

# Wheat Cost-Return Budget in Western Kansas



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Research and Extension

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In most years, Kansas is the number one wheat producing state in the nation. Historically, wheat has been the principal nonirrigated crop grown in western Kansas. However, the position of wheat in many western Kansas cropping systems has changed, as many producers have switched from traditional wheat-fallow rotations to more intensive wheat-summer crop-fallow cropping systems during the last decade. This transition has been encouraged by increased planting flexibility in recent government farm programs and by competitive pressure placed on farmers to increase the profitability of nonirrigated crop enterprises.

The goal of farmers using these more intensive rotations is to increase crop production and income through effective soil moisture conservation and utilization. Wheat is an essential crop in these intensive dryland-cropping systems, providing valuable residue for following summer crops. In no-till conditions, university research shows that wheat residue provides approximately 30 percent greater water infiltration than grain sorghum residue. Wheat is also the only winter annual crop in western Kansas rotations, providing a break in the growth cycle of summer annual weeds.

There are four recognized phases to a three-year wheat-summer crop-fallow rotation. Phase 1 is the period of winter wheat production, lasting approximately 9 months (September 15 of year 1 to July 1 of year 2). Phase 2 is the period of winter wheat stubble, covering 10 or 11 months

(July 1 of year 2 to May or June of year 3). Phase 3 is the summer crop production period of approximately 4 to 5 months (May to June of year 3 to October of year 3). Phase 4 is the time of summer crop stubble, lasting approximately 11 months (October of year 3 to September 15 of year 4). The primary spring crops to be considered in rotation with wheat in this cropping system and their associated Farm Management Guides are as follows: grain sorghum (MF-904), corn (MF-2150), oil-type and confectionary sunflowers (MF-887), cane hay (MF-997), and soybeans (MF-2366).

The conventional wheat-fallow rotation has been a mainstay crop enterprise for many years in western Kansas. The 14- to 15-month fallow period (from July harvest to wheat seeding in September or October of the following year) in this rotation has traditionally served as a time to accumulate soil moisture to be used by the following wheat crop. Although many crop producers in this region are now using wheat-summer crop-fallow or even more intensive cropping systems, the wheat-fallow rotation still is used by a number of western Kansas farmers. Farmers may choose not to adopt more intensive cropping systems because of a) the change in management expertise required to make such intensive cropping systems work, b) the additional input costs of the intensive systems, or c) other special soil type/field conditions on their farms that limit the effectiveness of the more intensive rotations.

**Table 1A.** *Production Inputs — Wheat-Fallow*

Item	Yield Level (bu)			
	35	45	55	
Seed, lbs	50	65	80	\$0.16/lb
Fertilizer:				
N (anhydrous)	32	49	67	\$0.44/lb
N	0	0	0	\$0.68/lb
P	20	26	31	\$0.80/lb
K	0	0	0	\$0.55/lb
Lime	0	0	0	\$0.01/lb
Herbicide				
RT3	16.5	16.5	16.5	\$0.12/oz
+ 2, 4-D	1.0	1.0	1.0	\$2.94/pt
Ally	0.1	0.1	0.1	\$13.93/oz
+ Banvel	4.0	4.0	4.0	\$0.34/oz

**Table 1B.** *Production Inputs — Wheat-Summer Crop-Fallow*

Item	Yield Level (bu)			
	35	45	55	
Seed, lbs	50	65	80	\$0.16/lb
Fertilizer:				
N (anhydrous)	32	49	67	\$0.44/lb
N	0	0	0	\$0.68/lb
P	20	26	31	\$0.80/lb
K	0	0	0	\$0.55/lb
Lime	0	0	0	\$0.01/lb
Herbicide				
RT3	16.5	16.5	16.5	\$0.12/oz
+ 2, 4-D	1.0	1.0	1.0	\$2.94/pt
Ally	0.1	0.1	0.1	\$13.93/oz
+ Banvel	4.0	4.0	4.0	\$0.34/oz

## 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.

Price per bushel represents an expected harvest price in Scott City, Kan., accounting for government marketing loan price support levels. Wheat producers in other regions of 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 typically exceeded premiums due to government subsidies.

## Costs Per Acre

Production costs for three alternative 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. Tables 1A and 1B identify the typical seed, fertilizer, herbicide, and insecticide requirements (rate and cost/unit) for conventional-till wheat in a wheat-fallow cropping system, and for reduced-till wheat in a wheat-summer crop-fallow cropping system, respectively. Herbicide requirements include both pre-crop and in-crop treatments, and are greater in the reduced-till wheat-summer crop-fallow cropping system. Tables 2A and 2B outline the field operations and land resources used for conventional-till

**Table 2A.** *Machinery and Land Resources — Wheat-Fallow*

Item	Yield Level (bu)			Custom Rate
	35	45	55	
Tillage/Planting/Chemical Applications:				
Sweep	3	3	3	\$7.92/a
Disk	0	0	0	\$9.89/a
Field cultivate	1	1	1	\$9.49/a
Drill	1	1	1	\$12.36/a
Anhydrous application	1	1	1	\$10.89/a
Fertilizer application	0	0	0	\$5.36/a
Herbicide application	2	2	2	\$5.47/a
Insecticide application	0	0	0	\$5.54/a
Harvest				
Base charge	1	1	1	\$20.63/a
Extra charge for yields exceeding	22	22	22	\$0.200/bu
Hauling	35	45	55	\$0.191/bu
Non-machinery labor	0.85	0.88	0.91	\$13.00/hr
Land charge/rent	\$102.40	\$128.00	\$153.60	
Interest on capital				6.5%

**Table 2B.** *Machinery and Land Resources — Wheat-Summer Crop-Fallow*

Item	Yield Level (bu)			Custom Rate
	35	45	55	
Tillage/Planting/Chemical Applications:				
Sweep	2	2	2	\$7.92/a
Disk	0	0	0	\$9.89/a
Field cultivate	0	0	0	\$9.49/a
Drill	1	1	1	\$12.36/a
Anhydrous application	1	1	1	\$10.89/a
Fertilizer application	0	0	0	\$5.36/a
Herbicide application	2	2	2	\$5.47/a
Insecticide application	0	0	0	\$5.54/a
Harvest				
Base charge	1	1	1	\$20.63/a
Extra charge for yields exceeding	22	22	22	\$0.200/bu
Hauling	35	45	55	\$0.191/bu
Non-machinery labor	0.69	0.73	0.76	\$13.00/hr
Land charge/rent	\$76.80	\$96.00	\$115.20	
Interest on capital				6.5%

wheat-fallow and for reduced-till wheat in a wheat summer crop-fallow cropping system. Each tillage, planting, and harvest operation is identified.

### Other Wheat Production Management Resources

K-State Research and Extension has a number of resources available relating to wheat production and marketing. The *Kansas Wheat Production Handbook*, C-529, provides

information on recommended wheat production practices. More information on wheat variety performance, insect, weed and disease management, market prospects, wheat residue and yield estimation, and other wheat production and marketing information can be obtained through local K-State Research and Extension offices or via the K-State Research and Extension Wheat Web site, [www.ksre.ksu.edu/wheatpage/agronomy.htm](http://www.ksre.ksu.edu/wheatpage/agronomy.htm).

## COST-RETURN PROJECTION—WHEAT (W-F ROTATION)—WESTERN KANSAS

	Yield Level (bu)			Your Farm
	35	45	55	
<b>INCOME PER ACRE</b>				
A. Yield per acre .....	35	45	55	_____
B. Price per bushel .....	\$ 6.37	\$ 6.37	\$ 6.37	_____
C. Net government payment .....	\$ 14.96	\$ 16.26	\$ 17.56	_____
D. Indemnity payments .....	\$ _____	\$ _____	\$ _____	_____
E. Miscellaneous income.....	\$ _____	\$ _____	\$ _____	_____
F. Returns/acre ((A × B) + C + D + E) .....	\$ 237.91	\$ 302.91	\$ 367.91	_____
<b>COSTS PER ACRE</b>				
1. Seed .....	\$ 8.00	\$ 10.40	\$ 12.80	_____
2. Herbicide .....	7.67	7.67	7.67	_____
3. Insecticide / Fungicide .....	_____	_____	_____	_____
4. Fertilizer and Lime .....	30.08	42.36	54.28	_____
5. Crop Consulting .....	_____	_____	_____	_____
6. Crop Insurance .....	_____	_____	_____	_____
7. Drying .....	_____	_____	_____	_____
8. Miscellaneous.....	5.50	5.50	5.50	_____
9. Custom Hire / Machinery Expense.....	97.36	101.27	105.18	_____
10. Non-machinery Labor .....	11.00	11.44	11.88	_____
11. Irrigation .....	_____	_____	_____	_____
a. Labor .....	_____	_____	_____	_____
b. Fuel and Oil.....	_____	_____	_____	_____
c. Repairs and Maintenance .....	_____	_____	_____	_____
d. Depreciation on Equipment and Well.....	_____	_____	_____	_____
e. Interest on Equipment.....	_____	_____	_____	_____
12. Land Charge / Rent.....	102.40	128.00	153.60	_____
G. SUB TOTAL .....	\$ 262.01	\$ 306.64	\$ 350.91	_____
13. Interest on ½ Nonland Costs .....	5.19	5.81	6.41	_____
H. TOTAL COSTS.....	\$ 267.20	\$ 312.45	\$ 357.33	_____
I. RETURNS OVER COSTS (F - H) .....	\$ -29.28	\$ -9.53	\$ 10.59	_____
J. TOTAL COSTS/BUSHEL (H ÷ A) .....	\$ 7.63	\$ 6.94	\$ 6.50	_____
K. RETURN TO ANNUAL COST (I + 13) ÷ G .....	-9.20%	-1.22%	4.84%	_____

**COST-RETURN PROJECTION—WHEAT (W-S-F ROTATION)—WESTERN KANSAS**

	Yield Level (bu)			Your Farm
	35	45	55	
<b>INCOME PER ACRE</b>				
A. Yield per acre.....	35	45	55	_____
B. Price per bushel .....	\$ 6.37	\$ 6.37	\$ 6.37	_____
C. Net government payment .....	\$ 11.22	\$ 12.20	\$ 13.17	_____
D. Indemnity payments .....	\$ _____	\$ _____	\$ _____	_____
E. Miscellaneous income.....	\$ _____	\$ _____	\$ _____	_____
F. Returns/acre ((A × B) + C + D + E) .....	\$ 234.17	\$ 298.85	\$ 363.52	_____
<b>COSTS PER ACRE</b>				
1. Seed .....	\$ 8.00	\$ 10.40	\$ 12.80	_____
2. Herbicide .....	7.67	7.67	7.67	_____
3. Insecticide / Fungicide .....	_____	_____	_____	_____
4. Fertilizer and Lime .....	30.08	42.36	54.28	_____
5. Crop Consulting .....	_____	_____	_____	_____
6. Crop Insurance .....	_____	_____	_____	_____
7. Drying .....	_____	_____	_____	_____
8. Miscellaneous.....	5.50	5.50	5.50	_____
9. Custom Hire / Machinery Expense.....	79.95	83.86	87.77	_____
10. Non-machinery Labor .....	9.03	9.48	9.92	_____
11. Irrigation	_____	_____	_____	_____
a. Labor.....	_____	_____	_____	_____
b. Fuel and Oil.....	_____	_____	_____	_____
c. Repairs and Maintenance .....	_____	_____	_____	_____
d. Depreciation on Equipment and Well.....	_____	_____	_____	_____
e. Interest on Equipment.....	_____	_____	_____	_____
12. Land Charge / Rent.....	76.80	96.00	115.20	_____
G. SUB TOTAL .....	\$ 217.03	\$ 255.26	\$ 293.14	_____
13. Interest on ½ Nonland Costs .....	4.56	5.18	5.78	_____
H. TOTAL COSTS.....	\$ 221.59	\$ 260.44	\$ 298.92	_____
I. RETURNS OVER COSTS (F - H) .....	\$ 12.58	\$ 38.41	\$ 64.60	_____
J. TOTAL COSTS/BUSHEL (H ÷ A) .....	\$ 6.33	\$ 5.79	\$ 5.43	_____
K. RETURN TO ANNUAL COST (I + 13) ÷ G .....	7.90%	17.07%	24.01%	_____

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Dumler et al., *Wheat Cost-Return Budget in Western Kansas*, Kansas State University, December 2011.

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