Grain Sorghum Cost-Return Budget (W-S-F Rotation) in Western Kansas

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Western Kansas grain producers now have near-complete planting flexibility under the 1996 Federal Agricultural Improvement and Reform Act. This freedom to select from a number of spring crop alternatives following wheat in an intensive wheat-summer crop-fallow program has lead to an increase in the acreage of grain sorghum in Western Kansas. Grain sorghum has been an important crop in Western Kansas because it is well suited to the arid climate of the area. Non-irrigated grain sorghum acreage has gradually increased in the area since 1993—with the exception of 1996. In that year a late spring freeze severely damaged the wheat crop and caused a one time large increase in sorghum acres. K-State research on intensive dryland cropping systems indicates that reduced tillage grain sorghum planted after winter wheat leads to higher and more consistent yields and is more profitable than conventional-tillage grain sorghum.

Expected Yields

Crop production costs per unit and net returns are highly dependent on yields. The following estimated budget includes three different yield levels, which are intended to represent expected yields for land of varying quality for a given level of management. Alternative expected yields can help producers compare the profitability of crop enterprises on farmland tracts with varying yield potentials. Land values and government payments have been adjusted for alternative yield levels in this budget. In customizing this budget to your farm, attention should be given to using land values representative of your farm's productive capacity.

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, 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.

Variable and Fixed Costs, Return Factors

Variable costs such as fertilizer, repairs, and fuel-oil may vary with the level of production. The cost columns show the interest on the variable costs (Lines 1 through 15) for one-half year. Fixed costs do not vary with level of production and are incurred by virtue of owning assets such as land and machinery. 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	**65**	**75**	**86**	
Fertilizer:				
N (Anhy.)	56	65	74	$0.15/lb
N (Dry)	19	22	25	$0.24/lb
P	29	34	39	$0.18/lb
K	0	0	0	$0.14/lb
Lime	0	0	0	$0.01/lb
Seed, lbs.	3.0	3.0	3.0	
Seed price, $/lb.	$1.05	$1.05	$1.05	
Labor hours	1.15	1.20	1.25	
Labor price/hour				$10.80
Land value/acre*	$398	$498	$598	
Land interest rate				6.00%
Land real estate tax rate				0.50%
Machinery investment**				$191
Machinery life				10 yrs
Salvage value				35%
Interest rate on machinery				10.00%
Insurance rate on machinery				0.25%
Interest on variable costs				10.00%

**All land costs were computed, and then mulitplied by a factor of 1.5 to account for fallow land (two crops every 3 years).*
***Investment required/crop and fallow acres.*

COST-RETURN PROJECTION — GRAIN SORGHUM — (W-S-F ROTATION)
WESTERN KANSAS

	Yield Level (bu)			Your
	65	75	86	Farm
VARIABLE COSTS PER ACRE:[1]				
1. Labor	$ 12.38	$ 12.96	$ 13.54	
2. Seed	3.15	3.15	3.15	
3. Herbicide	13.01	13.01	13.01	
4. Insecticide	4.68	4.68	4.68	
5. Fertilizer and Lime	18.18	21.15	24.12	
6. Fuel and Oil	5.91	6.18	6.46	
7.				
8. Machinery and Equipment Repairs	9.68	10.14	10.60	
9.				
10. Crop Insurance				
11. Drying	6.50	7.50	8.60	
12. Custom Hire				
13. Crop Consulting				
14. Miscellaneous	5.00	5.00	5.00	
15. Interest on 1/2 Variable Costs	3.92	4.19	4.46	
A. TOTAL VARIABLE COSTS	$ 82.41	$ 87.96	$ 93.62	
FIXED COSTS PER ACRE:[1]				
16. Real Estate Taxes	2.99	3.74	4.49	
17 Interest on Land[2]	44.82	44.82	44.82	
18. Rent for Rented Land				
19. Depreciation on Crop Machinery	12.42	12.42	12.42	
20. Interest on Crop Machinery[3]	12.89	12.89	12.89	
21.				
22.				
23. Insurance on Machinery	0.48	0.48	0.48	
B. TOTAL FIXED COSTS	$ 73.59	$ 74.34	$ 75.09	
C. TOTAL COSTS (A + B)	$156.00	$162.30	$168.71	
D. YIELD PER ACRE	65	75	86	
E. PRICE PER BUSHEL[4]	$ 1.78	$ 1.78	$ 1.78	
F. NET GOVERNMENT PAYMENT[4]	$ 8.67	$ 9.42	$ 10.17	
G. INDEMNITY PAYMENTS	$	$	$	
H. MISCELLANEOUS INCOME	$	$	$	
I. RETURNS PER ACRE [(D × E) + F + G + H]	$ 124.37	$ 142.92	$163.25	
J. RETURNS OVER VARIABLE COSTS (I – A)	$ 41.96	$ 54.96	$ 69.63	
K. RETURNS OVER TOTAL COSTS (I – C)	$ -31.63	$ -19.38	$ -5.46	
L. VARIABLE COSTS PER BUSHEL (A ÷ D)	$ 1.27	$ 1.17	$ 1.09	
M. TOTAL COSTS PER BUSHEL (C ÷ D)	$ 2.40	$ 2.16	$ 1.96	
N. NET RETURN ON INVESTMENT [(K+15+17+20) ÷ INVESTMENT][5]	3.81%	4.53%	5.21%	

[1]*Totals were derived using information listed in Table 1.* [2]*Assumes interest rate shown in Table 1.* [3]*Assumes one-half the average investment [(initial investment + salvage value) ÷ 2] at the interest rate shown in Table 1.* [4]*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.* [5]*Investment equals total value of all fixed assets shown in Table 1.*

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