



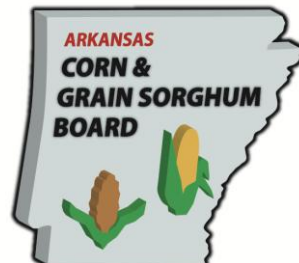
**DIVISION OF AGRICULTURE
RESEARCH & EXTENSION**

University of Arkansas System

**2011
University of Arkansas
Corn and Grain Sorghum Research
Verification Program**

The Corn and Grain Sorghum Research Verification Program is funded by Arkansas corn and grain sorghum producers through checkoff monies administered by the Arkansas Corn and Grain Sorghum Promotion Board.

University of Arkansas
Cooperative Extension Service
Agriculture Experiment Station
U.S. Department of Agriculture
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CORN & GRAIN SORGHUM RESEARCH VERIFICATION PROGRAM, 2011

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INTRODUCTION

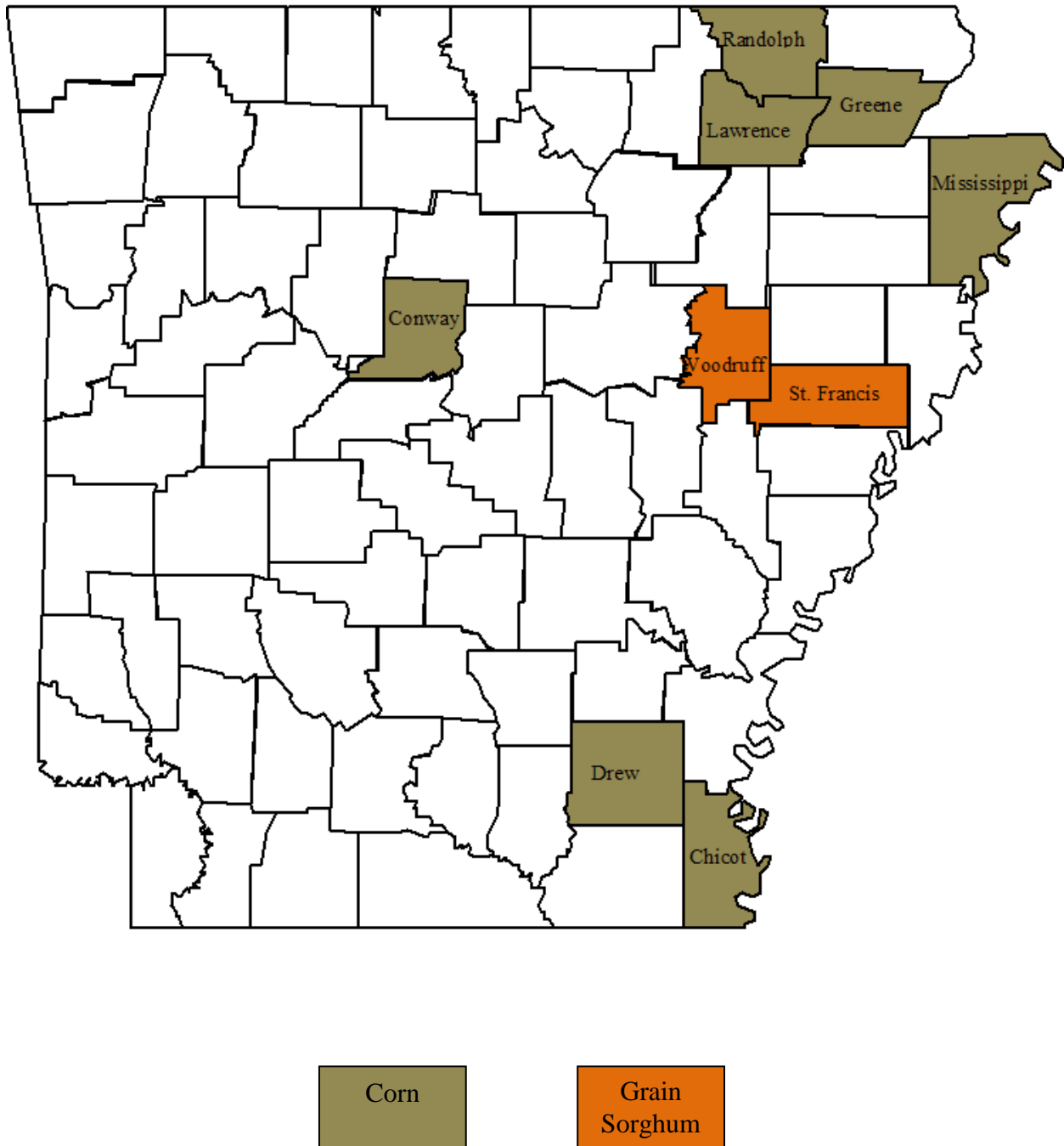
The 2011 growing season was the twelfth year for the Corn and Grain Sorghum Research Verification Program (CGSRVP). The CGSRVP is an interdisciplinary effort between growers, county Extension agents, Extension specialists, and researchers. The CGSRVP is an on-farm demonstration of all the research-based recommendations required to grow corn and grain sorghum profitably in Arkansas. The specific objectives of the program are:

1. To verify research-based recommendations for profitable corn and grain sorghum production in all corn and grain sorghum producing areas of Arkansas.
2. To develop a database for economic analysis of all aspects of corn and grain sorghum production.
3. To demonstrate that consistently high yields of corn and grain sorghum can be produced economically with the use of available technology and inputs.
4. To identify specific problems and opportunities in Arkansas corn and grain sorghum production for further investigation.
5. To promote timely implementation of cultural and management practices among corn and grain sorghum growers.
6. To provide training and assistance to county agents with limited expertise in corn and grain sorghum production.

Each CGSRVP 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. Eight growers were enrolled in the CGSRVP in the spring of 2011, six corn and two grain sorghum fields. The fields were located on commercial farms ranging in size from 25 to 62 acres for corn fields, and 9 to 26.4 acres for the grain sorghum fields. The average field size was 35.7 acres for the corn fields and 17.7 acres for the grain sorghum fields.

The 2011 CGSRVP corn fields were in Chicot, Conway, Drew, Greene, Lawrence/Randolph and Mississippi Counties; and grain sorghum fields were in St. Francis and Woodruff Counties. Four different corn hybrids (Armor 1655PRO, DeKalb DKC 64-83, DeKalb DKC 66-96 and Pioneer 1184HR) and two grain sorghum hybrids (Pioneer 84G62 and Pioneer 83G66) were planted. Management decisions were based on field history, soil test results, hybrids, and data collected from each individual field during the growing season.

Figure 1. Location of 2011 Corn and Grain Sorghum Research Verification Fields



CORN FIELD REVIEWS

Chicot County

The Chicot County corn research verification field was located in the south part of the county just south of Eudora. The field was 26.5 acres and the previous crop was soybeans. The soil type was Bowdre Silty Clay Loam. The field was tilled and hipped in the fall. A preplant fertilizer of 0-50-50-0-0 was applied on March 20 and cultivated in. The field was planted on March 21 with DeKalb DKC 66-96 at 34,000 seeds per acre with 38 inch row spacing. A starter fertilizer of 10-34-0 was applied at planting at the rate of 3 gallons per acre. The final plant stand was 31,950 plants per acre. 72 gallons of UAN 32% (252 units) was applied on April 10. Total fertilizer for this field was 253-53-50-0-0. On April 14, 3.6 pints of Halex GT was applied by the producer for weed control. Furrow irrigation started on May 14 and the field was irrigated 5 times. The field was harvested on August 6 at 15.4% moisture and yielded 201.5 bushels per acre adjusted to 15.5% moisture.

Conway County

The Conway County corn research verification field was located in the southeastern part of the county near Morrilton. The field was 25 acres and the previous crop was soybeans. The soil type was Gallion Silt Loam. 2 tons of chicken litter was applied in the fall and the field was subsoiled. In the spring, a mixed fertilizer of 99-46-105-0-10 was applied by the producer and the field was field cultivated. On April 6, 100 pounds of ammonium sulfate was applied and a do-all was run over the field. The field was planted on April 6 with DeKalb DKC 64-83 at 33,500 seed per acre with 30 inch row spacing. The final plant stand was 31,800 plants per acre. 250 pounds of Urea (115 units) plus 50 pounds of ammonium sulfate (11 units of N) was applied by the producer on May 10. Total fertilizer for this field was 245-46-105-36-10. The field was cultivated to aeriate the soil due to previous saturation from heavy rains. The producer sprayed the field for weeds on May 10 with 1.5 quarts of Atrazine, 1 quart of glyphosate plus 1.25 ounces of Resolve Q. Pivot irrigation started on May 17 and the field was irrigated 16 times. The field was harvested on August 23 at 15.5% moisture and yielded 197.7 bushels per acre.

Drew County

The Drew County corn research verification field was located in the north eastern part of the county near Winchester. The field was 40.9 acres and the previous crop was soybeans. The soil type was McGehee Silt Loam. A mixed fertilizer of 27-45-113-24-0 was custom applied on April 6 and the field was bedded, then a do-all knocked the tops off the beds. The field was planted on April 7 with DeKalb DKC 66-96 at 34,000 seeds per acre with 38 inch twin row spacing. Stand counts were done and it was noticed in the field that the planter planted several double and triple seeds. After taking a stand count the final stand was 37,200 plants per acre. On May 6 a custom application of 400 pounds of Urea (184 units) was applied. The producer sprayed the field with 1.5 quarts of Atrazine, 1 quart of glyphosate plus 1.5 pints of Dual for morningglories and grass on May 12. Furrow irrigation started on May 30 and the field was irrigated 8 times. A pretassel application of 100 pounds of Urea (46 units) was applied on June 6. Total fertilizer for the field was 257-45-113-24-0. The field was harvested on August 9 at 18.4% moisture and averaged 227.4 bushels per acre adjusted to 15.5%.

Greene County

The Greene County corn research verification field was located in the southern part of the county just south of Paragould. The field was 26.8 acres and the previous crop was soybeans. The soil type was Calloway Silt Loam. A mixed fertilizer of 80-0-115-24-8 was applied on April 18, and then the field was cultivated and hipped. The field was planted on April 18 with DeKalb DKC 66-96 at 34,500 seeds per acre with 30 inch row spacing. The final plant stand was 34,300 plants per acre. On May 18 the producer applied 3.6 pints of Halex GT plus 1 quart of Atrazine for weed control. 280 pounds of Urea (129 units) was applied on May 18 at the V5 growth stage. Furrow irrigation started on June 2 and the field was irrigated 11 times. On June 13 a severe thunderstorm passed over the field. Winds of 70 miles per hour were recorded for 15 minutes. The field was scouted the next day, and there was severe greensnap in the field. It was estimated that 25% of the plants had some kind of damage. The field was supposed to receive a pretassel application of nitrogen at this time, and it was recommended to not apply that application. Total fertilizer for the field was 209-0-115-24-8. Another storm passed over the field on June 28, and there was some more greensnap just above the ear from this storm. The field was harvested on September 8 at 15.3% moisture and yielded 173.4 bushels per acre adjusted to 15.5% moisture.

Lawrence/Randolph County

The Lawrence/Randolph County corn research verification field was located on the line of Lawrence and Randolph Counties. Both County Agents assisted with this field. The field was located just east of Highway 67. The field was 32.8 acres and the previous crop was peanuts. The soil type was Bosket Fine Sandy Loam. This field was late planted due to the early rains and floods. The field was disked on May 10 and a mixed fertilizer of 80-80-110-20-0 was applied on May 12. The field was bedded up with a bedder/roller and planted on May 12 with Armor 1655PRO at 33,000 seeds per acre. The final plant stand was 32,800 plants per acre. On June 1, 275 pounds of Urea (127 units) was custom applied. The field was sprayed on June 3 with 3.6 pints of Halex GT plus 1 quart of Atrazine for pigweeds and grass. Furrow irrigation started on June 8 and the field was irrigated 6 times. On June 28, a severe thunderstorm passed over this field. The field was scouted a couple of days later and it was estimated that 15% of the plants had greensnap. The field was supposed to receive a pretassel application of nitrogen at the time, and it was recommended to not apply that application. Total fertilizer for the field was 207-80-110-20-0. The field was harvested on September 17 at 18.0% moisture and yielded 146.3 bushels per acre adjusted to 15.5% moisture.

Mississippi County

The Mississippi County corn research verification field was located in the western part of the county just south of Manila. The field was 62.0 acres and the previous crop was soybeans. The soil type was Routon-Dundee-Crevasse Complex. The field was disked April 1 and hipped on April 2. The field was planted on April 2 with Pioneer 1184HR at 32,500 seeds per acre with 38 inch row spacing. The final plant population was 30,800 plants per acre. On April 19, a mixed fertilizer of 85-0-80-21-0 was custom applied. The producer applied 1 quart of Atrazine, 1 quart of Glyphosate plus 1 ounce of Resolve Q for weeds on April 19. The field received some high winds and blowing sand that caused some damage to the small plants on April 20. This early season stress likely led to a lower than anticipated yield. 275 pounds of Urea (127 units) was custom applied on May 12. Another application of 1 quart of Atrazine plus 1 quart of glyphosate was applied on May 13. Pivot irrigation was started on May 20 and the field was irrigated 12 times. A pre tassel application of 100 pounds of Urea (46 units) was applied on June 8. The total fertilizer for the field was 258-0-80-21-0. The field was harvested on August 26 at 16.0% moisture and yielded 132.9 bushels per acre adjusted to 15.5% moisture.

GRAIN SORGHUM FIELD REVIEWS

St Francis County

The St Francis County non irrigated grain sorghum research verification field was located in the western part of the county south of Widener. The field was approximately 25 acres when the field was planted, but due to flooding, only 9 acres was harvested. The previous crop was soybeans. The soil type was Dundee Fine Sandy Loam. The field was disked and cultivated on March 15. An herbicide application of 1 quart of glyphosate plus 1.5 pints of Dual was applied on March 25. A mixed fertilizer of 29-48-86-0-0 was custom applied on April 8 and the field was planted with Pioneer 83G66 at 4.5 pounds per acre with 19 inch row spacing. The final plant population was 55,000 plants per acre. On May 10, 165 pounds of Urea (76 units) was custom applied. Total fertilizer for the field was 105-48-86-0-0. 2 quarts of Atrazine was custom applied on May 10 for pigweeds. The field was sprayed with 1 ounce of Karate on June 22 for sorghum midge control. The field was harvested on August 11 at 16.3% moisture and yielded 101.3 bushels per acre adjusted to 14% moisture.

Woodruff County

The Woodruff County grain sorghum research verification field was located in the southern part of the county near Cotton Plant. The field was 26.4 acres and the previous crop was soybeans. The soil type was a Foely-Bonn Complex. An application of glyphosate and Dicamba was used as a burn down on March 25, then a bedder and conditioner was used on April 10. The field was planted on April 10 with Pioneer 84G62 at 6 lbs per acre with 38 inch row spacing. The final plant population was 78,400 plants per acre. Parallel was applied at 1.5 pints per acre on April 10 by the producer for grass control. On April 15, Urea and Triple Super Phosphate was applied with a variable rate applicator. The average fertilizer applied at this time was 87 pounds of Urea (40 units) and 253 pounds of Triple Super Phosphate (116 units). Another application of Urea and potassium was variably applied on May 20 at the V6 growth stage. The average fertilize applied at this time was 250 pounds of Urea (115 units) and 207 pounds of potassium (124 units). Total fertilizer for the field was 155-116-124-0-0. On May 30, the producer applied 1.5 qts of Atrazine for broadleaf weed control. Furrow irrigation was started on June 1 and the field was irrigated 4 times. An application of 1 ounce of Baythroid was applied by the producer on July 14 for head worms in the field. The field was harvested on August 29 at 13.6% moisture and yielded 108.3 bushels per acre adjusted to 14% moisture.

Table 1. Agronomic information for the 2011 Corn Research Verification Fields.

County	Hybrid	Field Size (ac)	Row Spacing (in)	Previous Crop	Planting Population (seeds/ac)	Plant Stand (plants/ac)	Planting Date	Emergence Date	Harvest Date	Yield (bu/ac)
Chicot	DeKalb DKC 66-96 ¹	26.5	38	Soybeans	34,000	31,600	March 21	March 30	August 6	201.5
Conway	DeKalb DKC 64-83 ¹	25	30	Soybeans	33,500	31,900	April 6	April 14	August 23	197.7
Drew	DeKalb DKC 66-96 ¹	40.9	38 twin	Soybeans	34,000	37,200	April 7	April 15	August 9	227.4
Greene	DeKalb DKC 66-96 ¹	26.8	30	Soybeans	34,500	34,300	April 18	April 27	September 8	173.8
Lawrence/ Randolph	Armor 1655PRO ¹	32.8	30	Peanuts	33,000	32,800	May 12	May 22	September 17	146.3
Mississippi	Pioneer 1184HR ²	62.0	38	Soybeans	32,500	30,800	April 2	April 10	August 26	132.9
Average	---	35.7	---	---	33,500	33,100	April 10	April 19	August 19	179.9

Traits – ¹Genuity VT Triple Pro

²Herculex, Roundup Ready Corn 2, Liberty Link

Table 2. Agronomic information for the 2011 Grain Sorghum Research Verification Fields.

County	Hybrid	Field Size (ac)	Row Spacing (in)	Previous Crop	Planting Population (lbs/ac)	Plant Stand (plants/ac)	Planting Date	Emergence Date	Harvest Date	Yield (bu/ac)
St Francis	Pioneer 83G66	9.0	19	Soybeans	4.5	55,000	April 8	April 14	August 11	101.3
Woodruff	Pioneer 84G62	26.4	38	Soybeans	6	78,400	April 10	April 17	August 29	108.3

Table 3. Soil test results, applied fertilizer, total fertilizer and soil classification for the 2011 Corn Research Verification Fields.

County	Soil Test (lb/ac)					Applied Fertilizer N-P-K-S-Zn ¹ (lb/ac)			Total Applied Fertilizer N-P-K-S-Zn	Soil Classification
	pH	P	K	S	Zn	Preplant	Sidedress	Pre Tassel		
Chicot	7.0	58	342	26	4.8	1-54-50-0-0	252-0-0-0-0	0-0-0-0-0	253-54-50-0-0	Bowdre Silty Clay Loam
Conway	6.9	80	196	26	6.0	120-46-105-24-10	126-0-0-12-0	0-0-0-0-0	246-46-105-36-10	Gallion Silt Loam
Drew	6.2	56	114	28	7.3	27-45-113-24-0	184-0-0-0-0	46-0-0-0-0	257-45-113-24-0	McGehee Silt Loam
Greene	6.8	81	141	15	3.8	80-0-115-24-8	129-0-0-0-0	0-0-0-0-0	209-0-115-24-8	Calloway Silt Loam
Lawrence/ Randolph	6.8	64	114	16	21.2	80-80-110-20-0	127-0-0-0-0	0-0-0-0-0	207-80-110-20-0	Bosket Fine Sandy Loam
Mississippi	5.6	117	238	13	9.7	85-0-80-21-0	127-0-0-0-0	46-0-0-0-0	258-0-80-21-0	Routon-Dundee-Crevasse

Table 4. Soil test results, applied fertilizer, total fertilizer and soil classification for the 2011 Grain Sorghum Research Verification Field.

County	Soil Test (lb/ac)					Applied Fertilizer N-P-K-S-Zn ¹ (lb/ac)		Total Applied Fertilizer N-P-K-S-Zn	Soil Classification
	pH	P	K	S	Zn	Preplant	Sidedress		
St. Francis	6.0	132	624	22	10.8	29-48-86-0-0	76-0-0-0-0	105-48-86-0-0	Dundee Fine Sandy Loam
Woodruff	6.4	25	105	18	11.2	40-116-0-0-0	115-0-124-0-0	155-116-124-0-0	Foley-Bonn Complex

¹ N=nitrogen, P= phosphorus, K=potassium, S=sulfur and Zn=zinc.

Table 5. Pesticide information for the 2011 Corn Research Verification fields.

County	Herbicide	Insecticide	Fungicide
Chicot	3.6 pints Halex GT + 1 quart atrazine - April 14	None	None
Conway	1.5 quarts atrazine +1 quart glyphosate + 1.25 ounces of Reslove Q - May 10	None	None
Drew	0.75 quarts glyphosate – April 7 1.5 quart atrazine + 1.5 pint Dual + 1 quart glyphosate – May 12	None	None
Greene	3.6 pints Halex GT + 1 quart atrazine – May 18	None	None
Lawrence/ Randolph	3.6 pints Halex GT + 1 quart atrazine – June 3	None	None
Mississippi	1 qt atrazine + 1 qt glyphosate + 1 ounce Resolve Q– April 19 1 qt atrazine + 1 qt glyphosate – May 13	None	None

Table 6. . Pesticide information for the 2011 Grain Sorghum Research Verification field.

County	Herbicide	Insecticide	Fungicide
St. Francis	1 quart glyphosate + 1.5 pint Dual – March 25 2 quarts atrazine – May 10	1 ounce Karate- June 22	None
Woodruff	1 quart glyphosate + 8 ounces dicamba – March 25 1.5 pints Parallel – April 10 1.5 quarts atrazine – May 30	1 ounce Baythroid – August 14	None

Table 7. Irrigation information and rainfall for the 2011 Corn Research Verification Fields.

County	Irrigation Type	Number of Irrigations	Rainfall (in)*
Chicot	Furrow	5 times	9.7
Conway	Pivot	16 times	23.4
Drew	Furrow	8 times	9.5
Greene	Furrow	11 times	24.8
Lawrence/ Randolph	Furrow	6 times	13.8
Mississippi	Pivot	12 times	24.9

Table 8. Irrigation information and rainfall for the 2011 Grain Sorghum Research Verification Fields.

County	Irrigation Type	Number of Irrigations	Rainfall (in)*
St. Francis	Non Irrigated	None	26.1
Woodruff	Furrow	4 times	17.9

*Rainfall amount measured in verification field by weather stations and represents rainfall from planting until harvest.

Economic Analysis – Dr. Archie Flanders

This section provides information on production costs for the 2011 CGSRVP. Records of field operations on each field provided the basis for estimating these costs. The field records were compiled by the CGSRVP coordinator, county Extension agents, and cooperators. Production data from the 8 fields (6 corn and 2 grain sorghum) 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 expenses 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 2011 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.

Ownership 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, total costs, costs per bushel, and returns are presented in Table 9. Costs in this report do not include land costs, management, or other expenses and fees not associated with production. Budget summaries for corn are presented in Table 10. A summary for the grain sorghum fields is in Table 11. Price received for corn of \$6.75/bu. is the estimated Arkansas annual average based on the forecasted U.S. price from the U.S.D.A. as of November 2011. The corresponding average price for grain sorghum is \$5.94/bu. Average corn yield is 179.9 bu./acre and the average grain sorghum yield is 104.8 bu./acre.

Average operating costs for corn in Table 9 are \$515.98 per acre. Table 10 indicates that fertilizer was the largest expense category at \$198.25/acre, or 38% of total operating costs. Seed costs average \$108.88, and irrigation energy costs average \$44.98 per acre.

With average yield of 179.9 bu./acre, average operating costs are \$2.93/bu. Operating costs range from a low of \$438.46 in Mississippi County to a high of \$581.95 in Conway County. Returns to operating costs average \$698.47 per acre with a low of \$458.61 in Mississippi County and a high of \$972.50 in Drew County. Average fixed costs are \$63.68 which leads to average total costs of \$579.65 per acre. Returns to total costs average \$634.90 per acre with a low of \$402.86 in Mississippi County and a high of \$924.80 in Drew County. Total specified costs average \$3.29/bu.

Table 9. Operating Costs, Total Costs¹, Costs per Bushel, and Returns for 2011 CGSRVP.

County	Operating Costs	Operating Costs per Bushel	Returns to Operating Costs	Total Fixed Costs	Total Costs ¹	Returns to Total Costs	Total Costs per Bushel
Corn							
Chicot	493.75	2.45	866.37	68.88	562.63	797.49	2.79
Conway	581.95	2.94	752.53	96.99	678.94	655.54	3.43
Drew	562.45	2.47	972.50	47.70	610.15	924.80	2.68
Greene	509.21	2.93	663.94	58.86	568.08	605.07	3.27
Lawrence	510.04	3.49	477.49	53.87	563.91	423.62	3.85
Mississippi	438.46	3.30	458.61	55.76	494.22	402.86	3.72
Average	515.98	2.93	698.57	63.68	579.65	634.90	3.29
Grain Sorghum							
St. Francis	258.56	2.55	343.17	30.52	289.08	312.64	2.85
Woodruff	362.30	3.35	281.00	37.44	399.75	243.56	3.69
Average	310.43	2.95	312.08	33.98	344.41	278.10	3.27

¹Does not include land costs, management, or other expenses and fees not associated with production.

The two grain sorghum fields have average operating costs of \$310.43 per acre which is \$2.95/bu. The field in St. Francis was not irrigated and received much less fertilizer than the irrigated field in Woodruff County. Despite far fewer inputs, the St. Francis field had a yield of 101.3 bu./acre, only 7.0 bu./acre less than the Woodruff County field. Across both fields, fertilizer was 53% of operating costs with an average expense of \$165.14 per acre in Table 11. Returns to operating costs are \$312.08 per acre. Fixed costs are \$33.98, and this leads to total costs of \$344.41, or \$3.27/bu. Returns to total specified costs average \$278.10 per acre.

Table 10. Summary of Revenue and Expenses per Acre Corn Research Verification fields 2011.

Receipts	County						Average
	Chicot	Conway	Drew	Greene	Lawrence/ Randolph	Mississippi	
Yield (bu)	201.5	197.7	227.4	173.8	146.3	132.9	179.9
Price (\$/bu)	6.75	6.75	6.75	6.75	6.75	6.75	6.75
Total Crop Revenue	1360.13	1334.48	1534.95	1173.15	987.53	897.08	1214.55
Operating Expenses							
Seed	110.50	108.88	110.50	110.50	107.25	105.63	108.88
Fertilizer	175.24	238.22	219.06	171.99	211.50	173.48	198.25
Chemicals	23.24	17.86	32.32	23.24	23.24	26.05	24.33
Custom Applications	0.00	0.00	18.50	11.50	17.25	18.50	10.96
Fuel & Lube	24.73	19.33	13.02	10.48	13.36	11.57	15.42
Repairs & Maintenance	17.87	30.86	12.78	14.45	15.31	18.44	18.29
Irrigation Energy Costs	34.37	62.65	41.25	75.62	41.25	14.75	44.98
Labor, Field Activities	9.33	7.76	4.14	3.87	4.55	3.98	5.61
Other Inputs & Fees, Pre-harvest	13.83	13.35	15.38	14.55	14.89	10.24	13.71
Post-harvest Expenses	84.63	83.03	95.51	73.00	61.45	55.82	75.57
Total Operating Expenses	493.75	581.95	562.45	509.21	510.04	438.46	515.98
Returns to Operating Expenses	866.37	752.53	972.50	663.94	477.49	458.61	698.57
Capital Recovery & Fixed Costs	68.88	96.99	47.70	58.86	53.87	55.76	63.68
Total Specified Expenses¹	562.63	678.94	610.15	568.08	563.91	494.22	579.65
Returns to Specified Expenses	797.49	655.54	924.80	605.07	423.62	402.86	634.90
Operating Expenses/bu	2.45	2.94	2.47	2.93	3.49	3.30	2.93
Total Expenses/bu	2.79	3.43	2.68	3.27	3.85	3.72	3.29

¹Does not include land costs, management, or other expenses and fees not associated with production.

Table 11. Summary of Revenue and Expenses per Acre for the 2011 Grain Sorghum Research Verification fields.

Receipts	County		
	St. Francis	Woodruff	Average
Yield (bu)	101.3	108.3	104.8
Price (\$/bu)	5.94	5.94	5.94
Total Crop Revenue	601.72	643.30	622.51
Operating Expenses			
Seed	14.67	19.56	17.12
Fertilizer	122.66	207.61	165.14
Chemicals	34.66	35.16	34.91
Custom Applications	31.25	11.50	21.38
Fuel & Lube	12.24	10.52	11.38
Repairs & Maintenance	9.79	10.08	9.94
Irrigation Energy Costs	0.00	27.50	13.75
Labor, Field Activities	3.69	3.57	3.63
Other Inputs & Fees, Pre-harvest	6.30	11.91	9.10
Post-harvest Expenses	23.30	24.91	24.10
Total Operating Expenses	258.56	362.30	310.43
Returns to Operating Expenses	343.17	281.00	312.08
Capital Recovery & Fixed Costs	30.52	37.44	33.98
Total Specified Expenses¹	289.08	399.75	344.41
Returns to Specified Expenses	312.64	243.56	278.10
Operating Expenses/bu	2.55	3.35	2.95
Total Expenses/bu	2.85	3.69	3.27

¹Does not include land costs, management, or other expenses and fees not associated with production.