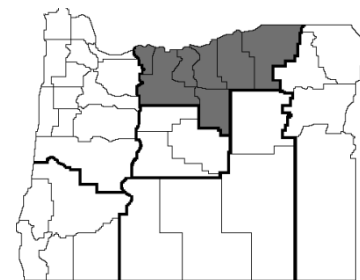


# Enterprise Budget

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

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AEB 0069, Revised November 2022

This enterprise budget estimates the typical economic costs and returns to produce fresh market sweet cherries in a standard-density orchard. It should be used to calculate actual costs and returns and is not representative of any specific farm. The assumptions used in constructing this budget are discussed below. Assistance provided by area producers and other agribusinesses is much 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 45 acres of standard density, 45 acres of high-density, and 5 acres of ultra-high-density plantings, all producing fresh market sweet cherry varieties.

### Land and Irrigation

This budget is based on 45 producing acres of standard-density 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. The land, with irrigation rights, is valued at \$15,000 per acre. Mature fruit trees and above ground improvements valued at \$5,000 per acre, with \$90 per acre property taxes. The sweet cherry orchard has a micro-irrigation system valued at \$1,500 per acre.

### Labor and Housing

General orchard labor is paid \$16.75, supervisory labor \$24.50, and tractor drivers are paid \$20.25 per hour. Workers harvesting cherries are paid a piece rate of \$0.26 per pound. All labor costs include worker's compensation, unemployment insurance, and other labor overhead expenses. Therefore, all general, tractor, supervision, and harvest labor is a cash variable cost. Housing for summer labor is valued \$800,000 and has a productive life of 30 years. Each unit houses 5 people and there are 16 total units. A charge of \$0.02 per pound of harvested cherries is assessed for picker camp maintenance during harvest. All labor housing charges are split equally across the 100 acres.

### Capital

The interest rate on operating funds is eight percent, treated as a cash expense. One-half of the cash expenses are borrowed for six months. Machinery and land are owned and assessed at an eight and four percent interest rate,

respectively, and treated as a fixed non-cash opportunity cost to the owner.

### Machinery and Equipment

A detailed list of machinery, purchase price, salvage value, annual use, and years of useful life are shown in Table 2. Estimated labor, variable, and fixed costs for machinery are shown in Table 3, based on an hourly and per acre basis. The machinery costs are calculated based on the total farm use of the machinery. Gasoline, off-road diesel, and propane costs are \$4.00, \$4.00, and \$2.25 per gallon, respectively.

### Operations

Table 4 shows the machine operations for sweet cherry production. A 90-hp tractor is used to pull an air-blast sprayer, flail chopper, grass cutter, and assist during harvest. A 75-hp tractor is used to apply gopher bait and assist during harvest. An ATV is equipped with a tank sprayer for weed control. A charge for miscellaneous and other expenses is five percent of production costs, including additional labor, repairs and maintenance, supplies and materials, tax preparation, memberships in professional organizations, and educational workshops not included in field operations.

### Results

The average sweet cherry price is \$0.85 per pound returned to the grower after subtracting packing costs and a yield of 12,000 pounds per acre. The total gross income in this budget is \$10,200 per acre. Variable cash costs are \$6,848 per acre, giving a net return above variable costs of \$3,352 per acre. Total costs are \$8,973 per acre when all costs are considered, resulting in a projected net return of \$1,227.

### Break Even Analysis

Tables 5 and 6 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, cash and total costs at different yields and prices.

**Note:** Not included in this study are a return to management, family living withdrawals for unpaid labor, depreciation and opportunity costs for vehicles, buildings, and improvements, an accounting for all regulatory costs, and local, state, and federal income taxes paid by the owner.

**Table 1. Sweet Cherries, Mature, Standard-Density, \$/acre economic costs and returns.**

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Sweet Cherries	12,000	pounds	0.85	<u>10,200.00</u>	<u>0.8500</u>	
Total gross income				10,200.00	0.8500	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Pruning trees	40.0 hours	\$670.00	\$10.50	\$0.00	\$680.50	\$0.0567
Flail chopping	1.0 x/acre	20.90	18.92	0.00	39.81	0.0033
Fertilizer (broadcast applied)	1.0 appl.	1.08	0.81	110.00	111.90	0.0093
Fertilizer (foliar applied)		0.00	0.00	110.00	110.00	0.0092
ATV herbicide maintenance	4.0 appl.	56.84	8.62	200.00	265.46	0.0221
Insecticide and disease control	6.0 appl.	39.47	64.59	900.00	1,004.06	0.0837
Bee rental	2.0 hives	0.00	0.00	110.00	110.00	0.0092
Grass cutter	3.0 times	31.35	33.72	0.00	65.07	0.0054
Rodent control	3.0 x/acre	41.61	11.75	20.00	73.36	0.0061
Frost protection	2.0 hours	49.00	80.87	0.00	129.87	0.0108
Irrigation	5.5 hours	92.13	57.00	0.00	149.13	0.0124
Harvesting costs	6.0 tons	3,120.00	215.43	240.00	3,575.43	0.2980
Pickup, truck & ATV		0.00	78.59	0.00	78.59	0.0065
Seasonal housing & shop facilities		0.00	0.00	170.80	170.80	0.0142
Miscellaneous and overhead		0.00	0.00	150.00	150.00	0.0125
Interest: operating capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>134.28</u>	<u>134.28</u>	<u>0.0112</u>
Total variable costs		\$4,122.38	\$580.80	\$2,145.08	\$6,848.26	\$0.5707
<b>GROSS INCOME minus VARIABLE COSTS</b>				3,351.74	\$0.2793	
<u>FIXED CASH COSTS</u>						
			<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>	
Water assessment			acre	\$168.00	\$0.0140	
Property insurance			acre	70.00	0.0058	
Property taxes			acre	<u>90.00</u>	<u>0.0075</u>	
Total cash costs				\$328.00	\$0.03	
<u>FIXED NON-CASH COSTS</u>						
			<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>	
Machinery and equipment depreciation, interest, & insurance			acre	\$509.90	\$0.0425	
Pickup, truck & ATV - depreciation & interest			acre	67.91	0.0057	
Seasonal housing facilities			acre	418.57	0.0349	
Land interest charge			acre	<u>800.00</u>	<u>0.0667</u>	
Total non-cash costs				\$1,796.38	\$0.1497	
Total fixed costs				\$2,124.38	\$0.1770	
Total of all costs per acre				\$8,972.64	\$0.7477	
<b>Net projected returns</b>				<b>\$1,227.36</b>	<b>\$0.1023</b>	

**Table 2. Machinery Cost Assumptions**

Machine	Size	Market Value	Hours or Miles of Annual Use	Expected Life (yrs)	Salvage Value
Tractor	4 Wheel Dr 90hp, 2 Units, New	\$110,000	517	10	\$32,492
Tractor	4 Wheel Dr 75hp, Older	20,000	28	20	2,566
Air-blast sprayer	400 Gallon Unit, PTO, 2 Units	36,000	210	10	6,366
Flail chopper	8' Unit	10,000	88	7	2,551
Grass Cutter	9' Unit	8,000	219	10	1,415
Tank sprayer for ATV		1,500	194	10	265
Gopher machine	1 Unit	4,000	28	20	208
Pickup	3/4 Ton 4X4, New	50,000	15,000	10	18,908
ATV	4 Wheeler, New	5,500	3,000	5	2,465
5th Wheel Trailer	Flatbed	14,000	N/A	20	2,107
Auger		1,700	50	20	89
Field toilets	3 Units	18,000	N/A	15	0
Weather station	1 Units	2,500	N/A	5	0
Bin trailer	2 Units, per 100 acres	15,000	300	10	2,653
Front-End loader and backforks		2,000	300	10	354
Ladders	80 Units, per 100 acres	13,600	N/A	10	0
Picking buckets/harness	per 100 acres	2,880	N/A	5	0
Pruning equipment	Various tools	6,000	N/A	3	0
Irrigation filtration system	per 100-acres	4,000	N/A	30	0
Irrig. system, Standard-Density	Micro-sprinklers, per acre	1,500	N/A	30	0
Wind machine	2 unit, propane, per 100 acres	70,000	35	30	1,792
Shop with tools	20' x 40', per 100 acres	60,000	N/A	30	0
Pesticide storage shed	8' x 40', per 100 acres	6,000	N/A	30	0
Seasonal housing facilities	16 Units, per 100 acres	800,000	N/A	30	0

**Table 2. Machinery Cost Calculations**

Machine	Size or Description	-- Variable Costs --		-- Fixed Costs --		Total Cost
		Fuel & Lube	Repairs & Maint.	Depreciation	Interest	
----- Costs per Hour -----						
Tractor	4 Wheel Dr 90hp, 2 Units, New	\$15.09	\$1.71	\$15.00	\$11.03	\$42.83
Tractor	4 Wheel Dr 75hp, Older	15.09	0.08	31.36	32.47	78.99
Air-blast sprayer	400 Gallon Unit, PTO, 2 Units	0.00	18.44	14.11	8.07	40.62
Flail chopper	8' Unit	0.00	2.70	12.15	5.73	20.57
Grass Cutter	9' Unit	0.00	6.37	3.01	1.72	11.10
Tank sprayer for ATV		0.00	0.75	0.64	0.36	1.75
Gopher machine	1 Unit	0.00	0.98	6.82	6.06	13.85
----- Costs per Mile -----						
Pickup	3/4 Ton 4X4, New	\$0.38	\$0.04	\$0.21	\$0.18	\$0.81
ATV	4 Wheeler, New	0.48	0.02	0.20	0.11	0.81
----- Costs per Acre -----						
5th Wheel Trailer	Flatbed	\$0.00	\$8.40	\$5.95	\$6.44	\$20.79
Auger		0.00	1.02	0.81	0.72	2.54
Field toilets	3 Units	0.00	10.80	12.00	7.20	30.00
Weather station	1 Units	0.00	1.50	5.00	1.00	7.50
Bin trailer	2 Units, per 100 acres	0.00	9.00	12.35	7.06	28.41
Front-End loader and backforks		0.00	1.20	1.65	0.94	3.79
Ladders	80 Units, per 100 acres	0.00	8.16	13.60	5.44	27.20
Picking buckets	per 100 acres	0.00	1.73	5.76	1.15	8.64
Pruning equipment	Various tools	6.90	3.60	20.00	2.40	32.90
Irrigation filtration system	per 100-acres	0.00	40.00	1.33	1.60	42.93
Irrig. system, Standard-Density	Micro-sprinklers, per acre	0.00	15.00	50.00	60.00	125.00
Trellis system, Ultra High-Densit	Installation included, per acre	0.00	72.00	72.00	288.00	432.00
Wind machine	2 unit, propane, per 100 acres	10.87	70.00	22.74	28.72	132.32
Shop with tools	20' x 40', per 100 acres	0.00	6.00	20.00	9.00	35.00
Pesticide storage shed	8' x 40', per 100 acres	0.00	4.80	2.00	0.90	7.70
Seasonal housing facilities	16 Units, per 100 acres	0.00	160.00	266.67	120.00	546.67

**Table 3. Estimated Cost of Each Operation with Power-Unit in a Standard-Density Orchard, \$/acre, 20' between row spacing.**

-- 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 sprayer	4 Wheel Dr 90hp	2.25	3.27	\$6.58	\$10.76	\$14.73	\$32.07
Flail chopper	4 Wheel Dr 90hp	1.50	1.03	20.90	18.92	42.61	82.43
Grass Cutter	4 Wheel Dr 90hp	3.00	2.06	10.45	11.24	14.92	36.61
Tank sprayer for ATV	ATV	2.50	2.27	9.47	1.44	1.12	12.03
Gopher machine	4 Wheel Dr 75hp	2.00	4.12	5.22	3.92	18.61	27.75

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

Price per Lb	Lbs per Acre						
	6,000	8,000	10,000	12,000	14,000	16,000	18,000
\$ 0.55	\$ (2,089)	\$ (1,584)	\$ (1,080)	\$ (576)	\$ (72)	\$ 432	\$ 936
\$ 0.65	(1,489)	(784)	(80)	624	1,328	2,032	2,736
\$ 0.75	(889)	16	920	1,824	2,728	3,632	4,536
\$ 0.85	(289)	816	1,920	3,024	4,128	5,232	6,336
\$ 0.95	311	1,616	2,920	4,224	5,528	6,832	8,136
\$ 1.05	911	2,416	3,920	5,424	6,928	8,432	9,936
\$ 1.15	1,511	3,216	4,920	6,624	8,328	10,032	11,736

**Table 6. Estimated Per Acre Returns Over Total Economic Costs at Varying Yields & Prices.**

Price per Lb	Lbs per Acre						
	6,000	8,000	10,000	12,000	14,000	16,000	18,000
\$ 0.55	\$ (3,885)	\$ (3,381)	\$ (2,877)	\$ (2,373)	\$ (1,869)	\$ (1,364)	\$ (860)
\$ 0.65	(3,285)	(2,581)	(1,877)	(1,173)	(469)	236	940
\$ 0.75	(2,685)	(1,781)	(877)	27	931	1,836	2,740
\$ 0.85	(2,085)	(981)	123	1,227	2,331	3,436	4,540
\$ 0.95	(1,485)	(181)	1,123	2,427	3,731	5,036	6,340
\$ 1.05	(885)	619	2,123	3,627	5,131	6,636	8,140
\$ 1.15	(285)	1,419	3,123	4,827	6,531	8,236	9,940