

NAVEL ORANGE PRODUCTION COSTS  
WESTERN RIVERSIDE COUNTY - 1974

The acreage of navel oranges in Riverside County has remained about the same for the last twenty-five years, with a range of 11,000 - 13,000 acres. New plantings have virtually ceased with total acreage starting to decline as older groves are removed for housing or replanted to a different variety. Present acreage is listed at 13,024.

The purpose of this cost data summary is to provide current and prospective growers with a guide for production costs so they may better analyze the economics of grove operation.

Navel oranges are grown in five major areas in western Riverside County. There is a great amount of difference for various cultural costs between these areas. For instance, in the Arlington Heights area, Gage canal water costs \$15-\$20 per acre foot; in the Gavilan Hills, Metropolitan water costs \$59 per acre foot; one area in Corona has to pump \$40 acre foot water up to the grove at a cost of \$32 per acre foot, a total of \$72 per acre foot.

Because of these area differences, the table on the reverse side shows the possible range of each cultural cost. The middle figure of each range depicts a typical cost. These "typical" costs would be for a grove such as the one described below.

Sample Farm: It is a well-managed 50 acre planting of 12-year-old trees that are spaced 18 x 22 feet for 110 trees per acre. Water obtained through the local water district is applied with a 3-move, drag-line sprinkler system. The lower thirty acres require frost protection from three 75 hp electric wind machines and 450 heaters. Other equipment includes a wheel tractor and implements, weed sprayer, heater fuel tank, gas storage tank, flat bed trailer, and hand tools.

Overhead Costs: In addition to cultural costs, the citrus grower has overhead charges that must be considered. Maintenance, repairs, taxes, general expense, depreciation and interest on investment are the main ones. Property taxes vary greatly in Riverside County. Our "sample farm" is in an agricultural preserve where property taxes are based solely on the agricultural value of the grove. Charges for orchard management are not included in these sample costs.

Depreciation on trees and equipment is considered an overhead cost because at some point in time, they will have to be replaced.

Interest on investment is calculated on the money invested in the land, buildings, and equipment. This interest charge is included because the value of a grower's capital should not be ignored. This money could be drawing interest or be invested in an alternative resource if it were not invested in the grove.

**NAVEL ORANGE PRODUCTION  
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COST ANALYSIS**

	COST PER ACRE		
	Low	Typical	High
<b><u>Cash Cultural Costs</u></b>			
Irrigation: water-2.5 to 4 ac. ft. @\$15-\$72/ac.ft.	\$38	\$135	\$288
labor - 6 to 25 hrs/ac @ \$3/hr.	18	36	75
Weed Control: Soil sterilant & contact control or cultivation	15	40	65
Fertilization: 100-250 lbs. nitrogen/acre @ 25¢/lb. of N plus leaf analysis and minor elements in pesticide spray spread @ \$2.50/acre	28	43	69
Pest & Disease Control: highly variable	35	110	160
Frost Protection: from warm areas with none to cold areas with complete	0	110	160
Prune, remove & replant: includes deadwooding, hedging, replacing dead trees, fumigating soil, brush disposal	16	43	60
Girdling: @ 5-8¢/tree, some do, some don't	0	6	14
<b>TOTAL CASH CULTURAL COSTS</b>	*	523	*
<b><u>Cash Overhead</u></b>			
Maintenance and repair: general care, but includes expenses for vandalism	25	40	60
General Expense: office, insurance, professional fees, etc.	25	40	60
Taxes: acreage may be in a remote area, or next to a subdivision	40	65	200
<b>TOTAL CASH OVERHEAD</b>	*	145	*
<b>TOTAL PREHARVEST CASH COSTS</b>		668	
<b><u>Investment Overhead</u></b>			
Depreciation (sample farm only)		221	
Interest on investment (sample farm only)		574	
<b>TOTAL INVESTMENT</b>	*	795	*
<b>TOTAL PREHARVEST COSTS</b>		\$1463	

\*No totals for the low and high ends of the range because no one farm has all low or all high costs.

**DEPRECIATION & INTEREST SCHEDULE**

	Per acre values: Investment	Life	Depr.	Interest(8%)
Trees	\$3000	25 yrs.	\$120	\$240
Irrigation System	450	10 yrs.	45	36
Equipment & Buildings	225	10 yrs.	23	18
Wind machines & heaters	495	15 yrs.	33	40
Land	3000	--	--	240
	<b>\$7170</b>		<b>\$221</b>	<b>\$574</b>

NAVEL ORANGE CULTURE  
WESTERN RIVERSIDE COUNTY

The acreage of navel oranges in Riverside County has remained about the same for the last twenty-five years, with a range of 11,000 - 13,000 acres. New plantings have virtually ceased with total acreage starting to decline as older groves are removed for housing or replanted to a different variety. Present acreage is listed at 13,024.

SOIL: Navel oranges do best on deep well-drained soil. While the roots are usually concentrated in the upper two to three feet of soil, in the more open sandy soils they will go deeper.

IRRIGATION: This is an important operation in citrus culture. The area of soil occupied by roots should be supplied with moisture at all times, but excessive use of water may cause root decay, especially if drainage is poor. Test the soil for moisture at various depths as a regular practice. The moisture in the root zone is the only moisture available to the tree. The interval between irrigations in the summer usually ranges between 10 to 21 days. The amount of water applied at each irrigation is determined by both the capacity of the soil to hold water and the depth to which soil is occupied by roots. A good rule is "always irrigate dry soil, never irrigate wet soil".

FERTILIZER: Nitrogen is the element generally lacking in the soil. This is usually supplied by commercial fertilizers and often supplemented with animal manures. The nitrogen content of the leaves is a good measure of the nitrogen supply of the tree. Good production has been obtained when there is between 2.4 and 2.6 percent nitrogen in orange leaves when tested in the period from August 15 to October 15. Most mature trees need 1.5 - 2.5 lbs. of elemental nitrogen each year. It is recommended to apply this nitrogen between mid-December and mid-February.

FROST PROTECTION: In some areas low winter temperatures make some form of frost protection desirable. Wind machines generally give adequate protection against light frost. Orchard heaters are needed on nights of a severe freeze. Under most conditions, a wind machine supplemented with 10 to 20 heaters per acre will give adequate protection.

SOIL MANAGEMENT: Cultivation is commonly used for weed control, but if excessive or poorly timed can be harmful. Work the soil as little as possible as all forms of tillage tend to destroy soil structure and cause water to penetrate less readily. Organic matter is often valuable where soil structure has deteriorated and water penetration is poor. The more often soil is tilled the greater is the need for organic matter. Cover crops and animal manures are a good source of organic matter.

Non-tillage is followed in many orchards. Various herbicides are used to control weeds. Oil, Paraquat<sup>®</sup>, diuron and simazine have been found to be effective and economical in destroying the growth of weeds when a nontillage program is used.

PEST CONTROL: The principal pests requiring control are red spider, red scale, black scale and thrips. Fungicides are sometimes used to control brown rot both on the fruit and on the trunks of the trees.

BULLETINS: Bulletins on citrus production and marketing problems are available at the Agricultural Extension office.

AGRICULTURAL EXTENSION 21150 BOX SPRINGS ROAD RIVERSIDE, CALIFORNIA