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Forage Sorghum Silage Cost-Return Budget in South Central Kansas

K-STATE Research and Extension

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Silage can be a very good feed ingredient in livestock rations, but there is considerable variability in different types of silage. Forage sorghum silage will generally out-yield corn silage. However, because of the lower feed value, sorghum silage is often valued less on a per ton basis. Grain sorghum put up as silage typically has a higher feeding value than forage sorghum silage, but with lower yields. The type of silage to produce will depend on the producer's feeding program or the intended use of the silage buyer. There are several varieties that fall somewhere in between grain and forage sorghum that work well as silage. This budget is based on a forage sorghum put up as silage. Costs per acre would be similar for grain sorghum put up as silage, but with lower yields.

Income Per Acre

Crop production costs per unit and net returns are highly dependent on yields. The following estimated budget includes three yield levels, which are intended to represent expected yields for land of varying quality for a given level of management. Comparing alternative expected yields can help producers analyze the profitability of crop enterprises on farmland tracts with varying yield potential. 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 farm-specific government payments.

Table 1. *Production Inputs — Forage Sorghum Silage*

	Yield Level (ton)			
Item	11.0	13.7	16.4	
Seed, lbs*	2.33	3.00	3.67	$2.40/lb
Fertilizer:				
N (anhydrous)	90	115	145	$0.44/lb
N	0	0	0	$0.68/lb
P	35	45	55	$0.80/lb
K	0	0	0	$0.55/lb
Lime	500	500	500	$0.01/lb
Herbicide				
Bicep II Magnum	2.0	2.0	2.0	$10.55/qt

* *Gaucho treated*

Price per ton is calculated using an expected harvest price for corn in Hutchinson, Kan. (corn price × 8.0 × 80 percent) and reflects the price of silage in the bunker. Producers in other areas should use an expected price representative of their location. A reasonable price expectation for corn or grain sorghum is the futures market adjusted by the historical basis for a particular location, where basis = cash price – futures price.

Table 2. *Machinery and Land Resources — Forage Sorghum Silage*

	Yield Level (ton)			Custom
Item	11	13.7	16.4	Rate
Tillage/Planting/Chemical Applications:				
Chisel	0	0	0	$11.56/a
Disk	1	1	1	$9.89/a
Field cultivate	1	1	1	$9.49/a
Plant	1	1	1	$13.81/a
Anhydrous application	1	1	1	$10.89/a
Fertilizer application	1	1	1	$5.36/a
Herbicide application	1	1	1	$5.47/a
Insecticide / fungicide application	0	0	0	$5.54/a
Harvest				
Base charge	1	1	1	$0.00/a
Extra charge for yields exceeding	0	0	0	$8.100/ton
Hauling	11	13.7	16.4	$0.000/ton
Non-machinery labor	1.25	1.44	1.63	$13.00/hr
Land charge/rent	$49.60	$62.00	$74.40	
Interest on capital				6.5%

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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. Historically, crop insurance indemnity payments have typically exceeded premiums due to government subsidies.

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 forage sorghum silage. Herbicide requirements include both pre-crop and in-crop treatments. Table 2 outlines the machinery and land resources used for silage produced in a reduced tillage system.

COST-RETURN PROJECTION — SORGHUM SILAGE — SOUTH CENTRAL KANSAS

	Yield Level (ton)			Your
	11.0	**13.7**	**16.4**	**Farm**
INCOME PER ACRE				
A. Yield per acre	11.0	13.7	16.4	
B. Price per ton	$ 36.35	$ 36.35	$ 36.35	
C. Net government payment	$ 14.12	$ 15.35	$ 16.58	
D. Indemnity payments	$	$	$	
E. Miscellaneous income	$	$	$	
F. Returns/acre ((A × B) + C + D + E)	$ 413.99	$ 513.37	$ 612.75	
COSTS PER ACRE				
1. Seed	$ 5.60	$ 7.20	$ 8.80	
2. Herbicide	21.10	21.10	21.10	
3. Insecticide / Fungicide				
4. Fertilizer and Lime	72.60	91.60	112.80	
5. Crop Consulting				
6. Crop Insurance				
7. Drying				
8. Miscellaneous	5.75	5.75	5.75	
9. Custom Hire / Machinery Expense	144.01	165.88	187.75	
10. Non-machinery Labor	16.27	18.74	21.22	
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	49.60	62.00	74.40	
G. SUB TOTAL	$ 314.93	$ 372.27	$ 431.82	
13. Interest on ½ Nonland Costs	8.62	10.08	11.62	
H. TOTAL COSTS	$ 323.56	$ 382.36	$ 443.43	
I. RETURNS OVER COSTS (F - H)	$ 90.44	$ 131.01	$ 169.32	
J. TOTAL COSTS/TON (H ÷ A)	$ 29.41	$ 27.91	$ 27.04	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	31.45%	37.90%	41.90%	

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