KANSAS FARM MANAGEMENT & MARKETING HANDBOOK

KSU Farm Management Guide MF-586

Center-Pivot-Irrigated Soybean Cost-Return Budget

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Variety development has led to new, higher-yielding soybean varieties that respond well to irrigation. Recent research has provided additional information on water management for optimum irrigation of soybeans. Soybean yields can be increased from 20 to 50 percent by irrigation, with the crop's water needs being most critical during the reproductive stage. The soil moisture level should be maintained at or above 40 to 50 percent of its water holding capacity in the 0 to 24 inch depth in order to provide maximum fertilization of the flowers.

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.

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. However, labor requirements can be as much as 1 hour/acre less for the sprinkler system. MF-836, *Irrigation Capital Requirements and Energy Costs*, shows the irrigation costs and energy input amounts used in this budget.

Expected Yields and Enterprise Returns

Cost per bushel and net returns in crop production are highly dependent on yields. The following estimated budget includes three different yield levels. The three yield levels are intended to represent expected yields of varying land quality for a given level of management. Land values, government payments, and various inputs vary as yield levels vary. Crop insurance was not included in this budget as an input expense because yields reflect an average of all years (good and bad). If crop insurance is included as an input expense, than an expected value for indemnity payments should be included in the returns section. Historically, MPCI indemnity payments have exceeded premiums due to government subsidies.

Budgeting for alternative expected yields can help producers compare the profitability of crop enterprises on farmland tracts with varying yield potentials. In customizing this budget to fit 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.

Table 1. Factors Used for Cost-Return Budget

	Yield Level (bu)			
Item	**45**	**51**	**57**	
Water, 260 TDH	13 in	15 in	17 in	$2.72/inch
Fertilizer:				
N (Anhy.)	0	0	0	$0.11/lb
N (Dry)	0	0	0	$0.20/lb
P	40	40	40	$0.22/lb
K	0	0	0	$0.14/lb
Lime	0	0	0	$0.01/lb
Seed, lbs.	45	50	50	
Seed price, $/lb*	$0.49	$0.49	$0.49	
Labor hours	1.80	1.85	1.89	
Labor price/hour				$10.80
Land value/acre	$550	$687	$824	
Land interest rate				6.00%
Land real estate tax				0.50%
Machinery investment				$191
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				$359.00
Irrigation system life				10 yrs
Interest rate on machinery and equipment				9.00%
Insurance rate on machinery and equipment				0.25%
Interest on variable costs				9.00%

**Includes technology fee of $0.14/lb. for Roundup Ready seed.*

COST-RETURN PROJECTION — CENTER-PIVOT-IRRIGATED SOYBEANS

	Yield Level (bu)			Your
	45	51	57	Farm
VARIABLE COSTS PER ACRE:[1]				
1. Labor	$ 19.42	$ 19.98	$ 20.44	
2. Seed	22.05	24.50	24.50	
3. Herbicide	25.44	25.44	25.44	
4 Insecticide				
5. Fertilizer and Lime	8.80	8.80	8.80	
6. Fuel and Oil — Crop	6.92	7.11	7.28	
7. Fuel and Oil — Pumping[2]	35.36	40.80	46.24	
8. Machinery and Equipment Repairs	16.08	16.54	16.92	
9. Irrigation Repairs and Maintenance	3.90	4.50	5.10	
10. Crop Insurance				
11. Drying				
12. Custom Hire[3]				
13. Crop Consulting	6.25	6.25	6.25	
14. Miscellaneous	8.00	8.00	8.00	
15. Interest on ½ Variable Costs	6.85	7.29	7.60	
A. TOTAL VARIABLE COSTS	$ 159.06	$ 169.21	$ 176.57	
FIXED COSTS PER ACRE:[1]				
16. Real Estate Taxes (including well)	4.34	5.02	5.71	
17. Interest on Land and Well[4]	52.05	60.27	68.49	
18. Rent for Rented Land[5]				
19. Depreciation on Crop Machinery	12.42	12.42	12.42	
20. Interest on Crop Machinery[6]	11.60	11.60	11.60	
21. Depreciation on Irrigation Equipment and Well	62.96	62.96	62.96	
22. Interest on Irrigation Equipment[6]	18.01	18.01	18.01	
23. Insurance on Machinery and Equipment	1.48	1.48	1.48	
B. TOTAL FIXED COSTS	$ 162.85	$ 171.75	$ 180.66	
C. TOTAL COSTS (A + B)	$ 321.91	$ 340.96	$ 357.23	
D. YIELD PER ACRE	45	51	57	
E. PRICE PER BUSHEL[7]	$ 5.00	$ 5.00	$ 5.00	
F. NET GOVERNMENT PAYMENT[7]	$ 10.72	$ 11.65	$ 12.58	
G. INDEMNITY PAYMENTS	$	$	$	
H. MISCELLANEOUS INCOME	$	$	$	
I. RETURNS PER ACRE [(D × E) + F + G + H]	$ 235.72	$ 266.65	$ 297.58	
J. RETURNS OVER VARIABLE COSTS (I – A)	$ 76.66	$ 97.44	$ 121.01	
K. RETURNS OVER TOTAL COSTS (I – C)	$ –86.19	$ –74.31	$ –59.65	
L. VARIABLE COSTS PER BUSHEL (A ÷ D)	$ 3.53	$ 3.32	$ 3.10	
M. TOTAL COSTS PER BUSHEL (C ÷ D)	$ 7.15	$ 6.69	$ 6.27	
N. NET RETURN ON INVESTMENT [(K+15+17+20+22) ÷ INVESTMENT][8]	0.16%	1.43%	2.66%	

[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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