This file is for historical purposes only and may not reflect current practices. For current recommendations, contact K-State Research and Extension.

KANSAS FARM MANAGEMENT & MARKETING HANDBOOK

KSU Farm Management Guide MF-584

Center-Pivot-Irrigated Alfalfa Cost-Return Budget (Custom Harvested)

Department of Agricultural Economics

K-STATE Kansas State University

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

James D. Sartwelle, III
Extension Agricultural Economist, SW

Daniel M. O'Brien
Extension Agricultural Economist, NW

Alfalfa is a major irrigated cash crop in Western Kansas. Sizable cattle feeding and expanding dairy operations in the area provide a ready market for alfalfa hay. Additionally, producers and hay brokers routinely ship alfalfa hay and pellets produced in the area out of Kansas. Under good management, alfalfa can be as profitable as corn or other irrigated grain crops.

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, which may require a center pivot system; and (4) soil type. Capital outlays will be $20,000 to $40,000 higher with a center pivot system, but labor requirements could be reduced by as much as 1 hour per acre compared to flood irrigation. MF-836, *Irrigation Capital Requirements and Energy Costs*, shows the irrigation costs and energy input amounts used in this budget.

Yield Goals, Return Factors

Cost per ton and net returns in crop production are highly dependent on yields. The following estimated budget includes three different yield levels. Yield goals vary for a number of reasons such as soil type/land quality, historical weather patterns, input levels, and management. Budgeting for alternative yield goals can help producers compare the profitability of crop enterprises on farmland tracts with varying yield potentials.

Multi-peril crop insurance is not available for this crop in this area. Land values have been adjusted for alternative yield goals in this budget. 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 and other investments.

Table 1. Factors Used for Cost-Return Budget

	Yield Level (ton)			
Item	**3.5**	**5.0**	**6.5**	
Water, 325 TDH	14	19	24	$2.55/inch
Fertilizer:				
N (Anhy.)	0	0	0	$0.17/lb
N (Dry)	0	0	0	$0.31/lb
P	40	60	80	$0.28/lb
K	0	0	0	$0.13 /lb
Lime	0	0	0	$0.005/lb
Seed, lbs	15	15	15	
Seed price, $/lb	$2.85	$2.85	$2.85	
Custom harvest, $/ton	$24.00	$24.00	$24.00	
Labor hours	3.85	3.85	3.85	
Labor price/hour				$10.80
Land value/acre	$480	$600	$720	
Land interest rate				6.00%
Land real estate tax rate				0.50%
Machinery investment				$83
Machinery life				10 yrs
Salvage value				35.00%
Interest rate on machinery				10.00%
Well, pump and gearhead value				$290
Well, pump and gearhead life				15 yrs
Power unit and meter value				$50
Power unit and meter life				7 yrs
Irrigation system value				$385
Irrigation system life				10 yrs
Insurance rate on machinery				0.25%
Interest on variable costs				10.00%

This file is for historical purposes only and may not reflect current practices. For current recommendations, contact K-State Research and Extension.

COST-RETURN PROJECTION — CENTER-PIVOT-IRRIGATED ALFALFA (CUSTOM HARVESTED)

	Yield Level (ton)			Your
	3.5	5.0	6.5	Farm
VARIABLE COSTS PER ACRE:[1]				
1. Labor	$ 41.58	$ 41.58	$ 41.58	
2. Seed	8.55	8.55	8.55	
3. Herbicide	19.25	19.25	19.25	
4 Insecticide	12.34	12.34	12.34	
5. Fertilizer and Lime	11.20	16.80	22.40	
6. Fuel and Oil — Crop	4.20	4.20	4.20	
7. Fuel and Oil — Pumping[2]	35.70	48.45	61.20	
8. Machinery and Equipment Repairs	5.00	5.00	5.00	
9. Irrigation Repairs and Maintenance	4.20	5.70	7.20	
10. Crop Insurance				
11. Drying				
12. Custom Hire[3]	84.00	120.00	156.00	
13. Crop Consulting	6.50	6.50	6.50	
14. Miscellaneous	7.00	7.00	7.00	
15. Interest on ½ Variable Costs	11.98	14.77	17.56	
A. TOTAL VARIABLE COSTS	$ 251.50	$310.14	$ 368.78	
FIXED COSTS PER ACRE:[1]				
16. Real Estate Taxes (including well)	3.85	4.45	5.05	
17. Interest on Land and Well[4]	46.20	53.40	60.60	
18. Rent for Rented Land[5]				
19. Depreciation on Crop Machinery	5.40	5.40	5.40	
20. Interest on Crop Machinery[6]	5.60	5.60	5.60	
21. Depreciation on Irrigation Equipment and Well	64.98	64.98	64.98	
22. Interest on Irrigation Equipment[6]	21.75	21.75	21.75	
23. Insurance on Machinery and Equipment	1.30	1.30	1.30	
B. TOTAL FIXED COSTS	$ 149.07	$ 156.87	$ 164.67	
C. TOTAL COSTS (A + B)	$ 400.57	$467.01	$ 533.45	
D. YIELD PER ACRE	3.5	5.0	6.5	
E. PRICE PER TON[7]	$ 91.00	$ 91.00	$ 91.00	
F. NET GOVERNMENT PAYMENT[7]	$ 12.18	$ 13.23	$ 14.29	
G. INDEMNITY PAYMENTS	$	$	$	
H. MISCELLANEOUS INCOME	$	$	$	
I. RETURNS PER ACRE [(D × E) + F + G + H]	$ 330.68	$468.23	$ 605.79	
J. RETURNS OVER VARIABLE COSTS (I – A)	$ 79.18	$158.09	$ 237.01	
K. RETURNS OVER TOTAL COSTS (I – C)	$ -69.89	$ 1.22	$ 72.34	
L. VARIABLE COSTS PER TON (A ÷ D)	$ 71.86	$ 62.03	$ 56.74	
M. TOTAL COSTS PER TON (C ÷ D)	$ 114.45	$ 93.40	$ 82.07	
N. NET RETURN ON INVESTMENT [(K+15+17+20+22) ÷ INVESTMENT][8]	1.81%	14.16%	22.15%	

[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.*

Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Manhattan, Kansas

MF-584 Revised October 1997

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 10-97—1.5M