


<p>Farm Business Management Reports</p>		<p>EB1374</p>
	<p>Cost of Producing Pears in the Wenatchee District of Central Washington, 1998</p>	
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NOTE

Enterprise costs and returns vary from one farm to the next and over time for any particular farm. Variability stems from differences:

- Capital, labor, and management resources.
- Type and size of machinery complement.
- Cultural practices.
- Crop yields.
- Input prices.
- Commodity prices.

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as a general guide for a modern and well-managed pear orchard in the Wenatchee River Valley of Central Washington as of 1998. To avoid drawing unwarranted conclusions about costs and returns for any particular farm or group of farms, the reader must closely examine the assumptions used in this publication. If they are not appropriate for the situation at hand, adjustments in the costs and/or returns should be made.

COST OF PRODUCING PEARS IN THE WENATCHEE DISTRICT OF CENTRAL WASHINGTON

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INTRODUCTION

The Wenatchee District is a fruit producing area located in five narrow river valleys of central Washington. Suitable planting sites are limited by the meandering of the rivers and the high mountains on either side. Most of the developed agricultural land in this valley is devoted to either apple or pear production. The objective of this study is to estimate the costs and returns associated with producing d'Anjou pears in this area.

Pears are a major tree fruit crop in Washington. The two leading cultivars (varieties) are Bartlett and d'Anjou. Together these varieties represent over 85% of the pear production in the state. In the Wenatchee District, both cultivars are grown for the fresh market which has specific size, shape, and grade requirements. These requirements influence the cultural practices used to produce pears. Bartlett pears are harvested in late summer and early fall and are marketed both for the processing and for the fresh market. They are best adapted to warmer climates, but are commonly used as a pollinizing cultivar in d'Anjou pear orchards.

The d'Anjou pear is grown as a premium fruit for the fresh market. It is best adapted to cool growing conditions found in the river valleys and higher elevations of the Pacific Northwest. Fruit is harvested in the early fall and stored either in regular refrigerated storages for early season marketing or under controlled atmosphere conditions for the winter and spring markets.

It is anticipated that growers, prospective growers, agricultural lenders, and others concerned with the Washington fruit industry will find the information reported herein helpful in estimating the physical and financial requirements of producing d'Anjou pears. While the acreages and the production practices outlined may not fit all conditions, they represent current trends.

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SOURCE OF DATA

The data presented in this publication were obtained from a committee of experienced pear growers in the Wenatchee District. In a group meeting, the growers described what they considered to be a common situation and the practices which pear growers use to produce d'Anjou pears. The growers provided estimates as to the requirements of labor, equipment, and materials. From this information, it was possible to estimate the costs of labor, equipment, pesticides, fertilizers, taxes, interest, insurance, and other related expenses. After the data were assembled, members of the committee reviewed the results to identify areas of possible misunderstanding.

Due to the procedures used in this study, the information in this publication should be viewed as "typical" or "representative" of costs and returns associated with producing d'Anjou pears rather than a mathematical average of a large number of producers. Where such factors as orchard size, equipment and building complement, equipment and building use, cultural practices, and input prices differ from those assumed in this publication, quite different production costs may result. Moreover, this publication is not intended to be a guide to production practices.

BUDGET ASSUMPTIONS

Practically all the developed agricultural land in the Wenatchee District is devoted to either apple or pear production. The value of these orchards varies considerably depending on their current and potential production levels. The better pear orchards in this valley have an annual production level of approximately 32 bins per acre. The objective of this study is to project what an existing planting would require in the way of equipment, buildings, materials, supplies, and labor, and what the potential returns would be for a person with a 20-year planning horizon purchasing this orchard. Therefore, the assumptions utilized in developing this information were:

1. An orchard operation with 40 acres of pears; 30 acres of d'Anjou pears and 10 acres of Bartlett pears.
2. The orchard, including the irrigation system but excluding buildings, has a current market value of \$15,000 per acre.

In 20 years, excluding appreciation, it is predicted that the orchard will retain its current value of \$15,000 per acre. Pear trees can be productive for 100 years or more and the popularity of varieties does not change, as it does so often with apples.

3. The pear planting is 15 years old planted 10 by 20 feet with a tree density of 216 trees per acre. For pollenization purposes, Bartlett pear trees are scattered throughout the d'Anjou pear orchard at a ratio of one out of every four trees (25%).
4. Buildings include a workshop and machine shed valued at \$30,000, and housing for labor valued at \$100,000.
5. Equipment and buildings are valued at costs which would be incurred if the items were to be replaced. While this may overstate actual investment costs, it provides an indication of the enterprise's ability to generate the earnings needed to replace depreciable assets. Continuing increases in prices mean that depreciation claimed on assets purchased in past years understates the amount of capital required for asset replacement. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets on a current cost basis.
6. An under tree permanent sprinkler irrigation system with lateral lines every 40 feet and risers every 30 feet is used in this orchard. Annual maintenance, primarily to sprinkler heads, is \$30 per acre. The sprinkler system is rarely ever replaced, being continuously maintained and repaired. The water charge is \$100 per acre from the irrigation district. The electricity required to pump water is limited to \$10 per acre since the system is under gravity flow and the pump is used to boost the pressure to the sprinklers.
7. The property tax on the land, trees, irrigation system, and buildings, excluding the operator's home, is \$200 per acre.
8. General labor, excluding piecework, is valued at \$7.60 per hour. This includes wages, industrial insurance, social security taxes, and federal and state unemployment insurance.
9. Supervisor and equipment operator labor is valued at \$8.50 per hour, plus housing. This includes wages, industrial insurance, social security taxes, and federal and state

unemployment insurance.

10. Picking costs are \$13 per bin plus an additional 15% for unemployment insurance, social security taxes, and industrial insurance, a total cost of \$15.00 per bin picked. In addition, the cost of picking bags was estimated to be \$3.00 per acre.
11. Interest on investment represents a 9% opportunity cost to the enterprise. These are earnings foregone by investing money in orchard, equipment and buildings rather than an alternative investment. This may also represent interest on funds borrowed to finance orchard, equipment, and building purchases.
12. Estimated production is 800 loose boxes or 32 bins (1,000 lbs. per bin) per acre. One-fourth of the production, or 8 bins per acre, is Bartlett pears. Estimated returns to the grower for both Bartlett and d'Anjou pears is \$150 per bin.

ANNUAL PRODUCTION COST

Table 1 outlines the annual schedule of field operations by calendar month, the type of equipment and labor used, and the hours used per acre for producing pears.

The costs of field operations are divided into two categories. The first is the cost of equipment, building, and orchard ownership, or fixed costs. The second category, variable costs, is associated with operating equipment, hiring labor, and purchasing services and materials. Total cost is the sum of fixed costs and variable costs.

Equipment fixed costs include depreciation, interest on the average investment, property taxes, and insurance. These costs are incurred whether or not a crop is grown and do not vary with the enterprise, given ownership of a specific equipment complement. Per-hour fixed costs for equipment are determined by dividing the total annual fixed cost per equipment item by the annual hours of equipment use over the entire orchard. For a specific field operation, equipment fixed costs per acre are determined by multiplying the equipment hours per acre times the equipment per-hour fixed costs. Fixed costs for the machine shed and shop, housing for labor, and some miscellaneous equipment items are determined on a per-acre basis by dividing the total annual fixed cost by the number of acres. The per-hour (acre)

fixed and variable costs for all equipment and buildings are presented in Table 5.

Interest on investment represents the opportunity cost (returns foregone by investing in the orchard) or interest paid to finance the purchase of the orchard. Total interest cost is calculated on the average value of the orchard (\$15,000 per acre) over the 20-year planning horizon. A 9% interest charge is made against this value.

Variable costs depend directly on the number of acres produced. These costs include fuel, oil, repairs, fertilizer, chemicals, custom work, overhead, and interest on operating capital. Labor is also a variable cost.

Table 2 lists by operation, as presented in Table 1, the specific services and/or materials used, the quantities used per acre, and the prices paid per unit.

Table 3 presents a summary of costs appearing in Table 1. Most items are self-explanatory; however, "Building Interest" and "Equipment Interest" warrant additional explanation. These interest costs represent opportunity costs (returns foregone by investing in the given equipment and building complement rather than in alternative investments) or interest paid to finance the given equipment and building complement.

Total interest cost on these capital purchases is calculated on the average value of the equipment and buildings over their respective years of use. The 9% interest charge made against this "average" value represents the total interest cost.

DISCUSSION OF PRODUCTION PRACTICES

Table 1 outlines the schedule of field operations necessary to produce pears.

The trees are pruned during the dormant period. Pruners are paid either by the hour or on a per-tree basis. Price per tree depends on tree size and the degree of detail in pruning required by the orchard. In this study it was assumed that there are four pruners, with one serving as the supervisor, and that they are paid on a per hour basis. Hand tools and a power pruner are used to do the pruning. A brush rake is used to gather the prunings between the rows where they are chopped up with a rotary mower in early spring.

Insect and disease control is a season-long program. Control of

the key pests and diseases requires numerous well-timed spray applications in the late dormant through petal fall periods. Summer sprays are often much less frequent, but may be required for pest and disease control, as well as calcium nutrition. Foliar nutrient sprays are often applied in the fall to avoid conflicts with late winter dormant oil applications.

Between September and November, about 75 pounds per acre of actual nitrogen is applied by ground applicator, usually in the form of calcium nitrate. Weeds are controlled by herbicides applied in the late fall in a strip about seven to eight feet wide under the trees. Grass and weeds between tree rows requires about four mowings per growing season. Gophers are controlled by gopher poison during the spring and early summer. Mouse (vole) control requires season-long mowing and weed control, followed by fall bait application.

Precipitation in the Wenatchee District occurs mainly in the winter months as snow. To maintain tree vigor and produce high quality fruit, irrigation is required from late May through September. About 30 to 35 acre inches of water are applied, usually by undertree impact sprinklers.

Pears are harvested in late August through September. Pickers are paid by the number of bins picked. Approximately 20 pickers are employed. Each picker is supplied with a shoulder harness, picking bag, and ladder. The fruit is collected into large bins for transport out of the orchard by tractor to trucks which haul the bins of fruit to the centralized warehouse. In this study it was assumed that custom hauling to the warehouse was used.

In the Wenatchee District, if seasonal labor is to work in the area, a certain amount of housing must be provided by the producer. The cost of this housing, as indicated in the budget, can be a substantial part of total production costs.

EQUIPMENT AND BUILDING COMPLEMENT

Table 4 identifies the type of equipment and buildings used on the representative farm, their current replacement value (new or used), years before trade-in, salvage value at trade-in, annual repair cost and annual hours of use or acres served.

The data in Table 4 are used to estimate the per-hour or per-acre fixed and variable costs which appear in Table 5. Equipment and building fixed costs include depreciation, interest on investment, property taxes, and insurance--costs that do not vary

with the number of acres produced.

Equipment variable costs include repairs, electricity, fuel, and lubrication costs. These costs vary with the crop grown or the number of acres produced.

SUMMARY OF RECEIPTS, COSTS, AND PROFITABILITY PER ACRE

Per-acre costs, returns, and profitability for pears under the given budget assumptions are presented in Table 6. Gross receipts are based on 8 bins of Bartlett pears and 24 bins of d'Anjou pears returning \$150 per bin to the grower. Final returns are calculated as net returns to management and risk. This is the return the owner-operator realizes after accounting for all costs including \$8.50 per hour for any labor the producer contributed to the production of the crop and a 9% return on the investment in the orchard.

BREAK-EVEN RETURNS

Break-even returns to the fruit grower for different levels of enterprise costs are presented in Table 7. The first break-even return is that necessary to cover total variable costs--those costs that occur only if the crop is produced. If the return received does not equal or exceed this break-even return, producing pears becomes uneconomical, even in the short run, because the added costs of production are greater than the added returns.

The second break-even return is that necessary to cover total cash costs, assuming no interest on outstanding loans or land rent. If other cash costs exist on an individual's orchard, these costs must be identified and included in the cash cost break-even return calculation. This return may be viewed as that necessary to remain financially viable in the short run.

The third break-even return is that required to cover total cash cost plus depreciation on equipment, buildings, and orchard investment. This return must be realized to stay in business over the long run.

If farmers do not include the opportunity costs they forego from their investments in the orchard, equipment, and buildings in calculating their total cost break-even return, they are overlooking the profitability of farming relative to alternative

uses of their resources. Only if the fourth break-even value, the total cost break-even return, is received, will the owner-operator be able to cover all out-of-pocket expenses, plus realize a competitive return to equity capital invested in land, trees, equipment, and buildings. Failure to obtain this level of break-even return means that the owner-operator will not receive a return on capital contributions equal to what could be earned in an alternative use. A return in excess of the fourth break-even level means that in addition to covering all cash and opportunity costs, the operator receives a return to management and to the risk assumed.

SUMMARY

This study examined the costs and returns that experienced fruit growers in the Wenatchee District may anticipate from owning and operating a planting of three-fourths d'Anjou pears and one-fourth Bartlett pears during prime production years. Under the assumptions of this study, if a person was to enter the pear production business given current market prices and interest rates, he/she would likely find the venture to be unprofitable in relation to investments returning 9% or more. Therefore, potential investors should give the assumptions underlying these projections careful study. In the calculations to determine profitability per acre and break-even selling prices, an average production level of 32 bins per acre was assumed. Average production, however, differs among different orchards and managers. Furthermore, pear prices may drop or rise in years to come. To help investors better analyze their potential situation, Table 8 illustrates likely per-acre returns from varying yields and per-bin returns to the fruit grower. The solid line dividing the lower right-hand values from those in the upper left of the table indicates break-even combinations of yields and prices as indicated in the column and row headings.

TABLE 1. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING PEARS IN THE WENATCHEE DISTRICT OF CENTRAL WASHINGTON.												
OPERATION	TOOLING	MTH YEAR	EQUIP HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
						FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
			\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
WEED SPRAY	55HP-WT, WEED SPRAYER	OCT 1997	.67	.89	8.44	3.09	7.56	.00	13.33	1.98	25.96	34.39
FERTILIZE	55HP-WT, FERTILIZER SPREADER	NOV 1997	.25	.33	9.60	2.32	2.83	.00	60.00	4.89	70.04	79.63
HOUSE CONTROL	HAND LABOR	NOV 1997	.00	.50	.00	.00	3.80	.00	11.00	1.11	15.91	15.91
PRUNING	HAND LABOR	NOV-FEB 1998	.00	60.00	.00	.00	466.80	12.50	.00	28.76	508.06	508.06
BRUSH REMOVAL	55HP-WT, BRUSH RAKE	MAR 1998	.33	.36	11.57	3.28	3.06	.00	.00	.29	6.62	18.20
BRUSH REMOVAL	55HP-WT, ROTARY MOWER	MAR 1998	.50	.55	6.15	2.40	4.68	.00	.00	.32	7.40	13.55
DELAYED DORM SPY	55HP-WT, BLAST SPRAYER	MAR 1998	.50	.67	16.01	5.41	5.67	.00	155.00	7.47	173.55	189.56
RENT BEE HIVES	ONE AND ONE-HALF HIVES/ACRE	APR 1998	.00	.00	.00	.00	.00	52.50	.00	1.97	54.47	54.47
FROST CONTROL	PROPANE POWERED WIND MACHINE	APR 1998	50.00*	.50	87.28	54.24	4.25	.00	.00	2.19	60.68	147.96
PREEBLOOM SPRAY	55HP-WT, BLAST SPRAYER	APR 1998	.50	.67	16.01	5.41	5.67	.00	70.00	3.04	84.12	100.13
BLOSSOM SPRAY	55HP-WT, BLAST SPRAYER	APR 1998	.50	.67	16.01	5.41	5.67	.00	30.00	1.54	42.62	58.63
PETAL FALL SPRAY	55HP-WT, BLAST SPRAYER	MAY 1998	.50	.67	16.01	5.41	5.67	.00	150.00	4.83	165.91	181.92
THIN BARTLETS	HAND LABOR	JUN 1998	.00	10.00	.00	.00	76.00	.00	.00	1.71	77.71	77.71
SURVEILLANCE	FOR FIRE BLIGHT	JUN-JUL 1998	.00	3.00	.00	.00	25.50	.00	.00	.57	26.07	26.07
SUMMER SPRAY(4X)	55HP-WT, BLAST SPRAYER	JUN-AUG 1998	2.00	2.67	64.05	21.64	22.70	.00	200.00	3.67	248.00	312.05
IRRIGATION	UNDERTREE SPRINKLER	JUN-SEP 1998	.00	5.00	.00	30.00	42.50	110.00	.00	2.74	185.24	185.24
MOW (4X)	55HP-WT, ROTARY MOWER	JUN-SEP 1998	2.67	2.93	29.56	15.61	24.91	.00	.00	.61	41.12	70.68
SUCKERING	HAND LABOR	JUL 1998	.00	45.00	.00	.00	342.00	.00	.00	5.13	347.13	347.13
WEED SPRAY	55HP-WT, WEED SPRAYER	JUL 1998	.67	.89	8.44	3.09	7.56	.00	8.00	.28	18.92	27.36
PROP & TIE TREES	55HP-WT, TRAILER & HAND LABOR	JUL 1998	.50	5.50	5.94	2.47	43.15	.00	25.00	1.06	71.68	77.61
STOP DROP SPRAY	APPLIED BY HELICOPTER	AUG 1998	.00	.00	.00	.00	.00	15.00	15.00	.23	30.23	30.23
HARVEST PREP	4WD-ATV (DISTRIBUTE BINS)	SEP 1998	1.00	3.00	2.19	1.01	24.15	.00	.00	.00	25.16	27.35
INSTALL POTTIES	RENT 2 POTTIES FOR 40 ACRES	SEP 1998	.00	.00	.00	.00	.00	6.00	.00	.00	6.00	6.00
PICK PEARS	PIECE WORK	SEP 1998	.00	.00	.00	.00	.00	483.00	.00	.00	483.00	483.00
SWAMPING	55HP-WT, BACKFORK	SEP 1998	4.80	5.28	40.61	16.65	44.88	.00	.00	.00	61.53	102.14
LOADING	55HP-WT, FRONT END LOADER	SEP 1998	1.50	1.50	27.59	12.40	12.75	.00	.00	.00	25.15	52.74
CHECKER	CHECK AND COUNT BINS	SEP 1998	.00	3.00	.00	.00	25.50	.00	.00	.00	25.50	25.50
HAUL TO STORAGE	CUSTOM HAUL BINS (EMPTY&FULL)	SEP 1998	.00	.00	.00	.00	.00	96.00	.00	.00	96.00	96.00
CLEAN-UP	55HP-WT, TRAILER	SEP 1998	1.00	1.60	11.87	4.94	13.60	.00	.00	.00	18.54	30.41
GOPHER CONTROL	HAND LABOR	ANN 1998	.00	.50	.00	.00	3.80	.00	5.00	.40	9.20	9.20
MISC USE	PICKUP	ANN 1998	15.00	15.00	76.57	49.20	127.50	.00	.00	7.95	184.65	261.22
MISC USE	4WD-ATV	ANN 1998	9.00	9.00	19.74	9.07	76.50	.00	.00	3.85	89.42	109.16
MISC USE	LADDERS	ANN 1998	.00	.00	9.81	6.25	.00	.00	.00	.28	6.53	16.34
MISC USE	SHOP TOOLS	ANN 1998	.00	.00	26.75	.00	.00	.00	.00	.00	.00	26.75
MISC USE	MACHINE SHED AND SHOP	ANN 1998	.00	.00	67.75	.00	.00	.00	.00	.00	.00	67.75
LABOR HOUSING	LABOR HOUSING	ANN 1998	.00	.00	225.83	25.00	.00	.00	.00	1.13	26.12	251.96
OVERHEAD	UTILITIES LEGAL ACCT. ETC.	ANN 1998	.00	.00	.00	.00	.00	165.91	.00	.00	165.91	165.91
TAXES	ORCHARD	ANN 1998	.00	.00	200.00	.00	.00	.00	.00	.00	.00	200.00
INVESTMENT COST	INTEREST ON ORCHARD INVESTMENT	ANN 1998	.00	.00	1350.00	.00	.00	.00	.00	.00	.00	1350.00
TOTAL PER ACRE			91.88	179.17	2343.78	284.30	1428.62	940.91	742.33	87.98	3484.14	5837.92
*50 HOURS PER YEAR OVER 20 ACRES												

Table 2: Materials and Services Used Per Acre

Operation	Month	Service or Material
Weed Spray	October	Herbicide @ \$13.33/acre
Fertilize	November	500 lbs. of calcium nitrate (15.5%N) @ \$240.00/ton
Mouse Control	November	10 lbs. of Z-P pellets @ \$1.10/lb.
Pruning	November-February	Pruning tool cost @\$7.50/acre Power pruner cost @ \$5.00/acre
Delayed Dormant Spray	March	Spray materials @ \$155.00/acre
Rent Bee Hives	April	1.5 bee hives @ \$35.00/acre
Prebloom Spray	April	Spray materials @ \$70.00/acre
Blossom Spray	May	Spray materials @ \$30.00/acre
Petal Fall Spray	May	Spray materials @ \$150.00/acre
Summer Spray (4x)	June-August	Spray materials @ \$50.00/acre each time over
Irrigation	June-September	Water Charge @\$100.00/acre Electricity @ \$10.00/acre
Weed Spray	July	Herbicide @ \$8.00/acre
Prop & Tie Trees	July	Prop & tie materials @ \$25.00/acre
Stop Drop Spray	August	Helicopter applied @\$15.00/acre Spray materials @ \$15.00/acre
Install Potties	September	Pottie rental @ \$240/40 acres
Pick Pears	September	32 bins @ \$15.00/bin Picking bag cost @ \$3.00/acre
Haul to Storage	September	32 bins @ \$3.00/bin
Gopher Control	Annual	Gopher poison @ \$5.00/acre
Overhead	Annual	5% of variable cost

TABLE 3. ITEMIZED COST PER ACRE FOR PRODUCING PEARS IN THE WENATCHEE DISTRICT OF CENTRAL WASHINGTON.

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
VARIABLE COSTS	\$	\$			
CALCIUM NITRATE	LB.	.12	500.00	60.00	
Z-P PELLETS	LB.	1.10	10.00	11.00	
GOPHER POISEN	ACRE	5.00	1.00	5.00	
OCTOBER HERBICIDE	ACRE	40.00	.33	13.33	
DORMANT SPRAY	ACRE	155.00	1.00	155.00	
PREBLOOM SPRAY	ACRE	70.00	1.00	70.00	
BLOSSOM SPRAY	ACRE	30.00	1.00	30.00	
PETAL FALL SPRY	ACRE	150.00	1.00	150.00	
SUMMER SPRAYS	ACRE	50.00	4.00	200.00	
JULY HERBICIDE	ACRE	8.00	1.00	8.00	
STOP DROP SPRAY	ACRE	15.00	1.00	15.00	
PRUNING TOOLS	ACRE	7.50	1.00	7.50	
POWER PRUNER	ACRE	5.00	1.00	5.00	
PICKING BAGS	ACRE	3.00	1.00	3.00	
PROP & TIE MATERIAL	ACRE	25.00	1.00	25.00	
HELICOPTER	ACRE	15.00	1.00	15.00	
BEE HIVE RENTAL	HIVE	35.00	1.50	52.50	
POTTIE RENTAL	ACRE	6.00	1.00	6.00	
CUSTOM HAUL BIN	BIN	3.00	32.00	96.00	
WATER CHARGE	ACRE	100.00	1.00	100.00	
IRRIGATION ELECTRIC.	ACRE	10.00	1.00	10.00	
IRRIGATION REPAIR	ACRE	20.00	1.00	20.00	
GENERAL LABOR	HOURL	7.60	109.50	832.20	
SUPERVISOR/MACH LABOR	HOURL	8.50	70.17	596.42	
PICKING LABOR	BIN	15.00	32.00	480.00	
EQUIPMENT REPAIR	ACRE	137.11	1.00	137.11	
EQUIPMENT FUEL/LUBE	ACRE	127.20	1.00	127.20	
INTEREST ON OP. CAP.	ACRE	87.98	1.00	87.98	
OVERHEAD	ACRE	165.91	1.00	165.91	
TOTAL VARIABLE COST				3484.14	
FIXED COSTS		\$		\$	
BUILDING DEPREC.	ACRE	108.33	1.00	108.33	
BUILDING INTEREST	ACRE	146.25	1.00	146.25	
BUILDING INSURANCE	ACRE	9.75	1.00	9.75	
BUILDING TAXES	ACRE	29.25	1.00	29.25	
EQUIPMENT DEPREC.*	ACRE	211.11	1.00	211.11	
EQUIPMENT INTEREST*	ACRE	236.12	1.00	236.12	
EQUIPMENT INSURANCE*	ACRE	15.74	1.00	15.74	
EQUIPMENT TAXES*	ACRE	47.23	1.00	47.23	
REAL ESTATE TAX	ACRE	200.00	1.00	200.00	
INTEREST COST	ACRE	1350.00	1.00	1350.00	
TOTAL FIXED COST				2353.78	
TOTAL COST				5837.92	

*INCLUDES SHOP TOOLS AND LADDERS.

Table 4: Equipment and Building Data

Machine Name	Purchase Price (\$)	Years of Use	Salvage Value (\$)	Annual Repair Cost (\$)	Annual Hours of Use	Gallons of Fuel Use Per Hour
55HP-Wheel Tractor	21,000	15	5,000	600	340	1.0 Diesel 2.0 Diesel
4WD-ATV	6,000	10	1,500	150	400	.5 Gas
Pickup	25,000	15	3,000	450	600	2.0 Gas
Blast Sprayer	35,000	20	8,500	500	160	3.5 Gas
Weed Sprayer	2,000	15	500	750	55	
Fertilizer Spreader	2,500	15	800	60	10	
Brush Rake	2,700	10	500	100	15	
Rotary Mower	3,500	10	500	200	130	
Trailer	2,000	20	500	100	60	
Backfork	200	20	0	20	100	
Front-end Loader	5,000	15	1,000	300	60	
Wind Machine	16,000	20	4,800	300	50 over 20 acres	13.0 Propane
Shop Tools	10,000	20	0	0	40 acres*	
Machine Shed & Shop	30,000	30	0	0	40 acres*	
Labor Housing	100,000	30	0	1,000	40 acres*	
Ladders (20)	2,500	10	0	250	40 acres*	

TABLE 5. PER HOUR AND PER ACRE EQUIPMENT AND BUILDING COSTS													
MACHINERY	PURCHASE PRICE	YEARS		ANNUAL HOURS	DEPRECIATION	INTEREST	INSURANCE	TAXES	TOTAL		TOTAL		
		TO TRADE							FIXED COST	REPAIR AND LUBE	VARIABLE COST	TOTAL COST	
-----COST PER HOUR-----													
55HP-WHEEL TRACTOR	21,000	15		340	3.14	3.44	.23	.69	7.50	1.76	1.21*	2.97	10.47
WEED SPRAYER	2,000	15		55	1.82	2.05	.14	.41	4.41	1.36	.00	1.36	5.77
FERTILIZER SPREADER	2,500	15		10	11.33	14.85	.99	2.97	30.14	6.00	.00	6.00	36.14
BRUSH RAKE	2,700	10		15	14.67	9.60	.64	1.92	26.83	6.67	.00	6.67	33.49
ROTARY MOWER	3,500	10		130	2.31	1.38	.09	.28	4.06	1.54	.00	1.54	5.60
BLAST SPRAYER	35,000	20		160	8.28	12.23	.82	2.45	23.78	3.13	4.43	7.55	31.33
TRAILER	2,000	20		60	1.25	1.88	.13	.38	3.63	1.67	.00	1.67	5.29
BACKFORK	200	20		100	.10	.09	.01	.02	.21	.20	.00	.20	.41
FRONT END LOADER	5,000	15		60	4.44	4.50	.30	.90	10.14	5.00	.00	5.00	15.14
PICKUP	25,000	15		600	2.44	2.10	.14	.42	5.10	.75	2.53	3.28	8.38
4WD-ALL TERRAIN VEH.	6,000	10		400	1.13	0.84	.06	.17	2.19	.38	.63	1.01	3.20
-----COST PER ACRE-----													
WIND MACHINE	16,000	20	-		28.00	46.80	3.12	9.36	87.28	15.00	39.24	54.24	141.52
SHOP TOOLS	10,000	20	-		12.50	11.25	.75	2.25	26.75	.00	.00	.00	26.75
MACHINE SHED & SHOP	30,000	30	-		25.00	33.75	2.25	6.75	67.75	.00	.00	.00	67.75
LABOR HOUSING	100,000	30	-		83.33	112.50	7.50	22.50	225.83	25.00	.00	25.00	250.83
LADDERS (20)	2,500	10	-		6.25	2.81	.19	.56	9.81	6.25	.00	6.25	16.06
*SHOWN USING 1 GALLON OF FUEL PER HOUR. WHEN USING 2 GALLONS OF FUEL PER HOUR THE FUEL AND LUBE COST IS \$2.42.													

Table 6: Summary of Receipts, Costs, and Profitability per Acre for a Producing d'Anjou Pear Orchard in the Wenatchee District of Central Washington.

	Unit	Price or Cost/Unit	Quantity	Value or Cost	Your Farm	
		\$	Bins	\$	\$	
Gross Receipts from Production						
	Bartlett Pears	Bins	150.00	8.0	1,200.00	_____
	D'Anjou Pears	Bins	150.00	24.0	<u>3,600.00</u>	_____
1.	Total Receipts				4,800.00	_____
	Less: Total Variable Cost				3,484.14	_____
2.	Returns Over Variable Cost				1,315.86	_____
	Less: Equipment & Buildings Fixed Cost				803.78	_____
	Interest on Orchard Investment				1,350.00	_____
	Real Estate Taxes				200.00	_____
3.	Net Returns to Management and Risk				-1,037.92	_____

Table 7: Break-Even Returns per Bin to the Pear Grower.

	Cost per Acre*	Your Farm	Break-Even Return/Bin**	Your Farm
	\$	\$	\$	\$
1. Total Variable Costs	3,484.14	_____	108.88	_____
Plus: Ins. & Taxes on Equip. & Bldg.	101.97	_____		
Land Taxes	200.00	_____		
_____		_____		
_____		_____		
2. Total Cash Costs	3,786.11	_____	118.32	_____
Plus: Depr. on Equip. & Bldg.	319.44	_____		
3. Total Cash Costs + Depr.	4,105.55	_____	128.30	_____
Plus: Int. on Equip. & Bldg.	382.37	_____		
Int. on Invest.	1,350.00	_____		
4. Total Cost	5,837.92	_____	182.44	_____

* Excluding management, marketing, and packaging costs.

** Assumes 32 bins per acre.

Table 8: Per-Acre Returns to Management and Risk for Varying Pear Yields and Per-Bin Returns to the Fruit Grower.

	\$140 per Bin*	\$150 per Bin*	\$160 per Bin*	\$170 per Bin*	\$180 per Bin*
Bins	\$	\$	\$	\$	\$
28	-1,820	-1,540	-1,260	-980	-700
30	-1,589	-1,289	-989	-689	-389
32	-1,358	-1,038	-718	-398	-78
34	-1,127	-787	-447	-107	233
36	-896	-536	-176	184	544
38	-666	-286	94	474	854
40	-435	-35	365	765	1,165
42	-205	216	636	1,056	1,476

* Returns received by the producer after paying marketing and packaging costs.

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is violation of law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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