

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

Department of Agricultural Economics



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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	105	120	
Seed, lbs*	6.0	6.5	6.5	\$1.33/lb
Fertilizer:				
N (anhydrous)	113	131	150	\$0.20/lb
N	0	0	0	\$0.28/lb
P	40	42	53	\$0.23/lb
K	0	0	0	\$0.15/lb
Lime	0	0	0	\$0.01/lb
Herbicide				
Bicep II Magnum	2.0	2.0	2.0	\$10.24/qt
Marksman	2.0	2.0	2.0	\$3.97/pt
Insecticide / Fungicide				
Lorsban 4E	0.25	0.25	0.25	\$10.56/lb
Irrigation water, in	10	14	16	\$2.85/in

* *Concep treated*

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

Item	Yield Level (bu)			Custom Rate	Farm Rate
	90	105	120		
Chisel	1	1	1	\$7.61	\$9.61/a
Disk	1	1	1	\$6.34	\$8.01/a
Field cultivate	1	1	1	\$6.16	\$7.78/a
Plant	1	1	1	\$8.13	\$10.27/a
Anhydrous application	1	1	1	\$5.90	\$7.45/a
Fertilizer application	0	0	0	\$3.58	\$4.52/a
Herbicide application	2	2	2	\$3.81	\$4.81/a
Insecticide / fungicide application	0.5	0.5	0.5	\$3.90	\$4.93/a
Harvest					
Base charge	1	1	1	\$14.68	\$18.54/a
Extra charge for yields exceeding	35	35	35	\$0.130	\$0.164/bu
Hauling	90	105	120	\$0.126	\$0.159/bu
Non-machinery labor	1.10	1.15	1.21		\$10.00/hr
Irrigation labor	0.50	0.50	0.50		\$10.00/hr
Land value/acre	\$553	\$692	\$830		
Interest on capital					7.0%
Irrigation Equipment	Investment, \$/a		Years	Salvage value	
Well, pump and gearhead value	\$377.00		25	0%	
Power unit and meter	\$63.00		7	0%	
Irrigation system	\$387.00		20	0%	

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	105	120	
INCOME PER ACRE				
A. Yield per acre	90	105	120	
B. Price per bushel	\$ 2.01	\$ 2.01	\$ 2.01	
C. Net government payment	\$ 37.35	\$ 40.60	\$ 43.85	
D. Indemnity payments	\$	\$	\$	
E. Miscellaneous income	\$	\$	\$	
F. Returns/acre ((A × B) + C + D + E)	\$ 218.25	\$ 251.65	\$ 285.05	
COSTS PER ACRE				
1. Seed	\$ 7.98	\$ 8.65	\$ 8.65	
2. Herbicide	28.42	28.42	28.42	
3. Insecticide / Fungicide	2.64	2.64	2.64	
4. Fertilizer and Lime	31.80	35.86	42.19	
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	97.10	101.95	106.80	
10. Non-machinery Labor	10.97	11.52	12.07	
11. Irrigation				
a. Labor	5.00	5.00	5.00	
b. Fuel and Oil	28.50	39.90	45.60	
c. Repairs and Maintenance	3.30	4.62	5.28	
d. Depreciation on Equipment and Well	43.43	43.43	43.43	
e. Interest on Equipment	28.95	28.95	28.95	
12. Land Charge / Rent	31.80	39.76	47.73	
G. SUB TOTAL	\$ 336.13	\$ 366.94	\$ 392.99	
13. Interest on 1/2 Nonland Costs	8.12	8.92	9.55	
H. TOTAL COSTS	\$ 344.25	\$ 375.86	\$ 402.54	
I. RETURNS OVER COSTS (F - H)	\$ -126.00	\$ -124.21	\$ -117.49	
J. TOTAL COSTS/BUSHEL (H ÷ A)	\$ 3.82	\$ 3.58	\$ 3.35	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	-35.07%	-31.42%	-27.47%	

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-582

October 2003

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