K A N S A S
FARM MANAGEMENT
&
MARKETING
H A N D B O O K

KSU Farm Management Guide MF-996

Center-Pivot-Irrigated Popcorn

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Irrigated popcorn in Western Kansas has become a viable alternate crop for producers. With respect to government programs, popcorn is not considered "corn" so it is classified as a nonprogram crop. With the arrival of flex acres in the 1990 Farm Bill, popcorn is a crop that may fit into irrigated farming operations. The one rotational requirement of popcorn is that it does not follow field corn. Popcorn is a specialty food crop so it does require a higher level of management than field corn. Due to limited market outlets, there is also much more risk in marketing popcorn than other crops. Because of this, most popcorn is grown under contract. Producers should be aware of quality requirements and all premiums/discounts that exist if the crop does not meet contract specifications.

The cost of production for popcorn is similar to that of field corn. Fertility requirements equal 5 to 10 percent under field corn while herbicide requirements are essentially the same for the two crops. Good weed control early in the season is key. Insect control will vary from year to year and among producers but is critical since popcorn is a food crop. Producers should expect to treat once each for corn borers and spider mites in a normal year. Rootworm treatments will also be needed in continuous popcorn operations. Earworms are not currently a major problem in Kansas, but if an infestation occurs, treatments could be needed every 3 or 4 days for 2 to 3 weeks. The cost and number of these treatments will depend on whether it can be applied through chemigation or if aerial application is required.

Popcorn requires about the same amount of water as field corn. Eliminating one fall watering is possible. Popcorn does not have as extensive a root system as field corn, so watering popcorn more often with less water per irrigation is common. Yields on popcorn are about half the yields of field corn. A uniform stand is important as it will help increase yield and quality.

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.

Yield Level

Cost per bushel and net returns in crop production are highly dependent on yields. The following estimated budget includes three different yield levels. Yield levels vary for many reasons such as soil type/land quality, weather, input levels, and management. Budgeting at multiple yield levels can help producers examine the financial risk of a crop enterprise that is directly related to production risk as well as to compare the profitability of crop enterprises on farmland tracts with varying yield potentials.

Table 1. Factors Used for Cost-Return Budget

	Yield Level (cwt.)			
Item	**38**	**43**	**48**	
Water, 325 TDH				
(acre inches)	14	17	20	$2.41/inch
Fertilizer:				
N (Anhy.)	145	145	160	$0.19/lb
N (Dry)	20	20	20	$0.29/lb
P	40	40	40	$0.27/lb
K	0	0	0	$0.13/lb
Seed (lbs/Acre)	33	33	36	
Seed Price, $/lb	$0.72	$0.72	$0.72	
Labor Hours	2.50	2.50	2.50	
Labor Price/Hour				$9.00
Land Value/Acre				$540.00
Land Interest Rate				6.00%
Machinery Investment				$208.00
Machinery Life				10 yrs
Interest Rate on Machinery				10.00%
Well, Pump, and Gearhead Value				$290.00
Well, Pump, and Gearhead Life				15 yrs
Power Unit and Meter Value				$50.00
Power Unit and Meter Life				7 yrs
Irrigation System Value				$385.00
Irrigation System Life				10 yrs
Insurance Rate on Machinery				0.25%
Interest on Variable Costs				10.00%

COST-RETURN PROJECTION—CENTER PIVOT IRRIGATED POPCORN[1]

	Yield Level (cwt.)			
	38	43	48	Your Farm
VARIABLE COSTS PER ACRE:				
1. Labor ($2.50 hrs × $9.00 per hr)	$ 22.50	$ 22.50	$ 22.50	
2. Seed (___ seeds × $0.72 per 1,000 seeds)	23.76	23.76	25.92	
3. Herbicide ($20.30) and Insecticide ($53.38)	73.68	73.68	73.68	
4. Fertilizer	44.15	44.15	47.00	
5. Fuel and Oil—Crop	6.96	6.96	6.96	
6. Fuel and Oil—Pumping[2]	33.74	40.97	48.20	
7. Crop Machinery Repairs	22.00	22.00	22.00	
8. Irrigation Repairs and Maintenance	4.20	5.10	6.00	
9. Crop Insurance				
10. Drying @ $0.10/bu				
11. Custom Hire (_____ operation)[3]				
12. Crop Consulting	6.50	6.50	6.50	
13. Miscellaneous	6.00	6.00	6.00	
14. Interest ½ Variable Costs @ 10%	12.17	12.58	13.24	
A. TOTAL VARIABLE COSTS	$255.66	$264.20	$278.00	
FIXED COSTS PER ACRE:				
15. Real Estate Taxes (including well) @ 0.5%	$ 4.15	$ 4.15	$ 4.15	
16. Interest on Land and Well ($830/A @ 10%[6] 6%)[4]	49.80	49.80	49.80	
17. Rent for Rented Land[5]				
18. Depreciation on Crop Machinery	13.52	13.52	13.52	
19. Interest on Crop Machinery @ 10%[6]	14.04	14.04	14.04	
20. Depreciation on Irrigation Equipment and Well	64.98	64.98	64.98	
21. Interest on Irrigation Equipment @ 10%[6]	21.75	21.75	21.75	
22. Insurance on Machinery and Equipment @ .25%	1.61	1.61	1.61	
B. TOTAL FIXED COSTS	$169.84	$169.84	$169.84	
C. TOTAL COSTS (A + B)	$425.51	$434.04	$447.84	
D. YIELD PER ACRE	38	43	48	
E. PRICE PER BUSHEL	$ 8.30	$ 8.30	$ 8.30	
F. NET GOVERNMENT PAYMENT[7]	$	$	$	
G. RETURNS PER ACRE ((D × E) + F)	$315.40	$356.90	$398.40	
H. RETURNS OVER VARIABLE COSTS (G-A)	$ 59.74	$ 92.70	$120.40	
I. RETURNS OVER TOTAL COSTS (G-C)	–$110.11	$–77.14	$–49.44	
J. VARIABLE COSTS PER CWT (A ÷ D)	$ 6.73	$ 6.14	$ 5.79	
K. FIXED COSTS PER CWT (B ÷ D)	$ 4.47	$ 3.95	$ 3.54	
L. TOTAL COSTS PER CWT (C ÷ D)	$ 11.20	$ 10.09	$ 9.33	
M. ASSET TURNOVER (G ÷ INVESTMENT)[8]	21.41%	24.23%	27.05%	
N. NET RETURN ON INVESTMENT ((I+14+16+19) ÷ INVESTMENT)[8]	–2.31%	–0.05%	1.88%	

[1]See Table 1, page 1, for factors used. [2]See MF-836, "Irrigation Capital Requirements and Energy Costs." If using custom hire, adjust lines 5, 7, 18, and 19. [4]Assumes interest rate shown in Table 1. [5]If cash rented, insert zero in lines 15 and 16. [6]Assumes one-half the (original cost plus salvage value) at the interest rate shown in Table 1. [7]Net government payment equals yield per acre (D) times expected deficiency payment minus prorated cost of set-aside acres. Based on 15% flex acres and 5% ARP. The price used was a five-year average price. The 1995 farm program may have major changes. [8]Investment equals total value of all fixed assets shown in Table 1.

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