SAN JOAQUIN
COUNTY
1947

SECOND ANNUAL ALMOND COST STUDY

COMPILED BY

AGRICULTURAL EXTENSION SERVICE

UNIVERSITY OF CALIFORNIA

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INTRODUCTION

Almond production in California has increased rapidly in recent years, as will be noted in the accompanying chart. This can be attributed mainly to a combination of the following three factors: (1) Increased bearing acreage. In the 5 years 1942-47, bearing acreage increased from about 79,500 acres to approximately 94,700 acres, or nearly 20 per cent. (2) Increased yield per acre due to improved cultural care of orchards by growers because of higher prices. (3) Plantings now coming into production are on better land with higher average productive capacity. In addition to these three factors, weather conditions in recent years have probably averaged on the more favorable side.

In 1946 production reached almost 38,000 tons. The largest prewar crop was only 21,600 tons in 1939. The average yield per bearing acre in 1947 was practically the same as in 1945. With more bearing acres in 1947, however, the size of the crop was 2,000 tons higher than in 1945. Average annual production for the 6 years 1942-47 inclusive, was approximately 26,000 tons, which was almost double the 13,700 tons average for the preceding 6-year period, 1936-41.

It is expected that the trend in California almond production will continue upwards for at least the next few years with crops probably even larger than in 1946 because of the non-bearing acreage which is due to come into production and the young bearing trees that have not reached full bearing capacity. Prices received by growers for almonds have tended to vary from year to year according to total production. As will be noted in the chart, when production was up, prices generally were down and vice-versa. During the war these prices reached the highest level on record even though total production was considerably higher. In the years immediately prior to World War 11, grower prices ranged between 10 cents and 20 cents per pound except for the extremely short 1941 crop. Since 1941 they have fluctuated between 21 cents and 37 cents. The average price received by growers for their large 1946 crop was approximately 24 cents per pound, or only about two-thirds the average price of the three previous years. The 1947 average price was only about 28 cents, even though the size of the crop was down nearly to that of the 1945 level.

Grower average prices for almonds in the next few years will depend largely upon such factors as size of crop, consumer purchasing power, imports, and competition with other nuts. It is probable that they will average somewhat lower than during the war years. Costs of production on the other hand are not likely to decrease as rapidly as almond prices in the process of postwar adjustments. Therefore, it is entirely possible that net earnings from almonds could be reduced substantially. Efficient growers will be able to get through such adjustments that might take place, but others may find themselves in financial difficulties. Every wise grower will endeavor to thoroughly analyze his individual situation and make adjustments in management practices or otherwise, which will put him in the best possible position to weather any adverse economic conditions.

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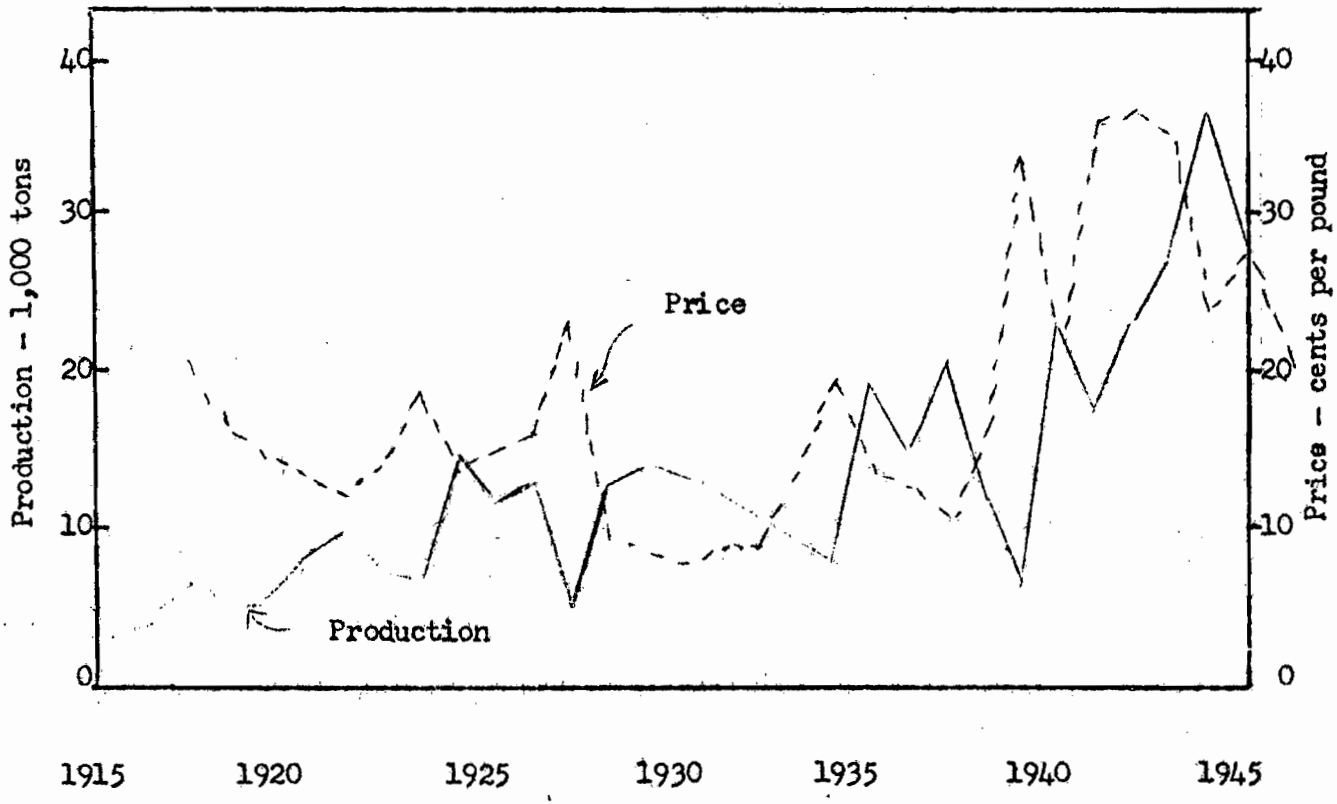
PRODUCTION AND FARM PRICE OF CALIFORNIA ALMONDS



EXPLANATION OF TERMS USED

Yields are given in terms of pounds of hulled unshelled nuts. All meats and sticktights have been converted to this basis.

Total income is the returns received for nuts after hulling. Most of the cooperators in the study were members of the California Almond Growers' Exchange. Income for Exchange members is based upon tentative closing statements as of March 20, 1947.

Labor cost is composed of the cost of hired labor, the value of the operator's own labor, and the value or cost of field power equipment. Field power equipment, where owned by the operator, is charged at hourly rates calculated to cover operating cost as well as interest and depreciation overhead. Such rates were considerably below the going rates charged for contract work.

Cultural labor includes costs of all operations up to harvesting.

Harvest labor covers knocking, picking, hauling out of orchard to huller, hulling and hauling to first delivery point.

Material cost takes in all items such as water, cover crop seed, fertilizer, spray material, and oil for heating.

Cash overhead cost includes all cash expenditures not reported under labor or material costs. The general expense item is computed at 5 per cent of total cultural labor and material costs and is included to cover miscellaneous unreported costs, such as interest on operating capital, office, telephone, and use of family car in conjunction with the enterprise.

Depreciation is that part of the original cost of trees, improvements, and equipment which should be charged to each year of operation, in order to absorb the cost of such facilities during their period of usefulness.

Interest on investment is computed at 5 per cent on one-half of the original cost of trees, improvements, and equipment which is their average value during their useful life. The normal agricultural land values are used in this study in calculating 5 per cent interest on investment overhead. Such values are considerably below present prices being paid.

Total cost of production includes all of the above items.

Management income is the amount by which total income exceeds total cost of production as indicated above. It represents the operator's income for management after he has paid himself wages for the manual labor which he performed and a normal return on his invested capital. If total income is insufficient to meet total cost, the loss is shown by a minus (-) sign preceding the amount.

TABLE 1 - GENERAL SUMMARY OF COSTS, INCOME AND EARNINGS PER ACRE - INDIVIDUAL ORCHARDS - 1947

Serial No.	No. of acres	Yield pounds per acre	Av. price per lb.	Total income per acre	Cultural labor cost per A.	Harvest labor cost per A.	Material cost per acre	Cash over-head per A.	Depre-ciation cost per A.	Inter-est cost per A.	Total costs per A.	Manage-ment income per acre
8	43.0	2798	27.2	759.82	24.49	137.87	33.76	23.75	27.91	30.39	278.17	481.65
9	42.0	1675	25.5	427.28	19.70	32.88	12.27	11.30	17.03	29.30	122.48	304.80
10	14.0	1555	26.6	414.02	25.57	85.00	25.76	13.50	21.05	29.63	200.51	213.51
5	52.0	1426	26.3	374.52	41.42	51.95	23.62	18.87	29.96	34.58	200.35	174.17
4	4.0	1186	25.8	305.71	42.43	93.96	24.88	16.21	17.81	21.42	216.71	89.00
7	25.3	843	27.2	229.34	30.92	32.66	27.63	20.63	22.44	32.10	166.38	62.96
11	50.0	545	28.4	154.67	32.17	33.15	18.91	13.41	14.65	28.87	141.16	13.51
Av. 1947	230.3	1476	26.7	393.61	30.19	61.06	23.01	17.03	22.32	30.78	184.39	209.22
Av. 1946	224.55	2469	24.6	607.65	35.34	116.07	28.02	23.25	20.07	24.86	247.61	360.04

Discussion of Table 1. The main profit-determining factors for individuals in the 1947 study are compared in table 1. Records are arranged downward in order of decreasing management income per acre, as shown in the extreme right column of the table. A comparison of the various profit factors for individual orchards in the study will indicate why some orchards were considerably more profitable than others. As in the 1946 study, yield is by far the most important single factor. A comparison of yield and management income for each orchard shows that in each case a high management income is accompanied by high yields.

With a yield of 2798 pounds per acre, orchard No. 8 is outstanding. No. 9 shows exceptionally low total costs per acre of $122.48. The harvest labor costs of necessity vary with the yield, but this factor is subject to more variations between orchards than any other single factor. Orchard No. 9 is outstanding in this respect with harvest costs of $32.88 per acre with a yield of 1675 pounds per acre.

TABLE 2 - YIELD, COSTS, INCOME AND EARNINGS PER HUNDREDWEIGHT - 1947

Serial No.	Av. age of trees	Av. yield lbs. per A.	Harvesting labor costs per cwt.				Cultural labor costs	Total material costs	Cash overhead costs	Depreciation cost	Interest cost	Total all costs	Av. price	Management income
			Knock, pick haul out	Hulling	Haul to market	Total								
8	12	2798	2.12	2.71	.10	4.93	.87	1.21	.85	1.00	1.08	9.94	27.16	17.22
9	7	1675	1.28	.64	.04	1.96	1.18	.73	.67	1.02	1.75	7.31	25.51	18.20
10	9	1555	2.34	3.13	-	5.47	1.64	1.66	.87	1.35	1.90	12.89	26.62	13.73
5	8	1426	2.66	.93	.05	3.64	2.91	1.66	1.32	2.10	2.42	14.05	26.26	12.21
4	9	1186	5.02	2.66	.24	7.92	3.58	2.10	1.37	1.50	1.80	18.27	25.77	7.50
7	9	843	1.88	1.90	.09	3.87	3.67	3.28	2.44	2.66	3.81	19.73	27.20	7.47
11	10	545	3.99	2.09	-	6.08	5.90	3.47	2.45	2.69	5.29	25.88	28.36	2.48
Av.1947	9	1476	2.25	1.82	.06	4.13	2.05	1.56	1.15	1.51	2.09	12.49	26.66	14.17
Av.1946	12	2469	2.72	1.85	.13	4.70	1.43	1.14	.94	.81	1.01	10.03	24.61	14.58

Discussion of Table 2. Table 2 presents an analysis of costs on a per hundredweight basis for orchards in the study in 1947. Records are arranged in the same order as in the preceding table with averages for all records shown at the bottom. Averages of the 1946 study are included at the bottom of the table for comparison. Noticeable is the increase in costs per hundredweight in 1947 for all costs except harvest labor costs. A comparison of the two years must take into consideration the smaller average yield per acre in 1947. In general, the orchards with higher yields show lower costs per hundredweight for harvest labor costs. This is to be expected as many of the same operations are performed, and the same ground must be covered regardless of the size of crop. A look at the Total of all costs on a hundredweight basis for the different orchards, show that they vary with the yield. This again emphasizes the value of high yields as is shown by the management income. Hulling costs are based upon adjusted yield figures in which sticktights and meats were converted to an unshelled basis.

TABLE 3 - YIELD AND GROSS INCOME PER ACRE OF PRINCIPAL VARIETIES - INDIVIDUAL ORCHARDS - 1947

Serial No.	Nonpareil		IXL		NePlus		Peerless		Drake		Mission		Average all #	
	Yield lbs.per acre	Gross income per A.	Yield lbs.per acre	Gross income per A.	Yield lbs.per acre	Gross income per A.	Yield lbs.per acre	Gross income per A.	Yield lbs.per acre	Gross income per A.	Yield lbs.per acre	Gross income per A.	Yield lbs.per acre	Gross income per A.
8	2600	912.41	———	———	2220	689.41	2618	512.04	———	———	3287	767.84	2798	759.82
9	1092	367.59	———	———	———	———	2481	434.15	———	———	1932	463.86	1675	427.28
10	1263	424.04	———	———	———	———	1634	333.94	———	———	1800	424.77	1555	414.02
5	979	337.67	———	———	———	———	———	———	———	———	1873	411.36	1426	374.52
4	705	223.59	———	———	———	———	———	———	———	———	1600	376.38	1186	305.71
7	558	193.58	———	———	———	———	———	———	———	———	1131	265.38	843	229.34
11	433	145.00	———	———	———	———	———	———	———	———	796	175.71	545	154.67
Av. 1947	946	324.28			2220	689.41	2419	456.94			1859	429.35	1476	393.61
Av. 1946	2157	661.04			2146	525.68	2714	534.02	3036	537.70	2857	565.00	2469	607.65

Discussion of Table 3. In table 3 the important varieties in the orchards are compared as to yield per acre and gross income. A few minor varieties in some of the orchards are not shown in the table but are included in the averages of all varieties in the right hand columns.

Mission and Nonpareil are the two principle varieties in the Study. The average yield per acre of Mission was almost double the yield of Nonpareil. Noticeable is the comparatively low yield of Nonpareil in the four orchards that do not have early blooming varieties. In most years the presence of early blooming varieties materially increases the pollination of Nonpareil. Texas variety alone does not offer adequate pollination for Nonpareil in these years, although Nonpareil seems to be adequate for pollinizing the Texas. This is indicated by the higher yields of Nonpareil in the three orchards with the early blooming NePlus or peerless varieties. It would seem logical to assume that the last four orchards would benefit from the introduction of an early blooming variety for pollinization.

TABLE 4 - CULTURAL COSTS PER ACRE INDIVIDUAL ORCHARDS, 1947

Serial No.	Pruning	Brush disposal	Cover crop		Fertilizing		Spray & Dust		Cultivation & irrig. prep.	Irrigation		Frost protection		Total cultural, labor & material
			Labor cost	Seed	Labor	Fertilizer	Labor	Material		Application	Water	Labor	Material	
8	6.98	2.67	-	-	.81	14.72	2.58	10.25	8.49	2.33	6.46	.63	-	58.25
9	3.80	4.50	.43	.59	1.20	4.71	.41	2.11	5.29	4.07	4.80	-	-	31.97
10	6.57	2.36	-	.54	.79	10.71	1.07	4.64	9.93	2.71	6.88	-	-	51.33
5	14.75	8.23	-	-	.72	10.19	1.38	7.41	11.07	Sub	5.60	-	-	65.04
4	6.00	2.50	1.55	5.50	.77	10.00	6.16	3.00	10.45	15.00	6.38	-	-	67.31
7	8.18	3.48	-	-	2.02	16.50	2.06	3.53	11.49	1.74	5.85	-	-	58.55
11	4.04	1.26	.73	.68	.29	6.60	7.56	3.77	6.51	7.46	6.85	-	-	51.08
Av.	7.60	4.02	.63	.80	.88	9.98	2.91	5.51	8.57	4.59	6.01	.63		53.20
Av.1946	9.08	4.63	.74	1.94	.75	13.71	4.43	7.43	6.03	6.32	6.17	3.97	1.49	63.36

Discussion of Table 4. Table 4 is presented mainly for use by individual cooperators in comparing their cultural operations and costs with others in the study. The wide variations between orchards indicate that possible adjustments might be made by some operators, which would decrease their costs per acre without sacrificing yield and quality of nuts. With a view towards possible lower prices for almonds in the next few years, it is suggested that almond growers carefully scrutinize their management practices. Finding ways and means of reducing costs here and there a little will help to relieve some of the squeeze on net earnings, which is likely to occur. Averages shown at the bottom of the table are based upon the acreage reporting such costs. The average total labor and material costs shown in the extreme right column are less than the sum of the various item averages since all costs did not apply to all orchards. Total labor and material costs include some miscellaneous cultural costs not indicated in the table of note, is the fact that variations in total cultural labor and material costs between the different orchards are not sufficient to account for the differences in management income. The 1946 averages are listed at the bottom of the table for comparison.

TABLE 5 - CASH OVERHEAD AND DEPRECIATION COSTS PER ACRE, INDIVIDUAL ORCHARDS - 1947

Serial No.	Cash overhead costs per acre					Depreciation costs per acre							
	General expense	County taxes	Repairs	Insurance & Misc.	Total	Trees	Gen. improvements	Irrigation system	Tillage equipment	Spraying equip.	Frost equipment	Harvesting	Other equipment	Total
8	9.80	5.57	4.65	3.73	23.75	10.00	.87	1.59	2.82	3.95	5.85	.50	2.33	27.91
9	3.24	4.95	1.19	1.92	11.30	10.00	.29	-	.47	1.57	-	2.56	2.14	17.03
10	6.82	4.00	1.34	1.34	13.50	10.00	.46	-	1.25	4.23	-	4.82	.29	21.05
5	5.85	5.94	4.81	2.27	18.87	10.00	.80	.03	.87	3.85	6.77	1.79	5.85	29.96
4	8.06	4.52	2.50	1.13	16.21	10.00	.33	3.83	.73	2.25	-	.50	.17	17.81
7	4.56	8.64	6.44	.99	20.63	10.00	-	2.58	2.70	2.56	-	.73	3.87	22.44
11	4.21	5.13	2.00	2.07	13.41	10.00	1.10	-	.81	1.20	-	.74	.80	14.65
Av.	5.71	5.67	3.44	2.21	17.03	10.00	.75	1.21	1.37	2.73	6.35	1.51	2.77	22.32
Av.1946	8.97	5.79	5.36	3.13	23.25	10.00	.92	2.23	.68	2.42	5.19	1.10	2.26	20.07

Discussion of Table 5. Cash overhead costs and depreciation costs per acre are analyzed in table 5 for the orchards in this year's study. Cash overhead costs include all cash costs not reported under labor and materials. The general expense item is defined under explanation of terms in the first part of the report. Tree values were assumed to be the same for all orchards in the study. Depreciation costs of $10 per acre were based upon $300 as the original cost of bringing the trees into bearing and a productive life thereafter of 30 years. Depreciation of other improvements and facilities was based upon the original cost of these items and expected length of life. It should be pointed out that a good many of these costs were based upon prewar valuations, and therefore, are much lower than what would be expected if similar equipment were purchased today. Averages at the bottom of the table are based upon the acreage reporting costs for the various items. Average total costs are less than the sum of the individual items since all orchards were not involved in all classifications.

TABLE 6 - INVESTMENTS PER ACRE FOR INDIVIDUAL ORCHARDS - 1947

Serial No.	Trees	General improve-ment	Irrigation system	Tillage equip-ment	Spray-ing equip.	Frost equip-ment	Harvest-ing equip.	Misc. equip-ment	Land	Total except field power	Field power equip-ment	Grand total invest-ment
8	150.00	17.44	31.69	14.10	19.77	61.22	2.01	11.63	300.00	607.86	49.41	657.27
9	150.00	5.71	-	2.35	7.86	-	3.36	16.84	400.00	586.12	19.02	605.14
10	150.00	4.64		8.17	21.14	-	7.14	1.43	400.00	592.52	27.00	619.52
5	150.00	12.50	.48	3.85	19.23	63.19	4.74	36.53	400.00	690.52	52.40	742.92
4	150.00	4.17	57.50	3.23	11.25	-	1.50	.83	200.00	428.48	13.74	442.22
7	150.00	-	38.62	19.71	19.22	-	4.19	10.32	400.00	642.06	36.05	678.11
11	150.00	16.56	-	4.21	3.00	-	1.77	1.95	400.00	577.49	6.25	583.74
Av.	150.00	12.44	20.87	7.56	13.71	62.30	3.36	15.15	337.85	615.67	31.72	647.39
Av.1946	150.00	13.69	33.38	3.85	13.84	43.96	3.84	13.54	274.69	497.15	36.41	533.56

Discussion of Table 6. Table 6 shows average investment figures for the principal classifications of improvements and equipment for orchards in this year's study. Averages at the bottom of the table are the same as in preceding tables. Average value except for land are based upon one-half of the original cost. Such values are maintained from year to year regardless of age of the improvements and equipment. This method of showing valuations is used as a basis of calculating interest on investments at 5 per cent, so that no one crop year will be charged a larger interest cost then another. Land values used in this study for purposes of calculating an interest charge are grower's estimated normal agricultural values for such land based upon alternative uses. It is, therefore, obvious from the above that the valuation indicated in this table do not indicate the amount of capital required to go into almond production under present day conditions. Total investment for the averages at the bottom of the table are less than the sum of the various items since all orchards did not have investments in all items listed.