

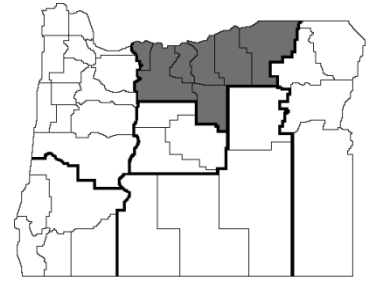
# Enterprise Budget

## Cherries, Sweet, Fresh Market, Standard-Density, North Central Region

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This enterprise budget estimates the typical per-acre costs associated with standard density, fresh market sweet cherry production in Wasco County. It should be used as a guide to estimate actual costs and is not representative of any particular farm. The major assumptions used in constructing this budget are discussed below. An attempt has been made to report typical cultural practices used in standard density, fresh market sweet cherry production; however, this does not represent the only production method. Assistance provided by area producers and agribusinesses is greatly appreciated.

### Typical Farm

The typical sweet cherry orchard in Wasco County, as used in this budget, consists of 100 total productive acres. Bearing acres include 60 acres of mature, standard density, fresh market sweet cherries, 25 acres of high density, fresh market sweet cherries, 5 acres of mature, standard density, brine market sweet cherries, and approximately 10 percent, or 10 acres, of the orchard under establishment. It is assumed that this farm complies with the Integrated Fruit Production (IFP) program established by the Wasco County Fruit and Produce League. To review the IFP guidelines, please visit: <http://extension.oregonstate.edu/wasco/integrated-fruit-production>.

### Land and Irrigation

This budget is based on 60 producing acres of standard-density, fresh market sweet cherries, with 136 trees per acre grafted onto Mazzard rootstock and planted on a 16-by 20-foot spacing. The trees are mature, ranging in age from 15 to 25 years, and therefore establishment costs are assumed to have been fully amortized in the years prior to this budget. Average production is 12,000 pounds per acre at a gross price to the grower of \$.85 per pound. The land, with irrigation rights, is valued at \$5,000 per acre. Mature fruit trees and above ground improvements valued at \$5,000 per acre, with \$60 per acre property taxes. The sweet cherry orchard has a micro-irrigation system valued at \$1,200 per acre.

### Labor and Housing

General labor is hired at a rate of \$11.50 per hour; tractor drivers paid \$13 per hour, and harvest costs \$.25 per pound, all of which include worker's compensation, unemployment insurance, and other labor overhead expenses. Housing for summer labor is valued \$200,000 and has a productive life of 30 years. Each unit houses 5

people and there are 16 total units. Foreman housing is also provided year-round at no cost to the employee and is valued at \$600 per month. The foreman housing is treated as a non-cash opportunity cost to the owner. All labor and foreman housing charges are split equally across the 100 acres.

### Capital

Interest on operating capital (5 percent) is treated as a cash expense. One-half of the cash expenses are borrowed for a 6 month period. 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 the budget reflect the typical machinery complement of a 100-acre orchard in Wasco County. A detailed breakdown of machinery values is shown in Table 1. Estimated machinery costs are shown in Table 2. The machinery costs are estimated based on the total farm use of the machinery. Gasoline and diesel costs \$4.00 per gallon, and propane costs \$2.25 per gallon. Table 3 shows the per acre labor, variable, and fixed costs for certain machinery operations in the orchard.

### Operations

The cultural operations are listed approximately in the order in which they are performed. A 75-hp tractor is used for shredding brush, mowing, flailing, and pulling the air-blast sprayer; it's also used during harvest. A 50-hp tractor is used to auger holes for new trees, spread fertilizer, spray weeds, apply gopher bait, and assist during harvest. An ATV is also used for weed spraying. Herbicides are applied to 30 percent of each acre as strips between trees.

### Break Even Analysis

Tables 4 and 5 show the returns per acre for cash and total costs at various yields and prices for a mature orchard. These returns reflect the changes in harvesting costs with changes in yield. Refer to footnotes below tables for interpretation of table contents.

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**Sweet Cherries, Standard-Density, \$/ acre economic costs and returns.**

<b>GROSS INCOME</b>	<b>Quantity</b>	<b>Unit</b>	<b>\$/Unit</b>	<b>Total</b>	<b>Price/Lb</b>	<b>Your Income</b>		
Sweet Cherries	12,000	pounds	0.85	10,200.00	0.85	_____		
<b>Total gross income</b>				10,200.00	0.85	_____		
<b>VARIABLE CASH COSTS</b>	<b>Description</b>	<b>Labor</b>	<b>Machinery</b>	<b>Materials</b>	<b>Total</b>	<b>Cost/Lb</b>	<b>Your Cost</b>	
	Pruning trees	40.0 hours	\$520.00	\$8.70	\$0.00	\$528.70	\$0.0441	_____
	Tree removal & tree replacement	3.0 hours	35.99	70.72	21.00	127.70	0.0106	_____
	Flail chopping	2.0 x/acre	16.82	39.91	0.00	56.74	0.0047	_____
	Fertilizer (broadcast applied)	2.0 appl.	1.58	2.97	110.00	114.55	0.0095	_____
	Fertilizer (foliar applied)		0.00	0.00	110.00	110.00	0.0092	_____
	Herbicide strip maintenance (.30x)	6.0 appl.	34.32	40.75	125.00	200.07	0.0167	_____
	Disease control	5.0 appl.	0.00	0.00	150.00	150.00	0.0125	_____
	Insecticides, ground applied	5.0 appl.	14.89	43.48	143.00	201.38	0.0168	_____
	Insecticides, aerial applied	5.0 appl.	0.00	0.00	80.00	80.00	0.0067	_____
	Growth regulators		0.00	0.00	35.00	35.00	0.0029	_____
	Bee rental	2.0 hives	0.00	0.00	88.00	88.00	0.0073	_____
	Flail mowing	2.0 times	10.09	23.13	0.00	33.22	0.0028	_____
	Rotary mower	3.0 times	12.62	30.19	0.00	42.80	0.0036	_____
	Rodent control	3.8 x/acre	54.95	21.97	10.00	86.92	0.0072	_____
	Irrigation monitoring		0.00	0.00	40.00	40.00	0.0033	_____
	Irrigation	5.5 hours	71.50	12.00	0.00	83.50	0.0070	_____
	Harvesting costs <sup>1</sup>	6.0 tons	3,000.00	240.00	360.00	3,600.00	0.3000	_____
	Frost protection		10.87	5.17	0.00	16.04	0.0013	_____
	Supervisory labor		368.00	0.00	0.00	368.00	0.0307	_____
	Pickup, truck & ATV		0.00	132.65	0.00	132.65	0.0111	_____
	Seasonal housing & shop facilities		0.00	0.00	60.95	60.95	0.0051	_____
	Miscellaneous and overhead		0.00	0.00	125.00	125.00	0.0104	_____
	Interest: operating capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>78.52</u>	<u>78.52</u>	<u>0.0065</u>	_____
<b>Total variable costs</b>			4,151.62	671.64	1,536.47	6,359.73	0.5300	_____
<b>FIXED CASH COSTS</b>				<b>Unit</b>	<b>Total</b>	<b>Cost/Lb</b>	<b>Your Cost</b>	
	Pickup, truck & ATV insurance			acre	23.77	0.0020	_____	
	Water assessment			acre	160.00	0.0133	_____	
	Helicopter - remove water from trees			acre	75.00	0.0063	_____	
	Property insurance			acre	35.00	0.0029	_____	
	Property taxes			acre	<u>60.00</u>	<u>0.0050</u>	_____	
<b>Total cash costs</b>					353.77	0.0295	_____	
<b>FIXED NON-CASH COSTS</b>				<b>Unit</b>	<b>Total</b>	<b>Cost/Lb</b>	<b>Your Cost</b>	
	Machinery and equipment depreciation, interest, & insurance			acre	340.15	0.0283	_____	
	Pickup, truck & ATV - depreciation & interest			acre	58.55	0.0049	_____	
	Seasonal housing facilities			acre	146.67	0.0122	_____	
	Land interest charge			acre	<u>400.00</u>	<u>0.0333</u>	_____	
<b>Total non-cash costs</b>					945.37	0.0788	_____	
<b>Total fixed costs</b>					1,299.14	0.1083	_____	
<b>Total of all costs per acre</b>					<b>\$7,658.86</b>	<b>\$0.6382</b>	_____	
<b>Net projected returns</b>					<b>\$2,541.14</b>	<b>\$0.2118</b>	_____	

<sup>1</sup>Costs include picking (\$0.25/lb), rental tractors, forklift and truck with fuel (\$0.02/lb), and utilities and maintenance of labor camp (\$0.03/lb)

**Table 1. Machinery Cost Assumptions**

<b>Machine</b>	<b>Size</b>	<b>Market Value</b>	<b>Hours or Miles of Annual Use</b>	<b>Expected Life (yrs)</b>	<b>Salvage Value</b>
Tractor	4 Wheel Dr 75hp, New	\$ 35,000	587	10	\$ 10,338
Tractor	2 Wheel Dr 50hp, Older	20,000	185	20	2,566
Air-blast apray	400 Gallon Unit, PTO	18,000	252	10	3,183
Flail chopper	8' Unit	6,000	142	7	1,531
Flail mower	8' Unit	6,000	85	7	1,531
Rotary mower	9' Unit	6,000	107	10	1,061
Weed sprayer	100 Gallon Unit	2,000	145	15	192
Tank sprayer for ATV		1,500	145	10	265
Fertilizer spreader	16' Unit	2,300	13	20	120
Gopher machine	8' Unit	1,200	27	20	63
Pickup	1/2 Ton 4X4, New	35,000	<i>12,000</i>	10	13,235
Truck	2 Ton, Used	18,000	<i>3,500</i>	20	2,710
ATV	4 Wheeler, New	5,500	<i>3,000</i>	5	2,465
Auger		1,700	50	20	89
Bin trailer	2 Units, per 100 acres	7,500	300	10	1,326
Front-End loader and backforks		5,800	300	10	1,026
Ladders	80 Units, per 100 acres	9,000	N/A	10	N/A
Picking buckets	1,600 Buckets, per 100 acres	10,000	N/A	5	N/A
Pruning and power saws	2 Ch, 3PP, 3PS, 3HL, 1PL	3,000	N/A	3	N/A
Irrig. system, Standard-Density	Micro-sprinklers, per acre	1,200	N/A	25	N/A
Irrig. system, High-Density	Micro-sprinklers, per acre	1,350	N/A	25	N/A
Wind machine	1 unit, propane, per 100 acres	28,000	35	25	1,321
Shop with tools	20' x 40', per 100 acres	30,000	N/A	30	0
Seasonal housing facilities	16 Units, per 100 acres	200,000	N/A	30	0

**Table 2. Machinery Cost Calculations**

Machine	Size	--- Variable Costs ---		--- Fixed Costs ---		Total Cost
		Fuel & Lube	Repairs & Maint.	Deprec. & Interest	Insurance	
----- Costs per Hour -----						
Tractor	4 Wheel Dr 75hp, New	\$27.60	\$0.62	\$6.52	\$0.35	\$35.09
Tractor	2 Wheel Dr 50hp, Older	23.00	0.52	8.36	0.55	32.43
Air-blast spray	400 Gallon Unit, PTO	0.00	9.74	8.40	0.25	18.39
Flail chopper	8' Unit	0.00	2.63	6.07	0.16	8.86
Flail mower	8' Unit	0.00	1.58	10.12	0.26	11.96
Rotary mower	9' Unit	0.00	2.89	6.61	0.20	9.70
Weed sprayer	100 Gallon Unit	0.00	1.04	1.28	0.05	2.36
Tank sprayer for ATV		0.00	0.69	1.22	0.04	1.94
Fertilizer spreader	16' Unit	0.00	0.97	13.61	0.54	15.13
Gopher machine		0.00	0.63	3.55	0.14	4.32
----- Costs per Mile -----						
Pickup	1/2 Ton 4X4, New	\$0.38	\$0.05	\$0.30	\$0.12	\$0.85
Truck	2 Ton, Used	0.77	0.57	0.40	0.27	2.00
ATV	4 Wheeler, New	1.10	0.02	0.28	0.01	1.42
----- Costs per Acre -----						
Auger		\$0.00	\$0.16	\$1.34	\$0.00	\$1.50
Bin trailer	2 Units, per 100 acres	0.00	5.94	8.82	0.00	14.77
Front-End loader and backforks		0.00	4.60	6.82	0.00	11.42
Ladders	80 Units, per 100 acres	0.00	5.40	11.70	0.00	17.10
Picking buckets	1,600 Buckets, per 100 acres	0.00	6.00	23.00	0.00	29.00
Pruning and power saws	2 Ch, 3PP, 3PS, 3HL, 1PL	6.90	1.80	10.90	0.00	19.60
Irrig. system, Standard-Density	Micro-sprinklers, per acre	0.00	12.00	84.00	0.00	96.00
Irrig. system, High-Density	Micro-sprinklers, per acre	0.00	13.50	94.50	0.00	108.00
Wind machine	1 unit, propane, per 100 acres	10.87	5.17	28.26	0.00	44.30
Shop with tools	20' x 40', per 100 acres	0.00	7.95	28.00	0.00	35.95
Seasonal housing facilities	16 Units, per 100 acres	0.00	53.00	146.67	0.00	199.67

**Table 3. Estimated Cost of Each Operation with Power-Unit in a Standard-Density Sweet Cherry Orchard.**

-- Machine Costs --							
Operation	Tractor	Miles per hour	Acres per hour	Labor cost per acre	Variable		Total cost per acre
					cost per acre	Fixed cost per acre	
Air-blast apray	4 Wheel Dr 75hp, New	3.00	4.36	\$ 2.98	\$ 8.70	\$ 3.56	\$ 15.23
Flail chopper	4 Wheel Dr 75hp, New	1.50	1.55	8.41	19.96	8.48	36.85
Flail mower	4 Wheel Dr 75hp, New	2.50	2.58	5.05	11.57	6.70	23.31
Rotary mower	4 Wheel Dr 75hp, New	3.00	3.09	4.21	10.06	4.43	18.69
Weed sprayer	2 Wheel Dr 50hp, Older	2.50	2.27	5.72	10.80	4.50	21.03
Tank sprayer for ATV	ATV	2.50	2.27	5.72	2.78	1.20	9.70
Fertilizer spreader	2 Wheel Dr 50hp, Older	4.00	16.49	0.79	1.49	1.40	3.67
Gopher machine	2 Wheel Dr 50hp, Older	2.00	4.12	3.15	5.86	3.06	12.07

**Table 4. Estimated Per Acre Returns Over Cash Costs at Varying Yields and Prices<sup>1</sup>.**

Price per Lb	Lbs per Acre						
	6,000	8,000	10,000	12,000	14,000	16,000	18,000
\$ 0.55	\$ (1,613)	\$ (1,113)	\$ (613)	\$ (113)	\$ 387	\$ 887	\$ 1,387
\$ 0.65	(1,013)	(313)	387	1,087	1,787	2,487	3,187
\$ 0.75	(413)	487	1,387	2,287	3,187	4,087	4,987
\$ 0.85	187	1,287	2,387	3,487	4,587	5,687	6,787
\$ 0.95	787	2,087	3,387	4,687	5,987	7,287	8,587
\$ 1.05	1,387	2,887	4,387	5,887	7,387	8,887	10,387
\$ 1.15	1,987	3,687	5,387	7,087	8,787	10,487	12,187

**Table 5. Estimated Per Acre Returns Over Total Economic Costs at Varying Yields and Prices<sup>2</sup>.**

Price per Lb	Lbs per Acre						
	6,000	8,000	10,000	12,000	14,000	16,000	18,000
\$ 0.55	\$ (2,559)	\$ (2,059)	\$ (1,559)	\$ (1,059)	\$ (559)	\$ (59)	\$ 441
\$ 0.65	(1,959)	(1,259)	(559)	141	841	1,541	2,241
\$ 0.75	(1,359)	(459)	441	1,341	2,241	3,141	4,041
\$ 0.85	(759)	341	1,441	2,541	3,641	4,741	5,841
\$ 0.95	(159)	1,141	2,441	3,741	5,041	6,341	7,641
\$ 1.05	441	1,941	3,441	4,941	6,441	7,941	9,441
\$ 1.15	1,041	2,741	4,441	6,141	7,841	9,541	11,241

<sup>1</sup>Table 4 estimates the returns over cash costs per acre based on varying yields and prices for a full producing standard-density orchard. In this budget a grower should expect \$3,487, based on a per acre yield of 12,000 pounds at \$0.85 per pound. At this price, as yields increase the returns to a grower increase as well and conversely, returns decrease as yields decrease.

<sup>2</sup>Table 5 estimates the returns over total economic costs per acre based on varying yields and prices for a full producing standard-density orchard. In this budget a grower should expect \$2,541, based on a per acre yield of 12,000 pounds at \$0.85 per pound. At this price, as yields increase the returns to a grower increase as well and conversely, returns decrease as yields decrease.