

CITRUS ORCHARD DEVELOPMENT COSTS

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Many acres of citrus were removed from the old and established citrus areas of southern California during the past 15 years. New plantings, however, continue to be made in areas having water available and located beyond the direct influence of urbanization. Extensive new citrus development also is taking place in several San Joaquin Valley counties. During 1963, 22,822 acres of citrus were reported as young nonbearing acreage in southern California, and 34,867 acres were listed as nonbearing in the San Joaquin Valley. The general trend of a decreasing total acreage in California during the late forties and early fifties has reversed, and total acreage is increasing.

The question of the costs involved in establishing a citrus orchard in California is of general interest. It is a question, however, for which there is no single answer covering all varieties in all citrus districts of the state. Orange trees, for example, are grown from San Diego and Imperial Counties in the south to Glenn and Butte Counties in the north, a distance of 600 miles. Within this range exist many varying conditions resulting in significant differences in development costs due primarily to variations in the costs of 1) land, 2) land preparation, 3) water, 4) frost protection, 5) pest control, and 6) taxes.

The purpose of this sample orchard development cost analysis is to provide you with a guide for cost estimation. Because cost factors often vary widely among different locations, you should estimate your own development costs based on your specific situation.

The figures in this analysis are sample or typical costs of developing an orange orchard in the major producing areas of California. They would not necessarily be the actual costs experienced by any individual grower in a specific location. These costs also may be used as a guide in estimating development costs for other citrus varieties.

Basis for Sample Costs

The sample costs in this analysis were estimated for a 40-acre, owner-operated planting of orange trees set at 11 by 22 feet for a total of 180 trees per acre. We assumed that the land was brought to sufficient grade to permit the use of dragline sprinklers; that water was available at the orchard boundary; that weed control was by chemicals and oil; and that frost protection was provided by a wind machine with 5 hp. per acre plus 15 to 20 heaters per acre, in addition to tree wraps for the first 2 years. The building and equipment cost was calculated to provide storage, shelter, and rolling stock adequate for the 40 acres.

While fruit returns vary depending on the yield and fruit prices, we assumed for this analysis the yield per acre was 90 field boxes the fourth year, and 230 field boxes the fifth year at an on-tree return of \$1.50 per field box.

Initial Capital Outlay

The initial capital outlay required includes the cost of land, land preparation, layout, planting, trees, sprinkler system, wind machine, heaters, buildings, and equipment. The total cost of these initial capital outlay items was estimated to be \$2,947 per acre.

Of these capital outlay items, the principal variable is the cost of land, ranging from \$800 to \$3,000 per acre. For this sample, a land cost of \$1,500 per acre was assumed. Land preparation costs in the sample included only discing and possibly floating—not terracing or ripping. The costs of trees, layout, and planting are fairly standard throughout the citrus areas.

Development Costs

Irrigation costs for the sample were computed on basin irrigation at planting, followed by sprinkling with “spitters” and then revolving heads as the trees grew older. Depending on location, water costs vary from \$5 to \$60 per acre-foot. A cost of \$20 per acre-foot was used in this sample. The number of irrigations required also varies by locality from 6 to 16 per year.

Weed control was assumed to be by chemicals and oil with some hand hoeing necessary the first year or two. For the first few years, weed control by cultivation would cost approximately the same. We assumed pest control was handled by contract. While variation in pest control cost occurs

among areas, it often varies more from year to year in the same location than among areas.

Tree protection costs include wrapping the trunks with suitable materials for sun and frost protection during the first 2 years. Standby charges for the electric wind machine account for the major portion of the frost protection cost in the sample.

Taxes vary among areas as much as any cost item, ranging from \$8 per acre in rural areas to more than \$100 per acre within city limits of heavy populated urban areas. In the sample, we assumed taxes increased from \$20 to \$35 per acre during the development period.

Depreciation was charged on the irrigation system (10 years), wind machine and heaters (10 years), and building and equipment (varying years). No depreciation was charged to land or trees during this development period.

Interest on investment was charged at 6 per cent on land and trees and at 6 per cent of one-half the original cost of the irrigation system, wind machine, heaters, building, and equipment.

Investment

The total investment value at the end of each year during the 5-year development period, based on the assumed costs of the sample orchard, is shown in the accompanying table. This value includes the original cost of the land; the accumulated cultural and overhead costs adjusted for fruit credits; plus the undepreciated value of the irrigation system, wind machine, heaters, building and equipment. It does not include a charge for management. As indicated, the value of the investment at the end of 5 years is \$4,549 per acre.

CITRUS ORCHARD DEVELOPMENT COST ANALYSIS

(Based on 1964 costs)

| DOLLARS PER ACRE | | | | | |
|---|----------------|----------------|----------------|----------------|----------------|
| | 1st Year | 2d Year | 3d Year | 4th Year | 5th Year |
| Cultural Costs | | | | | |
| Land Preparation | \$ 8 | \$ — | \$ — | \$ — | \$ — |
| Layout and Plant | 54 | — | — | — | — |
| Trees — 180 at \$2.75 | 495 | — | — | — | — |
| Irrigation Labor | 45 | 40 | 30 | 30 | 30 |
| Water — at \$20/a.-ft. | 15 | 25 | 35 | 45 | 50 |
| Wrapping — labor and material | 20 | 3 | — | — | — |
| Weed Control | 23 | 23 | 23 | 23 | 23 |
| Fertilize — labor | 3 | 2 | 3 | 3 | 3 |
| Fertilizer — material | 2 | 5 | 9 | 14 | 18 |
| Pest Control (contract) | 7 | 10 | 14 | 20 | 25 |
| Frost Protection | 39 | 39 | 35 | 35 | 35 |
| Miscellaneous — tree care, rodents | 12 | 12 | 10 | 10 | 8 |
| TOTAL CULTURAL COSTS | \$ 723 | \$ 159 | \$ 159 | \$ 180 | \$ 192 |
| Overhead Costs | | | | | |
| Taxes | 20 | 25 | 25 | 30 | 35 |
| General — insurance, office, car, etc. | 30 | 15 | 16 | 18 | 25 |
| Depreciation ¹ | 88 | 88 | 88 | 88 | 88 |
| Interest ² | 117 | 176 | 203 | 233 | 258 |
| TOTAL OVERHEAD COSTS | \$ 255 | \$ 304 | \$ 332 | \$ 369 | \$ 406 |
| TOTAL COST PER ACRE — Preharvest | \$ 978 | \$ 463 | \$ 491 | \$ 549 | \$ 598 |
| Less On-Tree Fruit Returns ³ | — | — | — | 135 | 345 |
| Net Cost Per Acre | \$ 978 | \$ 463 | \$ 491 | \$ 414 | \$ 253 |
| Accumulated Net Costs | \$ 978 | \$1,441 | \$1,932 | \$2,346 | \$2,599 |
| Investment Value — at end of year | | | | | |
| Land at \$1,500/a. | \$1,500 | \$1,500 | \$1,500 | \$1,500 | \$1,500 |
| Trees ⁴ | 978 | 1,441 | 1,932 | 2,346 | 2,599 |
| Irrigation System \$300 | | | | | |
| Wind Machine and Heaters \$440 \$890 ⁵ | 802 | 714 | 626 | 538 | 450 |
| Building and Equipment \$150 | | | | | |
| TOTAL INVESTMENT VALUE — at end of year | \$3,280 | \$3,655 | \$4,058 | \$4,384 | \$4,549 |

¹ Depreciation of irrigation system (10 yr), wind machine and heaters (10 yr) and building and equipment (varying yr).

² Interest at 6 per cent on land and investment in trees at beginning of year. Interest at 6 per cent of one-half original cost of irrigation system, wind machine and heaters, and building and equipment.

³ Based on an on-tree return of \$1.50 per field box and a fourth-year yield of 90 field boxes, a fifth-year yield of 230 field boxes.

⁴ Investment in trees at end of year equals accumulated net costs of prior years.

⁵ Investment value for items is original cost less accumulated depreciation.