Observations:

There were significant responses to the combined fungicide and insecticide treatments at one location. Overall locations there was a 3.77 bu/acre response from the treatments which was just shy of being significant overall based on P=.10 confidence. There were no observations of stay green affect or visual differences.



Field Trial Report

2014 On-Farm Affiance Fungicide Response Study

Conducted by: Del Voight, Dr. Alyssa Collins, John Bray and the Crop Management Extension Team

Field Information:

Cultural Practices: Variable		
Participating growers: 4	Counties represented: Columbia, Lancaster	
Design: Paired comparison trial		Reps 14

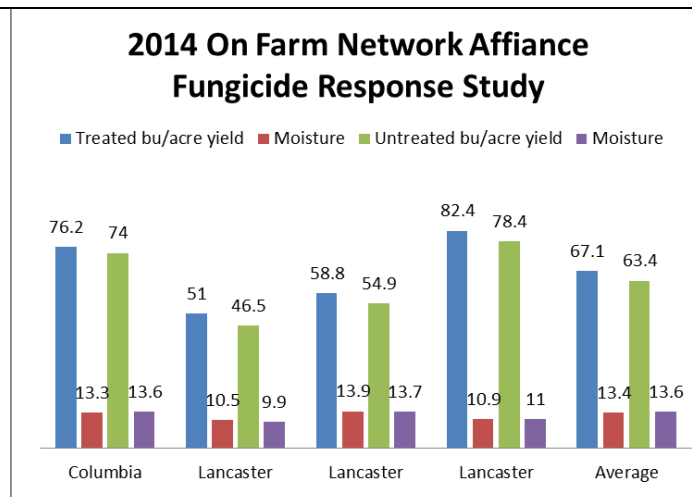
Treatments Evaluated:

1. Untreated
2. Affiance 10 oz./acre Applied at R3

Combined Results:				Treated		Untreated			
	Cooperator	County	Reps	Yield	Moisture	Yield	Moisture	Difference	Significance
1	Carl Shaffer	Columbia	4	76.2	13.3	74	13.6	2.2	no
2	Jeff Frey	Lancaster	2	51	10.5	46.5	9.9	4.5	no
3	Jeff Frey	Lancaster	2	58.8	13.9	54.9	13.7	3.8	no
4	Searec	Lancaster	6	82.4	10.9	78.4	11.0	4	no
	Average		14	67.1	13.4	63.4	13.6	3.6	no

Observations:

There were no sites that yielded a significant response at the P=.10 confidence parameter for statistics. However, there was a positive response at each location tested and overall a 3.77 bu/acre yield increase due to treatment observed.



Field Trial Report

2015 Fungicide Insecticide Trial

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth,
Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: YS

2014 Crop: Corn

Planting Date: June 12, 2015

Seed Treatment:

Planting Depth: 1 inch

Herbicide: Gramazone plus Canopy f/b Credit Extra+ Pursuit

Harvest Date:

Replications: 6

Treatments

- 1 Control/Untreated
- 2 Asana
- 3 Aproach Prima
- 4 Asana and Aproach Prima

Results

	Insect Damage in %	Disease Damage in %
Control	42.8 a	30 a
Asana	23.9 b	20.7 b
Aproach Prima	14.5 c	14.8 c
Asana and Aproach Prima	6.1 d	9.7 d
Average	21.8	18.8
CV	1.9	1.3
LSD	.03	1.4



Field Trial Report

	Yield			
	Pod Count	Bushels/Acre	Moisture in %	Test Weight
Control	94.7	95.9 a	12.2 a	54.1 a
Asana	102.9 a	96.3	12.2 a	54
Aproach Prima	86.4 b	95.1 a	12.4	54 a
Asana and Aproach Prima	82.1 c	93.5 a	12.2 a	54.2
Average	90.4	94.9	12.2	54.1 a
CV	1.7	8.5	4.3	1.2
LSD	1.6	8.4	.5	.7

Comments:





Field Trial Report

2015 Response to Fungicide/Insecticide

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Background: The yield and economic response of soybeans to insecticides at current prices is not well understood. Our goal is to be able to better estimate economic returns to fungicide and insecticide applications in relation to disease and insect incidence and damage.

Treatments

1. Untreated
2. Stratego YLD @ 4oz product/acre plus Insecticide (TBA) @ x ounces/acre applied at the first sign of either disease or insect thresholds.

Results

Overall	Treated	Untreated	Significance
Yield	70.5	68.8	NS



Results Continued

Site Background Data										Harvest Data			
Cooperator	County	Reps	Dropped	Planting Date	Variety	Yield bu/acre		Moisture %					
Greenleaf	Lancaster	10	145000	5/5/2015	NK S34N3	Control	85.1	Control	12.9	Stratego YLD	13.1		
Grumbine	Lebanon	4	NR	NR	NR	Control	70.9	Control	12.4	Stratego YLD	12.5		
Root	Berks	4	NR	NR	NR	Control	65.2	Control	12.2	Stratego YLD	12.0		
Harell	Lebanon	4	140000	4/28/2015	Pioneer 93M11	Control	52.5	Control	NR	Stratego YLD	NR		
Krall	Lebanon	4	NR	NR	NR	Control	71.4	Control	12.35	Stratego YLD	12.50		
Alger	Lebanon	4	160,000	4/30/2015	Asgrow 3431	Control	71.4	Control	12.6	Stratego YLD	12.6		
Alsbaugh	Lebanon	4	163,000	5/18/2015	NR	Control	63.7	Control	12.6	Stratego YLD	12.3		
Overall Averages		34				Control	68.6	Control	12.5	Stratego YLD	12.5		
*Sig. @ P=0.10													

Comments:



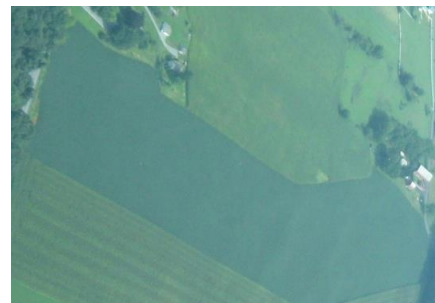
PennState Extension



Field Trial Report

2011 Soybean Response to Starter Fertilizer: Centre County

Site coordinators – Greg Roth
Penn State Extension



FIELD INFORMATION

Field Name: 32F	Acres: 7	2010 Crop: corn	2011 Crop: Soybeans
Soil type: Morrison	Field Length: 500	Tillage: No Till	Planting Date: 5-26-11
Soybean Variety: NK S28-B4	Seed Treatment: Cruiser Max	Inoculants: Optimize	Planting Depth: 1 inch
Planter/Drill and width: 30 in. JD7000 2 row		Herbicide: RoundUp Weathermax	
Sprayer/width: 60	Combine/width: Wintersteiger Nursery Master Elite /4 ft	Yield Monitor: Yes	GPS capability: No
Guidance system: No			

This study was established to evaluate the potential for use of a starter fertilizer on soybeans. Starter fertilizers are being used in some areas, however responses to N-P-K starter fertilizers have been inconsistent in other research. A recent Missouri study (Nelson et al. 2010) showed responses of 5 bu/ac to preplant K applications on soils testing low or medium range for K. This effect was attributed in part to improved disease control with from the chloride in the KCl fertilizer. Our hypothesis is that a starter response may be likely on some soils due to a combination of K and some of the improved disease impacts noted by these authors. Another study has shown a 5% yield benefit from the use of N (15 lb N /acre) containing starters under no-till conditions in South Dakota (Osborne and Riedell, 2006) This yield increase was associated with an increase in early season biomass, perhaps increasing vigor during the period prior to nodule development in the soybean plants. Our hypothesis is that an N/K fertilizer starter program could result in yield increases under some Pennsylvania conditions. Based on feedback from producers, who indicate slow early season growth and occasional K deficiency are common problems in soybeans, then this program could have merit under some conditions. We also suspected that some fields might be responsive to an S application, since sulfur deposition rates have been declining in Pennsylvania. Based on these issues we selected a starter fertilizer that was a blend of muriate of potash 0-0-60 and ammonium sulfate (21-0-0-24) applied at 150 pounds/acre, which supplied a total of 15-0-45-18in the row.

Field Trial Report

TREATMENTS EVALUATED

- 1 Control
2. Starter 150lbs 10-0-30

RESULTS

This study was planted in later May following a wet spring. The field experienced some groundhog damage and despite our effort to control them, we eventually had to discard two of the replications. Subtle differences in color were apparent early in the season with the starter treated strips appearing a slightly darker green. Plant stands were evaluated on 6/27 (Table 1). No differences in plant height or nutrient content were apparent.

Table 1. Plant size and nutrient content on June 27.

Treatment	Population	Plant Height	N	P	K	S
	p/a	in	%	%	%	%
Control:	94K	8	4.33	0.36	2.90	0.25
Starter:	97K	9	4.31	0.34	2.83	0.25
Significant	NS	NS	NS	NS	NS	NS

Grain yields were measured on October 17. Grain yields averaged 39.2 bushels per acre in the control plots and 41.6 in the starter treatment. These averages are from only two replications and while significant we are not confident the effect is real. There was no impact on the moisture or test weight of the soybeans harvested.

Table 2.. Yield, grain moisture, and test weight response to the starter fertilizer.

Treatment	Yield	Moisture	Test Wt.
	Bu/ac	%	Lb/bu
Control:	39.3	14.7	53.8
Starter:	41.6	14.7	54.0
Significant	0.1	NS	NS
CV	0.6	1.5	1.3

Field Trial Report

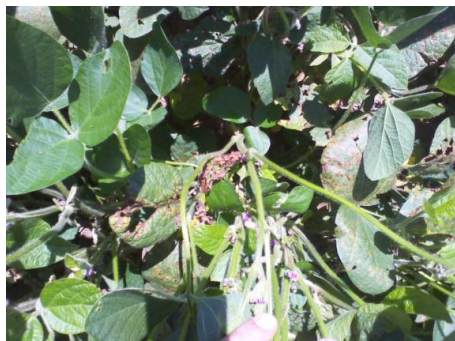
Following the trial, soil samples were collected to assess nutrient levels and stratification in this soil. Soil pH and K levels were at or above optimum, but the P level in this soil was below optimum at each level, ranging from 28 ppm in the surface to 10 ppm in the 6-9 inch range. S levels were well close to average for the Penn State Ag Analytical Laboratory. High K and average S levels in this soil near the surface could explain the lack of a large response to starter.

Table 3. Soil nutrient levels as affected by depth

Treatment	pH	P	K	S
		ppm	ppm	ppm
0-3 inches	6.8	28	158	11.1
3-6 inches	6.5	16	137	9.8
6-9 inches	6.4	10	105	12.8
	6.6	18	133	11.0

Field Trial Report

2011 Preliminary Soybean Product Assessment SEAREC Study



Site coordinators – Del Voight,
John Bray, Alyssa Collins and
Greg Roth
Penn State Extension



FIELD INFORMATION

Field Name: X	Acres: 15	2010 Crop: Wheat/Soybeans	2011 Crop: Soybeans
Soil type: Duffield	Field Length: 800	Tillage: No till	Planting Date: 5/10/11
Soybean Variety: 93M11	Seed Treatment: Trilex plus Gaucho	Inoculants: Optimize	Planting Depth: 1 inch
Planter/Drill and width: 10 foot 7 inch JD1250		Herbicide: Canopy+Round Up f/b Round Up f/b Arrow	
Sprayer/width: 20	Combine/width: 15	Yield Monitor: No	GPS capability: No
Guidance system: No	Soil Test K (ppm):	Design: Replicated Complete Block	3 reps

TREATMENTS EVALUATED

- 1 Untreated (Trilex plus Gaucho)
- 2 Cobra at 6 oz/acre 1qt/a COC +2.5lb/a AMS V 6 V6 R1
- 3 Post at V2 Moly 5 oz/acre
- 4 M power 1 pint per acre at planting

RESULTS

Treatment	Yield	Moisture	Test Wt.
	Bu/ac	%	Lb/bu
1 Untreated	50.4	15.5	47.7
2 Cobra at 6 oz/acre 1qt/a	49.4	15.5	49.2
3 Post Moly 5 oz/acre	49.5	15.5	48.4
4 M power 1 pint per acre	48.5	15.4	48.0
Significant/ LSD(0.10)	NS	NS	0.9

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low.



Field Trial Report

2011 SEAREC Preliminary Potassium Source Study



Investigators –Del Voight,
John Bray and Greg Roth
Penn State Extension



FIELD INFORMATION

Field Name: YS	Acres: 5	2010 Crop: corn	2011 Crop: Soybeans
Soil type: Duffield	Field Length: 232 feet	Tillage: No till	Planting Date: 5/10/11
Soybean Variety: Pioneer 93M11	Seed Treatment: Trilex plus Gaucho	Inoculants: Optimize	Planting Depth: 1 inch
Planter/Drill and width: 10 foot 7 inch JD1250 drill		Herbicide: Glyphosate+ Canopy f/b Glyphosate	
Sprayer/width: 20	Combine/width: 15	Yield Monitor: No	GPS capability: No
Guidance system: No	Soil Test K (ppm): 169	Design: Randomized Complete Block	3 reps

TREATMENTS EVALUATED

1. Untreated Control
2. 140lb/acre K20 as applied at planting
3. 140lb/acre K20 at plant as applied f/b Foliar K @ R2 (Coron 10-0-10-0.5B @ 1gal/acre)
4. Foliar K @ R2 (Coron 10-0-10-0.5B @ 1gal/acre)
5. In season 140lb/acre K20 at flowering

RESULTS

This study was established to evaluate the impact of various potassium sources. None of the treatments had an impact on yield, probably because of the optimum soil K level in the field.

Treatment	Yield	Grain Moisture	Test Wt.
	Bu/ac	%	Lb/bu
Control	60.1	15.5	51.1
140 K20 @plant	59.6	15.0	50.7
140 K20 fb foliar K	58.3	14.9	50.3
Foliar K	60.2	15.0	50.5
Foliar K at Flowering	57.5	15.2	52.1
Significant	NS	NS	NS

Notes: Conditions were dry in Late July and August. Disease and insect pressure was low.



Field Trial Report

2013 Sulfur Response Study

Delbert G. Voight, John Bray, Alyssa Collins Doug Beegle and Greg Roth, Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name:YS

Acres: 15

2012 Crop: Corn

Tillage: No-till

Planting Date: 4/26/2013

Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucho

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180 k

Herbicide: Gramazone plus Canopy f/b Credit Extra+ Pursuit 6/22/2013

Harvest Date:

Plot size: 20 x 250 Feet

Replications: 4

Treatments

1. Untreated (Trilex base) plus Cell Tech 2.1 oz/50lb
2. Ammonium Sulfate 24-0-0-24100lb/acre
3. Potassium Sulfate 0-0-60-24 200lb/acre
4. Urea 46-0-0 100/b/acre

Results

Treatment	Yield	Moisture	Pop up Populati on	Final Populatio n	Nodule s per plant	Nitroge n Tissue Test	Final Hiegh t	Pod Count	Total Pods
	Bu/ac	%	ppa	ppa	Per Plant	%	inche s	Per Plant	Per acre
Check	69.0	14.1	98814	108926	34	5.8	29	62	6129565
AMS100	68.6	13.9	102901	113013	35	6.2	28	73	7526662
KSulfate200	63.2	13.7	91475	101587	33	5.9	28	74	6882735
Urea100	67.7	13.7	93218	103330	34	5.9	29	75	7131030
Significance	ns	ns	ns	ns	ns	ns	ns	ns	ns
CV	7.0	2.5	9.5	11.6	10.7	3.9	2.3	3.7	27.3
LSD	6.0	0.4	11974	13390	4.8	.3	1.0	24	2432576
Mean	68.1	13.82	96602	106714	34	5.9	28.5	71	6052570

Comments: We were unable to detect any differences in any of the parameters of the study.



Field Trial Report

2013 Molybdenum and Foliar Fertilizer Study

Delbert G. Voight, John Bray, Alyssa Collins Doug Beegle and Greg Roth, Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name:YS

Acres: 15

2012 Crop: Corn

Tillage: No-till

Planting Date: 4/26/2013

Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucho

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180 k

Herbicide: Gramoxone plus Canopy f/b Credit Extra+ Pursuit

6/22/2013 Harvest Date:

Plot size: 20 x 250

Feet Replications: 4

Treatments

- 1 Untreated (Trilex base) plus Cell Tech 2.1 oz/50lb
- 2 Manni-Plex B Moly 1 pint/acre at V2
- 3 M power 5 ounce/acre AT v2 f/b Micropower at R2
- 4 M Power 5 ounce/acre at V2

Results

Treatment	Yield	Moisture	Pop up Population	Final Population	Nodules per plant	Spad Meter Reading	Nitrogen Tissue Test Pre	Nitrogen Tissue Test Post	Moly Post	CU	Final Height	Pod Count	Total Pods
	Bu/a	%	ppa	ppa	Per Plant		%	%	%	%	inches	Per Plant	Per acre
Check	62.3	14.1	121967	148500	26	40.4	5.8	5.8	0.15	9.8	27	28	4255900
Manni-Plex B Moly	59.7	13.9	124581	170500 +	25	42.4 +	6.1	5.7	0.15	9.5 +	28	29	5029750
M Power f/b Micro Power	61.9	13.7	118483	159500	29	41.9 +	5.9	5.6	0.15	8.8 +	28	30	4761350
M Power Alone	61.8	13.7	120225	130000	29	40.7 +	5.9	5.9	0.15	9.0 +	25	25	3250000
Significance	ns	ns	ns	ns	ns	+ P=.1	ns	ns	ns	+ P=.1	ns	ns	ns
CV	6.15	2.5	9.4	10.44	12.7	2.1	1.4	3.4	0	5.7	6.2	0	16.9
LSD	5.2	0.4	14794	20578	4.6	1.2	.1	.25	0	.6	2.2	0	950039
Mean	61.96	13.82	121314	152125	28	41.3	5.4	5.8	.15	9.2	27	28	4324250

Comments: We were unable to detect any differences in any of the parameters of the study for yield. However there were significant differences in Spad Meter Readings for all three treatments compared to the check. The pre and post tissue tests did not however show significant levels of contained N in the leaves. Also there were significant differences in the level of CU(Copper) in the plant tissue tests.



Field Trial Report

2014 On-Farm Fertileader Response Study

Conducted by- Del Voight, John Bray and the Penn State Crop Management Team

Field Information:

Cultural Practices: Variable		
	Counties represented: Berks, Columbia, Lancaster, York, Butler	
Design: Paired comparison trial		Reps 24

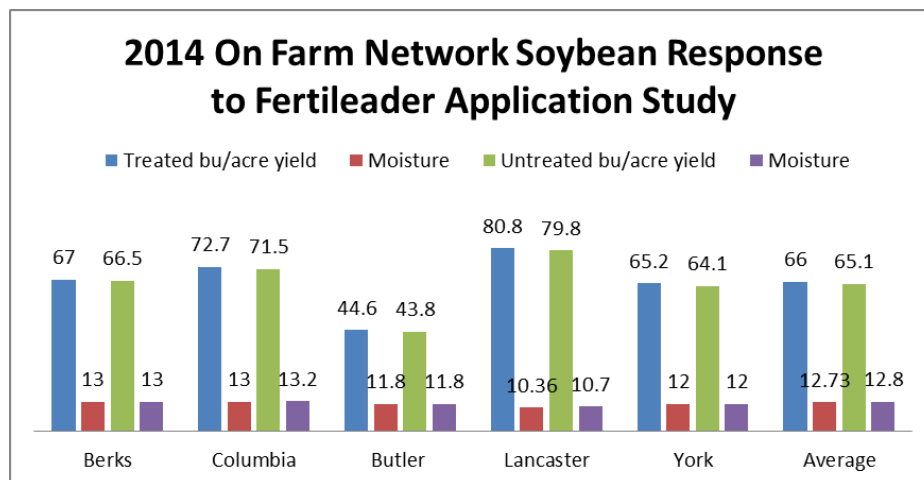
Treatments Evaluated:

- 1 Untreated
- 6. Fertileader Alpha 2.5 pints per acre applied at R3

Combined Results:				Treated		Untreated			
	Cooperator	County	Reps	Yield	Moisture	Yield	Moisture	Difference	Significance
1	Troy Alderfer	Berks	6	67	13	66.5	13	.5	no
2	Carl Shaffer	Columbia	4	72.7	13	71.5	13.2	1.2	no
3	Gary Reichert	Lancaster	4	44.6	11.8	43.8	11.8	.8	no
4	SEAREC	Lancaster	6	80.8	10.3	79.8	10.7	1.1	no
5	Dan Wolf	York	4	65.2	12	64.1	12	1.1	no
	Average		24	66.0	12.7	65.1	12.8	..9	no

Observations:

There were no significant responses to the treatment at any of the locations. However at each location there was a positive response to treatment. On average there was a .9 bu/acre differential with this product.



Field Trial Report

2015 Response of Soybeans to Foliar Spray

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth,
Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: 5N

2014 Crop: Corn?

Planting Date: June 12, 2015

Acres:

Tillage: No-till

Variety: Hubner 3411 R2

Untreated Seed

Seed Treatment:

Planting Depth: 1 inch

Planter: JD 1250 Drill

Seeding rate: 180 k

Herbicide: Gramazone plus Canopy f/b Credit Extra+ Pursuit 6/22/2013

Harvest Date:

Plot size: 20 x 75

Replications: 6

Treatments

- 1 Untreated
- 2 Bor Power
- 3 PK Power
- 4 Bor Power and PK Power
- 5 M-Power
- 6 Fertileader Axis



Results

	Height before application	Height 2 weeks after application	Final Height
Control	24.8 c	28.6 cd	27.2 c
PK and Bor Power	25.3 bc	31 b	35.5 a
PK Power	25.7 ab	28.7 c	30 b
Bor Power	26.1 a	28.3 cd	36.1 a
M Power	25.5 ab	27.8 d	30 b
Fertileader Axis	25.5 b	32.4 a	35.3
Average	25.5	29.5	31.8
CV	2.2	2.7	2
LSD	.56	.77	.63

Field Trial Report

	Phytotoxicity (%)	Population
Control	.4 c	115161.7 b
PK and Bor Power	50 a	115978 b
PK Power	2.6 b	120418.3 a
Bor Power	3.1 b	119800.2 a
M Power	.3 c	119167.7 a
Fertileader Axis	.2 c	118694 a
Average	9.4	118203.3
CV	24.6	1.8
LSD	2.97	2134

	Yield			
	Pod Count	Bushels/Acre	Moisture in %	Test Weight
Control	83.7 c	46.3 a	12.2 a	53.5 a
PK and Bor Power	69.9 e	47.9 a	12.48 a	54 a
PK Power	100.8 a	47.8 a	12.2 a	54.3 a
Bor Power	79.2 d	47.8 a	12.1 a	53.8 a
M Power	90.7 b	46.3 a	12.2 a	52.8 a
Fertileader Axis	81.3 cd	45.8 a	11.9 a	53.3 a
Average	84.3	46.9	12.2	53.6
CV	3.9	5.9	3.3	1.9
LSD	3.3	2.8	.4	.9

Comments:



Field Trial Report

2015 Response to Application of M-Power Trial

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Background: MPOWER is a dormant spore based liquid designed to rejuvenate the microbial population in the soil and improve soybean yields.
<http://www.powerag.com/products/m-power.aspx>

Treatments

1. Untreated
2. M-Power 1 pint/acre (pre-plant, in furrow, or post emergent V stages)

Results

Treatment	Yield	Moisture	Growth	Significance
M Power	64.5	12.6	34.7	NS
Control	65.3	12.6	37.5	NS



Site Background Data					Harvest Data in bu/acre adjusted to 13% moisture			Economics		Growth Assessment		Statistics
Cooperator	County	Reps	Planting Date	Variety	Mpower		Control		Net Return	Final Height (inches)	MPower	NS
					Yield	Moisture(%)	Yield	Moisture (%)		Control		
SEAREC	Lancaster	6	6/12/2015	Doebblers	46.3	12.2	46.3	12.2	-13.3	27.2	30.0	NS
Beam	Berks	3	5/4/2015	35T5AR	53.2	NR	53.5	NR	-10.6	42.2	44.9	NS
Greenleaf	Lancaster	4	5/5/2015	NK S34N3	88.5	13.0	91.8	12.9	16.5	NR	NR	NS
Alger	Lebanon	4	4/30/2015	Asgrow 3431	69.8	13.8	69.5	13.8	-16.0	NR	NR	NS
Overall Averages		17.0			64.5	13.0	65.3	13.0	-5.8	34.7	37.5	NS
* Sig. @ P=0.10												

Comments: There was no significance found this year in yield when using the M Power product.



PennState Extension





Field Trial Report

2015 Soybean Response to Foliar Fertilizer Trial

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Background: BORPOWER and PKPOWER are two foliar fertilizers marketed in SE PA. An analysis of the BORPOWER is 10% boric acid and PKPOWER is 0-0-30 phosphoric acid and potassium hydroxide. <http://www.powerag.com/products/borpower.aspx>

Treatments:

1. Control
2. BOROPOWER at 1.5 pint/acre + PKPOWER 1.5 quarts/acre applied at V6 to R2

Results:

Treatment	Yield	Moisture	Growth	Significance
PK and Bor Power	47.1	12.7	22.9	NS
Control	47.2	13.1	19.5	NS



Site Background Data				Harvest Data			Growth Assessment	
Cooperator	County	Reps	Planting Date	Variety	Bor/PK Power		Control	
SEAREC	Lancaster	6	6/12/2015	Hubner 3411	Yield	Moisture (%)	Yield	Moisture (%)
Grumbine	Lebanon	8	4/27/2015	Asgrow	47.9	12.5	46.3	12.2
Reichert	Lancaster	4	6/15/2015	NR	78.7	NR	80.43	NR
Carutis	Tioga	3	5/26/2015	NR	51.0	12.6	48.3	14.0
Overall Averages		21.0			10.96	12.9	13.7	13.1
*Sig. @ P=0.10					47.1	12.7	47.2	13.1
							27.2	35.5
							NR	NR
							NR	NR
							11.7	10.3
							19.5	22.9

Comments: There were no significant responses to Foliar Fertilizer in this year's trials.



PennState Extension



Field Trial Report



2011 Plant Stress Study: SEAREC

Investigators –Del Voight, Greg Roth, John Bray and Alyssa Collins
Penn State Extension



FIELD INFORMATION

Field Name: X	Acres: 5	2010 Crop: Winter Wheat/Soy double crop	2011 Crop: Soybeans
Soil type: Duffield	Field Length: 800	Tillage: No till	Planting Date: 5/10/11
Soybean Variety: 93M11	Seed Treatment: Trilex plus Gaucho	Inoculants: Various by treatment	Planting Depth: 1 inch
Planter/Drill and width: 10 foot 7 inch JD1250 drill		Herbicide: Glyphosate+ Canopy f/b Glyphosate	
Sprayer/width: 20	Combine/width: 15	Design: Replicated Block	3 reps
Guidance system: No	Soil Test K (ppm):		

TREATMENTS EVALUATED

- 1 Untreated (Trilex plus Gaucho base)
- 2 Optimize 400 on seed
- 3 Bio Forge ST 2 oz/100lb of seed
- 4 Bio Forge 1 pint/acre R3
- 5 Optimize 400 2.5 oz/100lb of seed f/b Ratchet
- 6 Ratchet 4 Oz/acre V6-late R1

RESULTS

Treatment	Yield	Moisture	Test Wt.
	Bu/ac	%	Lb/bu
1 Untreated (Trilex base)	44.3	16.0	47.5
2 Optimize 400 on seed	46.2	16.2	46.9
3 Bio Forge ST 2 oz/100lb of	49.9	16.2	48.6
4 Bio Forge 1 pint/acre R3	46.3	16.0	48.4
5 Optimize 400 2.5 oz/100lb of	48.8	16.2	48.8
6 Ratchet 4 Oz/acre V6-late R1	47.2	16.0	48.6
Significant	NS	NS	NS
CV	6.5	1.0	2.4

Notes: Conditions were dry in Late July and August. Disease and insect pressure was high. Excessive rains promoted disease outbreak.



Field Trial Report

2012 Plant Stress Input Study

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: X

Acres: 5

2011 Crop: Corn

Tillage: No-till

Planting Date: 4/26/2012

Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucho (all)

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding Rate: 180,000

Herbicide: Glyphosate/Canopy f/b Glyphosate/Dakota

Harvest Date: 10/09/2012

Combine: 15 foot JD

Design: Randomized Complete Block Replications: 4



Treatments

1. Untreated (Trilex/Gaucho) plus Cell Tech 2.1 oz/50lb
2. Optimize 400 on seed 2.5 oz/100lb of seed
3. Ratchet 4 oz/acre V6-late R1 plus Cell Tech 2.1 oz/50lb
4. Optimize 400 2.5 oz/100lb of seed f/b Ratchet V6-R1
5. Bio Forge ST 4 oz/100lb of seed plus Cell Tech 2.1 oz/50lb
6. Bio Forge 1 pint/acre R1 plus Cell Tech 2.1 oz/50lb
7. Tag Team 2.8 oz/100lb of seed
8. Tag Team 2.8 oz/100lb f/b Ratchet 6/14/2012 4 oz/acre

Results

	Yield	Moisture	Plant N	Height	Plant pop.
	Bu/ac	%	%	in.	Plants/acre
Untreated Cell Tech	65.5	15.9	5.7	24.3	108900
Optimize 400	67.1	15.9	5.8	26.2	109626
Cell Tech f/b Ratchet	64.3	16.0	5.9	25.3	107206
Optimize 400 f/b Ratchet	65.0	15.4	5.6	25.3	100430
Cell Tech +Bio Forge ST	62.5	15.7	5.8	24.5	94380
Cell Tech f/b Bio Forge @ R1	66.6	15.1	5.7	23.8	116644
Cell Tech+ Bio Forge ST f/b Bioforge @ R1	64.6	15.3	6.1	24.0	96558
Tag Team	64.4	15.4	5.4	25.7	107690
Tag Team f/b Ratchet	64.8	15.4	5.7	26.2	93896
Significance	ns	ns	P=0.10	ns	ns
CV	4.3	4.0	5.3	15	15
LSD	-	-	0.3	-	-

Comments: There is interest in the use of growth regulators such as Optimize, Ratchet, Tag Team and Bioforge used in this study to enhance soybean growth and yields. This field experienced some drought stress in June and then had reasonably good conditions for growth in late July and August. Populations may have been reduced in some treatments due to excessive seed treatment application and may have reduced flow through the drill. We were unable to detect any significant differences among treatments in this study for yield, moisture or plant height, despite having a relatively low CV for yield. Plant N was increased for one of the Bioforge treatments compared to the check.



2013 Plant Stress Input Study

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name:YS Acres: 15

2012 Crop: Corn

Tillage: No-till

Planting Date: 5/14/13

Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucho

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180 k

Herbicide: Gramoxone plus Canopy f/b Credit Extra+ Pursuit

6/22/2013

Harvest Date:

Plot size: 20 x 250 Feet

Replications: 4

Treatments

- 1 Untreated (Trilex base) plus Cell Tech 2.1 oz/50lb
- 2 Optimize 400 2.8 oz/100lb of seed
- 3 Optimize 400 2.8oz + Jump Start 3oz per 100lb of seed
- 4 Optimize 400 2.8 oz/100lb of seed f/b Ratchet 7/9/2013 R2 applied
- 5 Cell Tech 2.1 oz/50lb on Seed Ratchet 4 Oz/acre R2 7/9/2013
- 6 Cell Tech 2.1 oz/50lb on Seed 3 apps Ratchet 4 Oz/acre V4-6/24/2013 –and R2 7/9/2013 R3
- 7 Bio Forge ST 4 oz/100lb of seed Cell Tech 2.1 oz/50lb on seed
- 8 Bio Forge 1 pint/acre R2 7/9/2013 Cell Tech 2.1 oz/50lb on seed
- 9 Bio Forge ST 4oz/100lb f/b Bioforge post R27/9/2013 Cell Tech 2.1 oz/50lb on seed
- 10 Tag Team 2.8 oz/100lb f/b Ratchet R2 7/9/2013 4 Oz/acre
- 11 Cue.368oz +Optimize 2.8 oz. per 100lb of seed
- 12 Cue .368oz+ Tag Team 2.8oz/100lb of seed
- 13 Prostabish .5oz per 100lb of seed



Field Trial Report

Results

Treatment	Yield	Moisture	Pop up Population	Final Population	Nodules per plant	Nitrogen Tissue Test	Mid Season Height	Final Height	Pod Count	Total Pods
	Bu/ac	%	ppa	ppa	Per Plant	%	inches	inches	Per Plant	Per acre
1 Untreated (Trilex base) plus Cell	75.9	11.7	118482	159729	38	5.6	22.7	37.0	31	3670631
2 Optimize 400 on seed +	79.9	11.7	126323	132000	38	5.9+	21.8	38.3	58+	7310827 +
3 Optimize+ Jump Start	79.1	11.7	125452	128667	32	5.6+	22.5	38.0	46+	5787746 +
4 Optimize 400 f/b Ratchet	77.9	12.1	142876	127676	42	6.0+	22.1	37.3	54+	7845601 +
5 Cell Tech f/b Ratchet	81.8 +	11.6	132422	146370	34	5.9+	23.0	40.0	34	4430229
6 Cell Tech 2f/b 3 apps Ratchet	78.1	11.6	124581	175137	35	6.0+	24.7+	41.5+	36	4466162
7 Bio Forge ST	72.9	11.6	118482	117906	36	5.8	22.5	36.3	79+	8749978 +
8 Bio Forge Post	77.8	11.6	139391	158309	35	5.6	24.7+	41.3+	37	5235277
9 Bio Forge ST f/b Bioforge post	75.5	11.6	89733	117366	34	5.9+	22.0	37.0	73 +	6554759 +
10 Tag Team f/b Ratchet	78.4	11.6	116740	140214	32	6.1+	23.8	39.5	61 +	7157229 +
11 Cue +Optimize	77.9	11.9	97574	133723	28	5.8+	23.6	37.0	53 +	5192307
12 Cue+ Tag Team	78.6	11.4	136361	131770	31	5.9+	23.4	39.5	56 +	7632358 +
13 Prostabish	79.3	11.7	102801	145056	28.7	5.9+	22.1	38.3	45 +	4650309
Significance	+ P=0.1 0	ns	ns	ns	ns	+ =P.10	+ =P.10	+ =P.10	+ =P.10	+ =P.10
CV	4.0	2.8	20.0	2.1	28.0	3.9	6.1	5.9	3.7	18.0
LSD	3.7	.4	29,287	26,580	11.8	.3	1.6	2.3	9.5	125422
Mean	77.9	11.5	120863	139533	34.5	5.8	23.1	38.5	51.4	6052570

Comments: We were able to detect two significant differences as compared to the check for yield in treatments 2 and 5.



Field Trial Report

2012 On-Farm Ratchet Response Study



Investigators –Del Voight,
John Bray and Greg Roth
PennState Extension
Site coordinators:
Andrew Frankenfield,
Mena Hautau, Jeff Graybill,
Jen Bratthaur



FIELD INFORMATION

Soil type, seed variety and management practices: Variable

Participating growers: 9 Counties: Berks, Lebanon, Dauphin, Lancaster, Franklin, Chester

Design: Replicated Strip Tests: 9 locations 33 reps

TREATMENTS EVALUATED

1 Untreated

2. Ratchet @ 4 oz./acre applied at R3

INDIVIDUAL SITE RESPONSES

Cooperator	County	Rep	Ratchet Bu/acre	Control Bu/acre	Response
Stanley Burkholder	Franklin	1	79.0	75.0	ns
Dwight Zook	Berks	4	54.5	54.3	ns
Eugene Sensenig	Berks	4	42.1	42.7	ns
David Wolfskill	Berks	4	76.8	77.1	ns
Glenn Krall	Lebanon	3	49.5	48.0	ns
Darren Grumbine	Lebanon	4	87.5	87.3	ns
Merle Stoltzfus	Lancaster	4	85.5	80.5	P=0.20
Bill Beam	Lancaster	5	59.6	56.9	p=0.01
Milton Hershey	Dauphin	3	46.1	48.9	ns
9 Sites		33	64.5	63.4	ns

*Statistical differences: ns= not significant, 0.20=80%, 0.10=90%, 0.01=99% confidence level.

In this study, on farm cooperators evaluated the potential of a new growth promoter, Ratchet, applied at the R3 stage of soybeans. Yield responses varied by site. At two of the nine sites, significant ($p=0.20$) yield responses of 5.0 and 2.7 bushels per acre were documented. Averaged across all sites and replications, the yield difference or 1.0 bu/acre was not significant. In general conditions were good for soybean production at these sites with some midseason drought stress and with moderate to good recovery in August.



Field Trial Report

2013 On-Farm Ratchet Response Study



Investigators –Del Voight, John Bray and Greg Roth Penn State Extension
Site coordinators:
Andrew Frankenfield, Mena Hautau, Jeff Graybill and Jen Bratthaur



FIELD INFORMATION

Soil type, seed variety and management practices: Variable

Participating growers: 9 Counties: Berks, Lebanon, Dauphin, Lancaster, Franklin, Chester

Design: Replicated Strip Tests: 8 locations 29 reps

TREATMENTS EVALUATED

- 1 Untreated
2. Ratchet @ 4 oz./acre applied at R3

INDIVIDUAL SITE RESPONSES

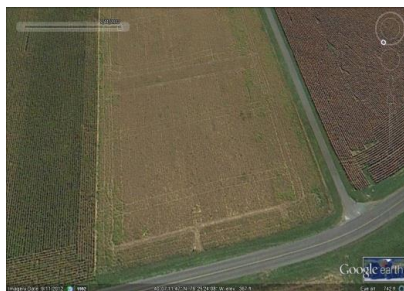
Cooperator	County	Rep	Ratchet Bu/acre	Control Bu/acre	Response
John Bicksler	Berks	4	72.7	68.8	P=.20 LSD 3.4
Robert Hess	Lancaster	4	78.2	79.0	NS
Roger Burkholder	Franklin	3	40.9	44.6	NS
David Wolfskill	Berks	4	81.0	72.0	P=.10 LSD 5.0
MarMec Farming	Franklin	3	43.4	43.5	NS
Darren Grumbine	Lebanon	4	77.5	77.3	NS
John Kulp	Montgomery	4	56.2	55.7	NS
Milton Hershey	Dauphin	3	66.1	68.9	NS
TOTALS		29	64.5	63.7	

*Statistical differences: ns= not significant, 0.20 =80% 0.10=90%

In this study, on farm cooperators evaluated the potential of a new growth promoter, Ratchet, applied at the R3 stage of soybeans. Yield responses varied by site. At two of the nine sites, significant ($p=0.10$) yield responses of 9.0 and 3.9($p=.20$) bushels per acre were documented. Averaged across all sites and replications, the yield difference or 1.0 bu/acre was not significant. In general conditions were good for soybean production at these sites with some midseason drought stress and with moderate to good recovery in August.

Field Trial Report

2012 On-Farm Bio Forge Response Study



Investigators –Del Voight,
John Bray and Greg Roth.
Site coordinators:
Mena Hautau, Andrew
Frankenfield, Jen Bratthaur,
Jon Rowehl and Jeff Graybill
Penn State Extension



FIELD INFORMATION

Soil type, seed variety and management practices: Variable

Participating growers: 5 Counties: Berks, Dauphin, Franklin, Lancaster, York

Design: Replicated strip tests: 5 locations 17 reps

TREATMENTS EVALUATED

- 1 Untreated
2. Bio Forge @ 1 Pint/acre applied at R3
3. Fertileader Axis @ 2.5 pint/acre applied at R3

INDIVIDUAL SITE RESPONSES

Cooperator	County	Rep	Bio Forge Bu/acre	Control Bu/acre	Fertileader Bu/acre	Significance*
Leslie Bowman	Franklin	4	78.4	77.4	--	ns
Troy Alderfer	Berks	4	77.5	76.2	77.7	ns
Harold Miller	York	4	53.8	52.9	--	ns
Dwight Cottrel	Franklin	2	74.3	75.0	--	ns
Merle Stoltzfus	Lancaster	4	85.2	80.6	--	p=0.10
Mean (5sites)		17	73.8	72.4	--	ns

*Statistical differences: ns= not significant, 0.10=90%, 0.01=99% confidence level.

In this trial we enlisted cooperators to evaluate two biostimulants, Fertileader and Bioforge, in replicated field scale trials to assess their potential to increase soybean yields. Significant yield differences between the Bioforge application and the control were detected at one of the five sites. At that site, a yield response of 4.6 bu /acre were measured. Averaged over all sites, yield differences were not significant. No yield response to the Fertileader product was detected at the Alderfer location. In general, conditions were good for soybean production at these sites with some midseason drought stress and with moderate to good recovery in August.

Field Trial Report

2014 SEAREC Double Crop Soybean Response to Ryz Up Response Study



D.G. Voight -
Penn State Extension



FIELD INFORMATION		
Hagerstown Silt loam	Row Width: 7.5"	Planter or Drill: Drill
Grower: SEAREC	County: Lancaster	Planting Date: 7/28/2014
Design: Randomized Complete Block		6 reps

TREATMENTS EVALUATED

- 1 Untreated
2. .5 ounce/acre of Ryz Up applied at V2-V3 on Aug 11, 2014

Description		Height to 1st Pod		Test Weight		Moisture		Yield		Mid Height	
1	Ryze Up	6.00	a	55.8	a	11.8	a	32.8	a	12.3	a
2	Check	6.57	a	56.0	a	11.9	a	34.3	a	11.7	a
LSD P=.10		0.91		0.62		0.27		5.36		1.56	
CV		12.53		0.95		1.99		11.86		11.19	

Observations: There was an initial growth surge in the first 20 days after application that was measurable between treatments. Pod height and yield did not significantly differ during this growing season.

Field Trial Report

2015 Impact of GAA on Soybean Pod Height Delbert G. Voight,
John Bray, Alyssa Collins and Greg Roth, Penn State University
Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: 1S

Acres:

2014 Crop: Corn

Tillage: No-till

Planting Date: April 24, 2015

Variety:

Seed Treatment:

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180 k

Herbicide: Gramazone plus Canopy f/b Credit Extra+ Pursuit

Harvest Date:

Plot size: 10 x 25 Feet

Replications: 6

Treatments

- 1 Control
- 2 GAA VE
- 3 GAA V1
- 4 GAA V2
- 5 GAA V3
- 6 GAA VE and V3



Results:

	Growth				
	Height 2 weeks after application	Height after all application	Height to 1 st pod	Mid-Season Heights	Final Season Heights
Control	11.1 d	14.3 d	2.5 f	20.4 e	26.1 d
GAA VE	13 c	15.8 c	3.4 e	23 d	28.4 c
GAA V1	10 e	13.5 e	3.9 d	19.5 f	25.7 e
GAA V2	14.5 b	16.8 b	5.0 c	25.3 c	32.8
GAA V3	16.1 a	20.8 a	5.6 b	26.7 c	36.2 a
GAA VE, V3	14.7 a	18.7	6.5 a	25.7 b	33.2 b
Average	13.24	16.23	4.46	23.42	29.9
CV	4.3	2.61	5.31	1.58	.81
LSD	.56	.42	.23	.37	.24

Field Trial Report

	Yield			
	Pod Count	Bushels/Acre	Moisture in %	Test Weight
Control	71.8 c	59.5 a	12.75 a	52.4 a
GAA VE	80.3 a	66.8 a	13.38 a	54.9 a
GAA V1	72.2 c	65.8 a	12.43 a	50.9 a
GAA V2	75.3 b	65.6 a	13.3 a	53.9 a
GAA V3	76.9 b	62 a	12.83 a	52.4 a
GAA VE,V3	75.0 b	62.1 a	12.52 a	51.3 a
Average	75.23	63.6	12.9	52.7
CV	3.7	13.6	6.4	6.7
LSD	2.72	8.56	.81	3.5

Comments:

Field Trial Report

2012 Induced Branching Study

Delbert G. Voight, John Bray, Alyssa Collins and Greg Roth, Penn State University
Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name: X

Acres: 5

2011 Crop: Corn

Tillage: No-till

Planting Date: 5/10//2012

Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucho

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180000

Herbicide: Glyphosate plus Canopy f/b Glyphosate plus Dakota

Harvest Date: 10/09/2012

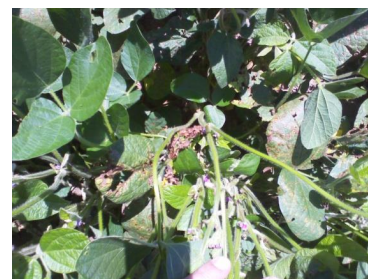
Other: Headline and Warrior

Design: Randomized Complete Block

Replications: 4

Treatments

1. Untreated
2. Cobra at 12 oz/acre 1qt/a COC +2.5lb/a AMS V6
3. Cobra at 12 oz/acre 1qt/a COC +2.5lb/a AMS R2
4. Cobra at 12 oz/acre 1qt/a COC +2.5lb/a AMS V6 f/b
Cobra at 12 oz/acre 1qt/a COC +2.5lb/a AMS R2
5. Synchrony at 0.66 oz/acre 1 pt/100 gal NIS +2.5lb/a AMS R1
6. Extreme 3 pt/acre 1 pint/100 gal NIS + 2.5lb/a AMS R1
7. Harmony GT 0.08 oz +1 qt/acre COC + 2.5lb AMS R1



Results

	Yield	Moisture	Height@ R2	Height
	Bu/ac	%	%	In.
Untreated	64.8	15.0	35.2	28.0
Cobra V6	64.5	14.8	33.7	26.8
Cobra R2	65.4	14.6	32.2	26.1
Cobra V6 and R2	62.4	14.5	30.7	26.6
Synchrony R1	62.5	14.5	36.0	26.9
Extreme R1	62.8	14.4	35.2	27.9
Harmony R1	64.5	14.4	34.5	27.0
Significance	ns	ns	ns	ns
CV	4.6	4.0	5.3	9
LSD	-	-	-	-

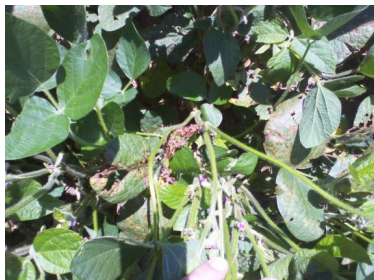
Comments

The herbicide treatments caused visual injury following application but had limited effects on plant height. There were no differences in grain moisture or yield but there was a trend for lower yields with double Cobra, Synchrony, and Extreme treatments. Responses to the herbicide treatment might have been greater in taller soybeans that were more prone to lodging. Because of the weather pattern these soybeans were not excessively tall.



Field Trial Report

2012 Soybean Kitchen Sink vs ICM Trial SEAREC Study



Site coordinators –
Del Voight, John Bray,
Alyssa Collins and
Greg Roth
Penn State Extension



FIELD INFORMATION

Field Name: JE	Acres: 3	2011 Crop: Corn	2012 Crop: Soybeans
Soil type: Duffield	Field Length: 800	Tillage: No till	Planting Date: 5/4/12

TREATMENTS EVALUATED

1: Kitchen Sink

- May 4, 2012 Planting Date
- P 93M11
- Trilex plus Gaucho
- 250,000 ppa
- Tag Team plus Bio Forge on Seed
- M Power plus Moly at emergence
- Cobra at V6 and R2
- Ratchet and Bio Forge
- Fungicide and Insecticide at R3

2: ICM

- May 4, 2012 Planting Date
- P 93M11
- Trilex plus Gaucho
- 180,000 ppa
- Fungicide and Insecticide at R3

Observations

Due to the plant population variations no inferences can be made other than more products placed on the seed can be detrimental to the feed out while planting. At the time of planting the drill failed to feed out the seeds due to the clumping of the seed from too many seed treatments. One interesting point is that even with a reduced stand in the ICM plot respective yield resulted.

RESULTS

Treatment	Yield	Moisture	Final Stand Population	Mid Season Height	Final Height
	Bu/ac	%	Per Acre	Inches	Inches
Kitchen Sink	64.1	13.5	58079	5	33
ICM	81.1	13.8	95130	4.5	37



Field Trial Report

2013 Soybean Response to Tall Harvest Applications

Delbert G. Voight, John Bray, Alyssa Collins, Doug Beegle and Greg Roth, Penn State University

Field Information

Location: Southeast Research and Extension Center, Landisville

Field Name:YS

Acres: 15

2012 Crop: Corn

Tillage: No-till

Planting Date: 4/26/2013

Variety: Pioneer 93M11

Seed Treatment: Trilex/Gaucho

Planter: JD 1250 Drill

Planting Depth: 1 inch

Seeding rate: 180 k

Herbicide: Gramoxone plus Canopy f/b Credit Extra+ Pursuit 6/22/2013

Harvest Date:

Plot size: 20 x 250 Feet

Replications: 4

Treatments

1Untreated

2Tall Harvest

1 gal/at V2

3Tall Harvest

1.5 gal/a at V2

4Tall Harvest

1 gal/a V2 f/b .5 gal/acre at R2

Results

Treatment	Yield	Moisture	Pop up Population	Final Population	Nodules per plant	R2 Height	Spad Meter Reading	Nitrogen Tissue Test 2week post app	Final Height	Pod Count	Total Pods
	Bu/a	%	ppa	PPA	Per Plant	Inches	Hand held	%	inches	Per Plant	Per acre
Untreated	78.4	13.0	89733	137500	44	21	39	6.0	38	59	8204351
Tall Harvest	79.2	12.8	95831	132000	39	22	41	5.9	37	60	8056401
Tall Harvest	78.9	13.5	93218	126500	44	21	39	6.1	37	63	8068501
Tall Harvest	73.6	12.9	92347	137500	39	21	39	6.1	36	70	9771851
Significance	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
LSD	4.7	0.030 t	10882	21648	7.8	2.7	2.1	0.3	2.7	6.8	1491121
CV	4.6	2.0	9.0	12.5	14.4	9.6	4.0	3.3	5.6	8.3	13.4
Mean	77.5	1.2 t	92782	133375	41.7	21.6	40	6.0	37	63	8525275

Comments: We were unable to detect any differences in any of the parameters of the study.



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