KANSAS FARM MANAGEMENT & MARKETING HANDBOOK

KSU Farm Management Guide MF-998

Center-Pivot-Irrigated Sorghum Silage (Custom Harvested)

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Irrigated sorghum silage is a popular crop for farmer feeders as well as a cash crop that can be sold to feedlots. Forage sorghum silage will generally out yield corn silage. However, because of the lower feed value, sorghum silage is often valued less than corn silage. Research indicates that grain sorghum put up as silage has a higher feeding value than forage sorghum silage, but with lower yields. The type of silage to put up will depend somewhat on the producer's feeding program. Grain sorghum silage will be the choice of producers feeding or backgrounding cattle at high rates of gain. However, feeders that are primarily wintering calves at slow rates of gain for a summer pasture program would choose the higher yielding forage sorghum silage.

The type of sorghum silage that should be planted if the silage is to be sold as a cash crop will depend on the intended buyer. If the silage is sold on a tonnage basis with little concern for quality, forage sorghum silage will generate more income due to its higher yield. However, if the buyer is asking for a silage with a high grain content, the producer may opt to plant a grain sorghum and harvest it as silage. There are several varieties that fall somewhere in between grain sorghum and forage sorghum that work well as silage. This budget is based on a forage sorghum put up as silage. The costs would be similar for grain sorghum put up as silage, but the yield would be lower.

Cost Return Projections

The costs and returns estimated in this budget represent averages for Kansas. Production costs for individual farms will vary considerable due to the amounts of fertilizer and chemicals applied, the type and amount of farm machinery owned, and land costs.

An explanation for most of the production costs are included in the budget. Additional information on input costs can be found in *Cost-Return Budgets—Irrigated Crops*, MF-941. Price of the energy source and Total Dynamic Head are the important factors affecting pumping costs. For instance, a $1 change in natural gas causes $2.97 change with 100 feet TDH. However, with 500 feet of TDH, $1 change in gas price results in $14.83 change in costs for each acre foot of water pumped. Additional information on pumping costs can be found in *Irrigation Capital Requirements and Energy Costs*, MF-836. Any land preparation costs are included with the land charge. Other investments are shown in Table 1.

Yield Level

Cost per bushel and net returns in crop production are highly dependent on yields. The following estimated budget includes three different yield levels. Yield levels vary for a number of reasons such as soil type/land quality, weather, input levels, and management. Budgeting at multiple yield levels can help producers examine the financial risk of a crop enterprise that is directly related to production risk as well as to compare the profitability of crop enterprises on farmland tracts with varying yield potentials.

Table 1. Factors Used for Cost-Return Budget

	Yield Level (tons)			
Item	**12**	**16**	**20**	
Water, 325 TDH	11 in.	13 in.	15 in.	$2.41/inch
Fertilizer:				
N (Anhy.)	100	100	140	$0.19/lb
N (Dry)	20	20	20	$0.29/lb
P	40	40	40	$0.27/lb
K	0	0	0	$0.13/lb
Lime	0	0	0	$0.01/lb
Seed (lbs/Acre)	15.0	17.5	17.5	
Seed Price, $/lb	$1.00	$1.00	$1.00	
Labor Hours	1.75	1.75	1.75	
Labor Price/Hour				$9.00
Land Value/Acre				$540.00
Land Interest Rate				6.00%
Machinery Investment				$113.00
Machinery Life				10 yrs
Interest Rate on Machinery				10.00%
Well, Pump and Gearhead Value				$290.00
Well, Pump and Gearhead Life				15 yrs
Power Unit and Meter Value				$50.00
Power Unit and Meter Life				7 yrs
Irrigation System Value				$385.00
Irrigation System Life				10 yrs
Insurance Rate on Machinery				0.25%
Interest on Variable Costs				10.00%

COST-RETURN PROJECTION—CENTER PIVOT IRRIGATED SORGHUM SILAGE (CUSTOM HARVESTED)[1]

	Yield Level (tons)			
	12	**16**	**20**	**Your Farm**
VARIABLE COSTS PER ACRE:				
1. Labor ($1.75 hrs × $9.00 per hr)	$ 15.75	$ 15.75	$ 15.75	
2. Seed (___ lbs. × $1.00 per lb)	15.00	17.50	17.50	
3. Herbicide ($20.30) and Insecticide ($10.01)	30.31	30.31	30.31	
4. Fertilizer and Lime	35.60	35.60	43.20	
5. Fuel and Oil—Crop	3.99	3.99	3.99	
6. Fuel and Oil—Pumping[2]	26.51	31.33	36.15	
7. Crop Machinery Repairs	10.42	10.42	10.42	
8. Irrigation Repairs and Maintenance	3.30	3.90	4.50	
9. Crop Insurance				
10. Drying				
11. Custom Hire ($5.00 per ton)[3]	60.00	80.00	100.00	
12. Crop Consulting	6.25	6.25	6.25	
13. Miscellaneous	7.00	7.00	7.00	
14. Interest on 1/2 Variable Cost	10.71	12.10	13.75	
A. TOTAL VARIABLE COSTS	$224.83	$254.15	$288.82	
FIXED COSTS PER ACRE:				
15. Real Estate Taxes (including well) @ .5%	$ 4.15	$ 4.15	$ 4.15	
16. Interest on Land and Well ($830/A × 6%)[4]	49.80	49.80	49.80	
17. Rent for Rented Land[5]				
18. Depreciation on Crop Machinery	7.32	7.32	7.32	
19. Interest on Crop Machinery @ 10%[6]	7.60	7.60	7.60	
20. Depreciation on Irrigation Equipment and Well	64.98	64.98	64.98	
21. Interest on Irrigation Equipment @ 10%[6]	36.25	36.25	36.25	
22. Insurance on Machinery and Equipment @ .25%	2.09	2.09	2.09	
B. TOTAL FIXED COSTS	$172.18	$172.18	$172.18	
C. TOTAL COSTS (A + B)	$397.02	$426.33	$461.00	
D. YIELD PER ACRE	12	16	20	
E. PRICE PER TON	$ 21.00	$ 21.00	$ 21.00	
F. NET GOVERNMENT PAYMENTS[7]	$	$	$	
G. RETURNS PER ACRE ((D × E) + F)	$252.00	$336.00	$420.00	
H. RETURNS OVER VARIABLE COSTS (G – A)	$ 27.17	$ 81.85	$131.18	
I. RETURNS OVER TOTAL COSTS (G – C)	–$145.02	$–90.33	$–41.00	
J. VARIABLE COSTS PER TON (A ÷ D)	$ 18.74	$ 15.88	$ 14.44	
K FIXED COSTS PER TON (B ÷D)	$ 14.35	$ 10.76	$ 8.61	
L. TOTAL COSTS PER TON (C ÷ D)	$ 33.08	$ 26.65	$ 23.05	
M. ASSET TURNOVER (G ÷ INVESTMENT)[8]	30.09%	40.12%	50.15%	
N. NET RETURN ON INVESTMENT ((I + 14 + 16 + 19 + 21) ÷ INVESTMENT)[8]	–4.85%	1.84%	7.93%	

[1]See Table 1, page 1, for factors used. [2]See MF-836, "Irrigation Capital Requirements and Energy Costs." If using custom hire, adjust lines 5, 7, 18, and 19. [4]Assumes interest rate shown in Table 1. [5]If cash rented, insert zero in lines 15 and 16. [6]Assumes one-half the (original cost plus salvage value) at the interest rate shown in Table 1. [7]Net government payment equals yield per acre (D) times expected deficiency payment minus prorated cost of set-aside acres. Based on 15% flex acres and 5% ARP. The price used was a five-year average price. The 1995 farm program may have major changes. [8]Investment equals total value of all fixed assets shown in Table 1.

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