

Sunflower Cost-Return Budget in Western Kansas

Department of Agricultural Economics



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Sunflower is an economically viable crop alternative for growers in the High Plains region, including Kansas, Colorado, and Nebraska. The state of Kansas ranked third in the nation in oil-type sunflower acreage in 2002 with 155,000 acres, behind North Dakota (1,105,000 acres) and South Dakota (375,000 acres). Kansas ranked sixth in the United States in non-oil (i.e., primarily confection and some birdseed) sunflower acres (13,000 acres), following North Dakota (210,000 acres), South Dakota (55,000 acres), Minnesota (27,000 acres), Texas (23,000 acres), and Colorado (20,000 acres).

Dryland confection and oil-type sunflowers are being used by western Kansas farmers in wheat-summer crop-fallow or even more intensive crop rotations. Sunflower is also a viable "double crop" option following wheat in western Kansas where growing season length permits. The quality of farmland and the management expertise of crop producers can have large impacts on sunflower yields. Sunflower moth is a potential problem, but can be controlled with management practices such as planting date selection, diligent field scouting, and timely application of insecticides when needed.

The profitability of dryland sunflower production has been comparable in recent years to other no-till summer

crops in High Plains cropping systems, including corn, grain sorghum, soybeans, and cane hay-type forages. Sunflower and grain sorghum production are similar in many respects, such as in tillage practices, crop water requirements, and fertility needs.

Sunflower Prices

The sunflower prices used in these budgets do not include any premiums or discounts for oil content, foreign matter, or identification such as a mid-oleic or Nusun, variety. For confection sunflowers it is assumed that 65 percent of sunflower seeds are graded as "large," with the remaining 35 percent graded as "small." The actual proportion of large versus small confection sunflower seed varies from year to year, depending on growing conditions and other factors. The existence of several major sunflower processing plants in the High Plains region provides area sunflower producers with local market outlets for the crop, and helps ensure the long run viability of the sunflower enterprise in the region.

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

Table 1A. Production Inputs — Wheat-Oil-Type Sunflower-Fallow

Item	Yield Level (lbs)			
	1,200	1,500	1,800	
Seed, 1,000/a	20.0	20.0	20.0	\$0.96/1,000
Fertilizer:				
N (anhydrous)	0	0	0	\$0.21/lb
N	60	75	90	\$0.30/lb
P	22	28	33	\$0.24/lb
K	0	0	0	\$0.16/lb
Lime	0	0	0	\$0.01/lb
Herbicide				
RT Master II + 2,4-D	1.0	1.0	1.0	\$4.66/a
RT Master II + 2,4-D	1.0	1.0	1.0	\$4.66/a
Roundup Ultra Max II + Prowl + Spartan	1.0	1.0	1.0	\$15.70/a
Insecticide / Fungicide				
Warrior 1EC	0.025	0.025	0.025	\$279.33/lb
Warrior 1EC	0.025	0.025	0.025	\$279.33/lb

Table 1B. Production Inputs — Wheat-Confectionary Sunflower-Fallow

Item	Yield Level (lbs)			
	1,050	1,350	1,650	
Seed, 1,000/a	16	16	16	\$1.05/1,000
Fertilizer:				
N (anhydrous)	0	0	0	\$0.21/lb
N	53	68	83	\$0.30/lb
P	20	25	31	\$0.24/lb
K	0	0	0	\$0.16/lb
Lime	0	0	0	\$0.01/lb
Herbicide				
RT Master II + 2,4-D	1.0	1.0	1.0	\$5.66/a
RT Master II + 2,4-D	1.0	1.0	1.0	\$5.66/a
Roundup Ultra Max II + Prowl + Spartan	1.0	1.0	1.0	\$15.70/a
Insecticide / Fungicide				
Warrior 1EC	0.025	0.025	0.025	\$279.33/lb
Warrior 1EC	0.025	0.025	0.025	\$279.33/lb

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 hundred weight (cwt) for oil-type sunflowers represents an expected harvest price in Goodland, Kan., accounting for government sunflower marketing loan price support levels. Sunflower 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 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. Tables 1A and 1B identify the typical seed,

Table 2A. Machinery and Land Resources — Wheat-Oil-Type Sunflower-Fallow

Item	Yield Level (lbs)			Custom Rate	Farm Rate*
	1,200	1,500	1,800		
Tillage/Planting/Chemical Applications:					
Sweep	0	0	0	\$5.47	\$6.91/a
Disk	0	0	0	\$6.42	\$8.11/a
Field cultivate	0	0	0	\$6.18	\$7.81/a
No-till plant	1	1	1	\$10.25	\$12.95/a
Anhydrous application	0	0	0	\$6.18	\$7.81/a
Fertilizer application	1	1	1	\$3.68	\$4.65/a
Herbicide application	3	3	3	\$3.85	\$4.86/a
Insecticide application (aerial)	2	2	2	\$4.83	\$6.10/a
Harvest					
Base charge	1	1	1	\$18.90	\$23.87/a
Extra charge for yields exceeding	0	0	0	\$0.000	\$0.000/cwt
Hauling	1,200	1,500	1,800	\$0.202	\$0.255/cwt
Non-machinery labor	0.81	0.81	0.82		\$10.00/hr
Land value/acre	\$416	\$520	\$624		
Interest on capital					7.0%

* Farm Rate equals Custom Rate x 126.3%

Table 2B. Machinery and Land Resources — Wheat-Confectionary Sunflower-Fallow

	Yield Level (lbs)			Custom	Farm
Item	1,050	1,350	1,650	Rate	Rate*
Tillage/Planting/Chemical Applications:					
Sweep	0	0	0	\$5.47	\$6.91/a
Disk	0	0	0	\$6.42	\$8.11/a
Field cultivate	0	0	0	\$6.18	\$7.81/a
No-till plant	1	1	1	\$10.25	\$12.95/a
Anhydrous application	0	0	0	\$6.18	\$7.81/a
Fertilizer application	1	1	1	\$3.68	\$4.65/a
Herbicide application	3	3	3	\$3.85	\$4.86/a
Insecticide application (aerial)	2	2	2	\$4.83	\$6.10/a
Harvest					
Base charge	1	1	1	\$18.90	\$23.87/a
Extra charge for yields exceeding	0	0	0	\$0.000	\$0.000/cwt
Hauling	1,050	1,350	1,650	\$0.202	\$0.255/cwt
Non-machinery labor	0.80	0.81	0.82		\$10.00/hr
Land value/acre	\$416	\$520	\$624		
Interest on capital					7.0%

* Farm Rate equals Custom Rate x 126.3%

fertilizer, herbicide, and insecticide requirements (rate and cost/unit) for no-till oil-type and confection sunflowers, respectively. Herbicide requirements include both pre-crop and in-crop treatments. Tables 2A and 2B outline the machinery and land resources used for no-till sunflowers in a wheat-sunflower-fallow rotation. Each tillage, planting, and harvest operation is identified.

Other Sunflower Production and Marketing Resources

K-State Research and Extension has a number of resources available relating to sunflower production and marketing.

The *High Plains Sunflower Production Handbook*, MF-2384, provides information on recommended sunflower production practices for the High Plains region, including Kansas, Colorado, Nebraska, and Wyoming. *Sunflower Marketing in the High Plains*, L-887, addresses a number of practical marketing issues and the development of an effective sunflower-marketing plan. *Economic issues with Sunflowers*, MF-2514, discusses a number of economic trends and issues affecting the U.S. and Kansas sunflower industry. These publications can be obtained through K-State Research and Extension offices or via the K-State Research and Extension Web site, www.oznet.ksu.edu.

COST-RETURN PROJECTION — OIL-TYPE SUNFLOWERS (W-SF-F ROTATION) — WESTERN KANSAS

	Yield Level (lbs)			Your Farm
	1,200	1,500	1,800	
INCOME PER ACRE				
A. Yield per acre	1,200	1,500	1,800	
B. Price per cwt	\$ 10.12	\$ 10.12	\$ 10.12	
C. Net government payment.....	\$ 11.22	\$ 12.20	\$ 13.17	
D. Indemnity payments.....	\$	\$	\$	
E. Miscellaneous income	\$	\$	\$	
F. Returns/acre ((A × B) + C + D + E)	\$ 132.66	\$ 164.00	\$ 195.33	
COSTS PER ACRE				
1. Seed	\$ 19.20	\$ 19.20	\$ 19.20	
2. Herbicide	25.01	25.01	25.01	
3. Insecticide / Fungicide	13.97	13.97	13.97	
4. Fertilizer and Lime.....	23.28	29.22	34.92	
5. Crop Consulting				
6. Crop Insurance				
7. Drying				
8. Miscellaneous	5.50	5.50	5.50	
9. Custom Hire / Machinery Expense	71.32	72.08	72.85	
10. Non-machinery Labor	8.06	8.15	8.23	
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	35.88	44.85	53.82	
G. SUB TOTAL	\$ 202.21	\$ 217.98	\$ 233.50	
13. Interest on ½ Nonland Costs.....	5.82	6.06	6.29	
H. TOTAL COSTS	\$ 208.04	\$ 224.04	\$ 239.79	
I. RETURNS OVER COSTS (F - H).....	\$ -75.37	\$ -60.04	\$ -44.45	
J. TOTAL COSTS/BUSHEL (H ÷ A)	\$ 17.34	\$ 14.94	\$ 13.32	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	-34.40%	-24.76%	-16.34%	

**COST-RETURN PROJECTION — CONFECTIONARY SUNFLOWERS
(W-SF-F ROTATION) — WESTERN KANSAS**

	Yield Level (lbs)			Your Farm
	1,050	1,350	1,650	
INCOME PER ACRE				
A. Yield per acre	1,050	1,350	1,650	
B. Price per cwt	\$ 16.90	\$ 16.90	\$ 16.90	
C. Net government payment.....	\$ 11.22	\$ 12.20	\$ 13.17	
D. Indemnity payments.....	\$	\$	\$	
E. Miscellaneous income	\$	\$	\$	
F. Returns/acre ((A × B) + C + D + E)	\$ 188.67	\$240.35	\$ 292.02	
COSTS PER ACRE				
1. Seed	\$ 16.80	\$ 16.80	\$ 16.80	
2. Herbicide	27.01	27.01	27.01	
3. Insecticide / Fungicide	13.97	13.97	13.97	
4. Fertilizer and Lime.....	20.70	26.40	32.34	
5. Crop Consulting				
6. Crop Insurance				
7. Drying				
8. Miscellaneous	5.50	5.50	5.50	
9. Custom Hire / Machinery Expense	70.93	71.70	72.46	
10. Non-machinery Labor	8.02	8.10	8.19	
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	35.88	44.85	53.82	
G. SUB TOTAL	\$ 198.81	\$214.33	\$230.09	
13. Interest on ½ Nonland Costs.....	5.70	5.93	6.17	
H. TOTAL COSTS	\$ 204.51	\$220.26	\$236.26	
I. RETURNS OVER COSTS (F - H).....	\$ -15.84	\$ 20.09	\$ 55.76	
J. TOTAL COSTS/CWT ((H ÷ A) × 100)	\$ 19.48	\$ 16.32	\$ 14.32	
K. RETURN TO ANNUAL COST (I + 13) ÷ G	-5.10%	12.14%	26.92%	

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