

# Soybean Management Verification Program Report, 2012

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## Abstract

The 2012 Soybean Management Verification Program (SoyMVP) enrolled 19 fields across Western Kentucky, providing ten direct comparisons between University of Kentucky recommendations and producers practices for soybean production. All fields were scouted weekly and recommendations were made on the university portion of the field based on established thresholds and observations from agronomic research. The objective of these comparisons is to validate university research and identify areas for more research.

The 2012 season began with warm temperatures and early spring-like weather in March. Farmers in several counties in Western Kentucky planted corn as early as March 21. Soybean planting was early as well. The first full season field was planted April 26 and the last field (double crop) was planted June 3. A lack of rain and prolonged periods of excessive heat occurred during the reproductive stages of most soybean fields and posed several challenges during the year.

The season favored later-planted soybeans and generally favored higher plant populations. Such conditions are abnormal, but they are what soybeans experienced in 2012.

Weed pressure during the 2012 growing season was from: Virginia copperleaf, mare's tail, large crabgrass, smooth pigweed, pokeweed, morning glory (mostly tall and ivyleaf), volunteer ryegrass, and Johnsongrass. Insect pressure varied during the growing season, beginning with bean leaf beetles and early emerging Japanese beetles. Mid June-September

insect pressure shifted and green clover worm pressure increased in comparison to 2011. In addition, there was patchy pressure due to corn earworms, three-cornered alfalfa leaf hoppers, and stinkbugs.

Disease pressure was relatively low due to the drought and high temperatures. There was consistent charcoal rot, Rhizoctonia root rot, late season frogeye leaf spot, sun burn, septoria, soybean vein necrosis-associated virus (SVNaV), and green stem syndrome. The green stem syndrome occurred mostly in double crop fields. Samples of *Cercospora sojina*, the causal agent of frogeye leaf spot, and the various stinkbugs were collected in collaboration with surveys conducted throughout Western Kentucky. Other pressures included potassium (K) deficiency noticed not only in one soybean field but also in leaf nutrient analysis results from samples taken at growth stage R2.

## Introduction

The 2012 growing season marked the fourth and final field season that the Soybean Management Verification Program (SoyMVP) was fully implemented in Kentucky. During the season, 19 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 producers. The stated goals for SoyMVP are:

- To get up-to-date research-based recommendations to Kentucky soybean producers for implementation in production-based systems

- To assist researchers in the improvement of research methods and identify areas of soybeans research that requires further investigation
- To update university recommendations from information received from production-based systems and subsequent research in order to provide Kentucky soybean producers knowledge and information to maximize soybean profitability

## Methods

### Cooperator and Field Selection

Kentucky County Extension agents play a critical role in SoyMVP. The agents originally contact and identify prospective cooperators as well as arrange meetings between the producers and the program coordinator.

Field enrollment into SoyMVP follows two requirements:

1. Have an area representative of field-scale production
2. Consistent soil type(s) on both halves of the field

Field location, size, and soil type were determined using Web Soil Survey. Once all requirements were met, producers agreed to use their own equipment for resources for all production practices during the growing 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 some cases, the field was already split with a drainage ditch or berm, but soil types remained consistent in both halves.

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

**Table A.** Results by Location.

| Location      | Yield (bu/a) |       | Partial Net Return (\$/a) |         |
|---------------|--------------|-------|---------------------------|---------|
|               | Prod.        | Univ. | Prod.                     | Univ.   |
| Ballard       | 40.5         | 39.7  | 540.62                    | 550.89  |
| Butler        | 57.7         | 58.8  | 779.03                    | 799.00  |
| Carlisle      | 56.9         | 59.9  | 635.47                    | 687.25  |
| Daviess       | 60.9         | 60.6  | 780.20                    | 785.43  |
| Graves (a)    | 29.4         | 30.0  | 357.80                    | 373.30  |
| Graves (b)    | 51.0         | 49.0  | 673.55                    | 676.60  |
| Graves (c)    | 55.0         | 49.0  | 734.03                    | 672.17  |
| Graves (d)    | 45.7         | 48.0  | 618.99                    | 660.20  |
| Henderson (a) | 62.2         | 53.5  | 823.30                    | 716.18  |
| Henderson (b) | 78.2         | 78.5  | 1093.37                   | 1104.25 |
| Hickman       | 26.4         | 26.4  | 347.80                    | 342.98  |
| Simpson (a)   | 47.2         | 45.7  | 638.41                    | 625.07  |
| Simpson (b)   | 55.1         | 59.1  | 745.80                    | 808.54  |
| Trigg (a)     | 40.2         | 39.0  | 550.83                    | 525.26  |
| Trigg (b)     | 18.1         | 19.3  | 221.46                    | 239.31  |
| Trigg (c)     | 32.8         | 36.2  | 423.57                    | 480.60  |
| Trigg (d)     | 82.3         | 76.1  | 1158.20                   | 1074.31 |
| Union         | 46.5         | 50.9  | 501.46                    | 571.88  |
| Warren        | 50.3         | 49.6  | 666.96                    | 676.63  |
| Average       | 49.3         | 48.9  | 646.89                    | 651.04  |
|               | 0.4          |       | -4.16                     |         |

**Table B.** Practice Differences during 2012 Growing Season.

| Location                   | Rate (seeds/a) |        | Differences <sup>2</sup> |          |
|----------------------------|----------------|--------|--------------------------|----------|
|                            | Prod.          | Univ.  | Prod.                    | Univ.    |
| Ballard                    | 140000         | 140000 | h, l, f                  | h        |
| Butler                     | 150000         | 140000 | h, l, f                  | h, f     |
| Carlisle                   | 140000         | 120000 | h                        | h        |
| Daviess                    | 150000         | 135000 | h                        | h        |
| Graves (a)                 | 160000         | 140000 | h                        | h        |
| Graves (b)                 | 200000         | 140000 | h, foliar, l, f          | h, l, f  |
| Graves (c) <sup>1</sup>    | 200000         | 160000 | h, foliar, l, f          | h, f     |
| Graves (d) <sup>1</sup>    | 160000         | 140000 | h, f                     | h, f     |
| Henderson (a) <sup>1</sup> | 155000         | 142000 | h, foliar, l, f          | h, f     |
| Henderson (b)              | 162000         | 142000 | h                        | h        |
| Hickman                    | 140000         | 155000 | h, l                     | h, i     |
| Simpson (a)                | 140000         | 155000 | h, l, f                  | h, l     |
| Simpson (b)                | 160000         | 150000 | h, l, f                  | h, l, f  |
| Trigg (a)                  | 125000         | 149000 | h                        | h        |
| Trigg (b)                  | 125611         | 125611 | (4/26), h                | (5/2), h |
| Trigg (c)                  | 169000         | 149000 | h, f                     | h, l     |
| Trigg (d) <sup>1</sup>     | 175000         | 149000 | h, l                     | h, l     |
| Union                      | 160000         | 142000 | h                        | h        |
| Warren                     | 150000         | 135000 | h, f                     | h        |

<sup>1</sup> Field under irrigation.

<sup>2</sup> ( ) - planting date, with date in parentheses; h - herbicide; l - insecticide; f - fungicide, foliar - foliar fertilizer.

## Scouting and Recommendations

Soil samples were collected prior to planting and fertilizer guidelines followed on the university half were based upon soil-test results from University of Kentucky Regulatory Services and guidelines from *2011-2012 Lime and Nutrient Recommendations* (AGR-1). Producers were provided a copy of the university's soybean varietal-trial results in order to make varietal decisions. Seeding rate was based upon 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 early June or before.

The coordinator performed weekly and bi-weekly scouting for physiological, weed, insect, and disease observations at every field. If a threshold was met on the university half, a recommendation was

requested for the appropriate product and application rate. During the late bloom growth state (reproductive state R1-R3), leaf samples were collected for tissue nutrient analysis. The nutrient concentrations are displayed along with reference levels for each site. Pictures were taken for visual comparison of canopy closure at each field. Prior to soybean reproductive growth, canopy closure must reach 95 percent.

During harvest, yield was calculated either by a weigh wagon (if available) or a yield monitor. Results were adjusted to 13 percent moisture.

## Economic Analysis

Economic analyses were done using partial budgets. Variable costs of production were considered for the comparison of practices between the fields. In the interest of confidentiality, input prices from area suppliers rather than the price paid by the producer were used. Custom application rates for pesticide applica-

tions were obtained from the University of Kentucky Agricultural Economics *Custom Machinery Rates Applicable to Kentucky* (AEC 2012-03) and 2012 corn and soybean budgets. 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 on their portion of the field from a source other than the University of Kentucky.

## Results

Detailed results can be viewed on proceeding pages. Average yield for the fields using university practices was 48.9 bushels per acre, compared to average yield of 49.3 bushels per acre for producer practices. Average partial return per acre for university practices was \$651.04 compared to \$646.89 per acre for producer practices.

## Final Thoughts

We thank the farmers on the Soybean Promotion Board for funding this program. The working relationship with the Kentucky Soybean Promotion Board and the University of Kentucky is highly valued. We thank the county Extension agents and the farmers who volunteered fields, time, and equipment to make these comparisons.

### Project Coordinator and Lead Faculty

Amanda Martin, Coordinator, Extension Associate, Princeton  
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### County Extension Agents

Joanna Coles, Warren County  
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Carla Harper, Carlisle County  
Clint Hardy, Daviess County  
Darian Irvan, Hickman County  
Tom Miller, Ballard County  
Kenny Perry, Graves County  
Jason Philips, Simpson County  
Rankin Powell, Union County  
Mike Smith, Henderson County

### Producers

Barry Alexander  
Adam Bell  
Mike Bullock  
Jed Clark  
Cundiff Farms  
Tim Horn  
Jesse Horn  
Adam Kough  
Randy Mann  
Philip Meredith  
Jerry Peery  
Brad Reddick  
Jeremy Robertson  
Gary Thomas  
Shane Wells  
Bob White

## For More Information

Soybean Management Verification Program  
[www.soymvp.blogspot.com](http://www.soymvp.blogspot.com)

Kentucky Soybean Board  
[www.kysoy.org](http://www.kysoy.org)

Grain crop production in Kentucky  
[www.uky.edu/Ag/GrainCrops/](http://www.uky.edu/Ag/GrainCrops/)

### University of Kentucky

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Cory Walters, Assistant Professor for Agricultural Economics, Lexington

### Kentucky Soybean Promotion Board

The soybean farmers and employees of the Kentucky Soybean Board were extremely helpful throughout the duration of this project.



## Site 1, Ballard County

Producer: Allen Foster  
 County Agent: Tom Miller  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 59' 31"  
 Longitude: 88° 56' 15"

**Table 1a.** Costs and Returns, 2012, Ballard.

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 45.00      | 45.00      |
| Herbicide                     | 8.74       | 4.37       |
| Insecticide                   | 4.00       | 0.00       |
| Fungicide                     | 14.00      | 0.00       |
| Fertilizer                    | 0.00       | 0.00       |
| Total Partial Cost/a          | 71.74      | 49.37      |
| Partial Return/a <sup>‡</sup> | 612.36     | 600.26     |
| Partial Net Return/a          | 540.62     | 550.89     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Ballard County Field Notes

**May 1:** Allen planted Asgrow 4232. He planted both halves with the same seeding rate (140,000 seeds per acre). This should not cause a problem as long as there are some differences between the halves during the season.

**May 8:** The field is very dry and in need of a decent amount of rain. Emergence is slow with the beans at VC. Met Allen Foster for the first time and discussed MVP protocol for the growing season.

**May 23:** Met with Tom this morning, and we flagged out a newer and more productive section of the field. Weed pressure is very low but there are patches of Virginia copperleaf, crabgrass, volunteer corn, and marestail. The field is very dry and needs a good rain, so insect pressure is low and the soybeans are at V1 and 2.5 inches tall. On a good note, the stand looks good and the stand count was 136,256 plants per acre (97% emergence).

**May 30:** The soybeans are at V2 and 4 inches tall. The field is extremely dry and needs rain, explaining the low weed pressures except for single marestail plants.

## Ballard County

### Producer



May 23 - V1



June 6 - V3



June 13 - V6

### University



There is some leaf feeding, and Japanese beetles are emerging and are present in the field in low numbers. There is some thrips injury and possibly some herbicide drift but in low numbers.

**June 6:** Field received a much needed 0.6 inches Monday night, and the beans look better at a stage of V3 and 5.5 inches. Overall the field looks clean with only minor foliage feeding from Japanese beetles. The volunteer corn and crabgrass are pretty heavy on the university side. The producer half appears to be sprayed due to the yellowing on top of the marestail. I called Allen to request an application and he informed me that he sprayed yesterday.

**June 13:** Field received a good rain on the 12th. The soybeans look healthier with a growth stage of V6 and 9.5 inches tall. There is a section of the university half

that has a section (1% of the plot area) that has herbicide injury, likely from an overlap application. Japanese beetles feeding are concentrated to the upper trifoliolate leaves and is about 2%. Other insects that have been seen in the field are brown stinkbugs, striped blister beetles, and grasshoppers.

**June 20:** The university side, where the soybeans appeared injured, is now completely dead. Soybeans are at V8 and 10 inches tall. The weed pressure is still low and the same applies to the insect feeding. The upper trifoliolates are tattered, and this could be due to Japanese beetles or grasshoppers. Other insects seen in this field are corn borers and alfalfa leaf hoppers.

**June 27:** Aside from the dry conditions the field looks good. The soybeans are

**Table 1b.** Practices during Growing Season, 2012, Ballard.

|                                       | Producer          | University   |
|---------------------------------------|-------------------|--------------|
| Field Size, acres                     | 16                | 14           |
| Previous Crop                         | Corn              |              |
| Soil Type                             | Grenada silt loam |              |
| Fertilizer Applied                    |                   |              |
| P <sub>2</sub> O <sub>5</sub> , lbs/a | 80                |              |
| K <sub>2</sub> O, lbs/a               | 100               |              |
| Ag Lime, tons/a                       |                   |              |
| Planting Date                         | 1-May-12          |              |
| Soybean Variety                       | Asgrow 4232       |              |
| Row Spacing, inches                   | 15                |              |
| Seeding Rate, seeds/a                 | 140,000           |              |
| Plant Stand, plants/a                 | 136,256           |              |
| Herbicide                             | 1 pt Roundup x2   | 1 pt Roundup |
| Insecticide                           | 2.5 oz Mustang    | None         |
| Fungicide                             | 6 oz Headline     | None         |
| Harvest Date                          | 26-Sep-12         |              |
| Yield, bu/a                           | 40.5              | 39.6         |

at R1 and 16 inches tall. The field has gentle rolling hills, so on the low ends the heights are a little lower. Insect sweeps indicate an average of three bean leaf beetles and three Japanese beetles on the university half and three bean leaf beetles (one Japanese beetles) per 20 sweeps on the producer half. Defoliation percentage remains below 5% and is patchy on both halves.

**July 10:** The field has received some rain and the beans are a little taller this week: 23 inches (producer) and 24 inches (university). The insect pressure is mostly Japanese beetles, however there is a spot of heavy leaf defoliation due to striped blister beetles. This section does not represent the whole field to justify an application.

**July 18:** Allen sprayed an insecticide and fungicide on the 17th. The field is now at R3 and 30 inches tall with a rain storm approaching. Insect counts indicate that Japanese beetle counts have decreased with defoliation below 10%. Some mares-tail is creeping through the canopy of the soybeans but in low numbers.

**July 24:** The field has patchy areas where the soybeans are starting to lean near the edge of the field on the university side. The insect pressure is mostly from green clover worms, some stinkbugs and three-cornered alfalfa leaf hoppers.

**August 7:** The soybeans on both halves are at R5 and 40 inches. The field could use another rain to fill the pods. There is low disease pressure present with some bacterial blight. Insect sweeps indicate mostly bean leaf beetles and three-cornered alfalfa leaf hoppers. Stem and developing pod damage is low across the field.

**August 22:** The field has reached R6 with an average of three to four pods per node. There were a few plants collected with charcoal root rot on the producer half. The low spots on the university side have patchy areas of lodged plants. There are small areas of frogeye leaf spot on the university half and some areas of blister beetle feeding. Some more rain should help the pods fill.

**September 13:** The field is at R7. The majority of the lodged soybeans are located on the university half of the field. A rating for the two areas would be a 3. There are pods that are dried and twisted along the main stem of the soybeans. The drought affected this field greatly with lingering charcoal root rot, and some stinkbug damage (university side). The field should be ready for harvest in two weeks.

**Table 1c.** Physiological Characteristics, 2012, Ballard.

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 8-May      | 2           | VE           |                | 2           | VE           |                |
| 23-May     | 2.5         | V1           |                | 2.5         | V1           |                |
| 30-May     | 3.5         | V2           |                | 3.5         | V2           |                |
| 6-Jun      | 5.5         | V3           |                | 5.5         | V3           |                |
| 13-Jun     | 9.5         | V6           | 60%            | 9.5         | V6           | 60%            |
| 20-Jun     | 10          | V8           | Full           | 10          | V8           | Full           |
| 27-Jun     | 16          | V10, R1      | Full           | 16          | V9, R1       | Full           |
| 10-Jul     | 23          | V12, R2      | Full           | 24          | V13, R2      | Full           |
| 18-Jul     | 29          | V19, R3      | Full           | 33          | V17, R3      | Full           |
| 24-Jul     | 36          | V19, R4      | Full           | 36          | V7, R4       | Full           |
| 7-Aug      | 40          | V19, R5      | Full           | 40          | V20, R5      | Full           |
| 22-Aug     | 40          | R6           | Full           | 40          | R6           | Full           |
| 29-Aug     | 40          | R6           | Full           | 40          | R6           | Full           |
| 13-Sep     | 40          | R7           | Full           | 40          | R7           | Full           |

**Table 1d.** Insect Counts\*, 2012, Ballard.

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 28-Jun | 20     | 1                | 3                | 0               | 1           | 0       | 4                  | 3                | 3                | 0               | 0           | 0       | 2                  |
| 10-Jul | 20     | 2                | 1                | 0               | 1           | 0       | 0                  | 5                | 1                | 1               | 1           | 0       | 2                  |
| 18-Jul | 20     | 0                | 0                | 0               | 0           | 0       | 0                  | 5                | 1                | 3               | 0           | 0       | 0                  |
| 24-Jul | 20     | 1                | 0                | 0               | 0           | 0       | 0                  | 1                | 0                | 1               | 1           | 0       | 1                  |
| 7-Aug  | 20     | 0                | 2                | 0               | 1           | 0       | 1                  | 1                | 1                | 1               | 1           | 0       | 4                  |
| 22-Aug | 20     | 0                | 5                | 0               | 1           | 0       | 2                  | 0                | 4                | 1               | 0           | 0       | 3                  |

\*Total number of insects per 20 sweeps.

**Table 1e.** Leaf Nutrient Analysis, 2012, Ballard.

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.35    | 0.35  |
| K        | 1.5 - 2.25      | 1.81    | 1.77  |
| Mg       | 0.25 - 0.7      | 0.34    | 0.36  |
| Ca       | 0.8 - 1.4       | 0.99    | 1.02  |
| S        | 0.25 - 0.60     | 0.25    | 0.24  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 23      | 22    |
| Zn       | 21 - 80         | 47      | 50    |
| Mn       | 17 - 100        | 95      | 72    |
| Fe       | 25 - 300        | 76      | 91    |
| Cu       | 4 - 30          | 10      | 13    |

Date: 7/10  
Growth Stage: R2

## Site 2, Butler County

Producer: Shane Wells  
 County Agent: Greg Drake Jr.  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 37° 14' 10"  
 Longitude: 86° 52' 10"

**Table 2a.** Costs and Returns, 2012, Butler.

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 48.21      | 45.00      |
| Herbicide            | 3.28       | 3.28       |
| Insecticide          | 5.00       | 0.00       |
| Fungicide            | 12.09      | 12.09      |
| Fertilizer           | 0.00       | 0.00       |
| Total Partial Cost/a | 68.58      | 60.37      |
| Partial Return/a‡    | 847.61     | 859.37     |
| Partial Net Return/a | 779.03     | 799.00     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Butler County Field Notes

**May 3:** Shane planted Asgrow 4632. The rate for his half was 150,000 seeds per acre, and the rate on the university half was 140,000 seeds per acre.

**May 11:** Visited briefly with Shane. He informed me that they received an inch of rain last Friday. The field looks very clean, with a good burn down of the weeds. No pressure is visible, and the beans are at VC.

**May 23:** Fields look clean. It is a little drier than the last visit. Soybeans are at V1 and 3 inches tall. Weed pressure is low but there are patches of deer pressure on both halves in the middle/back end of the field. Stand counts for Shane's half were 140,786 plants per acre (94% emergence) and 132,074 plants per acre (94% emergence) for the university side.

**June 4:** Soybeans are at V3 and 5.5 inches tall on both halves. Canopy is about 30%-40% full this week. The pest pressure on the university side has been Japanese beetles and a few patches of deer feeding. Deer pressure is patchy, but more prevalent on the producer half. Giant

## Butler County

Producer



May 24 - V1

University



June 4 - V3



June 14 - V5



June 27 - R1



ragweed, Johnsongrass, and smooth pigweed are showing up more and are about 2-4 inches tall, and therefore it is time for herbicide.

**June 14:** Both halves of the field are at V5 and 9 inches tall. Weed pressure from teaweed, crabgrass, smooth pigweed, giant ragweed, ivy, and tall morning glory has increased, so I called Shane to request

herbicide for the university side. Other pressure from insects and deer is low this week for both halves. The soybeans on Shane's half have branched out to recover from the deer feeding.

**June 28:** The field has reached R1 and full canopy, so I began insect sweeps. The insects trapped were mostly three-cornered alfalfa leaf hoppers, bean leaf

**Table 2b.** Practices during Growing Season, 2012, Butler.

|                       | Producer         | University |
|-----------------------|------------------|------------|
| Field Size, acres     | 36               | 25         |
| Previous Crop         | Corn             |            |
| Soil Type             | Melvin silt loam |            |
| Soil Test             | Fall applied     |            |
| Planting Date         | 3-May-12         |            |
| Soybean Variety       | Asgrow 4632      |            |
| Row Spacing, inches   | 15               |            |
| Seeding Rate, seeds/a | 150,000          | 140,000    |
| Plant Stand, plants/a | 132,074          | 140,786    |
| Herbicide             | 24 oz Roundup    |            |
| Insecticide           | 1.28 oz Declare  | None       |
| Fungicide             | 4 oz Quadris     |            |
| Harvest Date          | 15-Oct-12        |            |
| Yield, bu/a           | 57.7             | 58.8       |

beetles, green clover worms, and grasshoppers. The numbers were low and so is the leaf defoliation. Shane sprayed the field with herbicide Tuesday, and weeds are expressing symptoms of dying. Soybeans in low areas on the university side have heat stress.

**July 5:** The field received much needed rain. The soybeans have no signs of wind damage in comparison to the corn in the rest of the field. The insect and disease pressure is steady but there are quite a few stinkbugs collected on the university half of the field as well as green clover worms and Japanese beetles. The soybeans are at R2, 20 inches tall and ready for leaf nutrient analysis.

**July 19:** Shane sprayed fungicide and insecticide July 18 to his half of the MVP field. Due to disease history, river bottom field, fungicide was applied to the university half. Insect sweeps indicated low numbers of green clover worms and grasshoppers (one per 20 sweeps).

**August 2:** The plants are at R5 and 45 inches tall. The whole field has flipped leaves due to heat stress. The soybeans that are along the wheel tracts are showing early signs of Sudden Death Syndrome (SDS) due to mechanical stress. Insect sweeps indicate more three-cornered alfalfa leaf hoppers, green clover worms, and grasshoppers; however, the numbers and percent of defoliation are in low levels. (Note: Flipped leaves indicate severe drought stress and the plants are desperately trying to hold onto water. Photosynthesis drops considerably when leaves are flipped over.)

**August 20:** There are small areas of turn-overs in the field. The beans have reached R6. Insect pressure is mostly green clover worms. SDS pressure has covered both halves of the field on the border rows and 30 feet into the end rows.

**September 7:** The field is at R7 and continues to turnover. There is no pod damage and most of the insects present are stinkbug nymphs. Most of the lodging is near the end rows, and it is likely due to wind damage and stem borer pressure.

**September 20:** The field should be ready for harvest in a week. I pulled a few plants to document stem borer populations. Due to the prolonged periods of heat stress the yield will probably be near 40 bushels per acre.

**Table 2c.** Physiological Characteristics, 2012, Butler.

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 11-May     | 1           | VC           |                | 1           | VC           |                |
| 24-May     | 3           | V1           |                | 2.5         | V1           |                |
| 4-Jun      | 5.5         | V3           |                | 5.5         | V3           |                |
| 14-Jun     | 9           | V5           | 40%            | 9           | V5           | 40%            |
| 28-Jun     | 17          | V9, R1       | Full           | 16          | V10, R1      | Full           |
| 5-Jul      | 20          | V11, R2      | Full           | 21          | V11, R2      | Full           |
| 19-Jul     | 33          | V16, R3      | Full           | 33          | V15, R3      | Full           |
| 2-Aug      | 45          | V19, R5      | Full           | 44          | V19, R5      | Full           |
| 20-Aug     | 45          | R6           | Full           | 44          | R6           | Full           |
| 7-Sep      | 45          | R6           | Full           | 45          | R6           | Full           |
| 20-Sep     | 45          | R7           | Full           | 45          | R7           | Full           |

**Table 2d.** Insect Counts, 2012, Butler.

| Date   | Sweeps | Producer         |                  |                 |             |         |                    | University       |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 28-Jun | 20     | 2                | 1                | 0               | 1           | 0       | 1                  | 2                | 1                | 0               | 1           | 0       | 1                  |
| 5-Jul  | 20     | 3                | 0                | 1               | 1           | 0       | 2                  | 3                | 0                | 0               | 1           | 0       | 2                  |
| 19-Jul | 20     | 0                | 0                | 0               | 1           | 0       | 0                  | 1                | 0                | 1               | 0           | 0       | 1                  |
| 2-Aug  | 20     | 0                | 0                | 0               | 1           | 0       | 1                  | 0                | 0                | 0               | 0           | 0       | 3                  |
| 20-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 6                  | 0                | 0                | 1               | 0           | 0       | 12                 |

**Table 2e.** Leaf Nutrient Analysis, 2012, Butler.

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.41    | 0.42  |
| K        | 1.5 - 2.25      | 1.71    | 1.73  |
| Mg       | 0.25 - 0.7      | 0.35    | 0.36  |
| Ca       | 0.8 - 1.4       | 1.14    | 1.02  |
| S        | 0.25 - 0.60     | 0.26    | 0.28  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 52      | 56    |
| Zn       | 21 - 80         | 48      | 49    |
| Mn       | 17 - 100        | 63      | 66    |
| Fe       | 25 - 300        | 85      | 93    |
| Cu       | 4 - 30          | 10      | 9     |

Date: 7/5  
Growth Stage: R2

## Site 3, Carlisle County

Producer: Brad Reddick  
 County Agent: Carla Harper  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 50' 30"  
 Longitude: 88° 54' 28"

**Table 3a.** Costs and Returns, 2012, Carlisle.

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 45.00      | 38.58      |
| Herbicide                     | 20.86      | 20.86      |
| Insecticide                   | 0.00       | 0.00       |
| Fungicide                     | 0.00       | 0.00       |
| Fertilizer                    | 159.00     | 159.00     |
| Total Partial Cost/a          | 224.86     | 218.44     |
| Partial Return/a <sup>‡</sup> | 860.33     | 905.69     |
| Partial Net Return/a          | 635.47     | 687.25     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Carlisle County Field Notes

**April 27:** The MVP plot was planted today on a 14-acre field with a Convent-Adler silt loam. Brad set a seeding rate of 140,000 seeds per acre on his half of the field. The seeding rate for the university side was set at 120,000 seeds per acre.

**May 8:** Field received a good rainfall and burndown on the cover ryegrass. There is a patch in the middle of the field that could use another round of spray. The beans are coming up well and are at VE. The end rows have a little damage on the unifoliate leaves due to either rain or insect feeding.

**May 17:** Beans are 2.5 inches tall and are at V1. The field is pretty dry on both halves. No signs of heavy leaf feeding from bean leaf beetles observed. Weeds present are volunteer rye cover, crabgrass, Palmer pigweed, and pitted morning glory. The weed pressure is low except for an area in the university half. I called Brad and requested an application of herbicide. Stand counts for Brad's half was 115,695 plants per acre (83% emergence) and 102,802 plants per acre (86% emergence).

## Carlisle County

### Producer



### University



May 17 - V1



May 23 - V2



June 6 - V5



June 13 - V6, R1

**May 23:** Soybeans are looking great and are at V2 and 4 inches tall. Today, Brad joined me to observe our scouting procedure. He informed me that his applicator sprayed the field this morning so herbicide symptoms will not show up in the weeds for another four days.

**May 30:** The soybeans field looks clean; there are signs of die back. A few soy-

beans were injured after the field was sprayed. There were quite a few Japanese beetles in the field, but there is very little defoliation (<1%) observed on the university side. Insect populations are concentrated on the dead ryegrass rather than the soybeans. I will continue to monitor the defoliation on the leaves due to this early season.



**Table 3b.** Practices during Growing Season, 2012, Carlisle.

|                                       | Producer                | University |
|---------------------------------------|-------------------------|------------|
| Field Size, acres                     | 7                       |            |
| Previous Crop                         | Corn and rye cover      |            |
| Soil Type                             | Convent-Adler silt loam |            |
| Fertilizer Applied                    |                         |            |
| P <sub>2</sub> O <sub>5</sub> , lbs/a | None                    |            |
| K <sub>2</sub> O, lbs/a               | 300                     |            |
| Ag Lime, tons/a                       | None                    |            |
| Planting Date                         | 27-Apr-12               |            |
| Soybean Variety                       | NK39A3                  |            |
| Row Spacing, inches                   | 15                      |            |
| Seeding Rate, seeds/a                 | 140,000                 | 120,000    |
| Plant Stand, plants/a                 | 115,695                 | 102,802    |
| Herbicide                             | 24 oz Intensity One     |            |
| Insecticide                           | None                    |            |
| Fungicide                             | None                    |            |
| Harvest Date                          | 21-Sep-12               |            |
| Yield, bu/a                           | 57.0                    | 59.9       |

**June 6:** Monday night's rain helped. The beans are at V5 8 inches tall, 50% full canopy, and should reach R1 soon. Japanese beetle numbers and feeding have increased a little bit on the university half from last week. The foliage feeding is minimal for now; for example, every 20-30 plants feeding or mating beetles are observed on an upper trifoliolate leaves. The same was observed on the producer half but not as prevalent. This field will need more attention next week if it receives more rain.

**June 13:** Soybeans have reached R1 with heights of 11 inches (university) and 10 inches (producers). The insect defoliation from Japanese beetles has stayed low. There is one spot on the producer half that has reached less than 5%. I began insect sweeps and took three sets of 20 sweeps on both halves. The insects trapped were Japanese beetles, alfalfa leaf hoppers, and corn root borers.

**June 20:** Soybeans are at V9/R2 and 15 inches tall. This field has the tallest beans this year so far. Both halves are beginning to show signs of heat stress. Insect sweeps indicated mostly bean leaf beetles, Japanese beetles, green clover worms, and alfalfa leaf hoppers. The leaf feeding is low and no disease pressure is present. The only need is rain.

**June 27:** The soybeans are now at R2, reproductive stage and ready for leaf nutrient analysis. The heights on the university side (120,000 seeds per acre) are 20 inches.

The producer half at 140,000 seeds per acre are 19 inches. There are some signs of heat stress on the end rows and low areas of the field. Another stress observed was a row of chewed petioles on Brad's side (deer). Insect trapped were mostly Japanese beetles and bean leaf beetles.

**July 10:** Field received some rain.

The left over rye straw must be providing a lot of moisture because the plants are pretty tall (35 inches on the UK side and 33 on the producer side). The reproductive stage is now at R4. I received a call from Brad and he requested an update on the field. I indicated that disease pressure is low and the insects are bean leaf beetles and Japanese beetles but in low levels that a spray is not needed. He told me that he will not spray fungicide or insecticide due to the progression of this drought.

**July 17:** The extreme heat and stretch of sandy, out wash soil in parts of the field has a few yellow, wilted soybeans. The beans are at V18-19, R4 and 43 inches tall. This week, insect counts decreased but more Japanese beetles and stinkbugs

**Table 3c.** Physiological Characteristics, 2012, Carlisle.

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 8-May      | 2           | VE           |                | 2           | VE           |                |
| 17-May     | 2.5         | V1           |                | 2.5         | V1           |                |
| 23-May     | 3.6         | V2           |                | 4           | V2           |                |
| 30-May     | 5.5         | V3           | 50%            | 5.5         | V3           | 50%            |
| 6-Jun      | 8           | V5           | 70%            | 8           | V5           | 70%            |
| 13-Jun     | 11          | V6, R1       | Full           | 11          | V6, R1       | Full           |
| 20-Jun     | 14.5        | V9, R2       | Full           | 15          | V9, R2       | Full           |
| 27-Jun     | 20          | V10, R2      | Full           | 19          | V10, R2      | Full           |
| 10-Jul     | 33          | V16, R4      | Full           | 35          | V16, R4      | Full           |
| 17-Jul     | 43          | V18, R4      | Full           | 42          | V19, R5      | Full           |
| 24-Jul     | 47          | V20, R5      | Full           | 47          | V2, R5       | Full           |
| 7-Aug      | 50          | R6           | Full           | 51          | R6           | Full           |
| 22-Aug     | 50          | R6           | Full           | 51          | R6           | Full           |
| 30-Aug     | 50          | R7           | Full           | 51          | R7           | Full           |

**Table 3d.** Insect Counts\*, 2012, Carlisle.

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 13-Jun | 20     | 10               | 0                | 0               | 1           | 0       | 1                  | 14               | 0                | 0               | 1           | 0       | 0                  |
| 20-Jun | 20     | 3                | 2                | 0               | 0           | 0       | 3                  | 2                | 2                | 0               | 0           | 0       | 2                  |
| 27-Jun | 20     | 3                | 1                | 0               | 1           | 1       | 2                  | 2                | 1                | 0               | 0           | 0       | 2                  |
| 10-Jul | 20     | 4                | 2                | 1               | 1           | 0       | 1                  | 5                | 1                | 0               | 0           | 0       | 1                  |
| 17-Jul | 20     | 1                | 0                | 0               | 1           | 0       | 0                  | 3                | 1                | 1               | 1           | 0       | 0                  |
| 24-Jul | 20     | 1                | 0                | 0               | 1           | 0       | 3                  | 1                | 0                | 1               | 0           | 0       | 4                  |
| 7-Aug  | 20     | 0                | 0                | 0               | 0           | 0       | 5                  | 3                | 0                | 1               | 0           | 0       | 0                  |
| 22-Aug | 20     | 0                | 1                | 0               | 0           | 0       | 2                  | 0                | 1                | 0               | 0           | 0       | 2                  |

\*Total number per 20 sweeps.

**Table 3e.** Leaf Nutrient Analysis, 2012, Carlisle.

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.48    | 0.47  |
| K        | 1.5 - 2.25      | 2.71    | 2.69  |
| Mg       | 0.25 - 0.7      | 0.28    | 0.28  |
| Ca       | 0.8 - 1.4       | 0.94    | 0.89  |
| S        | 0.25 - 0.60     | 0.27    | 0.26  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 36      | 40    |
| Zn       | 21 - 80         | 47      | 42    |
| Mn       | 17 - 100        | 57      | 56    |
| Fe       | 25 - 300        | 112     | 112   |
| Cu       | 4 - 30          | 11      | 10    |

Date: 6/20  
Growth Stage: R2

were collected on the university side. No disease pressure has been observed with the exception of septoria brown spot on the lower leaves and petioles.

**July 24:** The plants continue to grow taller with areas on the university side (population 120,000 seeds per acre) 48-53 inches tall. Some SDS was observed on both halves midfield. On the top leaves there are low levels of bacterial clusters, and downy mildew. Insect numbers are mostly green clover worms, corn root borers, and fewer Japanese beetles.

**August 7:** There has been a cool down with temperatures and there has been more dew accumulating in fields; this explain the late season frogeye leaf spot on the upper leaves of the soybeans. Both halves are between R5 and R6. There are several areas on the university side where the beans have lodged making insect sweeps more challenging. There are patchy areas of white flies. No heat stress or further SDS.

**August 22:** The fields are beginning to turnover on the borders and end rows. The frogeye leaf spot pressure has been isolated to the top leaves and has not

moved to the pods. I counted three to six pods per nodes on the university side and three to five on the producer half. Insect pressure is mostly low numbers of bean leaf beetles, and three-cornered alfalfa leaf hoppers. No significant pod feeding or stem damage observed.

**August 30:** The field is now at R7 and turned over across the whole field. The severity of the lodging is no more than a scale of 2. Most of it appears to be on the producer half (140,000 seeds per acre population). I talked to Brad and he anticipates harvest in two weeks.

## Site 4, Daviess County

Producer: Tim Horn  
 County Agent: Clint Hardy  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 37° 39' 37. 2"  
 Longitude: 88° 55' 1"

**Table 4a.** Costs and Returns, 2012, Daviess.

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 48.21      | 43.39      |
| Herbicide            | 9.00       | 9.00       |
| Insecticide          | 0.00       | 0.00       |
| Fungicide            | 0.00       | 0.00       |
| Fertilizer           | 57.21      | 52.39      |
| Total Partial Cost/a | 114.42     | 104.78     |
| Partial Return/a‡    | 894.62     | 890.21     |
| Partial Net Return/a | 780.20     | 785.43     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Daviess County Field Notes

**May 1:** Tim planted today. The variety is Becks398 and the seeding rate for his side was 150,000 seeds per acre. The university side of the field was planted at a rate of 135,000 seeds per acre.

**May 11:** Field has little to no weed pressure. The soybeans are at VE and 1.5 inches tall and the stand is looking good.

**May 21:** The field received some rain over the weekend. The soybeans are at V1 and 3 inches tall. Stand counts for the producer half is 135,210 (90% emergence) and 119,180 (88% emergence) for the university half. There is some leaf feeding due to bean leaf beetles, but very little. Weed pressure is low with the exception of some marestalk scattered in the field and 2 inches tall. On May 25, I received a call from Tim regarding an application of First Rate to kill the marestalk that were not killed by the burndown. Due to the number and height of marestalk, I requested an application for the university half.

## Daviess County

### Producer



### University



May 21 - V1



June 4 - V4



June 14 - V6

**June 4:** Met with Tim and Jesse Horn in the field. They were setting up a semi to spray the field in the afternoon to control the Johnsongrass smooth pigweed, and marestalk. They requested the stand count numbers from the previous visit. We also discussed the insects that have been emerging, Japanese beetles, and other pest such as voles. They asked about methods to control the voles. I was unable to answer but will seek information from the experts in Princeton. The beans are now at V4 and 6 inches tall. Japanese beetles are present; however, they are appearing in clusters on the dried corn stubble. Foliage feeding is very low at this point.

**June 14:** The fields looks good after Tim sprayed. The soybeans are at V6 growth stage and 10 inches on the producer half

and 10.5 inches tall on the university side. On the university half near the end rows there is some injury present on the lower leaves; however the upper trifoliates look healthy. Deer feeding is still prevalent but in low numbers.

**June 21:** The field is dry and the beans are showing signs of heat stress. The growth stage is now at R1. The university side remains slightly taller than the producer half with height. I started insect sweeps and trapped Japanese beetles and bean leaf beetles on both halves of the field. The numbers were low per 20 sweeps. Although not caught in the sweep net the other insects in the field were alfalfa hopper, and snails (mostly found on the producer half).

**June 28:** Tim sprayed another round of herbicide. The soybeans are at R2 and

**Table 4b.** Practices during Growing Season, 2012, Daviess.

|                                       | Producer                               | University |
|---------------------------------------|--|------------|
| Field Size, acres                     | 11                                     |            |
| Previous Crop                         | Corn                                   |            |
| Soil Type                             | Belknap silt loam                      |            |
| Fertilizer Recommended                | 40 lbs K <sub>2</sub> O                | None       |
| Fertilizer Applied                    | 300 lbs 9-23-30                        |            |
| P <sub>2</sub> O <sub>5</sub> , lbs/a | 69                                     |            |
| K <sub>2</sub> O, lbs/a               | 90                                     |            |
| Ag Lime, tons/a                       | 1.0                                    |            |
| Planting Date                         | 1-May-12                               |            |
| Soybean Variety                       | Becks 398                              |            |
| Row Spacing, inches                   | 15                                     |            |
| Seeding Rate, seeds/a                 | 150,000                                | 135,000    |
| Plant Stand, plants/a                 | 135,210                                | 119,180    |
| Herbicide                             | 2x (0.3 oz First Rate & 24 oz Roundup) |            |
| Insecticide                           | None                                   |            |
| Fungicide                             | None                                   |            |
| Harvest Date                          | 10-Oct-12                              |            |
| Yield, bu/a                           | 60.9                                   | 60.6       |

pretty tall (20 inches). There are sections of wilting plants on both halves in patches or along rills in the field. The university side has one section that is 30 feet long and takes over three rows. Insect counts indicated mostly bean leaf beetles, and Japanese beetles (one per 20 sweeps). Thresholds are low, along with any disease or weed pressure.

**July 12:** The field is at R4 and 33 inches tall on both halves. The field is pretty dry with strips of wilted, drought stressed beans on the university half. There are not recent tire marks in the field indicating that the producers have not sprayed anything beyond the second application of First Rate. Insect counts are low this week with mostly green clover worms, bean leaf beetles, and green stinkbugs.

**July 23:** Soybeans are at R5 and 45 inches tall. The disease pressure remains low with stress on the soybeans being sun scorching on older leaves, and patchy SDS on the end rows. Near the ditch on the producer half there is a spot with K deficiency symptoms. Leaf defoliation and chewing has decreased along with sweep counts. Hopefully a good rain is in the forecast.

**August 8:** There is some lodging on the university half on the end rows (rate 1-2). SDS is more noticeable on both halves covering 10% of the field. Bean leaf beetle and green cover worm counts are higher following the recent rain. No signs of pod feeding or damage.

**August 29:** The soybeans are at R7. The rains from the weekend through Tuesday helped the field turnover quickly. The average pods per node for both halves are four to six. There is a patch of soybeans on the producer half that is severely lodged. This may reduce the yield potential but the percentage of the field is low. Insecticide and fungicide was not applied to either half of the field so there may be little difference in the yield for this year.

**Table 4c.** Physiological Characteristics, 2012, Daviess.

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 11-May     | 1.5         | VE           |                | 1.5         | VE           |                |
| 21-May     | 3           | V1           |                | 2.9         | V1           |                |
| 4-Jun      | 6           | V4           |                | 6           | V4           |                |
| 21-Jun     | 14          | V8, R1       | Full           | 15          | V8, R1       | Full           |
| 28-Jun     | 20          | V10, R2      | Full           | 21          | V10, R2      | Full           |
| 12-Jul     | 27          | V17, R4      | Full           | 33          | V15, R4      | Full           |
| 23-Jul     | 33          | V17, R5      | Full           | 35          | V19, R5      | Full           |
| 8-Aug      | 45          | R6           | Full           | 44          | R6           | Full           |
| 29-Aug     | 45          | R7           | Full           | 45          | R7           | Full           |

**Table 4d.** Insect Counts\*, 2012, Daviess.

| Date   | Sweeps | Producer         |                  |                 |             |         |                    | University       |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 21-Jun | 20     | 3                | 3                | 0               | 0           | 0       | 0                  | 1                | 3                | 0               | 0           | 0       | 0                  |
| 28-Jun | 20     | 1                | 1                | 0               | 0           | 0       | 0                  | 1                | 2                | 0               | 1           | 0       | 1                  |
| 12-Jul | 20     | 1                | 1                | 0               | 1           | 0       | 1                  | 1                | 1                | 1               | 0           | 0       | 1                  |
| 23-Jul | 20     | 0                | 2                | 0               | 0           | 0       | 2                  | 0                | 1                | 0               | 0           | 0       | 1                  |
| 8-Aug  | 20     | 0                | 9                | 1               | 0           | 0       | 8                  | 0                | 11               | 1               | 0           | 0       | 6                  |

\*Total number per 20 sweeps.

**Table 4e.** Leaf Nutrient Analysis 2012, Daviess.

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.4     | 0.45  |
| K        | 1.5 - 2.25      | 1.67    | 1.92  |
| Mg       | 0.25 - 0.7      | 0.3     | 0.31  |
| Ca       | 0.8 - 1.4       | 1.05    | 1.04  |
| S        | 0.25 - 0.60     | 0.28    | 0.28  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 32      | 34    |
| Zn       | 21 - 80         | 35      | 38    |
| Mn       | 17 - 100        | 69      | 71    |
| Fe       | 25 - 300        | 98      | 86    |
| Cu       | 4 - 30          | 10      | 9     |

Date: 6/28  
Growth Stage: R2

## Site 5, Graves County (a)

Producer: Adam Kough  
 County Agent: Kenny Perry  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 37' 30"  
 Longitude: 88° 30' 27"

**Table 5a.** Costs and Returns, 2012, Graves (a).

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 51.43      | 45.00      |
| Herbicide                     | 3.50       | 3.50       |
| Insecticide                   | 0.00       | 0.00       |
| Fungicide                     | 0.00       | 0.00       |
| Fertilizer                    | 31.80      | 31.80      |
| Total Partial Cost/a          | 86.73      | 80.30      |
| Partial Return/a <sup>‡</sup> | 444.53     | 453.60     |
| Partial Net Return/a          | 357.80     | 373.30     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Graves County (a) Field Notes

**April 26:** Adam planted a 27 variety today. A seeding rate of 140,000 seeds per acre was set for the university half and 150,000 seeds per acre for the producer section.

**May 8:** Soybeans are at VE and coming up nicely. The field received 0.4 inch of rain. Met with Adam and obtained the soybean variety NKS27C4. The field had some sporadic spots with minor feeding on the unifoliolate leaves due to bean leaf beetles.

**May 17:** The beans are at V1 and 3 inches tall on both halves. On both halves there are patchy areas of poor stand due to deer feeding on the soybeans. This appears more prominent on the producer half. There are also areas of cotyledon and unifoliolate damage due to bean leaf beetles. The weed pressure is low consisting of henbit, crabgrass, and volunteer corn. The stand counts on the producer half is 137,998 plants per acre (89% emergence) and 130,331 plants per acre (93% emergence).

**May 23:** The beans are at V2 and 4 inches tall. No new bean leaf beetles damage

## Graves County (a)

Producer



University



May 17 - V1



May 23 - V2



June 6 - V6, R1



June 13 - V7, R2

has been observed on the new leaves. In addition, the beans are branching out to recover from the deer feeding. Due to the warm winter, I will continue to monitor the defoliation on both halves. Phytophthora root rot was found in one row on the University half of the field.

**May 30:** Canopy is about 50% in the field by now (stage V3 for both halves) and

the field still looks pretty clean with the exception of some Johnsongrass and henbit. The percent defoliation remains low on the UK side and the producer side. Recently read the Grain Crop Blog regarding Japanese beetles (<http://grain-crops.blogspot.com/2012/05/japanese-beetle-emergence-begins.html>) (Doug Johnson) and these insects are present

**Table 5b.** Practices during Growing Season, 2012, Graves (a).

|                                       | Producer                              | University |
|---------------------------------------|---------------------------------------|------------|
| Field Size, acres                     | 12                                    |            |
| Previous Crop                         | Corn                                  |            |
| Soil Type                             | Kirkland silt loam, Collins silt loam |            |
| P, lbs/a                              | 199                                   |            |
| K, lbs/a                              | 204                                   |            |
| pH                                    | 6.0                                   |            |
| Fertilizer Recommended                | 60 lbs                                |            |
| Fertilizer Applied                    |                                       |            |
| P <sub>2</sub> O <sub>5</sub> , lbs/a | None                                  |            |
| K <sub>2</sub> O, lbs/a               | 60 lbs                                |            |
| Ag Lime, tons/a                       |                                       |            |
| Planting Date                         | 27-Apr-12                             |            |
| Soybean Variety                       | NK S27C4                              |            |
| Row Spacing, inches                   | 15                                    |            |
| Seeding Rate, seeds/a                 | 160,000                               | 140,000    |
| Plant Stand, plants/a                 | 137,998                               | 130,331    |
| Herbicide                             | 32 oz Touchdown                       |            |
| Insecticide                           | None                                  |            |
| Fungicide                             | None                                  |            |
| Harvest Date                          | 2-Sep-12                              |            |
| Yield, bu/a                           | 29.4                                  | 30.0       |

in this field. By observation the producer half has experience more leaf feeding and the university half has had more deer damage.

**June 6:** Field has received some rain. Adam sprayed to control the henbit and grasses recently and the field looks clean. The growth stages of the beans are now at V5, R1 and 7 inches tall. Canopy closure is close to full. Insect pressure is minimal on both halves.

**June 13:** Soybeans are at R2 so I collected leaf tissue for nutrient analysis. Insect sweeps consisted of Japanese beetles, alfalfa leaf hoppers, and green clover worms. The numbers caught were below threshold and percent defoliation remains low. No disease pressure present, but the field could use a good rain.

**June 20:** Soybeans remain are R2 and are 13.5 inches tall on the producer half and 14.5 inches tall on the university side. Sweeps nets revealed mostly Japanese beetles, alfalfa hoppers, and an occasional green clover worm. Japanese beetle defoliation has reached 15% in the border rows. Within the field and scouting areas the defoliation is not that high, in fact it is patchy and less than 5%. After a phone call with the Graves Co. agent, Mr. Perry, I called Adam to inform him that he may

want to spray the border rows with insecticide to reduce the beetle pressure, but not the field itself.

**June 27:** Insect sweeps indicated a lower number of Japanese beetles. The bean leaf beetles numbers went up on the university half (five per 20 sweeps). Leaf defoliation is about 5 % now. The soybean stage is now at V10, R3 and 20 inches on the university side (17 inches on the producer half). If some rain comes the pods will continue to develop properly.

**July 11:** The field is at R4 and 22 inches tall. There is widespread yellowing across the field due to scorched, wilting leaves and charcoal root rot. There are also signs of SDS showing up in this field. On the university half the areas that are taller with healthier beans, Japanese beetle pressure has reached 10%. Quite a few dectes stem borers were collected. This may lead to lodging issues if these soybeans grow any taller, this may not be if the drought stress worsens in this field.

**Table 5c.** Physiological Characteristics, 2012, Graves (a).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 8-May      | 2           | VE           |                | 2           | VE           |                |
| 17-May     | 3.1         | V1           |                | 3.1         | V1           |                |
| 23-May     | 3.3         | V2           |                | 3.5         | V2           |                |
| 30-May     | 5           | V3           | 50%            | 5           | V3           | 50%            |
| 6-Jun      | 7           | V5, R1       | Full           | 7           | V5, R1       | Full           |
| 13-Jun     | 12          | V7, R2       | Full           | 12          | V7, R2       | Full           |
| 20-Jun     | 13.5        | V8, R2       | Full           | 14.5        | V8, R2       | Full           |
| 27-Jun     | 18          | V10, R3      | Full           | 21          | V10, R3      | Full           |
| 11-Jul     | 23          | V11, R4      | Full           | 22          | V13, R4      | Full           |
| 17-Jul     | 32          | V13, R5      | Full           | 32          | V13, R5      | Full           |
| 24-Jul     | 34          | R6           | Full           | 33          | R6           | Full           |
| 3-Aug      | 34          | R6           | Full           | 34          | R6           | Full           |
| 17-Aug     | 34          | R7           | Full           | 34          | R7           | Full           |
| 21-Aug     | 34          | R7           | Full           | 34          | R7           | Full           |

**Table 5d.** Insect Counts\*, 2012, Graves (a).

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 13-Jun | 20     | 8                | 0                | 0               | 1           | 0       | 1                  | 12               | 0                | 0               | 0           | 0       | 2                  |
| 20-Jun | 20     | 6                | 0                | 0               | 0           | 0       | 1                  | 7                | 0                | 0               | 0           | 0       | 1                  |
| 27-Jun | 20     | 3                | 2                | 1               | 0           | 0       | 2                  | 1                | 5                | 0               | 2           | 1       | 4                  |
| 11-Jul | 20     | 3                | 1                | 0               | 0           | 0       | 0                  | 11               | 1                | 0               | 0           | 0       | 0                  |
| 17-Jul | 20     | 1                | 1                | 0               | 1           | 0       | 1                  | 1                | 0                | 0               | 1           | 0       | 1                  |
| 24-Jul | 20     | 0                | 1                | 0               | 0           | 0       | 3                  | 2                | 0                | 0               | 0           | 0       | 3                  |
| 3-Aug  | 20     | 1                | 0                | 0               | 1           | 0       | 6                  | 1                | 0                | 0               | 1           | 0       | 14                 |
| 17-Aug | 20     | 1                | 0                | 0               | 0           | 0       | 4                  | 0                | 1                | 0               | 1           | 0       | 5                  |

\*Total number per 20 sweeps.

**Table 5e.** Leaf Nutrient Analysis, 2012, Graves (a).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.61    | 0.59  |
| K        | 1.5 - 2.25      | 2.72    | 2.53  |
| Mg       | 0.25 - 0.7      | 0.27    | 0.28  |
| Ca       | 0.8 - 1.4       | 1.16    | 1.03  |
| S        | 0.25 - 0.60     | 0.3     | 0.31  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 19      | 17    |
| Zn       | 21 - 80         | 36      | 40    |
| Mn       | 17 - 100        | 87      | 110   |
| Fe       | 25 - 300        | 94      | 104   |
| Cu       | 4 - 30          | 10      | 11    |

Date: 6/20  
Growth Stage: R2

**July 17:** Both sides are at R5 and 32 inches tall respectively. The insect counts have decreased (average one to two insects per 20 sweeps). The drought has greatly affected this field with large areas near the end rows and 50% incidence of SDS and charcoal rot and reduce yield. If some rain falls, there may be 30 bushel potential.

**July 24:** The SDS and charcoal rot incidence remain at 50%. No significant rainfall since the last visit. The seeds are filling and still are between R5 and R6. The insect counts remain low, with a few more green clover worms and one

patch of defoliation due to blister beetles (producer side).

**August 3:** The field is at R6 and starting to turnover on field edges. I took some random pod counts to estimate yield. There are three to four pods per node on the producer half and three pods per node on the university side. The green clover worm counts are high on the university half (12 worms per 20 sweeps). There is no sign of pod feeding and the field has undergone much drought stress so an insecticide is not needed.

**August 17:** The fields are turning over some more. Some plants have dried down prematurely due to SDS and

charcoal rot. All the insects trapped in the sweep net are green clover worms, three-cornered alfalfa leaf hoppers and stink bug nymphs. There are no signs of pod feeding just remnants of prolonged heat stress.

**August 21:** The field is at R7 and drying down nicely. Some more rain has reached the field. There are a quite a few pods that are twisted at the top of the main stems. I would still estimate 30 bushels at most for this field. In conversation with the Graves County Agent, there has been a lot of stress on the early maturing groups this year. This should be ready for harvest by the end of this month.

## Site 6, Graves County (b)

Producer: Jed Clark  
 County Agent: Kenny Perry  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 34' 17"  
 Longitude: 88° 33' 40"

**Table 6a.** Costs and Returns, 2012, Graves (b).

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 64.29      | 45.00      |
| Herbicide                     | 3.28       | 3.28       |
| Insecticide                   | 2.00       | 2.00       |
| Fungicide                     | 16.00      | 14.00      |
| Fertilizer                    | 12.00      | 0.00       |
| Total Partial Cost/a          | 97.57      | 64.28      |
| Partial Return/a <sup>‡</sup> | 771.12     | 740.88     |
| Partial Net Return/a          | 673.55     | 676.60     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Graves County (b) Field Notes

**June 2:** Jed planted two plots in his field for the MVP program this year. He planted his halves consistently at 200,000 seeds per acre. On the university half one plot was planted at a rate of 140,000 seeds per acre.

**June 20:** Soybeans are at V1 and 4 inches tall on both halves of the field. This is an irrigated double crop and therefore there are no signs of stress. The stand is looking good and the only insect pressure is from grasshopper and Japanese beetles (very low).

**June 27:** Soybeans are now at V2. Stand counts resulted in 160,649 seeds per acre on Jed's half and 124,059 plants per acre (89% emergence) on the university side. There is little to no insect or weed pressure at the moment. There is some rhizoctonia pressure on a few soybeans on both halves. The soybeans are showing some signs of stress as well.

**July 11:** Soybeans are at V4. The university half is a little taller than the producer half at 10 inches tall vs. 7.5. There is a little more feeding due to grasshoppers. The Virginia copperleaf, crabgrass, and volunteer wheat are heavy in areas throughout the field.

## Graves County (b)

Producer



June 27 - V1

University



July 11 - V5



July 17 - V8



July 24 - V9 - V10, R1



**July 17:** Jed sprayed an herbicide recently. There are some herbicide symptoms on weeds. The soybeans are close to full canopy and 13 inches tall.

**July 24:** The field is at R1. One row has symptoms of herbicide injury on the university side. I collected a plant with unique petiole and root damage for assessment. Although the soybeans are taller there are

several areas that are shorter, and thinner stems with patchy stand so insect sweeps will be held off until the next visit.

**August 3:** The soybeans have reached R2 and are ready for leaf nutrient analysis. The university half has a slight edge on height averaging 23 inches tall in comparison to the producer half which is 21 inches tall. The field overall is clean for



**Table 6b.** Practices during Growing Season Site, 2012, Graves (b).

|                       | Producer                              | University    |
|-----------------------|---------------------------------------|---------------|
| Field Size, acres     | 20                                    |               |
| Previous Crop         | Wheat, irrigated                      |               |
| Soil Type             | Calloway silt loam, Collins silt loam |               |
| Planting Date         | 30-May-12                             |               |
| Soybean Variety       | Asgrow 4832                           |               |
| Row Spacing, inches   | 15                                    |               |
| Seeding Rate, seeds/a | 200,000                               | 140,000       |
| Plant Stand, plants/a | 160,649                               | 124,059       |
| Herbicide             | 24 oz Roundup                         |               |
| Insecticide           | 2 oz Declare                          | None          |
| Fungicide             | 9 oz Headline                         | 6 oz Headline |
| Foliar application    | 9 gal Sure K                          |               |
| Harvest Date          | 10-Oct-12                             |               |
| Yield, bu/a           | 51.0                                  | 49.0          |

now with low insect counts consisting of mostly grasshoppers, and three-cornered alfalfa leaf hoppers.

**August 17:** Jed applied a foliar fertilizer, insecticide and fungicide to his half of the field. I only requested a fungicide for our half because the field is under irrigation and more susceptible to diseases. The soybeans have grown to 38 inches tall on both halves. Likely there will be some lodging later on in the season. There is a difference in insect counts; mainly 1 insect per 20 sweeps on the producer half. The insect levels remain low on the university half so no insecticide is necessary.

**August 21:** Field remains pretty clean. The soybeans are now at V17-20 and 45 inches tall. The insect counts remain very low on the producer half and steady on the university half. Most of the insects in this field are green clover worms, alfalfa leaf hoppers, grasshopper, and bean leaf beetles. There are a few decates stem borers in this field but the numbers caught are lower than the full season MVP fields.

**August 30:** The field has received some rain. The reproductive stage is R5 and maxed out at 45 inches. Insect counts remain low but there is a patch of heavy leaf defoliation from blister beetles on the university side.

**September 12:** I received a call from Kenny and Jed informing me that he will be applying insecticide again because of stinkbug pressure. Due to the recent rain event, insect levels have increased. The field is now at R6, pods are filling out nicely, and there are large patches of lodged soybeans (rating = 1-2). There are mostly

stinkbug nymphs and there are some pods with damage due to the stinkbugs sucking mouth parts. For the university half based on the lodging, pod damage and number of stinkbugs captured the pressure is below threshold and I will not recommend an application. Other pressures are SVNaV on the older leaves. No additional fungicide is needed.

**September 20:** The field is at R6 with no senescence at the moment. The lodging on the producer half (200,000 seeds per acre) has progressed to about 40%. There does not appear to be more lodging on the university side; however, the insect pressure from stinkbugs has gone up but remains below threshold. There are a few loopers, green clover worms, and alfalfa leaf hoppers present. No notable disease pressure or further pod feeding on either half.

**October 9:** The field is completely turned over (R7). The severity of lodging on the producer and university half is no greater than a scale of 1-2. This will likely not affect the yield at harvest. There are still clusters of stinkbug nymphs but concentrated on the field edges and single plants. On the university side which received no insecticide there are no signs of dis-

**Table 6c.** Physiological Characteristics, 2012, Graves (b).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 20-Jun     | 4           | V1           |                | 4           | V1           |                |
| 27-Jun     | 5           | V2           |                | 5           | V2           |                |
| 11-Jul     | 8           | V4           |                | 10          | V6           |                |
| 17-Jul     | 13          | V8           | 50%            | 13          | V8           | 50%            |
| 24-Jul     | 16          | V10, R1      | Full           | 17          | V9, R1       | Full           |
| 3-Aug      | 21          | V10, R2      | Full           | 23          | V11, R2      | Full           |
| 17-Aug     | 38          | V16, R3      | Full           | 38          | V17, R3      | Full           |
| 21-Aug     | 45          | V17, R4      | Full           | 45          | V20, R4      | Full           |
| 30-Aug     | 45          | V19, R5,     | Full           | 45          | V20, R5      | Full           |
| 12-Sep     | 45          | R6           | Full           | 45          | R6           | Full           |
| 20-Sep     | 45          | R6           | Full           | 45          | R6           | Full           |
| 9-Oct      | 45          | R7           | Full           | 45          | R7           | Full           |

**Table 6d.** Insect Counts\*, 2012, Graves (b).

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 24-Jul | 20     | 1                | 0                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 3           | 0       | 0                  |
| 3-Aug  | 20     | 0                | 0                | 0               | 6           | 0       | 0                  | 0                | 0                | 1               | 3           | 0       | 0                  |
| 17-Aug | 20     | 0                | 0                | 0               | 0           | 0       | 1                  | 0                | 0                | 0               | 1           | 0       | 1                  |
| 21-Aug | 20     | 0                | 0                | 0               | 1           | 0       | 0                  | 0                | 2                | 0               | 1           | 0       | 1                  |
| 30-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 1                  | 0                | 1                | 1               | 1           | 0       | 4                  |
| 12-Sep | 20     | 0                | 0                | 0               | 0           | 1       | 2                  | 0                | 1                | 4               | 1           | 1       | 3                  |
| 20-Sep | 20     | 0                | 0                | 1               | 1           | 1       | 0                  | 0                | 0                | 5               | 1           | 1       | 3                  |

\*Total number per 20 sweeps.

**Table 6e.** Leaf Nutrient Analysis, 2012, Graves (b).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.53    | 0.55  |
| K        | 1.5 - 2.25      | 2.43    | 2.18  |
| Mg       | 0.25 - 0.7      | 0.29    | 0.28  |
| Ca       | 0.8 - 1.4       | 0.8     | 0.8   |
| S        | 0.25 - 0.60     | 0.3     | 0.28  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 20      | 20    |
| Zn       | 21 - 80         | 42      | 59    |
| Mn       | 17 - 100        | 87      | 78    |
| Fe       | 25 - 300        | 97      | 86    |
| Cu       | 4 - 30          | 8       | 8     |

Date: 8/3  
Growth Stage: R2

cernible pod feeding. There are a good number of pods per node (five to seven); therefore, I would estimate yield close to 45 bushels per acre.

## Site 7, Graves County (c)

Producer: Jed Clark  
 County Agent: Kenny Perry  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 34' 8"  
 Longitude: 88° 35' 40"

**Table 7a.** Costs and Returns, 2012, Graves (c).

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 64.29      | 51.43      |
| Herbicide            | 3.28       | 3.28       |
| Insecticide          | 2.00       | 0.00       |
| Fungicide            | 16.00      | 14.00      |
| Fertilizer           | 12.00      | 0.00       |
| Total Partial Cost/a | 97.57      | 68.71      |
| Partial Return/a‡    | 831.60     | 740.88     |
| Partial Net Return/a | 734.03     | 672.17     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

### Graves County (c) Field Notes

**June 2:** Jed planted an irrigated; double crop soybean field with a seeding rate of 200,000 seeds per acre on his half. On the university half one plot was planted at a rate of 160,000 seeds per acre.

**June 20:** Both halves of the field have good emergence. Insects have stayed on the wheat and have not chewed on the unifoliolate at this moment. The soybeans are at V1 and 5 inches on the university side and 4 inches tall on the producer half.

**June 27:** Soybeans are at V2 and 5 inches tall. The stand counts for the university half were 148,452 plants per acre on the university side (93% emergence). For the producer half, the stand counts were 160,700 plants per acre (80% emergence). The field is pretty clean; however, there were some grasshoppers present on the wheat straw. This may be a problem so I will watch for defoliation.

**July 11:** Both halves are at V5 and 9 inches tall. In comparison to the other field the defoliation is not as heavy. The weed pressure is increasing with volunteer wheat. An application of herbicide will be needed. There are still traces of rhizoctonia in this field.

### Graves County (c)

Producer



University



June 27 - V2



July 11 - V5



July 17 - V7



July 24 - V9, R1

**July 17:** Jed applied an herbicide. The herbicide symptoms are not visible; however should show in a day or two. There is a clear height difference in this field with the university side at V8 and 16 inches tall and the producer half at 14 inches tall. The beans are near full canopy and should be ready for sweeps next week.

**July 24:** The herbicide application did a good job. The field looks clean. The soybeans are approaching R1. It appears that the plot with lower seeding rate flowered first versus the higher population. The insect feeding is minimal due to Japanese beetles, corn root borer, and grasshoppers.

**Table 7b.** Practices during Growing Season, 2012, Graves (c).

|                       | Producer                             | University    |
|-----------------------|--------------------------------------|---------------|
| Field Size, acres     | 20                                   |               |
| Previous Crop         | Wheat, irrigated                     |               |
| Soil Type             | Grenada silt loam, Collins silt loam |               |
| Planting Date         | 30-May-12                            |               |
| Soybean Variety       | Asgrow 4832                          |               |
| Row Spacing, inches   | 15                                   |               |
| Seeding Rate, seeds/a | 200,000                              | 160,000       |
| Plant Stand, plants/a | 160,700                              | 148,452       |
| Herbicide             | 24 oz Roundup                        |               |
| Insecticide           | 2 oz Declare                         |               |
| Fungicide             | 9 oz Headline                        | 6 oz Headline |
| Foliar Fertilizer     | 9 gal Sure K                         | None          |
| Harvest Date          | 12-Oct-12                            |               |
| Yield, bu/a           | 55.0                                 | 49.0          |

**August 3:** The soybeans have reached R2 reproductive stage and are ready for leaf tissue analysis. Both halves have average bean heights of 20 inches. There are a few patches of lingering rhizoctonia root rot and some bacterial cluster on the older leaves of the plants. These are common diseases that occur in fields and do not require any applications at the moment. Insect counts are low with mostly grasshoppers and alfalfa leaf hoppers. Stinkbugs are beginning to show on the university side.

**August 17:** Jed applied a foliar fertilizer, insecticide and fungicide to his half of the field. I only requested a fungicide for our half because the field is under irrigation and more susceptible to diseases. The soybeans have grown to 34 inches tall on both halves. There is a difference in insect counts with little to none caught on the producer half; however, insect levels remain low on the university half so no insecticide is necessary.

**August 21:** Field remains pretty clean. The soybeans are now at V17, R4 and 40-42 inches tall. This plot has caught up to the 140,000 seed per acre plot. The insect counts remain very low on the producer half and steady on the university half. Most of the insects in this field are green clover worms, alfalfa leaf hoppers, grasshopper, and bean leaf beetles.

**August 30:** The field has received some rain. The reproductive stage is R5 and maxed out at 43 inches. Insect counts remain low but there are a higher number of green clover worms and stinkbugs on the university side. Overall, the field

looks clean and there are no new stresses in light of the rainfall.

**September 12:** I received a call from Kenny and Jed informing me that he will be applying insecticide again because of stinkbug pressure. Due to the recent rain event, insect levels have increased. The field is now at R6, pods are filling out nicely, and there are large patches of lodged soybeans (rating = 1). There are mostly stinkbug nymphs and there are some pods with damage due to the stinkbugs sucking mouth parts. On the university half there were a high number of stinkbugs caught and noticeable damage to reach threshold and justify application. Jed was harvesting tobacco in a neighboring plot and I requested a spray for this plot and gave him an update on both fields.

**September 20:** The field is at R6 with no senescence at the moment. The lodging on the producer half (200,000 seeds per acre) has progressed. The insect pressure from stinkbugs remains at threshold. There have been a few delays for spraying and harvest due to rain. There are a few loopers and alfalfa leaf hoppers present also on both halves. There is an increase in green clover worm counts this

**Table 7c.** Physiological Characteristics, 2012, Graves (c).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 20-Jun     | 4           | V1           |                | 5           | V1           |                |
| 27-Jun     | 5           | V2           |                | 6           | V2           |                |
| 11-Jul     | 9           | V5           |                | 9           | V5           |                |
| 17-Jul     | 12          | V7           | 50%            | 12          | V6           | 50%            |
| 24-Jul     | 16          | V9           | Full           | 17          | V9, R1       | Full           |
| 3-Aug      | 20          | V11, R2      | Full           | 20          | V10, R2      | Full           |
| 17-Aug     | 34          | V16, R3      | Full           | 35          | V15, R3      | Full           |
| 21-Aug     | 40          | V17, R4      | Full           | 42          | V18, R4      | Full           |
| 30-Aug     | 41          | V18, R5      | Full           | 43          | V20, R5      | Full           |
| 12-Sep     | 41          | R6           | Full           | 43          | R6           | Full           |
| 20-Sep     | 41          | R6           | Full           | 43          | R6           | Full           |
| 9-Oct      | 41          | R7           | Full           | 43          | R7           | Full           |

**Table 7d.** Insect Counts\*, 2012, Graves (c).

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 24-Jul | 20     | 0                | 0                | 0               | 2           | 0       | 0                  | 0                | 0                | 0               | 1           | 0       | 0                  |
| 3-Aug  | 20     | 0                | 0                | 1               | 1           | 0       | 0                  | 0                | 0                | 0               | 1           | 0       | 0                  |
| 17-Aug | 20     | 0                | 0                | 0               | 1           | 0       | 0                  | 0                | 1                | 1               | 4           | 0       | 0                  |
| 21-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 0                  | 0                | 4                | 0               | 1           | 0       | 0                  |
| 30-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 0                  | 0                | 1                | 1               | 1           | 0       | 1                  |
| 12-Sep | 20     | 0                | 1                | 1               | 1           | 0       | 4                  | 0                | 0                | 8               | 1           | 1       | 4                  |
| 20-Sep | 20     | 0                | 0                | 2               | 1           | 2       | 1                  | 0                | 0                | 12              | 0           | 0       | 2                  |

\*Total number per 20 sweeps.

**Table 7e.** Leaf Nutrient Analysis, 2012, Graves (c).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
|          |                 | %       |       |
| P        | 0.3 - 0.6       | 0.43    | 0.55  |
| K        | 1.5 - 2.25      | 2.39    | 2.46  |
| Mg       | 0.25 - 0.7      | 0.42    | 0.42  |
| Ca       | 0.8 - 1.4       | 0.83    | 0.9   |
| S        | 0.25 - 0.60     | 0.29    | 0.31  |
|          |                 | ppm     |       |
| B        | 20 - 60         | 55      | 53    |
| Zn       | 21 - 80         | 49      | 51    |
| Mn       | 17 - 100        | 98      | 110   |
| Fe       | 25 - 300        | 96      | 98    |
| Cu       | 4 - 30          | 8       | 9     |

Date: 8/3  
Growth Stage: R2

week on the university side. No notable disease pressure aside from Cercospora and SVNaV or further pod feeding on either half.

**October 9:** The field is completely turned over (R7). There appears to be more lodg-

ing on the producer half (200,000 seeds per acre) but the severity is no greater than a scale of 1-2. This will likely not affect the yield at harvest. There are no groups or clusters with Green Stem Syndrome in this field. There are high numbers of grasshoppers and stinkbug

nymphs on field edges and in the grassy areas of the field, but no pod feeding or damage was observed. The steady rain events in August and September during R6 really helped fill these pods. I would estimate close to 50 bushels.

## Site 8, Graves County (d)

Producer: Adam Bell  
 County Agent: Kenny Perry  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 41' 1"  
 Longitude: 88° 33' 50"

**Table 8a.** Costs and Returns, 2012, Graves (d).

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 51.43      | 45.00      |
| Herbicide            | 6.56       | 6.56       |
| Insecticide          | 0.00       | 0.00       |
| Fungicide            | 14.00      | 14.00      |
| Fertilizer           | 0.00       | 0.00       |
| Total Partial Cost/a | 71.99      | 65.56      |
| Partial Return/a‡    | 690.98     | 725.76     |
| Partial Net Return/a | 618.99     | 660.20     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Graves County (d) Field Notes

**May 31:** Adam planted 20 acres of a 94 acre wheat field with a seeding rate of 150,000 seeds per acre for the university side. The rest of the field was planted at a rate of 160,000 seeds per acre for the producer half. In a phone conversation, Adam gave us another field.

**June 27:** Visited Adam and his dad at his shop and they drove me to the field. The stand looks good and the field is showing little heat stress right now. I was informed the field was sprayed with Roundup on the 20th. The stand counts for Adam's half was 124,756 plants per acre which is 89% emergence. For the university side the results were 144,619 plants per acre (90% emergence).

**July 11:** Soybeans are at V5 and 8.5 inches tall on the producer half and V5 and 10 inches tall on the university side. This week with no rain in the forecast there is some heat stress, and weed pressure is low with a few areas of volunteer wheat. The soybeans have some damage due to Japanese beetles and grasshopper. The defoliation is at low levels.

**July 17:** The university's half still has a slight edge in plant height (V7, 16 inches

## Graves County (d)

Producer



University



June 27 - V2



July 11 - V5



July 17 - V8



July 24 - V9, R1

versus V7, 14 inches). The little bit of rain has helped a little because the heat stress in the beans is not as prevalent. The field is still clean with low weed pressure.

**July 24:** Adam applied an herbicide to the field. There is minor herbicide injury located on the border rows and a few end rows. The growth stage is V9, R1, 17 inches tall on both halves. There is

herbicide injury to weeds and the field has reached full canopy.

**August 3:** The rain has helped. The soybeans are now at R2 ready for nutrient analysis. The insect sweeps indicated that there are mostly low levels of three-cornered alfalfa leafhoppers, green clover worms, and grasshoppers present. Most of the insects were caught on the univer-

**Table 8b.** Practices during Growing Season, 2012, Graves (d).

|                       | Producer  | University |
|-----------------------|---|------------|
| Field Size, acres     | 19  |            |
| Previous Crop         | Wheat   |            |
| Soil Type             | Collins silt loam, Wakeland silt loam, Falaya silt loam |            |
| Planting Date         | 8-Jun-12  |            |
| Soybean Variety       | Asgrow 4831   |            |
| Row Spacing, inches   | 15  |            |
| Seeding Rate, seeds/a | 160,000   | 140,000    |
| Plant Stand, plants/a | 144,619   | 124,756    |
| Herbicide             | 48 oz Roundup   |            |
| Insecticide           | None  |            |
| Fungicide             | 6 oz Headline*  |            |
| Harvest Date          | 14-Oct-12   |            |
| Yield, bu/a           | 45.7  | 48.0       |

\*Soybeans were under contract.

sity half. No further weed pressure or any diseases identified this week.

**August 17:** Received a call from Adam. He requested an update on the field and asked if he should spray a fungicide in light of the reduced temperatures and dew accumulation. The insect sweeps have not changed much this week and remain low. No disease aside from sunscald, and bacterial blight was noticed so I called him and told him for the university half no application was necessary. (In a later call from Adam, the variety used in this field was under a contract with an industry group, so both halves had to receive a full rate of Headline.)

**August 21:** The soybeans are now at R4 and pretty tall (close to 40 inches tall). If the county continues to receive a little more rain there is good yield potential for the double crop beans. Insect counts have gone down this week with just a few three-cornered alfalfa leaf hoppers and bean leaf beetles (one per 20 sweeps). No further signs of herbicide injury.

**August 30:** The field is at R5 and between 40-42 inches tall. Some areas of tall soybeans are beginning to lean on the university half. The rain has caused a spike in insect counts. The producer have now has low levels of green clover worms, bean leaf beetles, and grasshoppers. The university half, however, has very low numbers of alfalfa leaf hoppers, corn root borers, and 1 green clover worm. There are some older leaves with unusual mottling so I collected a few for plant pathology specialist to diagnose.

**September 12:**

The field is at R6 and the beans are lodging in the middle of the field due to wind. The green clover worm populations went up slightly on the producer half and two pod worms were trapped (in 60 sweeps total). On the university side I caught some

loopers instead. No pod feeding has been reached therefore there is no need for insecticide. Plant pathology diagnosed the leaves as SVNaV and cercospera. There is another patch of yellowing leaves this week. I collected some more because it is too early for the field to senesce. I called Adam with an update on the first set of leaves. He has also noticed yellowing on some bottom fields behind his home. I collected a few of these leaves to see if the problem is due to a deficiency.

**September 20:** The growth stage is still R6 and the pods are filling out nicely. The lodging has progressed to a rating of 2 mostly mid field on the producer half. Looper counts have increased on both halves of the field. There is still no discernible pod feeding or heavy leaf feeding. Based on the leaf nutrient results and plant pathology diagnosis; the results of the leaf yellowing was rendered incon-

**Table 8c.** Physiological Characteristics, 2012, Graves (d).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 27-Jun     | 5           | V2           |                | 5           | V2           |                |
| 11-Jul     | 9           | V5           |                | 10          | V5           |                |
| 17-Jul     | 14          | V8           | 60%            | 16          | V8           | 60%            |
| 24-Jul     | 17          | V9, R1       | Full           | 17          | V9, R1       | Full           |
| 3-Aug      | 22          | V11, R2      | Full           | 24          | V11, R2      | Full           |
| 17-Aug     | 27          | V13, R3      | Full           | 28          | V14, R3      | Full           |
| 21-Aug     | 38          | V18, R4      | Full           | 40          | V19, R4      | Full           |
| 30-Aug     | 41          | V18, R5      | Full           | 42          | V19, R5      | Full           |
| 12-Sep     | 41          | R6           | Full           | 42          | R6           | Full           |
| 20-Sep     | 41          | R6           | Full           | 42          | R6           | Full           |
| 9-Oct      | 41          | R7           | Full           | 42          | R7           | Full           |

**Table 8d.** Insect Counts\*, 2012, Graves (d).

| Date   | Sweeps | Producer         |                  |                 |             |         |                    | University       |                  |                 |             |         |                    |   |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|---|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |   |
| 24-Jul | 20     | 0                | 0                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 0           | 0       | 0                  | 0 |
| 3-Aug  | 20     | 1                | 0                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 1           | 0       | 1                  | 0 |
| 17-Aug | 20     | 0                | 0                | 1               | 0           | 0       | 0                  | 0                | 0                | 0               | 0           | 0       | 0                  | 1 |
| 21-Aug | 20     | 0                | 1                | 0               | 0           | 0       | 0                  | 0                | 1                | 0               | 0           | 0       | 0                  | 0 |
| 30-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 1                  | 0                | 0                | 0               | 0           | 0       | 1                  | 0 |
| 12-Sep | 20     | 0                | 0                | 1               | 0           | 1       | 3                  | 0                | 0                | 1               | 0           | 3       | 0                  | 0 |
| 20-Sep | 20     | 0                | 0                | 0               | 1           | 3       | 0                  | 0                | 0                | 0               | 0           | 0       | 4                  | 0 |

\*Total number per 20 sweeps.

**Table 8e.** Leaf Nutrient Analysis, 2012, Graves (d).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
|          |                 | %       |       |
| P        | 0.3 - 0.6       | 0.65    | 0.63  |
| K        | 1.5 - 2.25      | 2.69    | 2.65  |
| Mg       | 0.25 - 0.7      | 0.42    | 0.36  |
| Ca       | 0.8 - 1.4       | 0.8     | 0.81  |
| S        | 0.25 - 0.60     | 0.33    | 0.31  |
|          |                 | ppm     |       |
| B        | 20 - 60         | 46      | 45    |
| Zn       | 21 - 80         | 49      | 45    |
| Mn       | 17 - 100        | 117     | 91    |
| Fe       | 25 - 300        | 95      | 89    |
| Cu       | 4 - 30          | 10      | 8     |

Date: 8/3  
Growth Stage: R2

clusive. The drought year has opened a lot of questions for disease and insect pressure. This should not affect the yield in this field.

**October 9:** The field is completely turned over (R7). There are scattered groups of soybeans with twisted pods. This field did

not receive a lot of rain during R4-R5 but later rain events helped fill the pods later in the season. The side with the higher seeding rate appears to have more lodging than the lower rate (140,000 seeds per acre). The severity and incidence is no greater than a rating of 2 so there should

be no great yield loss. There were a very low number of soybean pod worms (corn earworms) trapped during the year but there was no pod feeding noticed. This field should be ready for harvest in three weeks.

## Site 9, Henderson County (a)

Producer: Philip Meredith  
 County Agent: Mike Smith  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 37° 52' 12"  
 Longitude: 87° 19' 0"

## Henderson County (a)

Producer



University



**Table 9a.** Costs and Returns, 2012, Henderson (a).

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 49.82      | 45.64      |
| Herbicide                     | 4.73       | 4.73       |
| Insecticide                   | 5.63       | 5.63       |
| Fungicide                     | 13.74      | 13.74      |
| Fertilizer                    | 16.50      | 0.00       |
| Total Partial Cost/a          | 90.42      | 69.74      |
| Partial Return/a <sup>‡</sup> | 913.72     | 785.92     |
| Partial Net Return/a          | 823.30     | 716.18     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

May 22 - V1



May 31 - V2



June 4 - V4



June 14 - V6



June 22 - V9, R1

## Henderson County (a) Field Notes

**May 1:** Philip planted the field with a Stein variety. The seeding rate for his half of the field is 155,000 seeds per acre. The seeding rate for the university half is 142,000 seeds per acre.

**May 16:** Met with Philip this morning to locate the flags for the field. He has been running his irrigation frequently due to the dry weather. The beans are a VE and despite a few skips near the end rows the stand looks good. Weed pressure is low.

**May 22:** Soybeans are at V1 and are growing nicely at heights of about 3 inches tall. Field has received some rain. Weed pressure remains low and the field looks clean.

**May 31:** I met with Philip in the field today to locate and replace flags that have been damaged on the university plot. We discussed insect defoliation and insect types that he has seen this year, which have been bean leaf beetles, green clover worm, cut worms, and yellow striped army worms. In this field there is some defoliation due to green clover worms and bean leaf beetles, but less than 1% and very patchy for now. Soybeans are now at V2 and 4 inches tall. The final



**Table 9b.** Practices during Growing Season, 2012, Henderson (a).

|                       | Producer  | University |
|-----------------------|---|------------|
| Field Size, acres     | 46.4  |            |
| Previous Crop         | Corn, irrigated   |            |
| Soil Type             | Ginot silt loam/silty clay loam, Melvin silt loam/silty clay loam |            |
| Planting Date         | 3-May-12  |            |
| Soybean Variety       | Stine 40RD02  |            |
| Row Spacing, inches   | 15  |            |
| Seeding Rate, seeds/a | 155,000   | 142,000    |
| Plant Stand, plants/a | 118,832   | 109,423    |
| Herbicide             | 0.3 oz First Rate & 32 oz Touchdown                               |            |
| Foliar application    | 1 gal 3 qts Coron   | None       |
| Insecticide           | 4 oz Endigo   | None       |
| Fungicide             | 6 oz. Quadris   |            |
| Harvest Date          | 26-Sep-12   |            |
| Yield, bu/a           | 62.2  | 53.5       |

stand for Philip's half were 118,832 plants per acre and 109,423 plants per acre on the university half (both fields have an emergence of 76%).

**June 7:** Soybeans are at V4 and 6 inches tall. There is more foliage feeding from Japanese beetles than last week. Damage is less than 1% and concentrated on one of the upper trifoliolate of the soybeans and near end rows. Weed pressure is patchy with a lot of ivy leaf morning glory and smooth pigweed.

**June 15:** Philip is running the irrigation today. Soybeans are at V6 and 8 inches tall on the university side and 7 inches tall on the producer's side. Some beans have reached R1 but not all but by next week 90% will reach that stage. Insect feeding has remained low and weed pressure is moderate, mostly morning glories.

**June 22:** In a conversation with Philip, the heat and lack of rain has forced him to irrigate around the clock. The road to access was so wet my truck got stuck a few times. The soybeans are coming up just fine and are now at V9, R1 and 15 inches tall. Insect sweeps indicated a low number of Japanese beetles, which agrees with low leaf feeding.

**June 28:** There is a clear difference amongst irrigated soybeans versus non-irrigated soybeans this year. The soybeans have reached R2 and are 17 inches tall. The insect feeding remains low with an average of one Japanese beetle and three bean leaf beetles per 20 sweeps

on both halves of the field. Disease pressure is low as well.

**July 12:** Soybeans are at R3. I called Philip and he will be getting ready to spray fungicide. I requested an application of fungicide only because the field is irrigated a susceptible to diseases. Insect sweeps indicated mostly green clover worms similar to his river bottom field last year. The leaf defoliation is below 5% so I did not recommend insecticide or a Nitrogen foliar application.

**July 23:** The field is at R4 with 45 inch tall soybeans on the university side and 47 inch on the producer half. The numbers of insect counts have decreased on the producer half following an application of Endigo (only one bean leaf beetle and one grasshopper). On the university side the green clover worm counts decreased.

**August 1:** The field has been irrigated frequently in light of the drought and the results are soybeans ranging from 50-54 inches tall. At this stage, R5 on both halves, the plants are starting to lean. Along the wheel tracks there are spots of lodged beans and SDS. I spoke to Mike Smith and Philip on my observation in

**Table 9c.** Physiological Characteristics, 2012, Henderson (a).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 22-May     | 2.7         | V1           |                | 2.5         | V1           |                |
| 31-May     | 4           | V2           |                | 4.2         | V2           |                |
| 7-Jun      | 6           | V4           | 50%            | 6           | V4           | 50%            |
| 15-Jun     | 7           | V6           | Full           | 8           | V6           | Full           |
| 22-Jun     | 15          | V9, R1       | Full           | 15          | V9, R1       | Full           |
| 28-Jun     | 17          | V10, R2      | Full           | 16          | V10, R2      | Full           |
| 12-Jul     | 33          | V14, R3      | Full           | 35          | V16, R3      | Full           |
| 23-Jul     | 45          | V17, R4      | Full           | 44          | V18, R4      | Full           |
| 1-Aug      | 51          | V20, R5      | Full           | 50          | V20, R5      | Full           |
| 16-Aug     | 51          | R6           | Full           | 50          | R6           | Full           |
| 29-Aug     | 51          | R6           | Full           | 50          | R6           | Full           |
| 11-Sep     | 51          | R7           | Full           | 50          | R7           | Full           |

**Table 9d.** Insect Counts\*, 2012, Henderson (a).

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 22-Jun | 20     | 2                | 0                | 0               | 0           | 0       | 0                  | 3                | 0                | 0               | 0           | 0       | 0                  |
| 28-Jun | 20     | 1                | 3                | 0               | 1           | 0       | 1                  | 1                | 3                | 0               | 0           | 0       | 1                  |
| 12-Jul | 20     | 1                | 3                | 1               | 0           | 0       | 4                  | 0                | 3                | 1               | 0           | 0       | 4                  |
| 23-Jul | 20     | 0                | 1                | 0               | 1           | 0       | 0                  | 0                | 2                | 0               | 1           | 0       | 1                  |
| 1-Aug  | 20     | 0                | 2                | 0               | 0           | 0       | 0                  | 0                | 15               | 3               | 1           | 0       | 1                  |
| 16-Aug | 20     | 0                | 15               | 1               | 1           | 0       | 1                  | 0                | 14               | 0               | 0           | 0       | 2                  |
| 29-Aug | 20     | 0                | 5                | 0               | 0           | 0       | 0                  | 0                | 8                | 0               | 0           | 0       | 0                  |

\*Total number per 20 sweeps.

**Table 9e.** Leaf Nutrient Analysis, 2012, Henderson (a).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
|          |                 | %       |       |
| P        | 0.3 - 0.6       | 0.54    | 0.51  |
| K        | 1.5 - 2.25      | 2.64    | 2.5   |
| Mg       | 0.25 - 0.7      | 0.35    | 0.33  |
| Ca       | 0.8 - 1.4       | 0.99    | 1.03  |
| S        | 0.25 - 0.60     | 0.32    | 0.3   |
|          |                 | ppm     |       |
| B        | 20 - 60         | 53      | 42    |
| Zn       | 21 - 80         | 47      | 41    |
| Mn       | 17 - 100        | 77      | 76    |
| Fe       | 25 - 300        | 117     | 138   |
| Cu       | 4 - 30          | 12      | 10    |

Date: 6/28  
Growth Stage: R2

the field so far. The insect counts, after a recent rain is a high number of bean leaf beetles 13 per 20 sweeps. They appear to be feeding on the leaves and not the developing pods; however, I will continue to monitor the university half.

**August 16:** Soybeans have reached R6 with four to six pods per node on the producer half and five to six pods per node on the university side. Bean leaf beetle counts went down slightly on the university half and are a little higher on the producer half. SDS is more apparent and widespread this week. The toxin has traveled from the bottom older leaves

to the top leaves. Lodging is closer to a rating of 3. It is possible at R8 that these soybeans will not be as severe but that won't be for a while.

**August 29:** The field is still at R6 but senescing. The beans look healthy and there is little to no pod feeding. The lodging has reached a rating between 3 and 4 near the wheel track rows and in several areas throughout the field that it is difficult to walk through or take sweeps. This is an irrigated field; therefore taller beans with more pods per node seen in other full season fields. This may affect yield at the end of the year.

**September 11:** The soybeans are at R7 and drying down quickly. I counted pods from seven random plants. The producer half ranged from 68 to 84 pods per plant and the university side ranged from 64-80 pods per plant. The lodging is still heavy on the producer side but no prominent then last visit. The estimated yield will be relatively higher than all of the fields between 60 and 70 bushels.

**September 25:** The field is drying down nicely. There are still a few green stems but it should be ready for harvest in a few days.

## Site 10, Henderson County (b)

Producer: Gary Thomas  
 County Agent: Mike Smith  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 37° 48' 1"  
 Longitude: 87° 33' 54"

**Table 10a.** Costs and Returns, 2012, Henderson (b).

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 52.07      | 45.64      |
| Herbicide                     | 3.28       | 3.28       |
| Insecticide                   | 0.00       | 0.00       |
| Fungicide                     | 0.00       | 0.00       |
| Fertilizer                    | 0.00       | 0.00       |
| Total Partial Cost/a          | 55.35      | 48.92      |
| Partial Return/a <sup>‡</sup> | 1148.72    | 1153.17    |
| Partial Net Return/a          | 1093.37    | 1104.25    |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

### Henderson County (b) Field Notes

**May 3:** Gary planted the field. The seeding rate for his side was 160,000 seeds per acre and 142,000 seeds per acre on the university half. The variety he planted was Channel 3.7.

**May 16:** The field is pretty dry. Soybeans are ready to emerge. I had to scratch the surface on the university side to find cotyledon. Weed pressure is low with the exception of some carpet weed, patches of bluegrass, and yellow wood sorrel.

**May 22:** The beans are at VE and 1.8 inches tall. Weed pressure remains very low. The field could use a good rain.

**May 31:** Soybeans are now at V2 and have a nice final stand throughout the field. Gary's half has a stand count of 140,786 plants per acre (87% emergence) and 134,513 plants per acre (96% emergence) on the university half. Weed pressure is still low, with only patches of marestail, henbit, smooth pigweed, clover, and spotted spurge; but an application may be necessary following this rain. There is some bean leaf beetle pressure but it is sporadic and concentrated on the unifoliate leaves.

### Henderson County (b)

Producer



University



May 22 - V1



May 31 - V2



June 6 - V3



June 14 - V6



June 22 - V7, R1

**Table 10b.** Practices during Growing Season, 2012, Henderson (b).

|                       | Producer                               | University |
|-----------------------|--|------------|
| Field Size, acres     | 25                                     |            |
| Previous Crop         | Corn                                   |            |
| Soil Type             | Dekoven silt loam, Uniontown silt loam |            |
| Planting Date         | 3-May-12                               |            |
| Soybean Variety       | Channel 3.7                            |            |
| Row Spacing, inches   | 15                                     |            |
| Seeding Rate, seeds/a | 162,000                                | 142,000    |
| Plant Stand, plants/a | 140,786                                | 134,513    |
| Herbicide             | 24 oz Roundup                          |            |
| Insecticide           | None                                   |            |
| Fungicide             | None                                   |            |
| Harvest Date          | 26-Sep-12                              |            |
| Yield, bu/a           | 78.2                                   | 78.5       |

**June 7:** Soybeans are at 50% full canopy this week and are now at V3. Weed pressure is heavier this week, most henbit, crabgrass, carpet weed, smooth pigweed and velvetleaf. Called Gary Thomas, June 8 to request an application of Roundup without the addition of insecticide because there is little to no leaf feeding noticed on the university side.

**June 15:** Field is pretty dry and could use a rain; but no stress was observed on the soybeans. The soybeans have reached V6 and are 8.5 inches tall. The difference in heights is only a half inch in comparison to the producer half. No signs of herbicide injury on the pigweeds or pokeweeds therefore Gary must have just sprayed. The insect feeds is still pretty low but a graduate student working in this field indicated that she trapped several stinkbug nymphs on the producer side, so during the sweeps I will pay attention.

**June 22:** Field needs rain. The soybeans on the producer half are showing signs of drought in a few areas. The soybeans have reached V7, R1 and 11 inches tall. Insect feeding remains low. I began insect sweeps and caught low numbers of bean leaf beetles and Japanese beetles. In addition to the graduate student's findings of stinkbug nymphs, one brown stinkbug was caught on Gary's half.

**June 28:** The field is pretty dry. The dead weeds from an earlier Roundup application literally crunch beneath my feet. On the end rows there are a few wilting plants but further into the field the soybeans look healthy. Insect sweeps are showing low numbers of bean leaf beetles (one

per 20 sweeps). Soybeans are now at R2 and ready for leaf nutrient analysis.

**July 12:** This field still has not seen a decent rain shower in a while. The producer half with section that are more on a hill in addition to the border rows have wilting plants and dead soybeans due to charcoal rot. The soybeans growth stage is between V14-15 and R3 reproductive stage. The drought stress has kept the insect counts low to mainly grasshoppers, corn root borers, and bean leaf beetles (average one to two per 20 sweeps).

**July 23:** Some moderate disease pressure has become more noticeable. On the university side there is a patch of powdery mildew, septoria brown spot, and K deficiency on the border rows. The same is present on the producer half but the main stress is due to the heat stress. Insect counts remain low. The racemes are still flowering and trying to produce pods.

**August 1:** There has been patchy rain event but it is not apparent that this field received any. Regardless these struggling plants have reached R5 with 18-20 nodes and 40 inches tall. The insect counts have become a little more diverse including detes stem borers and green clover worms.

**Table 10c.** Physiological Characteristics, 2012, Henderson (b).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 22-May     | 1.5         | VE           |                | 1.8         | VE           |                |
| 31-May     | 3           | V2           |                | 3           | V2           |                |
| 7-Jun      | 4.5         | V3           | 50%            | 5           | V3           | 50%            |
| 15-Jun     | 8           | V6           | 50%            | 8.5         | V6           | 50%            |
| 22-Jun     | 11          | V7, R1       | Full           | 10.5        | V7, R1       | Full           |
| 28-Jun     | 15          | V9, R2       | Full           | 15          | V9, R2       | Full           |
| 12-Jul     | 25          | V14, R       | Full           | 27          | V15, R3      | Full           |
| 23-Jul     | 32          | V16, R4      | Full           | 34          | V16, R4      | Full           |
| 1-Aug      | 38          | V18, R5      | Full           | 40          | V19, R5      | Full           |
| 16-Aug     | 38          | R6           | Full           | 40          | R6           | Full           |
| 29-Aug     | 38          | R6           | Full           | 40          | R6           | Full           |
| 11-Sep     | 38          | R7           | Full           | 40          | R7           | Full           |

**Table 10d.** Insect Counts\*, 2012, Henderson (b).

| Date   | Sweeps | Producer         |                  |                 |             |         |                    | University       |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 22-Jun | 20     | 1                | 5                | 0               | 0           | 0       | 0                  | 1                | 4                | 0               | 0           | 0       | 0                  |
| 28-Jun | 20     | 0                | 1                | 0               | 0           | 0       | 0                  | 0                | 1                | 0               | 0           | 0       | 0                  |
| 12-Jul | 20     | 0                | 1                | 0               | 1           | 0       | 0                  | 1                | 1                | 0               | 1           | 0       | 1                  |
| 23-Jul | 20     | 1                | 1                | 0               | 1           | 0       | 0                  | 0                | 1                | 1               | 0           | 0       | 0                  |
| 1-Aug  | 20     | 0                | 3                | 0               | 1           | 0       | 1                  | 0                | 1                | 0               | 0           | 0       | 0                  |
| 16-Aug | 20     | 0                | 10               | 1               | 0           | 0       | 1                  | 0                | 12               | 0               | 0           | 0       | 0                  |
| 29-Aug | 20     | 0                | 3                | 0               | 1           | 0       | 2                  | 0                | 2                | 0               | 0           | 0       | 2                  |

\*Total number per 20 sweeps.

**Table 10e.** Leaf Nutrient Analysis, 2012, Henderson (b).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.42    | 0.45  |
| K        | 1.5 - 2.25      | 2.53    | 2.02  |
| Mg       | 0.25 - 0.7      | 0.29    | 0.41  |
| Ca       | 0.8 - 1.4       | 1.07    | 1.12  |
| S        | 0.25 - 0.60     | 0.3     | 0.31  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 46      | 49    |
| Zn       | 21 - 80         | 44      | 44    |
| Mn       | 17 - 100        | 70      | 65    |
| Fe       | 25 - 300        | 112     | 101   |
| Cu       | 4 - 30          | 9       | 10    |

Date: 6/28  
Growth Stage: R2

**August 16:** The field has finally received rain. After some plants were taken to the plant diagnostic lab, it turns out there are patches of cercospora on the university side. The charcoal rot has not seem to progress, but it will become more apparent at R7 (field is now at R6 with three to four pods per node). The bean leaf beetle numbers have increased but there is not pod feeding observed. I called Gary with an update and informed him that no applications are necessary.

**August 29:** Both halves are starting to turnover. The pods on the upper nodes and raceme could use a good rain to

fill out some more. The bean leaf beetle counts have decreased this week and there are no signs of insect feeding or lodging. If a strong wind comes across the field, my concern is the patchy areas of tall beans on the university half.

**September 11:** The recent rainfall helped out with seed fill. The soybeans are at R7 and dropping leaves and petioles. Looking closer at the pods on the producer half there is very minimal insect feeding. Majority of the soybeans in this variety are shorter but there were some low areas on the producer that were tall and lodged (leaning but not on the ground) due to wind.

**September 25:** I collected plants for a stem borer survey. The field has several plants (50%) with green stem syndrome. The producer has a combine and semi-truck parked near the field. In light of a recent blog post (<http://graincrops.blogspot.com/2012/09/soybean-green-stem-syndrome-complicates.html>) posted by Dr. Lee and Dr. Hershman regarding combine maintenance and green stem syndrome, I called Gary to inform him to take caution if he plans to harvest the field.

## Site 11, Hickman County

Producer: Jerry Peery  
 County Agent: Darian Irvan  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 44' 27"  
 Longitude: 89° 0' 8"

**Table 11a.** Costs and Returns, 2012, Hickman.

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 45.00      | 49.82      |
| Herbicide                     | 4.37       | 4.37       |
| Insecticide                   | 2.00       | 2.00       |
| Fungicide                     | 0.00       | 0.00       |
| Fertilizer                    | 0.00       | 0.00       |
| Total Partial Cost/a          | 51.37      | 56.19      |
| Partial Return/a <sup>‡</sup> | 399.17     | 399.17     |
| Partial Net Return/a          | 347.80     | 342.98     |

<sup>†</sup> 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. Additional trucking, storage, and/or drying costs are not included.

<sup>‡</sup> Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

### Hickman County Field Notes

**May 30:** Jerry called me to inform me that he is planting the field. I recommended a seeding rate of 155,000 seeds per acre and Jerry decided on a seeding rate of 140,000 seeds per acre.

**June 20:** Soybeans are at V1 and 3 inches tall. The emergence and stand look good; however, like all western counties, this field needs rain. The newly emerged soybeans have all the leaves folded up and due to lack of rain.

**June 27:** The soybeans, in spite of the drought, are 5 inches tall. There are patchy areas of poor stand along border rows and within the field that are wilting and have thin stems. I pulled up a few plants and the symptoms are that of rhizoctonia root rot. This is likely due to the heat stress. The weed pressure from volunteer ryegrass and Virginia copperleaf remain low so no herbicide will be recommended this week.

**July 10:** Soybeans are at V4 and a rain shower has delayed stand counts for a good hour. Hopefully, some more showers appear in the near future. Stand counts for the university half are 151,586 plants per acre and 136, 710 plants per

### Hickman County

#### Producer



June 20 - V1



July 10 - V4



July 17 - V6



July 24 - V8

#### University



acre. This is a good stand for the patchy areas of rhizoctonia.

**July 17:** The rain helped and the soybeans are 11 inches tall and the leaves aren't flipped. The weed pressure from Johnsongrass, copperleaf, and volunteer ryegrass has gone up especially in areas with patchy stand. I called Jerry and requested an application. I ended up

meeting Jerry and viewing other double crop fields. After looking at his fields, we both concluded that rhizoctonia and field mice were the culprits for the poor stand on the border rows.

**July 24:** Some of the beans are flower but not 50%. The heights are between 12 and 20 inches tall throughout the field. There is excellent herbicide injury on the weeds

**Table 11b.** Practices during Growing Season, 2012, Hickman.

|                       | Producer                            | University |
|-----------------------|-------------------------------------|------------|
| Field Size, acres     | 15                                  |            |
| Previous Crop         | Cereal rye                          |            |
| Soil Type             | Loring silt loam, Memphis silt loam |            |
| Planting Date         | 30-May-12                           |            |
| Soybean Variety       | Stewarts 4712                       |            |
| Row Spacing, inches   | 20                                  |            |
| Seeding Rate, seeds/a | 140,000                             | 155,000    |
| Plant Stand, plants/a | 137,710                             | 151,586    |
| Herbicide             | 32 oz Roundup                       |            |
| Insecticide           | 1.2 oz Declare                      |            |
| Fungicide             | None                                |            |
| Harvest Date          | 2-Oct-12                            |            |
| Yield, bu/a           | 26.4                                | 26.4       |

post herbicide application. There is some lingering rhizoctonia and deer damage but it has remained on the field edges and low spots of the field. Some areas have symptoms of heat stress showing up.

**August 3:** The field has reached R2 and the leaves are ready to be collected for nutrient analysis. No further stress has progressed. The charcoal rot symptoms and incidence in the field is very patchy and will likely be seen for the rest of the season in this field on both halves of the field. Most of the insects caught in the sweep net are corn root borers and leaf defoliation is low. Weed pressure remains low due to another round of no rain.

**August 22:** The soybeans are at R4 and 34 inches tall. Overall the field looks clean with no real changes in disease pressure. There is heat stress showing up on the hill sides of the field showing 50% of flipped leaves.

**August 30:** The insect counts and type has changed (alfalfa hoppers, loopers, grasshoppers, and stinkbugs) in light of a few rain showers that have passed through the field. The defoliation remains minimal so there is no need to spray. The soybeans are at R5 and beginning to fill. So far the pod count is two to three pods per node on the plants for both halves.

**September 13:** The field has reached R6. On the producer half near the field edge the beans are twisting and will have trouble filling if no rain falls. The pods look healthy with minimal damage from stinkbugs. Additional pressures seen in the field are septoria brown

spot, deer damage, and areas of blister beetle damage on the university half. The last rain event brought wind damage and the low areas of the field have lodged beans (rating=1).

**September 20:** The field is still at R6 and the upper pods are filling a lot better. No further lodging was observed. Insect pressure and pod feeding remains very minute on both halves; however, the drought will inevitable reduce the yield in this field. The heat stress is still patchy.

**October 9:** The field is at R7 and leaves are turning brown and beginning to drop. The pods on the upper nodes struggled to fill and there are a few plants with twisted pods and green stem syndrome on both halves of the field. Lodging on the producer half covers less than 1% of the field (one low area in the field). The severity is low (a rating of 2). There a little more lodging on the university half (140,000 seeds per acre) covering 3% and a rating of 3-4. The disease pressure that was seen in this field has been low levels of septoria brown spot and charcoal rot. I called Jerry to give him an update and he informed me that he will probably harvest in three weeks.

**Table 11c.** Physiological Characteristics, 2012, Hickman.

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 20-Jun     | 3           | V1           |                | 3           | V1           |                |
| 27-Jun     | 5           | V3           |                | 5           | V3           |                |
| 10-Jul     | 7.5         | V4           |                | 7           | V4           |                |
| 17-Jul     | 11          | V6           |                | 10          | V5           |                |
| 24-Jul     | 20          | V8, R1       | Full           | 19          | V7, R1       | Full           |
| 3-Aug      | 22          | V11, R2      | Full           | 23          | V10, R2      | Full           |
| 22-Aug     | 33          | V15, R4      | Full           | 34          | V15, R4      | Full           |
| 30-Aug     | 33          | V16, R5      | Full           | 34          | V15, R5      | Full           |
| 13-Sep     | 33          | R6           | Full           | 34          | R6           | Full           |
| 20-Sep     | 33          | R6           | Full           | 34          | R6           | Full           |
| 9-Oct      | 33          | R7           | Full           | 34          | R7           | Full           |

**Table 11d.** Insect Counts\*, 2012, Hickman.

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 24-Jul | 20     | 0                | 0                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 0           | 0       | 0                  |
| 3-Aug  | 20     | 0                | 0                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 0           | 0       | 0                  |
| 22-Aug | 20     | 0                | 1                | 0               | 0           | 0       | 1                  | 0                | 0                | 0               | 1           | 0       | 0                  |
| 30-Aug | 20     | 0                | 0                | 0               | 1           | 0       | 0                  | 0                | 0                | 0               | 1           | 0       | 1                  |
| 13-Sep | 20     | 0                | 0                | 1               | 0           | 3       | 1                  | 0                | 0                | 0               | 1           | 1       | 1                  |
| 20-Sep | 20     | 0                | 0                | 1               | 0           | 1       | 1                  | 0                | 0                | 1               | 0           | 2       | 1                  |

\*Total number per 20 sweeps.

**Table 11e.** Leaf Nutrient Analysis, 2012, Hickman.

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
|          |                 | %       |       |
| P        | 0.3 - 0.6       | 0.52    | 0.56  |
| K        | 1.5 - 2.25      | 2.31    | 2.47  |
| Mg       | 0.25 - 0.7      | 0.4     | 0.41  |
| Ca       | 0.8 - 1.4       | 1.13    | 1.19  |
| S        | 0.25 - 0.60     | 0.3     | 0.3   |
|          |                 | ppm     |       |
| B        | 20 - 60         | 48      | 45    |
| Zn       | 21 - 80         | 58      | 60    |
| Mn       | 17 - 100        | 89      | 80    |
| Fe       | 25 - 300        | 94      | 90    |
| Cu       | 4 - 30          | 10      | 10    |

Date: 8/3  
Growth Stage: R2

## Site 12, Simpson County (a)

Producer: Jeremy Robertson  
 County Agent: Jason Philips  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 48' 2"  
 Longitude: 86° 42' 10"

**Table 12a.** Costs and Returns, 2012, Simpson (a).

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 45.00      | 49.82      |
| Herbicide            | 3.50       | 3.50       |
| Insecticide          | 1.63       | 1.63       |
| Fungicide            | 13.80      | 0.00       |
| Fertilizer           | 0.00       | 0.00       |
| Total Partial Cost/a | 63.93      | 54.95      |
| Partial Return/a‡    | 702.34     | 680.02     |
| Partial Net Return/a | 638.41     | 625.07     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Simpson County (a) Field Notes

**June 19:** The stand in the field looks good. The growth stage of the beans is at VE and 3 inches tall. The weed and insect pressure is minimal. There is sporadic chewing on some unifoliates by Japanese beetles and small grasshoppers.

**July 5:** Soybean are at V2 and 5 inches tall. I met with Jeremy and he clarified the change in population and informed me that this field received no rain from the recent storm. We walked the field and I noticed some soybeans were has rhizoctonia root rot and identified some plants for Jeremy. Final stand count for the producer side was 101,408 plants per acre (72% emergence) and 106,983 plants per acre (67% emergence) for the university half. University publications indicate that if there is a final stand of 100,000 plants per acre soybeans will have a good yield.

**July 19:** There are heavy areas of smooth pigweed, carpetweed, and volunteer wheat. I called Jeremy to request an application of herbicide. The soybeans are 11 inches tall and approaching R1. Insects observed are corn root borer and Japanese beetles.

## Simpson County (a)

Producer



June 19 - VE



July 5 - V2



July 19 - V7

University



**August 2:** The field has reached R2 and heights are 18 inches tall on both halves. I collected leaves for nutrient assessment. The insect pressure observed from sweeps and percent defoliation is due to low numbers of grasshoppers and green clover worms (16 per 20 sweeps) with defoliation below 5%. There are still some patchy areas of rhizoctonia.

**August 20:** Jeremy contacted me informing me that he will be spraying Headline and Lambda Cy. The soybeans are at V15, R4 and 36 inches tall. The green clover worm counts have decreased on his half. On the university side there is no history of diseases in the field. There was a spot that had four corn earworms (soybean podworms) and the green clover worm counts are 32 per 20 sweeps the defoliation is at 10% and no representative

of the whole field so no insecticide was recommended.

**September 7:** Soybeans are at the beginning of R6. The green clover worm defoliation has reached 25% and there are signs of pod feeding due to corn earworms. I called Jeremy and requested an insecticide application. He will apply 2.56 oz. of Lambda Cy prior to the expected rainfall.

**September 19:** The green clover worm counts have gone down dramatically since the producer sprayed the field. The pods are filling out really well. This rain has helped. The field is beginning to turnover (50% of the field is senescing).

**October 4:** The field is now at R7 and drying down nicely. The insect types in the field are mostly grasshoppers and stink-bug nymphs. There is no lodging present



**Table 12b.** Practices during Growing Season, 2012, Simpson (a).

|                       | Producer           | University |
|-----------------------|--------------------|------------|
| Field Size, acres     | 20                 |            |
| Previous Crop         | Wheat              |            |
| Soil Type             | Pembroke silt loam |            |
| Planting Date         | 5-Jun-12           |            |
| Soybean Variety       | SS 4711            |            |
| Row Spacing, inches   | 15                 |            |
| Seeding Rate, seeds/a | 140,000            | 155,000    |
| Plant Stand, plants/a | 106,983            | 101,408    |
| Herbicide             | 32 oz Touchdown    |            |
| Insecticide           | 2.56 oz Lambda Cy  |            |
| Fungicide             | 6 oz Headline      | None       |
| Harvest Date          | 21-Oct-12          |            |
| Yield, bu/a           | 47.2               | 45.7       |

and the petioles and leaves are dropping; so, the field has a 40 bushel potential. The insecticide helped on the university half to prevent any further pod feeding. By the end of October this field should be ready for harvest.

**Table 12c.** Physiological Characteristics, 2012, Simpson (a).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 19-Jun     | 2.5         | VE           |                | 3           | VE           |                |
| 5-Jul      | 5           | V2           |                | 5           | V2           |                |
| 19-Jul     | 11          | V6           |                | 11          | V7           |                |
| 2-Aug      | 18          | V10, R2      | Full           | 18          | V10, R2      | Full           |
| 20-Aug     | 34          | V14, R4      | Full           | 34          | V15, R4      | Full           |
| 7-Sep      | 34          | R6           | Full           | 36          | R6           | Full           |
| 19-Sep     | 36          | R6           | Full           | 36          | R6           | Full           |
| 4-Oct      | 36          | R7           | Full           | 36          | R7           | Full           |

**Table 12d.** Insect Counts\*, 2012, Simpson (a).

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 19-Jul | 20     | 1                | 0                | 0               | 1           | 0       | 2                  | 0                | 0                | 0               | 1           | 0       | 4                  |
| 2-Aug  | 20     | 1                | 1                | 0               | 1           | 0       | 4                  | 1                | 1                | 0               | 1           | 0       | 13                 |
| 20-Aug | 20     | 0                | 0                | 0               | 0           | 0       | 4                  | 0                | 1                | 0               | 1           | 0       | 32                 |
| 7-Sep  | 20     | 0                | 3                | 0               | 2           | 0       | 2                  | 0                | 0                | 0               | 1           | 0       | 20                 |
| 19-Sep | 20     | 0                | 0                | 1               | 1           | 1       | 1                  | 0                | 0                | 0               | 1           | 1       | 3                  |

\*Total number per 20 sweeps.

**Table 12e.** Leaf Nutrient Analysis 2012, Simpson (a).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
|          |                 | %       |       |
| P        | 0.3 - 0.6       | 0.52    | 0.47  |
| K        | 1.5 - 2.25      | 2.57    | 2.62  |
| Mg       | 0.25 - 0.7      | 0.35    | 0.32  |
| Ca       | 0.8 - 1.4       | 1.02    | 1     |
| S        | 0.25 - 0.60     | 0.29    | 0.27  |
|          |                 | ppm     |       |
| B        | 20 - 60         | 39      | 40    |
| Zn       | 21 - 80         | 47      | 46    |
| Mn       | 17 - 100        | 124     | 113   |
| Fe       | 25 - 300        | 85      | 81    |
| Cu       | 4 - 30          | 9       | 9     |

Date: 8/2  
Growth Stage: R2

## Site 13, Simpson County (b)

Producer: Randy Mann  
 County Agent: Jason Philips  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 47' 26"  
 Longitude: 86° 42' 32"

**Table 13a.** Costs and Returns, 2012, Simpson (b).

| Partial Costs/a <sup>†</sup>  | Prod. \$/a | Univ. \$/a |
|-------------------------------|------------|------------|
| Seed                          | 51.43      | 48.21      |
| Herbicide                     | 3.58       | 3.58       |
| Insecticide                   | 3.94       | 3.94       |
| Fungicide                     | 15.14      | 15.14      |
| Fertilizer                    | 0.00       | 0.00       |
| Total Partial Cost/a          | 74.09      | 70.87      |
| Partial Return/a <sup>‡</sup> | 819.89     | 879.41     |
| Partial Net Return/a          | 745.80     | 808.54     |

<sup>†</sup> 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. Additional trucking, storage, and/or drying costs are not included.

<sup>‡</sup> Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Simpson County (b) Field Notes

**June 8:** Randy planted the field. The university half was planted at a seeding rate of 150,000 seeds per acre and the producer half was planted at 166,000 seeds per acre. The variety planted in this field was Pioneer 95Y10.

**June 19:** Soybeans are at VE and 2.5 inches tall on both halves. The field is pretty dry but the stand throughout looks good. There are some areas where the beans are just emerging or blocked by heavy area of wheat straw. I saw some Japanese beetles in the field; however, they are remaining on the wheat straw.

**July 5:** Field received 1 tenth of an inch (text message from Randy). The beans are at V2. The stand for the producer half was 130,680 plants per acre (82% emergence) and 123,362 for the university half 82% emergence for the university half. There are some soybeans that were infected by rhizoctonia root rot, likely due to dry weather.

**July 19:** The field has received rain and the soybeans have reduced the stress symptoms. No further rhizoctonia has showed up in the field. Randy applied herbicide. There are signs of herbicide

## Simpson County (b)

Producer



University



June 19 - VE



July 5 - V2



July 19 - V6

injury on the weeds and a patch of injured soybean leaves (overlap from the sprayer).

**August 2:** The soybeans are at R2. The plants heights are a little taller on the university side (21 inches versus 19 inches). The pod formation begins at the sixth node for most of the beans. The field overall looks pretty clean and with some more rain should yield pretty well. Insect sweeps indicate very low numbers of bean leaf beetles and grasshoppers.

**August 20:** The field is at R4. Weed pressure and insect pressure remains low on both halves of the field. Green clover worm feeding is present but below 5% (seven worms per 20 sweeps) on both halves. I called Randy to update him on the field conditions and he plans to spray the field. I requested no insecticide or fungicide on the university half. There

was one pod worm (corn earworm) trapped in sweeps.

**September 7:** Following the insect application (university side received an application), the insects caught are mostly bean leaf beetle and three-cornered alfalfa leaf hoppers. There are patchy areas of soybean vein necrotic associated virus on older leaves. One group of soybeans is dead due to both standing water and charcoal root rot.

**September 20:** The field has reached R6 and the average pods per stems are 33 for the university side and 35 for the producer half. Due to the rain, the low areas with tall soybeans are beginning to lodge. No additional applications of fungicide or herbicide have been applied to the field and there are no signs of senescence.

**Table 13b.** Practices during Growing Season, 2012, Simpson (b).

|                       | Producer           | University |
|-----------------------|--------------------|------------|
| Field Size, acres     | 9                  |            |
| Previous Crop         | Wheat              |            |
| Soil Type             | Pembroke silt loam |            |
| Fertilizer Applied    | Fall applied       |            |
| Planting Date         | 8-Jun-12           |            |
| Soybean Variety       | Pioneer 95Y10      |            |
| Row Spacing, inches   | 15                 |            |
| Seeding Rate, seeds/a | 160,000            | 150,000    |
| Plant Stand, plants/a | 130,680            | 123,362    |
| Herbicide             | 24 oz Extreme      |            |
| Insecticide           | 2 oz Warrior       |            |
| Fungicide             | 4 oz Headline      |            |
| Harvest Date          | 30-Oct-12          |            |
| Yield, bu/a           | 55.1               | 59.1       |

**October 4:** The soybeans are still at R6 but 40% of the field is turning brown. I met with both the agent Jason Philips and the producer Randy Mann. We walked through the fields and I gave them both a brief summary of the field's progress. Both halves have lodged (rating=1), but this should not greatly affect the yield. The rain events that have occurred in September have been beneficial to this field. The beans filled nicely. The one thing that may be a challenge is there are symptoms of green stem syndrome that may pose challenges at harvest.

**Table 13c.** Physiological Characteristics, 2012, Simpson (b).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 19-Jun     | 2           | VE           |                | 2.5         | VE           |                |
| 5-Jul      | 5           | V2           |                | 6           | V2           |                |
| 19-Jul     | 10          | V6           |                | 11          | V6           |                |
| 2-Aug      | 19          | V10, R2      | Full           | 19          | V11, R2      | Full           |
| 20-Aug     | 32          | V15, R4      | Full           | 33          | V15, R4      | Full           |
| 7-Sep      | 33          | V17, R5      | Full           | 33          | V16, R5      | Full           |
| 19-Sep     | 33          | R6           | Full           | 33          | R6           | Full           |
| 4-Oct      | 33          | R7           | Full           | 33          | R7           | Full           |

**Table 13d.** Insect Counts\*, 2012, Simpson (b).

| Date   | Sweeps | Producer         |                  |                 |             |         |                    | University       |                  |                 |             |         |                    |   |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|---|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |   |
| 19-Jul | 20     | 0                | 0                | 0               | 1           | 0       | 0                  | 0                | 0                | 0               | 0           | 0       | 0                  | 0 |
| 2-Aug  | 20     | 0                | 1                | 0               | 1           | 0       | 1                  | 0                | 2                | 0               | 1           | 0       | 0                  | 1 |
| 20-Aug | 20     | 0                | 2                | 0               | 0           | 0       | 10                 | 0                | 2                | 0               | 1           | 1       | 1                  | 7 |
| 7-Sep  | 20     | 0                | 3                | 0               | 0           | 0       | 2                  | 0                | 2                | 0               | 0           | 1       | 1                  | 1 |
| 19-Sep | 20     | 0                | 1                | 1               | 0           | 1       | 0                  | 0                | 0                | 1               | 1           | 1       | 1                  | 1 |

\*Total number per 20 sweeps.

**Table 13e.** Leaf Nutrient Analysis 2012, Simpson (b).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.56    | 0.52  |
| K        | 1.5 - 2.25      | 2.42    | 2.32  |
| Mg       | 0.25 - 0.7      | 0.39    | 0.4   |
| Ca       | 0.8 - 1.4       | 1.06    | 1.03  |
| S        | 0.25 - 0.60     | 0.29    | 0.29  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 45      | 47    |
| Zn       | 21 - 80         | 54      | 51    |
| Mn       | 17 - 100        | 130     | 106   |
| Fe       | 25 - 300        | 93      | 91    |
| Cu       | 4 - 30          | 11      | 11    |

Date: 8/2  
Growth Stage: R2

## Site 14, Trigg County (a)

Producer: Barry Alexander  
 County Agent: David Fourqurean  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 37° 2' 5"  
 Longitude: 87° 45' 49"

**Table 14a.** Costs and Returns, 2012, Trigg (a).

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 40.18      | 47.89      |
| Herbicide            | 7.17       | 7.17       |
| Insecticide          | 0.00       | 0.00       |
| Fungicide            | 0.00       | 0.00       |
| Fertilizer           | 0.00       | 0.00       |
| Total Partial Cost/a | 47.35      | 55.06      |
| Partial Return/a‡    | 598.18     | 580.32     |
| Partial Net Return/a | 550.83     | 525.26     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

### Trigg County (a) Field Notes

**April 30:** Barry planted a 16-acre full season field on a Zanesville silt loam. The seeding rate for the producer half as set at 125,000 seeds per acre and 149,000 seeds per acre for the university half.

**May 9:** Field is pretty dry but the soybeans have a good stand. The growth stage is VE and there are no rain expected in the forecast.

**May 21:** The stand continues to look healthy. Crabgrass and resistant marestail the main weed pressure however, conditions are relatively dry so herbicide is not needed for now. There are early signs of potassium (K) deficiency on the producer half of the field. The producer may have to apply a foliar if this progresses. Stand counts are 107,332 plants per acre for Barry's half (86% emergence) and 106,635 plants per acre for the university half (72% emergence).

**June 4:** The growth stage of the field is V5 and 7 inches half for both sides. The K deficiency has continued along with the pressure from smooth pigweed and crabgrass. I called the producer to request an application of herbicide and informed him about the K deficiency. He will use a foliar to manage the deficiency.

### Trigg County (a)

Producer



University



May 21 - V2



June 4 - V5



June 12 - V7, R1

**June 12:** The soybeans are at full canopy and at R1 since it received some rain. Both sides average 10 inches. The herbicide killed weeds except the lingering marestail in the grass waterways. Insect pressure consists of minor leaf defoliation from Japanese beetle pressure (this insect has emerged earlier than 2011 due to a mild winter).

**June 19:** The growth stage in now at R2 and I will collect soybean leaves for nutrient analysis. The K deficiency is still persistent in the field. The insect counts from the net procedure indicate low number of Japanese beetles and bean leaf beetles (one per 20 sweeps) on both halves. Percent defoliation remains below 5%.

**June 26:** There has not been any consistent rainfall in almost two weeks. The soybeans are now at R3 at heights of 16

(university) and 17 (producer) inches tall. The hilly and shallow soil sections of the field have several leaves with sunscald and flipped leaves due to heat stress. Insect levels and percent defoliation are still low, most are on the producer side of the field.

**July 13:** The soybeans have approached 25 inches in height. The heat stressed locations of the field have worsened with sections of wilting plants.

**July 18:** The field is still at R4 on the producer half. The university side has reached R5. Due to the dry soil and hot temperatures; the disease pressure in this field is charcoal root rot. Insect levels and type have not changed and remain low. There are mostly dectes stem borers, corn root borers, and three-cornered alfalfa leaf hoppers.

**Table 14b.** Practices during Growing Season, 2012, Trigg (a).

|                       | Producer             | University |
|-----------------------|----------------------|------------|
| Field Size, acres     | 8                    |            |
| Previous Crop         | Corn                 |            |
| Soil Type             | Zanesville silt loam |            |
| Planting Date         | 27-Apr-12            |            |
| Soybean Variety       | Pioneer 93Y92        |            |
| Row Spacing, inches   | 15                   |            |
| Seeding Rate, seeds/a | 125,000              | 149,000    |
| Plant Stand, plants/a | 106,635              | 107,332    |
| Herbicide             | 48 oz Extreme        |            |
| Insecticide           | None                 |            |
| Fungicide             | None                 |            |
| Harvest Date          | 12-Sep-12            |            |
| Yield, bu/a           | 40.2                 | 39.0       |

**July 25:** Both halves of the field are now at R5 and 28 inches tall. Charcoal rot is more pronounced in several plants now. There was a little rainfall and insect pressure has increased slightly from grasshopper, alfalfa leaf hopper, and green clover worms (one per 20 sweeps). The K deficiency is lingering on younger leaves on the university half. The foliar application does not appear to have overcome this deficiency.

**July 31:** The soybeans are now at R6. The upper nodes are struggling to fill in the exceptional drought conditions. Again this field has not seen any real pod feeding for any other insect damage.

**August 10:** There is some turnover now and some rain has fallen on the field. The rain has led to more pronounced numbers of bean leaf beetles and green clover worms feeding on the leaves. There is no pod feeding present and there are two to four pods per node on average on both halves of the field.

**August 28:** The field is at R7 and drying down quickly. The K deficiency, lack of water, and charcoal rot were the real challenges seen in this field all season. Due to the excessive heat, I would estimate that this field has 30 bushel potential. There was no lodging likely due to the soybean variety (producing shorter beans). The beans should be ready for harvest in mid-September.

**Table 14c.** Physiological Characteristics, 2012, Trigg (a).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 21-May     | 3           | V2           |                | 3           | V2           |                |
| 4-Jun      | 6.5         | V5           |                | 6.5         | V5           |                |
| 12-Jun     | 10          | V7, R1       | Full           | 10          | V7, R1       | Full           |
| 19-Jun     | 15          | V9, R2       | Full           | 15          | V10, R2      | Full           |
| 26-Jun     | 17          | V12, R3      | Full           | 16          | V11, R3      | Full           |
| 13-Jul     | 24          | V14, R4      | Full           | 25          | V16, R4      | Full           |
| 18-Jul     | 28          | V17, R4      | Full           | 28          | V17, R5      | Full           |
| 25-Jul     | 28          | V17, R5      | Full           | 28          | V17, R5      | Full           |
| 31-Jul     | 28          | V18, R5      | Full           | 28          | R6           | Full           |
| 10-Aug     | 28          | R6           | Full           | 28          | R6           | Full           |
| 28-Aug     | 28          | R7           | Full           | 28          | R7           | Full           |
| 10-Sep     | 28          | R8           | Full           | 28          | R8           | Full           |

**Table 14d.** Insect Counts\*, 2012, Trigg (a).

| Date   | Sweeps | Producer         |                  |                 |             |         |                    | University       |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 12-Jun | 20     | 1                | 0                | 0               | 0           | 0       | 0                  | 1                | 0                | 0               | 0           | 0       | 0                  |
| 19-Jun | 20     | 1                | 1                | 0               | 0           | 0       | 0                  | 1                | 0                | 0               | 0           | 0       | 0                  |
| 26-Jun | 20     | 0                | 1                | 0               | 0           | 0       | 0                  | 1                | 2                | 0               | 0           | 0       | 0                  |
| 13-Jul | 20     | 0                | 1                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 0           | 0       | 0                  |
| 18-Jul | 20     | 1                | 0                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 1           | 0       | 0                  |
| 21-Jul | 20     | 0                | 0                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 1           | 0       | 1                  |
| 31-Jul | 20     | 0                | 1                | 0               | 0           | 0       | 0                  | 0                | 0                | 0               | 0           | 0       | 1                  |
| 10-Aug | 20     | 0                | 4                | 0               | 1           | 0       | 10                 | 0                | 5                | 0               | 1           | 0       | 10                 |

\*Total number per 20 sweeps.

**Table 14e.** Leaf Nutrient Analysis, 2012, Trigg (a).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.46    | 0.47  |
| K        | 1.5 - 2.25      | 1.59    | 1.49  |
| Mg       | 0.25 - 0.7      | 0.5     | 0.5   |
| Ca       | 0.8 - 1.4       | 0.94    | 0.9   |
| S        | 0.25 - 0.60     | 0.28    | 0.27  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 37      | 33    |
| Zn       | 21 - 80         | 45      | 45    |
| Mn       | 17 - 100        | 82      | 122   |
| Fe       | 25 - 300        | 91      | 84    |
| Cu       | 4 - 30          | 11      | 10    |

Date: 6/19  
Growth Stage: R2

## Site 15, Trigg County (b)

Producer: Barry Alexander  
 County Agent: David Fourqurean  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 55' 15"  
 Longitude: 86° 43' 33"

**Table 15a.** Costs and Returns, 2012, Trigg (b).

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 40.70      | 40.70      |
| Herbicide            | 7.17       | 7.17       |
| Insecticide          | 0.00       | 0.00       |
| Fungicide            | 0.00       | 0.00       |
| Fertilizer           | 0.00       | 0.00       |
| Total Partial Cost/a | 47.87      | 47.87      |
| Partial Return/a‡    | 269.33     | 287.18     |
| Partial Net Return/a | 221.46     | 239.31     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Trigg County (b) Field Notes

**April 26 and May 2:** This field was planted to demonstrate soybean yield differences in planting date. This is an 80 acre field consisting of all Crider silt loam. The first half of the field was planted on April 26 and the second half was planted on May 2. The variety selected for these two plots was Pioneer 93Y92 at a seeding rate of 126,611 seeds per acre. It was agreed that all chemical applications were to remain consistent to not crowd the producers operations during the growing season.

**May 21:** The stand count for the field was 105,241 plants per acre (83% emergence). Weed pressure from smooth pigweed, crabgrass, marestail, and ragweed is low this week so no herbicide request is necessary. The growth stage is V2 and 5 inches on both halves.

**June 6:** The field is at R1 and the weeds have grown to the appropriate height to justify herbicide. I sent Barry a text message requesting an application for the university half only. There is minor defoliation due to Japanese beetles and bean leaf beetles. There also are three-cornered alfalfa leaf hoppers.

**June 14:** The soybeans are still at R1 and there are not a lot of comparisons to be

## Trigg County (b)

Producer



University



May 21 - V1



June 6 - V5



June 14 - V8, R1



June 19 - V9, R2

made between both dates. Plant heights are 15 (April date) and 14 (May date) inches tall. The May planting date has more observed pressure from deer and patchy blister beetle feeding.

**June 19:** Both planting dates are at V9, R2 and ready for leaf nutrient sampling. Insect and weed pressure remain low for both halves. The April date has several

areas with heat stress and flipped leaves. The May date has no signs of heat stress. There is a difference in slope between the two dates. The April date has more hills and therefore shallower soils so there is more stress present.

**June 26:** The soybeans are still at R2 but slightly taller. There has been a difference in height by one inch amongst the

**Table 15b.** Practices during Growing Season, 2012, Trigg (b).

|                       | Producer         | University |
|-----------------------|------------------|------------|
| Field Size, acres     | 20               |            |
| Previous Crop         | Soybean          |            |
| Soil Type             | Crider silt loam |            |
| Planting Date         | 26-Apr-12        | 2-May-12   |
| Soybean Variety       | Pioneer 93Y92    |            |
| Row Spacing, inches   | 15               |            |
| Seeding Rate, seeds/a | 126,611          |            |
| Plant Stand, plants/a | 105,241          |            |
| Herbicide             | 48 oz Extreme    |            |
| Insecticide           | None             |            |
| Fungicide             | None             |            |
| Harvest Date          | 12-Sep-12        |            |
| Yield, bu/a           | 18.1             | 19.3       |

planting dates; however the topography and heat stress symptoms are clearly different. The April date has some areas with wilting soybeans this week. The April date has a higher occurrence of charcoal rot also. The Insect pressure has diversified to green and brown stinkbugs, green clover worms. The May planting date has had a higher count of insects in the sweep net (example four Japanese beetles per 20 sweeps versus one per 20 sweeps on the April date). Regardless, defoliation is low on both halves and no insecticide or fungicide appears necessary.

**July 13:** There is a clear difference in height on the May date this week (V15, R4 28 inches) in comparison to the April date (V17, R4 24 inches). The drought has led to dead or wilting plants on the border rows of the field. Heat stress is appearing on the May date and there is more leaf feeding (below 5%). I had a meeting with Barry to go over both the full season and double crop MVP fields. He informed me that no chemicals have been applied except an herbicide. I told him on the university and planting date side that it was not necessary.

**July 18:** Both halves are at R5. The disease pressure is mostly from charcoal rot and there are some areas of SDS on the May planting date. Insect counts have decreased slightly (one per sweep for all insects) on the May date.

**July 25:** The field is still at R5 and there will likely be a difference in yield due to the drought stress. The difference in

planting date for this field thus far has been in insect pressure and length of time for the appearance of heat stress. This is due to that difference in slope amongst the two dates.

**August 6:** The field is at R6. The average pods per node are one to three on the April date and two to four pods per node for the May date.

Insect pressure has gone up slightly due to green clover worm pressure. I was surprised to catch a Japanese beetle still in the sweep net (emergence should be zero this late in the season). The April date pods appear to fill faster than the May date.

**August 23:** The field is now at R7 and drying down. The beans most affected by the drought have severe charcoal rot or are just bare stems. The drought and topography difference affected the comparison of these two planting dates. Perhaps if conditions were different there may have been more to observe in this plot. The beans should have an estimated yield of 25-30 bushels per acre by the time they are cut (one week or so).

**Table 15c.** Physiological Characteristics, 2012, Trigg (b).

| Visit Date | Producer (4/26) |              |                | University (5/2) |              |                |
|------------|-----------------|--------------|----------------|------------------|--------------|----------------|
|            | Height (in)     | Growth Stage | Canopy Closure | Height (in)      | Growth Stage | Canopy Closure |
| 21-May     | 6               | V3           |                | 6                | V2           |                |
| 6-Jun      | 8               | V5, R1       | 70%            | 9                | V6, R1       | 70%            |
| 14-Jun     | 12              | V8, R1       | Full           | 12               | V8, R1       | Full           |
| 19-Jun     | 15              | V9, R2       | Full           | 14               | V9, R2       | Full           |
| 26-Jun     | 16              | V11, R2      | Full           | 17               | V10, R3      | Full           |
| 13-Jul     | 26              | V17, R4      | Full           | 28               | V15, R4      | Full           |
| 18-Jul     | 27              | V18, R5      | Full           | 29               | V16, R5      | Full           |
| 25-Jul     | 29              | V19, R5      | Full           | 31               | V18, R5      | Full           |
| 31-Jul     | 29              | R5           | Full           | 31               | R5           | Full           |
| 6-Aug      | 29              | R6           | Full           | 31               | R6           | Full           |
| 28-Aug     | 29              | R7           | Full           | 31               | R7           | Full           |
| 10-Sep     | 29              | R8           | Full           | 31               | R8           | Full           |

**Table 15d.** Insect Counts\*, 2012, Trigg (b).

| Date   | Sweeps | Producer (4/26)  |                  |                 |             |         |                    | University (5/2) |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 6-Jun  | 20     | 2                | 0                | 0               | 0           | 0       | 0                  | 1                | 1                | 0               | 0           | 0       | 0                  |
| 14-Jun | 20     | 1                | 0                | 0               | 1           | 0       | 0                  | 1                | 0                | 0               | 1           | 0       | 0                  |
| 19-Jun | 20     | 1                | 5                | 0               | 0           | 0       | 0                  | 1                | 1                | 0               | 0           | 0       | 0                  |
| 26-Jun | 20     | 1                | 3                | 0               | 0           | 0       | 0                  | 1                | 6                | 0               | 1           | 0       | 0                  |
| 13-Jul | 20     | 1                | 1                | 0               | 0           | 0       | 0                  | 4                | 1                | 1               | 1           | 0       | 1                  |
| 18-Jul | 20     | 1                | 1                | 1               | 0           | 0       | 1                  | 1                | 1                | 1               | 1           | 0       | 1                  |
| 21-Jul | 20     | 0                | 0                | 0               | 1           | 0       | 0                  | 1                | 1                | 1               | 1           | 0       | 1                  |
| 6-Aug  | 20     | 1                | 0                | 0               | 1           | 0       | 8                  | 0                | 1                | 0               | 0           | 0       | 8                  |

\*Total number per 20 sweeps.

**Table 15e.** Leaf Nutrient Results, 2012, Trigg (b).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.44    | 0.42  |
| K        | 1.5 - 2.25      | 2.07    | 2.48  |
| Mg       | 0.25 - 0.7      | 0.32    | 0.35  |
| Ca       | 0.8 - 1.4       | 1.1     | 1.0   |
| S        | 0.25 - 0.60     | 0.28    | 0.28  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 20      | 24    |
| Zn       | 21 - 80         | 33      | 37    |
| Mn       | 17 - 100        | 63      | 106   |
| Fe       | 25 - 300        | 107     | 117   |
| Cu       | 4 - 30          | 8       | 9     |

Date: 6/19  
Growth Stage: R2

## Site 16, Trigg County (c)

Producer: Barry Alexander  
 County Agent: David Fourqurean  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 56' 3"  
 Longitude: 87° 45' 54"

**Table 16a.** Costs and Returns, 2012, Trigg (c).

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 54.32      | 47.89      |
| Herbicide            | 7.17       | 7.17       |
| Insecticide          | 3.00       | 3.00       |
| Fungicide            | 0.00       | 0.00       |
| Fertilizer           | 0.00       | 0.00       |
| Total Partial Cost/a | 64.49      | 58.06      |
| Partial Return/a‡    | 488.06     | 538.66     |
| Partial Net Return/a | 423.57     | 480.60     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Trigg County (c) Field Notes

**June 2:** Barry planted a double crop soybean field, non-irrigated with a Pioneer 93Y92 variety. The seeding rate for his half was 169,000 seeds per acre and 149,000 seeds per acre for the university half.

**June 26:** The growth stage is now V2, 5 inches tall on the producer half and V2, 6 inches tall on the university side. The final stand count results are 143,574 plants per acre (producer) and 127,544 plants per acre (university). Both halves had an 85%-86% emergence. There are several plants with rhizoctonia root rot scattered in the field due to the prolonged dry conditions and high temperatures.

**July 13:** The soybeans are at V6 and very close to approaching R1. The incidence of rhizoctonia is not a high this week. The weed pressure from volunteer wheat and pigweeds remain low due to no rain. There is minimal insect pressure from bean leaf beetles, mostly on the university half. At this point no herbicide is necessary for the UK half of the field.

**July 18:** The soybeans are at V9, and are between R1 and R2. The weed population is heavy this week. In a brief meeting with Barry, I requested herbicide for the uni-

## Trigg County (c)

Producer



July 13 - V6

University



July 18 - V9, R1



July 25 - V10, R2



versity side. Other pressure observed in this field are flipped leaves from excessive heat stress, low incidence of charcoal rot, and bean leaf beetle pressure. No further action is needed beyond the herbicide.

**July 25:** The soybeans have stayed at V9-V11 at R2. The plant heights are between 16 and 18 inches tall. The university half are slightly shorter compared to the producer half. At R2 the leaves will be taken for leaf nutrient analysis. The leaves are pretty small and the plants have stunted growth in some spots of the field (5% in total) due to the drought. There is still some lingering volunteer wheat but the beans have canopied so there is no need for further action.

**July 31:** The hilly sections on both halves have progressed in heat stress symptoms (scorched leaves and wilting plants). The

soybeans are now at R3 reproductive stage and 24 inches on both halves. The disease pressure is from charcoal root rot and some symptoms of SVNaV. These occurrences are in very low numbers so a fungicide will not be necessary for the university side. Insect pressure remains low consisting of alfalfa leaf hoppers, green stinkbugs, grasshoppers, and green clover worms.

**August 6:** The heat stress and gone down a little with the exception of the border rows. Charcoal rot is still patchy and will continue to be throughout the season. The soybeans are at pod set (R4) and just beginning to develop pods. The insect counts in the sweep net remain low; however, one soybean pod worm (corn earworm) was caught on both halves of the field. Again no pods are fully devel-



**Table 16b.** Practices during Growing Season, 2012, Trigg (c).

|                       | Producer             | University |
|-----------------------|----------------------|------------|
| Field Size, acres     | 25                   | 20         |
| Previous Crop         | Wheat, Non-Irrigated |            |
| Soil Type             | Crider silt loam     |            |
| Planting Date         | 6-Jun-12             |            |
| Soybean Variety       | Pioneer 93Y92        |            |
| Row Spacing, inches   | 15                   |            |
| Seeding Rate, seeds/a | 169,000              | 149,000    |
| Plant Stand, plants/a | 143,574              | 127,544    |
| Herbicide             | 48 oz Extreme        |            |
| Insecticide           | 1 oz Silencer        |            |
| Fungicide             | None                 |            |
| Harvest Date          | 15-Oct-12            |            |
| Yield, bu/a           | 32.8                 | 36.2       |

oped right now but this insect will have to be watched carefully.

**August 23:** The field is now at V13- V14, R5 and 28 inches tall on the university side and 27 on the producer half. There have been some rain events during the season and the insect counts have increased. Three-cornered alfalfa leaf hopper counts have gone up (20 per 20 sweeps) along with green clover worm counts (13 per 20 sweeps) mostly on the university side. There are signs of pod feeding on the stressed beans on the producer side of the field; however, no pod worms were caught in the net or identified feeding on any pods. The drought will inevitably reduce the yield for these beans but to prevent further loss the pod feeding will be monitored.

**August 29:** The soybeans are now between R5 and R6. I observed the pod feeding and it does not appear to have worsened. Since it is mostly on the producer's side, I called Barry and notified him of these findings. It remains low on the university side so no action will be taken. Green clover worm counts remain high this week on both halves and there is minor leaf defoliation (below 5%). Alfalfa hoppers numbers have gone down but there are some signs of stem girdling. This should not affect yield at harvest because the beans are pretty mature at this point. Some SDS is occurring along wheel tracks and in patches in the field on both halves, but no other new disease pressures were noticed this week.

**September 14:** The field remains at R6 and is turning over in several sections. Due to strong storms there are some areas on the producer side that are lodged (rating=2). The last series of insect sweeps indicated that green clover worm counts decreased and there is no further pod damage in comparison to August. There are several leaves with septoria brown spot on lower leaves and more pronounced charcoal rot. SDS incidence remains the same on both halves so no further yield loss should be expected.

**September 28:** The beans are between R7 and R8. The drought stress and charcoal rot is apparent on the hill sections of the university half with thin stems and stunted plants. There are areas and some sections of the field with green stem syndrome. The incidence is low so there should not be any complications at harvest time. This plot will likely be close to 25 bushels per acre.

**Table 16c.** Physiological Characteristics, 2012, Trigg (c).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 26-Jun     | 5           | V2           |                | 5           | V2           |                |
| 13-Jul     | 10          | V6           | 80%            | 12          | V6           | 80%            |
| 18-Jul     | 15          | V9, R1       | Full           | 17          | V9, R1       | Full           |
| 25-Jul     | 18          | V10, R2      | Full           | 16          | V9, R2       | Full           |
| 31-Jul     | 24          | V14, R3      | Full           | 24          | V14, R3      | Full           |
| 6-Aug      | 26          | V17, R4      | Full           | 26          | V16, R4      | Full           |
| 23-Aug     | 31          | V18, R5      | Full           | 31          | V16, R5      | Full           |
| 29-Aug     | 31          | R6           | Full           | 31          | R6           | Full           |
| 14-Sep     | 31          | R6           | Full           | 31          | R6           | Full           |
| 28-Sep     | 31          | R7           | Full           | 31          | R7           | Full           |
| 5-Oct      | 31          | R8           | Full           | 31          | R8           | Full           |

**Table 16d.** Insect Counts\*, 2012, Trigg (c).

| Date   | Sweeps | Producer         |                  |                 |             |         |                    | University       |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 18-Jul | 20     | 0                | 2                | 0               | 0           | 0       | 0                  | 0                | 1                | 0               | 1           | 0       | 0                  |
| 21-Jul | 20     | 1                | 1                | 0               | 1           | 0       | 0                  | 0                | 1                | 0               | 1           | 0       | 0                  |
| 31-Jul | 20     | 0                | 0                | 1               | 1           | 0       | 1                  | 0                | 1                | 1               | 1           | 0       | 1                  |
| 6-Aug  | 20     | 0                | 1                | 0               | 1           | 0       | 2                  | 0                | 0                | 0               | 0           | 0       | 2                  |
| 23-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 3                  | 0                | 1                | 0               | 0           | 0       | 11                 |
| 29-Aug | 20     | 0                | 0                | 1               | 1           | 0       | 14                 | 0                | 0                | 0               | 1           | 0       | 14                 |
| 14-Sep | 20     | 0                | 0                | 2               | 1           | 0       | 3                  | 0                | 0                | 0               | 0           | 0       | 7                  |

\*Total number per 20 sweeps.

**Table 16e.** Leaf Nutrient Analysis 2012, Trigg (c).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.58    | 0.62  |
| K        | 1.5 - 2.25      | 2.48    | 2.35  |
| Mg       | 0.25 - 0.7      | 0.38    | 0.4   |
| Ca       | 0.8 - 1.4       | 1.12    | 1.07  |
| S        | 0.25 - 0.60     | 0.28    | 0.3   |
| ppm      |                 |         |       |
| B        | 20 - 60         | 46      | 47    |
| Zn       | 21 - 80         | 43      | 49    |
| Mn       | 17 - 100        | 95      | 105   |
| Fe       | 25 - 300        | 92      | 92    |
| Cu       | 4 - 30          | 11      | 11    |

Date: 7/25  
Growth Stage: R2

## Site 17, Trigg County (d)

Producer: Barry Alexander  
 County Agent: David Fourqurean  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 36° 58' 15"  
 Longitude: 87° 46' 36"

**Table 17a.** Costs and Returns, 2012, Trigg (d).

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 56.25      | 47.89      |
| Herbicide            | 7.17       | 7.17       |
| Insecticide          | 3.00       | 3.00       |
| Fungicide            | 0.00       | 0.00       |
| Fertilizer           | 0.00       | 0.00       |
| Total Partial Cost/a | 66.42      | 58.06      |
| Partial Return/a‡    | 1224.62    | 1132.37    |
| Partial Net Return/a | 1158.20    | 1074.31    |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

### Trigg County (d) Field Notes

**June 8:** Barry planted an Armor 47R23 variety on an irrigated double crop bean field. The seeding rate for his half was 175,000 seeds per acre and 149,000 seeds per acre on the university side.

**June 26:** The beans are at V4 and 7 inches tall on both halves of the field. Final stand counts for the university half were 146,013 plants per acre and 149,931 plants per acre on the producer half. Several double crop fields have symptoms of rhizoctonia root rot; however, that has not been noticed in this field. Likely the approaching rain and irrigation reduced the incidence of this soil borne disease. Weed pressure remains low (volunteer wheat and smooth pigweed).

**July 13:** The plant stage and height at V7 and 12 inches remains consistent for both halves of the field. The rain helped a great deal. Overall the field looks clean with low weed pressure.

**July 18:** I had a brief meeting with Barry regarding all four MVP fields. I requested an application of herbicide for both double crop fields. There is some leaf defoliation from bean leaf beetles and grasshoppers university half but it is at low levels. The weed pressure still

### Trigg County (d)

Producer



University



July 13 - V4



July 18 - V7



July 25 - V9, R1

remains low but with more moisture will increase the weedy populations and height.

**July 25:** The soybeans have reached R1 with plant heights ranging from 14-16 inches tall. The herbicide helped and the beans have reached full canopy closure this week. Insect sweeps this week indicated no damaging insects on the producer half beyond corn root borers and alfalfa leaf hoppers. The university half had low numbers of grasshoppers, green cover worms, and Japanese beetles (one insect per 20 sweeps). Leaf defoliation is low near 1%, and the field continues to look clean.

**July 31:** Leaf samples will be collected to nutrient analysis on both halves of the field (R2). Although the field receives irrigation there are some spots with

heat stress on both halves of the field. It is patchy on the university side. Overall the field looks clean with no further weed pressure or disease pressure present. Insect sweeps indicate green stinkbugs and green clover worms. No significant leaf defoliation has occurred (below 5%).

**August 10:** The soybeans are at R3 and 24 inches tall on the producer side (23 inches on the university side). No disease pressure was observed and therefore no fungicide application will be necessary. The hill sides and a large section of the university half have flipped leaves due to drought stress. Insect sweeps indicated low numbers of green clover worms and therefore no insecticide will be recommended for the university side.

**August 23:** The stage of the soybeans on both halves is V17, R5 and 31 inches

**Table 17b.** Practices during Growing Season, 2012, Trigg (d).

|                       | Producer                                    | University |
|-----------------------|---|------------|
| Field Size, acres     | 35  | 40         |
| Previous Crop         | Wheat, Irrigated                            |            |
| Soil Type             | Crider silt loam, Crider-Pembroke silt loam |            |
| Planting Date         | 8-Jun-12                                    |            |
| Soybean Variety       | Armor 47R23                                 |            |
| Row Spacing, inches   | 15  |            |
| Seeding Rate, seeds/a | 175,000                                     | 149,000    |
| Plant Stand, plants/a | 149,931                                     | 146,013    |
| Herbicide             | 48 oz Extreme                               |            |
| Insecticide           | 1 oz Silencer                               |            |
| Fungicide             | None  |            |
| Harvest Date          | 10-Oct-12                                   |            |
| Yield, bu/a           | 82.3  | 76.1       |

tall. The irrigation is running on a section of the producer half. There is still a large area of stressed soybeans on the university side which is a concern since the pods are beginning to fill. No disease symptoms were observed. Green clover worm counts have increased on the university half (11 worms per 20 sweeps). No insecticide is necessary because leaf defoliation remains low and the counts are below economic threshold.

**August 29:** The field is between R5 and R6. Both halves reached a maximum height of 31 inches. The field has been both irrigated and received rain recently but high winds led to patchy lodging on the producer half of the field (1% of the field so far). No disease pressure has been observed beyond SVNaV. Green clover worm counts have increased this week with leaf defoliation close to 5% on the upper leaves. The numbers are slightly higher on the university half and there is a section of heavy defoliation due to blister beetles. No pod feeding is present so I will not recommend an insecticide.

**September 14:** The soybeans are now at R6 and these recent rain events from a hurricane have decreased the heat stress incidence on the university side. Lodging has progressed due to wind dam-

age (rating 1-2 on both halves). In addition insect counts have increased greatly (green clover worms and loopers). Percent leaf defoliation is approximately 10% but this is mostly on the border rows. One pod worm was caught on the university side, but no pod feeding noticed. Frogeye leaf spot and SVNaV was noticed on the producer side but in low levels.

**September 28:** The field is now at R7 and turning over. There are still loopers chewing on leaves and there are one or two plants with pod feeding. The lodging rating is not greater than 2 on the university side and in the low areas on the producer half. Since this is an irrigated soybean field the yield will differ from the Trigg C field and will likely be between 30-40 bushels if enough rain fell later in this season.

**Table 17c.** Physiological Characteristics, 2012, Trigg (d).

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 26-Jun     | 5           | V2           |                | 5           | V2           |                |
| 13-Jul     | 7           | V4           |                | 7           | V4           |                |
| 18-Jul     | 12          | V7           | 50%            | 12          | V7           | 50%            |
| 25-Jul     | 15          | V8, R1       | Full           | 16          | V8, R1       | Full           |
| 31-Jul     | 19          | V11, R2      | Full           | 18          | V10, R2      | Full           |
| 10-Aug     | 24          | V12, R3      | Full           | 23          | V13, R3      | Full           |
| 23-Aug     | 27          | V13, R5      | Full           | 28          | V14, R5      | Full           |
| 29-Aug     | 27          | R5           | Full           | 28          | R5           | Full           |
| 14-Sep     | 27          | R6           | Full           | 28          | R6           | Full           |
| 28-Sep     | 27          | R6           | Full           | 28          | R6           | Full           |
| 5-Oct      | 27          | R7           | Full           | 28          | R7           | Full           |
| 10-Oct     | 27          | R7           | Full           | 28          | R7           | Full           |

**Table 17d.** Insect Counts\*, 2012, Trigg (d).

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 18-Jul | 20     | 1                | 0                | 0               | 1           | 0       | 0                  | 2                | 1                | 0               | 0           | 0       | 0                  |
| 21-Jul | 20     | 0                | 0                | 0               | 0           | 0       | 0                  | 1                | 0                | 0               | 1           | 0       | 1                  |
| 31-Jul | 20     | 0                | 0                | 0               | 0           | 0       | 1                  | 0                | 0                | 1               | 0           | 0       | 6                  |
| 10-Aug | 20     | 0                | 0                | 0               | 0           | 0       | 1                  | 0                | 0                | 0               | 0           | 0       | 3                  |
| 23-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 14                 | 0                | 1                | 0               | 1           | 0       | 11                 |
| 29-Aug | 20     | 0                | 1                | 0               | 1           | 0       | 13                 | 0                | 1                | 1               | 0           | 0       | 20                 |
| 14-Sep | 20     | 0                | 0                | 0               | 1           | 2       | 22                 | 0                | 0                | 3               | 1           | 11      | 23                 |

\*Total number per 20 sweeps.

**Table 17e.** Leaf Nutrient Analysis 2012, Trigg (d).

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
|          |                 | %       |       |
| P        | 0.3 - 0.6       | 0.56    | 0.55  |
| K        | 1.5 - 2.25      | 2.5     | 2.81  |
| Mg       | 0.25 - 0.7      | 0.38    | 0.39  |
| Ca       | 0.8 - 1.4       | 0.95    | 0.86  |
| S        | 0.25 - 0.60     | 0.3     | 0.3   |
|          |                 | ppm     |       |
| B        | 20 - 60         | 36      | 42    |
| Zn       | 21 - 80         | 48      | 49    |
| Mn       | 17 - 100        | 74      | 72    |
| Fe       | 25 - 300        | 91      | 94    |
| Cu       | 4 - 30          | 10      | 11    |

Date: 7/31  
Growth Stage: R2

## Site 18, Union County

Producer: Bob White  
 County Agent: Rankin Powell  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 37° 30' 36"  
 Longitude: 87° 52' 8"

**Table 18a.** Costs and Returns, 2012, Union.

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 51.43      | 45.64      |
| Herbicide            | 3.00       | 3.00       |
| Insecticide          | 0.00       | 0.00       |
| Fungicide            | 0.00       | 0.00       |
| Fertilizer           | 127.20     | 127.20     |
| Total Partial Cost/a | 181.63     | 175.84     |
| Partial Return/a‡    | 683.09     | 747.72     |
| Partial Net Return/a | 501.46     | 571.88     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Union County Field Notes

**May 2:** Bob planted the field. Due to a dry spring the university side was planted at a rate of 142,000 seeds per acre. Bob planted his half of the field at 162,000 seeds per acre. The sides were divided by a grass waterway.

**May 14:** Beans are at VE and are coming up nicely. I had a meeting with Bob at his shop to record variety (Becks 432), and soil fertility (250 lbs. K<sub>2</sub>O) program for the SoyMVP field. With the assistance of Dr. Murdock, I answered a soil fertility question that he asked pertaining to another one of his fields.

**May 22:** Fields are at V1 and 2.5 inches tall on the university side and 2 inches tall on the producer half. Weed pressure is moderate consisting of some clovers, marehail, pitted morning glory, and smooth pigweed. I took stand counts for both halves. For the university side a final stand of 126,468 plants per acres (89% emergence), and for the producer half the final stand was 152,983 plants per acre (94% emergence).

**May 30:** There are a few soybean plants with signs of K deficiency on the university half of the field. The current stage in the field is V3 and 4 inches tall for both

## Union County

Producer



University



May 22 - V1



June 7 - V4



June 19 - V7

halves. Japanese beetles are present, but there is only minimal defoliation. Weed pressure is moderate, with Johnson grass, crabgrass, smooth pigweed, and some marehail. The field will need an application of herbicide sometime next week. Other pressure, are deer and wheel track damage on both halves.

**June 7:** Field could use some rain, but has been sprayed and looks very clean. The soybeans are at V4. K deficiency observed last week is due to wheel compaction. Insect pressure is more prevalent and is due to Japanese beetles and juvenile grasshoppers. Foliage feeding remains low but will need more attention if we receive a heavy rain event.

**June 19:** Soybeans have reached V7 and 12 inches tall on the university half. The producer half is 11 inches tall. The

canopy closure is full and there are no flowers present yet. There were patches of heavy feeding from Japanese beetles so I began insect sweeps. After three sets of 20 sweeps the insect numbers are 1.2 beetles per 20 sweeps on the university side and one per 20 sweeps on the producer half. The leaf defoliation is below 10% so no recommendation is necessary. I will, however, continue to monitor the feeding on the border rows.

**June 29:** The field is now at R2 and I collected leaves for nutrient analysis. The percent defoliation from Japanese beetle pressure stays consistent on the university half. The insect sweeps indicate an average of three Japanese beetles per 20 sweeps on the university side and four on the producer half. Other insects that were trapped were defoliate stem borer, bean leaf

**Table 18b.** Practices during Growing Season, 2012, Union.

|                                       | Producer   | University |
|---------------------------------------|--|------------|
| Field Size, acres                     | 15   |            |
| Previous Crop                         | Corn   |            |
| Soil Type                             | Loring silt loam, Zanesville silty clay loam, Holmsers silt loam |            |
| Fertilizer Applied                    |  |            |
| P <sub>2</sub> O <sub>5</sub> , lbs/a | None   |            |
| K <sub>2</sub> O, lbs/a               | 240  |            |
| Ag Lime, tons/a                       | None   |            |
| Planting Date                         | 1-May-12   |            |
| Soybean Variety                       | Becks 432  |            |
| Row Spacing, inches                   | 15   |            |
| Seeding Rate, seeds/a                 | 160,000  | 142,000    |
| Plant Stand, plants/a                 | 152,983  | 126,498    |
| Herbicide                             | 26 oz Roundup  |            |
| Insecticide                           | None   |            |
| Fungicide                             | None   |            |
| Harvest Date                          | 28-Sep-12  |            |
| Yield, bu/a                           | 50.9   | 46.5       |

beetles, and green clover worms. Disease and weed pressure remains low.

**July 6:** Soybeans are still at R2. The heat stress has progressed to the hilly parts of the field, most on the university side. The heights of the soybeans range from 21-24 inches tall on both halves of the field. The decates stem borer numbers are higher this half and there are more brown stinkbugs near the end rows. Leaf defoliation remains at 5% due to grasshoppers and mostly Japanese beetles. The numbers are higher near the end rows. Because defoliation is below 25% there is no need for action this week.

**July 12:** Japanese beetle counts remain high in the sweep nets on the producer half of the field (average 11 beetles per 20 sweeps). Defoliation remains below 25%. Disease pressure remains low and there are symptoms of heat stress so there is no need for an application of fungicide or insecticide on the university side.

**July 19:** The soybeans are at R4. The leaf defoliation percentage has not increased. The producer side has heavy leaf feeding due to blister beetles. This feeding is isolated and not across the whole field. The heat and lack of rainfall has led to stress in groups of soybeans on the university side. There are several areas of wilting plants, mostly on the hillsides. A closer look shows a few groups with charcoal root rot.

**August 1:** The drought stress persists. This is a concern now that the soybeans are at R5 and starting to fill on the lower nodes. The insect pressure is steady; now there are bean leaf beetles present in the sweeps. The Japanese beetle counts are lower

now that their cycle is over. There are no signs of pod feeding but some stem feeding from three-cornered alfalfa leafhoppers. Disease pressure beyond charcoal rot is not present.

**August 16:** The field received an inch of rain at most. I called Bob prior to scouting and he informed me that nothing was applied to the field beyond the post emergent herbicide. Most of the insect trapped in the sweep net were bean leaf beetles, green clover worms, and three-cornered alfalfa leafhoppers on the university side. The same was seen on the producer side but the counts are slightly lower. There are some areas along the hills that are stressed and have charcoal rot and septoria brown spot on older leaves. There are large areas of deer feeding mostly by the tile drains.

**Table 18c.** Physiological Characteristics, 2012, Union.

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 22-May     | 2           | V1           |                | 2.5         | V1           |                |
| 30-May     | 4           | V3           |                | 3.1         | V3           |                |
| 7-Jun      | 5           | V4           |                | 5.5         | V4           |                |
| 19-Jun     | 11          | V7           | 50%            | 12          | V7           | 50%            |
| 29-Jun     | 16          | V9, R2       | Full           | 18          | V9, R2       | Full           |
| 6-Jul      | 21          | V12, R2      | Full           | 23          | V13, R2      | Full           |
| 12-Jul     | 25          | V14, R3      | Full           | 29          | V15, R3      | Full           |
| 19-Jul     | 27          | V16, R4      | Full           | 30          | V15, R4      | Full           |
| 1-Aug      | 32          | V16, R5      | Full           | 32          | V17, R5      | Full           |
| 16-Aug     | 32          | R6           | Full           | 32          | R6           | Full           |
| 29-Aug     | 32          | R6           | Full           | 32          | R6           | Full           |
| 10-Sep     | 32          | R7           | Full           | 32          | R7           | Full           |

**Table 18d.** Insect Counts\*, 2012, Union.

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 19-Jun | 20     | 6                | 1                | 0               | 1           | 0       | 0                  | 8                | 1                | 0               | 0           | 0       | 0                  |
| 29-Jun | 20     | 3                | 1                | 1               | 1           | 1       | 4                  | 4                | 1                | 0               | 1           | 0       | 1                  |
| 6-Jul  | 20     | 5                | 2                | 0               | 1           | 0       | 1                  | 3                | 2                | 0               | 0           | 0       | 1                  |
| 12-Jul | 20     | 8                | 0                | 0               | 1           | 0       | 1                  | 5                | 0                | 1               | 2           | 0       | 1                  |
| 19-Jul | 20     | 5                | 0                | 0               | 1           | 0       | 0                  | 6                | 0                | 0               | 2           | 0       | 1                  |
| 1-Aug  | 20     | 0                | 1                | 0               | 1           | 0       | 1                  | 1                | 1                | 0               | 1           | 0       | 3                  |
| 16-Aug | 20     | 1                | 4                | 0               | 0           | 0       | 11                 | 0                | 2                | 0               | 1           | 0       | 7                  |
| 29-Aug | 20     | 0                | 2                | 0               | 0           | 0       | 17                 | 0                | 1                | 0               | 0           | 0       | 17                 |

\*Total number per 20 sweeps.

**Table 18e.** Leaf Nutrient Analysis, 2012, Union.

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.38    | 0.39  |
| K        | 1.5 - 2.25      | 2.05    | 1.81  |
| Mg       | 0.25 - 0.7      | 0.43    | 0.49  |
| Ca       | 0.8 - 1.4       | 1.01    | 0.96  |
| S        | 0.25 - 0.60     | 0.26    | 0.28  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 30      | 26    |
| Zn       | 21 - 80         | 48      | 46    |
| Mn       | 17 - 100        | 88      | 95    |
| Fe       | 25 - 300        | 80      | 90    |
| Cu       | 4 - 30          | 10      | 11    |

Date: 7/6  
Growth Stage: R2

**August 29:** Both halves of the field are beginning to senesce. There is no lingering disease pressure and the only insects found in the sweep net are green clover worms and very low numbers of bean leaf beetles. There is about 5% defoliation and no pod feeding.

**September 10:** The field has received some more rain. The soybeans have reached R7 and there are some areas that are still green. There is some older pod feeding and chewed up leaves from grasshoppers and green clover worms. The only disease

pressure seen in this field was charcoal rot. This is a hilly field and there was several patches of heat stress and wilted plants during the season therefore I would estimate 40 bushels per acre.

## Site 19, Warren County

Producer: Chad Elkins  
 County Agent: Joanna Coles  
 Coordinator: Amanda Martin  
 Field Location: Latitude: 37° 2' 6"  
 Longitude: 86° 13' 3"

**Table 19a.** Costs and Returns, 2012, Warren.

| Partial Costs/a†     | Prod. \$/a | Univ. \$/a |
|----------------------|------------|------------|
| Seed                 | 48.21      | 43.39      |
| Herbicide            | 8.60       | 8.60       |
| Insecticide          | 0.00       | 0.00       |
| Fungicide            | 0.00       | 0.00       |
| Fertilizer           | 15.14      | 0.00       |
| Total Partial Cost/a | 71.95      | 51.99      |
| Partial Return/a‡    | 738.91     | 728.62     |
| Partial Net Return/a | 666.96     | 676.63     |

† 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. Additional trucking, storage, and/or drying costs are not included.

‡ Soybean prices are based on the average price for 2012/2013 marketing year for soybean.

## Warren County Field Notes

**April 27:** Chad planted this evening. His side of the field has a seeding rate of 140,000 seeds per acre and 135,000 for the university side. Fields has recently received 1 inch of rain in the beginning of the week. Field has received more rain than some surrounding areas. More rain is expected by the 30th.

**April 30-May 1:** The amount of rain received was 1.5 inches.

**May 9:** Soybeans are emerging nicely. The field is minimal tillage and the surface is dry and cracked but below the soil is real moist. There are some tiny pigweeds near the end rows and small areas of tall morning glory within the field. Overall weed pressure is low.

**May 18:** Soybean stand looks good. There is some bean beetle pressure on the cotyledons and unifoliate leaves. Recent weather, 1.5 inches of rain followed by warm, dry conditions has led to crusting on the soil surface so a few beans emergence is slow. The stage is V1 for the most part and 3 inches tall on both sides. There are quite an array of weeds species in the field such as Johnsongrass, cocklebur, lambsquarter, prostrate pigweed, and ivy leaf morning glory. The

## Warren County

Producer



University



May 18 - V1



May 24 - V2



June 5 - V5

height ranges from 0.3 inches to 2 inches and parts of the field have heavy weed pressure. Called Chad and requested an application of herbicide.

**May 24:** I spoke to Chad and requested an application of herbicide. Soybeans are at V2 and 3.5 inches tall. The stand counts for the university side 103,499 plants per acre (76% emergence) and 116,044 plants per acre (77% emergence) for the producer half of the field. There is some bean leaf beetle feeding on the producer half of the field but it is relatively low.

**June 4:** Field received rain. The soybeans are at V5 and 6 inches tall. Canopy closure is 50% and the field looks clean. There are a few areas on the producer half where the soybeans failed to emerge. In the back, border rows there are patches of herbicide injury and potassium defi-

ciency. Insect pressure and leaf feeding remains low on both halves of the field.

**June 19:** Field is dry and the soybeans are tall (12 inches on both halves) and reached R2. I collected leaves for nutrient assessment and took sweeps. The insects that were trapped were mostly grasshoppers, alfalfa leaf hoppers, Japanese beetles, and bean leaf beetles. The counts were low and so was the leaf defoliation. Other areas of the field look good with no disease pressure or further K deficiency.

**July 3 and 5:** The field received rain from a strong thunderstorm Monday night and has no wind damage throughout the field. The soybeans are at R3 and 21 inches tall. The K deficiency on the producer half has progressed to the upper leaves (3% of the field). There are still quite a number of flowers producer and flower-

**Table 19b.** Practices during Growing Season, 2012, Warren.

|                       | Producer              | University |
|-----------------------|-----------------------|------------|
| Field Size, acres     | 21.6                  | 22.2       |
| Previous Crop         | Soybean               |            |
| Soil Type             | Crider                |            |
| Fertilizer Applied    | Variable Rate Applied |            |
| Planting Date         | 26-Apr-12             |            |
| Soybean Variety       | Pioneer 94Y23         |            |
| Row Spacing, inches   | 15                    |            |
| Seeding Rate, seeds/a | 150,000               | 135,000    |
| Plant Stand, plants/a | 116,044               | 103,499    |
| Herbicide             | 57.6 Extreme          |            |
| Insecticide           | None                  |            |
| Fungicide             | 6 oz. Headline        | None       |
| Harvest Date          | 25-Sep-12             |            |
| Yield, bu/a           | 50.3                  | 49.6       |

ing. Defoliation is low and most insects per 20 sweeps on Chad's side trapped bean leaf beetles, grasshopper, and green clover worm (most defoliation is from this insect). On the university half there are mostly bean leaf beetles and Japanese beetles. No stinkbug pressure observed; however, there were higher numbers of dectes stem borers. This may lead to lodging near harvest.

**July 19:** The growth stage is V17, R4 and 30 inches tall throughout the field. The dectes stem borer counts have gone down but the soybeans seem to have reached maximum heights and therefore lodging may not be a challenge later on in the season. No disease pressure has showed up in light of the rain. There is some leaf feeding due to green clover worms. I called Chad and informed him that the university side did not need any fungicide or insecticide.

**August 2:** Recent rain in Warren County has spiked the bean leaf beetle populations throughout the field. The producer half averaged 20 per 20 sweeps and the university average 17 beetles per 20 sweeps. The soybeans are at R6 and there is no apparent pod feeding. There is just leaf damage present. There are spray tracks on the producer half. I called Chad

and he has not sprayed anything but the weeds along the fence rows. The status of pod feeding will have to be closely observed.

**August 20:** The field is beginning to senesce in a few areas. The beans are filling out pretty well with the rain events. The bean leaf beetle counts have gone down, and there is minimal pod feeding on the producer half. The pod counts that were collected estimate 50 bushels per acre roughly.

**September 7:** The field is between R7 and R8. No more signs of pod feeding were noticed from the last visit. There was no lodging in this field (shorter bean variety); however, I was able to find stem borer larva in few soybean plants. The only chemicals applied to this field were Extreme herbicide (both sides) and Headline fungicide (producer side only). The only lingering disease pressure was charcoal rot. I would still estimate 50-55 bushels per acre for the yield.

**Table 19c.** Physiological Characteristics, 2012, Warren.

| Visit Date | Producer    |              |                | University  |              |                |
|------------|-------------|--------------|----------------|-------------|--------------|----------------|
|            | Height (in) | Growth Stage | Canopy Closure | Height (in) | Growth Stage | Canopy Closure |
| 9-May      | 2           | VE           |                | 2           | VE           |                |
| 24-May     | 3.5         | V2           |                | 3           | V2           |                |
| 5-Jun      | 6           | V5           | 40%            | 6.5         | V5           | 40%            |
| 19-Jun     | 12          | V9, R2       | Full           | 12          | V9, R2       | Full           |
| 5-Jul      | 21          | V13, R3      | Full           | 21          | V13, R3      | Full           |
| 19-Jul     | 30          | V17, R4      | Full           | 29          | V17, R4      | Full           |
| 2-Aug      | 30          | V18, R5      | Full           | 30          | V18, R5      | Full           |
| 20-Aug     | 30          | R6           | Full           | 30          | R6           | Full           |
| 7-Sep      | 30          | R7           | Full           | 30          | R7           | Full           |

**Table 19d.** Insect Counts\*, 2012, Warren.

| Date   | Sweeps | Producer         |                  |                 |             |         | University         |                  |                  |                 |             |         |                    |
|--------|--------|------------------|------------------|-----------------|-------------|---------|--------------------|------------------|------------------|-----------------|-------------|---------|--------------------|
|        |        | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms | Japanese Beetles | Bean Leaf Beetle | Green Stink Bug | Grasshopper | Loopers | Green Clover Worms |
| 19-Jun | 20     | 4                | 1                | 0               | 1           | 0       | 1                  | 3                | 1                | 0               | 1           | 0       | 1                  |
| 6-Jul  | 20     | 1                | 3                | 0               | 1           | 0       | 3                  | 2                | 3                | 0               | 0           | 0       | 4                  |
| 19-Jul | 20     | 1                | 1                | 0               | 0           | 0       | 1                  | 1                | 1                | 0               | 1           | 0       | 2                  |
| 2-Aug  | 20     | 0                | 22               | 0               | 1           | 0       | 9                  | 0                | 19               | 0               | 0           | 0       | 5                  |
| 20-Aug | 20     | 0                | 19               | 0               | 1           | 0       | 3                  | 0                | 13               | 0               | 1           | 0       | 3                  |

\*Total number per 20 sweeps.

**Table 19e.** Leaf Nutrient Analysis, 2012, Warren.

| Nutrient | Reference Level | Content |       |
|----------|-----------------|---------|-------|
|          |                 | Prod.   | Univ. |
| %        |                 |         |       |
| P        | 0.3 - 0.6       | 0.44    | 0.42  |
| K        | 1.5 - 2.25      | 2.42    | 2.22  |
| Mg       | 0.25 - 0.7      | 0.36    | 0.38  |
| Ca       | 0.8 - 1.4       | 1.44    | 1.448 |
| S        | 0.25 - 0.60     | 0.3     | 0.29  |
| ppm      |                 |         |       |
| B        | 20 - 60         | 39      | 36    |
| Zn       | 21 - 80         | 47      | 38    |
| Mn       | 17 - 100        | 133     | 109   |
| Fe       | 25 - 300        | 91      | 99    |
| Cu       | 4 - 30          | 11      | 9     |

Date: 6/19  
Growth Stage: R2



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