

*Cost of Producing*

# **Apples and Pears**

*in the Hood River Valley, Oregon*

PROGRESS REPORT V

Gustav W. Kuhlman

Arthur E. Irish

Agricultural Experiment Station  
Oregon State College  
Corvallis

Circular of Information 510

April 1952

# Cost of Producing

## Apples and Pears

*in the Hood River Valley, Oregon*

### PROGRESS REPORT V

Gustav W. Kuhlman, Agricultural Economist  
Arthur E. Irish, Fieldman

This report is a summary of detailed cost records kept on 25 fruit farms in the Hood River Valley for the year 1951 with comparable data for the 5-year period 1947-1951. 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 1951 on 24 orchards averaged 81¢ per loose box and \$1.40 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 \$2.65 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 1951	Five-year average 1947-1951	Distribution of costs
Number of orchards in study . . . . .	24	---	---
Acreage of apples per orchard . . . . .	15.2	---	---
Yield per acre, loose boxes . . . . .	556	598	---
Yield per acre, packed boxes . . . . .	323	359	---
Costs per loose box for:	<u>Cents</u>	<u>Cents</u>	<u>Per cent</u>
Preharvest labor . . . . .	23.1	25.5	31.3
Picking . . . . .	14.1	12.4	15.2
Other harvest . . . . .	5.6	5.9	7.2
Total labor . . . . .	42.8	43.8	53.7
Materials . . . . .	12.3	11.8	14.5
General expense . . . . .	12.8	12.1	14.8
Depreciation on equipment . . . . .	5.3	5.5	6.8
Interest on investment (5 per cent) . . . . .	8.1	8.3	10.2
Total cost per loose box . . . . .	81.3	81.5	100.0
Cost per packed-box basis . . . . .	139.8	135.1	---

\* 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 556 loose boxes per acre, equivalent to 323 packed boxes, in 1951 was the lowest yield of packed apples since this study was initiated in 1947. That year production averaged 542 loose boxes, equivalent to 328 packed boxes per acre. The highest cost, \$1.54 per packed-box basis in 1947, was 11 per cent higher than the cost in 1951.

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

Item	Man hours		Cost	
	1951	1947-1951	1951	1947-1951
Labor per acre				
Pruning . . . . .	28.6	31.8	\$ 28.56	\$ 30.69
Brush removal . . . . .	3.9	5.0	3.95	4.85
Hand cultivating . . . . .	1.2	1.8	1.03	1.63
Machine cultivating . . . . .	2.9	3.6	3.30	3.65
Fertilizing; mowing . . . . .	1.5	1.7	1.69	1.70
Irrigating . . . . .	10.5	12.8	12.10	13.12
Spraying . . . . .	5.3	11.6	6.28	11.82
Thinning . . . . .	33.0	40.4	31.23	35.46
Propping; cleanup . . . . .	6.2	6.5	6.89	6.45
Maintenance . . . . .	22.2	24.6	25.12	25.98
Supervision . . . . .	6.0	10.8	8.38	14.27
Total preharvest . . . . .	121.3	150.6	\$128.53	\$149.62
Picking . . . . .	89.9	89.4	78.41	74.85
Other harvest . . . . .	26.7	32.0	31.17	34.61
Total labor . . . . .	237.9	272.0	\$238.11	\$259.08
Materials per acre				
Fertilizers . . . . .			\$ 14.89	\$ 13.25
Irrigation water . . . . .			6.09	5.83
Sprays . . . . .			34.47	40.00
Miscellaneous supplies . . . . .			12.66	10.50
Total materials . . . . .			\$ 68.11	\$ 69.58
General expense per acre				
Building repair . . . . .			3.04	3.78
Machinery repair . . . . .			9.52	8.99
Machine hire . . . . .			6.12	5.48
Gas and oil . . . . .			11.41	11.45
Electricity; water; wood fuel; office . . . . .			8.06	8.13
Liability, fire, and motor insurance . . . . .			7.78	7.71
Property taxes . . . . .			15.40	15.71
Cash to operate . . . . .			10.00	10.00
Total general expense . . . . .			\$ 71.33	\$ 71.25
Depreciation per acre				
Buildings (not including operator's dwelling) . . . . .			\$ 8.35	\$ 10.58
Machinery . . . . .			21.06	21.40
Total depreciation . . . . .			\$ 29.41	\$ 31.98
Interest per acre (5 per cent)				
Buildings . . . . .			\$ 6.58	\$ 8.44
Machinery . . . . .			9.76	10.46
Orchard . . . . .			28.51	30.02
Total interest . . . . .			\$ 44.85	\$ 48.92
Total cost per acre . . . . .			\$451.81	\$480.81
Cost per loose box . . . . .			\$ .81	\$ .82
Cost per packed box . . . . .			\$ 1.40	\$ 1.35
Acres per orchard . . . . .			15.2	15.8
Loose boxes produced per acre . . . . .			556	598
Packed boxes produced per acre . . . . .			323	359

► Winter pears

The cost of producing winter pears in 1951 on 24 orchards averaged \$1.71 per lug box and \$1.93 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 \$3.18 or more per packed box.

Table 3. WINTER PEARS: Cost of Production, Hood River Valley, Oregon.  
(Does not include cost of storage, boxes, packing, and shipping)

Item	Year 1951	Five-year average 1947-1951	Distribution of costs
Number of orchards in the study . . . . .	24	---	---
Acreage of winter pears per orchard . . . . .	10.9	---	---
Yield per acre, loose-lug boxes . . . . .	232	430	---
Yield per acre, packed boxes . . . . .	205	383	---
Costs per loose-lug box for:	<u>Cents</u>	<u>Cents</u>	<u>Per cent</u>
Preharvest labor . . . . .	46.1	30.0	27.1
Picking . . . . .	16.7	13.0	11.8
Other harvest . . . . .	8.7	6.6	6.0
Total labor . . . . .	71.5	49.6	44.9
Materials . . . . .	29.8	18.1	16.4
General expense . . . . .	32.4	18.7	16.9
Depreciation on equipment . . . . .	14.2	9.0	8.2
Interest on investment (5 per cent) . . . . .	22.7	15.0	13.6
Total cost per loose-lug box . . . . .	170.6	110.4	100.0
Cost per packed-box basis . . . . .	192.9	123.9	---

The production of 232 loose-lug boxes per acre, equivalent to 205 packed boxes, in 1951 was the lowest yield during the five years studied. A 46 per cent decrease in yield for 1951 below the five-year average was accompanied by a 55 per cent increase in cost per lug box. See Table 5 for itemized costs.

► Bartlett (cannery) pears

The cost of producing cannery pears in 1951 on 22 orchards averaged \$1.86 per lug box and \$82.28 per ton (Table 4). See Table 6 for itemized costs.

Table 4. BARTLETT CANNERY PEARS: Cost of Production, Hood River Valley, Oregon.  
(Includes all costs, delivered to the cannery door)

Item	Year 1951	Five-year average 1947-1951	Distribution of costs
Number of orchards in the study . . . . .	22	---	---
Acreage bearing pears per orchard . . . . .	7.2	---	---
Yield per acre, loose-lug boxes . . . . .	205	286	---
Yield per acre, tons . . . . .	4.6	6.5	---
Costs per loose-lug box for:	<u>Dollars</u>	<u>Dollars</u>	<u>Per cent</u>
Preharvest labor . . . . .	.55	.50	32.7
Picking . . . . .	.14	.12	7.8
Other harvest . . . . .	.07	.07	4.6
Total labor . . . . .	.76	.69	45.1
Materials . . . . .	.33	.25	16.3
General expense . . . . .	.38	.27	17.7
Depreciation on equipment . . . . .	.15	.12	7.8
Interest on investment (5 per cent) . . . . .	.24	.20	13.1
Total cost per loose-lug box . . . . .	\$ 1.86	\$ 1.53	100.0
Cost per ton . . . . .	\$82.28	\$67.37	---

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

Item	Man hours		Cost	
	1951	1947-1951	1951	1947-1951
Labor per acre				
Pruning . . . . .	41.9	42.9	\$ 43.49	\$ 41.81
Brush removal . . . . .	3.8	4.3	3.84	4.17
Hand cultivating . . . . .	1.1	1.7	1.06	1.48
Machine cultivating . . . . .	2.1	2.6	2.44	2.73
Fertilizing; mowing . . . . .	1.8	1.7	2.13	1.75
Irrigating . . . . .	9.2	10.9	10.43	11.07
Spraying . . . . .	4.9	9.4	6.04	9.85
Thinning . . . . .	—	.4	—	.34
Propping; cleanup . . . . .	3.5	5.3	3.61	4.98
Maintenance . . . . .	21.6	22.3	25.87	24.16
Supervision . . . . .	5.6	11.4	7.99	15.29
Total preharvest . . . . .	95.5	112.9	\$106.90	\$117.63
Picking . . . . .	44.7	65.5	38.76	54.65
Other harvest . . . . .	17.3	25.3	20.29	26.93
Total labor . . . . .	157.5	203.7	\$165.95	\$199.21
Materials per acre				
Fertilizers . . . . .			\$ 14.25	\$ 13.39
Irrigation water . . . . .			5.90	5.92
Sprays . . . . .			37.85	38.79
Miscellaneous supplies . . . . .			11.17	12.51
Total materials . . . . .			\$ 69.17	\$ 70.61
General expense per acre				
Building repair . . . . .			\$ 4.13	\$ 3.51
Machinery repair . . . . .			11.15	9.71
Machine hire . . . . .			4.28	4.52
Gas and oil . . . . .			13.92	12.72
Electricity; water; wood fuel; office . . . . .			7.25	8.04
Liability, fire, and motor insurance . . . . .			8.60	7.87
Property taxes . . . . .			15.86	16.07
Cash to operate . . . . .			10.00	10.00
Total general expense . . . . .			\$ 75.19	\$ 72.44
Depreciation per acre				
Buildings (not including operator's dwelling) . . . . .			\$ 8.93	\$ 11.37
Machinery . . . . .			24.17	23.74
Total depreciation . . . . .			\$ 33.10	\$ 35.11
Interest per acre (5 per cent)				
Buildings . . . . .			\$ 6.87	\$ 8.76
Machinery . . . . .			11.35	11.32
Orchard . . . . .			34.46	38.60
Total interest . . . . .			\$ 52.68	\$ 58.68
Total cost per acre . . . . .			\$396.09	\$436.05
Cost per loose box . . . . .			\$ 1.71	\$ 1.10
Cost per packed box . . . . .			\$ 1.93	\$ 1.23
Acres per orchard . . . . .			10.9	10.9
Loose-lug boxes produced per acre . . . . .			232	430
Packed boxes produced per acre . . . . .			205	383

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

Item	Man hours		Cost	
	1951	1947-1951	1951	1947-1951
<b>Labor per acre</b>				
Pruning . . . . .	28.3	31.5	\$ 29.37	\$ 31.42
Brush removal . . . . .	2.5	3.6	2.40	3.52
Hand cultivating . . . . .	1.8	3.3	1.75	3.00
Machine cultivating . . . . .	2.9	3.2	3.34	3.31
Fertilizing; mowing . . . . .	2.3	1.7	2.45	1.69
Irrigating . . . . .	11.4	11.5	12.51	11.73
Spraying . . . . .	5.1	10.1	6.05	10.42
Thinning . . . . .	18.4	35.3	17.79	31.22
Propping; cleanup . . . . .	3.5	6.0	3.78	5.64
Maintenance . . . . .	22.2	23.5	25.79	25.84
Supervision . . . . .	5.4	9.6	7.44	12.50
Total preharvest . . . . .	103.8	139.3	\$112.67	\$140.29
Picking . . . . .	33.3	38.0	29.11	31.71
Other harvest . . . . .	13.1	18.5	15.05	19.32
Total labor . . . . .	150.2	195.8	\$156.83	\$191.32
<b>Materials per acre</b>				
Fertilizers . . . . .			\$ 16.32	\$ 13.82
Irrigation water . . . . .			5.49	5.39
Sprays . . . . .			34.35	38.20
Miscellaneous supplies . . . . .			12.33	12.11
Total materials . . . . .			\$ 68.49	\$ 69.52
<b>General expense per acre</b>				
Building repair . . . . .			\$ 4.77	\$ 3.66
Machinery repair . . . . .			11.38	9.16
Machine hire . . . . .			5.47	5.60
Gas and oil . . . . .			14.31	12.32
Electricity; water; wood fuel; office . . . . .			7.14	8.44
Liability, fire, and motor insurance . . . . .			7.97	8.37
Property taxes . . . . .			16.08	16.03
Cash to operate . . . . .			10.00	10.00
Total general expense . . . . .			\$ 77.12	\$ 73.58
<b>Depreciation per acre</b>				
Buildings (not including operator's dwelling) . . . . .			\$ 7.93	\$ 10.01
Machinery . . . . .			22.69	22.99
Total depreciation . . . . .			\$ 30.62	\$ 33.00
<b>Interest per acre (5 per cent)</b>				
Buildings . . . . .			\$ 6.79	\$ 8.53
Machinery . . . . .			11.12	11.71
Orchard . . . . .			30.96	34.49
Total interest . . . . .			\$ 48.87	\$ 54.73
<b>Total cost per acre . . . . .</b>			<b>\$381.93</b>	<b>\$422.15</b>
Cost per loose-lug box . . . . .			\$ 1.86	\$ 1.53
Cost per ton . . . . .			\$ 82.28	\$ 67.37
Acres per orchard . . . . .			7.2	6.0
Tons produced per acre . . . . .			4.6	6.5
Loose boxes produced per acre . . . . .			205	286

## Effect of Yield on Cost

The yields of apples and pears in 1951 varied more widely than usual from farm to farm (Table 7). In both the winter pear and the cannery pear groups the majority of the growers had yields of less than 200 boxes per acre--revealing the effects of severe winter damage in those orchards.

Table 7. YIELDS: Effect on Cost of Producing Apples and Pears,  
Hood River Valley, Oregon, 1951.  
(Does not include costs of storage, boxes, packing, and shipping)

Yield of packed boxes per acre*		Number of orchards	Acres per orchard	Cost per packed box*
Range	Average			
<b>Apples</b>				
Less than 200 boxes	153 . . . . .	4	11	\$ 2.28
200 to 399 boxes	285 . . . . .	14	16	1.55
400 or more boxes	504 . . . . .	6	15	1.04
All orchards . . .	323 . . . . .	24	15	\$ 1.40
<b>Winter pears</b>				
Less than 200 boxes	134 . . . . .	14	12	\$ 2.69
200 to 399 boxes	299 . . . . .	7	9	1.44
400 or more boxes	484 . . . . .	3	8	1.14
All orchards . . .	205 . . . . .	24	11	\$ 1.92
<b>Bartlett pears</b>				
Less than 200 boxes	132 . . . . .	13	6	\$ 2.59
200 to 399 boxes	245 . . . . .	7	7	1.64
400 or more boxes	416 . . . . .	2	10	1.29
All orchards . . .	205 . . . . .	22	7	\$ 1.88

\* Bartlett pears are figured as loose-lug boxes.

## Age of the Trees

The orchards typically have trees of varying ages ranging from a year up to maturity (Table 8). 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 8. AGE OF TREES: Distribution on 25 farms, Hood River Valley, Oregon, 1951.

Age of trees	Apples	Winter pears	Bartlett pears	
			Total	Bearing
	Per cent	Per cent	Per cent	Per cent
Less than 6 years . . . . .	16	7	25*	16
6 to 9 years . . . . .	5	9	18	20
10 years and over . . . . .	79	84	57	64
Total, all trees . . . . .	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. More than four-fifths of the winter pear trees were 10 years or older. In the case of the Bartlett pears, only 57 per cent of the trees had come into full bearing. One-fourth of the trees 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 6 years old) was excluded in computing cost of production where it comprised an abnormally high proportion of the total Bartlett planting. Thus 36 per cent of the Bartlett pear trees included in the cost study were less than full bearing age (under 10 years), and 64 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 9). D'Anjou is the principal winter (storage) pear, and the Bartlett is the canning pear.

Table 9. VARIETIES OF TREES: Distribution on 24 farms, Hood River Valley, Oregon, 1951.

Apples on farms studied		Winter pears on farms studied	
Variety	Percentage	Variety	Percentage
Newtown . . . . .	49	D'Anjou . . . . .	85
Delicious . . . . .	40	Bosc . . . . .	11
Ortley . . . . .	5	Easter . . . . .	2
Spitzenberg . . . . .	3	Comice . . . . .	2
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 10.).

Table 10. ORCHARD INVESTMENT: Average Value of Capital Investment on 25 farms, Hood River Valley, Oregon, 1951.\*

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 . . . . .	\$ 8,647	\$ 570	\$ 7,484	\$ 689	\$4,469	\$ 619
Buildings . . . . .	1,995	132	1,493	137	980	136
Equipment . . . . .	2,963	195	2,464	227	1,604	220
Cash for operating . . . . .	3,033	200	2,172	200	1,443	200
Total investment . . . . .	\$16,638	\$1,097	\$13,613	\$1,253	\$8,496	\$1,175

\* See Table 11 for acreages per orchard studied.



► Apple enterprise

The estimated worth of the capital, represented by the apple enterprise on the 25 farms in the study, averaged \$16,638 per orchard. More than half of the total capital investment for apple production, or \$570 per acre, was for the plantings.

Buildings (exclusive of the operator's dwelling) averaged \$1,995 per apple orchard. The equipment inventory, averaging \$2,963 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 \$13,613 per orchard. The value of the plantings averaged \$7,484 per orchard or \$689 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 pears averaged \$8,496 per orchard. Plantings represented \$4,469 each or \$619 per acre.

## Land Use

The size of the 25 farms in the study averaged 58 acres per farm (Table 11). Orchard plantings comprise 34 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 11. FRUIT FARMS: Utilization of the Land on 25 farms,\*  
Hood River Valley, Oregon, 1951.

Land use	Number of farms	Acreage per farm reporting	Average acreage per farm	Distribution of total farm area
		<u>Acres</u>	<u>Acres</u>	<u>Per cent</u>
Apples . . . . .	24	15.2	14.6	25
Bartlett pears . . . . .	25	7.6	7.6	13
Winter pears . . . . .	24	10.9	10.4	18
Other . . . . .	12	2.7	1.4	2
Total orchard . . . . .	25	---	34.0	58
Other cropland . . . . .	15	11.2	6.7	12
Farmstead . . . . .	25	2.3	2.3	4
Nontillable . . . . .	21	18.3	15.4	26
Total, all land . . . . .	25	---	58.4	100

\* Of the 34 acres in orchard, apple trees occupied 14.6 acres per farm. Total pear (winter and canning) acreage slightly exceeded the apple orchards with 18 acres per farm. Twelve of the 25 growers in the study had cherry plantings. These averaged 2.7 acres per farm reporting cherries.

## Five-Year Summary

The average annual yields per acre and the costs per box on 48 farms in this study have been compiled for the 5-year period 1947-51 (Table 12).

Table 12. COST OF PRODUCING APPLES AND PEARS IN HOOD RIVER VALLEY, OREGON, 1947-51.\*  
(Does not include costs of storage, boxes, packing, and shipping)

Year	Number of farms	Apples			Winter pears			Bartlett pears		
		No. of acres	Boxes /acre	Cost /box	No. of acres	Boxes /acre	Cost /box	No. of acres	Boxes /acre	Cost /box
1947 . . .	24	366	328	\$1.54	256	406	\$1.14	107	263	\$1.64
1948 . . .	25	406	358	1.39	283	363	1.20	126	258	1.64
1949 . . .	21	324	360	1.24	228	388	1.10	119	363	1.24
1950 . . .	23	360	425	1.18	236	556	.82	141	342	1.24
1951 . . .	25	364	323	1.40	261	205	1.93	159	205	1.86
Average .	24	364	359	\$1.35	253	383	\$1.24	130	286	\$1.53

\* Apples and winter pears are packed boxes; cannery pears are standard lug boxes.

### Effect of Size of Business on Costs

The size of the orchard enterprise had only very slight influence on the cost of production during the 5-year period studied (Table 13).

Table 13. SIZE OF BUSINESS: Five-year results on 48 cost farms, Hood River Valley, Oregon, 1947-51.  
(Does not include costs of storage, boxes, packing, and shipping)

Item †	Production*			Cost		
	Acres	Yield /acre	Total yield	Total	Per box	Range per box
<b>Small farms</b>						
Apples . . . . .	6.2	461	2,858	\$3,601	\$1.26	\$ .72 to \$8.96
Winter pears . . . . .	3.2	439	1,405	2,065	1.47	.48 to 4.18
Bartlett pears . . . . .	2.4	292	701	1,248	1.78	1.02 to 4.09
Total . . . . .	11.8	421	4,964	\$6,914	\$1.39	\$ .48 to \$8.96
<b>Medium farms</b>						
Apples . . . . .	13.6	369	5,018	\$7,075	\$1.41	\$ .71 to \$3.18
Winter pears . . . . .	8.4	454	3,814	4,462	1.17	.47 to 4.26
Bartlett pears . . . . .	5.0	302	1,510	2,280	1.51	1.09 to 5.51
Total . . . . .	27.0	383	10,342	\$13,817	\$1.34	\$ .47 to \$5.51
<b>Large farms</b>						
Apples . . . . .	22.7	340	7,718	\$10,342	\$1.34	\$ .75 to \$2.91
Winter pears . . . . .	17.4	350	6,090	7,612	1.25	.66 to 3.53
Bartlett pears . . . . .	8.0	280	2,240	3,293	1.47	.56 to 4.59
Total . . . . .	48.1	334	16,048	\$21,247	\$1.32	\$ .56 to \$4.59

\* Apples and winter pears are packed boxes; cannery pears are standard lug boxes.

† Small farms had less than 20 acres of orchard; medium farms had from 20 to 39 acres; and large farms had 40 acres or more.

The small farms (11.8 acres of apples and pears per farm) generally had the highest yields per acre. Good yields thus reduce the cost per box. The individual growers should note the wide range in the costs per box and strive to reduce his own costs by increasing his yields.

## 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 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 Extension Agent of Hood River County, were instrumental in helping to plan and initiate this project.