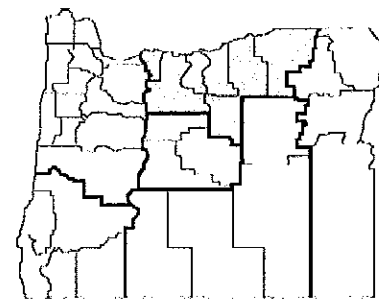


# Enterprise Budget

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

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**EM 8816, Revised March 2008**

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://osu.orst.edu/dept/mcarec/ifp/ifp\\_guide\\_2000.html](http://osu.orst.edu/dept/mcarec/ifp/ifp_guide_2000.html).

### 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, and therefore establishment costs are assumed to be fully amortized. 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 \$1,250 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 (8.5 percent) is treated as a cash expense. One-half of the cash expenses are borrowed for a 6 month period. Interest on intermediate (8.5 percent) 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 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 costs \$3.00 per gallon, and diesel costs \$3.30 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 70-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 do reflect the changes in harvesting costs with changes in yield. Refer to footnote below tables for interpretation of table contents.

**OREGON STATE UNIVERSITY**

**EXTENSION SERVICE**

**Full Production, Sweet Cherries, High 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	14,000	pounds	0.85	<u>11,900.00</u>	<u>0.85</u>	
<b>Total gross income</b>				11,900.00	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	\$460.00	\$0.00	\$0.00	\$460.00	\$0.0329	
Tree Removal & Tree Replacement	1.0 hours	24.50	20.44	21.00	65.94	0.0047	
Shredding Brush	1.0 x/acre	13.40	26.43	0.00	39.83	0.0028	
Fertilizer (broadcast applied)	2.0 appl.	6.38	10.53	68.00	84.92	0.0061	
Fertilizer (foliar applied)	1.0 x/acre	0.00	0.00	100.00	100.00	0.0071	
Herbicide strip maintenance (.30x)	2.0 appl.	10.21	16.61	16.67	43.49	0.0031	
ATV herbicide maintenance (.30x)	1.0 appl.	3.57	1.29	8.33	13.20	0.0009	
Disease Control	5.0 appl.	41.89	112.13	120.00	274.02	0.0196	
Insecticides, ground applied	1.0 appl.	8.38	22.43	127.50	158.30	0.0113	
Insecticides, aerial applied	5.0 appl.	0.00	0.00	67.50	67.50	0.0048	
Growth Regulators	1.0 x/acre	0.00	0.00	38.00	38.00	0.0027	
Bee Rental	2.0 hives	0.00	0.00	72.00	72.00	0.0051	
Mowing & Flailing Orchard Floor	4.0 times	45.47	90.16	0.00	135.63	0.0097	
Rodent Control	1.0 hours	7.43	2.68	20.00	30.10	0.0022	
Irrigation	3.5 hours	40.25	10.00	0.00	50.25	0.0036	
Ladders, Pruning, & Picking Equip.	1.0 x/acre	0.00	18.38	0.00	18.38	0.0013	
Harvesting Costs	7.0 ton	3,569.00	140.58	0.00	3,709.58	0.2650	
General Labor	6.0 hours						
Pickup, Truck & ATV	1.0 x/acre	0.00	106.16	0.00	106.16	0.0076	
Housing Facilities	1.0 x/acre	0.00	0.00	33.02	33.02	0.0024	
Miscellaneous and Overhead	1.0 x/acre	0.00	0.00	75.00	75.00	0.0054	
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>118.48</u>	<u>118.48</u>	<u>0.0085</u>	
<b>Total variable costs</b>		4,230.49	577.82	885.50	5,693.80	0.4067	

**FIXED CASH COSTS**

	<b>Unit</b>	<b>Total</b>	<b>Cost/Lb</b>
Pickup, Truck & ATV Insurance	acre	20.57	0.0015
Water Assessment	acre	175.00	0.0125
Farm Foreman	acre	368.00	0.0263
Helicopter - Remove water	acre	60.00	0.0043
Property Insurance	acre	50.00	0.0036
Property Taxes	acre	<u>60.00</u>	<u>0.0043</u>
<b>Total cash costs</b>		733.57	0.0524

**FIXED NON-CASH COSTS**

	<b>Unit</b>	<b>Total</b>	<b>Cost/Lb</b>
Machinery and Equip. Insurance, Depreciation & Interest	acre	322.60	0.0230
Pickup, Truck & ATV Depreciation & Interest	acre	58.51	0.0042
Housing Facilities	acre	91.67	0.0065
Land Interest Charge	acre	400.00	0.0286
Amortized Establishment Costs*	acre	<u>2,516.37</u>	<u>0.1797</u>
<b>Total non-cash costs</b>		3,389.15	0.2421
<b>Total fixed costs</b>		4,122.72	0.2945

**Total of all costs per acre**

**\$9,816.52 \$0.7012**

**Net projected returns**

**\$2,083.48 \$0.1488**

\*Based on "Orchard Economics: The Costs and Returns of Establishing and Producing High-Density Sweet Cherries in Wasco County", EM 8802-E, Revised March 2008.

**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	911	10	\$ 10,338
Tractor	2 Wheel Dr 50hp, Older	20,000	466	20	2,566
Air-Blast Spray	400 Gallon Unit, PTO	18,000	387	10	3,183
Flail Chopper	8' Unit	6,000	103	7	1,531
Mower	9' Unit	6,000	121	10	1,061
Weed Sprayer	100 Gallon Unit	2,000	79	15	192
Tank Sprayer for ATV	8' Unit	1,500	34	10	265
Fertilizer Spreader	16' Unit	2,300	25	20	120
Gopher Machine		1,200	13	20	63
Pickup	1/2 Ton 4X4, New	27,000	12,000	10	10,210
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	5,000	300	10	884
Front End Loader and Backforks		5,800	300	10	1,026
Ladders	80 Units	9,000	N/A	10	N/A
Picking Buckets	1600 Buckets	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, High Density	Micro-sprinklers, per acre	1,250	N/A	25	N/A
Housing Facilities	16 Units	125,000	N/A	30	0

**Table 2. Machinery Cost Calculations.**

<b>Machine</b>	<b>Size</b>	<b>--- Variable Costs ---</b>			<b>--- Fixed Costs ---</b>		<b>Total Cost</b>
		<b>Fuel &amp; Lube</b>	<b>Repairs &amp; Maint.</b>	<b>Deprec. &amp; Interest</b>	<b>Insurance</b>		
----- Costs per Hour -----							
Tractor	4 Wheel Dr 75hp, New	\$22.77	\$0.96	\$4.82	\$0.22	\$28.77	
Tractor	2 Wheel Dr 50hp, Older	18.98	1.30	3.93	0.22	24.43	
Air-Blast Spray	400 Gallon Unit, PTO	0.00	11.07	6.16	0.16	17.40	
Flail Chopper	8' Unit	0.00	1.91	9.30	0.22	11.42	
Mower	9' Unit	0.00	3.16	6.55	0.17	9.88	
Weed Sprayer	100 Gallon Unit	0.00	0.86	2.72	0.08	3.67	
Tank Sprayer for ATV		0.00	0.44	5.84	0.16	6.44	
Fertilizer Spreader	16' Unit	0.00	1.17	8.63	0.30	10.10	
Gopher Machine		0.00	0.50	8.58	0.29	9.37	
----- Costs per Mile -----							
Pickup	1/2 Ton 4X4, New	\$0.29	\$0.05	\$0.27	\$0.09	\$0.70	
Truck	2 Ton, Used	0.58	0.57	0.47	0.27	1.89	
ATV	4 Wheeler, New	0.83	0.02	0.32	0.01	1.18	
----- Costs per Acre -----							
Auger		\$0.00	\$0.16	\$1.57	\$0.00	\$1.73	
Bin Trailer	2 Units	0.00	3.96	6.62	0.00	10.58	
Front End Loader and Backforks		0.00	4.60	7.68	0.00	12.27	
Ladders	80 Units	0.00	5.40	12.83	0.00	18.23	
Picking Buckets	1600 Buckets	0.00	6.00	24.25	0.00	30.25	
Pruning and Power Saws	2 Ch, 3PP, 3PS, 3HL, 1PL	5.18	1.80	11.28	0.00	18.25	
Irrig. System, High Density	Micro-sprinklers, per acre	0.00	12.50	103.13	0.00	115.63	
Housing Facilities	16 Units	0.00	33.02	91.67	0.00	124.69	

**Table 3. Estimated Cost of Each Operation with Power-Unit for a 16' Between Row Spacing.**

-- Machine Costs --

Operation	Tractor	Miles per hour	Acres per hour	Labor cost per acre	Variable cost per acre	Fixed cost per acre	Total cost per acre
Air-Blast Spray	4 Wheel Dr 75hp, New	2.00	1.55	\$ 8.38	\$ 22.43	\$ 7.33	\$ 38.13
Flail Chopper	4 Wheel Dr 75hp, New	2.50	0.97	13.40	26.43	15.01	54.85
Mower	4 Wheel Dr 75hp, New	3.00	2.47	5.26	10.87	4.76	20.89
Weed Sprayer	2 Wheel Dr 50hp, Older	3.50	2.55	5.11	8.30	2.73	16.14
Tank Sprayer for ATV	ATV	5.00	3.64	3.57	1.29	2.10	6.96
Fertilizer Spreader	2 Wheel Dr 50hp, Older	3.00	4.07	3.19	5.27	3.21	11.67
Gopher Machine	2 Wheel Dr 50hp, Older	2.50	3.88	3.35	5.36	3.36	12.06

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

Price per Lb	Lbs per Acre						
	8,000	10,000	12,000	14,000	16,000	18,000	20,000
\$ 0.55	\$ (438)	\$ 132	\$ 702	\$ 1,273	\$ 1,843	\$ 2,413	\$ 2,983
\$ 0.65	362	1,132	1,902	2,673	3,443	4,213	4,983
\$ 0.75	1,162	2,132	3,102	4,073	5,043	6,013	6,983
\$ 0.85	1,962	3,132	4,302	5,473	6,643	7,813	8,983
\$ 0.95	2,762	4,132	5,502	6,873	8,243	9,613	10,983
\$ 1.05	3,562	5,132	6,702	8,273	9,843	11,413	12,983
\$ 1.15	4,362	6,132	7,902	9,673	11,443	13,213	14,983

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

Price per Lb	Lbs per Acre						
	8,000	10,000	12,000	14,000	16,000	18,000	20,000
\$ 0.55	\$ (3,827)	\$ (3,257)	\$ (2,687)	\$ (2,117)	\$ (1,547)	\$ (977)	\$ (407)
\$ 0.65	(3,027)	(2,257)	(1,487)	(717)	53	823	1,593
\$ 0.75	(2,227)	(1,257)	(287)	683	1,653	2,623	3,593
\$ 0.85	(1,427)	(257)	913	2,083	3,253	4,423	5,593
\$ 0.95	(627)	743	2,113	3,483	4,853	6,223	7,593
\$ 1.05	173	1,743	3,313	4,883	6,453	8,023	9,593
\$ 1.15	973	2,743	4,513	6,283	8,053	9,823	11,593

<sup>1</sup>Table 4 estimates the returns over cash costs per acre based on varying yields and prices for a full producing orchard. In this budget a grower should expect \$5,473, 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.

<sup>2</sup>Table 5 estimates the returns over total economic costs per acre based on varying yields and prices for a full producing orchard. In this budget a grower should expect \$2,083, based on a yield of 14,000 pounds at \$0.85 per pound.