2014
University of Arkansas
Soybean Research Verification Program

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University of Arkansas
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SOYBEAN RESEARCH VERIFICATION PROGRAM, 2014

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INTRODUCTION

The 2014 growing season was the thirty first 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.

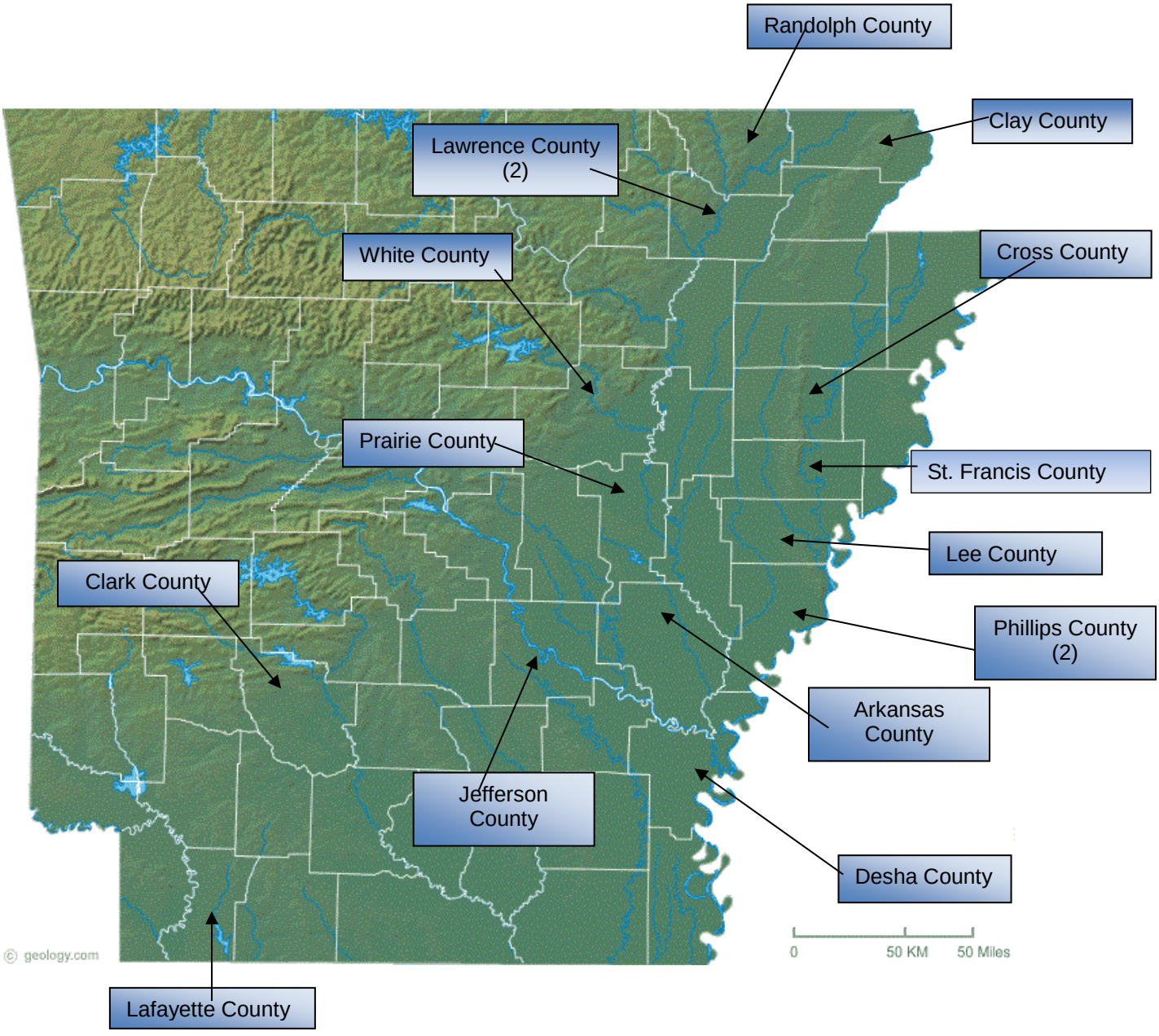
5. To promote timely implementation of cultural and management practices among soybean growers.

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. Sixteen farms were enrolled in the SRVP in 2014. The fields were located on commercial farms ranging in size from 16 to 68 acres. The average field size was 39 acres.

The 2014 SRVP fields were conducted in Arkansas, Clark, Clay, Cross, Desha, Jefferson, Lafayette, Lawrence (2), Lee, Phillips (2), Prairie, Randolph, St. Francis and White Counties. Ten different roundup ready varieties (Armor 47R44, Asgrow 4632, Asgrow 4533, Asgrow 5233, NK S49-F8, Pioneer 94Y80, Pioneer 95Y40 Progeny 4211), three liberty link variety (Halo 5:26, Delta Grow DG 4990LL, Terral TV 49L29) and two conventional (Osage, Leland) 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 2014 Soybean Research Verification Fields



FIELD REVIEWS

Northern Fields – Chris Grimes

Clay County

The Clay County field was located west of Corning. The field was 39 acres and the previous crop was grain sorghum. The soil type was Bosket fine sandy loam. 0-0-60 was applied preplant according to soil test recommendations. The field was planted on May 22 with Halo 5:26 at 57 pounds per acre on a 7.5" row spacing. The final plant population was 167,000 plants per acre. The field received two post emergence applications for weed control. 29oz/a Liberty plus 32oz/a Prefix was applied on June 17 and 29oz/a Liberty was applied on July 2. Insect and disease pressure remained below treatment levels throughout the growing season. The field was furrow irrigated 7 times with an average of 1.72 acre inch per irrigation according flowmeter readings. The field was harvested on October 24 and yielded 52 bushels per acre adjusted to 13% moisture.

Cross County

The Cross County field was located in Wynne. The field was 43 acres and the previous crop was rice. The soil type was Henry silt loam. 0-60-90 was applied preplant according to soil test recommendations. The field was planted April 19 with Progeny 4211 at 58 pounds per acre on 15" rows. The final plant population was of 140,000 plants per acre. 4oz/a Envive was applied after planting for residual. 32oz/a Roundup PowerMax plus 48oz/a Warrant were applied on May 27 for weed control and residual. The field required 2oz/a Karate Z for stink bug control and 14oz/a Quadris Top for Cercospra. The field was furrow irrigated 4 times with an average of 2.04 acre inch per irrigation according flowmeter readings.. The field was harvested on September 10 and yielded 71 bushels per acre adjusted to 13% moisture.

Lawrence County - 1

The field was located northeast of Walnut Ridge. The field was 27 acres and the previous crop was grain sorghum. The soil type was Bosket fine sandy loam. No preplant fertilize was required. The field was planted on May 25 with Asgrow 4632 at 60 pounds per acre on 30" rows. The final plant population was 148,000 plants per acre. 32oz/a Roundup PowerMax plus 32oz/a Prefix was applied June 16 for weed control and residual. Insect and disease pressure remained below treatment levels throughout the growing season. Furrow irrigated 6 times. The field was harvested on October 27 and yielded 65 bushels per acre adjusted to 13% moisture. The final yield was below what was anticipated due to Root Knot Nematode pressure discovered late in the season.

Lawrence County - 2

The Lawrence County field was located northwest of Hoxie. The field was 42 acres and the previous crop was soybeans. The soil type was Patterson fine sandy loam. A 0-40-90 was applied preplant according to soil test recommendations. The field was planted on May 21 with Leland and planted about 60 pounds per acre on 15" rows. The final plant population was 153,000 plants per acre. 24oz/a Generic Dual was applied after planting for residual. 24oz/a Storm plus 40oz/a Warrant was applied for emerged weeds and residual on June 20. The field received 16oz/a Select for grass control on July 20. The field required 3.2oz/a Sniper for stinkbug control. Furrow irrigated 4 times with an average of 2.16 acre inch per irrigation according flowmeter readings. The field was harvested on November 10 and yielded 59 bushels per acre adjusted to 13% moisture.

Prairie County

The Prairie County field was located north of Des Arc. The field was 16 acres and the previous crop was corn. The soil type was a Stuttgart silt loam. 0-40-60 fertilize was applied preplant according to soil sample results. The field was planted on May 26 with Pioneer 95Y40 at 58 pounds per acre on 38 inch row spacing. The final plant population was 95,000 plants per acre. On June 16 the producer applied 32oz/a Roundup PowerMax plus 32oz/a Prefix was applied post for weed control and residual. Another 32oz/a Roundup PowerMax was applied on July14 to clean up escapes from previous application. Frogeye reached treatment level and 12oz/a Quadris Top was applied and provided good control. Stinkbugs hit the field late in the season and required treatment. The field was furrow irrigated 5 times with an average of 2.20 acre inch per irrigation according flowmeter readings. Field was harvested on October 24 and yielded 56 bushels per acre adjusted to 13% moisture.

Randolph County

The Randolph County field was located northwest of Reyno. The field was 40 acres and the previous crop was corn. The soil type was Amagon silt loam/Hontas silt loam. According to soil test a 0-60-90 was applied preplant. The field was planted on June 19 with AG 4533 at 67 pounds per acre on 7.5 inch row spacing. The field received about 3 inches of rainfall after planting resulting in a final plant stand of 85,000 plants per acre. We decided to keep the less than optimum stand due to late planting date. On July 22 the producer applied 32oz/a Roundup PowerMax plus 2oz/a Ravage for weed control & Armyworm control. Field was dryland and harvested on November 11 and yielded 27 bushels per acre adjusted to 13% moisture.

St. Francis County

The St. Francis County field was located east of Heath. It was 46 acres and the previous crop was grain soybeans. The soil type was Alligator/Sharkey clay. According to soil test results no preplant fertilize was needed. The field was planted on April 12 with Terral TV 49L29 at 56 pounds per acre on 19” row spacing. The final plant stand was 160,000 plants per acre. 32oz/a Glyphosate plus 5oz/a Verdict was applied as a burndown. 29oz/a Liberty plus 32oz/a Prefix was applied on May 7 for emerged weeds and residual. A second shot of Liberty at 32oz/a was needed for pigweed control. No insecticide or fungicide applications were required. The field was center pivot irrigated 7 times and was harvested September 25 and yielded 59 bushels per acre adjusted to 13% moisture.

White County

The White County field was located in Griffithville. It was 61 acres and the previous crop was corn. The soil type was a Calhoun silt loam. 2 ton/a chicken litter along with 0-0-60 was applied preplant. The field was planted on June 17 with NK S49-F8 at 58 pounds per acre on 30” rows. The final plant stand was 125,000 plants per acre. 24oz/a Ultra Blazer plus 2oz/a Dual Magnum was applied on June 26 for weed control and residual. A second herbicide application of 32oz/a Roundup PowerMax plus 16oz/a Dual magnum was applied on July 16 for weed control. 8oz/a Quadris Top was applied for seed quality and 3.2oz/a was applied for stinkbug control. The field was furrow irrigated 6 times with an average of 1.61 acre inch per irrigation according flowmeter readings. Field was harvested October 30 and yielded 60 bushels per acre adjusted to 13% moisture.

Southern Fields – Chad Norton

Arkansas County

The 33 acre field, soil type Dewitt silt loam, was located northeast of Stuttgart and followed the previous year rice crop. Following a fertilizer application of 0-60-60 per acre, according to soil test recommendations, the field was planted on May 26 with Asgrow 5233, CruiserMaxx seed treatment, at 54 pounds/acre on 30" beds along with a 3 oz. Fierce/acre application for residual weed control. Final plant population was 90,000 plants/acre due to over-abundant rainfall after planting that caused stand reduction from the Fierce application. One 22 oz. RoundUp PowerMaxx/acre application on June 28 was the only post emergence herbicide used. The field required a 4.27 oz. Brigade/acre application on September 10 for stink bug control. While some Frogeye Leaf Spot appeared, it remained below treatment threshold, so no fungicide was applied. The field was furrow irrigated 3 times and harvested on October 21 yielding 68.5 bushels/acre adjusted to 13% moisture.

Clark County

The 33 acre field, soil types Gurdon and Ouachita silt loam, was located southeast of Arkadelphia and followed the previous year soybean crop. Following a fertilizer application of 0-80-130, according to soil test recommendations, the field was planted on May 22 with NK S49-F8, CruiserMaxx seed treatment, at 58 pounds/acre on 36" twin row beds. Final plant population was 128,000 plants/acre. An early post-emergence application of 1 qt. glyphosate plus 1.3 pts. metolachlor/acre on June 20 followed by a later post-emergence application of 1 qt. glyphosate plus 1.5 pts. Flexstar/acre on July 14 were utilized for weed control. The field required a 2 oz. Belt/acre application on July 22 for bollworm control and a 3.65 oz. Ravage/acre application on September 8 for stink bug control. Disease pressure remained below treatment thresholds so no fungicide application was warranted. Although set up for irrigation, field was not irrigated due to timely rainfall. Field was harvested on October 19 yielding 55.6 bushels/acre adjusted to 13% moisture.

Desha County

The 51 acre field, soil types McGehee and Rilla silt loam, was located west of Dumas and followed the previous year corn crop. Following a fertilizer application of 0-0-60, according to soil test recommendations, the field was planted on April 19 with Armor DK 4744, CruiserMaxx seed treatment, at 54 pounds/acre on 30" beds along with a 1 pt. Dual Magnum/acre application for residual weed control. Final plant population was 128,000 plants/acre. A post-emergence application of 22 ounces RoundUp PowerMaxx plus 1.3 pts metolachlor/acre on May 20 was used for weed control. The field required a 6.4 oz. Brigade plus 4.5 oz. Stratego YLD/acre application on July 11 for stink bug and Frogeye Leaf Spot control, respectively. The field was furrow irrigated 6 times and harvested on August 28 yielding 79.6 bushels/acre adjusted to 13% moisture.

Jefferson County

The 64 acre field, soil types McGehee silt loam and Perry clay, was located northeast of Gethsemane and followed the previous year soybean crop. The field received a burndown application of 1 qt. glyphosate plus .5 oz. FirstShot/acre in early spring. Following a fertilizer application of 0-23-90, according to soil test recommendations, the field was planted on May 24 with Delta Grow 4990 LL, CruiserMaxx seed treatment, at 60 pounds/acre on 30" beds along with a 2 oz. Zidua/acre application for residual weed control. Final plant population was 147,000 plants/acre. A post-emergence application of 30 oz. Liberty plus 1 pt. Flexstar/acre on June 16 was used for weed control. The field required a 2 oz. Belt plus 4 oz. Brigade/acre application on August 28 for bollworm and stink bug control, respectively. Disease pressure remained below treatment thresholds so no fungicide application was warranted. Field was furrow irrigated 6 times and harvested on October 20 yielding 60.7 bushels/acre adjusted to 13% moisture.

Lafayette County

The 50 acre field, soil types Billyhaw and Perry clay, was located south of Gin City and followed the previous year corn crop. According to soil test recommendations, there were no fertilizer applications. The field was planted on May 2 with Pioneer 94Y80, CruiserMaxx seed treatment, at 58 pounds/acre on 30" beds along with a 22 oz. RoundUp PowerMaxx plus1 pt. Dual Magnum/acre application for existing and residual weed control. Final plant population was 125,000 plants/acre. No post-emergence herbicides were needed for weed control. Insect and disease pressure remained below treatment thresholds so no insecticide or fungicide applications were warranted. The field was furrow irrigated 3 times and harvested on September 2 yielding 77.4 bushels/acre adjusted to 13% moisture.

Lee County

The 12 acre field, soil type Alligator clay, was located northeast of Marianna and followed the previous year corn crop. According to soil test recommendations, the field received no fertilizer application. It was planted on June 21 with Asgrow 4632, CruiserMaxx seed treatment, at 58 pounds/acre on 38" twin row beds along with a 2 oz. Valor/acre application for residual weed control. Final plant population was 70,000 plants/acre. A post-emergence application of 1 qt. glyphosate plus 1 pt. Dual Magnum/acre on July 17 was used for weed control. The field required a 5.12 oz Brigade plus .5 lbs. acephate/acre application on September 6 for bean leaf beetle control. No fungicide application was warranted. The field was pivot irrigated 3 times and harvested on October 1 yielding 34.4 bushels/acre adjusted to 13% moisture.

Phillips County-1

The 27 acre field, soil types Memphis and Foley silt loam, was located southeast of Rondo and followed the previous year soybean crop. Following a fertilizer application of 0-40-60, according to soil test recommendations, the field was planted on April 25 with the convention variety Osage, CruiserMaxx seed treatment, at 60 pounds/acre on 38" twin row beds. Final plant population was 125,000 plants/acre. An early post-emergence application of .5 oz. Classic plus 1.4 oz. Pursuit plus 1 pt. Dual Magnum/acre on May 15 followed by a later post-emergence application of .3 oz. FirstRate on May 28 was used for weed control. The field required a 10 oz. Quadris Top/acre application on August 5 for Frogeye Leaf Spot control. The field was furrow irrigated 1 time and harvested on August 29 yielding 51.6 bushels/acre adjusted to 13% moisture.

Phillips County-2

The 34 acre field, soil types Henry silt loam and Lagrange sandy loam, was located north of Marvell and followed the previous year rice crop. Following a fertilizer application of 0-0-60, according to soil test recommendations, the field was planted on May 4 with Asgrow 4632, CruiserMaxx seed treatment, at 58 pounds/acre on 38" twin row beds along with a 1.5 pt. Boundary/acre application for residual weed control. Final plant population was 106,000 plants/acre. A post-emergence application of 22 oz. RoundUp PowerMaxx plus 1 pt. Dual Magnum/acre on June 20 was used for weed control. Insect and disease pressure remained below treatment thresholds so no insecticide or fungicide applications were warranted. The field was furrow irrigated 5 times and harvested on September 29 yielding 73.4 bushels/acre adjusted to 13% moisture.

Table 1. Agronomic information for the 2014 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	Asgrow 5233	33	Rice	FSI	54	90K	5/26	6/2	10-21	69
Clark	NK S49-F8	33	Soybean	FSNI	58	128K	5/22	6/2	10-19	56
Clay	Halo 5:26	39	Grain Sorghum	FSI	57	167K	5/22	5/28	10/24	52
Cross	Progeny 4211	43	Rice	ESI	60	140K	4/19	4/29	9/10	71
Desha	Armor 4744	51	Corn	ESI	54	128K	4/19	4/25	8/28	80
Jefferson	Delta Grow 4990 LL	64	Soybean	FSI	60	147K	5/24	5/31	10-20	61
Lawrence-1	Asgrow 4632	27	Grain Sorghum	FSI	60	148K	5/25	5/31	10/27	65
Lawrence-2	Leland	42	Soybean	FSI	60	153K	5/21	5/28	11/10	59
Lafayette	Pioneer 94Y80	50	Corn	ESI	58	125K	5/2	5/2	9/2	77
Lee	Asgrow 4632	12	Corn	FSI	58	70K	6/21	6/28	10/1	34
Phillips-1	Osage	27	Soybean	ESI	60	125K	4/25	5/2	8-29	52
Phillips-2	Asgrow 4632	34	Rice	ESI	58	106K	5/4	5/10	9-29	73
Prairie	PIO 95Y40	16	Corn	FSI	58	95K	5/26	5/31	10/24	56
Randolph	Asgrow 4533	40	Soybean	FSNI	67	85K	6/19	6/23	11/4	27
St. Francis	Terrel TV 49L29	46	Soybean	ESI	54	160K	4/12	4/22	9/25	59
White	NK S49-F8	61	Corn	FSI	58	125K	6/17	6/22	10/30	60
Average		**39**			**58**	**125K**	**5/17**	**5/23**	**10/7**	**59**

State Avg. – 50bu/ac

Table 2. Soil tests results, applied fertilize and soil classification for the 2014 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	6.8	84	218	8.6	0-0-60	Dewitt silt loam
Clark	6.2	21	130	7.2	0-80-130	Gurdon, Ouachita silt loam
Clay	6.3	86	240	14	0-0-60	Bosket fine sandy loam
Cross	7.7	106	244	10	0-60-90	Silt loam
Desha	6.9	94	220	9	0-0-60	McGehee, Rilla silt loam
Jefferson	5.9	70	182	5.6	0-23-90	McGehee silt loam, Perry clay
Lawrence-1	6.3	35	105	6.0	0-40-60	Bosket fine sandy loam
Lawrence-2	6.5	59	220	6.3	0-40-90	Patterson fine sandy loam
Lafayette	6.0	94	368	7.6	0-0-0	Billyhaw, Perry clay
Lee	6.4	96	374	6.2	0-0-0	Alligator clay
Phillips-1	6.6	54	188	3.8	0-40-60	Memphis, Foley silt loam
Phillips-2	7.1	78	216	4.8	0-0-60	Henry silt loam, LaGrange sandy loam
Prairie	7.6	29	253	11.5	0-40-60	Stuttgart silt loam
Randolph	7.0	32	68	6.8	0-60-90	Silt loam
St. Francis	6.4	118	502	9.8	0-0-0	Alligator, Sharkey & Earl clay
White	6.3	86	234	8.1	2 ton/A Chicken Litter	Calhoun silt loam

Table 3. Herbicide rates and timings for 2014 Soybean Research Verification Program fields by county.

	Herbicide	
County	**Burndown/Pre-emergence**	**Post-emergence**
Arkansas	3 oz Fierce	22oz/a Roundup PowerMax
Clark	1 qt Glyphosate plus 1.3 pts Metolachlor	1 qt/ac Glyphosate plus 1.5 pts/ac Flexstar
Clay	----------	1st:29oz/a Liberty plus 32oz/a Prefix 2nd:32oz/a Liberty
Cross	4oz/a Envive	32oz/a Roundup PowerMax plus 48oz/a Warrant
Desha	1 pt Dual Magnum	22 oz/ac Roundup PowerMax plus 1.3 pts/ac Metolochlor
Jefferson	1 qt/ac Glyphosate plus .5 oz/ac FirstShot (burndown) 2 oz/ac Zidua (pre)	30 oz/ac Liberty plus 1 pt/ac Flexstar
Lawrence-1	32oz/a Treflan	32oz/a Roundup PowerMax plus 32oz/a Prefix
Lawrence-2	24oz/a Metolachlor	1st:24oz/a Storm plus 40oz/a Warrant 2nd:16oz/a Select plus 13oz/a COC
Lafayette	22 oz/ac Roundup PowerMax plus 1 pt/ac Dual Magnum	22 oz/ac Roundup PowerMax
Lee	2 oz/ac Valor	1 qt/ac Glyphosate plus 1 pt/ac Dual Magnum
Phillips-1	----------	1st .5 oz/ac Classic plus 1.4 oz/ac Pursuit plus 1 pt/ac Dual Magnum 2nd .3 oz FirstRate
Phillips-2	1.5 pts/ac Boundary	22 oz/ac Roundup PowerMax plus 1 pt Dual Magnum
Prairie	----------	1st:32oz/a Roundup PowerMax plus 32oz/a Prefix 2nd:32oz/a Roundup PowerMax
Randolph	----------	1st:32oz/a Glyphosate 2nd:32oz/a Glyphosate
St.Francis	32oz/a Glyphosate plus 5oz/a Verdict	1st:29oz/a Liberty plus 32oz/a Prefix 2nd:32oz/a Liberty
White	----------	1st:24oz/a Ultra Blazer plus 24oz/a Dual Magnum 2nd:32oz/a Roundup PowerMax plus 16oz/a Dual Magnum

Table 4. Fungicide and insecticides applications in 2014 Soybean Research Verification fields by county.

County	Aerial Web Blight	Frogeye	Bollworm/Defoliators	Stink Bug
Arkansas	----------	----------	----------	4.27 oz.ac Brigade
Clark	----------	----------	2 oz/ac Belt	3.65 oz/ac Ravage
Clay	----------	----------	----------	----------
Cross	----------	14oz/a Quadris Top	---------	1.83oz/a Karate Z
Desha	----------	4.5 oz/ac Stratego YLD	----------	6.4 oz/ac Brigade
Jefferson	----------	----------	2 oz/ac Belt	4 oz/ac Brigade
Lawrence-1	----------	----------	----------	----------
Lawrence-2	----------	----------	----------	3.2oz/a Sniper
Lafayette	----------	----------	----------	----------
Lee	----------	----------	.5 lbs/ac acephate plus 5.12 oz/ac Brigade	----------
Phillips-1	----------	10 oz/ac Quadris Top	----------	----------
Phillips-2	----------	----------	----------	----------
Prairie	----------	12oz/a Quadris Top	----------	4.3oz/a Lambda Cy
Randolph	----------	----------	2oz/a Ravage	----------
St. Francis	----------	----------	----------	----------
White	----------	8oz/ac Quadris Top	----------	3.2oz/a Sniper

Table 5. Irrigation information and rainfall for the 2014 Soybean Research Verification Fields.

County	Irrigation Type	Number of Irrigations	Rainfall (in)
Arkansas	Furrow	3	16.5
Clark	Furrow	0	18
Clay	Furrow	7	14
Cross	Furrow	4	14
Desha	Furrow	6	18
Jefferson	Furrow	6	18.4
Lawrence-1	Furrow	6	12
Lawrence-2	Furrow	5	11
Lafayette	Furrow	3	19
Lee	Pivot	3	12
Phillips-1	Furrow	1	19
Phillips-2	Furrow	5	18.3
Prairie	Furrow	5	14
Randolph	N/A	N/A	13
St. Francis	Center Pivot	7	16
White	Furrow	6	11

Table 6. Flowmeter information for the 2014 Soybean Research Verification Fields

Clay	40 acres	Irrigation Number	7
Rain Total	14.13 in	Initial Reading	810764
Total ac/in		Ending Reading	941329
12.02		Difference	130565
Average ac/in		Gallons Used	13056500
1.72		Acre inches	12.02

Cross	43 acres	Irrigation Number	4
Rain Total	14.23 in	Initial Reading	88080
Total ac/in		Ending Reading	123172
8.16		Difference	35092
Average ac/in			
2.04		Acre inches	8.16

Lawrence	42 acres	Irrigation Number	5
Rain Total	11.33 in	Initial Reading	0
Total ac/in		Ending Reading	45,455
10.82		Difference	45,455
Average ac/in			
2.16		Acre inches	10.82

Prairie	16 acres	Irrigation Number	5
Rain Total	14.0 in	Initial Reading	77120
Total ac/in		Ending Reading	94694
10.98		Difference	17574
Average ac/in			
2.20		Acre inches	10.98

White - 10	36 acres	Irrigation Number	6
Rain Total	11.4 in	Initial Reading	123172
Total ac/in		Ending Reading	159570
10.11		Difference	36398
Average ac/in			
1.69		Acre inches	10.11

White - 8	25 acres	Irrigation Number	6
Rain Total	11.4 in	Initial Reading	99778
Total ac/in		Ending Reading	125106
10.13		Difference	25328
Average ac/in			
1.69		Acre inches	10.13

ECONOMIC ANALYSIS

This section provides information on production costs and returns for the 2014 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 16 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 2014 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 simple averages across all SRVP fields. Operating costs per acre range from $181.97/acre for Lawrence County-Rice to $366.11/acre for Clark County, while operating costs per bushel range from $2.46/bu for Lafayette County to $8.85/bu for Randolph County. Total costs per acre (operating plus fixed) range from $223.99/acre for Lawrence County-Rice to $416.76/acre for Clark County, and total costs per bushel range from $3.05/bu for Lafayette County to $10.80/bu for Randolph County. Returns above operating costs range from $63.80/acre for Randolph County to $676.96/acre for Lafayette County, and returns above total costs range from $11.00 for Randolph County to $631.56/acre for Lafayette 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 simple averages across all SRVP fields. The average soybean yield for the 2014 SRVP was 59.38 bushels, but ranged from 27.0 bushels/acre for Randolph County to 79.6 bushels/acre in Desha County. The Arkansas average cash price for the 2014 SRVP was estimated from January through October 31 daily price quotes of the cash market price or cash booking price to be $11.21/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 2014 Arkansas crop booking prices on January 2 and switched to cash market quotes for the 2014 crop on October 31.

The average operating expense for the 16 SRVP fields was $277.22/acre (Table 8). Seed accounted for the largest share of operating expenses on average (25.24 percent) followed by fertilizers & nutrients (19.58 percent), herbicides (13.09 percent), diesel fuel (8.06 percent), and irrigation energy costs (7.26 percent),. The average return above operating expenses for the 16 fields was $388.48/acre and ranged from $63.80/acre for Randolph County to $676.96/acre for Lafayette County. The average return above total specified expenses for the 16 fields was $327.96/acre, and ranged from $11.00 for Randolph County to $631.56/acre for Lafayette County.

Table 7. Operating Costs, Total Costs, and Returns for Soybean Research Verification Program, 2014

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	332.18	4.85	435.15	78.40	410.57	356.75	6.00
Clark	366.11	6.58	257.17	50.65	416.76	206.52	7.50
Clay	274.66	5.28	308.26	70.69	345.35	237.57	6.64
Cross	319.21	4.50	476.70	44.48	363.69	432.22	5.12
Desha	303.57	3.81	588.74	82.00	385.58	506.74	4.84
Jefferson	347.67	5.73	332.78	56.73	404.40	276.05	6.66
Lafayette	190.69	2.46	676.96	45.40	236.09	631.56	3.05
Lawrence-R	181.97	2.80	546.68	42.02	223.99	504.66	3.45
Lawrence-W	269.46	4.57	391.93	47.37	316.83	344.56	5.37
Lee	183.77	5.34	201.85	72.91	256.68	128.94	7.46
Phillips-1	276.99	5.37	301.44	61.94	338.94	239.50	6.57
Phillips-2	285.67	3.89	537.15	63.66	349.33	473.48	4.76
Prairie	287.48	5.13	340.28	53.79	341.28	286.48	6.09
Randolph	238.87	8.85	63.80	52.80	291.67	11.00	10.80
St. Francis	229.45	3.89	431.94	82.43	311.87	349.52	5.29
White	347.75	5.80	324.85	63.07	410.82	261.78	6.85
Simple Average	**277.22**	**4.93**	**388.48**	**60.52**	**337.74**	**327.96**	**6.03**

Table 8. Summary of Revenue and Expenses per Acre, Soybean Research Verification Program, 2014 (1)

	Arkansas	Clark	Clay	Cross	Desha	Jefferson	Lafayette	Lawrence-Rice
Receipts								
Yield (bu.)	68.5	55.6	52.0	71.0	79.6	60.7	77.4	65.0
Price	11.21	11.21	11.21	11.21	11.21	11.21	11.21	11.21
Total Crop Revenue	**767.32**	**623.28**	**582.92**	**795.91**	**892.32**	**680.45**	**867.65**	**728.65**
Seed	70.74	75.98	68.97	75.98	70.74	72.60	70.74	78.60
Fertilizers & Nutrients	106.60	169.00	23.40	66.30	39.00	84.50	0.00	0.00
Herbicides (2)	25.43	22.10	47.04	38.29	27.25	61.62	19.50	23.18
Insecticides (2)	3.74	26.18	0.00	5.00	13.40	17.61	0.00	0.00
Other Chemicals (2)	0.00	0.00	0.00	30.41	0.00	0.00	0.00	0.00
Custom Applications	19.00	0.00	0.00	25.00	7.00	14.00	14.00	6.00
Diesel Fuel (3)	37.33	23.64	26.68	16.22	33.41	23.68	16.31	12.26
Repairs & Maintenance	23.76	19.59	21.35	13.83	24.23	16.75	13.60	13.37
Irrigation Energy Costs	4.44	0.00	52.42	12.65	44.93	18.97	22.47	18.97
Labor, Field Activities	13.31	7.54	12.31	7.38	13.71	11.64	7.34	6.08
Other Inputs & Fees, Pre-harvest	10.73	8.17	9.49	10.41	10.00	11.13	7.40	7.26
Post-harvest Expenses	17.11	13.90	13.00	17.75	19.90	15.18	19.35	16.25
Total Operating Expenses	**332.18**	**366.11**	**274.66**	**319.21**	**303.57**	**347.67**	**190.69**	**181.97**
Returns to Operating Expenses	**435.15**	**257.17**	**308.26**	**476.70**	**588.74**	**332.78**	**676.96**	**546.68**
Capital Recovery & Fixed Costs	78.40	50.65	70.69	44.48	82.00	56.73	45.40	42.02
Total Specified Expensesz	**410.57**	**416.76**	**345.35**	**363.69**	**385.58**	**404.40**	**236.09**	**223.99**
Returns to Specified Expenses	**356.75**	**206.52**	**237.57**	**432.22**	**506.74**	**276.05**	**631.56**	**504.66**
Operating Expenses/Yield Unit	4.85	6.58	5.28	4.50	3.81	5.73	2.46	2.80
Total Expenses/Yield Unit	6.00	7.50	6.64	5.12	4.84	6.66	3.05	3.45

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 8 (Continued). Summary of Revenue and Expenses per Acre, Soybean Research Verification Program, 2014 (1)

Receipts	Lawrence -Wright	Lee	Phillips-1	Phillips-2	*Prairie*	*Randolph*	St. Francis	White	Simple Average
Yield (bu.)	59.0	34.4	51.6	73.4	56.0	27.0	*59.0*	60.0	59.38
Price	11.21	11.21	11.21	11.21	11.21	11.21	11.21	11.21	11.21
Total Crop Revenue	**661.39**	**385.62**	**578.44**	**822.81**	**627.76**	**302.67**	**661.39**	**672.60**	**665.70**
Seed	39.00	75.98	39.00	75.98	75.98	87.77	65.34	75.98	69.96
Fertilizers & Nutrients	55.90	0.00	84.24	39.00	44.20	66.30	0.00	90.00	54.28
Herbicides (2)	71.01	29.22	38.43	33.43	22.50	8.00	62.16	51.61	36.30
Insecticides (2)	3.36	9.23	0.00	0.00	11.66	5.46	0.00	3.36	6.19
Other Chemicals (2)	0.00	0.00	21.72	0.00	26.06	0.00	0.00	17.38	5.97
Custom Applications	7.00	0.00	7.00	18.00	20.00	6.00	7.00	26.00	11.00
Diesel Fuel (3)	16.02	15.99	28.21	24.73	21.42	24.20	12.07	25.49	22.35
Repairs & Maintenance	15.04	18.81	20.45	19.70	15.65	20.68	17.95	17.47	18.26
Irrigation Energy Costs	29.95	17.06	3.16	37.44	15.81	0.00	39.81	3.75	20.11
Labor, Field Activities	8.10	4.81	12.33	9.41	10.45	8.33	5.38	10.58	9.29
Other Inputs & Fees, Pre-harvest	9.33	4.06	9.55	9.62	9.76	5.39	49.8	11.14	8.65
Post-harvest Expenses	14.75	8.60	12.90	18.35	14.00	6.75	14.75	15.00	14.85
Total Operating Expenses	**269.46**	**183.77**	**276.99**	**285.67**	**287.48**	**238.87**	**229.45**	**347.75**	**277.22**
Returns to Operating Expenses	**391.93**	**201.85**	**301.44**	**537.15**	**340.28**	**63.80**	**431.94**	**324.85**	**388.48**
Capital Recovery & Fixed Costs	47.37	72.91	61.94	63.66	53.79	52.80	82.43	63.07	60.52
Total Specified Expenses[z]	**316.83**	**256.68**	**338.94**	**349.33**	**341.28**	**291.67**	**311.87**	**410.82**	**337.74**
Returns to Specified Expenses	**344.56**	**128.94**	**239.50**	**473.48**	**286.48**	**11.00**	**349.52**	**261.78**	**327.96**
Operating Expenses/Yield Unit	4.57	5.34	5.37	3.89	5.13	8.85	3.89	5.80	4.93
Total Expenses/Yield Unit	5.37	7.46	6.57	4.76	6.09	10.80	5.29	6.85	6.03