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KANSAS FARM MANAGEMENT & MARKETING HANDBOOK

KSU Farm Management Guide MF-585

Center-Pivot-Irrigated Corn Cost-Return Budget

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This budget provides cost and return estimates for center-pivot-irrigated corn in Western Kansas. Feed demand from the area's cattle feeding complex and developing hog industry make irrigated corn an important crop. Kansas ranked sixth in the nation in corn production during 1999. The vast majority of Kansas' irrigated corn production is located in Western Kansas.

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 (TDH) are the important factors affecting pumping costs. For instance, at 300 TDH, an increase in natural gas prices from $3 to $4 per mcf causes pumping costs to increase from $2.22 to $2.97 per acre inch. At 500 TDH, the same increase in natural gas price causes pumping costs to increase from $3.71 to $4.94 per acre inch. See MF-836, *Irrigation Capital Requirements and Energy Costs*, for an explanation of Total Dynamic Head and other examples of pumping costs for diesel, electricity and propane.

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 requirements will run $20,000 to $40,000 higher for sprinkler over flood irrigation systems. However, labor requirements can be as much as 1 hour per acre less for the sprinkler system.

Expected Yields and Enterprise Returns

Crop production costs per unit and net returns are highly dependent on yields. The following estimated budget includes three different yield levels, which are intended to represent expected yields for land of varying quality for a given level of management. Alternative expected yields can help producers compare the profitability of crop enterprises on farmland tracts with varying yield potentials. Land values, government payments and some variable inputs have been adjusted for alternative yield levels in this budget. In customizing this budget to your farm, attention should be given to using land values representative of your farm's productive capacity. Projections of net percentage return on investment permit comparisons to be made among alternative enterprises or other investments.

Crop insurance was not included as an input expense in this budget because yields reflect an average of all years (good and bad). If crop insurance is included as an input expense, then an expected value for indemnity payments should be included in the returns section. Historically, MPCI indemnity payments have exceeded premiums due to government subsidies.

Table 1. Factors Used for Cost-Return Budget

	Yield Level (bu)			
Item	**150**	**180**	**210**	
Water, 325 TDH	20 in	22 in	24 in	$3.76/inch
Fertilizer:				
N (Anhy.)	133	160	186	$0.15/lb
N (Dry)	44	53	62	$0.24/lb
P	64	77	90	$0.18/lb
K	0	0	0	$0.14/lb
Lime	0	0	0	$0.01/lb
Seed,				
seeds/acre	28,000	32,000	36,000	
Seed price,				
$/1000 seeds	$1.19	$1.19	$1.19	
Labor hours	2.24	2.45	2.66	
Labor price/hour				$10.80
Land value/acre	$558	$697	$836	
Land interest rate				6.00%
Land real estate tax				0.50%
Machinery investment				$236
Machinery life				10 yrs
Salvage value				35%
Well, pump and gearhead value				$317.42
Well, pump and gearhead life				15 yrs
Power unit and meter value				$41.27
Power unit and meter life				7 yrs
Irrigation system value				$360.90
Irrigation system life				10 yrs
Interest rate on machinery and equipment				10.00%
Insurance rate on machinery and equipment				0.25%
Interest on variable costs				10.00%

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COST-RETURN PROJECTION — CENTER-PIVOT-IRRIGATED CORN

	Yield Level (bu)			Your
	150	180	210	Farm
VARIABLE COSTS PER ACRE:[1]				
1. Labor	$ 24.16	$ 26.46	$ 28.76	
2. Seed	33.32	38.08	42.84	
3. Herbicide	38.87	38.87	38.87	
4 Insecticide	39.70	39.70	39.70	
5. Fertilizer and Lime	42.03	50.58	58.98	
6. Fuel and Oil — Crop	14.61	16.00	17.39	
7. Fuel and Oil — Pumping[2]	75.20	82.72	90.24	
8. Machinery and Equipment Repairs	23.93	26.21	28.49	
9. Irrigation Repairs and Maintenance	6.00	6.60	7.20	
10. Crop Insurance				
11. Drying	15.00	18.00	21.00	
12. Custom Hire[3]				
13. Crop Consulting	6.50	6.50	6.50	
14. Miscellaneous	8.00	8.00	8.00	
15. Interest on ½ Variable Costs	16.37	17.89	19.40	
A. TOTAL VARIABLE COSTS	$ 343.68	$375.60	$ 407.37	
FIXED COSTS PER ACRE:[1]				
16. Real Estate Taxes (including well)	4.38	5.07	5.77	
17. Interest on Land and Well[4]	52.53	60.87	69.21	
18. Rent for Rented Land[5]				
19. Depreciation on Crop Machinery	15.34	15.34	15.34	
20. Interest on Crop Machinery[6]	15.93	15.93	15.93	
21. Depreciation on Irrigation Equipment and Well	63.15	63.15	63.15	
22. Interest on Irrigation Equipment[6]	20.11	20.11	20.11	
23. Insurance on Machinery and Equipment	1.60	1.60	1.60	
B. TOTAL FIXED COSTS	$ 173.02	$182.06	$ 191.09	
C. TOTAL COSTS (A + B)	$ 516.70	$557.66	$ 598.46	
D. YIELD PER ACRE	150	180	210	
E. PRICE PER BUSHEL[7]	$ 2.10	$ 2.10	$ 2.10	
F. NET GOVERNMENT PAYMENT[7]	$ 8.67	$ 9.42	$ 10.17	
G. INDEMNITY PAYMENTS	$	$	$	
H. MISCELLANEOUS INCOME	$	$	$	
I. RETURNS PER ACRE [(D × E) + F + G + H]	$ 323.67	$387.42	$ 451.17	
J. RETURNS OVER VARIABLE COSTS (I – A)	$ -20.01	$ 11.82	$ 43.80	
K. RETURNS OVER TOTAL COSTS (I – C)	$-193.03	$-170.24	$-147.29	
L. VARIABLE COSTS PER BUSHEL (A ÷ D)	$ 2.29	$ 2.09	$ 1.94	
M. TOTAL COSTS PER BUSHEL (C ÷ D)	$ 3.44	$ 3.10	$ 2.85	
N. NET RETURN ON INVESTMENT [(K+15+17+20+22) ÷ INVESTMENT][8]	-5.82%	-3.36%	-1.26%	

[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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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-585 October 2000

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File code: Farm Management 3-1