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COSTS AND RETURNS FROM PEACH PRODUCTION

Selected Areas, Utah

1947

by Earnest M. Morrison

Agricultural Experiment Station
Utah State Agricultural College
Logan Utah

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The cover picture of Johnson Elberta peaches was taken in the fall of 1948 on the A. P. Dalton Farm at Perry, Utah, by H. R. Reynolds, Utah State Agricultural College. The model is a coed of USAC from Box Elder County, Utah. The plates were made through the courtesy of J. P. Ridges Engraving Company.

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SUMMARY

1. The study of the costs and returns in peach production, 1947, included 103 farms in Utah whose average acreage was 33.5. The peach orchards surveyed contained a total of 563 acres and produced 99,726 bushels of peaches or about 11 percent of the 1947 peach crop in Utah.

2. Of the 103 farm records used in this study, 48 were in Utah County, 28 were in Box Elder-Weber area, and 27 were in Washington County. The survey covered the 1947 crop-year operations.

3. On the basis of the census classification of a fruit farm as one where 40 percent or more of the income was from fruit, about 60 percent of the farms included in the survey were fruit farms. Few livestock of any kind were kept on the farms.

4. The total investment per farm was \$23,659, of which \$4,591 or 19 percent was invested in the peach enterprise. The average enterprise investment per acre of peaches was \$840 of which the land and trees accounted for \$771.

5. The average acres of peaches per farm was 5.4 for the farms included in the study. These yielded 177 bushels of peaches per acre.

6. The average cost of producing peaches was \$1.66 per bushel in 1947. Labor cost amounted to 43 percent; overhead cost, 29 percent; material cost, 17 percent; and power cost, 11 percent of the total cost.

7. The cost per bushel was associated with yield per acre, size of orchard, and number of man-hours per acre.

8. Receipts per acre plus the value of containers where they were included in the sale averaged \$308 or \$1.74 per bushel.

9. The variation in total receipts was associated with yield per acre and price received per unit. Variation in receipts per bushel was associated with yield per acre, quality, and method of sale.

10. The net return above all costs including the operator's labor averaged \$14 per acre, or \$.08 per bushel. This was associated with size of the peach enterprise, hours of man-labor, yield per acre, and method of sale.

11. Of the total, 44 percent of the peaches was sold in out-of-state markets in carload lots, 23 percent was peddled to the consumer by the producer, 16 percent was sold at the farm to truckers, 12 percent was sold to canners, and 5 percent was sold to consumers at the farm.

12. Approximately 48 percent of the peaches was sold orchard-run and 52 percent was graded.

13. The man labor required to produce an acre of peaches in 1947 averaged 160 hours. About 55 percent of the labor was performed by the operator and his family. The average wage charged for all labor was \$.84 per hour.

14. The labor invested in the crop varied directly with the yield and inversely with the size of the orchard.

15. There was little difference in total profitableness in peach production between Washington County and the Box Elder-Weber area, but between these areas and Utah County it was marked. Net returns per bushel in the three areas, respectively, were \$.26, \$.21 and -\$.14. The main difference was the yield obtained per acre.

Costs and Returns from Peach Production Selected Areas, Utah, 1947¹

EARNEST M. MORRISON²

INTRODUCTION

PEACH PRODUCTION in Utah is an important fruit enterprise. Preliminary estimates place Utah's 1947 peach crop at about 933,000 bushels, valued at about \$1,679,000. This is equal to about 1.2 percent of the value of all agricultural commodities produced in the state, and about 27 percent of the value of Utah's fruit crop. The 1947 peach crop was, however, about 27 percent, or 200,000 bushels larger than the ten-year average, 1937 to 1946, and was the second largest crop on record in the last thirty years. In terms of value the 1947 crop was exceeded only by the crops of 1943 and 1944 (table 1).

According to the 1945 Census of Agriculture, peach trees were reported on 5,071 farms and in all counties of the state except three. The concentration of peach production, however, is in Washington County and along the base of the Wasatch foothills in Box Elder, Weber, Davis, Salt Lake, and Utah Counties, where about 95 percent of the trees are located.

Peach production is generally concentrated on well-drained, open soils, which require frequent irrigation. The enterprise is most successful when located where air currents protect the orchards from early spring frosts. In Utah the freestone varieties of peach predominate. The Early and the Late Elberta varieties are the most common, followed by J. H. Hale and other less common varieties such as the Late Crawford, Heath Cling, Rochester, and Greensboro.³

The peach is a perishable commodity and therefore must be marketed within a short period of time. The Utah crop usually begins to move about the latter part of July in Washington County and about one month later in the other areas of the state. Carlot shipments to out-of-state markets, usually handled by producers' marketing associations or produce brokers operating in the area, market about 40 percent of Utah's peach crop. The producers peddle a part of their crop to the consumer and to fruit and vegetable departments of local grocery stores. Cannery process a smaller portion of the crop and some sales—possibly as much as 20 percent—are made at the farm to consumers from nearby towns and cities and to truckers who truck to outside areas.

¹ Contribution of the Department of Agricultural Economics, Utah Agricultural Experiment Station. Report on Project 149-11 Purnell.

² Research assistant professor.

³ A. L. Wilson and A. L. Stark. The fruit tree situation in Utah. Utah Agr. Exp. Sta. Bul. 279. 1938. p. 11.

Table 1. *Production and price of peaches, Utah, 1918-46*

Year	Production	Price	Value	Index 1935-39=100	
	<i>1000 bushel</i>	<i>dollars</i>	<i>1000 dollars</i>	<i>number</i> Prod.	<i>number</i> Price
1918	1,050	1.50	1,575	215	156
1919	884	1.60	1,414	181	167
1920	471	2.50	1,178	96	260
1921	763	1.71	1,305	156	178
1922	885	0.50	442	181	52
1923	802	1.29	1,035	164	134
1924	750	1.50	1,125	153	156
1925	100	2.00	200	20	208
1926	550	0.90	495	113	94
1927	561	1.20	673	115	125
1928	612	0.95	581	125	99
1929	604	1.00	604	124	104
1930	370	1.35	500	76	141
1931	550	0.50	275	113	52
1932	748	0.34	254	153	35
1933	62	1.40	86	13	146
1934	558	0.85	474	114	89
1935	680	0.75	510	139	78
1936	554	0.70	388	113	73
1937	72	1.85	133	15	193
1938	573	0.75	430	117	78
1939	564	0.75	423	115	78
1940	600	0.80	480	122	83
1941	754	0.95	716	154	99
1942	340	2.25	765	70	234
1943	846	2.35	1,988	173	245
1944	850	2.15	1,828	174	224
1945	870	1.55	1,348	178	162
1946	700	2.10	1,470	143	219
1947*	933	1.80	1,679	191	187

Source: Agricultural statistics

*Preliminary estimates, U. S. Bur. Agr. Econ.

Utah's peaches that enter into out-of-state trade go into Idaho, California, Arizona, Kansas, Nebraska, Oklahoma, Missouri, and Iowa. In some years a few carloads of peaches are sold in Minnesota, Wisconsin, and Illinois markets. There Utah peaches are competing with those from central and northern California, Colorado, Idaho, Arkansas, Illinois, and Indiana.⁴

On the local markets, Utah peaches find competition with peaches from Idaho, California, and Colorado.

⁴ W. Preston Thomas and George T. Blanch. Marketing fruits and vegetables in Utah. Utah Agr. Exp. Sta. Bul. 316. 1945.

Over the period of the last thirty years, the production of peaches has varied from a low of 62,000 bushels in 1933 to 1,050,000 bushels in 1918 (table 1). From 1917 until about 1937 production had a down-

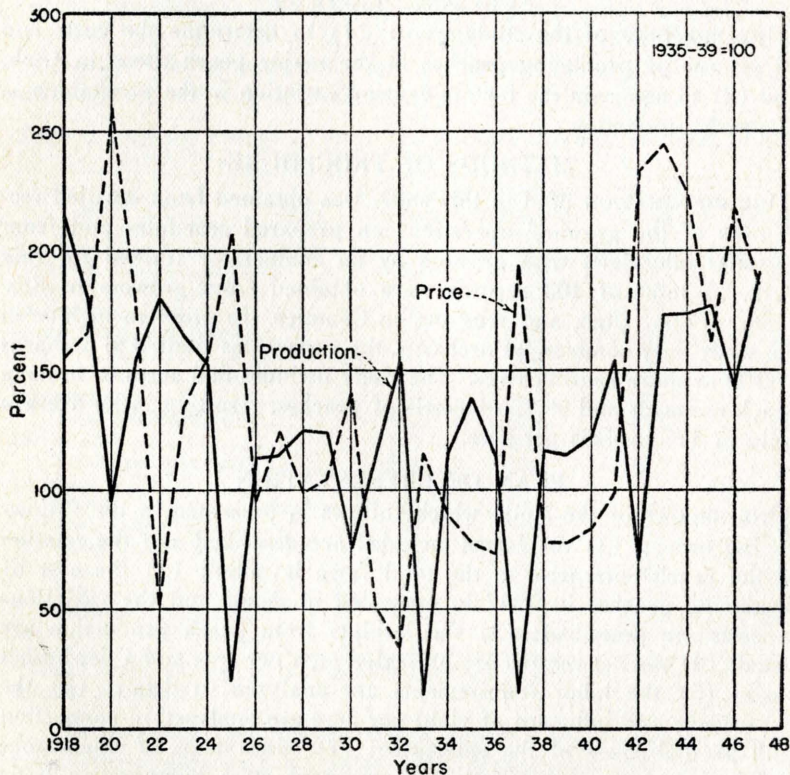


Fig. 1. Index of production and price of peaches in Utah, 1918-1947

ward trend. However, during the past ten years production has increased. Primarily owing to unfavorable weather conditions the crop was extremely small in 1925, 1933, and 1937 and below normal in 1920, 1930, and 1942. On an average short crops have been encountered about every 4 to 5 years.

Since 1917 in Utah, the price per bushel received by growers has generally varied inversely with the production. After allowing for changes in the general price level the large crops have generally been accompanied by low prices. The three-year period of 1938 to 1940, and the two-year period 1943 and 1944 are notable exceptions to the

above statement (fig. 1). Over the period of the last thirty years, prices have varied from \$.34 in 1932 to \$2.50 in 1920. In four of the past six years, the price has averaged over \$2 per bushel.

PURPOSE OF STUDY

THE PURPOSES of the study were: (1) to determine the costs and returns of producing peaches in the major peach areas in Utah, and (2) to ascertain the factors causing variation in the profitability in peach production.

METHODS OF PROCEDURE

THE INFORMATION used in this study was obtained from detailed records of the growers' operations on prepared schedules and from personal interviews with growers by an enumerator trained for this work. A total of 103 records were obtained from growers in Box Elder, Weber, Utah, and Washington Counties. In order to include in the study only commercial orchards, the survey was limited to orchards of 100 or more bearing trees. The study includes 563 acres of bearing peach orchards and 99,726 bushels of peaches, resulting in an average yield of 177 bushels per acre.⁵

PLAN OF PRESENTATION

THE REPORT of the study which follows is presented in the following order: (1) the farms included are described and the relation of the peach enterprise to the total farm is noted; (2) the cost of producing peaches in 1947 is presented in detail and the variations in costs are described; (3) the receipts from peach production are listed; (4) the net returns are presented on a per-acre and a per-bushel basis; (5) the labor requirements are analyzed in detail; (6) the importance and influence of yield per acre are analyzed in connection with profitability of the enterprise; (7) some items of importance and interest are summarized and presented on a comparative basis for the three major peach-producing areas included in the study; and (8) the conclusions of the study are presented as the final section of the report.

DESCRIPTION OF THE FARMS

THE FARMS INCLUDED in the study were comprised of an average of 33.5 acres of land of which 22.5 acres were cultivated cropland. The peach orchard occupied 5.4 acres per farm while other fruits and berries averaged 8.1 acres. Approximately 43 percent of the land area was used in fruit and berry production or about 60

⁵ Young orchards that had not come into production were not included. The bearing orchards included some non-bearing trees but were predominately bearing trees.

percent of the cultivated acres. On an income basis 79 percent of the farms studied received more than 40 percent of their income from fruits and berries. That the farms studied were primarily fruit farms is further substantiated by noting the crop and livestock programs in this connection. The average farm of 33.5 acres had about 4.5 acres of hay, 2.4 acres of grain, and 2.1 acres of miscellaneous crops (table 2). The average farm had one horse, one cow, three head of other cattle, one hog, and 47 poultry.

Table 2. *Average acreage of crops and livestock numbers per farm on peach survey farms, Utah, 1947*

Item	Unit	Washington County	Box-Elder- Weber area	Utah County	Total
Peaches	acres	4.8	6.7	5.1	5.4
Apricots	"	0.2	3.0	0.5	1.1
Cherries	"	0.3	2.9	1.6	1.6
Apples	"	1.8	0.7	2.5	1.6
Other fruits and berries...	"	2.3	1.0	6.4*	3.8
Hay	"	5.1	8.1	2.1	4.5
Grain	"	1.8	5.2	0.9	2.4
Miscellaneous	"	2.0	4.9	0.5	2.0
Total cultivated land...	"	17.3	32.5	19.6	22.5
Other land	"	11.1	22.5†	4.4	11.0
Total land per farm...	"	28.4	55.0	24.0	33.5
Livestock:					
Horses	number	1.3	0.5	0.9	0.9
Dairy cows	"	2.2	0.7	1.4	1.4
Other cattle	"	4.7	5.0	0.1	2.6
Sheep	"	0.2	1.1	0	0.4
Hogs	"	2.9	0.2	1.0	1.3
Poultry	"	82.9	5.7	51.9	46.8
Number of farms.....	"	27	28	48	103

*Mostly pears, cherries, apples, strawberries, and raspberries

†Mostly wasteland

In this study the average peach orchard was largest in the Box Elder-Weber area with 6.7 acres while Washington and Utah County orchards were about 5 acres.

The average capital investment per farm including the value of the farm dwelling was \$23,659, of which \$14,652 was invested in land, \$5,983 in buildings, \$2,208 in equipment, and \$816 in livestock (table 3). Approximately 19 percent or \$4,591 per farm was invested in the peach enterprise. The average investment per acre in the peach enterprise was \$840 of which approximately 92 percent was in land and trees. The value of the buildings and equipment that was charged against the peach enterprise was a prorated share based on use during the year. For the study as a whole, a value of \$28 per acre was charged as the peach enterprise's share of the buildings and \$41 per acre for equipment. The values used were about the same in each of the three major areas studied.

Table 3. *Average capital investment per farm and per peach enterprise, Utah, 1947*

Item	Washington County	Box Elder- Weber area	Utah County	Total
Total farm investment:	<i>dollars</i>	<i>dollars</i>	<i>dollars</i>	<i>dollars</i>
Land	9,499	11,441	15,925	14,652
Buildings	4,209	7,251	6,241	5,983
Equipment	1,841	2,189	2,424	2,208
Livestock	1,204	1,244	349	816
Total	16,752	28,125	24,939	23,659
Investment per peach enterprise:				
Land and trees.....	3,409	4,606	4,429	4,215
Buildings	142	312	70	153
Equipment	209	248	223	223
Total	3,760	5,166	4,722	4,591
Enterprise investment per acre of peaches:				
Land and trees.....	706	686	869	771
Buildings	30	46	14	28
Equipment	43	37	44	41
Total	779	769	927	840
Percent of capital invested in peach enterprise.....	22	18	19	19

COST OF PRODUCING PEACHES

THE AVERAGE TOTAL COSTS of producing an acre of peaches in 1947 in the areas where this study was conducted was \$294, or \$1.66 per bushel.

The cost per acre varied from \$110 to \$636. Of the total cost, approximately 43 percent was man-labor, 29 percent overhead, 17 percent material, and 11 percent power (table 4).

Of the labor cost, which amounted to \$127 per acre, approximately \$66, or 55 percent, was performed by the operator and members of his family. The other \$61 or 45 percent was hired. The average wage paid per hour was \$.84. The wage for the operator and his family averaged \$.86 per hour, whereas that of the hired laborer averaged \$.82. Shown later, the average number of man-hours was 151.

Overhead costs accounted for an average of \$84 per acre and include interest on the operating costs of the current crop; interest on the capital invested in the orchard, equipment and buildings connected with peach production; repair cost and depreciation expense on the equipment and buildings; depreciation of the orchard investment primarily from aging of the trees;⁶ land, water, and drainage

⁶ Depreciation of orchard investment from aging of the trees was calculated in the following manner: The farm operator estimated the current value of his land per acre with the peach trees on it. He then estimated the current value of land of equal quality without peach trees. To the difference between the two values was added the current cost of clearing an acre of land of peach trees, and the sum was divided by the farmer's estimate of the productive life of a peach orchard in his locality. The average productive life as reported by the operators was 17½ years.

Table 4. Peach production cost, 1947

Costs	Quantity	Price	Per acre	Per bushel	Percent of total
Material costs:			<i>dollars</i>	<i>dollars</i>	<i>percent</i>
Manure	3.3 tons	\$1.00	3	.02	1.0
Commercial fertilizers	162 lbs.	\$3.09	5	.03	1.7
Containers, etc.	80 bkt.	\$0.45	36	.20	12.3
Spray .....	.....	.....	5	.03	1.7
Total material cost.....	.....	.....	49	.28	16.7
Overhead costs:					
Interest on operating cost cost @ 5%.....	160 dol.	4 mo.	2	.01	0.7
Interest on capital invested.....	840 dol.	5%	42	.23	14.3
Building and equipment charges .....	.....	.....	5	.03	1.7
Depreciation of trees.....	330 dol.	17½ yr.	19	.11	6.5
Taxes, land and water.....	.....	.....	13	.07	4.4
Miscellaneous .....	.....	.....	3	.02	1.0
Total overhead cost.....	.....	.....	84	.47	28.6
Labor cost:					
Operator and family	77 hrs.	\$0.86	66	.37	22.4
Hired labor	74 hrs.	\$0.82	61	.35	20.8
Total labor cost	151 hrs.	\$0.84	127	.72	43.2
Power cost:					
Horse	8 hrs.	\$0.26	2	.01	.7
Tractor	11 hrs.	\$1.82	20	.11	6.8
Truck	9 hrs.	\$1.33	12	.07	4.0
Total power cost.....	.....	.....	34	.19	11.5
Grand total cost .....	.....	.....	294	1.66	100.0

taxes, and other miscellaneous items. Of this group, interest on the total capital invested was largest. An average capital investment of \$840 per acre was reported, amounting to a cost of \$42 per acre for an interest charge of 5 percent; depreciation of orchard from aging of trees amounted to \$19 per acre. Land, water, and drainage taxes averaged \$13 per acre. Overhead cost amounted to approximately \$.29 of every dollar spent in producing peaches.

Material cost averaged \$49 per acre. This included barnyard manure, commercial fertilizers, containers, spray, and other similar items. An average of 3.3 tons per acre of barnyard manure was considered available to the trees at a cost of \$3.⁷ One hundred and sixty-two pounds of commercial fertilizers of a wide variety of mixtures were applied to the orchard at a cost for the fertilizer of \$5

⁷ In the application of barnyard manure, 50 percent of the 1947 crop year's application was considered available to the 1947 crop. In addition, 30 percent of the 1946 crop year's application and 20 percent of the 1945 crop year's application were considered available to the 1947 crop. Manure was valued at \$1 per ton in the corral.

per acre. The cost of containers averaged \$36 per acre and was reported for about 42 percent of the crop, or in other words about 42 percent of the peaches sold were in containers furnished by the producer. Cost of spray materials averaged \$5 per acre.

Power cost averaged \$34 per acre and included horse power at \$.26 per horse-hour for a total of \$2; tractor power at \$1.82 per hour for a total of \$20; and truck power at \$1.33 per hour for a total of \$12 per acre.

Costs per bushel averaged \$1.66, with an average yield of 177 bushels per acre. Material cost averaged \$.28 per bushel, overhead cost amounted to \$.47 per bushel, labor cost averaged \$.72 per bushel, and power cost amounted to \$.19.

VARIATION IN COST

The variation in cost on the 103 farms ranged from \$110 to \$636 per acre. The range in cost per bushel was from \$.64 to \$5.94. The bulk of the growers had costs per bushel between \$1 and \$2.50 in 1947. Five growers had a cost of less than \$1 per bushel, and five had a cost over \$3. Twenty-nine had a cost between \$1.01 and \$1.49 per bushel, 35 had a cost between \$1.50 and \$1.99, 18 had a cost between \$2 and \$2.49, and 11 had a cost between \$2.50 and \$2.99 per bushel (table 5).

Table 5. *Variation in cost per bushel, peach production, 1947*

Cost per bushel	Farms in class	
	Number	Percent
Less than \$1.00.....	5	5
\$1.00 - 1.49	29	28
\$1.50 - 1.99	35	34
\$2.00 - 2.49	18	17
\$2.50 - 2.99	11	11
\$3.00 and over.....	5	5
Total	103	100

RELATION OF YIELD TO COST

When cost is reduced to a bushel basis, the yield per acre is an important factor. In the group with costs \$2.50 and over per bushel, the average yield was 109 bushels, and in the group with costs less than \$1, the yield was 285 bushels.

To point out more definitely the influence of yield on cost, the records were sorted into five groups on the basis of yield. There was a definite association between the yield per acre and the cost per acre and per bushel. A group of 13 records with an average yield of 72 bushels per acre had an average cost of \$217 per acre or \$3.01 per bushel. As the yield increased, the cost per acre increased, and the cost per bushel decreased (table 6). This relationship held rather constant throughout. The group of 21 records with a yield of 250

bushels or more per acre and an average yield of 334 bushels for the group had a cost per acre of \$448, or \$1.34 per bushel. While the association shown here is not wholly the influence of yield, yield does have a marked effect on the cost of production.

Table 6. *Relation of yield per acre to cost of producing peaches, 1947*

Range in bushels per acre	Average yield per acre	Number of records	Cost per acre	Cost per bushel
<i>bushels</i>	<i>bushels</i>	<i>number</i>	<i>dollars</i>	<i>dollars</i>
Less than 100.....	72	13	217	\$ 3.01
100 to 149	123	30	246	2.00
150 to 199	175	24	301	1.72
200 to 249	212	15	377	1.78
250 and over	334	21	448	1.34
All farms	177	103	294	1.66

RELATION OF SIZE OF ORCHARD AND COSTS

The records were sorted on the basis of acres in the peach orchard to ascertain the association between size and cost. Three groups were tabulated for comparison. The first group had 3.9 acres or less, the second group had 4.0 to 6.9 acres of peaches per farm, and the last group had 7.0 or more acres. To eliminate the effect of yield in this sorting of the records, the records with better than average yield were separated from those with average or less than average yield per acre (table 7). From the sort thus made, there was no

Table 7. *Relation of size of peach orchard to cost on enterprises of similar yields*

Acres of peaches per farm	Average acres per farm	Records	Cost per acre	Total costs per bushel
<i>acres</i>	<i>acres</i>	<i>number</i>	<i>dollars</i>	<i>dollars</i>
Group 1 — 177 bushels and less				
3.9 acres and less.....	2.1	22	250	2.36
4.0 to 6.9.....	5.0	12	216	1.73
7.0 and over.....	10.7	20	258	2.02
Group 2 — More than 177 bushels				
3.9 acres and less.....	2.2	18	351	1.50
4.0 to 6.9.....	5.2	25	377	1.51
7.0 and over.....	12.8	6	315	1.43

consistent or significant association between the size of the orchard as measured in acres of peaches per farm and the cost per bushel of producing peaches. Among the groups with average or less than average yield, there were some differences in the cost per bushel as the size increased, but there was no consistent relationship expressed. Among the groups with better than average yield, there were no significant differences in cost per bushel or cost per acre as the size of the orchard increased. It might be concluded, therefore, that yield per acre is more important in determining cost per bushel than is size of the orchard as measured in acres.

VARIATION IN MAN LABOR AND COST

It was noted earlier that labor costs amounted to about 43 percent of the total cost of production. The extent that hours of man-labor are associated with cost can be seen from a sorting of the records on the basis of hours of man-labor per acre. On those farms where less than 90 hours of man-labor per acre were reported, the cost per acre was \$217 (table 8). For a group of 23 farms on which an average

Table 8. *Relation of man-hours of labor to cost, peach production, 1947*

Range in man-hours per acre*	Average man-hours per-acre	Number of records	Yield per acre	Acres peaches per farm	Cost per acre
<i>hours</i>	<i>hours</i>	<i>number</i>	<i>bushels</i>	<i>acres</i>	<i>dollars</i>
Less than 90.....	84	26	136	5.0	217
90 to 114.....	110	23	129	6.1	233
115 to 159.....	162	27	208	6.8	305
160 and over.....	276	27	255	4.0	441
All farms	151	103	177	5.4	294

*Class intervals on this sort are not uniform. The intervals as reported here with the mid-points were more representative of the data than any other intervals tried.

of 110 hours of man-labor was expended, the average cost per acre was \$233. When the amount of man-labor was increased to 162 hours per acre, costs rose to \$305. In the last group reporting an average of 276 hours of man-labor, the cost per acre was \$441.

As would normally be expected, more man-labor was associated with larger yields. The amount of time spent caring for the orchard may influence the yields, and, conversely, greater yields require more hours of man-labor to care for the crop.

There was no significant association between man-labor per acre and the size of the peach orchard.

TOTAL RECEIPTS

TOTAL RECEIPTS are the total amount of money received by the producer for his crop including the value of the container where such is involved. They include the actual sales of all grades of fruit, the estimated value of the fruit used in the home, and the estimated value of the fruit given away. For the 103 farms surveyed, the average receipt per bushel was \$1.74, or about \$308 per acre. The receipt of \$1.74 includes the price of the container when the fruit was sold in a container. Since 42 percent of the crop was sold in containers, an average of about \$.20 per bushel represents the value of the container. Inasmuch as the cost of the container is charged as a cost against the crop, the sale of the same must be considered as a receipt.

Total receipts varied from \$63 to \$790 per acre and from \$.99 to \$2.83 per bushel. Receipts per bushel averaged \$1.74 and a range of \$.25 on each side of average included about 55 percent of all

farms, while a range of \$.50 included about 82 percent of all farms. Six farms had receipts less than \$1.20 per bushel, while six farms had receipts more than \$2.40 per bushel (table 9).

Table 9. *Variation in price received per bushel, 1947*

Receipts per bushel	Farms in class	
	Number	Percent
Less than \$1.20.....	6	6
\$1.20 to 1.39	15	15
\$1.40 to 1.59	19	18
\$1.60 to 1.79	20	19
\$1.80 to 1.99	20	19
\$2.00 to 2.19	10	10
\$2.20 to 2.39	6	6
\$2.40 and over	6	6
Total	103	100

Of the various factors associated with variations in receipts per acre, yield per acre has an important bearing. The extent of this association was noted by sorting records on the basis of yield per acre and noting the change in total receipts per acre. Five groups were made, ranging from records with less than 100 bushels per acre to those with 250 bushels or more. As yield increased from an average of 72 bushels per acre to 334 bushels, receipts increased consistently from \$120 to \$616 per acre (table 10). Receipts per bushel increased slightly but consistently as the yield increased. Although the difference in receipts per bushel is not significant statistically, it does suggest that the heavier yielding orchards were not yielding inferior fruit as compared to the more moderate yields.

Table 10. *Relation of yield to total receipts*

Range in bushels per acre	Average yield per acre	Number of records	Receipts per acre	Receipts per bushel
<i>bushels</i>	<i>bushels</i>	<i>number</i>	<i>dollars</i>	<i>dollars</i>
Less than 100	72	13	120	1.67
100 to 149	123	30	208	1.69
150 to 199	175	24	301	1.72
200 to 249	212	15	377	1.78
250 and over	344	21	616	1.79
All farms	177	103	308	1.74

METHOD OF SALES AND RECEIPTS⁸

Variations in receipts per bushel are difficult to explain. The primary association with high total receipts per bushel in general was the method of disposal employed. The growers who sold their fruit at their orchards to consumers or peddled it to the consumer received the highest average total receipts per bushel. They, of course, spent

⁸ All prices quoted in this section only and in table 11 are from the fruit without the container. The average price per bushel of \$1.74 used in other connections includes an average value of \$.20 per bushel for the container.

additional time in marketing the fruit. This avenue of disposing of the crop would be limited, and the advantages would be nullified if all growers adopted this as a means of disposing of fruit. Other methods or channels of fruit disposal included sales through out-of-state carlot shipments, to truckers, and to canning factories.

About 48 percent of the sales included in the study were of orchard-run fruit. About 83 percent of all sales to canners, 94 percent of sales to truckers, 86 percent of sales to consumers by producer-peddlers, and 76 percent of sales to consumers at the orchard were orchard-run fruit. Only in carlot shipment to out-of-state points was fruit graded and sized to any noticeable extent (table 11). The

Table 11. *Percentage distribution and average price per bushel by method of disposition and by grade, 1947*

Method of sale	Orchard run	U. S. No. 1						Sub total	Grand total
		1¾	2	2¼	Spec. pack	Graded only	U.S. No. 2		
Carlot shipments									
% in each grade.....	---	37	28	22	13	---	*	100	
average price	---	1.12	1.33	1.81	2.22	---	1.20	1.47	44
Canners†									
% in each grade.....	83	2	---	15	---	---	---	100	12
average price	1.33	1.24	---	1.69	---	---	---	1.38	
Truckers									
% in each grade.....	94	---	4	2	---	---	*	100	16
average price	1.62	---	1.72	1.99	---	---	.48	1.63	
Producer peddlers									
% in each grade.....	86	---	---	---	---	14	---	100	23
average price	1.75	---	---	---	---	1.57	---	1.72	
Orchard sales‡									
% in each grade.....	76	---	---	---	---	24	---	100	5
average price	1.73	---	---	---	---	1.47	---	1.68	
Total									
% in each grade.....	48	17	13	12	6	4	*	100	100
average price	1.65	1.13	1.35	1.75	2.22	1.50	1.09	1.54	1.54

*Less than .1 percent

†Price for canners was the 1947 contracted price

‡Includes only that sold to consumers at the orchard. Truck loads sold to truckers are not included in this class.

average price received per bushel for out-of-state-shipment was \$1.47 as compared to \$1.65 for sales of orchard-run fruit. Fruit graded as U. S. no. 1 with 1-¾ inch minimum averaged \$1.12 per bushel, U. S. no. 1 of 2-inch minimum averaged \$1.33 per bushel, U. S. no. 1 of 2-¼ minimum averaged \$1.81 per bushel, U. S. no. 1 fruit that was packed in special containers such as lugs or crates averaged \$2.22 when converted to a bushel basis, and fruit that was graded only to the extent that obvious culls were removed averaged \$1.50 per bushel. Of the fruit that was graded and sized, about 35 percent of it was sold as U. S. no. 1 of 1-¾ inch minimum, 27 percent as

U. S. no. 1 of 2 inch minimum, 26 percent as U. S. no. 1 of 2-1/4 inch minimum, and 12 percent as U. S. no. 1 that was specially packed.

NET RETURNS

NET RETURNS are the difference between total receipts and total expenses. The average return for the study was \$14 per acre, or about \$.08 per bushel (table 12). The net return might be regarded as a return to the operator for his managerial efforts. It should be borne in mind, however, that the total expenses do include a return to the operator for his own labor and that of his family, a 5 percent return on the money invested in land, buildings, and equipment, and a 5 percent return on operating costs insofar as the operator owned the capital thus invested. If the operator had purchased the farm prior to the last seven years, the inflated land values were not a real cost to him although he was allowed interest on such values as

Table 12. *Net returns from peach production, 1947*

Item	Per acre	Per bushel
	dollars	dollars
Total receipts	308	1.74
Total costs	294	1.66
Net returns	14	.08

a cost of production. The actual money income to the operator and his family, assuming he owns the land, buildings, and equipment, would be approximately \$129 per acre and would necessarily be regarded as the income to the operator for his and his family's labor, use of his capital, and a return for his management.

The amount of inflation in land values affected the net returns to producers. The exact amount of inflation is difficult to measure since there are no indexes available of the value of the particular land studied. On the basis of information obtained from the growers, land values in 1947 were 112 percent above those they reported for 1935 and about 78 percent above those for 1940. On the basis of 1935 land values of \$372 per acre with other costs remaining the same except overhead depreciation which is also affected by land values, the cost would be \$264 per acre or \$1.49 per bushel, leaving a net return of \$44 per acre or \$.25 per bushel assuming the same yields and receipts. On the basis of 1940 land values of \$425 per acre, the cost would be \$271 per acre or \$1.53 per bushel and a net return of \$37 per acre or \$.21 per bushel.

On a per-acre basis net returns, as defined above, varied from -\$275 to \$461 and from -\$2.20 to \$1.34 per bushel. Variation in net returns is affected by all the factors causing variation in receipts and costs, and since net returns measure what remains for the pro-

ducer after all cost items have been paid, the factors affecting net returns are those having a direct effect on the total success of the enterprise.

RELATION OF HOURS OF MAN LABOR TO NET RETURNS

To determine the relative profitableness of investing more labor in the care and management of the peach orchard, the records were sorted into four groups based on the amount of man-labor per acre expended in producing the 1947 crop. The farms with less than 90 hours of man-labor per acre obtained an average net return of \$17 per acre. The farms with 90 to 114 hours of man-labor per acre had a net return of -\$22 per acre. The farms on which 115 to 159 hours of man-labor were expended had a net return of \$43 per acre. The group of farms on which 160 or more hours per acre were expended obtained an average net return of \$23 per acre (table 13).

Table 13. *Relation of hours of man-labor to net returns*

Range in man-hours per acre*	Average man-hours per-acre	Number of records	Yield per acre	Net return per acre
<i>hours</i>	<i>hours</i>	<i>number</i>	<i>bushel</i>	<i>dollars</i>
Less than 90	84	26	136	17
90 to 114	110	23	129	-22
115 to 159	162	27	208	43
160 and over	276	27	255	23
All farms	151	103	177	14

*The class interval is not uniform. A change in class interval seems to be most effective in representing the data.

Since there was no consistent relationship between man-hours spent and net returns per acre, no definite conclusions can be drawn regarding the influence of time spent in the peach enterprise and the net returns received therefrom.

The results of the sort do suggest, however, that the greater expenditures of labor were economically justifiable and yielded a net return besides paying the current rate of wage for the greater amount of man-labor invested.

RELATION OF YIELD PER ACRE TO NET RETURNS

To determine the influence of yield on net returns, the records were sorted into five groups on the basis of yield per acre. As the average yield per acre increased from 72 bushels to 344 bushels, the net return increased consistently from -\$96 to \$152 (table 14). The inter-association between man-hours of labor and yield per acre was exhibited also in this connection. From the association which exists between yield per acre and net returns, it is justifiable to conclude that yield does have an important connection with and a vital bearing upon the success of the peach enterprise.

Table 14. *Relation of yield per acre to net return*

Range in yield per acre	Average yield per acre	Number of records	Total man-hours per acre	Net return per acre
<i>bushel</i>	<i>bushel</i>	<i>number</i>	<i>hours</i>	<i>dollars</i>
Less than 100	72	13	97	-96
100 to 149	123	30	130	-38
150 to 199	175	24	158	0
200 to 249	212	15	158	53
250 and over	344	21	248	152
All farms	177	103	151	14

RELATIONSHIP OF SELECTED FACTORS TO NET RETURNS

In an attempt to suggest the influence of the various combinations of factors of production on profitableness, the records were sorted into three groups of the highest, middle, and lowest third on the basis of net returns per bushel (table 15). Net returns per bushel

Table 15. *Relationship of net returns per bushel to selected factors in peach production, 1947*

Selected factors	Unit	Highest one-third	Middle one-third	Lowest one-third	Total
Records	number	34	35	34	103
Total acres per farm.....	acres	31	40	23	33
Peaches per farm.....	acres	4.6	6.2	4.6	5.4
Trees per acre.....	number	107	113	110	111
Age of trees.....	years	10.0	11.3	12.2	11.5
Man-hours per acre.....	hours	154	152	145	151
Hours per acre spent pruning.....	hours	32	23	18	24
Yield per acre.....	bushel	243	157	112	177
Receipts per bushel.....	dollars	1.80	1.68	1.63	1.74
Costs per bushel.....	dollars	1.23	1.68	2.47	1.66
Net returns per bushel.....	dollars	0.47	0	-0.84	0.08

was used as a measure of profitableness because it reflects all the effects of costs, receipts, and yields on production. This sort substantiates the results of previous sorts. The total size of the farm had little effect on the profitableness of the peach enterprise as measured by net returns per bushel. The most profitable third had an average of 31 acres per farm as compared with 40 acres for the middle third and 23 acres for the lowest third. The size of the peach orchard, likewise, had little association with profitableness. Both the highest third and the lowest third averaged 4.6 acres of peaches per farm. The middle third averaged 6.2 acres.

The number of trees per acre had no particular relationship to profitableness. A sort was made on the basis of the number of bearing peach trees per acre but no significant associations appeared to exist. The variations in the number of trees per acre was relatively small and little difference existed that could exert an influence in the final results.

The association of high yields with increased labor requirements is shown in a later discussion. Total profitableness is more dependent upon the efficient use of labor than on the total amount used. The most profitable third had an average man-labor investment of 154 hours per acre. This, however, amounts to about 35 minutes per bushel of fruit produced. The middle third had an average man-labor investment of 152 hours per acre but with lower yield this amounts to about 59 minutes per bushel of fruit produced. The least profitable third had an average investment in man-labor of 145 hours per acre or 78 minutes per bushel of fruit.

The association of high yields per acre with low costs per bushel and high net returns is discussed in detail in another connection. In this sort the highest third in net returns per bushel had an average yield of 243 bushels per acre as compared with 157 and 112 bushels for the middle and lowest thirds. As shown here and in other connections yield per acre seems to be one of the most important factors affecting success in peach production.

The influence of price received by the producer on the success of the enterprise is exhibited in this sort. The most profitable third received an average receipt of \$1.80 per bushel while the least profitable third averaged \$1.63 per bushel. The importance of unit costs is also demonstrated by the sort of the records on the basis of net returns per bushel. While there was a variation of \$.17 in net receipts, the costs per bushel varied \$1.24. This suggests the importance of efficiency in all production operations. Average net returns varied from \$.47 to -\$.84 per bushel for the most profitable and least profitable of the producers in 1947.

LABOR REQUIREMENTS

TOTAL HOURS of man-labor required to produce an acre of peaches in 1947 averaged 150.8. This resulted from an average yield of 177 bushels per acre for an average orchard of 5.4 acres. As will be shown later it was found from the study that the amount of time required to produce a crop of peaches from an acre of orchard was to some extent dependent upon the yield.

For purposes of analysis the operations were divided into three groups, as follows: (a) growing, which included those operations from the beginning of the crop year that are usually performed regardless of yield; (b) handling, those operations that are necessitated by the forming of the current peach crop and that usually vary with the yield; and (c) marketing, which included all operations performed by the producer in connection with his crop from the time the picked fruit was assembled at a central point on the

farm and the time when possession was turned to some other person or agency (table 16). Considering these three groups, the handling

Table 16. *Man-hours of labor per acre*

Operation	Hours per acre	Percent of total	Operation	Hours per acre	Percent of total
Growing:	<i>hours</i>	<i>percent</i>	Handling:	<i>hours</i>	<i>percent</i>
Manuring	4.5	3.0	Thinning and propping	15.2	10.0
Commercial fertilizing	1.1	0.7	Scattering boxes ...	1.6	1.1
Pruning and dis- posing of brush....	29.1	19.3	Picking	42.2	28.0
Mowing	0.6	0.4	Hauling to farm packing station ...	6.8	4.5
Cultivating	3.6	5.4	Total handling ...	65.8	43.6
Irrigating	17.3	11.5	Marketing:		
Spraying	4.3	2.9	Sorting, grading and packing	14.8	9.8
Miscellaneous	1.4	0.9	Hauling to market..	5.2	3.4
			Selling and misc....	1.3	0.9
			Total marketing ..	21.3	14.1
Total growing	63.7	42.3	Total labor	150.8	100.00

operations were slightly most time-consuming, accounting for 65.8 hours per acre or 43.6 percent of the total time required. Within this, 42.2 hours were spent in picking the fruit, 15.2 hours in thinning and propping operations, 6.8 hours hauling the fruit from the orchard to some central point, and 1.6 hours per acre in scattering empty boxes or baskets.

The operations grouped together as growing accounted for 63.7 hours per acre, or 42.3 percent of the total hours of man-labor. Pruning the trees and disposing of the brush accounted for 29.1 hours per acre, 17.3 hours per acre were spent in irrigating the crop, 5.6 hours in applying fertilizers to the orchard, 4.3 hours in spraying the trees, 3.6 hours in cultivating the orchard, and lesser amounts for such items as mowing, supervising labor, and keeping records.

Marketing operations consumed an average of 21.3 hours of man-labor per acre. The operation of sorting, grading, and packing the fruit was the major time-consuming task in this group, averaging 14.8 hours per acre. Hauling the fruit from farm to market required an average of 5.2 hours per acre. The time spent in actually effecting a change in title to the fruit and in locating markets averaged 1.3 hours per acre. The extent of the marketing activities varied greatly from farm to farm.

Of all the operations performed by man-labor, picking the fruit was the most time-consuming, requiring about 31 percent of all the

man-labor spent. For the average of the study, it required approximately 14 minutes to pick a packed-out bushel of peaches. Pruning the trees and disposing of the brush pruned away was the second most time-consuming operation, accounting for 19 percent of the total man-labor. The average time spent per bearing tree for this operation was 17 minutes.

The third largest time-consuming operation was irrigation, which required about 13 percent of the time spent. Picking, spraying, sorting, grading and packing, and pruning operations were those most frequently performed by hired labor.

RELATION OF LABOR AND YIELD

The number of hours of man-labor spent in producing peaches ranged from 49 to 435 per acre. One of the primary factors associated with the variation in the labor requirement was yield per acre. To ascertain the extent of this association, the records were sorted into five groups on the basis of yield. Yield was used as a basis of sorting to facilitate the presentation of the five major divisions of man-labor. As the average yield per acre of the groups increased consistently from 72 bushels to 344, the total hours of man-labor increased from 97 to 248. That labor was more effectively employed with the higher yield is emphasized by the fact that the hours per bushel decreased from 1.35 to .72 as the yield increased. The hours per acre spent in the growing operations remained relatively constant but increased slightly as the yield increased. In this connection the greater amounts of time spent in such operations as pruning, fertilizing, irrigating, and cultivating may be to some degree responsible for the increased yields obtained (table 17).

Table 17. *Relation of yield per acre to hours of man-labor*

Yield per acre	Average yield bushel	Number of records number	Hours of man-labor per acre Production*					Hours per bushel
			Grow- ing hours	Han- dling hours	Total hours	Market- ing hours	Total hours	
Less than 100	72	13	59	26	85	12	97	1.35
100 to 149	123	30	59	52	111	19	130	1.06
150 to 199	175	24	68	65	133	25	158	.90
200 to 249	212	15	72	66	138	20	158	.75
250 and over	344	21	85	123	208	40	248	.72
All farms	177	103	64	66	130	21	151	.86

*Includes all operations up to and including the assembling of the fruit at the orchard packing house or some central point from which it was later marketed.

The amount of time spent in handling operations increased consistently as the yield increased as would be expected since greater yields would require more man-labor in these operations. It is inter-

esting to note that the ratio of increase in yield to time spent in the handling operation was practically constant among the five groups. With the time spent in both the maintenance and handling groups increasing consistently with yield, the total hours spent in the production operations would increase also. In this connection, man-hours per acre increased from 85 to 208 as the yield increased from 72 to 344 bushels.

The increase in man-hours spent in the marketing operation was also about in constant proportion to the increase in yields, although there was a slight decrease for the higher yields.

VARIATION IN LABOR AND SIZE OF ORCHARD

It is usually accepted that in most lines of agricultural production larger units are operated more efficiently so far as the use of labor is concerned. This relationship existed in the peach enterprises surveyed. The records were sorted on the basis of acres in the peach orchard into three groups of 3.9 acres and less, 4.0 to 6.9 acres, and 7.0 acres and over. An attempt was made to hold the effect of yield relatively constant by sorting each of the three groups into two additional groups on the basis of more or less than the average yield (table 18). As the size of the orchard increased from about 2 to 11

Table 18. *Relation of size of peach orchard to hours of man-labor on enterprises of similar yields, 1947*

Acres peaches per farm	Average yield acres	Records number	Hours of man-labor per acre Production*				
			Grow- ing hours	Han- dling hours	Total hours	Market- ing hours	Total hours
177 bushels and less							
3 acres and less.....	2.1	22	67	50	117	23	140
4 to 6	5.0	12	56	47	103	15	118
7 and over	10.7	20	58	49	107	16	123
More than 177 bushels							
3 acres and less.....	2.2	18	82	81	163	24	187
4 to 6	5.2	25	76	102	178	35	213
7 and over	12.8	6	61	60	121	29	150

*Includes all operations up to and including the assembling of the fruit at the orchard packing house or some central point from which it was later marketed.

acres, the total man-hours per acre decreased. The time spent in the production operations decreased consistently as did the time spent in growing operations. The time spent in the marketing operation decreased as size increased in the group with less than average yields, but remained relatively the same in the group with better than average.

AREA COMPARISONS

IN THE OVER-ALL picture most of the factors affecting the production of peaches were about the same in the three major areas studied. For this reason, the analysis presented above has been for the study as a whole. A few variations occurred that are of interest and are presented here (table 19).

Table 19. *Area comparisons of selected items in peach production, 1947*

Item	Unit	Washington County	Box Elder- Weber area	Utah County	Total
Number of farms.....	number	27	28	48	103
Total land per farm.....	acres	28	55	24	34
Cultivated land per farm.....	acres	17	32	20	22
Peaches per farm.....	acres	4.8	6.7	5.1	5.4
Yield per acre.....	bushel	179	197	161	177
Man-labor per acre.....	hours	182	144	139	151
Cost per hour for man-labor	dollars	0.72	0.87	0.90	0.84
Receipts per acre.....	dollars	330	335	278	308
Costs per acre.....	dollars	284	294	300	294
Net returns per acre.....	dollars	46	41	-22	14
Receipts per bushel of peaches	dollars	1.84	1.70	1.72	1.74
Cost per bushel of peaches	dollars	1.59	1.49	1.86	1.66
Net returns per bushel.....	dollars	0.26	0.21	-0.14	0.08
Method of sales:					
Carlot shipment	percent	41	25	64	44
Canners	percent	---	28	3	12
Truckers	percent	17	30	4	16
Produce-peddlers	percent	37	12	25	23
Orchard sales	percent	5	5	4	5
Total	percent	100	100	100	100

The farms in Washington and Utah Counties were about the same size measured in acres and the peach enterprise in the two counties was about the same acreage. The Box Elder-Weber area farms were about twice as large as those in the other areas and the peach enterprise was also slightly larger. Yields of peaches per acre varied among the three areas. The largest yields were in the Box Elder-Weber area where an average of 197 bushels per acre was produced. The smallest yields were in Utah County where the average was 161 bushels. Washington County growers averaged 179 bushels per acre. The differences in yield can be largely attributed to the factors shown in the analysis of yield presented above. The importance of good yields as a factor of success is demonstrated also in other figures that are presently directed.

Some differences occurred in the amount of man-labor required to produce an acre of peaches. The farmers in the Box Elder-Weber area and in Utah County spent 144 and 139 hours per acre, respec-

tively, while the growers in Washington County averaged 182 hours per acre. Major difference occurred in only a few operations. Washington County growers spent more time irrigating, picking, and marketing. The orchards were irrigated on an average of 8 to 10 times more. Nearly all the fruit that was prepared for out-of-state shipment was graded, sized, and packed. These operations were performed by the producer or at his expense and direction and largely account for the increased time spent in picking and marketing.

The cost per hour for man-labor was about the same in the Box Elder-Weber area and Utah County, averaging \$.87 and \$.90, respectively. The average hourly wage paid in Washington County was \$.72. In the latter case, there were fewer alternative opportunities available for labor and a larger portion of the crop was picked by Mexican nationals. The wage rate established by the county farm labor committee was \$.65 per hour in that county.

The average receipts per bushel did not vary greatly. The Box Elder-Weber area and Utah County were about the same at \$1.70 and \$1.72, respectively. The average receipts per bushel in Washington County were \$1.84. Washington County producers peddled 37 percent of their fruit for an average price of \$2.06. Most of the peddling was carried on south of Utah County and the earlier fruit seemed to have a market advantage over the later crops in central and northern Utah.

The cost per bushel reflects noticeably the effect of variations in yield. Costs per acre were practically the same for the three areas but the differences in yields as discussed above result in per bushel costs of \$1.49, \$1.59, and \$1.86 for the Box Elder-Weber area, Washington County, and Utah County, respectively.

The effect of yields together with some variations in receipts resulted in a range in net returns per bushel of from \$.26 to -\$1.14 for Washington and Utah Counties, respectively. The Box Elder-Weber area had a net return of \$.21 per bushel. Reflected in the net return also, which cause part of the variation, are higher wage rates, higher land values, higher interest costs, and higher depreciation charges in Utah County than in either of the other areas.

As among the three areas studied, there was little significant difference in profitableness between Washington County and the Box Elder-Weber area. The difference between these two areas and Utah County in 1947 was rather marked.

The methods of sales present some interesting inter-area comparisons. In Washington County, 41 percent of the fruit included in the study was shipped in carlots to out-of-state markets. Practically all of this was shipped by the Washington County Fruit

Growers' Association. About 17 percent of the fruit was sold to truckers who trucked outside the production area. Approximately 37 percent of the fruit was peddled into areas adjacent to Washington County by the producers. While 37 percent of the fruit was peddled, about 50 percent of the producers did some peddling and about 16 percent sold all of their fruit by peddling. About 5 percent of the fruit was sold to consumers at the orchard. Only 13 percent of the growers operated roadside stands.

In the Box Elder-Weber area 25 percent of the fruit was shipped in carlots to out-of-state markets. About 85 percent of this quantity was handled by producers' marketing associations and the balance by produce dealers. About 28 percent of the fruit was sold to canners, 30 percent to truckers, 12 percent was peddled by the producers, and 5 percent was sold at the orchard to consumers.

In Utah County 64 percent of the fruit sold was shipped in carlots to out-of-state markets. This was all handled by producers' marketing cooperatives. About 3 percent was sold to canners, 4 percent to truckers, 25 percent by producers peddling, and 4 percent at the orchard to final consumers.

CONCLUSIONS

1. Of the 103 farms included in the survey, the average farmer made only a moderate net return of \$14 per acre in 1947. With the wide variation in the many factors that go into the production of peaches, it can be understood that many farmers received only a negative net return for their year's efforts after a wage for labor and management had been allowed. It should be borne in mind also that the 1947 crop was approximately 27 percent above the ten-year average, 1937 to 1946. Had yields been only equal to the 10-year average, with an average price per bushel of \$1.74, the average price of the 1947 crop, the net return to the average grower included in this study would have been about -\$50 per acre. Assuming only the ten-year average yield for 1947 and allowing payment of all costs except the operator and family labor, there would have been a return to the operator and his family of about 29 cents per hour for the time spent.

2. The study indicates that several important market channels exist for the peach crop and that they all bear a significant relationship to the industry. Producers in 1947 disposed of their crop through carlot shipments to out-of-state markets, through sale to truckers, through house-to-house peddling to the final consumer, through sale to canners for processing, and through sale to consumers at the orchard. In 1947 the sale to the consumer was in general

somewhat superior to the out-of-state market so far as price per bushel was considered. The producers' associations were primarily interested in out-of-state shipment, and their efforts together with those of the processors relieved the pressure of local production on the home market and made possible the sale of peaches to the local consumer at a comparatively better rate to the producer.

3. A small percentage of the peaches shipped out of the state was packed in lugs and crates on an experimental basis. While the cost was greatly increased because of smaller containers, the receipts for the fruit were more than proportionally increased so that a greater net return resulted. Only the best quality fruit was packed in lugs and crates to yield the greater return; however, while the amount sold in the smaller containers was not large enough for conclusive results, it was sufficient to suggest that increased investigation is warranted.

4. The more detailed analysis made of several of the factors bearing upon the success of the peach enterprise suggests the great importance of yield per acre. Man-labor was directly associated with yield; cost and net returns were likewise closely associated with yield. The marked dependency of success upon the yield suggests that the producer will find it profitable to seek out and adopt all known and proved good cultural practices in his orchard.

5. The consistency of the relationship between yield per acre and hours of man-labor would suggest that any consideration of labor requirements in peach production should be thought of in terms of a given level of production. The labor requirements for this study were 150 hours per acre when yield was 177 bushels per acre. The extent to which the extra hours of man-labor resulted in better yield per acre or the expenditure of more labor was necessitated by extra yields is not known. Greater efficiency in the use of labor did occur where high yields existed.

6. The level of cost will change in the future with economic conditions, but the composition of the cost of producing peaches will remain relatively the same until the methods of production have changed. The ratios of cost items to total cost were 17 percent material, 29 percent overhead, 43 percent labor, and 11 percent power cost.

7. The importance of and the necessity for efficiency of production has been noted several times in the above discussion. The extreme variations in cost were chiefly the difference in economic success or failure since the variations in the price were less pronounced.

Every effort should be directed to keeping costs at a minimum consistent with adequately performing the necessary functions. Since labor costs constitute 43 percent of all costs, the efficiency of labor and the effectiveness of management in using labor are major considerations on which profitableness in peach production depends.

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