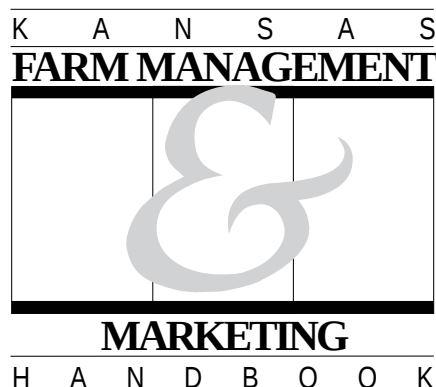




Center-Pivot-Irrigated Corn

Department of Agricultural Economics

Manhattan, Kansas

James D. Sartwelle, III
Extension Agricultural Economist, S.W.

Daniel M. O'Brien
Extension Agricultural Economist, N.W.

Adding a center pivot system to a quarter section requires a capital outlay of \$30,000 to \$100,000 depending on depth to water, land preparation, location of well, and type of equipment purchased. MF-836, *Irrigation Capital Requirements and Energy Costs*, details the ranges of costs and the amounts used for this budget.

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 (uneven land may require a center pivot system), and (4) soil type. Capital outlays will run higher with a center pivot system, but labor requirements could be reduced by as much as 1 hour/acre compared to flood irrigation.

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 many 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 and 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.)			
	160	190	220	
Water, 325 TDH (acre inches)	20	22	24	\$2.41/inch
Fertilizer:				
N (Anhy.)	170	170	210	\$0.19/lb
N (Dry)	20	20	20	\$0.29/lb
P	45	45	45	\$0.27/lb
K	0	0	0	\$0.13/lb
Seed (lbs/acre)	28,000	32,000	36,000	
Seed Price, \$/lb	\$0.90	\$0.90	\$0.90	
Labor Hours	2.50	2.50	2.50	
Labor Price/Hour				\$9.00
Land Value/Acre				\$540.00
Land Interest Rate				6.00%
Machinery Investment				\$208.00
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 CORN¹

	Yield Level (bu)			Your Farm
	160	190	220	
VARIABLE COSTS PER ACRE:				
1. Labor (2.50 hrs × \$9.00 per hr.)	\$ 22.50	\$ 22.50	\$ 22.50	
2. Seed (____ seeds × \$0.90 per 1,000 seeds)	25.20	28.80	32.40	
3. Herbicide (\$32.45) and Insecticide (\$53.38)	85.83	85.83	85.83	
4. Fertilizer	50.25	50.25	57.85	
5. Fuel and Oil—Crop	7.47	7.47	7.47	
6. Fuel and Oil—Pumping ²	48.20	53.02	57.84	
7. Crop Machinery Repairs	23.20	23.20	23.20	
8. Irrigation Repairs and Maintenance	6.00	6.60	7.20	
9. Crop Insurance	6.25	6.25	6.25	
10. Drying @ \$0.10/bu	16.00	19.00	22.00	
11. Custom Hire (_____ operation) ³				
12. Crop Consulting	6.50	6.50	6.50	
13. Miscellaneous	6.00	6.00	6.00	
14. Interest ¹ / ₂ Variable Costs @ 10%	15.17	15.77	16.75	
A. TOTAL VARIABLE COSTS	\$318.57	\$331.19	\$351.79	
FIXED COSTS PER ACRE:				
15. Real Estate Taxes (including well) @ 0.5%	\$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	13.52	13.52	13.52	
19. Interest on Crop Machinery @ 10% ⁶	14.04	14.04	14.04	
20. Depreciation on Irrigation Equipment and Well	64.98	64.98	64.98	
21. Interest on Irrigation Equipment @ 10% ⁶	21.75	21.75	21.75	
22. Insurance on Machinery and Equipment @ .25%	1.61	1.61	1.61	
B. TOTAL FIXED COSTS	\$169.84	\$169.84	\$169.84	
C. TOTAL COSTS (A + B)	\$488.41	\$501.03	\$521.64	
D. YIELD PER ACRE	160	190	220	
E. PRICE PER BUSHEL	\$ 2.50	\$ 2.50	\$ 2.50	
F. NET GOVERNMENT PAYMENT ⁷	\$ 40.80	\$ 48.45	\$ 56.10	
G. RETURNS PER ACRE ((D × E) + F)	\$440.80	\$523.45	\$606.10	
H. RETURNS OVER VARIABLE COSTS (G – A)	\$122.23	\$192.26	\$254.31	
I. RETURNS OVER TOTAL COSTS (G – C)	\$–47.61	\$ 22.42	\$ 84.46	
J. VARIABLE COSTS PER BUSHEL (A ÷ D)	\$ 1.99	\$ 1.74	\$ 1.60	
K. FIXED COSTS PER BUSHEL (B ÷ D)	\$ 1.06	\$ 0.89	\$ 0.77	
L. TOTAL COSTS PER BUSHEL (C ÷ D)	\$ 3.05	\$ 2.64	\$ 2.37	
M. ASSET TURNOVER (G ÷ INVESTMENT) ⁸	29.93%	35.54%	41.15%	
N. NET RETURN ON INVESTMENT ((I+14+16+19) ÷ INVESTMENT) ⁸	2.13%	6.93%	11.21%	

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. ⁷Investment equals total value of all fixed assets shown in Table 1.



COOPERATIVE EXTENSION SERVICE, MANHATTAN, KANSAS

MF-585 Revised

October 1995

Issued in furtherance of Cooperative Extension Work, acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Richard D. Wootton, Associate Director. All educational programs and materials available without discrimination on the basis of race, color, national origin, sex, age, or disability.

File Code: Farm Management 3-1

10-95—1.5M