

Economic Analysis of Corn and Grain Sorghum Production Practices

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Table 1. Selected Economic Information for the 2008 CGSRVP.							
<i>County</i>	Total Direct Expenses ¹	Break-even Price With Direct Costs ²	Total Fixed Costs ³	Total Direct and Fixed Costs ⁴	Break-even Price With Total Costs ⁵	Break-even Price With Land Rent Costs ⁶	Returns Above Total Costs and Land Rent Costs ⁷
	(\$/A)	(\$/Bu)	(\$/A)	(\$/A)	(\$/Bu)	(\$/Bu)	(\$/A)
Corn							
Conway	\$421.03	\$1.80	\$ 97.55	\$ 518.58	\$2.22	\$2.95	\$360.83
Cross	\$510.03	\$2.99	\$ 61.57	\$ 571.60	\$3.36	\$4.47	\$68.57
Independence	\$588.64	\$2.91	\$ 54.92	\$ 643.56	\$3.18	\$4.25	\$115.68
Lawrence	\$563.72	\$2.62	\$ 48.77	\$ 612.49	\$2.84	\$3.79	\$196.99
Lee	\$555.82	\$3.07	\$ 45.67	\$ 601.49	\$3.32	\$4.42	\$79.56
Lonoke	\$465.95	\$2.05	\$ 47.12	\$ 513.07	\$2.26	\$3.01	\$341.39
Monroe	\$564.24	\$2.72	\$ 56.09	\$ 620.33	\$2.99	\$3.99	\$158.15
Poinsett	\$507.78	\$2.43	\$ 44.53	\$ 552.31	\$2.64	\$3.53	\$232.56
Prairie	\$705.17	\$3.42	\$ 61.68	\$ 766.85	\$3.72	\$4.96	\$8.47
Pulaski	\$511.83	\$2.58	\$ 45.44	\$ 557.27	\$2.81	\$3.75	\$186.87
Average	\$526.38	\$2.60	\$ 54.42	\$ 580.80	\$2.87	\$3.82	\$191.27

Grain Sorghum										
Ashley (Irrigated)	\$	356.54	\$3.89	\$	49.18	\$	405.72	\$4.42	\$5.90	-\$108.64
Lawrence (Non-Irrig.)	\$	235.59	\$4.23	\$	24.29	\$	259.88	\$4.67	\$6.22	-\$79.44
Prairie (Irrigated)	\$	352.75	\$3.23	\$	45.29	\$	398.04	\$3.64	\$4.86	-\$43.88
Average	\$	318.48	\$3.77	\$	40.28	\$	358.76	\$4.23	\$5.64	-\$77.55
¹ Direct out-of-pocket, operating expense, such as seed, fertilizer, irrigation, etc.										
² Price per bushel required by the farmer to equal total direct costs. Does not include land, overhead, risk, and management costs.										
³ Total fixed or ownership costs which include charges for depreciation and opportunity cost of capital.										
⁴ Total direct operating costs plus fixed costs which include charges for depreciation and interest on all machinery and irrigation equipment.										
⁵ Price per bushel required by the farmer to equal total direct operating and fixed costs. Does not include land, overhead, risk, and management costs.										
⁶ Break-even price per bushel plus a 25 percent crop share rent. Does not include overhead, risk, and management costs.										
⁷ A 25 percent crop share rent was assumed as a land charge for a renter situation. No cost sharing was assumed.										

Table 2. Selected Economic Information for the 2009 CGSRVP.

County	Total Direct Expenses¹ (\$/A)	Break-even Price with Direct Costs² (\$/Bu)	Total Fixed Costs³ (\$/A)	Total Direct and Fixed Costs⁴ (\$/A)	Break-even Price with Total Costs⁵ (\$/Bu)	Break-even Price with Land Rent Costs⁶ (\$/A)	Returns Above Total Costs and Land Rent Costs⁷ (\$/A)
Corn							
Conway	\$519.70	\$2.83	\$111.35	\$631.05	\$3.44	\$4.51	-\$174.19
Cross	\$487.38	\$5.02	\$56.49	\$543.87	\$5.61	\$7.41	-\$302.56
Desha	\$489.02	\$2.28	\$65.31	\$554.33	\$2.59	\$3.38	-\$21.41
Independence	\$365.65	\$2.16	\$65.61	\$431.26	\$2.55	\$3.34	-\$11.05
Lawrence	\$543.14	\$2.42	\$52.42	\$595.56	\$2.66	\$3.48	-\$38.36
Lee	\$464.15	\$2.50	\$62.40	\$526.55	\$2.84	\$3.72	-\$64.94
Lonoke	\$548.34	\$2.96	\$63.79	\$612.13	\$3.31	\$4.35	-\$151.94
Mississippi	\$401.77	\$3.05	\$52.95	\$454.72	\$3.45	\$4.53	-\$126.97
Monroe	\$470.59	\$3.54	\$68.14	\$538.73	\$4.06	\$5.35	-\$208.97
Poinsett	\$441.93	\$2.18	\$52.70	\$494.63	\$2.44	\$3.18	\$10.33
St. Francis	\$462.66	\$2.63	\$50.06	\$512.72	\$2.91	\$3.82	-\$75.00
Average	\$482.27	\$2.94	\$64.44	\$546.71	\$3.34	\$4.38	-\$117.65
Grain Sorghum							
Woodruff	\$290.46	\$3.93	\$68.55	\$359.01	\$4.85	\$6.47	-\$184.00

¹ Direct out-of-pocket, operating expenses, such as seed, fertilizer, irrigation, etc.

² Price per bushel required by farmer to equal total direct costs. Does not include land, overhead, risk, and management costs.

³ Total fixed or ownership costs which include charges for depreciation and opportunity cost of capital.

⁴ Total direct costs plus fixed costs which include charges for depreciation and interest on all machinery and irrigation equipment.

⁵ Price per bushel required by farmers to equal total direct and fixed costs. Does not include land, overhead, risk, and management costs.

⁶ Break-even price per bushel including a 25 percent crop share rent. Does not include overhead, risk, and management costs.

Table 3. Operating Costs, Total Costs¹, Costs per Bushel, and Returns for 2010 CGSRVP							
Corn							
County	Operating Costs	Operating Costs per Bushel	Returns to Operating Costs	Total Fixed Costs	Total Costs	Returns to Total Costs	Total Costs per Bushel
Craighead	494.38	2.55	316.54	67.12	561.50	249.42	2.89
St. Francis	532.46	2.45	374.60	54.10	586.56	320.50	2.70
Mississippi	445.05	2.29	365.87	86.47	531.53	279.39	2.74
Chicot	439.48	2.18	404.88	74.14	513.62	330.74	2.54
Faulkner	474.65	2.45	336.27	97.80	572.45	238.47	2.95
Desha	571.50	2.60	348.10	61.12	632.61	286.99	2.88
Greene	528.45	2.57	332.63	56.83	585.28	275.80	2.84
Average	498.00	2.44	354.13	71.08	569.08	283.04	2.79
Grain Sorghum							
Woodruff	254.64	2.18	285.90	49.92	304.56	235.98	2.60

2008 and 2009 returns include a 25% crop share rent. Starting in 2010, no land rent was assumed.

Corn and Grain Sorghum Production Economics for Optimal Farm Management

- Investigator:** Dr. Archie Flanders
Assistant Professor - Economics
- Status:** New
- Stated Goal:** The goal of this project is to provide crop enterprise budgets for corn and grain sorghum that are flexible for representing alternative production practices of Arkansas producers. Crop enterprise budgets are developed with methods that are consistent over all field crops.
- Accomplishments:** The Program Associate position has been filled and the starting date for the new employee is November 16, 2011.
- Existing budgets were utilized for economic analysis of 2011 corn/grain sorghum research verification data.
- The computational program has been revised and updated for use in 2012 crop enterprise budgets. Specific revisions include features for 1) transferring data to the Whole Farm Planning Guide and 2) report writing.
- Crop enterprise budgets for 2012 will be released in December 2011.
- The crop enterprise budgets are applied to develop weighted average production functions for corn and grain sorghum. Weights are determined by irrigation type and state average yields are utilized to estimate production costs and net financial returns. Input costs indexes are used to develop economic measures for a time series.

Cost of production in Table 1 are weighted averages for irrigated and non-irrigated production derived from UAEX crop enterprise budgets. Figure 1 presents returns to land and management of Arkansas field crops for 2006-2011. Yields and prices are state averages reported by the National Agricultural Statistics Service. Yields for 2011 are the most recent estimate. Price for 2011 is forecasted with the November 2011 estimate from the USDA. The U.S. estimate is applied to the historical relationship between the U.S. price and the Arkansas price to derive a preliminary 2011 Arkansas price. Estimated 2011 net returns for corn are \$349/acre and are greater than net returns for all other Arkansas field crops. Net returns for grain sorghum are \$115/acre.

Table 1. Summary of Weighted Average Corn and Grain Sorghum Budgets, per Acre, 2011		
Expense Category	Corn	Sorghum
Production Inputs	432.11	235.71
Repairs & Other Fees	33.43	22.13
Post-Harvest Expenses	63.42	19.32
Total Operating Expenses	528.96	277.16
Fixed Costs	72.36	51.01
Total Costs¹	601.32	328.17
Unit Cost ²	4.30	4.43

¹Does not include land cost.

²Total costs per bu.

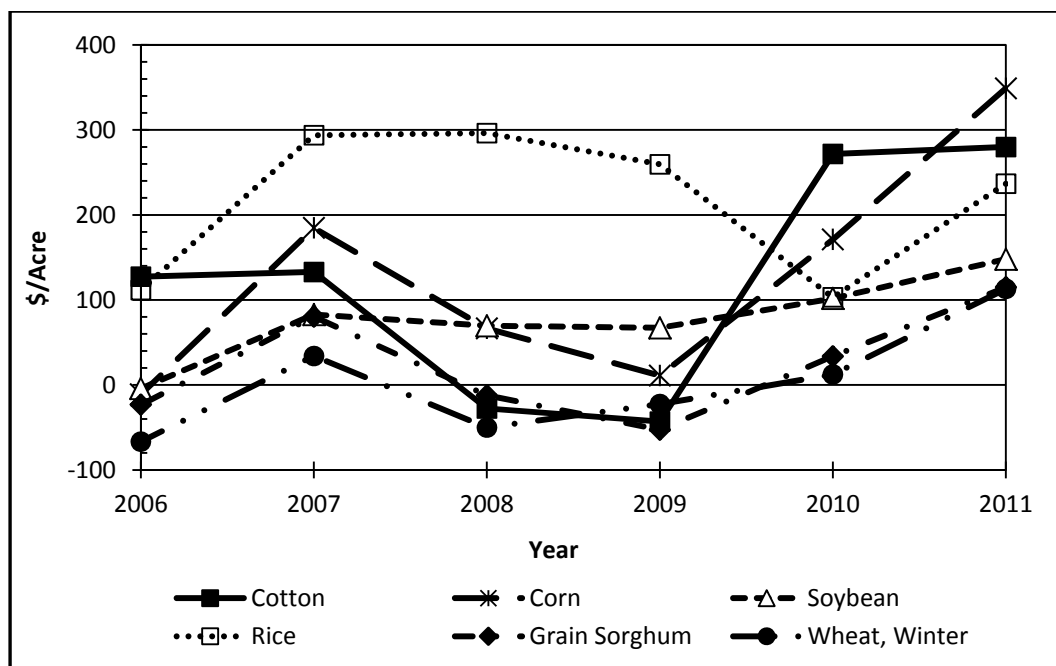


Figure 1. Net Returns per Acre, Arkansas Field Crops, 2006-2011

Table 2 presents costs and returns for corn during 2006-2011. The year with the greatest production costs is 2008. Costs declined for the next two years before increasing in 2011. Net returns in 2011 for corn far exceed net returns in any of the other years.

Table 2. Weighted Average Net Returns, per Acre, Arkansas Corn, 2006-2011

Expense	2011	2010	2009	2008	2007	2006
Average Yield (bu.)	140.0	150.0	148.0	155.0	169.0	146.0
Price Received	6.75	4.70	3.79	4.42	3.80	2.73
Operating Costs	523.68	464.16	482.67	555.27	399.64	354.47
Returns to Operating Costs	421.32	240.84	78.25	129.83	242.56	44.11
Fixed Costs	72.36	69.64	67.22	63.28	57.83	55.10
Total Costs ¹	596.05	533.79	549.88	618.55	457.47	409.58
Net Returns to Land & Management	348.95	171.21	11.04	66.55	184.73	-11.00

¹Does not include land cost.

Table 3 presents costs and returns for grain sorghum during 2006-2011. The year with the greatest production costs is 2008. Costs declined for the next two years before increasing in 2011. Net returns in 2011 for grain sorghum far exceed net returns in any of the other years.

Table 3. Weighted Average Net Returns, per Acre, Arkansas Grain Sorghum, 2006-2011

Expense	2011	2010	2009	2008	2007	2006
Average Yield (bu.)	74.0	77.0	79.0	88.0	96.0	85.0
Price Received	5.94	4.14	3.23	3.88	3.44	2.42
Operating Costs	273.91	236.31	260.59	309.14	209.48	190.06
Returns to Operating Costs	165.95	82.78	-5.33	32.37	121.14	15.57
Fixed Costs	51.01	49.09	47.38	44.61	40.77	38.84
Total Costs ¹	324.93	285.40	307.97	353.75	250.25	228.90
Net Returns to Land & Management	114.94	33.69	-52.71	-12.24	80.38	-23.27

¹Does not include land cost.