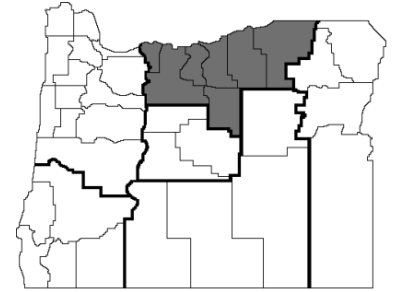


# Enterprise Budget

## Wheat (Winter) Under Center Pivot Irrigation, Minimum Tillage, North Central Region

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AEB 0051, July 2014

This enterprise budget estimates the typical costs and returns of producing winter wheat under center pivot irrigation in the Columbia Basin area of Oregon. 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 3,000-acre farm with 750 acres in winter wheat, 750 acres in field corn, 750 acres in grass seed production and 750 acres in alfalfa hay. All crops are grown under center pivot irrigation in 125-acre fields. Typical yield in this budget is 150 bushels per acre.

### Land

A land charge of \$260 per acre is included to represent the cost of leasing or owning land. The land is valued at \$6,500 per acre, based on current market. A center pivot irrigation system is valued at \$100,000 per 125-acre field and irrigation pump and tank valued at \$4,000 per circle.

### Labor

General and tractor driver labor cost approximately \$14 and \$20 per hour, respectively, which includes social security, workers' 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. Tractor labor hours are calculated based on machinery hours plus ten percent.

### Capital

Interest on operating capital (4.5 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 3,000-acre farm using center pivot

irrigation. The machinery and equipment hours reflect producing winter wheat, field corn, grass seed and alfalfa hay. A detailed breakdown of machinery values is shown in Table 2. Estimated machinery costs are shown in Table 3. The machinery costs are estimated based on the total farm use of the machinery. Gasoline costs \$3.75, on-road diesel \$4.00 and off-road diesel \$3.25 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 340-hp tractor is used to pull the light disk and grain drill. A 165-hp tractor is used to pull the field sprayer. Harvest is custom hired at a cost of \$60 per acre, which includes combines, bank out wagons and trucking to point of sale destination. A miscellaneous charge of \$5 per acre is added, which includes additional labor, repairs and maintenance, supplies and materials, tax preparation, memberships in professional organizations and educational workshops not included in field operations.

### Results

The price for winter wheat is \$6 per bushel with a long-run average yield of 150 bushels per acre for a gross income of \$900. Variable cash production costs are \$408 per acre, giving a net return above variable cash costs of \$492 per acre. Total costs were \$773 per acre when all costs are considered. A break-even price of \$2.72 per bushel would be required to cover variable cash costs, and \$5.15 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 by the Northwest Energy Efficiency Alliance (NEEA).*

**Table 1. Winter Wheat, Center Pivot Irrigation, Columbia Basin Area, \$/Acre Economic Costs and Returns**

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Bu</u>	<u>Your Income</u>			
Winter Wheat		150	bushel	\$6.00	900.00	\$6.00	_____			
Total GROSS Income					900.00	\$6.00	_____			
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Bu</u>	<u>Your Cost</u>		
<b>Preplant: Land Preparation &amp; Fertility Program</b>										
Light Disc	1.00	appl	2.59	9.71	0.00	12.30	0.08	_____		
Fertilizer, pre-plant, custom applied			0.00	0.00	60.00	60.00	0.40	_____		
Nitrogen, dry	100.00	lbs								
Price	\$0.60	per lb								
<b>Cultural Practices</b>										
Plant Wheat			4.58	13.32	26.60	44.50	0.30	_____		
Wheat Seed	140	lb								
Price	\$0.19	per lb								
Fertilizer, chemigate			0.00	0.00	82.50	82.50	0.55	_____		
Nitrogen, 32 Sol	150.0	lbs								
Price	\$0.55	per lb								
Weed Control - Ground Applied	1.0	appl	0.54	2.09	15.00	17.63	0.12	_____		
Irrigate	36.0	appl	0.00	0.00	100.00	100.00	0.67	_____		
Water Applied	18.0	acre inches								
Custom Hire: Combine, Bankout Wagon & Trucking			0.00	0.00	60.00	60.00	0.40	_____		
Circle Pivot Irrigation System			0.00	16.00	0.00	16.00	0.11	_____		
Irrigation Pump & Tank			0.00	0.64	0.00	0.64	0.00	_____		
Shop/Shed			0.00	0.17	0.00	0.17	0.00	_____		
Pickups			0.00	5.15	0.00	5.15	0.03	_____		
Quads			1.00	0.94	0.00	1.94	0.01	_____		
Miscellaneous			0.00	0.00	5.00	5.00	0.03	_____		
Interest on Operating Capital			<u>0.00</u>	<u>0.00</u>	<u>1.72</u>	<u>1.72</u>	<u>0.01</u>	_____		
Total VARIABLE COSTS					\$8.71	\$48.02	\$344.10	\$407.54	\$2.72	_____
GROSS INCOME minus VARIABLE COSTS								\$492.46	\$3.28	_____
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Bu</u>	<u>Your Cost</u>			
CASH Costs										
Property Taxes				acre	\$2.85	\$0.02	_____			
Property Insurance				acre	<u>5.00</u>	<u>0.03</u>	_____			
Total CASH Costs					\$7.85	\$1.31	_____			
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS								\$484.61	\$3.23	_____
<u>NON-CASH Costs</u>										
Machinery and Equipment - Depreciation & Interest				acre	\$39.91	\$0.27	_____			
Pickups & Quads - Depreciation & Interest				acre	5.99	0.04	_____			
Circle Pivot Irrigation System - Depreciation & Interest				acre	48.00	0.32	_____			
Irrigation Pump & Tank - Depreciation & Interest				acre	2.77	0.02	_____			
Shop/Shed - Depreciation & Interest				acre	0.49	0.00	_____			
Land Interest Charge				acre	<u>260.00</u>	<u>1.73</u>	_____			
Total NON-CASH Costs					\$357.16	\$2.38	_____			
Total FIXED COSTS								\$365.01	\$2.43	_____
Total of All Costs Per Acre								\$772.55	\$5.15	_____
<b>Net Projected Returns</b>								127.45	\$0.85	_____

Machine	Size	Market Value	Hours or Miles of Annual Use	Expected Life (yrs)
Tractor	340 hp 4WD	200,000	932 hours	10
Tractor	165 hp 2WD	115,000	437 hours	20
Light Disc	25 ft	25,000	161 hours	10
Field Sprayer	90 ft	55,000	81 hours	20
Grain Drill	36 ft	35,000	89 hours	15
Pickup - 3/4 Ton 4WD	2 units	60,000	30,000 miles	5
Quads	2 units	20,000	6,000 miles	5
Circle Pivot Irrigation System	125 ac-unit	100,000	N/A	25
Irrigation Pump & Tank	125 ac-unit	4,000	N/A	15
Shop/Shed	40' x 80'	25,000	N/A	35

Machine	Size	---- Variable Costs ----		---- Fixed Costs ----		Total Cost
		Fuel & Lube	Repairs & Maint.	Depreciation	Interest	
----- Costs per Hour -----						
Tractor	340 hp 4WD	\$55.66	\$13.40	\$17.28	\$12.88	\$99.22
Tractor	165 hp 2WD	27.01	7.71	10.60	15.80	61.11
Light Disc	25 ft	0.00	6.00	14.03	9.31	29.34
Field Sprayer	90 ft	0.00	42.68	30.74	40.80	114.22
Grain Drill	36 ft	0.00	23.42	23.66	23.56	70.63
----- Costs per Mile -----						
Pickup - 3/4 Ton 4WD	per unit	\$0.36	\$0.16	\$0.33	\$0.12	\$0.96
Quads	per unit	0.29	0.18	0.55	0.20	1.22
----- Costs per Acre -----						
Circle Pivot Irrigation System	125 ac-unit	\$0.00	\$16.00	\$24.00	\$24.00	\$64.00
Irrigation Pump & Tank	125 ac-unit	0.00	0.64	2.13	0.64	3.41
Shop/Shed	40' x 80'	0.00	0.17	0.24	0.25	0.65

Operation	Power Unit	Miles per Hour	Acres per Hour	Labor Cost per Acre	-- Machine Costs --		Total Cost per Acre
					Variable Cost per Acre	Fixed Cost per Acre	
Light Disc	Tractor 340 hp 4WD	3.00	7.73	2.59	9.71	6.92	19.22
Field Sprayer	Tractor 165 hp 2WD	4.00	37.10	0.54	2.09	2.64	5.27
Grain Drill	Tractor 340 hp 4WD	4.00	13.97	1.43	4.16	5.27	10.87

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

----- Bushels per Acre -----							
Price/Bu	120	130	140	150	160	170	180
<b>\$4.50</b>	\$124.61	\$169.61	\$214.61	\$259.61	\$304.61	\$349.61	\$394.61
<b>\$5.00</b>	\$184.61	\$234.61	\$284.61	\$334.61	\$384.61	\$434.61	\$484.61
<b>\$5.50</b>	\$244.61	\$299.61	\$354.61	\$409.61	\$464.61	\$519.61	\$574.61
<b>\$6.00</b>	\$304.61	\$364.61	\$424.61	\$484.61	\$544.61	\$604.61	\$664.61
<b>\$6.50</b>	\$364.61	\$429.61	\$494.61	\$559.61	\$624.61	\$689.61	\$754.61
<b>\$7.00</b>	\$424.61	\$494.61	\$564.61	\$634.61	\$704.61	\$774.61	\$844.61
<b>\$7.50</b>	\$484.61	\$559.61	\$634.61	\$709.61	\$784.61	\$859.61	\$934.61

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

----- Bushels per Acre -----							
Price/Bu	120.0	130.0	140.0	150.0	160.0	170.0	180.0
<b>\$ 4.50</b>	(\$232.55)	(\$187.55)	(\$142.55)	(\$97.55)	(\$52.55)	(\$7.55)	\$37.45
<b>\$ 5.00</b>	(\$172.55)	(\$122.55)	(\$72.55)	(\$22.55)	\$27.45	\$77.45	\$127.45
<b>\$ 5.50</b>	(\$112.55)	(\$57.55)	(\$2.55)	\$52.45	\$107.45	\$162.45	\$217.45
<b>\$ 6.00</b>	(\$52.55)	\$7.45	\$67.45	\$127.45	\$187.45	\$247.45	\$307.45
<b>\$ 6.50</b>	\$7.45	\$72.45	\$137.45	\$202.45	\$267.45	\$332.45	\$397.45
<b>\$ 7.00</b>	\$67.45	\$137.45	\$207.45	\$277.45	\$347.45	\$417.45	\$487.45
<b>\$ 7.50</b>	\$127.45	\$202.45	\$277.45	\$352.45	\$427.45	\$502.45	\$577.45