

# Enterprise Budget

## Pears, Winter, Fresh Market, South Western Region

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This enterprise budget estimates the typical per acre costs associated with winter pear production in the Rogue Valley. 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 winter pear production. This does not, however represent the only production method. Assistance provided by area producers and agribusinesses is greatly appreciated.

### Typical Farm

The typical farm used in this budget consists of 100 total productive acres. Bearing acres include 75 acres of winter pears and 25 acres of Bartlett pears.

### Land and Irrigation

This budget is based on 75 producing acres of winter pears with 270 trees per acre. The trees are mature, ranging in age from 25 to 35 years. Average production is 30 bins per acre at a gross price of \$175 per bin. Each bin contains 1,050 pounds of fruit. The orchard is owned and valued at \$6,500 per acre with \$100 per acre property taxes. This winter pear orchard is irrigated with a solid-set irrigation system, valued at \$1,750 per acre.

### Labor and Housing

General labor is hired at a rate of \$11 per hour, and harvest labor costs \$21 per bin, all of which include workers' compensation, unemployment insurance, and other labor overhead expenses. The machine shop and housing facilities for summer labor is valued at \$85,000 and has a productive life of 30 years. This housing unit accommodates 10 people. Utilities, repairs, and maintenance costs for these units are \$2,125 per year, or \$21.25 per acre. All labor housing charges are split equally across the 100 acres.

### Capital

Interest on operating capital (10 percent) is treated as a cash expense. One-half of the cash expenses are borrowed for a 6-month period. Interest on intermediate (10 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 the Rogue Valley. A detailed breakdown of machinery values is shown in Table 1. Estimated machinery costs are shown in Table 2, assuming the machinery is half depreciated. The machinery costs are estimated based on the total farm use of the machinery. Gasoline costs \$1.70 per gallon, and diesel costs \$0.95 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 they are performed. A 70-hp tractor is used to pull an air-blast sprayer and used during harvest. A 50-hp tractor is used for flailing and assisting during harvest. The 35-hp tractor is used to spray weeds, assist in harvest, and as a general utility tractor.

Herbicides are applied to one-third of each acre as strips between trees.

### Break-even Analysis

The returns per acre for cash and total costs at various yields and prices are shown in tables 4 and 5. These returns do reflect changes in harvesting costs with changes in yield.

## EM 8680 Enterprise Budget

### ECONOMIC COSTS and RETURNS SOUTH WESTERN REGION Pears, Winter, Fresh Market, 75 acres

<u>GROSS INCOME Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Your Income</u>	
Fresh Market Winter Pears	30.0	Bin	175.00	5,250	_____	
Total GROSS Income				5,250	_____	
<u>VARIABLE CASH COSTS Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>		<u>Your Cost</u>
				<u>\$/Acre</u>	<u>\$/Bin</u>	_____
Pruning & training	605.00	0.00	0.00	605.00	20.17	_____
Tree removal & tree replacement	5.50	3.14	6.50	15.14	0.50	_____
Raking and shredding brush	11.86	13.52	0.00	25.38	0.85	_____
Fertilizer and lime (custom applied)	4.80	3.16	100.00	107.96	3.60	_____
Herbicide strip maintenance (0.30x)	7.68	4.48	60.00	72.16	2.41	_____
Insecticides & fungicides	43.69	60.53	325.00	429.22	14.31	_____
Pheromone disruption	16.50	0.00	125.00	141.50	4.72	_____
Bee rental	0.00	0.00	16.00	16.00	0.53	_____
Flailing/mowing orchard floor	23.72	36.07	0.00	59.79	1.99	_____
Frost protection	11.00	54.56	0.00	65.56	2.19	_____
Irrigation	27.50	10.50	0.00	38.00	1.27	_____
Ladders, pruning, & picking equipment	0.00	10.33	0.00	10.33	0.34	_____
Harvesting costs	841.20	37.82	0.00	879.02	29.30	_____
General labor           30 bins x 12.80 = 384.00						_____
Pickup, truck, & ATV	0.00	51.69	0.00	51.69	1.72	_____
Housing facilities	0.00	0.00	21.25	21.25	0.71	_____
Miscellaneous and overhead	0.00	0.00	25.00	25.00	0.83	_____
Interest: operating capital 6 months	0.00	0.00	64.07	64.07	2.14	_____
Total VARIABLE COSTS	1,598.46	285.78	742.82	2,627.06	87.57	_____
<u>FIXED CASH COSTS</u>			<u>Unit</u>	<u>\$/Acre</u>	<u>\$/Bin</u>	<u>Your Cost</u>
Machinery and equipment insurance			acre	6.57	0.22	_____
Pickup, truck, & ATV insurance			acre	3.55	0.12	_____
Water assessment			acre	45.00	1.50	_____
Property insurance			acre	40.00	1.33	_____
Property taxes			acre	100.00	3.33	_____
Total CASH Costs				195.12	6.50	_____
<u>FIXED NON-CASH Costs</u>						_____
Machinery and equipment - depreciation & interest			acre	458.33	15.28	_____
Pickup, truck, & ATV - depreciation & interest			acre	33.84	1.13	_____
Housing facilities			acre	62.33	2.08	_____
Land interest charge			acre	520.00	17.33	_____
Total NON-CASH Costs				1,074.50	35.82	_____
Total FIXED COSTS				1,269.62	42.32	_____
Total of ALL Costs per Acre				3,896.68	129.89	_____
<b>Net Projected Returns</b>				1,353.32	45.11	_____

## EM 8680 Enterprise Budget

**Table 1. Machinery Cost Assumptions**

Machine	Size	Current Market Value	Hours or Miles of Annual Use	Expected Life (yrs)
Tractor	4 wheel dr 70 hp, new	\$30,000	782	10
Tractor	2 wheel dr 50 hp, old	17,000	268	20
Tractor	2 wheel dr 35 hp, old	3,500	239	20
Air-blast sprayer	400 gallon unit, PTO, new	15,000	238	10
Air-blast sprayer	400 gallon unit, PTO, older	5,000	159	10
Flail chopper	8' Unit	6,000	216	7
Weed sprayer	100 gallon unit	2,000	70	15
Fertilizer spreader		2,300	22	20
Brush windrow		3,500	54	20
Pickup	1/2 ton 4x4, new	20,000	12,000	10
Truck	2 ton, used	10,000	3,500	20
ATV	4 wheeler, new	5,500	3,000	5
Auger		1,700	N/A	20
Front-end loader & backforks		5,800	N/A	10
Bin trailer		5,000	N/A	10
Ladders	50 units	6,400	N/A	10
Picking bags	50 units	2,150	N/A	5
Chain and pruning saws	3 units each, 1-loppers	3,000	N/A	3
Irrigation system	Solid set, per acre	1,750	N/A	25
Wind machine	10 units, gasoline	180,000	35	25
Machine Shop & Housing facilities	1 unit of each	85,000	N/A	30

**Table 2. Machinery Cost Calculations**

Machine	Size	Variable		Fixed		Total
		Fuel & Lube	Repair & Maint.	Depreciation & Interest	Insurance	
<b>Costs per Hour</b>						
Tractor	4 wheel dr 70 hp, new	\$6.56	\$0.70	\$4.96	\$0.35	\$12.56
Tractor	2 wheel dr 50 hp, old	5.46	0.64	6.34	0.57	13.01
Tractor	2 wheel dr 35 hp, old	5.46	0.12	1.46	0.13	7.17
Air-blast sprayer	400 gallon unit, PTO, new	0.00	7.98	8.20	0.38	16.56
Air-blast sprayer	400 gallon unit, PTO, older	0.00	2.36	4.10	0.19	6.65
Flail chopper	8' Unit	0.00	3.26	4.83	0.17	8.25
Weed sprayer	100 gallon unit	0.00	0.83	3.27	0.17	4.27
Fertilizer spreader		0.00	1.13	10.54	0.63	12.30
Brush windrow		0.00	2.26	6.49	0.39	9.14
<b>Costs per Mile</b>						
Pickup	1/2 ton 4x4, new	0.20	0.05	0.21	0.02	0.47
Truck	2 ton, used	0.39	0.20	0.23	0.03	0.84
ATV	4 wheeler, new	0.04	0.02	0.04	0.02	0.12
<b>Costs per Acre</b>						
Auger		0.00	0.17	1.70	0.00	1.87
Front-end loader & backforks		0.00	2.32	34.80	0.00	37.12
Bin trailer		0.00	0.50	7.50	0.00	8.00
Ladders	35 units	0.00	3.84	9.60	0.00	13.44
Picking Bags	35 units	0.00	1.29	5.38	0.00	6.67
Chain and pruning saws	3 units each, 1-loppers	3.40	1.80	11.50	0.00	16.70
Irrigation system	Solid set, per acre	0.00	17.50	140.00	0.00	157.50
Wind machine	10 units, gasoline	17.85	36.00	144.00	0.00	197.85
Machine Shop & Housing facilities	1 unit	0.00	21.25	62.33	0.00	83.58

## EM 8680 Enterprise Budget

**Table 3. Estimated Cost of Each Operation with Power-Unit**

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 sprayer	4 wheel dr 70 hp	2.50	3.27	\$3.36	\$4.66	\$4.24	\$12.26
Air-blast sprayer	2 wheel dr 50hp	2.50	3.27	3.36	2.58	3.42	9.37
Flail chopper	4 wheel dr 70hp	2.00	1.85	5.93	9.02	5.55	20.50
Weed sprayer	2 wheel dr 35hp	3.50	2.86	3.84	2.24	1.76	7.84
Fertilizer spreader	2 wheel dr 50hp	3.00	4.58	2.40	1.58	3.95	7.92
Brush windrow	2 wheel dr 50hp	2.00	1.85	5.93	4.51	7.44	17.87

**Table 4. Estimated per Acre Returns Over Cash Costs at Varying Yields and Prices**

Price per Bin	Bins per Acre						
	10	15	20	25	30	35	40
\$ 130	-\$936	-\$433	\$71	\$574	\$1,078	\$1,581	\$2,085
\$ 150	-736	-133	471	1,074	1,678	2,281	2,885
\$ 175	-486	242	971	1,699	2,428	3,156	3,885
\$ 190	-336	467	1,271	2,074	2,878	3,681	4,485
\$ 210	-136	767	1,671	2,574	3,478	4,381	5,285
\$ 230	64	1,067	2,071	3,074	4,078	5,081	6,085
\$ 250	264	1,367	2,471	3,574	4,678	5,781	6,885

**Table 5. Estimated per Acre Returns Over Total Costs at Varying Yields and Prices**

Price per Bin	Bins per Acre						
	10	15	20	25	30	35	40
\$ 130	-\$2,011	-\$1,507	-\$1,004	-\$500	\$3	\$507	\$1,010
\$ 150	-1,811	-1,207	-604	-0	603	1,207	1,810
\$ 170	-1,611	-907	-204	500	1,203	1,907	2,610
\$ 190	-1,411	-607	196	1,000	1,803	2,607	3,410
\$ 210	-1,211	-307	596	1,500	2,403	3,307	4,210
\$ 230	-1,011	-7	996	2,000	3,003	4,007	5,010
\$ 250	-811	293	1,396	2,500	3,603	4,707	5,810

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