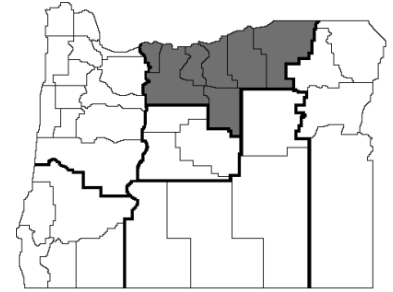


Enterprise Budget

Corn (Field) Under Center Pivot Irrigation, Minimum Tillage, North Central Region

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This enterprise budget estimates the typical costs and returns of producing field corn 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 field corn, 750 acres in winter wheat, 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 7 tons 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, all of which include 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 are sufficient for a 3,000-acre farm using center pivot

irrigation. The machinery and equipment hours reflect producing field corn, winter wheat, grass seed and alfalfa hay production. 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 heavy disk, chisel, light disk, and planter. A 165-hp tractor is used to pull the field sprayer and 8-row cultivator. Harvest is custom hired at a cost of \$60 per acre, which includes combines, bank out wagons and trucking to point of sale or storage 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 field corn is \$170 per ton with a long-run average yield of 7 tons per acre for a gross income of \$1,190. Variable cash production costs are \$680 per acre, giving a net return above variable cash costs of \$510 per acre. Total costs were \$1,045 per acre when all costs are considered. A break-even price of \$97 per ton would be required to cover variable cash costs, and \$149 per ton to cover total costs. Tables 5 and 6 show the returns per acre for cash and total costs at various yields and prices.

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Table 1. Field Corn, 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/ton</u>	<u>Your Income</u>	
Field Corn		7.0	ton	\$170.00	1,190.00	\$170.00	_____	
Total GROSS Income					1,190.00	\$170.00	_____	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/ton</u>	<u>Your Cost</u>
Preplant: Land Preparation & Fertility Program								
Heavy Disc	1.00	appl	\$3.08	\$11.75	\$0.00	\$14.83	\$2.12	_____
Chisel Plow	2.00	appl	5.39	22.37	0.00	27.76	3.97	_____
Light Disc	1.00	appl	2.59	9.71	0.00	12.30	1.76	_____
Fertilizer, pre-plant, custom applied			0.00	0.00	120.00	120.00	17.14	_____
Nitrogen, dry	200.00	lbs						
Price	\$0.60	per lb						
Cultural Practices								
Plant Corn			4.58	13.32	114.00	131.90	18.84	_____
Corn Seed	38,000	per acre						
Price	\$240.00	per bag						
Phosphous Fertilizer	40.0	lbs						
Price	\$0.75	per lb						
Fertilizer, chemigate			0.00	0.00	110.00	110.00	15.71	_____
Nitrogen, 32 Sol	200.0	lbs						
Price	\$0.55	per lb						
Weed Control - Cultivate	1.0	appl	3.23	6.70	0.00	9.93	1.42	_____
Weed Control - Ground Applied	2.0	appl	1.08	4.17	31.00	36.25	5.18	_____
Irrigate	72.0	appl	0.00	0.00	125.00	125.00	17.86	_____
Water Applied	36.0	acre-inches						
Custom Hire: Combine, Bankout Wagon & Trucking			0.00	0.00	60.00	60.00	8.57	_____
Circle Pivot Irrigation System			0.00	16.00	0.00	16.00	2.29	_____
Irrigation Pump & Tank			0.00	0.64	0.00	0.64	0.09	_____
Shop/Shed			0.00	0.17	0.00	0.17	0.02	_____
Pickups			0.00	5.15	0.00	5.15	0.74	_____
Quads			1.00	0.94	0.00	1.94	0.28	_____
Miscellaneous			0.00	0.00	5.00	5.00	0.71	_____
Interest on Operating Capital			<u>0.00</u>	<u>0.00</u>	<u>2.94</u>	<u>2.94</u>	<u>0.42</u>	_____
Total VARIABLE COSTS			\$20.96	\$90.92	\$560.00	\$679.81	\$97.12	_____
GROSS INCOME minus VARIABLE COSTS					\$510.19	\$72.88	_____	
<u>FIXED CASH COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/ton</u>	<u>Your Cost</u>
CASH Costs								
Property Taxes					acre	\$2.85	\$0.41	_____
Property Insurance					acre	<u>5.00</u>	<u>0.71</u>	_____
Total CASH Costs						\$7.85	\$0.05	_____
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						\$502.34	\$71.76	_____
<u>NON-CASH Costs</u>								
Machinery and Equipment - Depreciation & Interest					acre	\$39.91	\$5.70	_____
Pickups & Quads - Depreciation & Interest					acre	5.99	0.86	_____
Circle Pivot Irrigation System - Depreciation & Interest					acre	48.00	6.86	_____
Irrigation Pump & Tank - Depreciation & Interest					acre	2.77	0.40	_____
Shop/Shed - Depreciation & Interest					acre	0.49	0.07	_____
Land Interest Charge					acre	<u>260.00</u>	<u>37.14</u>	_____
Total NON-CASH Costs						\$357.16	\$51.02	_____
Total FIXED COSTS						\$365.01	\$52.14	_____
Total of All Costs Per Acre						\$1,044.82	\$149.26	_____
Net Projected Returns						145.18	\$20.74	_____

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
Heavy Disc	18 ft	30,000	307 hours	10
Chisel Plow	18 ft	25,000	202 hours	20
Light Disc	25 ft	25,000	161 hours	10
Field Sprayer	90 ft	55,000	81 hours	20
Row Cultivator - 8 Row	20 ft	12,000	121 hours	20
Planter - 8 Row, 30"	20 ft	35,000	172 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
Heavy Disc	18 ft	0.00	7.20	8.82	5.86	21.88
Chisel Plow	18 ft	0.00	13.93	5.59	7.42	26.93
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
Row Cultivator - 8 Row	20 ft	0.00	6.68	4.47	5.94	17.09
Planter - 8 Row, 30"	20 ft	0.00	23.42	12.27	12.22	47.91
----- 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	0.96	3.73
Shop/Shed	40' x 80'	0.00	0.17	0.24	0.25	0.65

Operation	Power Unit	Miles per Hour	Acres per Hour	-- Machine Costs --			Total Cost per Acre
				Labor Cost per Acre	Variable Cost per Acre	Fixed Cost per Acre	
Heavy Disc	Tractor 340 hp 4WD	3.50	6.49	\$3.08	\$11.75	\$6.91	\$21.74
Chisel Plow	Tractor 340 hp 4WD	4.00	7.42	2.70	11.19	5.82	19.70
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
Row Cultivator - 8 Row	Tractor 165 hp 2WD	3.00	6.18	3.23	6.70	5.95	15.88
Planter - 8 Row, 30"	Tractor 340 hp 4WD	3.00	4.36	4.58	13.32	11.66	29.56

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

Price/Ton	Tons per Acre						
	4.0	5.0	6.0	7.0	8.0	9.0	10.0
\$140.00	(\$122.66)	\$17.34	\$157.34	\$297.34	\$437.34	\$577.34	\$717.34
\$150.00	(\$82.66)	\$67.34	\$217.34	\$367.34	\$517.34	\$667.34	\$817.34
\$160.00	(\$42.66)	\$117.34	\$277.34	\$437.34	\$597.34	\$757.34	\$917.34
\$170.00	(\$2.66)	\$167.34	\$337.34	\$507.34	\$677.34	\$847.34	\$1,017.34
\$180.00	\$37.34	\$217.34	\$397.34	\$577.34	\$757.34	\$937.34	\$1,117.34
\$190.00	\$77.34	\$267.34	\$457.34	\$647.34	\$837.34	\$1,027.34	\$1,217.34
\$200.00	\$117.34	\$317.34	\$517.34	\$717.34	\$917.34	\$1,117.34	\$1,317.34

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

Price/Ton	Tons per Acre						
	4.0	5.0	6.0	7.0	8.0	9.0	10.0
\$140.00	(\$610.14)	(\$470.14)	(\$330.14)	(\$190.14)	(\$50.14)	\$89.86	\$229.86
\$150.00	(\$570.14)	(\$420.14)	(\$270.14)	(\$120.14)	\$29.86	\$179.86	\$329.86
\$160.00	(\$530.14)	(\$370.14)	(\$210.14)	(\$50.14)	\$109.86	\$269.86	\$429.86
\$170.00	(\$490.14)	(\$320.14)	(\$150.14)	\$19.86	\$189.86	\$359.86	\$529.86
\$180.00	(\$450.14)	(\$270.14)	(\$90.14)	\$89.86	\$269.86	\$449.86	\$629.86
\$190.00	(\$410.14)	(\$220.14)	(\$30.14)	\$159.86	\$349.86	\$539.86	\$729.86
\$200.00	(\$370.14)	(\$170.14)	\$29.86	\$229.86	\$429.86	\$629.86	\$829.86