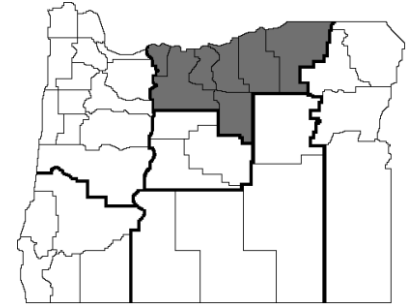


# Enterprise Budget

## Wheat (Winter) Following Fallow, Conservation Tillage, 12-18 inch Precipitation Zone, North Central Region

Clark Seavert<sup>1</sup>, Steven Petrie<sup>2</sup> and Sandy Macnab<sup>3</sup>

<sup>1</sup>Agricultural Economist, Department of Agricultural & Resource Economics, <sup>2</sup>Director of the Columbia Basin Agricultural Research Center, and <sup>3</sup>Extension Cereal Grains, Sherman/Wasco Counties, all of Oregon State University.



**AEB 0035, Revised October 2012**

This enterprise budget estimates the typical costs and returns of producing winter wheat using conservation tillage production practices in a 12-18 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 summer fallow. The average annual precipitation is 12 to 18-inches. Wheat yields in this cropping system range from 50 to 80 bushels per acre. A typical yield in this budget is 65 bushels per acre.

### Land

A land lease charge of \$188 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, 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 cost. 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 an 12-18 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 485-hp crawler tractor is used for pulling the bank out wagon, rotary mower, chisel, field sprayer, and drill. Grain is harvested using a combine, a bank out wagon, semi-truck and trailer and an older truck. The grain is hauled to Pendleton. A \$0.05 per bushel assessment is paid to the Wheat Commission. 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. Variable cash production costs were \$156 per acre, giving a net return above variable cash costs of \$261 per acre. Total costs were \$416 per acre when all costs are considered. A break-even price of \$2.36 per bushel would be required to cover variable cash costs, and \$6.40 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, 12-18 inches Precipitation Zone, \$/acre economic costs and returns.**

<b>GROSS INCOME</b>							<b>Quantity</b>	<b>Unit</b>	<b>\$/Unit</b>	<b>Total</b>	<b>Price/Bu</b>	<b>Your Income</b>
Winter Wheat							65	bushels	8.50	\$552.50	\$8.50	_____
<b>Total gross income</b>										\$552.50	\$8.50	_____
<b>VARIABLE CASH COSTS</b>			<b>Description</b>	<b>Labor</b>	<b>Machinery</b>	<b>Materials</b>	<b>Total</b>	<b>Cost/Bu</b>	<b>Your Cost</b>			
Summer fallow establishment & maintenance												
	Rotary mower	1.00	appl.	1.06	5.90	0.00	6.96	0.11	_____			
	Chisel plow	1.00	appl.	0.69	4.85	0.00	5.53	0.09	_____			
	Culti-weeder	2.00	appl.	0.87	5.82	0.00	6.69	0.10	_____			
	Herbicides	1.00	appl.	0.29	2.34	11.00	13.63	0.21	_____			
	Chemicals	\$ 11.00	/acre						_____			
Crop Production												
	Fertilizer	1.00	appl.	0.61	2.76	44.33	47.71	0.73	_____			
	Nitrogen	70.00	lbs						_____			
		\$ 0.60	/lb						_____			
	Sulfur	10.00	lbs						_____			
		\$ 0.70	/lb						_____			
	Drill seed	1.00	appl.	0.86	5.56	14.25	20.67	0.32	_____			
	Wheat seed	75.00	lbs						_____			
		\$ 0.19	/lb						_____			
	Herbicides	1.00	appl.	0.29	2.34	11.00	13.63	0.21	_____			
	Chemicals	\$ 11.00	/acre						_____			
Harvesting Operations												
	Combine			0.69	3.01	0.00	3.70	0.06	_____			
	Hauling grain			2.27	8.49	0.00	10.76	0.17	_____			
	Wheat Commission	\$ 0.05	/bu	0.00	0.00	3.25	3.25	0.05	_____			
Other Charges												
	Pickup & truck repairs, fuel & lube			0.00	9.63	0.00	9.63	0.15	_____			
	Other machinery			0.00	0.42	0.00	0.42	0.01	_____			
	Miscellaneous			4.47	1.00	5.00	10.47	0.16	_____			
	Interest: operating capital	12.00	mons	<u>0.00</u>	<u>0.00</u>	<u>2.53</u>	<u>2.53</u>	<u>0.04</u>	_____			
<b>Total variable costs</b>				<b>\$12.09</b>	<b>\$52.11</b>	<b>\$91.36</b>	<b>\$155.56</b>	<b>\$2.39</b>	_____			
<b>Total gross income minus variable costs</b>							<b>\$396.94</b>	<b>\$6.11</b>	_____			
<b>FIXED CASH COSTS</b>							<b>Unit</b>	<b>Total</b>	<b>Cost/Bu</b>	<b>Your Cost</b>		
Insurance - Hail, Fire & Crop Revenue Coverage <sup>1</sup>							acre	22.50	0.35	_____		
Conservation Practices							acre	<u>0.30</u>	<u>0.00</u>	_____		
<b>Total fixed cash costs</b>								<b>\$ 22.80</b>	<b>\$0.35</b>	_____		
<b>Total gross income minus variable plus fixed cash costs</b>								<b>\$374.14</b>	<b>\$5.76</b>	_____		
<b>FIXED NON-CASH COSTS</b>							<b>Unit</b>	<b>Total</b>	<b>Cost/Bu</b>	<b>Your Cost</b>		
Machinery and equipment - depreciation & interest							acre	\$ 40.67	0.63	_____		
Pickup, truck & ATV - depreciation & interest							acre	9.36	0.14	_____		
Land interest charge							acre	<u>187.85</u>	<u>2.89</u>	_____		
<b>Total non-cash costs</b>								<b>\$237.88</b>	<b>\$3.66</b>	_____		
<b>Total fixed costs</b>								<b>\$260.68</b>	<b>\$4.01</b>	_____		
<b>Total of all costs per acre</b>								<b>\$416.24</b>	<b>\$6.40</b>	_____		
<b>Net projected returns</b>								<b>\$ 136.26</b>	<b>\$2.10</b>	_____		

<sup>1</sup>Hail & Fire (\$4.50/acre) & 85% Crop Revenue Coverage at (\$18/acre).

Table 2. Machinery Cost Assumptions

Machine	Size	Current Market Value	Hours or Miles of Annual Use	Expected Life (Years)
Tractor, rubber tracked	485 hp	\$200,000	858	15
Combine, used	30' Hillside	125,000	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	485 hp	\$40.83	\$13.40	\$12.51	\$13.99	\$80.72
Combine, used	30' Hillside	29.80	22.75	93.14	68.91	214.60
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, used	N/A	6.0	17.46	\$0.69	\$3.01	\$9.28	\$12.98
Rotary mower	Tractor, rubber tracked	4.0	11.35	1.06	5.90	5.69	12.65
Chisel plow	Tractor, rubber tracked	4.0	17.46	0.69	4.85	4.97	10.50
Field sprayer	Tractor, rubber tracked	4.0	41.46	0.29	2.34	2.38	5.01
Culti-weeder	Tractor, rubber tracked	4.0	27.64	0.43	2.91	2.45	5.79
Grain drills	Tractor, rubber tracked	4.0	13.97	0.86	5.56	4.12	10.54
Fertilizer Application <sup>1</sup>	Tractor, rubber tracked	4.0	19.64	0.61	2.76	1.35	4.72

<sup>1</sup>Includes 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 -----						
	50	55	60	65	70	75	80
\$ 7.00	\$ 171.64	\$ 206.64	\$ 241.64	\$ 276.64	\$ 311.64	\$ 346.64	\$ 381.64
\$ 7.50	\$ 196.64	\$ 234.14	\$ 271.64	\$ 309.14	\$ 346.64	\$ 384.14	\$ 421.64
\$ 8.00	\$ 221.64	\$ 261.64	\$ 301.64	\$ 341.64	\$ 381.64	\$ 421.64	\$ 461.64
\$ 8.50	\$ 246.64	\$ 289.14	\$ 331.64	\$ 374.14	\$ 416.64	\$ 459.14	\$ 501.64
\$ 9.00	\$ 271.64	\$ 316.64	\$ 361.64	\$ 406.64	\$ 451.64	\$ 496.64	\$ 541.64
\$ 9.50	\$ 296.64	\$ 344.14	\$ 391.64	\$ 439.14	\$ 486.64	\$ 534.14	\$ 581.64
\$ 10.00	\$ 321.64	\$ 371.64	\$ 421.64	\$ 471.64	\$ 521.64	\$ 571.64	\$ 621.64
\$ 10.50	\$ 346.64	\$ 399.14	\$ 451.64	\$ 504.14	\$ 556.64	\$ 609.14	\$ 661.64

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

Price/Bushel	----- Bushels per Acre -----						
	50	55	60	65	70	75	80
\$ 7.00	\$ (66.24)	\$ (31.24)	\$ 3.76	\$ 38.76	\$ 73.76	\$ 108.76	\$ 143.76
\$ 7.50	\$ (41.24)	\$ (3.74)	\$ 33.76	\$ 71.26	\$ 108.76	\$ 146.26	\$ 183.76
\$ 8.00	\$ (16.24)	\$ 23.76	\$ 63.76	\$ 103.76	\$ 143.76	\$ 183.76	\$ 223.76
\$ 8.50	\$ 8.76	\$ 51.26	\$ 93.76	\$ 136.26	\$ 178.76	\$ 221.26	\$ 263.76
\$ 9.00	\$ 33.76	\$ 78.76	\$ 123.76	\$ 168.76	\$ 213.76	\$ 258.76	\$ 303.76
\$ 9.50	\$ 58.76	\$ 106.26	\$ 153.76	\$ 201.26	\$ 248.76	\$ 296.26	\$ 343.76
\$ 10.00	\$ 83.76	\$ 133.76	\$ 183.76	\$ 233.76	\$ 283.76	\$ 333.76	\$ 383.76
\$ 10.50	\$ 108.76	\$ 161.26	\$ 213.76	\$ 266.26	\$ 318.76	\$ 371.26	\$ 423.76