



Center-Pivot-Irrigated Sorghum Silage Cost-Return Budget (Custom Harvested)

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Irrigated sorghum silage is produced for feed by livestock feeders and for cash sales to feedlots. Forage sorghum silage will generally outyield corn silage. However, because of the lower feed value, sorghum silage is often valued less on a per unit basis. 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. Alternatively, 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 to produce for sale 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 high grain content, the producer may have an incentive to plant a grain sorghum and harvest it as silage. 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. The costs would be similar for grain sorghum put up as silage, but the yield would be lower.

Cost Return Projections

Any land preparation costs are included with the land charge. Other investments are shown in Table 1. Price of the energy source and Total Dynamic Head are the important factors affecting pumping costs. For instance, with 500 feet of TDH, \$1 change in gas price results in \$14.83 change in costs for each acre foot of water pumped. MF-836, *Irrigation Capital Requirements and Energy Costs*, shows the irrigation costs and energy input amounts used in this budget.

Yield Goals, Return Factors

Cost per ton and net returns in crop production are highly dependent on yields. The following estimated budget includes three different yield levels. Yield goals vary for a number of reasons such as soil type or land quality, historical weather patterns, input levels, and management. Budgeting for alternative yield goals can help producers compare the

profitability of crop enterprises on farmland tracts with varying yield potentials. Multi-peril crop insurance is not available for this crop in Western Kansas. Land values have been adjusted for alternative yield goals in this budget. In customizing this budget to fit your farm, attention should be given to using land values representative of your farm's productive capacity.

Table 1. Factors Used for Cost-Return Budget

Item	Yield Level (ton)			
	12	16	20	
Water, 325 TDH	11 in	13 in	15 in	\$2.55/inch
Fertilizer:				
N (Anhy.)	140	160	180	\$0.17/lb
N (Dry)	0	0	0	\$0.31/lb
P	40	40	40	\$0.28/lb
K	0	0	0	\$0.13/lb
Lime	0	0	0	\$0.005/lb
Seed, lbs	15.0	17.5	17.5	
Seed price, \$/lb	\$1.05	\$1.05	\$1.05	
Custom harvest (\$/ton)	\$5.00	\$5.00	\$5.00	
Labor hours	1.75	1.75	1.75	
Labor price/hour				\$10.80
Land value/acre	\$480	\$600	\$720	
Land interest rate				6.00%
Land real estate tax rate				0.50%
Machinery investment				\$115
Machinery life				10 yrs
Salvage value				35.00%
Interest rate on machinery				10.00%
Well, pump and gearhead value				\$290
Well, pump and gearhead life				15 yrs
Power unit and meter value				\$50
Power unit and meter life				7 yrs
Irrigation system value				\$385
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)

	Yield Level (ton)			Your Farm
	12	16	20	
VARIABLE COSTS PER ACRE: ¹				
1. Labor	\$ 18.90	\$ 18.90	\$ 18.90	
2. Seed	15.75	18.38	18.38	
3. Herbicide	20.35	20.35	20.35	
4. Insecticide	10.44	10.44	10.44	
5. Fertilizer and Lime	35.00	38.40	41.80	
6. Fuel and Oil — Crop	5.10	5.10	5.10	
7. Fuel and Oil — Pumping ²	28.05	33.15	38.25	
8. Machinery and Equipment Repairs	10.42	10.42	10.42	
9. Irrigation Repairs and Maintenance	3.30	3.90	4.50	
10. Crop Insurance				
11. Drying				
12. Custom Hire ³	60.00	80.00	100.00	
13. Crop Consulting	6.25	6.25	6.25	
14. Miscellaneous	7.00	7.00	7.00	
15. Interest on 1/2 Variable Costs	11.03	12.61	14.07	
A. TOTAL VARIABLE COSTS	\$ 231.58	\$ 264.89	\$ 295.45	
FIXED COSTS PER ACRE: ¹				
16. Real Estate Taxes (including well)	3.85	4.45	5.05	
17. Interest on Land and Well ⁴	46.20	53.40	60.60	
18. Rent for Rented Land ⁵				
19. Depreciation on Crop Machinery	7.48	7.48	7.48	
20. Interest on Crop Machinery ⁶	7.76	7.76	7.76	
21. Depreciation on Irrigation Equipment and Well	64.98	64.98	64.98	
22. Interest on Irrigation Equipment ⁶	21.75	21.75	21.75	
23. Insurance on Machinery and Equipment	1.38	1.38	1.38	
B. TOTAL FIXED COSTS	\$ 153.39	\$ 161.19	\$ 168.99	
C. TOTAL COSTS (A + B)	\$ 384.97	\$ 426.08	\$ 464.44	
D. YIELD PER ACRE	12	16	20	
E. PRICE PER TON ⁷	\$ 20.35	\$ 20.35	\$ 20.35	
F. NET GOVERNMENT PAYMENT ⁷	\$ 12.18	\$ 13.23	\$ 14.29	
G. INDEMNITY PAYMENTS	\$	\$	\$	
H. MISCELLANEOUS INCOME	\$	\$	\$	
I. RETURNS PER ACRE [(D × E) + F + G + H]	\$ 256.38	\$ 338.83	\$ 421.29	
J. RETURNS OVER VARIABLE COSTS (I – A)	\$ 24.80	\$ 73.94	\$ 125.84	
K. RETURNS OVER TOTAL COSTS (I – C)	\$ -128.59	\$ -87.25	\$ -43.15	
L. VARIABLE COSTS PER TON (A ÷ D)	\$ 19.30	\$ 16.56	\$ 14.77	
M. TOTAL COSTS PER TON (C ÷ D)	\$ 32.08	\$ 26.63	\$ 23.22	
N. NET RETURN ON INVESTMENT				
[(K+15+17+20+22) ÷ INVESTMENT] ⁸	-4.68%	1.16%	7.31%	

¹Totals were derived using information listed in Table 1.²See MF-836, "Irrigation Capital Requirements and Energy Costs."³If using custom hire, adjust lines 6, 8, 19, and 20.⁴Assumes interest rate shown in Table 1.⁵If cash rented, insert zero in lines 16 and 17.⁶Assumes one-half the average investment [(initial investment + salvage value) ÷ 2] at the interest rate shown in Table 1.⁷See MF-1013 "Prices for Crop and Livestock Cost-Return Budgets" and MF-2236 "Government Program Payments for Crop Cost Return Budgets" for additional information on crop prices and program payments.⁸Investment equals total value of all fixed assets shown in Table 1.**Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Manhattan, Kansas**

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