

Center-Pivot-Irrigated Grain Sorghum Cost-Return Budget in Western Kansas

Department of Agricultural Economics — www.agmanager.info

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Troy J. Dumler
Agricultural Economist

Daniel M. O'Brien
Agricultural Economist

Brian L.S. Olson
Crops and Soils

This budget provides cost and return estimates for center-pivot-irrigated grain sorghum in western Kansas. Western Kansas is home to the state's large cattle feeding complex and a developing hog industry, ensuring a continued high level of demand for irrigated and nonirrigated feedgrain production. Irrigated grain sorghum requires less water than fully irrigated crops such as corn, soybeans, and alfalfa, making it more suited for low volume irrigation systems. Although irrigated grain sorghum requires less water than many alternative irrigated crops, it often is not as economically viable as some of those crops.

Income Per Acre

Crop production costs per unit and net returns are highly dependent on yields. The following estimated budgets include three different yield levels, which are intended to represent expected yields for land of varying quality for a given level of management. Producers can compare the profitability of crop enterprises on farmland tracts with varying yield potential by considering alternative expected yield scenarios. Land values and government payments have been adjusted for alternative yield levels in this budget.

Price per bushel represents an expected harvest price in Scott City, Kan., accounting for government marketing loan price support levels. Grain sorghum producers in other

Table 1. Production Inputs — Center-Pivot-Irrigated Sorghum

Item	Yield Level (bu)			
	90	120	150	
Seed, lbs*	6	6.5	6.5	\$3.16/lb
Fertilizer:				
N (anhydrous)	113	150	188	\$0.57/lb
N	0	0	0	\$0.85/lb
P	40	53	66	\$1.09/lb
K	0	0	0	\$0.62/lb
Lime	0	0	0	\$0.01/lb
Herbicide				
Bicep Lite II Magnum	1.5	1.5	1.5	\$11.29/qt
Marksman	2.0	2.0	2.0	\$4.26/pt
Insecticide / Fungicide				
Irrigation water, in	8	12	16	\$5.80/in

* *Concep and Gaucho treated*

Table 2. Machinery and Land Resources — Center-Pivot-Irrigated Sorghum

Item	Yield Level (bu)			Custom Rate
	90	120	150	
Tillage/Planting/Chemical Applications:				
Chisel	1	1	1	\$11.04/a
Disk	1	1	1	\$9.07/a
Field cultivate	1	1	1	\$8.29/a
Plant	1	1	1	\$12.18/a
Anhydrous application	1	1	1	\$9.68/a
Fertilizer application	0	0	0	\$4.80/a
Herbicide application	2	2	2	\$5.15/a
Insecticide / fungicide application	0.5	0.5	0.5	\$5.14/a
Harvest				
Base charge	1	1	1	\$19.96/a
Extra charge for yields exceeding	36	36	36	\$0.182/bu
Hauling	90	120	150	\$0.175/bu
Non-machinery labor	0.94	1.04	1.13	\$13.00/hr
Irrigation labor	0.50	0.50	0.50	\$13.00/hr
Land charge/rent	\$42.40	\$53.00	\$63.60	
Interest on capital				8.0%
Irrigation Equipment	Investment, \$/a		Years	Salvage value
Well, pump and gearhead value	\$424.00		25	0%
Power unit and meter	\$98.00		7	0%
Irrigation system	\$476.00		25	25%

regions of western Kansas should use an expected price that is representative for their location.

Crop insurance was not included as an input expense in this budget because yields reflect an average of all years (good and bad). If crop insurance is included as an input expense, then an expected value for indemnity payments should be included in the returns section.

Costs Per Acre

Production costs at the three production levels are shown on lines 1 through 13. Kansas Custom Rates for specific field

operations are used to represent fuel and labor costs as well as machinery repair, depreciation, and interest expenses in these budgets. Table 1 identifies the typical seed, fertilizer, herbicide, insecticide, and irrigation water requirements (rate and cost/unit) for center-pivot-irrigated grain sorghum. Herbicide requirements include both pre-crop and in-crop treatments. Table 2 outlines the machinery, irrigation equipment, and land resources used for center-pivot-irrigated grain sorghum. Each tillage, planting, and harvest operation is identified.

COST-RETURN PROJECTION — CENTER-PIVOT-IRRIGATED GRAIN SORGHUM

	Yield Level (bu)			Your Farm
	90	120	150	
INCOME PER ACRE				
A. Yield per acre	90	120	150	
B. Price per bushel.....	\$ 4.10	\$ 4.10	\$ 4.10	
C. Net government payment.....	\$ 29.92	\$ 32.53	\$ 35.13	
D. Indemnity payments.....	\$	\$	\$	
E. Miscellaneous income	\$	\$	\$	
F. Returns/acre ((A × B) + C + D + E)	\$ 398.92	\$ 524.53	\$ 650.13	
COSTS PER ACRE				
1. Seed	\$ 18.96	\$ 20.54	\$ 20.54	
2. Herbicide.....	25.46	25.46	25.46	
3. Insecticide / Fungicide				
4. Fertilizer and Lime.....	108.01	143.27	179.10	
5. Crop Consulting	6.25	6.25	6.25	
6. Crop Insurance				
7. Drying				
8. Miscellaneous	10.00	10.00	10.00	
9. Custom Hire / Machinery Expense	108.67	119.38	130.09	
10. Non-machinery Labor.....	12.28	13.49	14.70	
11. Irrigation				
a. Labor.....	6.50	6.50	6.50	
b. Fuel and Oil	46.40	69.60	92.80	
c. Repairs and Maintenance	2.64	3.96	5.28	
d. Depreciation on Equipment and Well.....	45.24	45.24	45.24	
e. Interest on Equipment.....	44.68	44.68	44.68	
12. Land Charge / Rent	42.40	53.00	63.60	
G. SUB TOTAL	\$ 477.48	\$ 561.36	\$ 644.23	
13. Interest on ½ Nonland Costs.....	13.81	16.74	19.63	
H. TOTAL COSTS	\$ 491.29	\$ 578.10	\$ 663.86	
I. RETURNS OVER COSTS (F - H).....	\$ -92.37	\$ -53.58	\$ -13.73	
J. TOTAL COSTS/BUSHEL (H ÷ A)	\$ 5.46	\$ 4.82	\$ 4.43	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	-16.45%	-6.56%	0.91%	

Publications from Kansas State University are available on the World Wide Web at: www.oznet.ksu.edu

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Troy J. Dumler et al., *Center-Pivot-Irrigated Grain Sorghum Cost-Return Budget in Western Kansas*, Kansas State University, October 2008.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-582

October 2008

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Fred A. Cholick, Director.