Flood-Irrigated Grain Sorghum Cost-Return Budget

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This budget provides cost and return estimates for flood irrigated grain sorghum in western Kansas. Kansas led the nation in grain sorghum production during 1995. Historically, greater than half of the state's irrigated grain sorghum crop is harvested in western Kansas. The area is home to the state's large cattle feeding complex and a developing hog industry, insuring a continued high level of demand for feedgrains.

Cost-Return Projections

Land preparation costs are included in land value. 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, a $1 change in natural gas price causes a $2.97 increase with 100 feet TDH. However, with 500 feet TDH, a $1 change in gas price causes a $14.83 change in costs for each acre foot of water pumped.

The choice of a flood or center pivot system depends on: (1) available capital; (2) labor availability during the growing season; (3) the terrain, which may require a center pivot system; and (4) soil type. Capital outlays will be $20,000 to $40,000 higher with a center pivot system, but labor requirements could be reduced by as much as 1 hour/acre compared to flood irrigation. MF-836, *Irrigation Capital Requirements and Energy Costs*, shows the irrigation costs and energy input amounts used in this budget.

Yield Goals

Cost per bushel 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 expenses are included in western Kansas crop budgets as a cost of managing crop production risk in an area prone to great yield variability. Land values are not 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.

Profit and Return Factors

Projections of net percentage return on investment permit comparisons to be made among alternative enterprises and other investments. Asset turnover is the ratio of gross revenue to total investment in fixed assets. This financial measure represents the efficiency of capital use.

Table 1. Factors Used for Cost-Return Budget

	Yield Level (bu)			
Item	**85**	**110**	**135**	
Water, 260 TDH	12	16	18	$2.16/inch
Fertilizer:				
N (Anhy.)	100	100	120	$0.17/lb
N (Dry)	10	10	10	$0.30/lb
P	40	40	40	$0.28/lb
K	0	0	0	$0.13/lb
Lime	0	0	0	$0.005/lb
Seed, lbs	5	6	6	
Seed price, $/lb	$1.00	$1.00	$1.00	
Labor hours	2.20	2.20	2.20	
Labor price/hour				$9.00
Land value/acre				$650
Land interest rate				6.00%
Land real estate tax rate				0.50%
Machinery investment				$200
Machinery life				10 yrs
Salvage value				35.00%
Interest rate on machinery				10.00%
Well, pump and gearhead value				$228
Well, pump and gearhead life				15 yrs
Power unit and meter value				$39
Power unit and meter life				7 yrs
Irrigation system value				$33.00
Irrigation system life				10 yrs
Insurance rate on machinery				0.25%
Interest on variable costs				10.00%

COST-RETURN PROJECTION — FLOOD-IRRIGATED GRAIN SORGHUM

	Yield Level (bu) 85	110	135	Your Farm
VARIABLE COSTS PER ACRE:[1]				
1. Labor	$ 19.80	$ 19.80	$ 19.80	
2. Seed	5.00	6.00	6.00	
3. Herbicide	20.13	20.13	20.13	
4 Insecticide	10.23	10.23	10.23	
5. Fertilizer and Lime	31.20	31.20	34.60	
6. Fuel and Oil — Crop	9.02	9.02	9.02	
7. Fuel and Oil — Pumping[2]	25.92	34.56	38.88	
8. Machinery and Equipment Repairs	16.30	16.30	16.30	
9. Irrigation Repairs and Maintenance	2.40	3.20	3.60	
10. Crop Insurance	4.03	4.07	4.28	
11. Drying	8.50	11.00	13.50	
12. Custom Hire[3]				
13. Crop Consulting	6.25	6.25	6.25	
14. Miscellaneous	7.00	7.00	7.00	
15. Interest on ½ Variable Costs	8.29	8.94	9.48	
A. TOTAL VARIABLE COSTS	$ 174.07	$ 187.70	$ 199.07	
FIXED COSTS PER ACRE:[1]				
16. Real Estate Taxes (including well)	4.39	4.39	4.39	
17. Interest on Land and Well[4]	52.68	52.68	52.68	
18. Rent for Rented Land[5]				
19. Depreciation on Crop Machinery	13.00	13.00	13.00	
20. Interest on Crop Machinery[6]	13.50	13.50	13.50	
21. Depreciation on Irrigation Equipment and Well	24.07	24.07	24.07	
22. Interest on Irrigation Equipment[6]	3.60	3.60	3.60	
23. Insurance on Machinery and Equipment	0.68	0.68	0.68	
B. TOTAL FIXED COSTS	$ 111.92	$ 111.92	$ 111.92	
C. TOTAL COSTS (A + B)	$ 285.99	$ 299.62	$ 310.99	
D. YIELD PER ACRE	85	110	135	
E. PRICE PER BUSHEL[7]	$ 2.95	$ 2.95	$ 2.95	
F. NET GOVERNMENT PAYMENT[7]	$ 13.96	$ 13.96	$ 13.96	
G. RETURNS PER ACRE [(D × E) + F]	$ 264.71	$ 338.46	$ 412.21	
H. RETURNS OVER VARIABLE COSTS (G-A)	$ 90.64	$ 150.76	$ 213.14	
I. RETURNS OVER TOTAL COSTS (G-C)	$ –21.28	$ 38.84	$ 101.22	
J. VARIABLE COSTS PER BUSHEL (A ÷ D)	$ 2.05	$ 1.71	$ 1.47	
K. FIXED COSTS PER BUSHEL (B ÷ D)	$ 1.32	$ 1.02	$ 0.83	
L. TOTAL COSTS PER BUSHEL (C ÷ D)	$ 3.36	$ 2.72	$ 2.30	
M. ASSET TURNOVER (G ÷ INVESTMENT)[8]	23.02%	29.43%	35.84%	
N. NET RETURN ON INVESTMENT [(I+15+17+20+22) ÷ INVESTMENT][8]	4.94%	10.22%	15.69%	

[1]*Totals were derived using information listed in Table 1.*
[2]*See MF-836,* "Irrigation Capital Requirements and Energy Costs."
[3]*If using custom hire, adjust lines 6, 8, 19, and 20.*
[4]*Assumes interest rate shown in Table 1.*
[5]*If cash rented, insert zero in lines 16 and 17.*
[6]*Assumes one-half the average investment [(initial investment + salvage value) ÷ 2] at the interest rate shown in Table 1.*
[7]*See 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.*
[8]*Investment equals total value of all fixed assets shown in Table 1.*

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