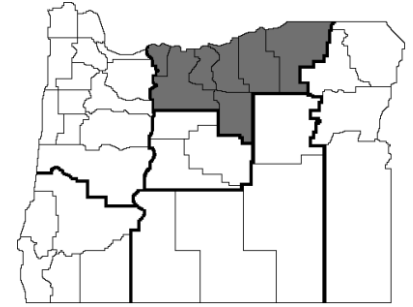


Enterprise Budget

Wheat (Winter) Following Fallow, Conservation Tillage, Less Than 12-inch Precipitation Zone, North Central Region

Clark Seavert¹, Sandy Macnab², Kayci Sharp³ and Steve Petrie⁴

¹Agricultural Economist, Department of Agricultural & Resource Economics, ²Extension Cereal Grains, Sherman/Wasco Counties, ³Student Intern, Eastern Oregon University, and ⁴Director of the Columbia Basin Agricultural Research Center, Oregon State University.



AEB 0033, Revised October 2012

This enterprise budget estimates the typical costs and returns of producing winter wheat using conservation tillage production practices in a less than 12-inch precipitation zone. It should be used as a guide to estimate actual costs and returns and is not representative of any particular farm. The major assumptions used in constructing this budget are discussed below. Assistance provided by area producers and agribusinesses is greatly appreciated.

Cropping Pattern

This budget is based on a 3,800-acre farm with 1,900 acres in winter wheat production each year following 1,900 acres of fallow. The average annual precipitation is less than 12-inches. Wheat yields in this cropping system range from 35 to 60 bushels per acre. A typical yield in this budget is 45 bushels per acre.

Land

A land lease charge of \$113 per acre is included to represent the cost of leasing or owning land. This correlates to the payment a landowner would receive under a one-third crop-share lease and paying one-third of the chemicals and fertilizer costs, the most common arrangement in this area, under our assumed prices and yields.

Labor

Typically tractor drivers and harvest labor cost approximately \$12 per hour, all of which include social security, worker's compensation, unemployment insurance, and other labor overhead expenses. For this study, owner labor is valued at the same rate as tractor driver rates, and all labor is assumed to be a cash costs. Labor hours are calculated based on machinery hours.

Capital

Interest on operating capital (5 percent) is treated as a cash expense. One-third of the cash expenses are borrowed for 12-months. Interest on intermediate (6 percent) and long-term capital (4 percent) is treated as a non-cash opportunity cost to the owner.

Machinery and Equipment

The machinery and equipment used in this budget is sufficient for a 3,800-acre farm in a less than 12-inch precipitation zone. A detailed breakdown of machinery values is shown in Table 2. Note: Precision technologies,

such as GPS auto-steer and spray boom controller, are included in this budget, which increase machine efficiencies and lowers labor and machinery and equipment hours. Estimated machinery costs are shown in Table 3. The machinery costs are estimated based on the total farm use of the machinery. Gasoline costs \$4.02, on-road diesel \$4.10 and off-road diesel \$3.55 per gallon. Table 4 shows the labor, variable, and fixed costs for certain machinery operations.

Operations

The cultural operations are listed approximately in the order in which they are performed. A 350-hp crawler tractor is used for pulling the bank out wagon, rotary cutter, chisel, culti-weeder, field sprayer, and drill. Grain is harvested using a combine, a bank out wagon, semi-truck and trailer and an older truck. A miscellaneous charge of \$10 per acre, which includes additional labor, repairs and maintenance, and materials not included in field operations.

Results

The price for wheat is \$8.50 per bushel, the average price at Portland in 2012. The total gross income in this budget does not include any government program payments. The grain is delivered to a local grain storage facility 12 miles from the farm. Six months of storage is assumed before final delivery to the Portland market. A total of \$0.54 per bushel is assessed for marketing, which includes a \$0.05 per bushel assessment paid to the Wheat Commission. Variable cash production costs were \$163 per acre, giving a net return above variable cash costs of \$219 per acre. Total costs were \$360 per acre when all costs are considered. A break-even price of \$3.63 per bushel would be required to cover variable cash costs, and \$8.00 per bushel to cover total costs. Tables 5 and 6 show the returns per acre for cash and total costs at various yields and prices.

This budget was partially funded through award 32011-68002-30191 from USDA National Institute for Food and Agriculture.

Table 1. Winter Wheat After Fallow Rotation, Conservation Tillage, Less than 12-inch Precipitation Zone, \$/acre economic costs and returns.

GROSS INCOME		Quantity	Unit	\$/Unit	Total	Price/Bu	Your Income	
Winter Wheat		45	bushels	8.50	\$382.50	\$8.50	_____	
Total gross income					\$382.50	\$8.50	_____	
VARIABLE CASH COSTS		Description	Labor	Machinery	Materials	Total	Cost/Bu	Your Cost
Summer fallow establishment & maintenance								
	Rotary mower	1.00 appl.	1.06	5.70	0.00	6.76	0.15	_____
	Chisel plow	1.00 appl.	0.69	4.71	0.00	5.40	0.12	_____
	Culti-weeder	2.00 appl.	0.87	5.65	0.00	6.52	0.14	_____
	Herbicides	1.00 appl.	0.29	2.28	11.00	13.57	0.30	_____
	Chemicals	\$11.00 /acre						_____
Crop Production								
	Fertilizer	1.00 appl.	0.61	2.65	29.33	32.59	0.72	_____
	Nitrogen	45.00 lbs						_____
		\$ 0.60 /lb						_____
	Sulfur	10.00 lbs						_____
		\$ 0.70 /lb						_____
	Drill seed	1.00 appl.	0.86	5.40	14.25	20.51	0.46	_____
	Wheat seed	75.00 lbs						_____
		\$ 0.19 /lb						_____
	Herbicides	1.00 appl.	0.29	2.28	11.00	13.57	0.30	_____
	Chemicals	\$11.00 /acre						_____
Harvesting Operations								
	Combine		0.69	5.44	0.00	6.13	0.14	_____
	Hauling grain		2.27	8.35	0.00	10.62	0.24	_____
	Marketing		0.00	0.00	24.30	24.30	0.54	_____
	Handling	\$ 0.11 /bu						_____
	Storage	\$ 0.03 /bu						_____
	Transportation	\$ 0.35 /bu						_____
	Wheat commission	\$ 0.05 /bu						_____
Other Charges								
	Pickup & truck repairs, fuel & lube		0.00	9.63	0.00	9.63	0.21	_____
	Other machinery		0.00	0.42	0.00	0.42	0.01	_____
	Miscellaneous		4.47	1.00	5.00	10.47	0.23	_____
	Interest: operating capital	12.00 mons	<u>0.00</u>	<u>0.00</u>	<u>2.65</u>	<u>2.65</u>	<u>0.06</u>	_____
Total variable costs			\$12.09	\$53.51	\$97.53	\$163.13	\$3.63	_____
Total gross income minus variable costs						\$219.37	\$4.87	_____
FIXED CASH COSTS					Unit	Total	Cost/Bu	Your Cost
Insurance - Hail, Fire & Crop Revenue Coverage ¹					acre	18.00	0.40	_____
Conservation Practices					acre	<u>0.30</u>	<u>0.01</u>	_____
Total fixed cash costs						\$ 18.30	\$0.41	_____
Total gross income minus variable plus fixed cash costs						\$201.07	\$4.47	_____
FIXED NON-CASH COSTS					Unit	Total	Cost/Bu	Your Cost
Machinery and equipment - depreciation & interest					acre	\$ 55.94	1.24	_____
Pickup, truck & ATV - depreciation & interest					acre	9.36	0.21	_____
Land interest charge					acre	<u>113.39</u>	<u>2.52</u>	_____
Total non-cash costs						\$178.69	\$3.97	_____
Total fixed costs						\$196.98	\$4.38	_____
Total of all costs per acre						\$360.12	\$8.00	_____
Net projected returns						\$ 22.38	\$0.50	_____

¹Hail & Fire (\$4.50/acre) & 85% Crop Revenue Coverage at (\$13.50/acre).

Table 2. Machinery Cost Assumptions

Machine	Size	Current Market Value	Hours or Miles of Annual Use	Expected Life (Years)
Tractor, rubber tracked	350 hp	\$166,000	858	15
Combine	30' Hillside	358,000	109	10
Rotary mower	26'	53,000	167	15
Chisel plow	40'	54,500	109	15
Field sprayer	90'	55,000	92	15
Culti-weeder	60'	47,000	137	15
Grain drills	36'	35,100	136	15
Bank out wagon	850 bushel capacity	49,000	120	20
Pickup	3/4 ton 4X4, new	40,000	15,000	10
Truck & trailer	Semi, used	52,000	3,000	10
Truck	2 1/2 ton, older	18,000	2,400	10
ATV	4-wheeler new	9,500	3,000	5
Precision technologies	GPS auto-steer, etc.	21,550	N/A	7
Other machinery		16,000	N/A	10

Table 3. Machinery Cost Calculations

Machine	Size	---- Variable Costs ----		---- Fixed Costs ----		Total Cost
		Fuel & Lube	Repairs & Maint.	Depreciation	Interest	
----- Costs per Hour -----						
Tractor, rubber tracked	350 hp	\$40.83	\$11.12	\$10.38	\$11.61	\$73.94
Combine	30' Hillside	29.80	65.16	266.75	197.35	559.06
Rotary mower	26'	0.00	12.72	19.08	18.99	50.79
Chisel plow	40'	0.00	30.36	30.18	30.04	90.58
Field sprayer	90'	0.00	42.68	36.16	36.00	114.85
Culti-weeder	60'	0.00	26.18	20.60	20.51	67.29
Grain drills	36'	0.00	23.48	15.55	15.48	54.51
Bank out wagon	850 bushel capacity	0.00	11.76	18.50	24.56	54.82
----- Costs per Mile -----						
Pickup	3/4 ton 4X4, new	\$0.46	\$0.21	\$0.22	\$0.16	\$1.05
Truck & trailer	Semi, used	0.94	0.83	1.43	1.04	4.24
Truck	2 1/2 ton, older	0.92	0.29	0.62	0.45	2.28
ATV	4-wheeler new	3.85	0.02	0.52	0.19	4.58
----- Costs per Acre -----						
Precision technologies	GPS auto-steer, etc.	\$0.00	\$0.57	\$1.62	\$0.68	\$2.87
Other machinery		0.00	0.42	0.84	0.51	1.77

Table 4. Estimated Cost of Each Operation with Power-Unit.

Operation	Tractor	Miles per Hour	Acres per Hour	--- Machine Costs ---			Total Cost per Acre
				Labor Cost per Acre	Variable Cost per Acre	Fixed Cost per Acre	
Combine	N/A	6.0	17.46	\$0.69	\$5.44	\$26.59	\$32.71
Rotary mower	Tractor, rubber tracked	4.0	11.35	1.06	5.70	5.29	12.05
Chisel plow	Tractor, rubber tracked	4.0	17.46	0.69	4.71	4.71	10.11
Field sprayer	Tractor, rubber tracked	4.0	41.46	0.29	2.28	2.27	4.84
Culti-weeder	Tractor, rubber tracked	4.0	27.64	0.43	2.83	2.28	5.54
Grain drills	Tractor, rubber tracked	4.0	13.97	0.86	5.40	3.80	10.06
Fertilizer Application ¹	Tractor, rubber tracked	4.0	19.64	0.61	2.65	1.12	4.38

¹Includes tractor costs only, applicator is provided by the fertilizer dealer.

Table 5. Estimated Per Acre Returns Over Cash Costs at Varying Yields and Prices.

Price/Bushel	----- Bushels per Acre -----						
	30	35	40	45	50	55	60
\$ 7.00	\$ 28.57	\$ 63.57	\$ 98.57	\$ 133.57	\$ 168.57	\$ 203.57	\$ 238.57
\$ 7.50	\$ 43.57	\$ 81.07	\$ 118.57	\$ 156.07	\$ 193.57	\$ 231.07	\$ 268.57
\$ 8.00	\$ 58.57	\$ 98.57	\$ 138.57	\$ 178.57	\$ 218.57	\$ 258.57	\$ 298.57
\$ 8.50	\$ 73.57	\$ 116.07	\$ 158.57	\$ 201.07	\$ 243.57	\$ 286.07	\$ 328.57
\$ 9.00	\$ 88.57	\$ 133.57	\$ 178.57	\$ 223.57	\$ 268.57	\$ 313.57	\$ 358.57
\$ 9.50	\$ 103.57	\$ 151.07	\$ 198.57	\$ 246.07	\$ 293.57	\$ 341.07	\$ 388.57
\$ 10.00	\$ 118.57	\$ 168.57	\$ 218.57	\$ 268.57	\$ 318.57	\$ 368.57	\$ 418.57
\$ 10.50	\$ 133.57	\$ 186.07	\$ 238.57	\$ 291.07	\$ 343.57	\$ 396.07	\$ 448.57

Table 6. Estimated Per Acre Returns Over Total Costs at Varying Yields and Prices.

Price/Bushel	----- Bushels per Acre -----						
	30	35	40	45	50	55	60
\$ 7.00	\$ (150.12)	\$ (115.12)	\$ (80.12)	\$ (45.12)	\$ (10.12)	\$ 24.88	\$ 59.88
\$ 7.50	\$ (135.12)	\$ (97.62)	\$ (60.12)	\$ (22.62)	\$ 14.88	\$ 52.38	\$ 89.88
\$ 8.00	\$ (120.12)	\$ (80.12)	\$ (40.12)	\$ (0.12)	\$ 39.88	\$ 79.88	\$ 119.88
\$ 8.50	\$ (105.12)	\$ (62.62)	\$ (20.12)	\$ 22.38	\$ 64.88	\$ 107.38	\$ 149.88
\$ 9.00	\$ (90.12)	\$ (45.12)	\$ (0.12)	\$ 44.88	\$ 89.88	\$ 134.88	\$ 179.88
\$ 9.50	\$ (75.12)	\$ (27.62)	\$ 19.88	\$ 67.38	\$ 114.88	\$ 162.38	\$ 209.88
\$ 10.00	\$ (60.12)	\$ (10.12)	\$ 39.88	\$ 89.88	\$ 139.88	\$ 189.88	\$ 239.88
\$ 10.50	\$ (45.12)	\$ 7.38	\$ 59.88	\$ 112.38	\$ 164.88	\$ 217.38	\$ 269.88