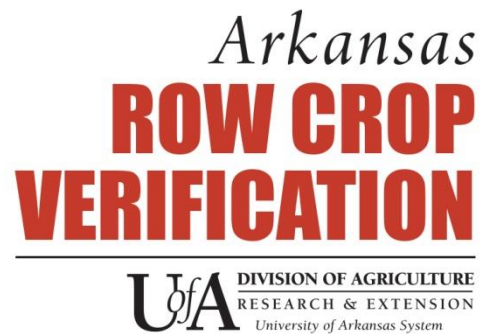




2016 University of Arkansas Soybean Research Verification Program

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SOYBEAN RESEARCH VERIFICATION PROGRAM, 2016

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INTRODUCTION

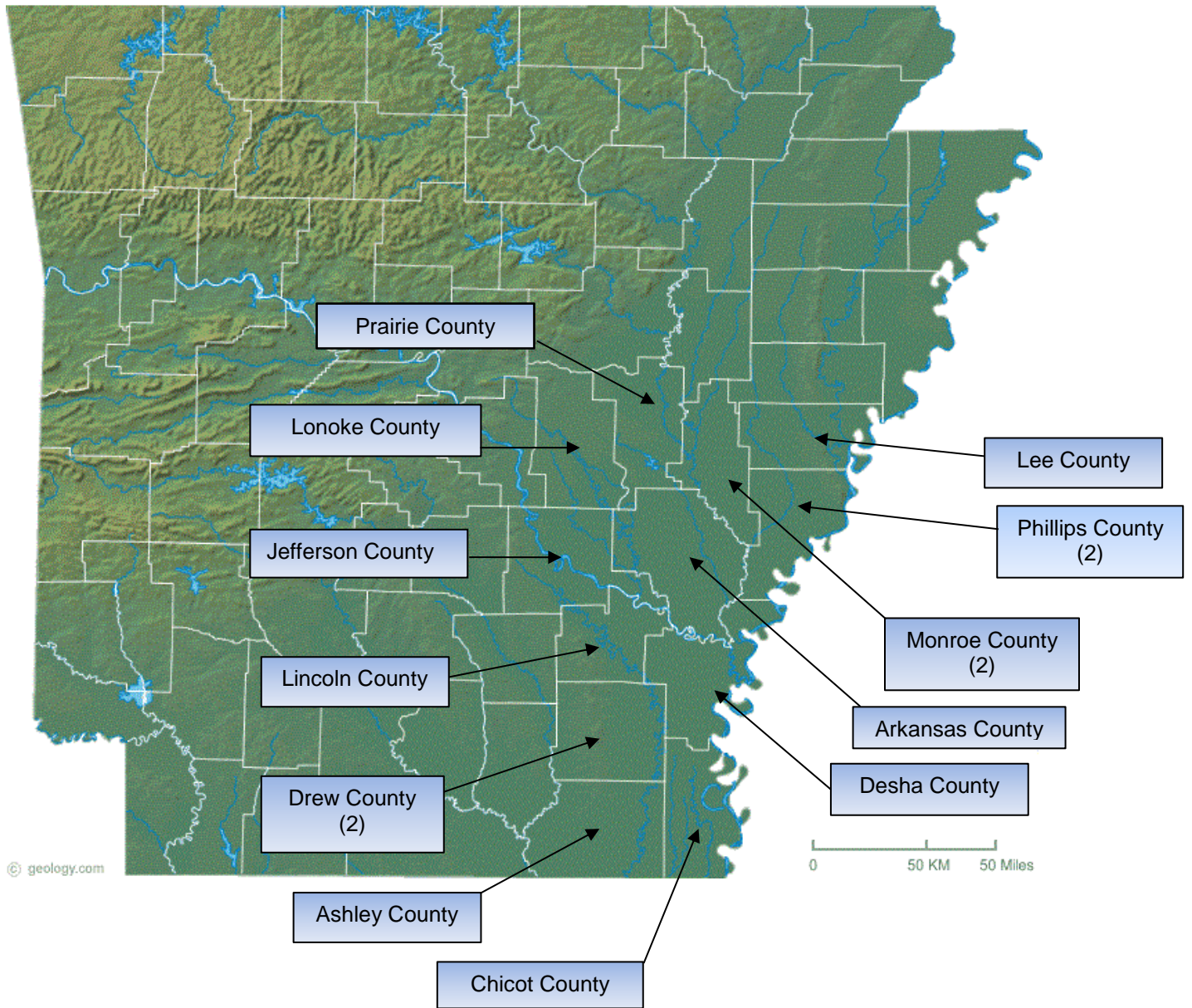
The 2016 growing season was the thirty second year for the Soybean Research Verification Program (SRVP). The SRVP is an interdisciplinary effort between growers, county Extension agents, Extension specialists, and researchers. The SRVP is an on-farm demonstration of all the research-based recommendations 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. Fifteen farms were enrolled in the SRVP in 2016. The fields were located on commercial farms ranging in size from 18 to 84 acres. The average field size was 45 acres.

The 2016 SRVP fields were conducted in Arkansas, Ashley, Chicot, Desha, Drew (2), Jefferson, Lee, Lincoln, Lonoke, Monroe (2), Phillips (2), and Prairie. Five different Roundup Ready varieties (Asgrow 4632, Asgrow 4835, Pioneer 47T36, Pioneer 49T80 & Pioneer 50P40), two liberty link varieties (Stine 42LH22 & Stine 51LE20) and three conventional varieties (UA 5213C, UA 5814HP and Hutcheson) 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 2016 Soybean Research Verification Fields



FIELD REVIEWS

Southern Fields – Chad Norton

Arkansas County

The 45 acre field, soil types Immanuel and Tichnor silt loam, was located south of Stuttgart and followed the previous year corn crop. Following fall land preparation, an early spring burndown application of 1 quart/acre generic glyphosate plus 2 ounces/acre Valor, and no fertilizer application, according to soil test recommendations, the field was planted April 28 with Pioneer 49T80R, CruiserMaxx seed treatment, at 46 pounds/acre on 30" beds. Final plant population was 90,000 plants/acre. Percent emergence was reduced due to deep planting. In addition, the bottom 10 acres had to be replanted because of standing water from a heavy rain event. Post-emergence applications of 1 quart/acre generic glyphosate plus 1 pint/acre generic metolachlor on May 7, 1 quart/acre generic glyphosate plus 2 ounces/acre Zidua on May 23, and 1 quart/acre generic glyphosate plus 1 pint/acre generic metolachlor on June 11 were used for weed control. The third herbicide application was needed because rainfall shortly after the May 23 application reduced the efficacy of the glyphosate. Neither insect nor disease pressure reached treatment thresholds, so insecticide or fungicide applications were unwarranted. The field was furrow irrigated 6 times and harvested on October 3 yielding 68.9 bushels/acre adjusted to 13% moisture.

Ashley County

The 70 acre field, soil type Calloway silt loam, was located west of Hamburg and followed the previous year soybean crop. Following an early spring burndown application of 1 quart/acre generic glyphosate plus 1.5 pints/acre 2,4-D, land preparation and a fertilizer application of 0-50-80, according to soil test recommendations, the field was planted on May 7 with Asgrow 4835 RR/STS, CruiserMaxx seed treatment, at 42 pound/acre on 38" twin row beds. Post-emergence applications of 1 quart/acre generic glyphosate plus 1 pint/acre Dual Magnum on May 12 and 22 ounces/acre RoundUp PowerMax plus 1.25 pints/acre generic metolachlor on June 21 were utilized for weed control. Bollworms reached treatment threshold and were treated with 2 ounces/acre Belt on July 8 and Frogeye Leaf Spot reached threshold and was treated with 4.5 ounces/acre Stratego YLD on August 10. The field was furrow irrigated 4 times and harvested on September 20 yielding 47.5 bushels/acre adjusted to 13% moisture.

Chicot County

The 45 acre field, soil type Sharkey clay, was located south of Lake Village and followed the previous year soybean crop. Following land preparation in the fall, 1 quart/acre 2,4-D plus 1 quart/acre generic glyphosate was utilized as a burndown treatment in early spring. Following a fertilizer application of 0-30-90, according to soil test recommendations, the field was planted on April 10 with Asgrow 4632RR/STS, CruiserMaxx seed treatment, at 47 pounds/acre on 38" twin row beds along with a 2 ounce/acre Valor application for residual weed control. Final plant population was 130,000 plants/acre. A post-emergence application of 22 ounces/acre RoundUp PowerMax plus 1.25 pints/acre generic metolachlor was also used for weed control. The field required a 5.12 ounce/acre Brigade application on July 13 for stink bug control. Disease pressure remained below treatment thresholds so no fungicide application was warranted. The field was furrow irrigated 3 times and harvested on September 17 yielding 68 bushels/acre adjusted to 13% moisture.

Desha County

The 37 acre field, soil types Desha silt loam and Desha clay, was located north of Dumas and followed the previous year corn crop. Following land preparation in the fall, a burndown treatment of 1 quart/acre 2,4-D plus 22 ounces/acre RoundUp PowerMax plus 1.5 ounces/acre LeadOff plus 6 ounces/acre Select was applied in early spring. Following a fertilizer application of 0-0-60, according to soil test recommendations, the field was re-hipped and planted on April 6 with Asgrow 4632 RR/STS, CruiserMaxx seed treatment, at 47 pounds/acre on 38" twin row beds along with a 1.25 pints/acre generic metolachlor application for residual weed control. Final plant population was 141,000 plants/acre. A post-emergence application of 22 ounces/acre RoundUp PowerMax plus 2 ounces/acre Zidua on May 6 was also used for weed control. Neither insect nor disease pressure reached treatment thresholds, so insecticide or fungicide applications were unwarranted. The field was furrow irrigated 5 times and harvested on September 12 yielding 82 bushels/acre adjusted to 13% moisture.

Drew County - 1

The 22 acre dryland field, soil types Grenada and Henry silt loam, was located west of Pine Hill and followed the previous year soybean crop. Following land preparation in the spring the field was flat-planted on April 9 with Pioneer 47T36R, CruiserMaxx seed treatment, at 50 pounds/acre with a 38" planter run twice to achieve 19" row spacing. Envive at 3.5 ounces/acre plus 1 quart/acre generic glyphosate was applied for residual and post-emergence weed control. Final plant population was 145,000 plants/acre. Two post-emergence applications of 1 quart/acre generic glyphosate plus 1.25 pints/acre generic metolachlor on May 11 and June 7 were also used for weed control. Neither insect or disease pressure reached treatment thresholds, so insecticide or fungicide applications were unwarranted. The field was harvested on September 11 yielding 32 bushels/acre adjusted to 13% moisture.

Drew County – 2

The 53 acre field, soil types Rilla and Hebert silt loam and Perry clay, was located northwest of Pine Hill and followed the previous year corn crop. Following a fertilizer application of 0-30-90, according to soil test recommendations, the field was bedded and planted on May 7 with Asgrow 4632 RR/STS, CruiserMaxx seed treatment, at 60 pounds/acre on 38" twin beds. Final plant population was 165,000 plants/acre. Two post-emergence applications of 1 quart/acre generic glyphosate plus 10 ounces/acre Flexstar on June 9 and 27 were utilized for weed control. Bollworms reached economic threshold and were treated with Belt at 2 ounces/acre on July 5 and stink bugs reached threshold and were treated with 6.4 ounces/acre Brigade plus .5 pound/acre generic acephate on August 30. The field was furrow irrigated 4 times and harvested on September 27 yielding 58 bushels/acre adjusted to 13% moisture.

Jefferson County

The 74 acre field, soil types Choushatta and Roxana silt loam, was located south of Altheimer and followed the previous year grain sorghum crop. Following a fertilizer application of 0-0-60, according to soil test recommendations, the field was bedded and planted on March 23 with Stine 42LH22, ApronMaxMoly seed treatment, at 68 pounds/acre on 30" beds along with 1 quart/acre generic glyphosate plus 1.25 pints/acre generic metolachlor application for post-emergence and residual weed control. Final plant population was 100,000 plants/acre. A post-emergence application of 1qt/a Liberty plus 2 ounces/acre Zidua on May 6 was used for weed control. Neither insect nor disease pressure reached treatment thresholds, so insecticide or fungicide applications were unwarranted. Generic gramoxone at 1 pint/acre was applied on August 20 as a harvest aid. Field was furrow irrigated 6 times and harvested on September 9

yielding 71 bushels/acre adjusted to 13% moisture using the actual weight harvested. Due to heavy rains and high humidity the week of August 15 and the field being at R7, harvest samples showed 15% damage and a test weight of 49.5 pounds/bushel. No yield adjustments were made for either of these deductions.

Lee County

The 54 acre field, soil type Alligator clay, was located east of Haynes and followed the previous year rice crop. Following land preparation in the fall, an early spring bed conditioning, burndown herbicide application of 1 quart/acre generic glyphosate plus 6 ounces/acre generic metribuzin, and a fertilizer application of 0-0-0, according to soil test recommendations, the field was planted May 7 with conventional variety UA 5814HP, CruiserMaxx seed treatment, at 48 pounds/acre along with a 1 quart/acre generic Gramoxone plus 2 ounces/acre generic Valor plus 3 ounces/acre generic metribuzin application for emerged and residual weed control. Following plowing middles, post-emergence applications of 8 ounces generic Select plus 1 quart/acre Prefix on June 10 and 1.5 pints/acre generic metolachlor on July 11 were also used for weed control. Neither insects nor diseases reached thresholds, so no insecticide or fungicide applications were used. The field was furrow irrigated 3 times and harvested on October 15 yielding 38.75 bushels/acre adjusted to 13% moisture. During weekly visit on July 8, symptoms of dicamba drift were noted. The field seemed to have grown out of the symptoms, but this could have reduced yield.

Lincoln County

The 68 acre field, soil types Herbert and Rilla silt loam and Perry clay, was located north of Grady and followed the previous year corn crop. Following fall land preparation and fertilizer application of 0-46-100, according to soil test recommendations, the field received 26 ounces/acre RoundUp PowerMax plus 1.5 ounces/acre LeadOff plus 1.5 pints/acre 2,4-D as a burndown application in early spring. The field was planted on April 9 with Asgrow 4632 RR/STS, Vault HP plus Magnum seed treatment, at 50 pounds/acre on 38" twin row beds along with a 1.25 pints/acre metolachlor plus 22 ounces/acre RoundUp PowerMax application for residual and post-emergence weed control. Post-emergence applications of 22 ounces/acre RoundUp PowerMax plus 1 quart/acre Prefix plus 6 ounces/acre Flexstar on May 14, and 22 ounces/acre RoundUp PowerMax on the southwest 25 acres on June 10 were also used for weed control. Insect and disease pressure did not reach treatment thresholds so no treatment applications were warranted. The field was furrow irrigated 7 times and harvested on September 13 yielding 76.6 bushels/acre adjusted to 13% moisture.

Lonoke County

The 84 acre field, soil types Immanuel and Calhoun silt loam, was located northeast of Seaton and followed the previous year soybean crop. Following spring land preparation and a fertilizer application of 0-0-60, according to soil test recommendations, the field was planted May 14 with Stine 51LE20, CruiserMaxx seed treatment, at 38 pounds/acre on 30" beds along with a 2 ounce/acre Panther application for residual weed control. Post-emergence applications of 1 quart/acre Liberty plus 1 pint/acre Dual Magnum on June 7 and 1 quart/acre Liberty plus 1 quart/acre Prefix on June 6 were also used for weed control. Insect and disease pressure did not reach treatment thresholds so no treatment applications were warranted. The field was furrow irrigated 4 times and harvested on October 7 yielding 53.4 bushels/acre adjusted to 13% moisture.

Monroe County - 1

The 24 acre field, soil type Foley-Calhoun-Bonn complex, was located southeast of Brinkley and followed the previous year corn crop. Following a fertilizer application of 0-36-72, according to soil test recommendations, and land preparation the field was planted on May 23 with the conventional variety UA 5213C, CruiserMaxx seed treatment, at 40 pounds/acre on 30" beds. Final plant population was 130,000 plants/acre. Post-emergence applications of 1.5 pints/acre Storm plus 2 ounces/acre Zidua on June 9, 1 pint/a generic Select plus 1% COC on June 18, and 1 quart/acre Prefix on June 30 were utilized for weed control. Insect and disease pressure remained below treatment thresholds so treatment applications were unwarranted. The field was furrow irrigated 3 times and harvested on October 10 yielding 50.9 bushels/acre adjusted to 13% moisture.

Monroe County – 2

The 35 acre field, soil types Jackport silty clam loam and Dubbs silt loam, was located northeast of Clarendon and followed the previous year rice crop. Following fall land preparation and a spring fertilizer application of 0-40-60, according to soil test recommendations, the field was drill planted on June 9 with Pioneer 50P40, CruiserMaxx seed treatment, at 55 pounds/acre, on 7.5" drill centers on 60" beds along with 1 quart/acre generic glyphosate plus 3 pints/acre Intimidator for post-emergence and residual weed control. Final plant population was 135,000 plants/acre. A post-emergence application of 1 quart/acre generic glyphosate plus 1 pint/acre SelectMax plus 1 pint/acre Dual Magnum was also utilized for weed control. Bollworms reached treatment threshold and 2 ounces/acre Belt was applied on August 7 for control. Diseases remained below thresholds so no fungicide application was warranted. The field was furrow irrigated twice and harvested on October 12 yielding 53.5 bushels/acre adjusted to 13% moisture.

Phillips County – 1

The 24 acre field, soil type Henry silt loam, was located west of West Helena and followed the previous year soybean crop. Following an early spring burndown of 40 ounces/acre Gramoxone and land preparation the field was drill planted on May 9 with conventional variety Hutcheson, CruiserMaxx seed treatment, on 10" drill centers. Final plant population was 90,000 plants/acre. Post-emergence applications of 1 pint/acre generic metolachlor on May 16 and 4 ounces/acre Anthem Flex plus 1.5 pints/acre Flexstar on June 10 were utilized for weed control. Stink bugs reached economic threshold and were treated with 3 ounces/acre Intrepid Edge plus .75 pound/acre generic acephate on September 5. No fungicide application was warranted. Although the field was irrigated 3 times, the initial irrigation wasn't applied until August 10, due to power unit issues, at which point the field was at R5 and had been running a 4"-5" moisture deficit for four weeks. The field was harvested on October 20 yielding 29.2 bushels/acre adjusted to 13% moisture.

Phillips County – 2

The 23 acre field, soil types Foley and Memphis silt loam, was located northeast of Turner and followed the previous year soybean crop. Following disking and sub-soiling in the fall the field received a fertilizer application of 0-45-90, according to soil test recommendations and bedded on 38" beds in the spring. The field was drill planted on April 10 with Pioneer 47T36R at 52 pounds/acre, CruiserMaxx seed treatment, on 7.5" drill centers on 38" beds along with 3 ounces/acre Fierce for residual weed control. Final plant population was 130,000 plants/acre. A post-emergence application of 22 ounces/acre RoundUp PowerMax plus 1.25 pints/acre generic metolachlor on May 10 was also used for weed control. Disease and insect pressure remained

below treatment thresholds so no applications were warranted. The field was furrow irrigated 3 times and harvested on September 22 yielding 68 bushels/acre adjusted to 13% moisture.

Prairie County

The 18 acre field, soil types Immanuel and Stuttgart silt loam, was located south of Slovak and followed the previous year corn crop. Following an early spring burndown of 1 quart/acre generic glyphosate plus 1 ounce/acre Sharpen and a fertilizer application of 0-45-90, according to soil test recommendations, the field was bedded and drill planted on April 24 with Asgrow 4632 RR/STS, CruiserMaxx seed treatment, on 7.5" drill centers on 30" beds along with 1.5 pints/acre Boundary for residual weed control. Final plant population was 115,000 plants/acre. Post-emergence applications of 1 quart/acre generic glyphosate plus 2 ounces/acre Zidua on May 15 and 1 quart/acre generic glyphosate on June 12 were also used for weed control. Neither insects nor diseases reached thresholds so insecticide or fungicide applications were unwarranted. The field was furrow irrigated 5 times, however, the second irrigation was delayed 10 days due to waiting for repair of well problems. It was harvested on October 6 yielding 66 bushels/acre adjusted to 13% moisture.

Table 1. Agronomic information for the 2016 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	Pioneer 49T80R	48	Corn	FSI	46	90K	4-28	5-9	10-3	68.9
Ashley	Asgrow 4835	70	Soybean	FSI	42	128K	5-7	5-12	9-20	47.5
Chicot	Asgrow 4632	45	Soybean	ESI	49	130K	4-10	4-18	9-17	68
Desha	Asgrow 4632	37	Corn	ESI	47	141K	4-6	4-18	9-12	82
Drew - 1	Pioneer 47T36R	22	Soybean	ESNI	50	145K	4-9	4-20	9-11	32
Drew - 2	Asgrow 4632	53	Corn	FSI	61	165K	5-5	5-11	9-27	58
Jefferson	Stine 42LH22	74	Grain Sorghum	ESI	68	100K	3-23	4-3	8-30	71
Lee	UA 5814HP	54	Rice	FSI	48	130K	5-8	5-14	10-15	38.75
Lincoln	Asgrow 4632	68	Corn	ESI	48	135K	4-9	4-20	9-13	76.6
Lonoke	Stine 51LE20	84	Soybean	FSI	38	115K	5-14	5-24	10-7	53.4
Monroe - 1	UA 5213C	24	Corn	FSI	40	130K	5-23	5-30	10-10	50.9
Monroe - 2	Pioneer 50P40	35	Rice	FSI	55	135K	6-9	6-15	10-12	53.5
Phillips - 1	Hutcheson	24	Soybean	FSI	48	90K	5-9	5-16	10-20	29.2
Phillips - 2	Pioneer 47T36R	23	Soybean	ESI	52	130K	4-10	4-19	9-22	68
Prairie	Asgrow 4632	18	Corn	ESI	47	115K	4-24	5-2	10-6	66
Average		45			49	125K	4-27	5-6	9-27	57.6

State Avg. – 48bu/ac

Table 2. Soil tests results, applied fertilizer and soil classification for the 2016 Soybean Research Verification Fields

County	Applied Fertilize N-P-K (lb/acre)				Soil Classification
	pH	P	K	Pre-plant	
Arkansas	6.6	60	410	0-0-0	Immanuel, Tichnor silt loam
Ashley	6.5	38	182	0-50-80	Calloway silt loam
Chicot	6.6	58	200	0-40-60	Sharkey clay
Desha	6.8	70	216	0-0-60	Desha silt loam, Desha clay
Drew - 1	6.0	56	164	0-0-0	Grenada, Henry silt loam
Drew - 2	6.4	70	180	0-30-90	Rilla, Hebert silt loam, Perry clay
Jefferson	5.7	122	252	0-0-60	Coushatta, Roxana silt loam
Lee	6.1	78	344	0-0-0	Alligator clay
Lincoln	6.8	60	188	0-46-100	Herbert, Rilla silt loam, Perry clay
Lonoke	6.3	80	190	0-0-60	Immanuel, Calhoun silt loam
Monroe - 1	6.2	64	182	0-36-72	Foley-Calhoun-Bonn Complex
Monroe - 2	6.3	60	210	0-40-60	Jackport silty clam loam, Dubbs silt loam
Phillips - 1	5.7	54	164	0-0-120	Henry silt loam
Phillips - 2	6.1	38	180	0-45-90	Foley, Memphis silt loam
Prairie	6.5	36	92	0-45-90	Immanuel, Stuttgart silt loam

Table 3. Herbicide rates and timings for 2016 Soybean Research Verification Program fields by county.

County	Herbicide	
	Burndown/Pre-emergence	Post-emergence
Arkansas	Burndown; 1 qt. generic glyphosate + 2 oz. Valor Pre-emerge; 1 qt. generic glyphosate + 1 pt. generic metolachlor	1 st ; 1 qt. generic glyphosate + 2 oz. Zidua 2 nd ; 1 qt. generic glyphosate + 1 pt. generic metolachlor
Ashley	Burndown; 1 qt. generic glyphosate + 1.5 pt. 2,4-D Pre-emerge; 22 oz. RoundUp PowerMax + 1.25 pt. generic metolachlor	22 oz. RoundUp PowerMax + 1.5 pt. Flexstar
Chicot	Burndown; 1 qt. generic glyphosate + 1 qt. 2,4-D Pre-emerge 2 oz. Valor	1 qt. generic glyphosate + 1.25 pt. generic metolachlor
Desha	Burndown; 22 oz. RoundUp PowerMax + 1.5 oz. Leadoff + 2 pt. 2,4-D + 6 oz. Select Pre-emerge; 1.25 pt. generic metolachlor	22 oz. RoundUp PowerMax + 2 oz. Zidua
Drew - 1	Pre-emerge; 1 qt. generic glyphosate + 3.5 oz Envive	1 st ; 1 qt. generic glyphosate + 1.25 pt. generic metolachlor 2 nd ; 1 qt. generic glyphosate + 1.25 pt. generic metolachlor
Drew - 2	Pre-emerge; 1.25 pt. generic metolachlor	1 qt. generic glyphosate + 1.5 pt. Flexstar
Jefferson	Pre-emerge; 1 qt. generic glyphosate + 1.25 pt generic metolachlor	1 qt. Liberty + 2 oz. Zidua Harvest aid; 1 pt. generic Gramoxone + 1% NIS
Lee	Burndown; 1 qt. generic glyphosate + 6 oz. generic metribuzin Pre-emerge; 1 qt. generic Gramoxone + 3 oz. generic metribuzin + 2 oz. generic Valor	1 st ; 8 oz. generic Select + 1 qt. Prefix 2 nd ; 1.5 pt. generic metolachlor
Lincoln	Burndown; 25.6 oz. RoundUp PowerMax + 1.5 pt. 2,4-D + 1.5 oz. Leadoff Pre-emerge; 22 oz. RoundUp PowerMax + 1.25 pt generic metolachlor	1 st ; 22 oz. RoundUp PowerMax + 1 qt. Prefix + 6 oz. Flexstar 2 nd ; 22 oz RoundUp PowerMax (25 acres)
Lonoke	Pre-emerge; 2 oz. generic Valor	1 st ; 1 qt. Liberty + 1pt. Dual 2 nd ; 1 qt Liberty + 1 qt. Prefix
Monroe - 1		1 st ; 1.5 pt. Storm + 2 oz. Zidua 2 nd ; 1pt. generic Select + 1% COC 3 rd ; 1 qt. Prefix
Monroe - 2	Pre-emerge; 36 oz. Intimidator + 1 qt. generic glyphosate	1 qt. generic glyphosate + 1 pt. Select Max + 1 pt. Dual
Phillips - 1	Burndown; 40 oz. Gramoxone Pre-emerge; 1.25 pt. metolachlor	1.5 pt. Flexstar + 2 oz. Zidua
Phillips - 2	Pre-emerge; 3 oz. Fierce	1 qt. generic glyphosate + 1.25 pt. generic metolachlor
Prairie	Burndown; 1 qt. generic glyphosate + 1 oz. Sharpen Pre-emerge; 1.5 pt. Boundary	1 st ; 1 qt. generic glyphosate + 2 oz. Zidua 2 nd ; 1 qt. generic glyphosate

Table 4. Fungicide and insecticides applications in 2016 Soybean Research Verification fields by county.

County	Aerial Web Blight	Frogeye	Bollworm/Defoliators	Stink Bug
Arkansas	-----	-----	-----	-----
Ashley	-----	4.5 oz. Stratego YLD	2 oz. Belt	-----
Chicot	-----	-----	-----	5.12 oz. Brigade
Desha	-----	-----	-----	-----
Drew - 1	-----	-----	-----	-----
Drew - 2	-----	-----	2 oz. Belt	6.4 oz. Brigade + .5 lb. acephate
Jefferson	-----	-----	-----	-----
Lee	-----	-----	-----	-----
Lincoln	-----	-----	-----	-----
Lonoke	-----	-----	-----	-----
Monroe - 1	-----	-----	-----	-----
Monroe - 2	-----	-----	2 oz. Belt	-----
Phillips - 1	-----	-----	-----	5.12 oz. Brigade
Phillips - 2	-----	-----	-----	-----
Prairie	-----	-----	-----	-----

Table 5. Irrigation information and rainfall for the 2016 Soybean Research Verification Fields.

County	Irrigation Type	Number of Irrigations	Rainfall (in)
Arkansas	Furrow	6	16
Ashley	Furrow	4	17.1
Chicot	Furrow	3	25.9
Desha	Furrow	5	23.7
Drew - 1	Dry Land	N/A	22.9
Drew - 2	Furrow	4	17.7
Jefferson	Furrow	6	17.1
Lee	Furrow	3	13
Lincoln	Furrow	7	17.6
Lonoke	Furrow	4	12.6
Monroe - 1	Furrow	3	10.3
Monroe - 2	Furrow	2	8.3
Phillips - 1	Furrow	3	14.3
Phillips - 2	Furrow	4	21.1
Prairie	Furrow	5	20.1

ECONOMIC ANALYSIS

This section provides information on production costs and returns for the 2016 SRVP. Records of field operations on each field provided the basis for estimating production costs. The field records were compiled by the SRVP coordinators, county extension agents, and cooperators. Production data from the 15 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 2016 Crop Enterprise Budgets published by the Cooperative Extension Service, a Southeast Arkansas input provider survey conducted by Stark and Hensley, 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 simple averages across all SRVP fields. Operating costs per acre range from \$159.97/acre for Drew County-1-Moore to \$283.37/acre for Prairie County-Feilke, while operating costs per bushel range from \$2.69/bu for Desha County-Walt to \$5.94/bu for Phillips County-1-Payne. Total costs per acre (operating plus fixed) range from \$206.76/acre for Drew County-1-Moore to \$358.58/acre for Lincoln County-JURA, and total costs per bushel range from \$3.63/bu for Desha County-Walt to \$7.66/bu for Phillips County-1-Payne. Returns above operating costs range from \$110.86/acre for Phillips County-1-Payne to \$578.47/acre for Desha County-Walt, and returns above total costs range from \$60.75 for Phillips County-1-Payne to \$500.64/acre for Desha County-Walt.

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 simple averages across all SRVP fields. The average soybean yield for the 2016 SRVP was 57.58 bushels, but ranged from 29.2 bushels/acre for Phillips County-1-Payne to 82.0 bushels/acre for Desha County-Walt. The Arkansas average cash price for the 2016 SRVP was estimated from January through October 31 daily price quotes of the cash market price or cash booking price to be \$9.74/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 2016 Arkansas crop booking prices on January 2 and switched to cash market quotes for the 2016 crop on October 3.

The average operating expense for the 15 SRVP fields was \$227.26/acre (Table 7). Seed accounted for the largest share of operating expenses on average (29.20 percent) followed by herbicides (20.14 percent), fertilizers & nutrients (10.26 percent), post-harvest expenses (7.54%), repairs & maintenance

(6.25 percent), and irrigation energy costs (4.81 percent). The average return above operating expenses for the 15 fields was \$333.53/acre and ranged from \$110.86/acre for Phillips County-1-Payne to \$578.47/acre for Desha County-Walt. The average return above total specified expenses for the 15 fields was \$256.63/acre, and ranged from \$60.75 for Phillips County-1-Payne to \$500.64/acre for Desha County-Walt.

Table 6. Operating Costs, Total Costs, and Returns for Soybean Research Verification Program, 2016

County	Operating Costs (\$/acre)	Operating Costs (\$/bushel)	Returns to Operating (\$/acre)	Fixed Costs (\$/acre)	Total Costs (\$/acre)	Returns to Total Costs (\$/acre)	Total Costs per Bushel (\$/bushel)
Arkansas	190.97	2.77	480.12	85.44	276.41	394.67	4.01
Ashley	261.53	5.51	201.12	80.01	341.54	121.11	7.19
Chicot	221.30	3.25	441.02	81.21	302.51	359.81	4.45
Desha	220.21	2.69	578.47	77.82	298.04	500.64	3.63
Drew-1	159.97	5.01	150.73	46.79	206.76	103.95	6.48
Drew-2	263.95	4.55	300.97	86.84	350.79	214.13	6.05
Jefferson	252.50	3.56	439.04	62.33	314.83	376.71	4.43
Lee	161.98	4.18	215.45	107.37	269.34	108.08	6.95
Lincoln	266.27	3.48	479.82	92.32	358.58	387.50	4.68
Lonoke	247.57	4.64	272.54	81.79	329.36	190.75	6.17
Monroe-1	196.07	3.85	299.70	69.35	265.42	230.35	5.21
Monroe-2	275.47	5.15	245.62	83.06	358.54	162.55	6.70
Phillips-1	173.55	5.94	110.86	50.11	223.66	60.75	7.66
Phillips-2	234.26	3.45	428.06	88.71	322.97	339.35	4.75
Prairie	283.37	4.29	359.47	60.41	343.79	299.05	5.21
Simple Average	227.26	4.15	333.53	76.90	304.17	256.63	5.57

Table 7. Summary of Revenue and Expenses per Acre, Soybean Research Verification Program, 2016 (1)								
	Arkansas	Ashley	Chicot	Desha	Drew-1	Drew-2	Jefferson	Lee
Receipts								
Yield (bu.)	68.9	47.5	68.0	82.0	31.9	58.0	71.0	38.8
Price	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74
Total Crop Revenue	671.09	462.65	662.32	798.68	310.71	564.92	691.54	377.43
Seed	68.08	62.16	69.56	74.30	88.80	98.35	36.48	74.00
Fertilizers & Nutrients	0.00	41.53	32.21	0.00	35.60	15.25	0.00	44.92
Herbicides (2)	51.36	37.93	30.00	46.93	41.24	17.98	45.27	48.34
Insecticides (2)	0.00	13.28	4.86	0.00	0.00	21.63	0.00	0.00
Fungicides (2)	0.00	16.88	0.00	0.00	0.00	0.00	0.00	0.00
Other Chemicals (2)	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.00
Custom Applications	0.00	14.00	7.00	0.00	0.00	14.00	7.00	0.00
Diesel Fuel (3)	7.82	9.12	9.67	8.94	5.32	10.12	5.74	12.99
Repairs & Maintenance	16.35	15.04	14.59	14.56	11.33	17.10	11.87	17.92
Irrigation Energy Costs	3.50	11.52	8.64	14.40	0.00	11.81	17.72	8.86
Labor, Field Activities	8.90	9.71	9.38	11.14	7.81	13.43	8.58	11.87
Interest	3.95	5.74	4.66	4.54	3.49	5.72	5.37	3.49
Other Inputs & Fee, Pre-harvest	10.50	10.50	10.50	10.50	7.00	10.50	10.50	10.50
Post-harvest Expenses	20.50	14.14	20.23	24.40	9.50	17.26	21.12	11.53
Total Operating Expenses	190.97	261.53	221.30	220.21	159.97	263.95	252.50	161.98
Returns to Operating Expenses	480.12	201.12	441.02	578.47	150.73	300.97	439.04	215.45
Capital Recovery & Fixed Costs	85.44	80.01	81.21	77.82	46.79	86.84	62.33	107.37
Total Specified Expenses	276.41	341.54	302.51	298.04	206.76	350.79	314.83	269.34
Returns to Specified Expenses	394.67	121.11	359.81	500.64	103.95	214.13	376.71	108.08
Operating Expenses/Yield Unit	2.77	5.51	3.25	2.69	5.01	4.55	3.56	4.18
Total Expenses/Yield Unit	4.01	7.19	4.45	3.63	6.48	6.05	4.43	6.95
1. Does not include land costs, management, or other expenses and fees not associated with production.								
2. Combined as Chemicals in some previous year reports								
3. Listed as Fuel & Lube in previous year reports								

Table 7. Summary of Revenue and Expenses per Acre, Soybean Research Verification Program, 2016 (1) - CONTINUED								
	Lincoln	Lonoke	Monroe-1	Monroe-2	Phillips-1	Phillips-2	Prairie	Simple Average
Receipts								
Yield (bu.)	76.6	53.4	50.9	53.5	29.2	68.0	66.0	57.58
Price	9.74	9.74	9.74	9.74	9.74	9.74	9.74	9.74
Total Crop Revenue	746.08	520.12	495.77	521.09	284.41	662.32	642.84	560.80
Seed	74.00	54.86	28.88	81.40	42.56	76.96	69.56	66.37
Fertilizers & Nutrients	44.92	15.25	33.56	32.21	0.00	41.96	41.96	23.31
Herbicides (2)	44.43	74.94	52.19	46.94	53.05	32.21	63.75	45.77
Insecticides (2)	0.00	0.00	0.00	13.28	11.13	0.00	0.00	4.28
Fungicides (2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13
Other Chemicals (2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38
Custom Applications	7.00	24.00	6.00	25.00	14.00	0.00	31.00	9.93
Diesel Fuel (3)	10.02	9.96	7.44	11.52	5.33	12.33	6.69	8.87
Repairs & Maintenance	16.48	14.44	12.41	14.18	9.40	15.31	12.05	14.20
Irrigation Energy Costs	20.16	11.81	17.39	5.76	8.86	8.64	14.76	10.92
Labor, Field Activities	10.31	10.54	8.35	12.74	6.20	11.17	7.35	9.83
Interest	5.65	5.37	4.20	6.02	3.82	4.97	6.12	4.87
Other Inputs & Fee, Pre-harvest	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.27
Post-harvest Expenses	22.79	15.89	15.15	15.92	8.69	20.23	19.64	17.13
Total Operating Expenses	266.27	247.57	196.07	275.47	173.55	234.26	283.37	227.26
Returns to Operating Expenses	479.82	272.54	299.70	245.62	110.86	428.06	359.47	333.53
Capital Recovery & Fixed Costs	92.32	81.79	69.35	83.06	50.11	88.71	60.41	76.90
Total Specified Expenses	358.58	329.36	265.42	358.54	223.66	322.97	343.79	304.17
Returns to Specified Expenses	387.50	190.75	230.35	162.55	60.75	339.35	299.05	256.63
Operating Expenses/Yield Unit	3.48	4.64	3.85	5.15	5.94	3.45	4.29	4.15
Total Expenses/Yield Unit	4.68	6.17	5.21	6.70	7.66	4.75	5.21	5.57
1. Does not include land costs, management, or other expenses and fees not associated with production.								
2. Combined as Chemicals in some previous year reports								
3. Listed as Fuel & Lube in previous year reports								