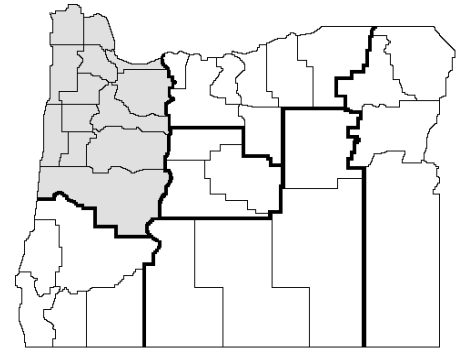


# Enterprise Budget

## Broccoli, Processed Market, Willamette Valley Region

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This enterprise budget estimates the typical per-acre costs for producing broccoli in the Willamette Valley for the processed market. It should be used as a guide to estimate your actual costs and does not represent any specific farm.

The major assumptions used in constructing this budget are discussed below. An attempt has been made to report typical cultural practices used in processed market broccoli production; however, this does not represent the only production method. Assistance provided by area producers is greatly appreciated.

### Typical Farm

The typical farm growing processed market vegetables, conventionally and organically in the Willamette Valley consists of 1000 total tillable acres. Other crops include sweet corn, bush beans, cauliflower, and grass seed. It has four tractors pulling various pieces of equipment and mechanical harvester.

### Land and Irrigation

This budget is based on 50 acres of broccoli production. Average production is 5 tons per acre at a gross price to the grower of \$500 per ton.

The land is owned, however, a \$200 per acre lease rate is charged as a return on investment to the owner for his/her investment in the land, and property taxes of \$20 per acre are charged as a fixed cash cost.

Irrigation equipment costs are based on a good used system with a \$50 per acre per year repair and maintenance cost. The irrigation system is composed of "overhead" types of systems such as travelers, linear pivots and/or permanent big guns. Pumping expenses are based on electricity costs of \$3.50 per inch of water applied during the growing season.

### Labor

General hand labor is hired at a rate of \$11 per hour, and tractor drivers are paid \$16.50 per hour, both of which include workers compensation, unemployment insurance, and other labor overhead expenses.

### Capital

Interest on operating capital (8 percent) is treated as a cash expense. One-half of the cash expenses are borrowed for a 6 month period. Interest on intermediate and long term capital (8 percent) is treated as a non-cash opportunity cost to the owner.

### Machinery and Equipment

The machinery and equipment used in the budget reflect the typical machinery complement for a 1000-acre farm growing processed market vegetables in the Willamette Valley.

A detailed breakdown of machinery values is shown in Table 2. Estimated machinery costs are shown in Table 3, assuming straight line depreciation. The machinery costs are estimated based on the total farm use of the machinery. Table 4 shows the per acre labor, variable, and fixed costs for certain machinery operations in the field.

Gasoline costs \$2.50 per gallon, and diesel costs \$2.50 per gallon.

### Operations

The cultural operations are listed approximately in the order in which they are performed. A 225-hp tractor is used to pull the moldboard plow and disk. A 150-hp tractor is used to pull the harrow/roller packer, rotovator, and field cultivator. A 110-hp tractor is used to pull the fertilizer spreader and harvest aid. A 70-hp tractor is used to pull the row crop planter and bin trailer. Table 1 shows operation rates and units. Fractional rates indicate operation applies to more than one crop cycle with costs allocated proportionally. Total costs for custom services such as liming are allocated as materials.

### Break even Analysis

Tables 5 and 6 show returns per acre for cash and total costs at various yields and prices. Refer to table footnotes for interpretations.

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**Table 1. Broccoli, Processed Market, 2010, \$/acre economic costs and returns**

<b>GROSS INCOME</b>							
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Ton</u>	<u>Your Income</u>	
Broccoli	5.00	Ton	\$500	\$2,500	\$500		
<b>VARIABLE CASH COSTS</b>							
<u>Descript.</u>	<u>Units</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Ton</u>	<u>Your Cost</u>
<i>Field Preparations &amp; Planting</i>							
Tandem Disk Harrow	2.00 x/acre	3.39	8.59	0.00	11.98	2.40	
Mold Board Plow	1.00 x/acre	2.13	5.25	0.00	7.39	1.48	
Harrow/Roller Packer	1.00 x/acre	1.52	3.83	65.00	70.36	14.07	
Preplant Fert.	\$65						
Field Cultivator	2.00 x/acre	5.86	15.04	0.00	20.89	4.18	
Rotovator	1.00 x/acre	3.81	10.98	20.00	34.79	6.96	
Herbicide	\$20						
Plant Broccoli	1.00 x/acre	2.54	6.57	240.00	249.10	49.82	
Seed	\$150						
Insecticide	\$20						
Side-dress Fert.	\$70						
Cultivating weeds	1.00 x/acre	0.85	1.84	0.00	2.69	0.54	
Hand Weed	14.00 hours	154.00	0.00	0.00	154.00	30.80	
Fertilize	1.00 x/acre	0.69	0.97	65.00	66.67	13.33	
Top-dress Fert.	\$65						
Self-propelled Boom Sprayer	2.00 x/acre	0.86	0.93	40.00	41.79	8.36	
Insecticide	\$20						
Irrigation		55.00	0.00	85.00	140.00	28.00	
Labor, \$11.00	5.00 hours						
Electricity, \$3.50	10.00 acre-inch						
Maint. & Repairs, \$50.00	1.00 x/acre						
<i>Harvesting</i>							
Hand Harvest Labor	45.00 hours	495.00	0.00	0.00	495.00	99.00	
Harvest Aid	3.00 x/acre	28.35	38.96	0.00	67.31	13.46	
Bin Trailer	3.00 x/acre	28.29	34.96	0.00	63.25	12.65	
Fork Lift	3.00 x/acre	28.29	20.14	0.00	48.43	9.69	
Truck	3.00 x/acre	0.00	11.18	0.00	11.18	2.24	
<i>Postharvest</i>							
Flail Crop Residue	1.00 x/acre	3.05	4.48	0.00	\$7.53	\$1.51	
Soil Test	1.00 x/acre	\$0.00	\$0.00	\$2.00	\$2.00	\$0.40	
Lime application, custom	0.25 x/acre	0.00	0.00	75.00	75.00	15.00	
<i>Other Costs</i>							
Pickup & ATV	1.00 x/acre	0.00	5.31	0.00	5.31	1.06	
Interest: operating capital	6.0 months	0.00	0.00	62.99	62.99	12.60	
<b>Total variable costs</b>		813.63	169.02	654.99	1,637.64	327.53	
<b>FIXED CASH COSTS</b>				<u>Unit</u>	<u>Total</u>	<u>Cost/Ton</u>	
Property insurance	1.00 x/acre			acre	25.00	5.00	
Property taxes	1.00 x/acre			acre	20.00	4.00	
Land Rent	1.00 x/acre			acre	200.00	40.00	
<b>Total fixed cash costs</b>					245.00	49.00	
<b>FIXED NON-CASH COSTS</b>				<u>Unit</u>	<u>Total</u>	<u>Cost/Ton</u>	
Machinery and equip - depreciation, interest & insurance				acre	120.38	24.08	
Pickups, truck & ATV - depreciation, interest & insurance				acre	14.29	2.86	
<b>Total fixed non-cash costs</b>					134.66	26.93	
<b>Total fixed costs</b>					379.66	75.93	
<b>Total of all costs per acre</b>					<b>\$2,017.30</b>	<b>\$403.46</b>	
<b>Net projected returns</b>					<b>\$482.70</b>	<b>\$96.54</b>	

**Table 2. Machinery Cost Assumptions**

Machine	Size or description	Market value	Hours or <i>miles</i> of annual use	Expected life (years)	Salvage Value
Tractor # 1	4 Wheel dr 225 hp	\$155,000	600	20	\$19,888
Tractor # 2	4 Wheel dr 150 hp	92,000	1,370	20	11,804
Tractor # 3	4 Wheel dr 110 hp	70,000	400	20	8,981
Tractor # 4	2 Wheel dr 70 hp	40,000	980	20	5,132
Tandem Disk Harrow	21 ft	16,500	250	15	1,584
Mold Board Plow	15 ft	16,200	150	15	1,555
Field Cultivator	27 ft	10,000	350	15	960
Harrow/Roller Packer	15 ft	26,900	185	15	2,582
Rotovator	14 ft	15,700	200	15	1,507
Fertilizer Spreader	40 ft spinner broadcast	5,400	200	10	954
Sidedresser attachment	12 ft	2,000	200	10	353
Row Crop Planter	15 ft	21,000	200	15	2,016
Flail Mower	15 ft	10,000	100	20	973
Bin Trailer	Wagon	2,800	100	10	495
Harvest Aid	36 ft conveyor	17,500	100	20	2,000
Fork Lift	Field harvest lift	12,000	100	15	1000
Self-propelled Boom Sprayer	60 ft	135,000	200	10	5,658
Pickup	3/4 ton 4x4	25,000	12000	10	9,857
Truck	2 ton	30,000	2,000	20	4,515
ATV	4 wheeler	6,000	500	10	1,772

**Table 3. Machinery Cost Calculations**

Machine	Size or description	--- Variable costs ---		---- Fixed costs ----		Total Cost
		Fuel & Lube	Repairs & Maint.	Depr. & Interest	Insurance	
----- Costs per hour -----						
Tractor # 1	4 Wheel dr 225 hp	\$28.75	\$5.58	\$22.92	\$1.31	\$58.56
Tractor # 2	4 Wheel dr 150 hp	23.00	7.56	5.96	0.34	36.86
Tractor # 3	4 Wheel dr 110 hp	17.25	1.68	15.53	0.89	35.34
Tractor # 4	2 Wheel dr 70 hp	14.38	5.49	3.62	0.21	23.69
Tandem Disk Harrow	21 ft	0.00	7.49	6.87	0.22	14.58
Mold Board Plow	15 ft	0.00	6.27	11.24	0.36	17.87
Field Cultivator	27 ft	0.00	5.24	2.97	0.09	8.31
Harrow/Roller Packer	15 ft	0.00	10.92	15.14	0.48	26.54
Rotovator	14 ft	0.00	16.96	8.17	0.26	25.39
Fertilizer Spreader	40 ft spinner broadcast	0.00	4.19	3.49	0.10	7.78
Sidedresser attachment	12 ft	0.00	0.26	1.29	0.04	1.58
Row Crop Planter	15 ft	0.00	22.50	10.93	0.35	33.78
Flail Mower	15 ft	0.00	4.40	8.90	0.33	13.63
Bin Trailer	Wagon	0.00	0.53	3.62	0.10	4.25
Harvest Aid	36 ft conveyor	0.00	8.00	15.55	0.59	24.14
Fork Lift	Field harvest lift	5.75	6.00	12.53	0.59	24.87
Self-propelled Boom Sprayer	60 ft	8.63	9.09	92.80	7.38	117.91
----- Costs per mile -----						
Pickup	3/4 ton 4x4	\$0.24	\$0.05	\$0.24	\$0.08	\$0.62
Truck	2 ton	0.86	1.00	1.33	0.79	3.98
----- Costs per acre -----						
ATV	4 wheeler	\$1.73	\$0.11	\$1.47	\$0.45	\$3.75

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

Operation	Tractor	Miles per hour	Acres per hour	Labor costs per acre	-- Machine costs --		Total costs per acre
					Variable costs per acre	Fixed costs per acre	
Tandem Disk Harrow	Tractor # 1	4.5	9.74	1.69	4.29	3.22	9.20
Mold Board Plow	Tractor # 1	5.0	7.73	2.13	5.25	4.63	12.02
Field Cultivator	Tractor # 2	7.0	19.48	0.85	1.84	0.48	3.17
Harrow/Roller Packer	Tractor # 2	7.0	10.82	1.52	3.83	2.02	7.38
Rotovator	Tractor # 2	3.0	4.33	3.81	10.98	3.40	18.19
Fertilizer Spreader	Tractor # 3	7.0	23.77	0.69	0.97	0.84	2.51
Harvest Aid	Tractor # 3	0.5	1.75	9.45	12.99	18.64	41.08
Row Crop Planter	Tractor # 4	5.5	6.50	2.54	6.52	2.32	11.38
Sidedresser attachment	Tractor # 4	5.0	5.09	--	0.05	0.26	0.31
Flail Mower	Tractor # 4	3.5	5.41	3.05	4.48	2.41	9.95
Bin Trailer	Tractor # 4	1.0	1.75	9.43	11.65	4.31	25.40
Fork Lift		1.0	1.75	9.43	6.71	7.50	23.64
Self-propelled Boom Sprayer		7.0	38.20	0.43	0.46	2.62	3.52

**Table 5. Estimated Per Acre Returns Over CASH Costs at Varying Yields & Prices<sup>1</sup>**

Price/Ton	----- Tons per Acre -----						
	2.75	3.50	4.25	5.00	5.75	6.50	7.25
\$350	(\$920)	(\$658)	(\$395)	(\$133)	\$130	\$392	\$655
\$400	(783)	(483)	(183)	117	417	717	1,017
\$450	(645)	(308)	30	367	705	1,042	1,380
\$500	(508)	(133)	242	617	992	1,367	1,742
\$550	(370)	42	455	867	1,280	1,692	2,105
\$600	(233)	217	667	1,117	1,567	2,017	2,467
\$650	(95)	392	880	1,367	1,855	2,342	2,830

**Table 6. Estimated Per Acre Returns Over TOTAL ECONOMIC Costs at Varying Yields & Prices<sup>2</sup>**

Price/Ton	----- Tons per Acre -----						
	2.75	3.50	4.25	5.00	5.75	6.50	7.25
\$350	(\$1,055)	(\$792)	(\$530)	(\$267)	(\$5)	\$258	\$520
\$400	(917)	(617)	(317)	(17)	283	583	883
\$450	(780)	(442)	(105)	233	570	908	1,245
\$500	(642)	(267)	108	483	858	1,233	1,608
\$550	(505)	(92)	320	733	1,145	1,558	1,970
\$600	(367)	83	533	983	1,433	1,883	2,333
\$650	(230)	258	745	1,233	1,720	2,208	2,695

<sup>1</sup> Table 5 estimates the returns over cash costs per acre based on varying yields and prices. In this budget, a grower should expect a net return of \$617 per acre, based upon a yield of 5 tons at \$500 per ton. At this yield, the breakeven price with respect to cash costs is approximately \$375 per ton.

<sup>2</sup> Table 6 estimates the returns over total economic costs per acre based on varying yields and prices. In this budget a grower should expect a net return of \$483 per acre, based on 5 tons at \$500 per ton. At this yield, the breakeven price with respect to total economics costs is approximately \$404 per ton.