

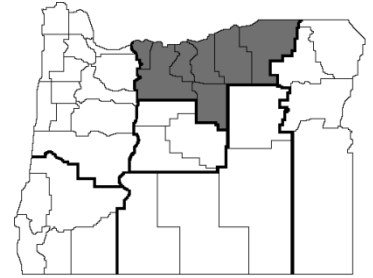
Enterprise Budget

Cherries, Sweet, Fresh Market, High-Density, North Central Region

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This enterprise budget estimates the typical per-acre costs associated with high 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 high 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 25 producing acres of high density, fresh market sweet cherries, with 340 trees per acre grafted onto Gisela 6 rootstock and planted on a 10-by 16-foot spacing. The trees are mature, ranging in age from 8 to 15 years, with establishment costs amortized over a 25-year period. Average production is 14,000 pounds per acre at a gross price to the grower of \$0.85 per pound. The land is owned and valued at \$5,000 per acre, with \$60 per acre property taxes. This high-density sweet cherry orchard is irrigated with a micro-irrigation system valued at \$1,350 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 at \$125,000 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.

OREGON STATE UNIVERSITY
EXTENSION SERVICE

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

GROSS INCOME	Quantity	Unit	\$/Unit	Total	Price/Lb	Your Income
Sweet Cherries	14,000	pounds	0.85	<u>11,900.00</u>	<u>0.85</u>	_____
Total gross income				11,900.00	0.85	_____

VARIABLE CASH COSTS	Description	Labor	Machinery	Materials	Total	Cost/Lb	Your Cost
Pruning trees	40.0 hours	\$520.00	\$8.70	\$0.00	\$528.70	\$0.0378	_____
Tree removal & tree replacement	3.0 hours	35.99	70.72	21.00	127.70	0.0091	_____
Flail chopping	2.0 x/acre	21.03	49.89	0.00	70.92	0.0051	_____
Fertilizer (broadcast applied)	2.0 appl.	1.97	3.71	110.00	115.69	0.0083	_____
Fertilizer (foliar applied)		0.00	0.00	110.00	110.00	0.0079	_____
Herbicide strip maintenance (.30x)	6.0 appl.	42.89	50.94	125.00	218.84	0.0156	_____
Disease control	5.0 appl.	0.00	0.00	150.00	150.00	0.0107	_____
Insecticides, ground applied	5.0 appl.	18.62	54.36	143.00	215.97	0.0154	_____
Insecticides, aerial applied	5.0 appl.	0.00	0.00	80.00	80.00	0.0057	_____
Growth regulators		0.00	0.00	35.00	35.00	0.0025	_____
Bee rental	2.0 hives	0.00	0.00	88.00	88.00	0.0063	_____
Flail mowing	2.0 times	12.62	28.91	0.00	41.53	0.0030	_____
Rotary mower	3.0 times	15.77	37.73	0.00	53.50	0.0038	_____
Rodent control	3.8 hours	57.91	27.46	10.00	95.37	0.0068	_____
Irrigation monitoring		0.00	0.00	40.00	40.00	0.0029	_____
Irrigation	5.5 hours	71.50	13.50	0.00	85.00	0.0061	_____
Harvesting costs ¹	7.0 tons	3,500.00	280.00	420.00	4,200.00	0.3000	_____
Frost protection		10.87	5.17	0.00	16.04	0.0011	_____
Supervisory labor		368.00	0.00	0.00	368.00	0.0263	_____
Pickup, truck & ATV		0.00	132.65	0.00	132.65	0.0095	_____
Seasonal housing & shop facilities		0.00	0.00	60.95	60.95	0.0044	_____
Miscellaneous and overhead		0.00	0.00	125.00	125.00	0.0089	_____
Interest: operating capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>86.99</u>	<u>86.99</u>	<u>0.0062</u>	_____
Total variable costs		4,677.16	763.74	1,604.94	7,045.84	0.5033	_____

FIXED CASH COSTS	Unit	Total	Cost/Lb	Your Cost
Pickup, truck & ATV insurance	acre	23.77	0.0017	_____
Water assessment	acre	160.00	0.0114	_____
Helicopter - remove water from trees	acre	75.00	0.0054	_____
Property insurance	acre	35.00	0.0025	_____
Property taxes	acre	<u>60.00</u>	<u>0.0043</u>	_____
Total cash costs		353.77	0.0253	_____

FIXED NON-CASH COSTS	Unit	Total	Cost/Lb	Your Cost
Machinery and equipment depreciation, interest, & insurance	acre	378.29	0.0270	_____
Pickup, truck & ATV - depreciation & interest	acre	58.55	0.0042	_____
Seasonal housing facilities	acre	146.67	0.0105	_____
Land interest charge	acre	400.00	0.0286	_____
Amortized establishment cost ²	acre	<u>1,907.16</u>	<u>0.1362</u>	_____
Total non-cash costs		2,890.67	0.2065	_____
Total fixed costs		3,244.44	0.2317	_____

Total of all costs per acre	\$10,290.28	\$0.7350	_____
Net projected returns	\$1,609.72	\$0.1150	_____

¹Costs 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)

²Based on "Orchard Economics: The Cost of Establishing and Producing High-Density Cherries in Wasco County", AEB 0032, Revised May 2012.

Table 1. Machinery Cost Assumptions

Machine	Size	Market Value	Hours or Miles of Annual Use	Expected Life (yrs)	Salvage Value
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 spray	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	12,000	10	13,235
Truck	2 Ton, Used	18,000	3,500	20	2,710
ATV	4 Wheeler, New	5,500	3,000	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 High-Density Sweet Cherry Orchard.

Operation	Tractor	Miles per hour	Acres per hour	Labor cost per acre	-- Machine Costs --			Total cost per acre
					Variable cost per acre	Fixed cost per acre		
Air-blast apray	4 Wheel Dr 75hp, New	3.00	3.49	\$ 3.72	\$ 10.87	\$ 4.45	\$ 19.04	
Flail chopper	4 Wheel Dr 75hp, New	1.50	1.24	10.51	24.95	10.60	46.06	
Flail mower	4 Wheel Dr 75hp, New	2.50	2.06	6.31	14.46	8.37	29.14	
Rotary mower	4 Wheel Dr 75hp, New	3.00	2.47	5.26	12.58	5.53	23.37	
Weed sprayer	2 Wheel Dr 50hp, Older	2.50	1.82	7.15	13.50	5.63	26.28	
Tank sprayer for ATV	ATV	2.50	1.82	7.15	3.48	1.50	12.12	
Fertilizer spreader	2 Wheel Dr 50hp, Older	4.00	13.19	0.99	1.86	1.75	4.59	
Gopher machine	2 Wheel Dr 50hp, Older	2.00	3.30	3.94	7.32	3.82	15.09	

Table 4. Estimated Per Acre Returns Over Cash Costs at Varying Yields and Prices¹.

Price per Lb	----- Lbs per Acre -----							
	8,000	10,000	12,000	14,000	16,000	18,000	20,000	
\$ 0.55	\$ (1,200)	\$ (700)	\$ (200)	\$ 300	\$ 800	\$ 1,300	\$ 1,800	
\$ 0.65	(400)	300	1,000	1,700	2,400	3,100	3,800	
\$ 0.75	400	1,300	2,200	3,100	4,000	4,900	5,800	
\$ 0.85	1,200	2,300	3,400	4,500	5,600	6,700	7,800	
\$ 0.95	2,000	3,300	4,600	5,900	7,200	8,500	9,800	
\$ 1.05	2,800	4,300	5,800	7,300	8,800	10,300	11,800	
\$ 1.15	3,600	5,300	7,000	8,700	10,400	12,100	13,800	

Table 5. Estimated Per Acre Returns Over Total Economic Costs at Varying Yields and Prices².

Price per Lb	----- Lbs per Acre -----							
	8,000	10,000	12,000	14,000	16,000	18,000	20,000	
\$ 0.55	\$ (4,090)	\$ (3,590)	\$ (3,090)	\$ (2,590)	\$ (2,090)	\$ (1,590)	\$ (1,090)	
\$ 0.65	(3,290)	(2,590)	(1,890)	(1,190)	(490)	210	910	
\$ 0.75	(2,490)	(1,590)	(690)	210	1,110	2,010	2,910	
\$ 0.85	(1,690)	(590)	510	1,610	2,710	3,810	4,910	
\$ 0.95	(890)	410	1,710	3,010	4,310	5,610	6,910	
\$ 1.05	(90)	1,410	2,910	4,410	5,910	7,410	8,910	
\$ 1.15	710	2,410	4,110	5,810	7,510	9,210	10,910	

¹Table 4 estimates the returns over cash costs per acre based on varying yields and prices for a full producing high-density orchard. In this budget a grower should expect \$4,500, based on a per acre yield of 14,000 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.

²Table 5 estimates the returns over total economic costs per acre based on varying yields and prices for a full producing high-density orchard. In this budget a grower should expect \$1,610, based on a per acre yield of 14,000 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.