

## 1980 AVOCADO PRODUCTION COSTS-SAN DIEGO COUNTY

### C. Don Gustafson

*Farm Advisor, Cooperative Extension Service, University of California. San Diego County.*

In San Diego County, the cost of producing avocados varies with the grower and the orchard. A recent study developed through the cooperative effort of growers, farm managers, and the University of California farm advisor showed that the total pre-harvest costs, which include the cultural, non-cash, and overhead costs, were \$6,854 per acre to produce avocados.

Sample costs in this study are based on a typical commercial 10-acre avocado orchard, 10- to 12-year-old trees, 100 trees per acre, planted on a hillside, and utilizing a permanent, plastic sprinkler or drip irrigation system. Costs will vary from orchard to orchard and from district to district and from varieties planted. Hass trees require up to twice as much nitrogen as Fuertes, Zutano, Bacon, and Reed.

The operating cost figure includes irrigation, fertilization, weed control, pest control, pruning, orchard thinning, maintenance and operation of equipment, taxes, insurance, management fee, general expense, interest on investment, and depreciation. Investment per acre includes the sprinkler/drip system, trees, building and equipment, and miscellaneous items such as hand and shop tools. Depreciation per acre is on the sprinkler/drip system, trees (after 5 years of growth), buildings, truck, weed sprayer, mower, and hand tools.

Irrigation constitutes the largest single expense of the agricultural operation, totaling \$1,050 per acre. Water use averages 3½ acre feet per acre at \$200 an acre foot for a cost of \$700. Labor required to irrigate approximately 40 times during the year costs \$350. Not only is irrigation the largest single expense, but the most important operation the grower must do in the orchard.

Fertilization with nitrogen totals \$200 per acre. Nitrogen applied in the chemical form costs \$150. Approximately 150 pounds of actual nitrogen per acre is used. Labor applying the material is \$50, giving a total for material and labor of \$200. Zinc may be needed from time to time. This may be applied to the leaves by aerial spraying (airplane or helicopter) or ground spraying, or applied on the ground. Zinc is applied once every three to five years to the soil. Soil application requires a larger dosage than a foliage spray in order to supply the tree with an adequate amount of this material. A large dosage, therefore, lasts for a period up to five years. The foliage spray will have to be done once every year. Phosphorus and potassium may be applied periodically as leaf analysis indicates. The fertilizer costs in this study include leaf analysis once a year.

Other operational costs are: weed control at \$125, using oil and simazine on a spot-spraying basis, and the use of a tractor mower for mowing the weeds or grass; pest

control totals \$100 per acre, which is the cost of controlling ants, gophers, snails, and rodents; pruning costs \$140 per acre, which consists of removing dead wood, lifting the skirts of the trees to permit better water distribution, and brush removal; orchard thinning, beginning between the 10th and 15th year, costs an average of \$25 per tree; maintenance and operation of equipment includes repairs, supplies, erosion control, etc., and totals \$85 per acre. Breakdown of the total cultural costs is as follows: materials and equipment \$1,050, and \$650 for labor, giving a total of \$1,700 per acre.

Harvest costs vary from 4¢ to 10¢ per pound depending on tree size, size of crop, terrain, etc. A 4.7% assessment is made on the value of crop at roadside. This money is used for industry advertising, sales promotion, and production research.

Operating overhead costs include: taxes at \$250 an acre, general expenses (insurance, office supplies, telephone, and management fee) of \$200 an acre; and maintenance and repairs of \$200. Management fee is variable, but \$8/acre/month is the usual charge. The fee increases yearly. This gives a total of \$746 an acre overhead cost. The management fee is placed in the study since many growers use grove managers and/or a grove management service. Whenever a grower utilizes an orchard management service, he is paying a fee of so much a month per acre for supervision. The total pre-harvest cost (cultural and overhead costs) comes to a total of \$2,446 per acre. The non-cash cost, including depreciation at \$1,803 an acre and interest on investment of \$2,605, adds \$4,408 to the pre-harvest cost of \$2,446, giving a total pre-harvest cost of \$6,854. For growers not wanting to charge interest on investment as a cost against the orchard, subtract the \$2,605 from \$6,854 which will give a pre-harvest cost of \$4,249 per acre.

Yield per acre varies by different varieties, locations, cultural practices, type of tree, and climatic conditions from year to year. Good commercial yields per acre for Fuerte and Bacon should range from 6,000 to 10,000 pounds; Hass, Reed, and Zutano, 7,000 to 12,000 pounds. In some years, under favorable weather conditions, some orchards have produced exceptionally high yields, up to 20,000 to 30,000 pounds per acre.

The accompanying table shows the breakdown of costs which should be given consideration in figuring the cost of producing an acre of avocados.

### **Investment Overhead per Acre**

Depreciation and interest on investment are included as overhead costs of investment. An annual charge for interest on investment is calculated on the money invested in land, buildings, and equipment. The charge is at a rate of 12% on assumed land value of \$7,000 per acre plus half life value on trees, equipment, and buildings.

The total economic cost of producing avocados includes a charge for interest, since the value of your capital should not be ignored in measuring orchard income, and for comparison with alternate use of resources. For management analysis, non-cash costs including interest and owner's labor should be included, even though they are not included as business expenses in accounting practices.

## YIELDS AND RETURNS

Yield varies considerably among orchards, and from year to year. Commercial production may range from 5,000 to 15,000 pounds per acre. Excellent 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*	Yields Per Acre						
	Pounds/Acre						
Cents/lb.	3,000	5,000	6,000	7,000	8,000	10,000	15,000
\$0.15	\$ 450	\$ 750	\$ 900	\$1,050	\$1,200	\$1,500	\$2,250
0.20	600	1,000	1,200	1,400	1,600	2,000	3,000
0.25	750	1,250	1,500	1,750	2,000	2,500	3,750
0.30	900	1,500	1,800	2,100	2,400	3,000	4,500
0.35	1,050	1,750	2,100	2,450	2,800	3,500	5,250
0.40	1,200	2,000	2,400	2,800	3,200	4,000	6,000
0.50	1,500	2,500	3,000	3,500	4,000	5,000	7,500

Cents/ lb.	3,000	5,000	6,000	7,000	8,000	10,000	15,000
0.60	1,800	3,000	3,600	4,200	4,800	6,000	9,000
0.70	2,100	3,500	4,200	4,900	5,600	7,000	10,500

\*Deduct cost of harvesting — 4c to 10c per pound.

Depreciation and interest per acre are calculated from the following investment Schedule:

Item	Expected Life	Investment per Acre	Depreciation per Acre
Land — \$7,000 (assumed value)	-	\$ 7,000	-
Trees — (100 trees/acre)	20 years	26,162	\$1,308
Irrigation System (sprinkler/drip)	10 years	1,800	180
Pickup (\$10,000 new)	5 years	1,000	200
Buildings (storage - \$1500)	20 years	150	75
Weed Sprayer, mower, hand tools (\$4,000)	10 years	400	40
<b>TOTAL INVESTMENT SCHEDULE</b>		<b>\$36,512</b>	<b>\$1,803</b>

COST ANALYSIS

<u>Cultural Operations</u>	<u>Labor Cost</u>	<u>Materials and Equipment Cost</u>	<u>Total Cost per Acre</u>
Fertilizer - 2x/year (Actual N: 150 lb/acre - hand applied)	\$ 50	\$ 150	\$ 200
Fertilizer through Irrigation System			
Drip Irrigation (10 months-wkly)	50	130	180
Sprinkler (10 months-biweekly)	25	85	110
Irrigation - 40x (water required - 3½ Ac feet/Acre at \$200 for sprinkler irrigation)	350	700	1,050
Drip Irrigation (reduced water use, with daily application)			
Pest Control - ants, gophers, snails, rodents (baits, poison, predators)	50	50	100
Weed Control - hand, spot spraying (oil) and/or mowing	50	75	125
Pruning - skirt, deadwood - orchard thinning (tree removal at 10-15 years, or tree stumping) \$25/tree - chain saw and brush disposal)	100	40	140
Miscellaneous - tree care, erosion control supplies, tree stakes, tools, etc.	50	35	85
<b>TOTAL CULTURAL COSTS</b>	<b>\$650</b>	<b>\$1,050</b>	<b>\$1,700</b>

<u>Overhead Costs</u>	<u>Total Cost per Acre</u>
Taxes	\$ 250
Maintenance and Repairs	200
General Expenses	200
Management Charge, (\$8/acre/month - amount increases yearly)	96
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>\$ 746</b>

**TOTAL PRE-HARVEST CASH COSTS** **\$2,446**

**Investment Overhead**

Depreciation	\$1,803
Total pre-harvest cash costs plus depreciation	4,249
Interest on Investment	2,605
<b>TOTAL PRE-HARVEST COSTS (includes   depreciation and interest on investment)</b>	<b>6,854</b>