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AVOCADO ECONOMICS: AN EVALUATION

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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 were 25,460 acres of avocados in California in 1972, 6,000 of which were non-bearing. This represents a 30% increase in producing acreage in the next four years with about 1,500 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 using sample cost data developed by the San Diego County Farm Advisors Office, Agricultural Extension, University of California.

For starting figures, a five-year-old grove has an investment value of *$9,207* per acre. This represents money spent, plus money that could have been earned if initial money were invested elsewhere at 7%.

The second figure is that you have a total annual cost for a mature grove of *$1,597* per acre. This includes a 7% return on investment, plus a charge for grower's labor. The $1,597 represents what total costs would be if all work was done by someone else, or the grower received $2.50 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 equaling the $1,597 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 7% 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 7% represents the interest you would be paying on the loan. If the interest charge is higher than 7%, you will have to adjust or strive to match your returns accordingly (at last report, it is as high as 9.5%). Before we see how the returns match up, I'll explain how the figures of $9,207 and $1,597 were derived.

Development Costs (Refer to Table 1)

The Labor and Field Power includes the following: land preparation, orchard layout,

planting (holes and protectors), irrigation, fertilization, weed control (hoe and spray), mulching (wood chips), tree care and pruning, pest control (gophers, rabbits, squirrels, etc.) and miscellaneous (repairs, erosion control).

Total first year's Labor and Power cost $457

TABLE 1. SAMPLE COSTS TO DEVELOP AN AVOCADO ORCHARD

	DOLLARS PER ACRE				
	1st Yr.	*2nd Yr.*	*3rd Yr.*	*4th Yr.*	*5th Yr.*
Labor and Field Power					
Land preparation (rip, disk, float)	$ 200	$ —	$ —	$ —	$ —
Orchard layout	20	—	—	—	—
Plant (dig, plant, mulch & wrap)	90	5	3	—	—
Irrigation (sprinkler)	80	80	80	80	80
Fertilization	2	3	3	7	7
Weed control (hoe, oil & herbicide)	35	25	20	15	15
Pest control	10	10	10	10	10
Tree care & pruning	5	5	5	5	10
Misc. (propping, erosion control, cover crop)	15	15	15	15	25
(1) Total Labor and Power	$ 457	$ 143	$ 136	$ 132	$ 147
Materials					
Trees (100 trees/acre @ $3.75 + tax)	$ 400	$ 20	$ —	$ —	$ —
Mulch	20	10	5	—	—
Tree protectors	10	—	—	—	—
Water	50	60	100	150	180
Fertilizer	3	5	8	10	15
Weed oil & herbicides	20	15	15	12	10
Pest control	4	4	5	5	5
Misc. (supplies)	10	10	10	10	10
(2) Total Materials	$ 517	$ 124	$ 143	$ 187	$ 220
(3) Total Cash Cultural	$ 974	$ 267	$ 279	$ 219	$ 367
Cash Overhead					
General expense	$ 78	$ 21	$ 22	$ 26	$ 29
Management charge, Variable	60	60	60	60	60
($5/acre/mo.)	50	50	50	75	100
Taxes					
Maintenance & repair	20	20	20	20	20
(4) Total Cash Overhead	$ 208	$ 151	$ 152	$ 181	$ 209
(5) Total Pre-Harvest Cash Costs	1,182	418	431	500	576
(6) Less Fruit Credits				100	250
(7) Net Cash Costs	$1,182	$ 418	$ 431	$ 400	$ 326
Investment Costs					
Depreciation	$ 124	$ 124	$ 124	$ 124	$ 124
Interest on investment	364	398	455	517	581
(8) Total Non-Cash Costs	$ 488	$ 522	$ 579	$ 641	$ 705
(9) Total Net All Costs	$1,670	$ 940	$1,010	$1,041	$1,031
(10) Accumulated Total Net Costs	$1,670	$3,610	$3,620	$4,661	$5,692
(11) Accumulated Net Cash Costs	$1,182	$1,600	$2,031	$2,431	$2,757
INVESTMENT VALUE AT END OF YEAR					
Land @ $3,000	$3,000	$3,000	$3,000	$3,000	$3,000
Trees	1,670	2,610	3,620	4,661	5,692
Irrigation Sprinkler system $650) = Equipment & buildings 485) =	1,135				
after depreciation	1,011	887	763	639	515
(12) Total Investment Value	$5,681	$6,497	$7,383	$8,300	$9,207

Source: Avocado Orchard Development Costs published by San Diego County Farm Advisors Office, Agricultural Extension, University of California.

Materials for the first year include trees at $3.75 per tree plus tax, 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 100 trees, and the price for trees is climbing.

Total Materials for the first year .....$ 517

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

Total Cash Overhead for the first year .....$ 208

Total Pre-Harvest costs per acre the first year $1,182

The *Investment Cost* includes depreciation (irrigation system, buildings

and equipment) .....$ 124

*Interest on Investment (*land, trees, cultural costs added to the value of trees, buildings, and equipment) .....$ 364

Total Investment cost .....$ 488

Total Net All Costs $1,670

This $1,670 is your cost when you charge only interest on investment. $364 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 $5,681 per acre that first year. In addition to cultural costs, there is a capital outlay of $3,000 per acre for land and $1,135 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 $5,681; for the second year, $6,497; $7,383 at the end of the third year; $8,300 at the end of the fourth year; and at the end of the fifth year, a total of $9,207. This is the figure after allowing for fruit credit. Fruit credit can vary greatly depending on yield of young trees.

Annual Costs

After seeing how we got $9,207 investment value, you now have a pretty good idea as to how easy it is to spend $l,597/acre/year to grow the trees. Table 2 reviews the Annual Costs.

TABLE 2. SAMPLE COST OF PRODUCTION

Cultural Operations	*Labor*	*Material*	*Total*
Fertilizer – 2 times (Actual N-150lbs/acre)	$ 14	$ 20	$ 34
Irrigation – 36 times (Water 3½ ac. ft./ acre @ $65)	100	228	328
Pest control – ants, gophers, snails (Bait, poisons, predators)	8	5	13
Weed control – spot spraying and mowing (oil)	12	10	22
Pruning (Skirt, deadwood) and orchard thinning (tree removal 10-15th yr. @$10/tree), chain saw and brush disposal	45	7	52
Misc. tree care, erosion control supplies, tree stakes (Supplies and tools)	35	15	50
Total Cultural Costs	$214	$285	$499
Overhead Costs			
Taxes			$ 100
Maintenance and repairs			30
General expenses			50
Management charge, variable ($5/acre/mo.)			60
Total Cash Overhead Costs			$ 240
Total Pre-Harvest Cash Costs			$ 739
Investment Overhead			
Depreciation			$ 409
Total Cash Cost Plus Depreciation			1,148
Interest on investment (7% of land value + ½ cost of depreciable items)			449
Total Pre-Harvest Costs			$1,597

Investment Schedule Item	*Expected Life*	*per Acre Investment*	*Depreciation per Acre*
Trees (100/Acre)	20 years	$5,692	$285
Irrigation System	10 years	650	65
Pickup	5 years	125	25
Buildings	20 years	50	3
Weed sprayer, mower, hand tools	10 years	310	31
			$409
Total Depreciable Items		$6,827	
Land		3,000	
Total Investment		$9,827	

Source: Avocado Production Costs, published by the San Diego County Farm Advisors Office, Agricultural Extension, University of California

TABLE 3. California avocado acreage, production and yield per acre: 1950-51 season to date

Crop year [1]	Acreage			Production	Yield
	Bearing	Non-bearing	Total	Total	Per bearing acre
	acres	acres	acres	millions of lbs.	lbs.
1950-51	12,008	8,464	20,472	44.8	3,731
1951-52	12,579	9,108	21,687	56.0	4,452
1952-53	13,566	9,135	22,701	46.4	3,420
1953-54	15,040	8,023	23,063	42.6	2,832
1954-55	16,292	6,709	23,001	90.4	5,549
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 [3]	18,380	4,230	22,610	129.2	7,029
1971-72 [3]	18,470			55.2	2,989

[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: Expansion in the California Avocado Industry, Agricultural Extension, University of California, Riverside 1973

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 $1,597 per acre/year, we'll have received a fair return 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 cents/lb.	YIELD PER ACRE Pounds/Acre 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 8,000 Ibs. at 20c/lb. to cover a total cost of $1,597. The 20c/lb. must represent the return to the grower on tree and not include picking cost and marketing order assessment.

Fuerte will not fit into this 8,000 Ibs./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 8,000 Ibs./acre are Hass, Reed, and Zutano. A good Fuerte is around 6,000 Ibs./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 the wide variations in yield from year to year for all varieties are 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 Ibs./acre. On the average, high-yielding Hass variety orchard yields range between 9,000 to 13,000 Ibs./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 47.4c/lb., an astounding figure! We know it can be attained. 1970-71 was 18.5¢, 1969-70 was 33¢. Assuming future prices will average 25¢/lb., then with an average production of 7,500 Ibs./acre, $l,875/acre returns should result. You'd be a successful avocado farmer —

Congratulations!

TABLE 4. California Avocado Industry Average Yield Per Bearing Acre by Varieties — 1965-66 to 1972-73

Variety	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71
	- pounds per bearing acre -					
Fuerte	4,552	8,446	2,209	6,065	2,158	5,532
Hass	9,995	6,959	8,496	6,212	6,380	8,659
Other varieties	6,191	7,688	3,894	6,813	4,145	7,294
All varieties	5,951	7,972	3,961	6,245	3,637	6,739

	1971-72	1972-73 [2]	8-year average	High	Low
	- pounds per bearing acre -				
Fuerte	1,124	5,691	4,472	8,446	1,124
Hass	4,419	10,467	7,698	10,467	4,419
Other varieties	4,042	6,314	5,798	7,688	3,894
All varieties	2,652	7,264	5,553	7,972	2,652

[1] *High and low yields underlined.*
[2] *Preliminary.*

Source: Expansion in the California Avocado Industry, Agricultural Extension, University of California, Riverside, 1973

TABLE 5. Sample Yield Per Acre From Selected Mature High-yielding Commercial Avocado Orchards in California [1]

Variety & orchard no.	No. Acres [2]	1965-66	1966-67	1967-68	1968-69	1969-70	5-year average [3]	High	Low
Fuerte									
1	10	8,103	11,292	4,778	10,358	9,750	8,856	11,292	4,778
2	8	3,121	11,232	1,938	8,212	9,035	6,708	11,232	1,938
3	10	8,075	5,738	6,805	2,526	1,542	4,937	8,075	1,542
4	18	7,562	4,026	6,159	5,111	4,579	5,487	7,562	4,026
5	45	7,364	7,373	5,363	6,414	5,992	6,048 (12 yr)	8,892	1,736
6	58	3,245	8,055	2,390	7,734	2,638	5,243 (6 yr)	8,055	2,390
7	9	4,389	13,178	4,411	13,733	5,922	8,508 (6 yr)	13,733	4,389
Hass									
8	4	14,000	11,325	7,925	15,800	7,750	11,667 (6 yr)	15,800	7,750
9	5	27,800	480	8,840	22,520	6,520	13,368 (10 yr)	27,800	480
10	10	14,600	6,520	12,200	15,000	10,520	10,280 (6 yr)	15,000	2,840
11	10	20,960	9,400	14,440	13,480	5,640	12,320 (6 yr)	20,000	5,640
12	20	18,209	7,444	8,408	10,063	6,423	10,109	18,209	6,424
13	10	20,995	4,057	14,260	1,813	2,635	8,752	20,995	1,813
14	16	12,667	5,850	6,060	6,717	8,696	7,998	12,667	5,850
15	46	17,143	6,218	9,020	7,135	6,484	7,898 (11 yr)	17,143	3,748

[1] *Sample orchards located in San Diego, Riverside, Orange and Ventura Counties.*
[2] *Number of acres in sample orchard.*
[3] *Except as noted*

Source: Expansion in the California Avocado Industry, Agri. Ext., Univ. of California, Riverside 1973