



Flood-Irrigated Wheat

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Approximately 65% to 70 % of the wheat grown under irrigation in Kansas is in the Southwest area, although only 13% of Kansas wheat is produced on irrigated land. There is keen competition for irrigated land in Southwest Kansas among such crops as corn, grain sorghum, alfalfa, and wheat. The following budget provides some guidelines in determining cost and returns for center pivot irrigated wheat.

Adding a pivot irrigation system to a quarter section requires additional capital of \$30,000 to \$100,000 depending on depth to water, land preparation, location of well and type of equipment. MF-836, *Irrigation Capital requirements and Energy Costs*, shows the ranges of costs and the amounts used in this budget.

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, 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.

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 due to unlevel land; and (4) soil type. Capital requirements will run \$20,000 to \$40,000 higher for sprinkler over flood. However, labor requirements can be as much as 1 hour/acre less for the sprinkler system.

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.

Profit and Return Factors

Net return on investment is the percentage return on investment. This measure enables comparisons to be made between enterprises as well as other investment alternatives. Asset turnover is the percentage of investment recovered by total returns. Inverting this measure allows different enterprises to be compared on the basis of capital required to generate a dollar of gross income.

Table 1. Factors Used for Cost-Return Budget

Item	Yield Level (bu)			
	45	55	65	
Water, 260 TDH	12 in.	12 in.	12 in.	\$1.92/inch
Fertilizer:				
N (Anhy.)	60	60	60	\$0.19/lb
N (Dry)	10	10	10	\$0.29/lb
P	30	30	30	\$0.27/lb
K	0	0	0	\$0.13/lb
Lime	0	0	0	\$0.01/lb
Seed (lbs/Acre)	60	75	90	
Seed Price, \$/lb	\$0.22	\$0.22	\$0.22	
Labor Hours	2.15	2.15	2.15	
Labor Price/Hour				\$9.00
Land Value/Acre				\$605.00
Land Interest Rate				6.00%
Machinery Investment				\$193.00
Machinery Life				10 yrs
Interest Rate on Machinery				10.00%
Well, Pump and Gearhead Value				\$228.00
Well, Pump and Gearhead Life				15 yrs
Power Unit and Meter Value				\$39.00
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 WHEAT¹

	Yield Level (bu)			Your Farm
	45	55	65	
VARIABLE COSTS PER ACRE:				
1. Labor (\$2.15 hrs. × \$9.00 per hr)	\$ 19.35	\$ 19.35	\$ 19.35	
2. Seed (___ lbs × \$0.22)	13.20	16.50	19.80	
3. Herbicide (\$4.49) and Insecticide (\$0.00)	4.49	4.49	4.49	
4. Fertilizer and Lime (70 lbs N; 30 lbs P ₂ O ₅)	22.40	22.40	22.40	
5. Fuel and Oil—Crop	7.10	7.10	7.10	
6. Fuel and Oil—Pumping ²	23.04	23.04	23.04	
7. Crop Machinery Repairs	14.64	14.64	14.64	
8. Irrigation Repairs and Maintenance	2.40	2.40	2.40	
9. Crop Insurance	5.15	5.15	5.15	
10. Drying (\$_____ per bu)				
11. Custom Hire (_____ operation) ³				
12. Crop Consulting	5.25	5.25	5.25	
13. Miscellaneous	7.00	7.00	7.00	
14. Interest on ½ Variable Cost @ 10%	6.20	6.37	6.53	
A. TOTAL VARIABLE COSTS	\$130.22	\$133.69	\$137.15	
FIXED COSTS PER ACRE:				
15. Real Estate Taxes (including well) @ 5%	\$ 4.17	\$ 4.17	\$ 4.17	
16. Interest on Land and Well (\$833/A × 6%) ⁴	49.98	49.98	49.98	
17. Rent for Rented Land ⁵				
18. Depreciation on Crop Machinery	12.55	12.55	12.55	
19. Interest on Crop Machinery @ 10% ⁶	13.03	13.03	13.03	
20. Depreciation on Irrigation Equipment and Well	24.07	24.07	24.07	
21. Interest on Irrigation Equipment @ 10% ⁶	15.00	15.00	15.00	
22. Insurance on Machinery and Equipment @ .25%	1.23	1.23	1.23	
B. TOTAL FIXED COSTS	\$120.03	\$120.03	\$120.03	
C. TOTAL COSTS (A + B)	\$250.25	\$253.72	\$257.18	
D. YIELD PER ACRE	45	55	65	
E. PRICE PER BUSHEL	\$ 3.90	\$ 3.90	\$ 3.90	
F. NET GOVERNMENT PAYMENTS ⁷	\$ 30.60	\$ 37.40	\$ 44.20	
G. RETURNS PER ACRE ((D × E)+F)	\$206.10	\$251.90	\$297.70	
H. RETURNS OVER VARIABLE COSTS (G – A)	\$ 75.88	\$118.21	\$160.55	
I. RETURNS OVER TOTAL COSTS (G – C)	\$ -44.15	\$ -1.82	\$ 40.52	
J. VARIABLE COSTS PER BUSHEL (A ÷ D)	\$ 2.89	\$ 2.43	\$ 2.11	
K FIXED COSTS PER BUSHEL (B ÷ D)	\$ 2.67	\$ 2.18	\$ 1.85	
L. TOTAL COSTS PER BUSHEL (C ÷ D)	\$ 5.56	\$ 4.61	\$ 3.96	
M. ASSET TURNOVER (G ÷ INVESTMENT) ⁸	41.80%	51.09%	60.38%	
N NET RETURN ON INVESTMENT				
((I + 14 + 16 + 19 + 21) ÷ INVESTMENT) ⁸	8.13%	16.75%	25.37%	

¹See Table 1, page 1, for factors used. ²See MF-836, "Irrigation Capital Requirements and Energy Costs." If using custom hire, adjust lines 5, 7, 18, and 19. ³Assumes interest rate shown in Table 1. ⁴If cash rented, insert zero in lines 15 and 16. ⁵Assumes one-half the (original cost plus salvage value) at the interest rate shown in Table 1. ⁶Net 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. ⁸Investment equals total value of all fixed assets shown in Table 1.

**COOPERATIVE EXTENSION SERVICE, MANHATTAN, KANSAS**

MF-590 Revised

January 1996

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File Code: Farm Management 3-1

1-96—1.5M