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Center-Pivot-Irrigated Soybean Cost-Return Budget in Western Kansas

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Variety development has led to new, higher-yielding soybean varieties that respond well to irrigation. Irrigated soybeans are less input intensive and have relatively low production costs, causing them to become a strong competitor for irrigated acreage with corn and other crops in the region. The addition of soybean processing plants in western Kansas offers producers a direct market and improved basis opportunities. Soybeans require water amounts similar to corn and alfalfa, making them less suitable for low volume irrigation systems.

Income Per Acre

Crop production costs per unit and net returns are highly dependent on yields. The following estimated budgets include three different yield levels, which are intended to represent expected yields for land of varying quality for a given level of management. Producers can compare the profitability of crop enterprises on farmland tracts with varying yield potential by considering alternative expected yield scenarios. Land values and government payments have been adjusted for alternative yield levels in this budget.

Price per bushel represents an expected harvest price in Scott City, Kan., accounting for government marketing loan price support levels. Soybean producers in other regions of

Table 1. *Production Inputs — Center-Pivot-Irrigated Soybean*

	Yield Level (bu)			
Item	45	55	65	
Seed, 1,000/a*	135	150	150	
$0.25/1,000				
Fertilizer:				
N (anhydrous)	0	0	0	$0.57/lb
N	0	0	0	$0.85/lb
P	39	48	56	$1.09/lb
K	0	0	0	$0.62/lb
Lime	0	0	0	$0.01/lb
Herbicide				
Prowl	3.6	3.6	3.6	$3.65/oz
Glyphosate + Adjuvants	1.0	1.0	1.0	$9.64/a
Glyphosate + Adjuvants	1.0	1.0	1.0	$9.64/a
Insecticide / Fungicide				
Irrigation water, in	12	15	18	$5.80/in

** Roundup Ready, seeding rate is based on planting in 30" rows, rates need to be increased if drilled.*

Table 2. *Machinery and Land Resources — Center-Pivot-Irrigated Soybean*

	Yield Level (bu)			Custom
Item	45	55	65	Rate
Tillage/Planting/Chemical Applications:				
Chisel	1	1	1	$11.04/a
Disk	1	1	1	$9.07/a
Field cultivate	1	1	1	$8.29/a
Plant	1	1	1	$12.52/a
Anhydrous application	0	0	0	$9.68/a
Fertilizer application	0	0	0	$4.80/a
Herbicide application	2	2	2	$5.15/a
Insecticide / fungicide application	0	0	0	$5.14/a
Harvest				
Base charge	1	1	1	$25.87/a
Extra charge for yields exceeding	28	28	28	$0.181/bu
Hauling	45	55	65	$0.164/bu
Non-machinery labor	0.76	0.79	0.82	$13.00/hr
Irrigation labor	0.50	0.50	0.50	$13.00/hr
Land charge/rent	$42.40	$53.00	$63.60	
Interest on capital				8.0%
Irrigation Equipment	Investment, $/a		Years	Salvage value
Well, pump and gearhead value	$424.00		25	0%
Power unit and meter	$98.00		7	0%
Irrigation system	$476.00		25	25%

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western Kansas should use an expected price that is representative for their location.

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, crop insurance indemnity payments have exceeded premiums due to government subsidies.

Costs Per Acre

Production costs at the three production levels are shown on lines 1 through 13. Kansas Custom Rates for specific field operations are used to represent fuel and labor costs as well as machinery repair, depreciation, and interest expenses in these budgets. Table 1 identifies the typical seed, fertilizer, herbicide, insecticide, and irrigation water requirements (rate and cost/unit) for center-pivot-irrigated soybeans. Herbicide requirements include both pre-crop and in-crop treatments. Table 2 outlines the machinery, irrigation equipment, and land resources used for center-pivot-irrigated soybeans. Each tillage, planting, and harvest operation is identified.

COST-RETURN PROJECTION — CENTER-PIVOT-IRRIGATED SOYBEANS

	Yield Level (bu)			Your
	45	**55**	**65**	**Farm**
INCOME PER ACRE				
A. Yield per acre	45	55	65	
B. Price per bushel	$ 8.39	$ 8.39	$ 8.39	
C. Net government payment	$ 29.92	$ 32.53	$ 35.13	
D. Indemnity payments	$	$	$	
E. Miscellaneous income	$	$	$	
F. Returns/acre ((A × B) + C + D + E)	$ 407.47	$ 493.98	$ 580.48	
COSTS PER ACRE				
1. Seed	$ 33.75	$ 37.50	$ 37.50	
2. Herbicide	32.42	32.42	32.42	
3. Insecticide / Fungicide				
4. Fertilizer and Lime	42.51	52.32	61.04	
5. Crop Consulting	6.25	6.25	6.25	
6. Crop Insurance				
7. Drying				
8. Miscellaneous	10.00	10.00	10.00	
9. Custom Hire / Machinery Expense	87.55	91.00	94.45	
10. Non-machinery Labor	9.89	10.28	10.67	
11. Irrigation				
a. Labor	6.50	6.50	6.50	
b. Fuel and Oil	69.60	87.00	104.40	
c. Repairs and Maintenance	3.96	4.95	5.94	
d. Depreciation on Equipment and Well	45.24	45.24	45.24	
e. Interest on Equipment	44.68	44.68	44.68	
12. Land Charge / Rent	42.40	53.00	63.60	
G. SUB TOTAL	$ 434.75	$ 481.14	$ 522.69	
13. Interest on ½ Nonland Costs	12.10	13.53	14.77	
H. TOTAL COSTS	$ 446.85	$ 494.67	$ 537.46	
I. RETURNS OVER COSTS (F - H)	$ -39.37	$ -0.69	$ 43.02	
J. TOTAL COSTS/BUSHEL (H ÷ A)	$ 9.93	$ 8.99	$ 8.27	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	-6.27%	2.67%	11.06%	

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