

Cost of Producing
Apples and Pears
in the Hood River Valley, Oreg

PROGRESS REPORT IV

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Circular of Information 494

May 1951

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This report is a summary of detailed cost records kept on 23 fruit farms in the Hood River Valley for the year 1950 with comparable data for the 4-year period 1947-1950. The cost of production includes all items of expense incurred in producing and delivering the crop to the door of the packing house or processing plant. No packing house costs are included.

Apple Production Costs

The cost of producing apples in 1950 on 22 orchards averaged 67¢ per loose box and \$1.18 per packed-box basis, exclusive of packing and storage costs (Table 1). Assuming packing and handling charges (from \$1.25 to \$1.50*), the total F.O.B. cost would be \$2.43 or more per packed box.

Table 1. APPLES: Cost of Production, Hood River Valley, Oregon.
(Does not include cost of storage, boxes, packing, and shipping)

Item	Year 1950	Four-year average 1947-1950	Percentage of average
Number of orchards in study	22	---	---
Acreage of apples per orchard	16.3	---	---
Yield per acre, loose boxes	750	608	---
Yield per acre, packed boxes	425	368	---
Costs per loose box for:	<u>Cents</u>	<u>Cents</u>	<u>Per cent</u>
Preharvest labor	18.1	26.1	32.0
Picking	13.7	12.0	14.7
Other harvest	5.8	5.9	7.3
Total labor	37.6	44.0	54.0
Materials	8.9	11.7	14.4
General expense	10.1	11.9	14.6
Depreciation on equipment	4.0	5.5	6.7
Interest on investment (5 per cent)	6.3	8.4	10.3
Total cost per loose box	66.9	81.5	100.0
Cost per packed-box basis	118.2	133.9	---

* The cost of sorting and handling all apples which are delivered to the packing house is charged against the packed fruit, which usually comprises from 60 to 85 per cent (by weight) of fruit delivered.

The production of 750 loose boxes per acre, equivalent to 425 packed boxes, in 1950 was the highest since this study was initiated in 1947. That year production was lowest with an average of 542 loose boxes, equivalent to 328 packed boxes per acre. As yields have increased, the costs per box have gradually decreased. The highest cost, \$1.54 per packed-box basis in 1947, was about 30 per cent higher than the cost in 1950.

Table 2. APPLE PRODUCTION COSTS, Hood River Valley, Oregon.
(Does not include cost of storage, boxes, packing, and shipping)

Item	Man hours		Cost	
	1950	1947-1950	1950	1947-1950
Labor per acre				
Pruning	26.3	32.6	\$ 24.73	\$ 31.23
Brush removal	3.4	5.3	3.35	5.07
Hand cultivating . . . . .	.9	2.0	.80	1.78
Machine cultivating	2.3	3.7	2.28	3.74
Fertilizing; mowing	1.3	1.7	1.30	1.70
Irrigating	11.0	13.4	11.33	13.37
Spraying	7.5	13.2	8.05	13.20
Thinning	45.7	42.2	39.21	36.52
Propping	5.6	6.6	5.59	6.34
Maintenance	23.1	25.2	25.59	26.20
Supervision	10.9	12.0	13.95	15.74
Total preharvest	138.0	157.9	\$136.18	\$154.89
Picking	120.8	89.3	102.74	73.96
Other harvest	38.6	33.3	43.31	35.47
Total labor	297.4	280.5	\$282.23	\$264.32
Materials per acre				
Fertilizers			\$ 11.15	\$ 12.84
Irrigation water			6.22	5.76
Sprays			37.12	41.39
Miscellaneous supplies			12.41	9.96
Total materials			\$ 66.90	\$ 69.95
General expense per acre				
Building repair			\$ 4.81	\$ 3.97
Machinery repair			8.19	8.86
Machine hire			8.05	5.32
Gas and oil			12.73	11.46
Electricity; water; wood fuel; office			8.37	8.14
Liability, fire, and motor insurance			6.64	7.69
Property taxes			16.63	15.79
Cash to operate			10.00	10.00
Total general expense			\$ 75.42	\$ 71.23
Depreciation per acre				
Buildings (not including operator's dwelling)			\$ 9.30	\$ 11.14
Machinery			20.85	21.48
Total depreciation			\$ 30.15	\$ 32.62
Interest per acre (5 per cent)				
Buildings			\$ 7.72	\$ 8.90
Machinery			9.78	10.64
Orchard			29.70	30.40
Total interest			\$ 47.20	\$ 49.94
Total cost per acre			\$501.90	\$488.06
Cost per loose box			\$.67	\$.82
Cost per packed box			\$ 1.18	\$ 1.34
Acres per orchard			16.3	16.0
Loose boxes produced per acre			750	608
Packed boxes produced per acre			425	368

Pear Production Costs

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Winter pears

The cost of producing winter pears in 1950 on 23 orchards averaged 74¢ per lug box and 82¢ per packed-box basis, exclusive of packing and storage costs (Table 3). Assuming packing and handling charges (from \$1.25 to \$1.50), the total F.O.B. cost would be \$2.07 or more per packed box.

Table 3. WINTER PEARS: Cost of Production, Hood River Valley, Oregon, 1950.

(Does not include cost of storage, boxes, packing, and shipping)

Item	Year 1950	Four-year average 1947-1950	Percentage of average
Number of orchards in the study	23	---	---
Acreage of winter pears per orchard	10.2	---	---
Yield per acre, loose-lug boxes	616	479	---
Yield per acre, packed boxes	556	428	---
Costs per loose-lug box for:	<u>Cents</u>	<u>Cents</u>	<u>Per cent</u>
Preharvest labor	17.0	26.0	27.3
Picking	13.4	12.1	12.7
Other harvest	5.1	6.0	6.3
Total labor	35.5	44.1	46.3
Materials	11.8	15.2	16.0
General expense	12.2	15.3	16.0
Depreciation on equipment	5.5	7.7	8.1
Interest on investment (5 per cent)	9.1	13.0	13.6
Total cost per loose-lug box	74.1	95.3	100.0
Cost per packed-box basis	82.1	106.7	---

The production of 616 loose-lug boxes per acre, equivalent to 556 packed boxes, in 1950 was the highest yield for the four years studied. A 30 per cent increase in yield for 1950 over the four-year period was accompanied by a 22 per cent decrease in cost per lug box. See Table 5 for itemized costs.

Bartlett (cannery) pears

The cost of producing cannery pears in 1950 on 20 orchards averaged \$1.24 per lug box (the identical cost in 1949) and \$54.18 per ton (Table 4). See Table 6 for itemized costs.

Table 4. BARTLETT CANNERY PEARS: Cost of Production, Hood River Valley, Oregon, 1950.

(Includes all costs, delivered to the cannery door)

Item	Year 1950	Four-year average 1947-1950	Percentage of average
Number of orchards in the study	20	---	---
Acreage bearing pears per orchard	7.0	---	---
Yield per acre, loose-lug boxes	342	306	---
Yield per acre, tons	7.8	7.0	---
Costs per loose-lug box for:	<u>Dollars</u>	<u>Dollars</u>	<u>Per cent</u>
Preharvest labor . . . . .	.40	.49	34.0
Picking . . . . .	.11	.11	7.6
Other harvest . . . . .	.05	.07	4.9
Total labor . . . . .	.56	.67	46.5
Materials . . . . .	.21	.23	16.0
General expense . . . . .	.23	.24	16.7
Depreciation on equipment . . . . .	.09	.11	7.6
Interest on investment (5 per cent) . . . . .	.15	.19	13.2
Total cost per loose-lug box	\$ 1.24	\$ 1.44	100.0
Cost per ton	\$54.18	\$63.64	---

Table 5. WINTER PEAR PRODUCTION COSTS: Hood River Valley, Oregon.
(Does not include cost of storage, boxes, packing, and shipping)

Item	Man hours		Cost	
	1950	1947-1950	1950	1947-1950
Labor per acre				
Pruning	34.8	43.1	\$ 33.67	\$ 41.39
Brush removal	4.1	4.4	4.07	4.25
Hand cultivating	1.0	1.8	.86	1.59
Machine cultivating	1.8	2.8	1.67	2.80
Fertilizing; mowing	1.5	1.7	1.52	1.66
Irrigating	10.4	11.3	10.41	11.23
Spraying	6.6	10.5	7.72	10.80
Thinning	---	.5	.05	.42
Propping	6.8	5.8	6.43	5.32
Maintenance	21.6	22.5	24.59	23.73
Supervision	10.2	12.8	13.43	17.12
Total preharvest	98.8	117.2	\$104.42	\$120.31
Picking	97.0	70.7	82.45	58.63
Other harvest	28.1	27.3	31.74	28.59
Total labor	223.9	215.2	\$218.61	\$207.53
Materials per acre				
Fertilizers			\$ 10.55	\$ 13.17
Irrigation water			6.11	5.92
Sprays			40.76	39.03
Miscellaneous supplies			15.47	12.85
Total materials			\$ 72.89	\$ 70.97
General expense per acre				
Building repair			\$ 3.46	\$ 3.36
Machinery repair			7.99	9.35
Machine hire			7.07	4.58
Gas and oil			13.83	12.42
Electricity; water; wood fuel; office			8.26	8.23
Liability, fire, and motor insurance			7.28	7.69
Property taxes			17.03	16.12
Cash to operate			10.00	10.00
Total general expense			\$ 74.92	\$ 71.75
Depreciation per acre				
Buildings (not including operator's dwelling)			\$ 10.25	\$ 11.98
Machinery			23.69	23.63
Total depreciation			\$ 33.94	\$ 35.61
Interest per acre (5 per cent)				
Buildings			\$ 7.93	\$ 9.23
Machinery			10.90	11.31
Orchard			36.96	39.64
Total interest			\$ 55.79	\$ 60.18
Total cost per acre			\$456.15	\$446.04
Cost per loose box			\$.74	\$.95
Cost per packed box			\$.82	\$ 1.06
Acres per orchard			10.2	10.9
Loose-lug boxes produced per acre			616	479
Packed boxes produced per acre			556	428

Table 6. BARTLETT PEAR PRODUCTION COSTS: Hood River Valley, Oregon.
(Includes all costs delivered to the cannery door)

Item	Man hours		Cost	
	1950	1947-1950	1950	1947-1950
Labor per acre				
Pruning	26.0	32.3	\$ 26.24	\$ 31.93
Brush removal	3.3	3.9	3.31	3.80
Hand cultivating	2.3	3.7	2.00	3.31
Machine cultivating	2.2	3.3	2.00	3.30
Fertilizing; mowing	1.5	1.5	1.53	1.50
Irrigating	11.3	11.6	11.10	11.53
Spraying	6.0	11.3	7.04	11.51
Thinning	42.6	39.5	37.90	34.58
Propping	4.7	6.6	4.62	6.11
Maintenance	23.2	23.9	26.58	25.86
Supervision	10.9	10.6	14.78	13.76
Total preharvest	134.0	148.2	\$137.10	\$147.19
Picking	42.7	39.2	36.30	32.38
Other harvest	16.5	19.8	18.26	20.37
Total labor	193.2	207.2	\$191.66	\$199.94
Materials per acre				
Fertilizers			\$ 12.46	\$ 13.19
Irrigation water			5.57	5.37
Sprays			36.64	39.17
Miscellaneous supplies			15.92	12.05
Total materials			\$ 70.59	\$ 69.78
General expense per acre				
Building repair			\$ 3.71	\$ 3.38
Machinery repair			7.16	8.61
Machine hire			8.42	5.63
Gas and oil			14.13	11.82
Electricity; water; wood fuel; office			9.08	8.77
Liability, fire, and motor insurance			7.53	8.47
Property taxes			17.26	16.02
Cash to operate			10.00	10.00
Total general expense			\$ 77.29	\$ 72.70
Depreciation per acre				
Buildings (not including operator's dwelling)			\$ 8.23	\$ 10.53
Machinery			24.20	23.06
Total depreciation			\$ 32.43	\$ 33.59
Interest per acre (5 per cent)				
Buildings			\$ 7.62	\$ 8.97
Machinery			12.04	11.85
Orchard			33.33	35.37
Total interest			\$ 52.99	\$ 56.19
Total cost per acre			\$424.96	\$432.20
Cost per loose-lug box			\$ 1.24	\$ 1.44
Cost per ton			\$ 54.18	\$ 63.63
Acres per orchard			7.0	5.7
Tons produced per acre			7.8	7.0
Loose boxes produced per acre			342	306

Age of the Trees

The orchards typically have trees of varying ages ranging from a year up to maturity (Table 7). The usual practice followed by most growers is to replace any dead or undesirable trees and thus tend to perpetuate the orchards. Therefore, depreciation on orchard investment was not included in computing the cost of producing fruit.

Table 7. AGE OF TREES: Distribution on 23 farms, Hood River Valley, Oregon, 1950.

Age of trees	Apples Per cent	Winter pears Per cent	Bartlett pears	
			Total Per cent	Bearing Per cent
Less than 6 years	14	10	30*	13
6 to 9 years	9	10	24	30
10 years and over	77	80	46	57
	100	100	100	100

*This group of trees was not included in computing cost of production where the nonbearing trees comprised an abnormally high proportion of the total Bartlett pear plantings on the farms studied.

Over three-fourths of the apple trees were 10 years old or over. Four-fifths of the winter pear trees were 10 years or older. In the case of the Bartlett pears, only 46 per cent of the trees had come into full bearing. One-fourth of the trees were just beginning to produce, while 30 per cent were less than 6 years old. In order to make the three orchard enterprises studied more nearly comparable, the latter group of trees (less than six years old) was excluded in computing cost of production where it comprised an abnormally high proportion of the total Bartlett planting. Thus 43 per cent of the Bartlett pear trees included in the cost study were less than full bearing age (under 10 years), and 57 per cent of the trees were in full bearing.

Varieties

Newtown and Delicious (Red, Striped, and Golden) comprised the major portion of the apple acreages on the farms studied (Table 8). D'Anjou is the principal winter (storage) pear, and the Bartlett is the canning pear.

Table 8. VARIETIES OF TREES: Distribution on 23 farms, Hood River Valley, Oregon, 1950.

Apples on farms studied		Winter pears on farms studied	
Variety	Percentage	Variety	Percentage
Newtown	49	D'Anjou	86
Delicious	38	Bosc	9
Ortley	6	Easter	2
Spitzenberg	4	Comice	3
Other	3		
Total	100	Total	100

Orchard Investment

The capital value represented by the plantings was estimated by the growers from a conservative, long-term standpoint. Consideration was given in the appraisal to the age and variety of trees and to the location and character of the land.

The present (depreciated) values of buildings (other than operator's dwelling) and all other equipment were allocated proportionately to the various enterprises according to the use made thereof (Table 9).

Table 9. ORCHARD INVESTMENT: Average Value of Capital Investment on 23 farms, Hood River Valley, Oregon, 1950.*

Item	Apples		Winter pears		Bartlett pears	
	Value per orchard	Value per acre	Value per orchard	Value per acre	Value per orchard	Value per acre
Orchard	\$ 9,707	\$ 594	\$ 7,570	\$ 739	\$4,699	\$ 667
Buildings	2,522	154	1,624	159	1,075	152
Equipment	3,197	196	2,231	218	1,697	241
Cash for operating . .	3,268	200	2,048	200	1,410	200
Total investment . .	\$18,694	\$1,144	\$13,473	\$1,316	\$8,881	\$1,260

* See Table 10 for acreages per orchard studied.

Apple enterprise

The estimated worth of the capital, represented by the apple enterprise on the 23 farms in the study, averaged \$18,694 per orchard. Over half of the total capital investment for apple production, or \$594 per acre, was for the plantings.

Buildings (exclusive of the operator's dwelling) averaged \$2,522 per apple orchard. The equipment inventory, averaging \$3,197 per apple orchard, includes irrigation equipment as well as the machinery, tractors, trucks, and small tools. It does not include the automobile (charge for the use of automobiles was computed on a mileage basis).

Winter pears

The investment for winter pears averaged \$13,473 per orchard. The value of the plantings averaged \$7,570 per orchard or \$739 per acre. The investment in buildings and equipment per acre of pears was similar in amount to that shown for apple orchards in this study.

Bartlett (canning pears)

The investment for bearing Bartlett pears averaged \$8,881 per orchard. Plantings represented \$4,699 each or \$667 per acre.

Land Use

The size of the 23 farms in the study averaged 61 acres per farm (Table 10). Orchard plantings comprised 35.3 acres per farm. This was 80 per cent of the total cropland or nearly three-fifths of the total farm acreage. The remainder of the cropland was chiefly in hay or used as pasture. Much of the untillable acreage is steep, rocky, and covered with trees and brush.

Table 10. FRUIT FARMS: Utilization of the Land on 23 farms,*
Hood River Valley, Oregon, 1950.

Land use	Number of farms	Acreage per farm reporting	Average acreage per farm	Percentage of total farm area
		<u>Acres</u>	<u>Acres</u>	<u>Per cent</u>
Apples	22	16.3	15.6	25.5
Bartlett pears	23	7.9	7.9	13.0
Winter pears	23	10.2	10.2	16.7
Other	14	2.6	1.6	2.6
Total orchard	23	---	35.3	57.8
Other cropland	12	12.4	6.5	10.6
Farmstead	23	2.3	2.3	3.8
Nontillable	20	19.6	17.0	27.8
Total	23	---	61.1	100.0

* Of the 35.3 acres in orchard, apple trees occupied 15.6 acres per farm. Total pear (winter and canning) acreage slightly exceeded the apple orchards with 18.1 acres per farm. Fourteen of the 23 growers in the study had cherry plantings. These averaged 2.6 acres per farm reporting cherries.

Purpose and Nature of the Study

The purpose of this study was to obtain information from growers that would provide basic facts on yields and on costs of production. This information, when carefully adjusted to reflect changes occurring in yields and in the price level of farm production cost, provides a basis whereby cost of production can be readily estimated for any given year if no changes have occurred in production techniques.

The cost of production reported herein is the average-acre cost of the entire plantings in the study. Thus, the man-hours-per-acre (See Tables 2, 5, 6) is a figure that is applicable to the entire acreage of a crop within an area such as a county and indicates the average amount of labor that may be required per acre for all of the acreage in that crop in the area even though each acre may not have been covered by each operation. The same holds true of the other items of cost.

Acknowledgments

The authors gratefully acknowledge the fine cooperation received from the 23 growers who kept detailed daily records which provided the data for this report. Special mention is made of the financial assistance contributed by the Hood River Traffic Association. Without the active participation of both these groups, the study would have been impossible.

Leroy Childs, Superintendent of the Hood River Branch Experiment Station, Paul C. Newkom, Apple Growers Association, Robert Nunamaker, fruit grower, and A. L. Marble, formerly County Agricultural Agent of Hood River County, were instrumental in helping to plan and initiate this project.