UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE

2010
University of Arkansas
Soybean Research Verification Program

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University of Arkansas
Cooperative Extension Service
Agriculture Experiment Station
U.S. Department of Agriculture
And County Governments Cooperating

Arkansas ROW CROP VERIFICATION

UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE

ARKANSAS SOYBEAN PROMOTION BOARD

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SOYBEAN RESEARCH VERIFICATION PROGRAM, 2010

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INTRODUCTION

The 2010 growing season was the twenty-eighth year for the Soybean Research Verification Program (SRVP). The SRVP is an interdisciplinary effort between growers, county Extension agents, Extension specialists, and researchers. The SRVP is an on-farm demonstration of all the research-based recommendations required to grow soybeans profitably in Arkansas. The specific objectives of the program are:

1. To verify research-based recommendations for profitable soybean production in all soybean producing areas of Arkansas.

2. To develop a database for economic analysis of all aspects of soybean production.

3. To demonstrate that consistently high yields of soybeans can be produced economically with the use of available technology and inputs.

4. To identify specific problems and opportunities in Arkansas soybeans for further investigation.

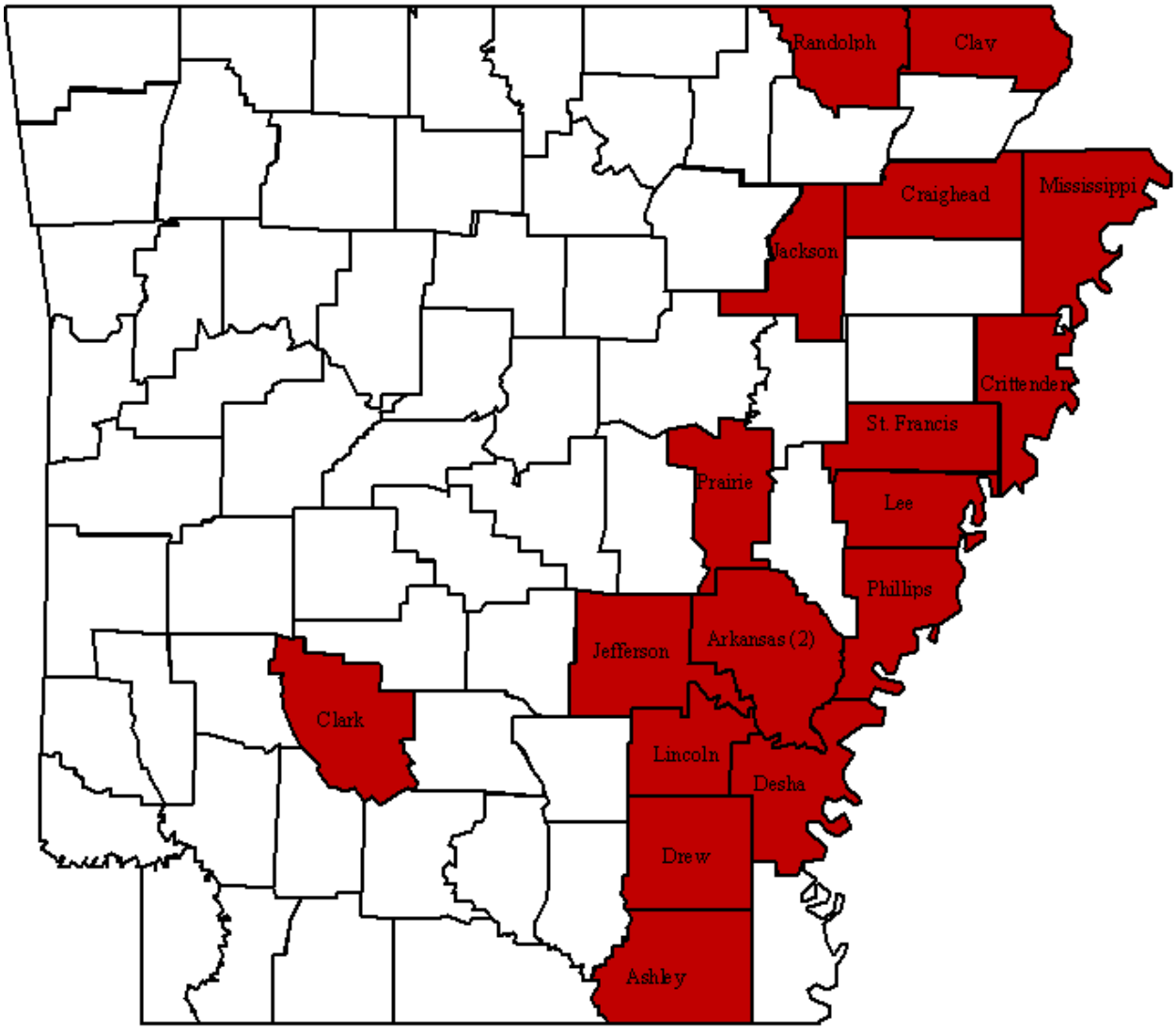
5. To promote timely implementation of cultural and management practices among soybean growers.

6. To provide training and assistance to county agents with limited expertise in soybean production.

Each SRVP field and cooperator was selected prior to planting. Cooperators agreed to pay production expenses, provide crop expense data for economic analysis and implement the recommended production practices in a timely manner from seedbed preparation to harvest. Nineteen growers were enrolled in the SRVP in 2010. The fields were located on commercial farms ranging in size from 22 to 151 acres. The average field size was 65 acres.

The 2010 SRVP fields were conducted in Arkansas (2), Ashley, Clark, Clay, Crittenden, Craighead, Desha, Drew, Jackson, Jefferson, Lee, Lincoln, Mississippi, Phillips, Prairie, Randolph, and St. Francis Counties; Thirteen different roundup ready varieties (AG 4605,AG 4703,AG4903,AG4907,AG5503,DPL4888,MorSoy4955,NK-S52-F2,PIO94Y40,PIO94Y60,PIO 94Y70, PIO 94Y90,PROG 5218) and two liberty link varieties (Halo 465 and Stine 49LA82) were planted. Management decisions were based on field history, soil test results, variety, and data collected from each individual field during the growing season.

Figure 1. Location of 2010 Soybean Research Verification Fields



FIELD REVIEWS

Northern Fields – Chris Grimes

Clay County

The Clay County field was located just north of Corning. The field was 145 acres and the previous crop was rice. The soil type was Foley silt loam. A burndown application of glyphosate was applied on May 19. A preplant fertilizer of 0-80-60 (100 acres) and 0-30-30 (45 acres) was applied and then bedded and rolled. The field was planted May 24 with Pioneer 94Y70 treated with Cruiser Maxx at 54 pounds per acre with 30 inch row spacing. The field received a 1.5 inch rain after planting and crusted over thus requiring a rotary hoe to be ran across the field three times to loosen the soil for seedling emergence. We still had to replant about thirteen acres on the bottom end of field. The field ended up with a final plant population of 118,000 plants per acre. On July 2 the producer applied 48oz/a of glyphosate plus .33oz/a of Classic for weed control. Furrow irrigation started on June 20, and the field was irrigated 7 times. The field was harvested on October 15 and yielded 64.28 bushels per acre adjusted to 13% moisture.

Craighead County

The Craighead County field was located in Cash in western Craighead County. The field was 27 acres and the previous crop was rice. The soil type was Amagon silt loam. The field was disked and landplaned in the spring and a burndown application of glyphosate and Valor was applied May 5. The field was planted on May 25 with Halo 4:65 treated with Cruiser Maxx at 54 pounds per acre with 7.5 inch row spacing. The final plant population was of 128,000 plants per acre. The field received two post emergence applications of Ignite for weed control. Frogeye leaf spot reached treatment level in the field and Quadris was applied for control. Soybean podworms reached treatment levels and Karate Z was applied for control. The field was flood irrigated 2 times. The field was harvested on October 7 and yielded 52.38 bushels per acre adjusted to 13% moisture.

Crittenden County

The Crittenden County field was located near the community of Clarkdale. The field was 36 acres and the previous crop was soybeans. The soil type was Crevasse silt loam. A burndown application of Roundup Powermax and Valor was applied on April 25. The field was planted on May 22 with Progeny 5218 treated with Cruiser Maxx at 60 pounds per acre with 15 inch row spacing. The final plant population was 152,000 plants per acre. An application of glyphosate and Prefix was applied at V2 for emerged weeds and residual weed control. The field required a second herbicide application of glyphosate and Flexstar. The field was treated with Karate Z for soybean podworms and required a second insecticide application for loopers and stinkbugs. The field was non-irrigated and struggled throughout the growing season due to the hot and dry conditions this summer. The field was harvested on October 22 and yielded 21.25 bushels per acre adjusted to 13% moisture.

Jackson County

The Jackson County field was located Southeast of Newport. The field was 44 acres and the previous crop was soybeans. The soil type was Foley-Calhoun complex. A burndown application of glyphosate and Envive was applied on April 22. Triple Super Phosphate and Potash was applied variable rate for a total of 0-80-130 on May 5. The field was planted on May 8 with Pioneer 94Y60 treated with Cruiser Maxx at 60 pounds per acre with 12 inch row spacing on 42” beds. The final plant population was 138,000 plants per acre. On May 27 the producer applied glyphosate and Flexstar for weed control. A pint of liquid boron was also included in this

application. On June 21 the field received an application of Ultra Blazer to take out emerged teaweed. The field had heavy insect pressure this year and three insecticide applications were made for defoliators and soybean podworms. Furrow irrigation started on June 12, and the field was irrigated 6 times. The field was harvested on September 23 and yielded 43 bushels per acre adjusted to 13% moisture.

Mississippi County

The Mississippi County field was located east of Leachville. The field was 96 acres and the previous crop was soybeans. The soil type was a Sharkey-Steele complex. The field was tilled in the fall. A burndown application of Banvel was applied in early spring. The field was bedded and 100 pounds per acre of potash was custom applied on April 13. The field was planted on April 16 with Pioneer 94Y70 treated with Apron Maxx and Optimize at 65 pounds per acre with 38 inch row spacing. Temik was applied infurrow for insect and nematode control. The final plant stand was 147,000 plants per acre. On April 22 the producer applied Prefix plus Roundup PowerMax early post for emerged weeds and residual. A second application of Roundup PowerMax plus Flexstar was required for weed control later in the season to get the field to canopy closure. The field had very little insect or disease pressure all year except we had to apply Brigade at R6 for stinkbugs. Furrow irrigation started on June 12, and the field was irrigated 8 times. The field was harvested on September 20 and yielded 68.11 bushels per acre adjusted to 13% moisture.

Prairie County

The Prairie County was located east of Des Arc. The field was 59 acres and the previous crop was rice. The soil type was a Crowley silt loam. The fieldwork was done in the spring and was planted June 10 with Asgrow 4903 at 60 pounds per acre with 7.5 inch row spacing. The final plant stand was 160,000 plants per acre. On July 6 the producer applied 48oz/a of glyphosate for weed control. A second application of glyphosate and Classic was applied on July 28. The field required an application of Karate Z and acephate for soybean pod worm control. The field was only irrigated 1 time and that was late in the season after the producer was through watering the rice which resulted in low yield. The field was harvested on October 22 and yielded 22.75 bushels per acre adjusted to 13% moisture.

Randolph

The Randolph County field was located near Pocahontas. It was 77 acres and the previous crop was soybeans. The soil type was Broseley loamy fine sand. A preplant application of 200 pounds per acre of potash was custom applied and the field was bedded. The field has heavy root knot nematode pressure and we utilized the SOYVA computer program to aid in variety selection. The field was planted on May 10 with NK-S52-F2 treated with Cruiser Maxx at 60 pounds per acre with 30 inch row spacing. The final plant stand was 177,000 plants per acre. The producer made three over the top herbicide applications (glyphosate) for weed control. Aerial Web Blight reached treatment level and Quadris was applied for control. Insects never reached treatment level in the field. Furrow irrigation started on June 22, and the field was irrigated 5 times. The field was harvested October 18 and yielded 50 bushels per acre adjusted to 13% moisture.

St. Francis County

The St. Francis County field was located south of Wiedner. It was 75 acres and the previous crop was soybeans. The soil type was Alligator and Sharkey silty clay loam. A burndown application of Roundup Power Max, Valor and Clarity was applied in March. Due to excessive rainfall the field didn't get planted in April like we had it scheduled. The burndown and

residual was pretty much gone by the time we were able to plant the field. The field had to be tilled to remove existing vegetation and incorporate the 0-60-100 preplant fertilize that was applied. The field was planted on May 5 with Asgrow 4605 treated with Cruiser Maxx at 50 pounds per acre with 15 inch row spacing. The final plant stand was 150,000 plants per acre. glyphosate resistant pigweed was documented on this farm last year and was a real issue in this field. We applied Dual Magnum early preemergence to hold the pigweed back and let the soybeans get off to a good start. The Dual did a good job but it played out after about 10 days. An application of Flexstar GT was recommended, but due to equipment breakdown the application was applied late and there were a lot of escaped pigweeds that we looked at the rest of the year. Stinkbugs and loopers came in late and an application of Intrepid plus Brigade was applied for control. Center Pivot irrigation started on June 11, and was irrigated 9 times. The field was harvested September 15 and yielded 47.2 bushels per acre adjusted to 13% moisture.

Southern Fields – Steve Kelley

Arkansas County (North)

The location for the SRVP field was near Almyra in northern Arkansas County. This was the second year for the program in the same field. Producers were Jonathan and Ryan Hillman from H2 Farms. Field acreage was 78 acres with half of the field following rice and half following soybean. Preplant tillage included disking, field cultivating twice, floating twice, and a bedder/roller. Morsoy 4955 RR/STS was chosen and planted on May 27 on twin row 36 inch beds. The soil type was a DeWitt silt loam. 130 lbs/ac of phosphate and 150 lbs/ac of potash were applied according to recommendations. No preemerge herbicide was used due to the extremely dry forecast. On June 25, one-half of the field was treated with glyphosate and Synchrony while the remaining portion was treated with glyphosate and Flexstar. No further weed control measures were needed due to the very fast growth and quick canopy closure. Bollworm pressure was heavy much of the year, and loopers reached treatment level late in the year. Appropriate insecticides were used and control was very good. Frogeye leaf spot developed and Headline was applied for control. Four furrow irrigations were made and the field was harvested on October 8 with a final yield of 45 bushels per acre. Early irrigation was delayed due to well capacity and sharing water with rice acreage.

In addition, the location was used for a replicated trial comparing various seed treatments. No difference was noted between treatments, verifying that planting dates during this timeframe rarely result in a yield difference.

Arkansas County (South)

This was the second year of the program with Jay Mclain in the same 31 acre field following soybean. The field was planted with Asgrow 5503 on May 13 on twin row 30 inch beds. The soil type was mostly a Stuttgart silt loam. 135 lbs/ac of phosphate and 210 lbs/ac of potash were applied according to recommendations. Preplant tillage included field cultivating twice followed by a bedder/roller. Herbicides included a preemerge application of Prefix followed approximately twenty days later with glyphosate and Flexstar. Control was very good. In early August, bollworm reached treatment level as well as frogeye leaf spot. Mustang Max and Quadris were applied in a timely manner with good results. Loopers were treated on August 20 with Intrepid.

The field was furrow irrigated four times, but early irrigation was delayed due to rice irrigation needs. Harvest was made on October 9 with a yield of 53 bu/ac.

Ashley County

Producer, Freddy Scroggins, enrolled this 120 acre field at Hamburg for the first year of the program. The previous crop was soybean and Asgrow 4303 was chosen to plant on May 5. The planting system was 30 inch beds and a drill was used. The soil type was a mixture of Calhoun and Henry silt loam. 175 lbs/ac of phosphate and 200 lbs/ac of potash were applied for fertility needs. Preplant tillage included: disking, triple-K, and a bedder/roller. Valor was applied after planting as a preemerge application. Two applications of glyphosate followed, with one treatment including Flexstar. Grass and dayflower pressure was intense in the field, and deer feeding resulted in severe loses on about 15% of the field. Aerial blight was heavy and Headline was applied for suppression. Due to the short stature of the variety, deer feeding reducing canopy closure, and constant weed emergence late in the season, the field warranted the use of sodium chlorate as a harvest aid. The field was furrow irrigated three times and harvest occurred on September 21 with a yield of 32 bushels per acre. Initial irrigation and frequency was delayed due to rice needs. It is believed that the delay largely resulted in the short plant height and reduced yield.

Clark County

The 74 acre location near Arkadelphia consisted of a Gurdon silt loam following rice. It was the first year in the program for producer, Derrick Helms. Considerable preplant tillage was necessary following rice. The field was disked twice, chisel plowed once, floated twice, and then bedded. 1 ½ tons/ac of chicken litter was used for fertility needs. Pioneer 95Y40 was planted on June 6 with a 10 inch drill spacing on 30 inch beds. No preemerge herbicides were used. Two applications of glyphosate with tank-mixes of Classic and Blazer were applied for effective weed control. Insect numbers never reached treatment level, but frogeye leaf spot was severe. Treatment for the disease was delayed approximately two weeks due to untimely rainfall. Surface drainage on the bottom of the field remained a problem throughout the year, and plant growth suffered greatly. The field was harvested on October 18 with a final yield of 41 bu/ac.

Desha County

This was the second year of the program for cooperator, Martin Henry. The Desha clay 55 acre field was planted in Asgrow DPL 4888 on 30 inch single row beds following soybean. 100 lbs/ac of phosphate was applied per soil test recommendations. Preplant tillage included disking, field cultivating, and a bedder/roller. Valor was applied as a preemerge herbicide, followed by glyphosate and Flexstar. A pyrethroid insecticide plus Quadris was applied in late July for frogeye leaf spot and bollworm control. The field was plowed once to aid in irrigation, and the field was furrow irrigated six times. Harvest occurred on September 19 with a yield of 63 bu/ac.

Drew County

Andrew McDow enrolled this 24 acre, Calhoun silt loam field in the first year of the program. The field was planted in Asgrow 4605 on 30 inch single row beds on May 11 following corn. 130 lbs/ac of phosphate and 200 lbs/ac of potash were applied according to soil test recommendations. Preplant tillage included disking, field cultivating, and a bedder/roller. Prefix was applied as a preemerge herbicide, and two applications of glyphosate plus Classic were applied in a timely manner. Small flower morningglory, teaweed, and grass pressure was very

heavy in the field, but weed control was near 100%. Bollworm and frogeye leaf spot reached treatment level, and a pyrethroid plus Quadris was made for control. The field was furrow irrigated eight times, and harvest was made on October 4 with a final yield of 67 bushels per acre.

Jefferson County

David Edwards' 22 acre field was in the second year of the program. Asgrow 4907 was planted on May 8 on single 30 inch rows. The previous crop was soybean, and the soil type was a McGehee and Rilla silt loam. Preplant tillage included a disk, field cultivator, and a bedder/roller. 1 ½ tons per acre of chicken litter was applied for fertilizer needs. Prefix was applied after planting and received rainfall soon after application for activation and good weed control. Glyphosate and Classic was applied approximately one month after planting for escaped weeds. The field was treated on August 3 for frogeye leaf spot, and later treated for stink bugs on August 21. The field was furrow irrigated five times and was harvested on September 24 with a yield of 67 bushels per acre.

Lee County

This location with producer Kenny Rachel consisted of a 37 acre field with a Calloway/Calhoun silt loam soil. The field was planted on May 22 with Stine 4782 seed following soybean. Preplant tillage included disking twice, field cultivated, and harrowed. The field was planted flat. Prefix was recommended immediately following planting, but circumstances did not allow for application. Glyphosate plus Prefix was applied over-the-top at the V2 growth stage on June 9. Control was good, but not near good enough on glyphosate resistant palmer pigweed. Later, on July 14, an application of glyphosate plus Blazer was applied to burn back pigweed regrowth. Karate was applied on August 8 for bollworm and stink bug control. Later, an application of Steward was applied for saltmarsh caterpillar control. The field was irrigated three times, but irrigation efforts were inefficient. The field was harvested on October 14 with a yield of 17 bushels per acre.

Lincoln County

This was the second year with cooperator, Steven Walmsley, near Grady. On May 7, Pioneer 94Y90 was planted following rice on 9 inch twin row on 38 inch beds. Field size was 43 acres, and the soil type was a Perry and Portland clay. Preplant tillage included two disks, field cultivated, floated, and a bedder/roller. 100 lbs/ac of phosphate was applied for fertilizer needs. Glyphosate and Prefix were applied three days after planting, and rainfall soon activated the preemerge herbicide. On June 2, an application of glyphosate and Classic was applied as a post treatment for small grass, teaweed, and morningglory. Frogeye leaf spot and bollworm were treated on August 14 with Quadris and Brigade. The field was furrow irrigated four times and harvested on September 2. Field yield was 50 bushels per acre. The field will go into the Wheat Research Verification Program this fall for the first year of the program.

Phillips County

The 150 acre field was enrolled for the first year of the program. The location was a known glyphosate resistant pigweed field which allowed us to utilize the Liberty Link system. Stine 49LA82 was planted on April 13 on 12 inch twin 38 inch beds. 80 lbs/ac of phosphate and

200 lbs/ac of potash were applied according to soil test recommendations. Preplant tillage included a disk, field cultivator, and bedder/roller. The herbicide program consisted of a burndown tank-mix of glyphosate and 2-4D during mid-March. Prefix was applied immediately after planting and was activated by rainfall. One application of Ignite was applied approximately five weeks after planting, and later plowed to aid irrigation efficiency. The field was treated for aerial blight and stink bugs on July 12. The majority of the field was furrow irrigated 7 times, while the remaining portion was irrigated with a center pivot. Harvest occurred on September 7 with a final yield of 62 bushels per acre.

Table 1. Agronomic information for the 2010 Soybean Research Verification Fields.

County	Variety	Field size (ac)	Previous crop	Production system	Seeding rate (lb/acre)	Stand density (plants/ac)	Planting date	Emergence date	Harvest date	Yield adj. to 13% moisture (bu/ac)
Arkansas-North	MorSoy 4955	78	Rice	FSI	60	132K	5/27	6/2	10/8	45.0
Arkansas-South	AG 5503	31	Soybean	FSI	60	126K	5/13	5/21	10/9	53.0
Ashley	AG 4303	120	Soybean	FSI	52	118K	5/5	5/13	9/21	32.0
Clark	PIO 94Y40	74	Rice	FSI	55	84K	6/6	6/12	10/18	41.0
Clay	PIO 94Y70	145	Rice	FSI	54	118K	5/24	6/2	10/14	64.28
Craighead	Halo 465	27	Rice	FSI	54	128K	6/1	6/7	10/7	52.4
Crittenden	PROG 5218	36	Soybean	FSNI	60	152K	5/22	5/30	10/22	21.3
Desha	DPL 4888	55	Soybean	FSI	70	165K	5/5	5/13	9/19	63.0
Drew	AG 4605	24	Corn	FSI	68	159K	5/11	5/18	10/4	67.0
Jackson	PIO 94Y60	44	Soybean	FSI	60	138K	5/8	5/15	9/23	49.0
Jefferson	AG 4907	22	Soybean	FSI	60	130K	5/8	5/15	9/24	67.0
Lee	AG 4703	25	Soybean	FSI	43	80K	5/23	5/30	10/14	17.0
Lincoln	PIO 94Y90	38	Rice	FSI	60	134K	5/7	5/14	9/21	50.0
Mississippi	PIO 94Y70	96	Soybean	ESI	65	147K	4/16	4/23	9/20	68.1
Phillips	Stine 49LA82	151	Soybean	ESI	60	136K	4/13	4/20	9/7	62.0
Prairie	AG 4903	58	Rice	FSI	60	160K	6/10	6/16	10/22	22.75
Randolph	NK-S52-F2	77	Soybean	FSI	60	177K	5/15	5/20	10/18	50.0
St. Francis	AG 4605	75	Soybean	FSI	50	150K	5/5	5/13	9/15	47.2
Average	-----	65.33	-----	-----	58.39	135.88K	5/15	5/21	10/2	48.45

Table 2. Soil tests results, applied fertilize and soil classification for the 2010 Soybean Research Verification Fields

	Soil Test (lb/acre)				Applied Fertilize N-P-K (lb/acre)	Soil Classification
County	pH	P	K	Zn	Pre-plant	
Arkansas- North	7.2	88	234	9.0	0-60-90	DeWitt silt loam
Arkansas- South	6.0	28	208	9.8	0-63-126	Stuttgart/Tichnor silt loam
Ashley	6.8	40	150	12.6	0-80-120	Calhoun/Henry silt loam
Clark	5.3	28	92	7.8	2T/A Chicken Litter	Gurdon silt loam
Clay	6.3	60	295	8.5	100 ac 0-80-60 45 ac 0-30-30	Foley silt loam
Craighead	6.4	80	260	5.1	0-0-0	Amagon silt loam
Crittenden	7.4	50	198	8.2	0-0-0	Crevasse silt loam
Desha	6.2	30	880	9.8	0-40-0	Desha clay
Drew	6.4	60	100	4.8	0-60-120	Calhoun silt loam
Jackson	7.2	124	182	4.6	0-0-60	Foley-Calhoun complex
Jefferson	7.2	58	326	6.6	1.5T/A Chicken Litter	McGehee/Rilla silt loam
Lee	5.3	34	142	6.6	0-40-90	Calloway/Calhoun silt loam
Lincoln	6.4	68	498	7.8	0-40-0	Perry/Portland clay
Mississippi	7.8	186	249	7.2	0-0-60	Sharkey-Steele complex
Phillips	6.0	28	208		11-37-120-12S	Calhoun silt loam
Prairie	5.8	81	193	10.9	0-0-0	Crowley silt loam
Randolph	7.4	118	178	15.6	0-0-120	Broseley loamy fine sand
St. Francis	6.4	61	163	16.1	0-60-100	Alligator and Sharkey silty clay loam

Table 3. Herbicide rates and timings for 2010 Soybean Research Verification Program fields by county.

	Herbicide	
County	Burndown/Pre-emergence	Post-emergence
Arkansas – North	**----------**	**South ½ of field: 32oz/a glyphosate plus .75oz/a Synchrony, North ½ of field: 32oz/a glyphosate plus 6oz/a Flexstar.**
Arkansas – South	**32oz/a Prefix**	**32oz/a of glyphosate plus 6oz/a Flexstar**
Ashley	**2oz/a Valor**	**1st: 32oz/a glyphosate, 2nd: 32oz/a glyphosate plus 6oz/a Flexstar**
Clark	**----------**	**1st: 32oz/a glyphosate plus .25oz/a Classic 2nd: 32oz/a glyphosate plus 8oz/a Ultra Blazer**
Clay	**32 oz/a Glyphosate**	**48oz/a glyphosate plus .33oz/a Classic**
Craighead	**24oz/a Glyphosate plus 2oz/a Valor**	**1st: 17oz/a Ignite, 2nd: 27oz/a Ignite**
Crittenden	**22oz/a Roundup Power Maxx plus 2oz/a Valor**	**1st: 32oz/a glyphosate plus 32oz/a Prefix, 2nd: 32oz/a glyphosate plus 6oz/a Flexstar**
Desha	**32oz/a Glyphosate plus 2oz/a Valor**	**32oz/a glyphosate plus 9.6oz/a Flexstar**
Drew	**32oz/a Prefix**	**1st: 32oz/a glyphosate plus .25oz/a Classic 2nd: 32oz/a glyphosate plus .25oz/a Classic**
Jackson	**24oz/a glyphosate plus 3oz/a Envive**	**1st: 48oz/a Flexstar plus 16oz/a glyphosate 2nd: 24oz/a Ultra Blazer**
Jefferson	**32oz/a Prefix**	**32oz/a glyphosate plus .25oz/a Classic**
Lee	**----------**	**1st: 32oz/a glyphosate plus 32oz/a Prefix 2nd: 32oz/a glyphosate plus 16oz/a Ultra Blazer**
Lincoln	**32oz/a Glyphosate plus 32oz/a Prefix**	**32oz/a glyphosate plus .25oz/a Classic**
Mississippi	**8oz/a Banvel**	**1st: 32oz/a of Prefix plus 22oz/a Roundup Power Maxx 2nd: 22oz/a Roundup Power Maxx plus 6oz/a Flexstar**
Phillips	**32oz/a Prefix**	**22oz/a Ignite**
Prairie	**----------**	**1st: 48oz/a glyphosate 2nd: 32oz/a glyphosate plus 3/10oz/a Classic**
Randolph	**----------**	**1st: 32oz/a glyphosate 2nd: 32oz/a glyphosate 3rd: 32oz/a glyphosate**
St. Francis	**1st:22oz/a Roundup Power Maxx plus 8oz/a Clarity plus 2oz/a Valor 2nd: 16oz/a Dual Magnum**	**48oz/a Flexstar GT**

Table 4. Fungicide and insecticides applications in 2010 Soybean Research Verification fields by county.

County	Aerial Web Blight	Frogeye	Bollworm/Defoliators	Stink Bug
Arkansas-North	----------	6oz/a Headline	½ of field 4.3oz/a Mustang Max ½ of field 2oz/a Belt	----------
Arkansas-South	----------	6oz/a Quadris	1st: 4oz/a Mustang Max 2nd: 4oz/a Intrepid	----------
Ashley	6oz/a Headline	----------	----------	Borders with 1lb/a acephate
Clark	----------	6oz/a Quadris	----------	----------
Clay	----------	----------	----------	----------
Craighead	----------	8oz/a Quadris	1.8oz/a Karate Z	----------
Crittenden	----------	----------	1st: 1.8oz/a Karate Z 2nd: 3.66oz/a Mustang Max plus 5oz/a Intrepid	----------
Desha	----------	6oz/a Quadris	3.7oz/a Tundra	----------
Drew	----------	6oz/a Headline	2oz/a Baythroid	----------
Jackson	----------	----------	1st: 1.6oz/a Karate Z 2nd: 1.8oz/a Karate Z 3rd: 6.4oz/a Brigade	----------
Jefferson	----------	6oz/a Quadris	----------	3.7oz/a Tundra
Lee	----------	----------	1st:1.6oz/a Karate Z 2nd: 5.8oz/a Steward	----------
Lincoln	----------	6oz/a Quadris	----------	5.1oz/a Brigade
Mississippi	----------	----------	----------	5.45oz/a Brigade
Phillips	----------	6oz/a Headline	1.6oz/a Karate Z	----------
Prairie	----------	----------	1.8oz/a Karate Z plus .5lb/a	----------
Randolph	12oz/a Quadris	----------	----------	----------
St. Francis	----------	----------	6oz/a Intrepid	5oz/a Brigade

Table 5. Irrigation information and rainfall for the 2010 Soybean Research Verification Fields.			
County	Irrigation Type	Number of Irrigations	Rainfall (in)
Arkansas-North	Furrow	4	9.6
Arkansas-South	Furrow	4	6.5
Ashley	Furrow	3	10.5
Clark	Furrow	1	12.5
Clay	Furrow	7	4.3
Craighead	Flood	2	8.25
Crittenden	Dry land	N/A	5
Desha	Furrow	6	8.5
Drew	Furrow	8	9.2
Jackson	Furrow	6	9.7
Jefferson	Furrow	5	10.6
Lee	Dry land	N/A	4.5
Lincoln	Furrow	4	8.5
Mississippi	Furrow	8	8.5
Phillips	Furrow	7	7.7
Prairie	Flood	1	5.6
Randolph	Furrow	5	12.4
St. Francis	Center Pivot	9	5.5

ECONOMIC ANALYSIS

This section provides information on production costs and returns for the 2010 SRVP. Records of field operations on each field provided the basis for estimating production costs. The field records were compiled by the SRVP coordinator, county extension agents, and cooperators. Production data from the 18 fields were applied to determine costs and returns above operating costs, as well as total specified costs. Operating costs and total costs per bushel indicate the commodity price needed to meet each costs type.

Operating costs are those expenditures that would generally require annual cash outlays and would be included on an annual operating loan application. Actual quantities of all operating inputs as reported by the cooperators are used in this analysis. Input prices are determined by data from the 2010 Crop Enterprise Budgets published by the Cooperative Extension Service and information provided by the producer cooperators. Fuel and repair costs for machinery are calculated using a budget calculator based on parameters and standards established by the American Society of Agricultural and Biological Engineers. Machinery repair costs should be regarded as estimated values for full service repairs, and actual cash outlays could differ as producers provide unpaid labor for equipment maintenance.

Fixed costs of machinery are determined by a capital recovery method, which determines the amount of money that should be set aside each year to replace the value of equipment used in production. Machinery costs are estimated by applying engineering formulas to representative prices of new equipment. This measure differs from typical depreciation methods, as well as actual annual cash expenses for machinery.

Operating costs, fixed costs, costs per bushel, and returns above operating and total specified costs are presented in Table 6. Costs in this report do not include land costs, management, or other expenses and fees not associated with production. Averages in the final row of Table 6 are weighted by the number of acres in each SRVP field. Operating costs per acre range from $152.69/acre for Prairie County to $365.08/acre for Drew County, while operating costs per bushel range from $3.39/bu for Clay County to $13.02/bu for Lee County. Total costs per acre (operating plus fixed) range from $214.57/acre for Crittenden County to $412.76/acre for Drew County, and total costs per bushel range from $4.15/bu for Jefferson County to $15.05/bu for Lee County. Returns above operating costs range from -$59.00/acre for Lee County to $408.26/acre for Jefferson County, and returns above total costs range from -$93.57 for Lee County to $361.76/acre for Jefferson County.

A summary of yield, soybean price, revenues, and expenses by expense type for each SRVP field is presented in Table 7. Averages in final column of Table 7 are weighted by the number of acres in each SRVP field. The weighted average soybean yield for the 2010 SRVP was 50.32 bushels, but ranged from a 17.0 bushels/acre for Lee County to 68.1 bushels/acre in Mississippi County. The Arkansas average cash price for the 2010 SRVP was estimated from January through October 29 daily price quotes of the cash market price or cash booking price to be $9.55/bu. Arkansas producers set the price for portions of their crop throughout the year. The Little Rock office of the National Agriculture Statistics Service began reporting 2010 Arkansas crop booking prices on January 4 and switched to cash market quotes for the 2010 crop on October 1.

The weighted average operating expense for the 18 SRVP fields was $269.70/acre (Table 7). Fertilizers & nutrients accounted for the largest share of operating expenses on average (28.4 percent) followed by seed (22.4 percent), chemicals (13.8 percent) and irrigation energy costs (8.9 percent). The average return above operating expenses for the 18 fields was $210.76/acre and ranged from -$59.00/acre for Lee County to $408.26/acre for Jefferson County. The average return above total specified expenses for the 18 fields was $153.85/acre, and ranged from -$93.57/acre for Lee County to $361.76/acre for Jefferson County.

Table 6. Operating Costs, Total Costs, and Returns for Soybean Research Verification Program, 2010

County	Operating Costs ($/acre)	Operating Costs ($/bushel)	Returns to Operating ($/acre)	Fixed Costs ($/bushel)	Total Costs ($/acre)	Returns to Total Costs ($/acre)	Total Costs per Bushel ($/bushel)
Arkansas-N	319.69	7.10	110.06	61.42	381.10	48.65	8.47
Arkansas-S	285.55	5.39	220.60	52.68	338.23	167.92	6.38
Ashley	331.98	10.37	-26.38	56.99	388.97	-83.37	12.16
Clark	191.08	4.66	200.47	72.78	263.86	127.69	6.44
Clay	218.13	3.39	395.74	65.48	283.61	330.27	4.41
Craighead	228.23	4.36	272.00	57.58	285.81	214.42	5.46
Crittenden	181.43	8.54	21.51	33.14	214.57	-11.64	10.10
Desha	253.42	4.02	348.23	47.50	300.92	300.73	4.78
Drew	365.08	5.45	274.77	47.68	412.76	227.09	6.16
Jackson	345.28	7.05	122.67	53.71	398.99	68.96	8.14
Jefferson	231.59	3.46	408.26	46.50	278.09	361.76	4.15
Lee	221.35	13.02	-59.00	34.57	255.92	-93.57	15.05
Lincoln	225.63	4.51	251.87	57.04	282.67	194.83	5.65
Mississippi	263.98	3.88	386.37	44.31	308.29	342.06	4.53
Phillips	327.39	5.28	264.71	48.49	375.87	216.23	6.06
Prairie	152.69	6.71	64.57	63.11	215.80	1.46	9.49
Randolph	279.03	5.58	198.47	60.22	339.25	138.25	6.78
St. Francis	304.81	6.46	145.95	79.78	384.59	66.17	8.15
Weighted Average	**269.70**	**5.90**	**210.76**	**56.91**	**326.60**	**153.85**	**7.17**

Table 7. Summary of Revenue and Expenses per Acre, Soybean Research Verification Program, 2010

	Arkansas-N	Arkansas-S	Ashley	Clark	Clay	Craighead	Crittenden	Desha	Drew
Receipts									
Yield (bu.)	45.0	53.0	32.0	41.0	64.3	52.4	21.3	63.0	67.0
Price	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55
Total Crop Revenue	**429.75**	**506.15**	**305.60**	**391.55**	**613.87**	**500.23**	**202.94**	**601.65**	**639.85**
Seed	58.80	58.80	50.96	53.90	60.93	83.98	75.18	68.60	66.64
Fertilizers & Nutrients	126.90	84.42	170.00	37.50	53.11	0.00	0.00	48.00	148.40
Chemicals	34.60	45.68	26.33	26.80	10.97	49.64	51.65	36.76	41.17
Custom Applications	25.00	29.50	19.50	0.00	5.50	29.50	13.00	12.00	5.50
Fuel & Lube	18.48	14.34	18.42	25.32	21.20	17.60	12.22	11.29	10.90
Repairs & Maintenance	11.65	9.94	10.03	13.08	10.92	10.43	8.23	9.45	10.04
Irrigation Energy Costs	12.65	12.65	9.48	5.91	22.13	6.32	0.00	35.43	47.25
Labor, Field Activities	7.71	5.15	6.24	8.63	7.11	7.18	6.25	5.12	4.86
Other Inputs & Fees, Pre-harvest	12.66	11.82	13.02	9.70	10.19	10.49	9.59	11.01	13.58
Post-harvest Expenses	11.25	13.25	8.00	10.25	16.07	13.10	5.31	15.75	16.75
Total Operating Expenses	**319.69**	**285.55**	**331.98**	**191.08**	**218.13**	**228.23**	**181.43**	**253.42**	**365.08**
Returns to Operating Expenses	**110.06**	**220.60**	**-26.38**	**200.47**	**395.74**	**272.00**	**21.51**	**348.23**	**274.77**
Capital Recovery & Fixed Costs	61.42	52.68	56.99	72.78	65.48	57.58	33.14	47.50	47.68
Total Specified Expenses	**381.10**	**338.23**	**388.97**	**263.86**	**283.61**	**285.81**	**214.57**	**300.92**	**412.76**
Returns to Specified Expenses	**48.65**	**167.92**	**-83.37**	**127.69**	**330.27**	**214.42**	**-11.64**	**300.73**	**227.09**
Operating Expenses/Yield Unit	7.10	5.39	10.37	4.66	3.39	4.36	8.54	4.02	5.45
Total Expenses/Yield Unit	8.47	6.38	12.16	6.44	4.41	5.46	10.10	4.78	6.16

Does not include land costs, management, or other expenses and fees not associated with production.

Table 7 (Continued). Summary of Revenue and Expenses per Acre, Soybean Research Verification Program, 2010

Receipts	Jackson	Jefferson	Lee	Lincoln	Mississippi	Phillips	Prairie	Randolph	St. Francis	Weighted Average
Yield (bu.)	49.0	67.0	17.0	50.0	68.1	62.0	22.8	50.0	47.2	50.32
Price	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55
Total Crop Revenue	**467.95**	**639.85**	**162.35**	**477.50**	**650.36**	**592.10**	**217.26**	**477.50**	**450.76**	**480.46**
Operating Expenses										
Seed	75.18	58.80	42.14	58.80	67.73	47.40	58.80	75.18	62.65	60.49
Fertilizers & Nutrients	94.30	37.50	87.16	48.00	25.80	129.90	0.00	51.60	71.80	76.55
Chemicals	82.20	34.78	37.75	38.93	52.90	41.49	20.41	38.44	57.50	37.13
Custom Applications	5.50	18.50	13.00	12.00	18.50	12.00	16.50	23.00	25.00	15.03
Fuel & Lube	11.56	11.15	12.72	15.68	9.85	11.99	21.12	18.07	9.95	15.84
Repairs & Maintenance	11.33	8.91	8.33	10.45	9.58	10.02	10.42	11.87	9.49	10.44
Irrigation Energy Costs	35.43	29.53	0.00	12.65	47.25	41.34	3.16	29.53	40.37	24.12
Labor, Field Activities	4.31	5.19	5.46	6.18	4.12	5.01	7.68	7.16	3.96	6.05
Other Inputs & Fees, Pre-harvest	13.23	10.48	10.54	10.44	11.23	12.74	8.91	11.68	12.30	11.47
Post-harvest Expenses	12.25	16.75	4.25	12.50	17.03	15.50	5.69	12.50	11.80	12.58
Total Operating Expenses	**345.28**	**231.59**	**221.35**	**225.63**	**263.98**	**327.39**	**152.69**	**279.03**	**304.81**	**269.70**
Returns to Operating Expenses	**122.67**	**408.26**	**-59.00**	**251.87**	**386.37**	**264.71**	**64.57**	**198.47**	**145.95**	**210.76**
Capital Recovery & Fixed Costs	53.71	46.50	34.57	57.04	44.31	48.49	63.11	60.22	79.78	56.91
Total Specified Expenses	**398.99**	**278.09**	**255.92**	**282.67**	**308.29**	**375.87**	**215.80**	**339.25**	**384.59**	**326.60**
Returns to Specified Expenses	**68.96**	**361.76**	**-93.57**	**194.83**	**342.06**	**216.23**	**1.46**	**138.25**	**66.17**	**153.85**
Operating Expenses/Yield Unit	7.05	3.46	13.02	4.51	3.88	5.28	6.71	5.58	6.46	5.90
Total Expenses/Yield Unit	8.14	4.15	15.05	5.65	4.53	6.06	9.49	6.78	8.15	7.17

Does not include land costs, management, or other expenses and fees not associated with production.