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

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Markets for alfalfa hay are firmly established in western Kansas where sizable cattle feeding and expanding dairy operations provide a ready demand. Additionally, alfalfa hay and pellets produced in the region are routinely shipped to other areas. Perhaps in alfalfa, as in no other western Kansas crop enterprise, the timely and effective management of harvesting, handling, storage, and marketing operations is rewarded with higher hay quality and selling prices. Under good management, alfalfa can be as, or more, profitable than corn or other irrigated crops.

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. In customizing a budget to your farm, attention should be given to using land values representative of your farm's productive capacity and local farmland market conditions.

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

	Yield Level (ton)			
Item	4.8	6.2	7.5	
Seed, lbs	3.0	3.0	3.0	$3.32/lb
Fertilizer:				
N (anhydrous)	0	0	0	$0.20/lb
N	0	0	0	$0.28/lb
P	78	102	125	$0.23/lb
K	0	0	0	$0.15/lb
Lime	0	0	0	$0.01/lb
Herbicide				
Velpar	1.0	1.0	1.0	$15.30/qt
Insecticide / Fungicide				
Warrior 1 EC	0.03	0.03	0.03	$279.33/lb
Irrigation water, in	14	19	24	$2.85/in

** Inputs represent annualized amounts over the five-year stand.*

Price per ton is based on the average Kansas Agricultural Statistics prices from May through July 2001.

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

	Yield Level (ton)			Custom	Farm
ITEM	4.8	6.2	7.5	Rate	Rate
Tillage/Planting/Chemical Applications:					
Chisel	0	0	0	$7.61	$9.61/a
Disk	0.4	0.4	0.4	$6.34	$8.01/a
Field cultivate	0.2	0.2	0.2	$6.16	$7.78/a
Plant	0.2	0.2	0.2	$9.83	$12.42/a
Anhydrous application	0	0	0	$5.90	$7.45/a
Fertilizer application	1	1	1	$3.58	$4.52/a
Herbicide application	1	1	1	$3.81	$4.81/a
Insecticide / fungicide application	1	1	1	$3.90	$4.93/a
Harvest					
Swathing and conditioning	4	4	4	$8.59	$10.85/a
Siderakingaw	2	2	2	$2.95	$3.726/a
Baling (number of bales/acre)**	6.4	8.3	10.0	$11.24	$14.196/bale
Non-machinery labor	1.84	2.14	2.42		$10.00/hr
Irrigation labor	0.50	0.50	0.50		$10.00/hr
Land value/acre	$553	$692	$830		
Interest on capital					7.0%
Irrigation Equipment	Investment, $/a		Years	Salvage value	
Well, pump and gearhead value	$377.00		25	0%	
Power unit and meter	$63.00		7	0%	
Irrigation system	$387.00		20	0%	

** Machinery operations represent annualized amounts over the five-year stand.*
*** Assumes big round bales weighing 1,500 pounds, without net — cost includes hauling to storage.*

Sizable price premiums are typically received for premium or dairy quality as opposed to average quality alfalfa hay. Producers need to account for the quality of their alfalfa and marketing opportunities when making their own price forecasts.

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 alfalfa. 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 alfalfa. Each tillage, planting, and harvest operation is identified.

Irrigation Costs

Any land preparation costs are included with the land charge. Capital requirements for sprinkler systems will run $20,000 to $40,000 higher than flood irrigation systems. Price of the energy source and Total Dynamic Head (TDH) are the major factors affecting pumping costs. See MF-836, *Irrigation Capital Requirements and Energy Costs*, for an explanation of differences in capital costs, TDH, and examples of pumping costs for natural gas, diesel, electricity and propane.

COST-RETURN PROJECTION — CENTER-PIVOT-IRRIGATED ALFALFA

	Yield Level (ton)			Your
	4.8	6.2	7.5	Farm
INCOME PER ACRE				
A. Yield per acre	4.8	6.2	7.5	
B. Price per ton	$ 75.33	$ 75.33	$ 75.33	
C. Net government payment	$ 37.35	$ 40.60	$ 43.85	
D. Indemnity payments	$	$	$	
E. Miscellaneous income	$	$	$	
F. Returns/acre ((A × B) + C + D + E)	$ 398.94	$ 507.65	$ 608.82	
COSTS PER ACRE				
1. Seed	$ 9.96	$ 9.96	$ 9.96	
2. Herbicide	15.30	15.30	15.30	
3. Insecticide / Fungicide	8.38	8.38	8.38	
4. Fertilizer and Lime	17.94	23.46	28.75	
5. Crop Consulting	6.50	6.50	6.50	
6. Crop Insurance				
7. Drying				
8. Miscellaneous	10.00	10.00	10.00	
9. Custom Hire / Machinery Expense	163.21	189.75	214.31	
10. Non-machinery Labor	18.44	21.44	24.22	
11. Irrigation				
a. Labor	5.00	5.00	5.00	
b. Fuel and Oil	39.90	54.15	68.40	
c. Repairs and Maintenance	4.62	6.27	7.92	
d. Depreciation on Equipment and Well	43.43	43.43	43.43	
e. Interest on Equipment	28.95	28.95	28.95	
12. Land Charge / Rent	31.80	39.76	47.73	
G. SUB TOTAL	$ 403.42	$ 462.36	$ 518.84	
13. Interest on ½ Nonland Costs	10.47	12.26	13.96	
H. TOTAL COSTS	$ 413.90	$ 474.61	$ 532.80	
I. RETURNS OVER COSTS (F - H)	$ –14.96	$ 33.03	$ 76.02	
J. TOTAL COSTS/TON (H ÷ A)	$ 86.23	$ 76.55	$ 71.04	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	-1.11%	9.80%	17.34%	

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