Cooperative Extension
University of California
Riverside, California

Donald O. Rosedale
Area Farm Advisor
October, 1977

AVOCADO PRODUCTION DATA

Avocado acreage reported in 1976 for Riverside County by the County Department of Agriculture shows a total of 3,714 planted acres. It is significant that about two-thirds of that is young trees, not yet in production. Total bearing acreage was 1,232 and non-bearing 2,482. In addition, considerable new acreage has been planted in Riverside County during 1977 that is not yet included in published reports. This expansion represents an important change in avocado production in this area. Table 3 shows that about one-third of the total California avocado acreage is non-bearing.

Avocado plantings in neighboring San Diego County have continued to increase. Interest has been shown also in warmer locations in San Bernardino County, where orange production has declined.

This leaflet is compiled to provide the most recent information frequently requested by those interested in avocado orchard development.

H. Leonard Francis, formerly Farm Advisor in Riverside County, published Avocado Economics: An Evaluation, in September, 1976. The sample cost data from that leaflet is included here.

Another publication, Economic Trends in the California Avocado Industry by Robert C. Rock and Robert G. Platt, University of California, is also out of print. The statement on Industry Highlights and data from selected tables are included here.

INDUSTRY HIGHLIGHTS

The California avocado industry is now in its second expansion period since World War II. Improved returns in the 1940's led growers to expand total acreage by almost 50 percent during 1945 to 1959. The resultant larger crops during the late 1950's and early 1960's brought depressed markets and a low level of new plantings during the early and mid-1960's. For the last twelve years total state bearing acreage has remained close to the 19,500-acre level, and annual production, while varying widely from year to year, has averaged around the 100-million-pound level.

Since the early 1960's grower returns have increased as a result of improved marketing procedures and strategies by growers and handlers, the extensive trade promotion program operating under a state marketing order, and a more favorable supply and demand relationship in the industry. Currently the rate of new planting is increasing, and higher levels of acreage and production are projected for the remainder of the 1970's. Projections also indicate a changing varietal composition in the crop in the years ahead. The trend is toward increased acreage of the Hass variety relative to the Fuerte variety and proportionately larger spring, summer, and fall crops than in the past years.

During this period of growth the industry should be alert to the opportunities of orderly growth as well as to the dangers of excessive expansion. Excessive expansion, particularly in certain varietal groups, could lead to marketing problems and lower grower returns.

Because of the difficulty of measuring the extent and the effect of the current expansion upon markets, growers should continually evaluate and revise their plans based on information as it becomes available. The rate of expansion of the industry and its effect on future grower returns will be largely determined by the following factors: 1) the loss of existing avocado acreage in California resulting from root rot infection and the encroachment of urban land uses; 2) the availability of land with suitable soil, climate, and water for new plantings and the high cost of orchard development; 3) the ability of growers and handlers to market the crop orderly; 4) the success of the industry promotion program in creating demand in line with expanded production; and 5) the expansion of avocado production in other competing areas both domestic and foreign and changes of movement of avocados in foreign trade.

5/74

SAMPLE COST ANALYSIS

Orchard development and production costs for Riverside County - 1976

This manuscript is aimed at the person who is interested not only in growing avocados, but also in making money while he is doing it. I'm going to point out some facts and figures for you, do a little explaining, and generally tell you that it's not going to be easy. There are 38,659 acres of avocados in California in 1976, 12,954 of which are non-bearing. This represents a 50% increase in producing acreage in the next four years with about 1,000 acres being planted each year during this period. The purpose for this paper is not based on how much money you'll make in growing avocados, but on how much you'll have to make to stay in business.

Recognizing that there is significant variation in costs and yields between avocado orchards in different areas and also between orchards of different varieties, let me illustrate the cost of developing and operating an avocado orchard in Western Riverside County.

For starting figures, a five year old grove has an investment value of $14,441 per acre. This represents money spent, plus money that could have been earned if initial money was invested elsewhere at 9%.

The second figure is that you have a total annual cost for a mature grove of $2,612 per acre. This includes a 9% return on investment, plus a charge for grower's labor. The $2,612 represents what total costs would be if all work was done by someone else, or the grower received $4.00 per hour for his labor. Grower's labor must be considered, because he could work for someone else and receive at least this wage for his time. You shouldn't discount your time. If we can show returns equalling the $2,612 per acre, we will be covering all cash costs, plus allowing for depreciation of equipment (this will need to be replaced someday and this charge will cover replacement), plus you will receive a 9% return on all the money you've invested. Most farmers feel a 5% return will keep them in business; however, many businessmen expect a higher rate of return. If the money to develop and operate the farm was borrowed, this 9% represents the interest you would be paying on the loan. If the interest charge is higher than 9% you will have to adjust or strive to match your returns accordingly.

DEVELOPMENT COSTS (Refer to Table 1)

Virtually all of the acreage that is being developed is on moderate to steep slopes. The cost of labor and equipment on this terrain is between 25-50% higher than it would be for flat ground. Soil on hillsides is usually shallow. Ripping the soil 3-4 feet deep improves the potential rooting and maximum growth of the trees but definitely increases the cost of development.

The Labor and Field Power includes the following: land preparation, (clearing, ripping, floating and service roads), orchard layout, planting (holes and protectors), irrigation, fertilization, weed control (hoe,mow and spray), mulching (wood chips), tree care and pruning, pest control (gophers, rabbits, squirrels, etc) and erosion control. Erosion control must be emphasized on hillsides.

Total first year's Labor and Power costs..... $885

TABLE I. SAMPLE COSTS TO DEVELOP AN AVOCADO ORCHARD

	DOLLARS PER ACRE				
Labor and Field Power	1st Year	2nd Year	3rd Year*	4th Year	5th Year*
Land Preparation	$ 325	$ -	$ -	$ -	$ -
Orchard Layout	20	-	-	-	-
Plant (dig, plant, mulch & wrap)	230	20	10	10	-
Irrigation (drip)	100	80	120	100	120
Fertilization	20	20	20	25	30
Weed control (hoe, oil, & herbicide)	90	90	80	80	60
Pest control	20	20	20	20	20
Tree care (pruning, tying, staking)	50	50	50	50	50
Erosion control, road surfacing	30	30	30	30	30
(1) Total Labor and Power	885	310	330	315	310
Materials					
Trees (110 trees an acre)	715	30	6	6	-
Mulch (around trees and for erosion)	40	15	10	10	-
Tree protectors	10	-	-	-	-
Water	25	50	75	100	140
Fertilizer & leaf analysis	20	25	30	30	40
Weed oil and herbicides	20	15	15	12	10
Pest control	6	6	6	6	6
Supplies (stakes, Irrigation parts)	20	30	70	30	70
(2) Total Materials	856	171	212	194	266
(3) Total Cash Cultural	1741	481	542	509	576
Cash Overhead					
General Expense (insurance,office,dues,etc.)	80	21	22	26	29
Management charge, variable($5/acre/mo.)	60	60	60	60	60
Taxes	75	75	75	100	115
Maintenance & repair	20	20	20	20	20
(4) Total Cash Overhaed	235	176	177	206	224
(5) Total Pre-Harvest Cash Costs	1976	657	719	715	800
(6) Less Fruit Credits			175	400	750
(7) Net Cash Costs	1976	657	534	315	50
(8) Accumulated Net Cash Costs	1976	2633	3167	3482	3532
Investment Costs					
Depreciation	130	130	130	130	130
Interest on investment	724	801	932	1064	1188
(9) Total Non-Cash Costs	854	931	1062	1194	1318
(10) Total Net All Costs	2830	588	1596	1509	1368
(11) Accumulated Total Net Costs	2830	4418	6014	7523	8891
INVESTMENT VALUE AT END OF YEAR					
Land @ $5000/acre	5000	5000	5000	5000	5000
Trees	2830	4418	6014	7523	8891
Drip irrigation system ($650)					
Equipment & buildings ($550)					
After depreciation 1200	1070	940	810	680	550
(12) Total Investment Value	8900	10,358	11,824	13,203	14,441

* Extra emitters added to Drip system

Materials for the first year include trees at $6.50 per tree(includes tax and delivery), water, mulching materials, fertilizer, pest control, chemicals and traps, tree wraps, weed oil, and miscellaneous parts and supplies. The largest item in the first year, of course, is the purchase of 110 trees.

Total Materials for the first year..... $ 856

The Cash Overhead includes general expense items (postage, telephone, insurance, magazines, etc), management charge (a fee paid to a grove manageer supervising the development of a grove for a grower), taxes, and maintenance and repair.

Total Cash Overhead for the first year..... $ 235

Total Pre-Harvest costs per acre the first year..... $1976

The Investment Cost includes depreciation (irrigation system,buildings and equipment.)..... $ 130

Interest on Investment (land, trees, cultural costs added to the value of trees, buildings, and equipment)..... $ 724

Total Investment cost..... $ 854

Total Net All Costs $2,830

This $2,830 is your cost when you charge only interest on investment;$ 724 is what you could have made if you had invested in savings bonds or other securities that you could readily sell or withdraw from a savings account.

What really needs to be considered is that you actually spent $9,030 per acre that first year. In addition to cultural costs, there is a capital outlay of $5,000 per acre for land and $1,200 per acre for the irrigation system, buildings, and equipment.

Your total Investment Value at the end of the first year(including labor and field power, materials, overhead cost, land, trees, irrigation system, buildings, and equipment) is $8,900;for the second year,$10,358; $11,824 at the end of the third year;$13,203 at the end of the fourth year; and at the end of the fifth year, a total of $14,441. This is the figure after allowing for fruit credit. Fruit credit can vary greatly depending on yield or young trees.

ANNUAL COSTS

After seeing how we got $14,441 investment value, you now have a pretty good idea as to how easy it is to spend $2612/acre/year to grow the trees. Table 2 reviews the Annual Costs.

TABLE 2. SAMPLE COST OF PRODUCTION

	Labor and Equipment	Material	Total
Cultural Operations			
Fertilizer-2 times(Nitrogen and Zinc)....	$ 40	$ 60	$ 100
Irrigation-3 times per week(water 2.5 acre ft @ $85).....	100	213	313
Pest control-ants,gophers,snails..... .....Bait,poisons,predators.....	25	25	50
Weed control-spot spraying and mowing(oil)	75	10	85
Pruning (Skirt,deadwood)and orchard thinning(tree removal 10-15th yr. @ $20/tree), chain saw and brush disposal.....	85	10	95
Misc. tree care, erosion control supplies, tree stakes (Supplies and tools).....	65	20	85
Total Cultural Costs.....	390	338	728
Overhead costs			
Taxes.....			150
Maintenance and repairs.....			80
General expenses.....			100
Management charge, variable($7/acre/mo.).....			84
Total Cash Overhead Costs.....			414
Total Pre-Harvest Cash Costs.....			1142
Investment Overhead			
Depreciation (see Investment Schedule below).....			569
Total Cash Cost Plus Depreciation.....			1711
Interest on investment (9% of land value +½ cost of depreciable items).....			901
Total Pre-Harvest Cost.....			2612

Investment Schedule

Item	Expected Life	Investment per Acre	Depreciation Per Acre
Trees (110/acre)	20 years	$ 8891	$ 445
Irrigation System	10 years	650	65
Pickup	5 years	125	25
Buildings	20 years	50	3
Weed sprayer,mower,handtools	10 years	310	31
			569
Total Depreciable Items		$10,026	
Plus Land		5,000	
Total Investment		$15,026	

Source: Compilation of data from farmers, farm managers, and other counties' cost studies.

RETURNS

We now know how much we are going to spend. Let's find out if we're going to make anything. If we can make $2612/acre/year, we'll have received a fair returns on our investment and a moderate wage for our labor.

Yield varies considerably among orchards, and from year to year. Commercial orchards under favorable conditions produce more. The following chart illustrates variability in gross on-tree returns due to yield and price changes for all varieties.

On-Tree Price	YIELD PER ACRE Pounds/acre						
cents/lb	3,000	5,000	6,000	7,000	8,000	10,000	12,000
$ 0.10	$ 300	$ 500	$ 600	$ 700	$ 800	$ 1,000	$ 1,200
0.15	450	750	900	1,050	1,200	1,500	1,800
0.20	600	1,000	1,200	1,400	1,600	2,000	2,400
0.25	750	1,250	1,500	1,750	2,000	2,500	3,000
0.30	900	1,500	1,800	2,100	2,400	3,000	3,600
0.35	1,050	1,750	2,100	2,450	2,800	3,500	4,200

Ideally we need 10,400 lbs at 25¢/lb to cover a total cost of $2600. The 25¢/lb must represent the return to the grower and not include picking cost and marketing order assessment.

Fuerte will not fit into this 10,400 lbs/acre figure, but it is still considered to be a most excellent fruit and there is a good demand for it. Therefore, there will always be some acreage. It may demand a premium price someday as total Fuerte acreage continues to decline.

Varieties that can average close to 10,000 lbs/acre are Hass, Reed and Zutano. A good Fuerte is around 6,000 lbs/acre. To project how much your production will be we can use two sets of data; (1) check the State averages, and (2) interpolate according to known, good producing groves.

State average yields are shown in Tables 3 and 4, and average 5,553 pounds for all varieties over an eight-year period, 1965-66 to 1972-73. This is an average of all varieties in all areas.

Sample yield data for top-producing mature orchards are shown in Table 5.

From these data a wide variation in yield from year to year for all varieties is evident. For this reason, growers should think of yield in terms of average over several years. On this basis, average yields for Fuerte variety from selected high-yielding orchards are in the range of 5,000 to 9,000 lbs/acre. On the average, high-yielding Hass variety orchards yields range between 9,000 to 13,000 lbs/ acre.

Price Per Pound: This is strictly guess work. We do know that prices are better than ever. In 1971-72, we received an average price of 47.4 ¢/lb; an astounding figure! We know it can be obtained, 1970-71 was 18.5¢; 1969-70 was 33 ¢. Assuming future prices will average 25¢/lb. You are going to have to produce at least 10,000 lbs/acre to come close to your expenses. As the expenses listed are those for optimum maintenance, production should be reasonably good. But remember, 10,000 lbs/acre is very good production. At the costs suggested in this booklet, it will require an ideal grove to meet expenses and meet adequate investment returns.

Good Luck!

H. Leonard Francis, 9/24/76

TABLE 3. CALIFORNIA AVOCADO ACREAGE, PRODUCTION AND YIELD PER ACRE: 1955-56 to 1975-76

Crop year[1]	Acreage			Production	Yield per Bearing acre
	Bearing	Non-Bearing	Total	Total	
	ACRES	ACRES	ACRES	Millions of lbs.	lbs.
1955-56	18,036	5,127	23,163	40.0	2,218
1956-57	19,119	5,348	24,467	31.6	1,653
1957-58	19,794	5,439	25,233	92.6	4,678
1958-59	20,205	5,061	25,266	103.0	5,098
1959-60	21,301	4,754	26,055	140.0[2]	6,572
1960-61	20,045	4,378	24,423	71.0	3,542
1961-62	20,862	3,066	23,928	100.0	4,793
1962-63	21,194	2,628	23,822	80.0	3,775
1963-64	21,921	1,706	23,627	93.6	4,270
1964-65	21,574	1,224	22,798	48.0	2,225
1965-66	18,810	2,530	21,340	116.0	6,167
1966-67	18,620	3,060	21,680	149.0	8,002
1967-68	18,730	3,150	21,880	74.8	3,994
1968-69	19,220	4,300	23,520	122.2	6,358
1969-70	18,040	4,200	22,240	66.0	3,658
1970-71	18,380	4,560	22.940	134.0	7,291
1971-72	19,039	5,920	24,959	52.0	2,731
1972-73	19,611	6,285	25,896	140.8	7,180
1973-74	21,004	8,004	29,008	107.0	5,094
1974-75	23,842	12,096	35,938	208.8	8,682
1975-76[3]	24,882	14,692	39,574	116.0	4,662

1. The crop year starts November 1 of the first year shown and continues for a period of 12 months.
2. Includes 1,000 tons production of no value.
3. Preliminary

Source: Economic Trends in the California Avocado Industry, Cooperative Extension, University of California, AXT 279, 10/74, and Statistical Supplement, 1/75, 4/77.

TABLE 4. CALIFORNIA AVOCADOS: CROP VALUE, GROSS RETURNS PER POUND AND PER BEARING ACRE, 1955-56 TO 1974-75

Crop year	Returns at packinghouse door			Returns at packinghouse door after deduction of marketing order assessment [1]		
	Total crop value	Cents per pound	Dollars per bearing acre	Total crop value	Cents per pound	Dollars per bearing acre
	1,000 dollars	¢	$	1,000 dollars	¢	$
1955-56	8,280	20.7	459			
1956-57	6,952	22.0	364			
1957-58	9,028	9.7	456			
1958-59	8,652	8.4	428			
1959-60	7,659	5.5	360			
1960-61	9,940	14.0	496			
1961-62	10,700	10.7	513	10,165[1]	10.2	487
1962-63	10,720	13.4	506	10,184	12.7	480
1963-64	12,121	12.9	553	11,515	12.3	525
1964-65	12,480	26.0	578	11,856	24.7	550
1965-66	15,196	13.1	808	14,436	12.4	767
1966-67	15,049	10.1	808	14,297	9.6	768
1967-68	17,204	23.0	919	16,344	21.8	873
1968-69	18,330	15.0	954	17,505	14.3	911
1969-70	21,648	32.8	1,200	20,674	31.3	1,146
1970-71	24,790	18.5	1,349	23,575	17.6	1,283
1971-72	24,752	47.6	1,300	23,539	45.3	1,227
1972-73	38,150	27.1	1,945	36,281	25.8	1,850
1973-74	44,405	41.5	2,114	42,229	39.5	2,010
1974-75	48,500	23.4	2,111	46,123	22.3	2,007
1975-76	55,000	47.4	2,140	52,415	45.2	2,106

1. State marketing order established California Avocado Advisory Board. First complete season of operation was 1961-62. Assessment rate has been 5% of value of fruit at roadside for years 1961-62 through 1967-68, 4.5% assessment for season 1968-69 through 1969-70 and 4.9% assessment for seasons 1970-71 (partial) to 1973-74.

Source: California Crop and Livestock Reporting Service, Sacramento.

Cooperative Extension work in Agriculture and Home Economics, Division of Agricultural Sciences, University of California, and United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8, and June 30, 1914. James B. Kendrick, Jr., Director, Cooperative Extension.

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10/77