PR-605

Soybean Management Verification Program, 2009

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Abstract

The 2009 Soybean Management Verification Program (SoyMVP) consisted of 16 fields across Western Kentucky, which were split to give eight direct comparisons between University of Kentucky recommendations and producer practices for soybean production. Weekly scouting was done on all fields and recommendations were made on the University portion of the field based on established thresholds and observations from agronomic research. Fields enrolled in the program in 2009 totaled 383 acres, with an average field consisting of nearly 24 acres. Our belief is that these farmer fields will serve as an extension of our small-plot research and will help to validate and verify the research that is done within the College of Agriculture and will show that results obtained are in fact applicable to the conditions that producers see in their fields.

Field locations ranged from Hickman County in far west Kentucky to Muhlenberg County. Four fields were double-crop soybean behind wheat. Four more fields were single crop (full season), tilled, while the remaining eight were single crop, no-till. Of those remaining eight, four were conventional no-till while the other four were behind a rye cover crop. All fields were in corn in 2008.

To say that 2009 was a unique, challenging year would be understating it. SoyMVP fields experienced the same challenges that all producers faced during this growing season. Due to a number of factors—most notably the exceedingly wet conditions at planting—four fields originally enrolled in the program were lost. Those that remained in the program were planted late by any standard. The earliest single-crop fields were planted June 3, with the latest single-crop planting date falling on June 24. All double-crop fields were planted in the last week of June. Harvest was also made more difficult by the wet conditions, but all fields were harvested in a timely enough manner that yield loss due to shattering was not significant.

Weed pressure varied across fields. The most common species did not differ from those that we normally see in west Kentucky fields. Johnsongrass, crabgrass, pigweed, marestail, eastern black nightshade, Virginia copperleaf, and lambsquarters were the typical weed species across most of the fields. One weed that was present in higher than usual numbers, however, was volunteer corn. Its prevalence can be attributed to the windstorm that lodged a great deal of the corn crop and the subsequent poor harvest conditions in 2008. Much of the corn was present in "clumps" because of the loss of whole ears as a result of the wind event. The volunteer corn presented some unique challenges, because you can't make treatment decisions based simply on yield impact. The potential for corn rootworm resistance in the following year's corn crop, for example, must be taken into consideration when deciding whether or not to control. Several grass-specific herbicides were used in the program in 2009 to control this pest.

Several diseases were present across most of the fields, with various degrees of incidence and severity. Septoria leaf spot (Septoria glycines) was seen at some level across all the full-season soybean fields. Incidence was higher in fields that were generally wetter, although the disease was contained to the bottom trifoliate in all cases until very late in the season. Downy mildew (Peronospora manshurica) was observed in four fields at relatively low levels. Sudden death syndrome also presented itself in six of the sixteen fields. Cercospora leaf spot (Cercospora kukuchii) was present at unprecedented levels in the state this year, and our fields were no different. The disease did not present itself until late R6 to R7 across the fields.

Fields in production under University of Kentucky recommendations averaged 52.5 bushels per acre on average, compared to 51.8 bushels per acre in fields in which producer practices were used. The state average yield for Kentucky in 2009 was 48.0 bushels, the highest state average yield ever recorded for Kentucky. Partial economic net returns per acre averaged $438.50 under University of Kentucky recommendations, compared to $422.01 using producer practices. So, in a year when growing conditions were favorable for high yields, University of Kentucky recommendations provided an advantage of $16.49 per acre.

The Soybean Management Verification Program (SoyMVP) is funded by Kentucky soybean producers through checkoff dollars allocated by the Kentucky Soybean Promotion Board.

Introduction

The 2009 season marked the first year that the Soybean Management Verification Program (SoyMVP) was fully implemented in Kentucky. During the season, 16 Kentucky soybean fields were enrolled in the program, with half in production according to University of Kentucky research-based recommendations and half in production using the practices of the producer. The stated goals for the Soybean Management Verification program (SoyMVP) are as follows:

1. To provide the most up-to-date research-based recommendations to Kentucky soybean producers for implementation in production-based systems.
2. To assist researchers in improving research methods and identifying areas of soybean research that require further work.
3. To ultimately update current University recommendations based on the results from the production-based systems and subsequent research in an effort to provide Kentucky soybean producers the knowledge and information that will enable them to maximize soybean profitability.

Methods

Cooperator and Field Selection

The first full season of field research for SoyMVP could not have taken place without the work of Western Kentucky county extension agents. The agents originally identified and contacted prospective cooperators and arranged meetings between these producers and the program coordinator.

Fields enrolled in the program had to meet two requirements:

1. Coverage of enough area to represent field-scale production.
2. Consistency in soil type across the field.

Soil type and field size were determined using producer data, the Web Soil Survey operated by the USDA Natural Resources Conservation Service, and Farm Works scouting software.

Once the requirements were met, participating producers agreed to use their own equipment and resources for all production practices throughout the season. In most cases, fields were split according to size and topography in order to get a valid comparison between producer practices and University of Kentucky recommendations. In those locations where the split didn't occur, two fields that may have been split by a natural feature (drainage ditch, berm, tree line, etc) were used for the sake of comparison.

Scouting and Recommendations

Fields were soil-sampled, and fertility recommendations, if necessary, were made based on soil test results from University of Kentucky Regulatory Services and the Cooperative Extension publication Lime and Fertilizer Recommendations (AGR-1). Producers were provided a copy of the University's soybean variety trial results in order to make varietal decisions. Soybean seeding rate decisions were mainly based on planting date and how it relates to seeding rate versus planting date data obtained at the University. According to University research, a final plant stand of 100,000 plants per acre is sufficient to achieve maximum yields in full-season soybean if seeds are planted in early June or before. Because of numerous rain events in the spring, planting dates as a whole were pushed back, leading to recommendations for increased seeding rate.

The coordinator made weekly visits and recorded all insect, weed, disease, and crop physiological observations. If pest thresholds were met, the producer was contacted with a recommendation for the appropriate product and application rate. Tissue samples were pulled from the newest fully developed trifoliate at R1-R2 and were analyzed for nutrient levels. These nutrient levels are displayed along with established reference levels. Pod counts were taken at full pod and analyzed on both per-plant and per-unit area basis. Per- plant numbers were calculated by dividing pods in the average 10 feet of row by number of plants in the average 10 feet of row. Pictures were also taken at five set locations in each field in order to have visual comparisons of canopy development. Canopy closure must reach 95 percent prior to soybean reproductive growth in order

Fields were harvested and yields were calculated by either the use of yield monitors and/or a weigh wagon where available and adjusted to 13 percent moisture.

Economic Analysis

Economic analyses were done using partial budgets. Variable costs of production were considered for comparison of practices between the fields. In the interest of confidence, input prices reflect an average of prices from area suppliers rather than the price paid by the producer, which may vary for a number of reasons. Custom application rates for pesticide applications were obtained from Custom Machinery Rates Applicable to Kentucky (AEC 2009-04) and Corn and Soybean Budgets 2009 from the UK Department of Agricultural Economics. Cost of application was split for budget purposes if multiple chemicals were applied as a tank mixture. Fertilization and lime costs were included in the partial budget only if the producer obtained and followed recommendations for portion of a field from a source other than UK Regulatory Services.

Results

Detailed results can be seen on the following pages. Fields in production under University of Kentucky recommendations averaged 52.5 bushels per acre on average, compared to 51.8 bushels per acre in those fields where producer practices were used. The state average yield for Kentucky in 2009 was 48.0 bushels, the highest state average yield recorded for Kentucky. Partial economic net returns per acre averaged $438.50 under University of Kentucky recommendations, compared to $422.01 using producer practices. So, in a year when growing conditions were favorable for high yields, University of Kentucky recommendations provided an advantage of $16.49 per acre.

Special Thanks

Kentucky Soybean Board and Association for funding this project and for its continued support of soybean production, protection, and promotion throughout the state.

County Extension Agents

David Fourqurean
Susan Fox
Clint Hardy
Cam Kenimer
Kenny Perry
Darrell Simpson

Producers

Jed Clark
Ben Cundiff
Robert Ellison
Chris Hooks
Curtis Hancock
Sam Hancock
Billy Miller
Danny Miller

University of Kentucky

Greg Halich
Don Hershman
Doug Johnson
Jim Martin

For More Information

Soybean Management Verification Program
www.soymvp.blogspot.com

Kentucky Soybean Board
www.kysoy.org

Grain crop production in Kentucky
www.uky.edu/Ag/GrainCrops/

Site 1

Producer: Jed Clark
County: Graves
County Agent: Kenny Perry
Coordinator: Jason Sarver
Field Location: Latitude: 36.532369
Longitude: -88.517278

Table 1a. Costs and Returns, 2009, Site 1.

Partial Costs/a†	**Prod.**	**Univ.**
Seed	42.00	36.00
Herbicide	15.05	15.05
Insecticide	5.51	0
Fungicide	12.38	0
Total Partial Costs/a	74.94	51.05
Partial Return/a‡	735.36	692.16
Partial Net Return/a	660.42	641.11

† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

Field Notes, Site 1

6/8—Both fields were planted. Jed planted the UK side at 120,000 plants per acre and his side at 140,000 plants per acre.

6/18—The plants are emerging and are currently at the unifoliate stage. Too small for stand counts, as many of the plants are still below the corn residue.

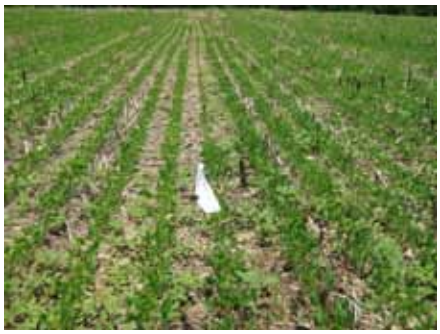
6/23—Took plant stand counts at the V1 stage. Average stand on UK side is 96,840 plants per acre (80.7% emergence). Our target stand was 100,000, so I feel this number is satisfactory. Average stand on Jed's side is 114,800 plants per acre (82%). Soybean plants look good, but pigweed and nightshade have really come on since the last visit. Both species are around 3 inches tall on average.

6/30—Weeds have taken off even more since last week. Mainly pigweed and nightshade, with some crabgrass, small vines, and patches of yellow nutsedge. All soybean plants are in the V2-V3 stage, with most being at V3. Called Jed to recommend a spray application. Only glyphosate for us, while Jed will apply Warrior insecticide to his part.

Crop Development, Site 1

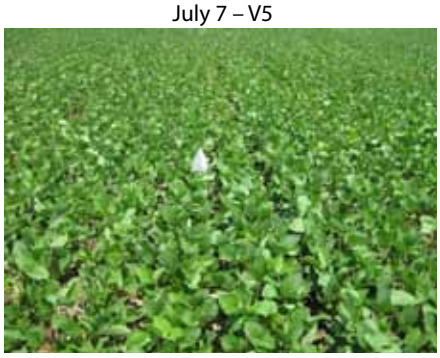
Producer Practices

June 23 – V2



June 30 – V3

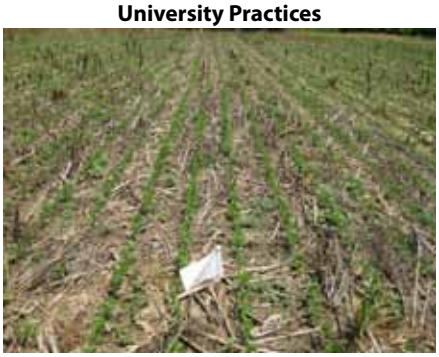
July 7 – V5



July 14 – V7

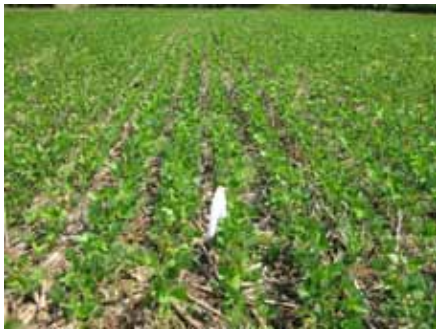
July 21 – R1, V9

University Practices

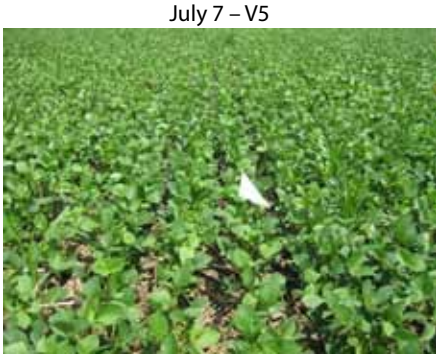


June 23 – V2

June 30 – V3



July 7 – V5



July 14 – V7

July 21 – R1, V9

7/7—The field has been sprayed. Some pigweeds had gotten rather large before application; skeptical about whether or not they will die. Good control of small pigweeds and all other weeds with the exception of yellow nutsedge, which is still heavy in some small patches. Volunteer corn is beginning to present itself as a problem, with the heaviest spots containing 25-30 clumps per acre. There is minimal insect pressure/damage to be found.

7/14—Canopy is around 80% on UK side and 75% on Jed's side in measured spots. Visually, the fields look equal on the grand scale. Large pigweeds and volunteer corn growth have warranted another spray application of both glyphosate and a grass herbicide.

7/21—Volunteer corn has reached threatening levels. Large pigweed plants did not die from the initial application, either.

7/24—Japanese beetles and bean leaf beetles are present at minimal levels. Basically equal on both sides of the field. Hasn't been sprayed yet. Full canopy has been reached across the field.

7/29—Field has been sprayed since the previous visit. Volunteer corn is dying as well as the broadleaf weeds. Some light downy mildew is starting to form.

8/6—Beans are getting abnormally tall. Slightly taller at higher population. Volunteer corn will definitely die completely.

8/13—Plants are getting very tall. Insect pressure remains low. Volunteer corn is very brown and wilting. Downy mildew still present across the field but at low levels.

8/21—A good deal of lodging is starting to occur, particularly at the higher population. Lodging is occurring mainly at field borders.

8/28—Took pod counts. Pod numbers are very similar per foot of row at both populations.

9/4—Full seed within the pods.

9/11—Still green, with full pods. Pod fill appears to have gone very well, as nearly all pods are full from top to bottom. There are several pods with four beans.

9/18—Leaves starting to yellow and senesce. Non-uniformity across the field, as Jed's side appears to be losing leaves slightly quicker.

9/24—Still a few leaves hanging on. Higher moisture content in certain areas. Seems to be higher moisture at the lower populations, but drying down is sporadic throughout.

9/29—If rain holds off, field will be ready to harvest within a week.

Table 1b. Practices, 2009, Site 1.

		Producer	University
Field size (acres)		14.1	
Previous crop		Corn	
Tillage		None	
Soil type		Grenada Silt Loam	
Soil test results	P_2O_5 (lbs/a)	106	136
	K_2O (lbs/a)	278	324
	pH	7.5	6.4
Fertilizer recommended		None	
Fertilizer applied	P_2O_5 (lbs/a)	0	
	K_2O (lbs/a)	0	
	Ag lime (tons/a)	0	
Planting date		8-Jun	
Soybean variety		Pioneer 94Y60	
Row spacing (inches)		15	
Seeding rate (seeds/a)		140,000	120,000
Plant stand (plants/a)		114,800	96,840
Pod number (pods/5 ft)		869	863
Pod number (pods/plant)		58	67
Herbicide applications		22 oz/a Touchdown + 8 oz Select Max	22 oz/a Roundup + 8 oz Select Max
Insecticide applications		3 oz/a Lambda-Cy	None
Fungicide applications		6 oz/a Stratego	None
Harvest date		6-Nov	
Yield (bu/a)		76.6	72.1

Table 1c. Insect Counts, 2009, Site 1.

		Producer					University				
Date	**Sweeps**	**Japanese Beetle**	**Bean Leaf Beetle**	**Green Stink Bug**	**Grasshopper**	**Loopers**	**Japanese Beetle**	**Bean Leaf Beetle**	**Green Stink Bug**	**Grasshopper**	**Loopers**
21-Jul	50	4	6	0	0	0	8	4	1	0	0
29-Jul	50	4	5	0	0	0	7	6	0	0	0
6-Aug	50	3	3	0	3	1	1	8	0	3	0
13-Aug	50	0	1	0	0	0	1	0	1	5	0
21-Aug	50	3	0	2	2	2	0	0	1	3	3

Table 1d. Physiological Characteristics, 2009, Site 1.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
18-Jun	--	VC†	--	--	VC†	--
23-Jun	6	V2		6	V2	
30-Jun	9	V3		9	V3	
7-Jul	11	V5		11	V5	
14-Jul	14	V7	75%	14	V7	80%
21-Jul	20	R1, V9	95%	20	R1, V9	95%
24-Jul	25	R2, V10	Full	24	R2, V10	Full
29-Jul	30	R2, V12		29	R2, V12	
6-Aug	36	R3, V14		35	R3, V14	
13-Aug	42	R4, V16		40	R4, V16	
21-Aug	45	R5, V17		43	R5, V16	
28-Aug	46			44	R5, V17	
4-Sep	47	R6		44	R6	
11-Sep	47			45		
18-Sep	--	R7	--	--	R7	--
24-Sep						
29-Sep		R8			R8	

† VC is unrolled unifoliolate leaves. From ISU Extension publication, Soybean Growth and Development, (PM 1945).

Table 1e. Leaf Nutrient Analysis, 2009, Site 1.

	Reference Level	Producer	University
Nutrient	(%)		
P	0.25-0.60	0.48	0.48
K	1.50-2.30	2.54	2.91
Mg	0.25-0.70	0.26	0.25
Ca	0.80-1.40	1.02	1.11
S	0.25-0.60	0.37	0.38
Nutrient	**(ppm)**		
B	20-60	45	55
Zn	21-80	35	44
Mn	17-100	130	123
Fe	25-300	124	127
Cu	4-30	11	12

Date: 7-21
Growth Stage: R2

Site 2

Producer: Robert Ellison
County: Graves
County Agent: Kenny Perry
Coordinator: Jason Sarver
Field Location: Latitude: 36.697761
Longitude: -88.585673

Table 2a. Costs and Returns, 2009, Site 2.

Partial Costs/a†	**Prod.**	**Univ.**
Seed	47.70	42.00
Herbicide	14.77	14.77
Insecticide	0	0
Fungicide	0	0
Total Partial Costs	62.47	56.77
Partial Return/a‡	480.96	568.32
Partial Net Return	418.49	511.55

† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

Field Notes, Site 2

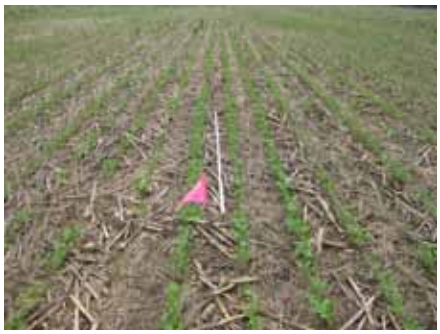
7/10—Plants are at the V1-V2 growth stage. The UK field was planted at 140,000 seeds per acre and has a stand of 101,300 plants per acre (72.4%), and the producer side was planted at 159,000 seeds per acre with a stand of 119,600 plants per acre (75.2%). Emergence was relatively uniform, but there are some plants that are late emerging, even at this point (June 23 planting date). Volunteer corn is heavy in spots. There is also some Johnsongrass and crabgrass.

7/21—The field has been sprayed within the last couple of days. Weeds are showing just the earliest signs of dying back.

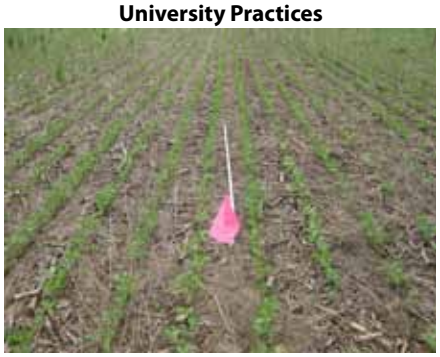
7/29—Weed control worked well on the broadleaf leaves as well as the grasses, including volunteer corn. Canopy development is progressing nicely. It's around 70% on the field as a whole but is higher in areas with the best stand.

Crop Development, Site 2

Producer Practices | **University Practices**

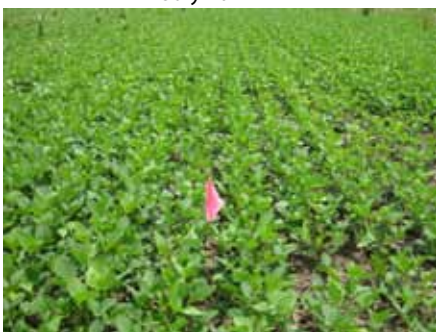


July 10 – V1



July 10 – V1

July 29 – V7



July 29 – V7

August 4 – R1, V8

August 4 – R1, V8

8/4—It appears that some marestail didn't die, but there is very little within the field. Volunteer corn is still standing but is dead. Canopy is nearly full across both fields.

8/13—Canopy is full across both fields. Plants are very tall and look healthy overall. There is no sign of disease up to this point.

8/21—Still no sign of disease and very little insect pressure.

8/27—Fields look good overall. Plants are very tall but also have nice, thick stems. No signs of lodging in either field.

9/4—Disease and insect pressure remain low.

9/11—Pod counts reveal what we expect. There are more pods per plant in the UK side (fewer plants), but overall pods per area is similar.

9/18—R6 has been reached. There are some early signs of Cercospora, mostly on field borders. It will be interesting to see how this progresses in the coming weeks.

9/24—Late R6. Cercospora is very prevalent across both fields. Defoliation is occurring in the tops of the plants, while the bottoms of the plants are still green.

10/30—Cercospora infection mainly coincided with the natural defoliation of the plants.

Table 2b. Practices, 2009, Site 2.

		Producer	University
Field size (acres)		28.0	13.2
Previous crop		Corn	
Tillage		None	
Soil type		Collins Silt Loam	
Soil test results	P_2O_5 (lbs/a)	102	113
	K_2O (lbs/a)	212	214
	pH	6.6	6.5
Fertilizer recommended		None	None*
Fertilizer applied	P_2O_5 (lbs/a)	0	
	K_2O (lbs/a)	0	
	Ag lime (tons/a)	0	
Planting date		23-Jun	
Soybean variety		Asgrow 4703	
Row spacing (inches)		15	
Seeding rate (seeds/a)		159,000	140,000
Plant stand (plants/a)		119,600	101,300
Pod number (pods/5 ft)		569	622
Pod number (pods/plant)		36	48
Herbicide applications		24 oz/a Touchdown + 6 oz/a Fusilade, July 20	
Insecticide applications		None	
Fungicide applications		None	
Harvest date		6-Nov	
Yield (bu/a)		50.1	59.2

* Due to late addition of field to the program, no recommended although it is warranted according to AGR-1.

Table 2d. Physiological Characteristics, 2009, Site 2.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
10-Jul	4	V1	--	4	V1	--
21-Jul	8	V4		8	V4	
29-Jul	15	V7	70	13	V7	70
4-Aug	21	R1, V8	90	19	R1, V8	95
13-Aug	28	R2, V14	Full	27	R2, V14	Full
21-Aug	36	R3, V15		34	R3, V15	
27-Aug	39	R4, V15		38	R4, V15	
4-Sep	43	R5, V16		40	R5, V16	
11-Sep	45	R6, V17		42	R6, V17	
18-Sep	46			42		
24-Sep	--	R6		--	R6	
30-Sep		R7	--		R7	--
7-Oct						

Table2c. Insect Counts, 2009, Site 2.

		Producer					University				
Date	Sweeps	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers
29-Jul	50	3	2	0	0	2	2	2	1	0	1
4-Aug	50	2	1	0	1	0	1	2	0	1	0
13-Aug	50	2	1	1	2	0	4	2	0	3	2
21-Aug	50	3	0	0	2	1	1	1	1	2	0
27-Aug	50	0	0	1	2	1	0	0	2	3	0
4-Sep	50	0	0	2	3	0	0	0	1	4	0

Table 2e. Leaf Nutrient Analysis, 2009, Site 2.

	Reference Level	Producer	University
Nutrient	(%)		
P	0.25-0.60	0.46	0.51
K	1.50-2.30	1.94	1.92
Mg	0.25-0.70	0.26	0.28
Ca	0.80-1.40	0.93	1.01
S	0.25-0.60	0.33	0.37
Nutrient	**(ppm)**		
B	25-300	42	44
Zn	17-200	47	43
Mn	21-80	135	118
Fe	4-30	100	112
Cu	20-60	13	13

Date: 8-13
Growth Stage: R2, V14

Site 3

Producer: Sam Hancock
County: Hickman
County Agent: Cam Kenimer
Coordinator: Jason Sarver
Field Location: Latitude: 36.583703
Longitude: -88.886569

Table 3a. Costs and Returns, 2009, Site 3.

Partial Costs/a†	Prod.	Univ.
Seed	42.00	36.00
Herbicide		
Insecticide		
Fungicide		
Total Partial Costs		
Partial Return/a‡		
Partial Net Return		

† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

Table 3b. Practices, 2009, Site 3.

		Producer	University
Field size (acres)			
Previous crop		Corn, Rye cover	
Tillage		None	
Soil type		Loring Silt Loam	
Soil test results	P_2O_5 (lbs/a)	124	127
	K_2O (lbs/a)	249	251
	pH		
Fertilizer recommended		N/A	None
Fertilizer applied	P_2O_5 (lbs/a)	None	
	K_2O (lbs/a)	None	
	Ag lime (tons/a)	None	
Planting date		3-Jun	
Soybean variety		Asgrow AG4703	
Row spacing (inches)		15	
Seeding rate (seeds/a)		140,000	120,000
Plant stand (plants/a)		118,700	91,200
Pod number (pods/5 ft)		824	714
Pod number (pods/plant)		69	72
Herbicide applications			
Insecticide applications			
Fungicide applications			
Harvest date		26-Oct	
Yield (bu/a)			

Table 3c. Insect Counts, 2009, Site 3.

		Producer					University				
Date	Sweeps	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers
8-Jul	50	5	0	0	0	0	4	0	0	0	0
14-Jul	50	7	0	1	0	0	8	0	1	0	0
21-Jul	50	6	2	0	2	1	6	2	2	1	0
30-Jul	50	6	1	0	2	0	4	1	3	2	0
6-Aug	50	2	0	0	1	0	0	4	0	0	1

Table 3d. Physiological Characteristics, 2009, Site 3.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
18-Jun	5	V1	--	5	V1	--
23-Jun	7	V2		7	V2	
30-Jun	8	V4		8	V4	
8-Jul	10	V5	55	10	V5	55
14-Jul	15	R1, V9	80	14	R1, V9	80
21-Jul	19	R2, V11	95	19	R2, V11	95
30-Jul	25	R2, V15	Full	23	R2, V15	Full
6-Aug	29	R3, V17		29	R3, V17	
13-Aug	33	R4, V18		33	R4, V18	
17-Aug	35	R5, V19		35	R5, V19	
24-Aug	38			38		
31-Aug	40	R6, V19		39	R6, V19	
11-Sep	40	R6		39	R6	
18-Sep	--	R7	--	--	R7	--
22-Sep						
28-Sep		R8			R8	

Table 3e. Leaf Nutrient Analysis, 2009, Site 3.

Nutrient	Reference Level	Producer	University
	(%)		
P	0.25-0.60	0.49	0.51
K	1.50-2.30	2.27	2.29
Mg	0.25-0.70	0.31	0.32
Ca	0.80-1.40	1.06	1.07
S	0.25-0.60	0.33	0.34
Nutrient	**(ppm)**		
B	20-60	42	39
Zn	21-80	34	32
Mn	17-100	94	88
Fe	25-300	104	102
Cu	4-30	12	11

Date: 7-30
Growth Stage: R2

Site 4

Producer: Curtis Hancock
County: Hickman
County Agent: Cam Kenimer
Coordinator: Jason Sarver
Field Location: Latitude: 36.583703
Longitude: -88.886569

Table 4a. Costs and Returns, 2009, Site 4.

Partial Costs/a†	Prod.	Univ.
Seed		
Herbicide		
Insecticide		
Fungicide		
Total Partial Costs		
Partial Return/a‡		
Partial Net Return		

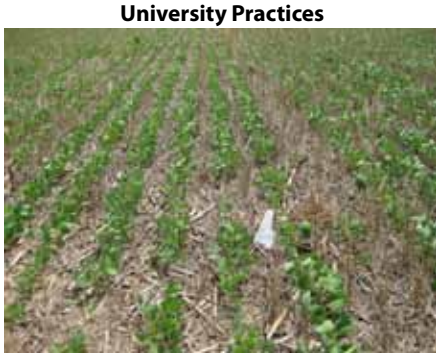
† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included.

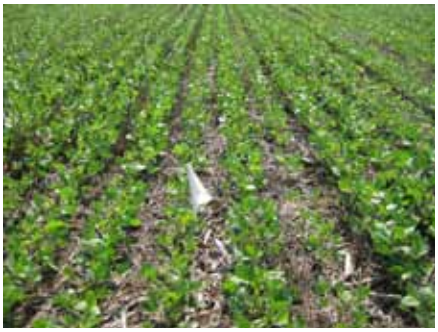
‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

Crop Development, Site 4

Producer Practices | **University Practices**


June 30 – V4

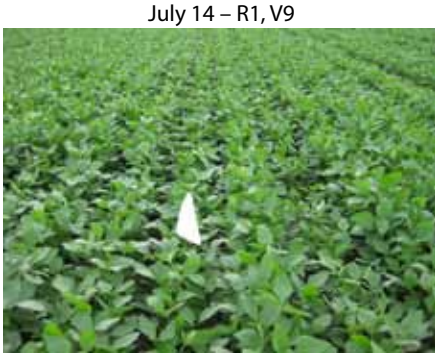

June 30 – V4


July 8 – V5


July 8 – V5


July 14 – R1, V9


July 14 – R1, V9


July 21 – R2, V11


July 21 – R2, V11

Field Notes, Site 4

6/18—Plants are at V1 after being planted on June 3. Emergence appears to be good and uniform. There is a lot of volunteer corn in the field, mainly in clumps from whole ears that were lost in the field.

6/23—Stand still appears good. Stands for UK fields are 91,200 and 93,000 respectively, while stands in producer practice fields are 118,700 and 116,800, respectively. Volunteer corn is growing rapidly in clumps.

6/30—Fields look good overall. There is very little insect pressure. Emergence was hurt in areas of very heavy rye cover and under tire tracks. Soybean plants are much larger in areas with significant corn residue. The field has been quite dry, and these areas of more corn residue are holding moisture.

7/8—Starting to observe some Japanese beetle damage, but defoliation is only around 5% in the most affected areas. Crop canopy is roughly 55% full across the field. A large amount of copperleaf has begun to emerge very heavily in several areas across the field. Will call Sam to get the field sprayed this week.

7/14—The spray application has resulted in very good weed control. Canopy is still uniform across the fields and is roughly 80% closed. Japanese beetles are heavy in some areas of the field, but they are still well below the defoliation threshold. Those small weeds that have emerged since the glyphosate application should be taken care of by the crop canopy, which should be closed by next week.

7/21—Canopy on the producer practice side of the field is full, while the UK side is nearly there (~95%). Japanese beetles are less prevalent than last week. Weed control should not be an issue now that the canopy has filled in.

7/30—Plants are getting very tall across all fields. Slightly taller in the producer practice fields. There are still some spots that never filled in. This is much more evident now that canopy has filled in the rest of the

field. Some downy mildew is starting to show. There is not a lot now but will need to continue to monitor.

8/6—Starting to see some lodging across the fields. It's more prevalent on field borders. Plants are very tall but have very thin stems.

8/13—Spraying fungicide. Crop is being grown for seed, so fungicide applications are mandatory.

8/17—Plants are very tall. Some SDS is starting to show up. It's quite sporadic across the field, but is more prevalent on field borders.

8/24—SDS is slightly more severe. Incidence level is up to about 10% across the field.

8/31—Pod counts reveal that the UK side has more pods per plant (as expected), but pods per unit area are very similar at both populations.

9/11—Some plants are starting to transition to R7.

Table 4b. Practices, 2009, Site 4.

		Producer	University
Field size (acres)			
Previous crop		Corn, Rye cover	
Tillage		None	
Soil type		Loring Silt Loam	
Soil test results	P_2O_5 (lbs/a)	108	112
	K_2O (lbs/a)	247	249
	pH		
Fertilizer recommended		N/A	None
Fertilizer applied	P_2O_5 (lbs/a)	None	
	K_2O (lbs/a)	None	
	Ag lime (tons/a)	None	
Planting date		3-Jun	
Soybean variety		Asgrow AG4703	
Row spacing (inches)		15	
Seeding rate (seeds/a)		140,000	120,000
Plant stand (plants/a)		116,800	93,000
Pod number (pods/5 ft)		599	661
Pod number (pods/plant)		50	66
Herbicide applications			
Insecticide applications			
Fungicide applications			
Harvest date		26-Oct	
Yield (bu/a)			

Table 4c. Insect Counts, 2009, Site 4.

		Producer					University				
Date	Sweeps	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers
8-Jul	50	3	0	0	1	0	4	0	0	1	0
14-Jul	50	5	1	1	1	0	4	2	1	2	0
21-Jul	50	6	2	2	3	0	5	1	1	3	0
30-Jul	50	2	1	0	0	1	2	0	0	2	0
6-Aug	50	0	2	0	4	1	2	0	0	1	0

Table 4d. Physiological Characteristics, 2009, Site 4.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
18-Jun	5	V1	--	5	V1	--
23-Jun	7	V2		7	V2	
30-Jun	8	V4		8	V4	
8-Jul	10	V5	55	10	V5	55
14-Jul	14	R1, V9	80	14	R1, V9	80
21-Jul	19	R2, V11	Full	19	R2, V11	95
30-Jul	24	R2, V15		24	R2, V15	Full
6-Aug	30	R3, V17		28	R3, V17	
13-Aug	35	R4, V18		32	R4, V18	
17-Aug	36	R5, V19		34	R5, V19	
24-Aug	39			37		
31-Aug	40	R6, V19		39	R6, V19	
11-Sep	40	R6		39	R6	
18-Sep	--	R7	--	--	R7	--
22-Sep						
28-Sep		R8			R8	

Table 4e. Leaf Nutrient Analysis, 2009, Site 4.

Nutrient	Reference Level	Producer	University
	(%)		
P	0.25-0.60	0.42	0.44
K	1.50-2.30	2.25	2.27
Mg	0.25-0.70	0.29	0.32
Ca	0.80-1.40	1.02	1.04
S	0.25-0.60	0.33	0.32
Nutrient	**(ppm)**		
B	20-60	53	53
Zn	21-80	35	33
Mn	17-100	137	132
Fe	25-300	103	103
Cu	4-30	11	11

Date: 7-30
Growth Stage: R2

Site 5

Producer: Roger Boyd
County: Lyon
County Agent: Susan Fox
Coordinator: Jason Sarver
Field Location: Latitude: 37.161182
Longitude: -88.033669

Table 5a. Costs and Returns, 2009, Site 5.

Partial Costs/a†	**Prod.**	**Univ.**
Seed	51.00	51.00
Herbicide	23.36	20.10
Insecticide	0	0
Fungicide	0	0
Total Partial Costs	74.36	71.10
Partial Return/a‡	408.00	410.88
Partial Net Return	333.64	339.78

† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

Field Notes, Site 5

6/29—No emergence yet. Straw cover after the wheat is very heavy, and there are also some patches of Johnsongrass disbursed throughout the field.

7/7—The Johnsongrass patches are of concern throughout the field. The plants are still at VE, so I would really like to delay herbicide application for at least one week and preferably two to control later emerging weeds as well.

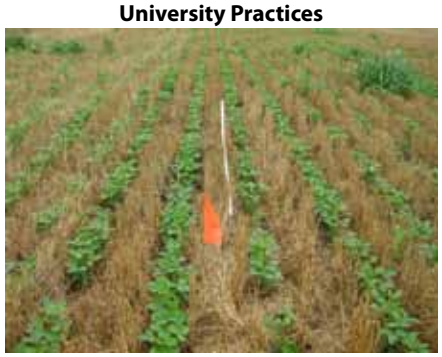
7/9—Johnsongrass is getting heavier. After consultation with Dr. Lee and Dr. Martin we have decided to wait a week or so. Emergence looks good and is better where straw cover isn't as heavy.

7/16—Plants look good. They are very tall and spindly for V2 beans. I suspect this is a result of the tall wheat stubble. Johnsongrass has a presence on roughly 10-15% of the field but is getting very tall. Will need a spray application this week. Roger sprayed their side of the field on 7/10 with 1.5 quarts glyphosate and 2 ounces of Pursuit. Copperleaf is the other major weed pest, but that should be easily removed by the Pursuit/glyphosate combo.

Crop Development, Site 5

Producer Practices | **University Practices**


July 16 – V3

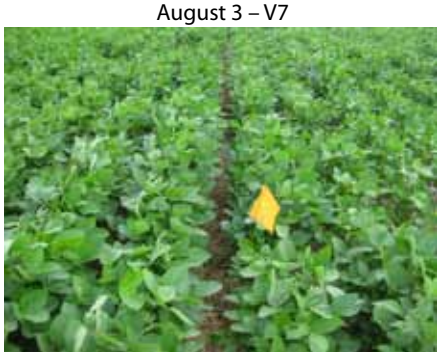

July 16 – V3

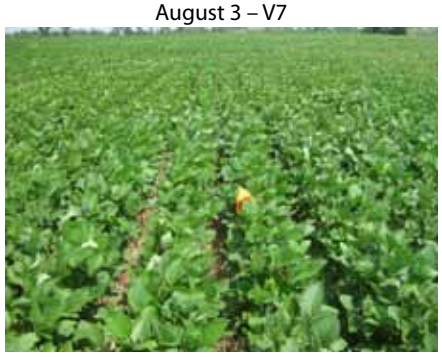

July 29 – V6


July 29 – V6


August 3 – V7


August 3 – V7


August 10 – R1, V9


August 10 – R1, V9

7/27—Our side was sprayed on 7/17 with 1 quart glyphosate and 2 ounces of Pursuit. Weed control appears to have worked well across the field. There is some Johnsongrass around telephone poles and in drainage ditches that may have not gotten the spray application. The yellowing seen at other locations is not nearly as pronounced here. There is some volunteer wheat in both fields, with slightly more on the producer practice side. May or may not be related to the earlier spray application.

8/3—Canopy is roughly 75% full. There is some heavy volunteer wheat in spots, slightly heavier on producer practice side. There is also some new copperleaf emerging, but it's very small and should be taken care of by the crop canopy.

8/10—Crop has reached reproductive growth. Volunteer wheat is still heavy but should be shaded out soon by the crop canopy. There is some very light downy mildew starting to show. It's heaviest on field borders.

8/19—Crop has reached full canopy. Downy mildew is less prevalent than last week. Insect pressure is very low.

8/25—Volunteer wheat has died beneath the crop canopy, although in areas of poor emergence it is quite heavy. There are a relatively high number of bean leaf beetles within the field but still below threshold.

9/1—Plants look very good. They are very tall, especially for double-crop beans. There are some aphids, but they are well below threshold levels.

9/10—The Johnsongrass that was in the drainage areas, around telephone poles, and one strip in the center of the field did escape the herbicide application. It shouldn't affect yield but may need to be spot-removed before going to seed.

9/16—The areas of Johnsongrass have been spot sprayed as a preventive measure for next growing season. Plants are at R6.

9/22—Some Cercospora is starting to show up, but the plants are at a late R6. It shouldn't be detrimental to yield.

Table 5b. Practices, 2009, Site 5.

		Producer	University
Field size (acres)		111.6	49.1
Previous crop		Corn, Wheat	
Tillage		None	
Soil type		Crider Silt Loam	Crider Silt Loam, Crider-Pembroke Silt Loam
Soil test results	P_2O_5 (lbs/a)	92	
	K_2O (lbs/a)	550	
	pH	6.9	
Fertilizer recommended		N/A	None
Fertilizer applied	P_2O_5 (lbs/a)	None	
	K_2O (lbs/a)	None	
	Ag lime (tons/a)	None	
Planting date		26-Jun	
Soybean variety		Pioneer 94M50	
Row spacing (inches)		15	
Seeding rate (seeds/a)		170,000	
Plant stand (plants/a)		136,000	
Pod number (pods/5 ft)		656	643
Pod number (pods/plant)		55	54
Herbicide applications		24 oz Roundup + 2 oz Pursuit, July 10	16 oz Roundup + 2 oz Pursuit, July 17
Insecticide applications		None	
Fungicide applications		None	
Harvest date		7-Nov	
Yield (bu/a)		42.5	42.8

Table 5c. Insect Counts, 2009, Site 5.

		Producer					University				
Date	Sweeps	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers
3-Aug	50	3	3	0	1	1	4	3	0	2	2
10-Aug	50	2	0	0	0	0	2	0	0	0	0
19-Aug	50	1	2	0	1	1	2	4	0	3	1
25-Aug	50	0	22	0	0	1	0	9	0	2	0
1-Sep	50	0	7	0	2	2	0	6	0	1	0

*Aphids, below threshold.

Table 5d. Physiological Characteristics, 2009, Site 5.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
29-Jun	--	VE	--	--	VE	--
7-Jul		VE			VE	
9-Jul	4	V1		4	V1	
16-Jul	8	V2		8	V2	
27-Jul	13	V5		13	V5	
3-Aug	18	V7	75	18	V7	75
10-Aug	25	R1, V9	85	25	R1, V9	85
19-Aug	32	R2, V11	95	32	R2, V11	95
25-Aug	35	R3, V12	Full	35	R3, V12	Full
1-Sep	38	R4, V13		38	R4, V13	
10-Sep	39	R5, V14		39	R5, V14	
16-Sep	40	R6, V14		40	R6, V14	
22-Sep	40	R6		40	R6	
29-Sep	--	R7	--	--	R7	--
6-Oct						

Table 5e. Leaf Nutrient Analysis, 2009, Site 5.

Nutrient	Reference Level	Producer	University
	(%)		
P	0.25-0.60	0.49	0.48
K	1.50-2.30	2.31	2.40
Mg	0.25-0.70	0.26	0.29
Ca	0.80-1.40	1.08	1.21
S	0.25-0.60	0.32	0.31
Nutrient	**(ppm)**		
B	25-300	39	53
Zn	17-200	41	32
Mn	21-80	91	85
Fe	4-30	93	95
Cu	20-60	13	11

Date: 8-13
Growth Stage: R2, V14

Site 6

Producer: Danny Miller
County: Muhlenberg
County Agent: Darrell Simpson
Coordinator: Jason Sarver
Field Location: Latitude: 37.342105
Longitude: -87.302603

Table 6a. Costs and Returns, 2009, Site 6.

Partial Costs†	**Prod.**	**Univ.**
Seed	52.80	42.00
Herbicide	19.74	19.74
Insecticide	0	0
Fungicide	0	0
Total Partial Costs	72.54	61.74
Partial Return‡	432.96	451.20
Partial Net Return	360.42	389.46

† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included. Seeding rates based on 3,000 seeds per pound in a 50-pound bag.

‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

Table 6b. Practices, 2009, Site 6.

		Producer	**University**
Field size (acres)		6.02	8.6
Previous crop		Corn	
Tillage		Disc, Field Cultivator	
Soil type		Belknap Silt Loam, Collins Silt Loam	
Soil test results	P_2O_5 (lbs/a)	69	112
	K_2O (lbs/a)	259	265
	pH	6.1	6.2
Fertilizer recommended		N/A	30 lb/a
Fertilizer applied	P_2O_5 (lbs/a)	None	
	K_2O (lbs/a)	78	
	Ag lime (tons/a)	1.0	None
Planting date		24-Jun	
Soybean variety		Crow's 4820	
Row spacing (inches)		15	
Seeding rate (seeds/a)		176,000	140,000
Plant stand (plants/a)		126,800	112,740
Pod number (pods/5 ft)		703	650
Pod number (pods/plant)		39	43
Herbicide applications		48 oz. Extreme + 8 oz. Roundup Original, July 11	
Insecticide applications		None	
Fungicide applications		None	
Harvest date		14-Nov	
Yield (bu/a)		45.1	47.0

Table 6c. Insect Counts, 2009, Site 6.

		Producer					**University**				
Date	**Sweeps**	**Japanese Beetle**	**Bean Leaf Beetle**	**Green Stink Bug**	**Grasshopper**	**Loopers**	**Japanese Beetle**	**Bean Leaf Beetle**	**Green Stink Bug**	**Grasshopper**	**Loopers**
10-Aug	50	0	0	1	0	0	0	0	1	0	0
19-Aug	50	0	2	2	2	0	0	1	1	3	0
27-Aug	50	0	3	2	4	0	0	3	2	3	0
10-Sep	50	0	3	1	2	0	0	2	1	0	0
16-Sep	50	0	1	1	0	0	0	2	0	0	0

*Aphids, below threshold.

Table 6d. Physiological Characteristics, 2009, Site 6.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
6-Jul	em	VE	--	em	VE	--
9-Jul	3	V1		3	V1	
17-Jul	7	V2		7	V2	
20-Jul	9	V3		9	V3	
27-Jul	12	V5		12	V5	
28-Jul	13	V6		12	V6	
3-Aug	15	R1, V8	70%	14	R1, V8	75%
10-Aug	19	R2, V9	85%	18	R2, V9	95%
19-Aug	25	R3, V10	95%	25	R3, V10	Full
27-Aug	28	R4, V11	Full	28	R4, V11	
10-Sep	30	R5, V13		30	R5, V13	
16-Sep	32	R6, V13		32	R6, V13	
1-Oct	32	R7	--	32	R7	--

Table 6e. Leaf Nutrient Analysis, 2009, Site 6.

	Reference Level	Producer	University
Nutrient	(%)		
P	0.25-0.60	0.42	0.42
K	1.50-2.30	2.34	2.25
Mg	0.25-0.70	0.29	0.29
Ca	0.80-1.40	1.21	1.02
S	0.25-0.60	0.30	0.33
Nutrient	**(ppm)**		
B	25-300	48	52
Zn	17-200	36	35
Mn	21-80	221	137
Fe	4-30	91	103
Cu	20-60	11	11

Date: 8-10
Growth Stage: R2, V9

Site 7

Producer: Billy Miller
County: Muhlenberg
County Agent: Darrell Simpson
Coordinator: Jason Sarver
Field Location: Latitude: 37.342105
Longitude: -87.302603

Table 7a. Costs and Returns, 2009, Site 7.

Partial Costs/a†	**Prod.**	**Univ.**
Seed	52.80	42.00
Herbicide	19.74	19.74
Insecticide	0	0
Fungicide	0	0
Total Partial Costs	72.54	61.74
Partial Return/a‡	377.28	373.44
Partial Net Return	304.74	311.70

† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

Field Notes, Site 7

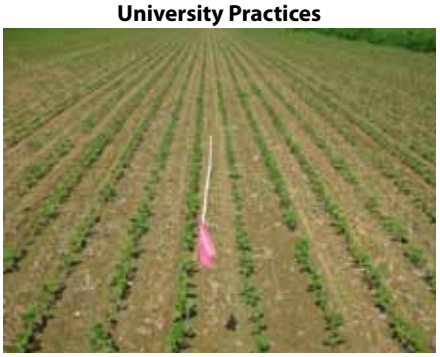
6/17—Visited the farm to make the final preparations for the plot layout. Measured and flagged out all fields in preparation for planting. Field 1 is the first University section and measures 8.64 acres. Field 2 measured 15.44 acres and will be divided into two parts. The portion nearest field 1 will be tended according to producer practices and contains an area of 12.04 acres, while the remaining 3.4 acres (Field 2c) will be tended in a manner identical to field 1. Producer practice portion of the field will be further subdivided, as the side nearest field 1 is most similar in soil type to field 1. This field will be referred to as 2a, while the other half; that nearest field 2c, will be labeled field 2b. The field was disked and will get field cultivator prior to planting, partially because of the previous year's windstorm, which left a good deal of corn residue in the field.

6/24—All fields have been limed and nutrients have been applied according to UK soil test results. The fields were planted at a rate of 140,000 seeds per acre on the University practice portion and at 176,000 seeds per acre on the producer practice portion.

Crop Development, Site 7

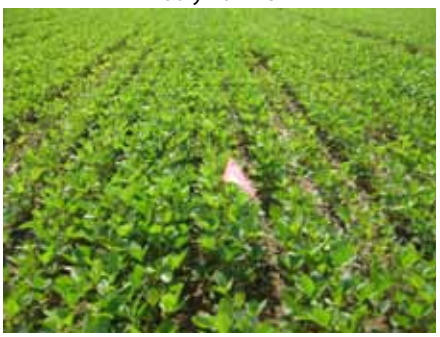
Producer Practices | **University Practices**


July 9 – V1

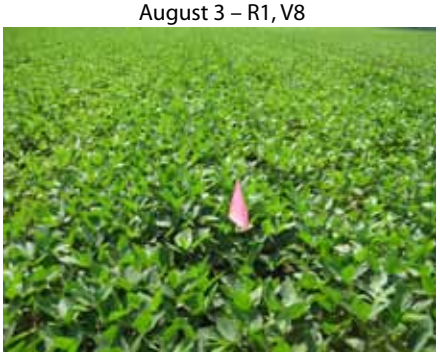

July 9 – V1

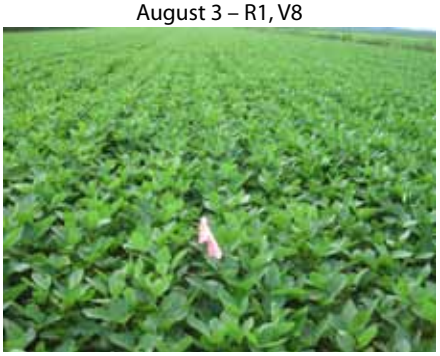

July 20 – V3


July 20 – V3


August 3 – R1, V8


August 3 – R1, V8


August 10 – R2, V9


August 10 – R2, V9

All fields were at an acceptable moisture level for planting, soil temperature is high, and planting depth is approximately 1.25 inches, which should lead to a quick, uniform emergence.

7/6—Plants are at the VE to V1 stage, and the stand appears to be relatively uniform. Due to heavy rains the field is very wet. Very little weed pressure.

7/9—Plants are at the V1 stage and are 3-4 inches tall. Good stand but some substantial skips, particularly in overlap from tire tracks. The stand in field 1, which was planted at 140,000 seeds per acre, is 112,740 (80.5% emergence). The stand in field 2a is 126,800 (72% emergence), 2b is 122,700 (69.7% emergence), 2c is 99,900 (71.4% emergence). Weed pressure is still

low but there are some large pigweeds and field bindweeds.

7/17—Both fields are yellow, with the yellowing being more evident on the new growth. Spraying has clearly occurred. Will come back early next week to see if yellowing still persists and will ask Danny what has been sprayed.

7/20—Plants are still very yellow and some of the newer leaves are puckered, although they have grown. Talked to Danny and found out that Extreme (3 pt/acre) and Roundup (8 oz/acre) were sprayed on July 11. I expect plants to come out of this as new growth occurs.

7/27—Plants have completely come out of the yellowed state. Weed control is very good. If we don't get a late weed flush I don't believe we will be hurt by the early weed control application. Canopy is around 50% developed throughout.

8/3—Some Septoria on lower trifoliates and unifoliates. It's worse in the wetter areas of field 2. Field is staying very wet. Canopy is progressing slightly faster in field 1. Around half of the plants have reached R1.

8/10—The dry weekend was very beneficial to this field. Septoria still hasn't moved up past the lowest trifoliate. Canopy is 85-95% throughout. Very little insect pressure to be found.

8/19—Field remains very wet.

8/27—Field is still wet, mainly across the far end of field 2. Septoria is still only affecting the bottom of the plants and has caused some defoliation in the bottom leaves in the wetter areas.

9/10—Starting to see some aphids. They are at levels far below threshold. Took pod counts. Numbers are very similar, with fields 2a and 2b (higher populations) having slightly more pods per area but fewer pods per plant.

9/16—Aphid numbers have increased but are still comfortably below the threshold for treatment.

10/1—Cercospora is common across both fields, but R7 maturity has been reached.

Table 7b. Practices, 2009, Site 7.

		Producer	University
Field size (acres)		6.02	3.4
Previous crop		Corn	
Tillage		Disc, Field Cultivator	
Soil type		Belknap Silt Loam, Collins Silt Loam	
Soil test results	P_2O_5 (lbs/a)	69	98
	K_2O (lbs/a)	259	
	pH	6.1	5.6
Fertilizer recommended		N/A	30 lb/a , 1.33 tons lime
Fertilizer applied	P_2O_5 (lbs/a)	None	
	K_2O (lbs/a)	78	
	Ag lime (tons/a)	1.0	
Planting date		24-Jun	
Soybean variety		Crow's 4820	
Row spacing (inches)		15	
Seeding rate (seeds/a)		176,000	140,000
Plant stand (plants/a)		122,700	99,900
Pod number (pods/5 ft)		660	582
Pod number (pods/plant)		44	45
Herbicide applications		48 oz. Extreme + 8 oz. Roundup Original, July 11	
Insecticide applications		None	
Fungicide applications		None	
Harvest date		14-Nov	
Yield (bu/a)		39.3	38.9

Table 7c. Insect Counts, 2009, Site 7.

		Producer					University				
Date	Sweeps	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers
10-Aug	50	0	0	1	0	0	0	1	1	0	0
19-Aug	50	0	3	1	2	0	0	4	3	3	0
27-Aug	50	0	2	2	2	0	0	5	1	2	0
10-Sep	50	0	3	1	1	0	0	3	2	3	0
16-Sep	50	0	2	2	1	0	0	1	2	1	0

Table 7d. Physiological Characteristics, 2009, Site 7.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
6-Jul	--	VE	--	--	VE	--
9-Jul	3	V1		3	V1	
17-Jul	7	V2		7	V2	
20-Jul	9	V3		9	V3	
27-Jul	12	V5		12	V5	
28-Jul	13	V6		12	V6	
3-Aug	15	R1, V8	70%	14	R1, V8	75%
10-Aug	19	R2, V9	85%	18	R2, V9	95%
19-Aug	25	R3, V10	95%	25	R3, V10	Full
27-Aug	28	R4, V11	Full	28	R4, V11	
10-Sep	30	R5, V13		30	R5, V13	
16-Sep	32	R6, V13		32	R6, V13	
1-Oct	32	R7	--	32	R7	--

Table 7e. Leaf Nutrient Analysis, 2009, Site 7.

	Reference Level	Producer	University
Nutrient	(%)		
P	0.25-0.60	0.42	0.42
K	1.50-2.30	2.34	2.25
Mg	0.25-0.70	0.29	0.29
Ca	0.80-1.40	1.21	1.02
S	0.25-0.60	0.30	0.33
Nutrient	**(ppm)**		
B	25-300	48	52
Zn	17-200	36	35
Mn	21-80	221	137
Fe	4-30	91	103
Cu	20-60	11	11

Date: 8-10
Growth Stage: R2, V9

Site 8

Producer: Barry Alexander
County: Trigg
County Agent: David Fourqurean
Coordinator: Jason Sarver
Field Location: Latitude: 36.93369
Longitude: -87.745875

Table 8a. Costs and Returns, 2009, Site 8.

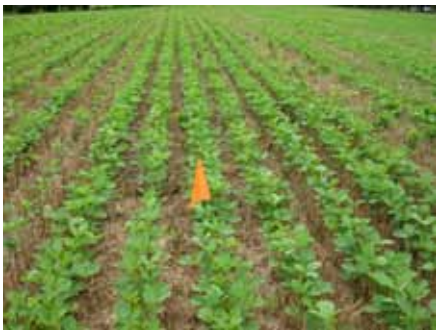
Partial Costs/a†	Prod.	Univ.
Seed	54.64	54.64
Herbicide	16.48	10.41
Insecticide	6.47	6.47
Fungicide	16.22	16.22
Total Partial Costs	93.81	87.74
Partial Return/a‡	548.16	526.08
Partial Net Return	454.35	438.34

† Costs for seeding rate and pest management are included. Any other costs that differed were also included. Costs are an average for input prices from the region. Custom application rates are included for pesticide applications. See "Economic Analysis" on page 2 for more details on how costs were determined. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices ($9.60/bu) are based on the average price for November delivery of soybean. See "Economic Analysis" on page 2 for more details on soybean commodity prices.

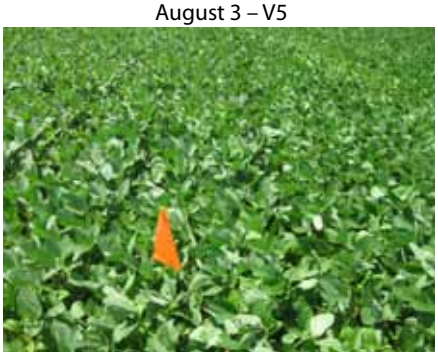
Crop Development, Site 8

Producer Practices



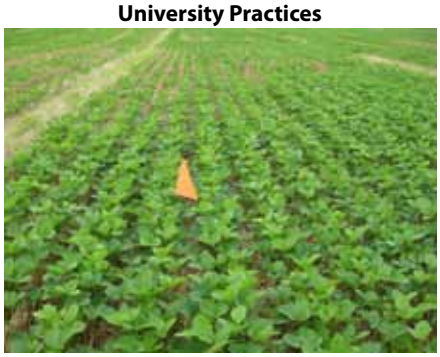
July 28 – V4

August 3 – V5



August 12 – R2, V8

University Practices



July 28 – V5

August 3 – V6

August 12 – R2, V8

Field Notes, Site 8

7/2—Cotyledons have emerged in most places. There is very heavy straw cover in some areas, which may delay or inhibit emergence in some areas of the field.

7/8—Plants are at the VE growth stage. Emergence is still not very uniform, as the areas of heavy straw cover have few emerged plants. There are some spots in the field with heavy pigweed, nightshade, and lambsquarters pressure.

7/13—Weed pressure is getting rather heavy while the soybean plants are at the V2 growth stage. Would ideally like to wait a little longer for spray application to be able to control for the entire season, but weeds need to be taken out now. Marestail, pigweed, lambsquarters, black nightshade, and volunteer wheat are all beginning to be a problem. Called Barry to spray. They will spray on 7/14. 3 pints of glyphosate on our side and 3 pints of Extreme on their side.

7/20—Weed control appears to be very good on both sides. Producer practice side is yellowed, most likely due to the Extreme sprayed, as we have seen this in other locations. There is a distinct line running between the two sides. On the UK side, it appears that there has been some volunteer wheat that has emerged since the spray application. There is also some yellow nutsedge that may not die from the glyphosate, but it is limited to a very small portion of the field. Producer side may actually be a half-growth stage behind, again possibly due to herbicide.

7/28—Weed removal was great, although there is still some volunteer wheat coming through, mainly on the UK side. There is some Septoria at very low levels starting to show up on the lowest leaves. Canopy closure is well ahead in the areas with less straw cover when compared to the areas with heavy cover Plant stand is also better in these areas. While there is no more sign of yellowing on the producer practice side, it is now a full growth stage behind (V3 vs. V4) and is 1-2 inches shorter on average.

8/3—Flowering is beginning on a few of the plants. Volunteer wheat remains prevalent (more so on UK side) but it is well below canopy height. I suspect it will not be a problem once canopy develops fully. Canopy on UK side is around 85%, with producer practice side being at around 75%. The difference is quite clear in canopy development, growth stage, and crop height.

8/12—Both sides are at the V7-V8 growth stage, with the UK side being mostly V8 and the producer side being mostly V7. It may be growing out of the differences. The UK side is at full canopy, while the producer side needs about 10% more closure to be full. Volunteer wheat is still there but is now fully enclosed by the crop canopy. Very little insect pressure in either side of the field.

8/18—As it was last time, vegetative growth stage is still slightly behind on the producer practice side, but both sides are at R2. The herbicide does not appear to have slowed

down development in the reproductive phases thus far.

8/26—Crop looks good. Weeds have remained at bay and insect pressure is still very light.

9/1—UK side is again a full vegetative stage and full reproductive stage ahead of the producer practice side. The height difference also remains.

9/10—Pod counts reveal that there are more pods per acre and per unit area on the UK side. It will be interesting to see yield results to see if these apparent differences result in a difference in the final product.

Table 8b. Practices, 2009, Site 8.

		Producer	University
Field size (acres)		24.2	
Previous crop		Corn, Wheat	
Tillage		None	
Soil type		Crider Silt Loam, Crider-Pembroke Silt Loam	
Soil test results	P_2O_5 (lbs/a)	67*	
	K_2O (lbs/a)	495*	
	pH	6.6*	
Fertilizer recommended		N/A	None
Fertilizer applied	P_2O_5 (lbs/a)	73*	
	K_2O (lbs/a)	34*	
	Ag lime (tons/a)	0	
Planting date		24-Jun	
Soybean variety		Crow's 4444	
Row spacing (inches)		15	
Seeding rate (seeds/a)		170,000	
Plant stand (plants/a)		134,300	129,200
Pod number (pods/5 ft)		626	736
Pod number (pods/plant)		45	52
Herbicide applications		48 oz Extreme	48 oz glyphosate
Insecticide applications		2 oz/a Warrior	
Fungicide applications		6 oz/a Headline	
Harvest date		6-Nov	
Yield (bu/a)		57.1	54.8

* Soil samples taken and fertilizer applications made prior to wheat crop.

Table 8c. Insect Counts, 2009, Site 8.

		Producer					University				
Date	Sweeps	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers	Japanese Beetle	Bean Leaf Beetle	Green Stink Bug	Grasshopper	Loopers
28-Jul	50	2	2	0	1	0	3	1	0	3	0
3-Aug	50	3	3	1	3	1	2	3	0	2	2
12-Aug	50	1	0	0	5	3	2	0	1	4	4
18-Aug	50	0	0	0	3	4	0	1	0	5	6
26-Aug	50	0	2	2	4	2	0	0	0	2	4
1-Sep	50	0	1	1	2	1	0	1	1	0	2

Table 8d. Physiological Characteristics, 2009, Site 8.

	Producer			University		
Date	Height (in)	Growth Stage	Canopy Closure	Height (in)	Growth Stage	Canopy Closure
2-Jul	--	VC	--	--	VC	--
8-Jul		VE			VE	
13-Jul	4	V2		4	V2	
20-Jul	7	V3		8	V3	
28-Jul	12	V4	65	13	V5	70
3-Aug	14	V5	75	16	V6	85
12-Aug	22	R2, V7	90	24	R2, V8	Full
18-Aug	29	R3, V9	95	31	R3, V10	
26-Aug	32	R3, V11	Full	33	R4, V12	
1-Sep	33	R4, V12		34	R5, V13	
10-Sep	35	R5, V13		36	R5, V14	
18-Sep	36	R6, V14		38	R6, V14	
25-Sep	--	R7	--	--	R7	--
30-Sep						

† VC is unrolled unifoliolate leaves. From ISU Extension publication, Soybean Growth and Development, (PM 1945).

Table 8e. Leaf Nutrient Analysis, 2009, Site 8.

	Reference Level	Producer	University
Nutrient	(%)		
P	0.25-0.60	0.44	0.51
K	1.50-2.30	2.21	2.29
Mg	0.25-0.70	0.26	0.32
Ca	0.80-1.40	0.95	1.07
S	0.25-0.60	0.29	0.34
Nutrient	**(ppm)**		
B	20-60	36	39
Zn	21-80	40	32
Mn	17-100	89	88
Fe	25-300	93	102
Cu	4-30	12	11

Date: 8-12
Growth Stage: R2, V8

12-2010