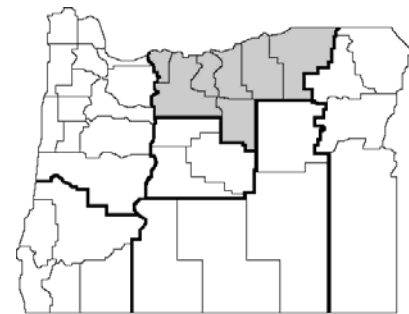


Enterprise Budget

Apples, Medium Density, North Central Region

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EM 8821, Revised August 2007

This enterprise budget estimates the typical per-acre costs associated with medium density apple production in Hood River 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 medium density apple production; however, this does not represent the only production method. Assistance provided by area producers and agribusinesses is greatly appreciated.

Typical Farm

The typical farm in Hood River County, as used in this budget, consists of 70 total productive acres. Bearing acres include 30 acres of winter pears, 8 acres of fresh market Bartlett pears, 4 acres of canning market Bartlett pears, 8 acres of medium density pears, 5 acres of medium density apples, 5 acres of high density sweet cherries or wine grapes, and approximately 15 percent, or 10 acres, of the orchard under establishment. It is assumed that this farm complies with Best Management Practices (BMP) established by the Hood River Grower Shipper Association.

Land and Irrigation

This budget is based on 5 producing acres of medium density apples, with 558 trees per acre. The trees are young, ranging in age from 10 to 25 years, with establishment costs amortized over a 25 year period. Average production is 50 bins per acre at a gross price to the grower of \$150 per bin. Each bin weighs 850 pounds. The land is owned and valued at \$6,000 per acre, with \$30 per acre property taxes. This medium density apple orchard is irrigated with 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 \$20 per bin, all of which include worker's compensation, unemployment insurance, and other labor overhead expenses. Housing for summer labor is valued at \$40,000 and has a productive life of 30 years. This unit houses 10 people. 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 70 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 70-acre orchard in Hood River 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, 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, pull an older air-blast sprayer, apply gopher bait, and assist during harvest. The 35-hp tractor is used to spray weeds, assist in harvest, and as a general utility tractor. 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. 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

Apples, Medium-Density, \$/acre economic costs and returns.

GROSS INCOME	Quantity	Unit	\$/Unit	Total	Price/bin	Your Income
Apples	50.00	bins	150.00	<u>7,500.00</u>	<u>150.00</u>	
Total gross income				7,500.00	150.00	

VARIABLE CASH COSTS	Description	Labor	Machinery	Materials	Total	Cost/bin	Your Costs
Pruning and training	55.0 hours	\$632.50	\$0.00	\$0.00	\$632.50	\$12.65	
Thinning	55.0 hours	632.50	0.00	0.00	632.50	12.65	
Tree removal & tree replacement	1.0 hours	24.50	19.72	13.50	57.72	1.15	
Raking and shredding brush	1.0 x/acre	14.56	24.50	0.00	39.06	0.78	
Fertilizer and lime - custom applied	1.0 applications	3.93	6.15	85.00	95.08	1.90	
Herbicide strip maintenance (.30x)	2.0 applications	12.57	19.18	50.00	81.75	1.64	
Insecticides and fungicides	15.0 applications	123.74	299.69	575.00	998.43	19.97	
Phermone disruption (1/2 rate)	1.0 hours	11.50	0.00	100.00	111.50	2.23	
Production mgmt consultant fees	1.0 x/acre	0.00	0.00	30.00	30.00	0.60	
Bee rental	2.0 hives	0.00	0.00	72.00	72.00	1.44	
Flailing/mowing orchard floor	5.0 times	24.26	48.22	0.00	72.48	1.45	
Rodent control	1.0 hours	4.12	6.32	20.00	30.45	0.61	
Frost protection	1.0 hour	11.50	35.37	0.00	46.87	0.94	
Irrigation	3.5 hours	40.25	20.00	0.00	60.25	1.21	
Ladders, pruning, & picking equip.	1.0 x/acre	0.00	12.89	0.00	12.89	0.26	
Harvesting costs	50.0 bins	1,431.25	40.50	0.00	1,471.75	29.44	
General Labor	37.5 hours						
Pickup, truck & ATV	1.0 x/acre	0.00	151.65	0.00	151.65	3.03	
Housing facilities	1.0 x/acre	0.00	0.00	43.21	43.21	0.86	
Miscellaneous and overhead	1.0 x/acre	0.00	0.00	75.00	75.00	1.50	
Interest: operating capital	6.0 months	<u>0.00</u>	<u>0.00</u>	<u>100.20</u>	<u>100.20</u>	<u>2.00</u>	
Total variable costs		2,967.18	684.20	1,163.91	4,815.28	96.31	

FIXED CASH COSTS	Unit	Total	Cost/bin	Your Costs
Pickup, truck & ATV insurance	acre	26.53	0.53	
Water assessment	acre	35.00	0.70	
Property insurance	acre	25.00	0.50	
Property taxes	acre	<u>30.00</u>	<u>0.60</u>	
Total fixed cash costs		116.53	2.33	

FIXED NON-CASH COSTS	Unit	Total	Cost/bin	Your Costs
Machinery and equipment insurance, depreciation & interest	acre	585.09	11.70	
Pickup, truck & ATV - depreciation & interest	acre	74.95	1.50	
Foreman housing	acre	102.86	2.06	
Housing facilities	acre	41.90	0.84	
Land interest charge	acre	680.00	13.60	
Amortized establishment costs*	acre	<u>2,558.00</u>	<u>51.16</u>	
Total fixed non-cash costs		4,042.81	80.86	
Total fixed costs		4,159.35	83.19	

Total of all costs per acre	\$8,974.63	\$179.49	
Net projected returns	-\$1,474.63	-\$29.49	

*Based on "Orchard Economics: The Cost of Establishing and Producing Medium Density Apples in the Hood River Valley", EM 8829-E, Revised July, 2007.

Table 1. Machinery Cost Assumptions.

Machine	Size or description	Market value	Hours or miles of annual use	Expected life (years)	Salvage Value
Tractor	4 wheel dr 70hp, new	\$ 33,000	523	10	\$ 9,747.68
Tractor	2 wheel dr 50hp, old	18,000	179	20	2,309.61
Tractor	2 wheel dr 35 hp, old	7,500	163	20	962.34
Air-blast sprayer	400 gallon unit, PTO, new	17,500	156	10	3,094.72
Air-blast sprayer	400 gallon unit, PTO, older	5,000	104	10	884.21
Flail chopper	8' unit	6,000	138	7	1,530.75
Weed sprayer	100 gallon unit	2,000	38	15	192.01
Fertilizer spreader		2,300	12	20	119.88
Brush windrow		3,500	29	20	182.43
Gopher machine		1,200	13	20	62.55
Pickup	1/2 ton 4x4, new	22,000	12,000	10	8,319.45
Truck	2 ton, used	18,000	3,500	20	2,709.52
ATV	4 wheeler, new	5,500	3,000	5	2,464.96
Auger		1,700	35	20	88.61
Front-end loader & backforks		5,800	64	10	1,025.68
Bin trailer		5,000	64	10	884.21
Ladders	35 units	4,500	N/A	10	N/A
Picking bags	35 units	1,500	N/A	5	N/A
Chain & pruning saws	3 units each, 1-loppers	3,000	N/A	3	N/A
Irrigation system	Micro, per acre	1,200	N/A	25	N/A
Wind machine	2 units, gasoline	34,000	35	25	962.08
Smudge Pots	3 units, per acre	30	15	10	5.31
Trellis system - apples	Three-wire vertical, per acre	1,800	N/A	25	N/A
Housing facilities	1 unit	40,000	N/A	30	0.00

Table 2. Machinery Cost Calculations.

Machine	Size or description	--- Variable costs ---		----- Fixed costs -----		Total cost
		Fuel & Lube	Repairs & Maint.	Depr. & Interest	Insurance	
----- Costs per hour -----						
Tractor	4 wheel dr 70hp, new	\$22.77	\$0.52	\$7.92	\$0.37	\$31.58
Tractor	2 wheel dr 50hp, old	18.98	0.45	\$9.22	0.51	29.16
Tractor	2 wheel dr 35 hp, old	18.98	0.17	4.21	0.23	23.59
Air-blast sprayer	400 gallon unit, PTO, new	0.00	8.20	14.84	0.40	23.44
Air-blast sprayer	400 gallon unit, PTO, older	0.00	2.07	6.36	0.17	8.61
Flail chopper	8' unit	0.00	2.55	6.95	0.16	9.66
Weed sprayer	100 gallon unit	0.00	0.69	5.60	0.17	6.47
Fertilizer spreader		0.00	0.94	17.77	0.61	19.32
Brush windrow		0.00	0.48	10.95	0.38	11.80
Gopher machine		0.00	0.50	8.83	0.30	9.63
----- Costs per mile -----						
Pickup	1/2 ton 4x4, new	\$0.29	\$0.05	\$0.22	\$0.07	\$0.63
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	\$0.29	\$4.47	\$0.00	\$4.76
Front-end loader & backforks		0.00	0.88	10.91	0.00	11.79
Bin trailer		0.00	0.76	9.41	0.00	10.16
Ladders	35 units	0.00	3.86	9.16	0.00	13.02
Picking bags	35 units	0.00	1.29	5.20	0.00	6.48
Chain & pruning saws	3 units each, 1-loppers	5.18	2.57	16.11	0.00	23.85
Irrigation system	Micro, per acre	0.00	12.00	99.00	0.00	111.00
Wind machines	2 units, gasoline	25.88	6.28	40.11	0.00	72.26
Smudge Pots	3 units, per acre	3.21	0.00	0.00	0.00	3.22
Trellis system - apples	Three-wire vertical, per acre	0.00	18.00	148.50	0.00	166.50
Housing facilities	1 unit	0.00	43.21	41.90	0.00	85.11

Table 3. Estimated Cost of Each Operation with Power Unit for a 13' Between-Row Spacing.

Operation	Tractor	-- Machine costs --					
		Miles per hour	Acres per hour	Labor cost per acre	Variable cost per acre	Fixed cost per acre	Total cost per acre
Air-blast sprayer	4 wheel dr 70hp	2.00	1.58	\$8.25	\$19.98	\$14.93	\$43.16
Flail chopper	4 wheel dr 70hp	2.00	2.68	4.85	9.64	5.75	20.25
Weed sprayer	2 wheel dr 35hp	3.50	2.07	6.28	9.59	4.94	20.82
Fertilizer spreader	2 wheel dr 50hp	3.00	3.31	3.93	6.15	8.50	18.58
Brush windrow	2 wheel dr 50hp	2.00	1.34	9.70	14.86	15.72	40.29
Gopher machine	2 wheel dr 50hp	2.50	3.15	4.12	6.32	5.99	16.43

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

Price per Bin	----- Bins per Acre -----						
	20	30	40	50	60	70	80
\$ 90	(2,220)	(1,614)	(1,009)	(403)	202	808	1,414
\$ 110	(1,820)	(1,014)	(209)	597	1,402	2,208	3,014
\$ 130	(1,420)	(414)	591	1,597	2,602	3,608	4,614
\$ 150	(1,020)	186	1,391	2,597	3,802	5,008	6,214
\$ 170	(620)	786	2,191	3,597	5,002	6,408	7,814
\$ 190	(220)	1,386	2,991	4,597	6,202	7,808	9,414
\$ 210	180	1,986	3,791	5,597	7,402	9,208	11,014

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

Price per Bin	----- Bins per Acre -----						
	20	30	40	50	60	70	80
\$ 90	(6,239)	(5,633)	(5,027)	(4,422)	(3,816)	(3,210)	(2,605)
\$ 110	(5,839)	(5,033)	(4,227)	(3,422)	(2,616)	(1,810)	(1,005)
\$ 130	(5,439)	(4,433)	(3,427)	(2,422)	(1,416)	(410)	595
\$ 150	(5,039)	(3,833)	(2,627)	(1,422)	(216)	990	2,195
\$ 170	(4,639)	(3,233)	(1,827)	(422)	984	2,390	3,795
\$ 190	(4,239)	(2,633)	(1,027)	578	2,184	3,790	5,395
\$ 210	(3,839)	(2,033)	(227)	1,578	3,384	5,190	6,995

¹Table 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 \$2,597, based on a yield of 50 bins of apples at \$150 per bin. 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 orchard. In this budget a grower should expect -\$1,422, based on a yield of 50 bins at \$150 per bin. For a grower to receive a positive per acre return, prices or yields for apples must increase. Based on \$150 per bin a grower would need to harvest 70 bins to return \$990 per acre.