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Grain Sorghum Cost-Return Budget in North Central Kansas

Department of Agricultural Economics — *www.agmanager.info*

K-STATE Kansas State University

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Kansas consistently ranks as the number one grain sorghum producing state in the nation. The largest share of the state's grain sorghum production is in north central Kansas. As with many north central Kansas crops, grain sorghum is produced using various crop rotation and tillage systems. This budget is based on grain sorghum production in rotation using a no-till system.

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. Yield levels are based on historical data from Kansas Agricultural Statistics Service and the North Central Kansas Farm Management Association, adjusting for trends over time. Based on K-State research findings, this budget assumes a higher yield for grain sorghum in rotation than would be expected for continuous grain sorghum production. Land values and government payments have been adjusted for alternative yield levels in this budget. In customizing a budget to your farm, attention should be given to using land values representative of your farm's productive capacity as well as government payments specific to your land.

Price per bushel represents an expected harvest price in Beloit, Kan., accounting for government marketing loan price support levels. Grain sorghum producers in other areas of north central Kansas should use an expected price that is representative for their location. Typically, a reasonable forecast for price is to use the futures market adjusted by the historical basis for a particular location, where basis equals cash price minus futures price.

Crop insurance was not included as an input expense in this budget because yields reflect an average of all years

Table 1. *Production Inputs — Grain Sorghum*

	Yield Level (bu)			
Item	70	90	110	
Seed, lbs*	4.67	4.67	4.67	$3.16/lb
Fertilizer:				
N (anhydrous)	41	62	78	$0.57/lb
N	10	12	15	$0.85/lb
P	32	41	50	$1.09/lb
K	0	0	0	$0.62/lb
Lime	500	500	500	$0.01/lb
Herbicide				
Atrazine 90 DF	2.2	0.0	0.0	$3.36/lb
Bicep II Magnum	0.0	1.6	1.6	$10.25/qt
Buctril + Atrazine	2.0	2.0	2.0	$6.56/pt
Glyphosate + Ammonium Sulfate	1.0	1.0	1.0	$9.06/a

** Concep/Gaucho treated*

Table 2. *Machinery and Land Resources — Grain Sorghum*

	Yield Level (bu)			Custom
Item	70	90	110	Rate
Tillage/Planting/Chemical Applications:				
Chisel	0	0	0	$11.04/a
Disk	0	0	0	$9.07/a
Field cultivate	0	0	0	$8.29/a
No-till plant	1	1	1	$13.77/a
Anhydrous application	1	1	1	$9.68/a
Fertilizer application	1	1	1	$4.80/a
Herbicide application	2	2	2	$5.15/a
Insecticide / fungicide application	0	0	0	$5.14/a
Harvest				
Base charge	1	1	1	$19.96/a
Extra charge for yields exceeding	36	36	36	$0.182/bu
Hauling	70	90	110	$0.175/bu
Non-machinery labor	0.67	0.73	0.79	$13.00/hr
Land charge/rent	$45.60	$57.00	$68.40	
Interest on capital				8.0%

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(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 yield 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. Table 1 identifies seed, fertilizer, herbicide, and insecticide requirements (rate and cost/unit) for grain sorghum. Fertilizer requirements are adjusted up for the higher yields expected under rotation, allowing for a 30-pound-per-acre nitrogen credit following soybeans. Herbicide requirements include both pre-crop and in-crop treatments. Table 2 outlines the machinery and land resources used for grain sorghum in a no-till system.

COST-RETURN PROJECTION — GRAIN SORGHUM — NORTH CENTRAL KANSAS

	Yield Level (bu)			Your
	70	**90**	**110**	**Farm**
INCOME PER ACRE				
A. Yield per acre	70	90	110	
B. Price per bushel	$ 4.13	$ 4.13	$ 4.13	
C. Net government payment	$ 13.03	$ 14.16	$ 15.29	
D. Indemnity payments	$	$	$	
E. Miscellaneous income	$	$	$	
F. Returns/acre ((A × B) + C + D + E)	$ 302.13	$ 385.86	$ 469.59	
COSTS PER ACRE				
1. Seed	$ 14.76	$ 14.76	$ 14.76	
2. Herbicide	29.57	38.58	38.58	
3. Insecticide / Fungicide				
4. Fertilizer and Lime	71.75	95.23	116.71	
5. Crop Consulting				
6. Crop Insurance				
7. Drying	9.10	11.70	14.30	
8. Miscellaneous	6.25	6.25	6.25	
9. Custom Hire / Machinery Expense	76.95	84.09	91.23	
10. Non-machinery Labor	8.70	9.50	10.31	
11. Irrigation				
a. Labor				
b. Fuel and Oil				
c. Repairs and Maintenance				
d. Depreciation on Equipment and Well				
e. Interest on Equipment				
12. Land Charge / Rent	45.60	57.00	68.40	
G.SUB TOTAL	$ 262.67	$ 317.11	$ 360.53	
13. Interest on ½ Nonland Costs	8.32	9.94	11.11	
H. TOTAL COSTS	$ 270.99	$ 327.04	$ 371.65	
I. RETURNS OVER COSTS (F - H)	$ 31.14	$ 58.82	$ 97.95	
J. TOTAL COSTS/BUSHEL (H ÷ A)	$ 3.87	$ 3.63	$ 3.38	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	15.02%	21.68%	30.25%	

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