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**THE COST OF PRODUCING CITRUS
RIVERSIDE-SAN BERNARDINO AREA
FOR THE 1983-84 SEASON**

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This study provides guidelines for estimating citrus production costs in the Riverside - San Bernardino area which includes the City of Riverside, Corona, Woodcrest, Lake Mathews, Redlands, and Mentone. It provides typical production costs based on data obtained by interviewing established growers, managers, and custom operators for navel and valencia oranges, lemons, and grapefruit.

Cost of citrus production varies among individual growers. Therefore, the range of values is presented along with the typical production costs to reflect such variations. Using this guideline, a grower can evaluate his cost of citrus production by substituting the figures for his citrus grove operations.

Following are brief descriptions of the assumptions upon which the cost figures are based.

ORCHARD SPECIFICATIONS

Sizes and ages of citrus groves in the Riverside - San Bernardino area vary considerably. This study is based on a 20-acre grove of 20 year-old trees on flat terrain assumed to be typical for the area. The grove's trees are planted 18 feet by 20 feet to include 120 trees per acre.

FERTILIZATION

Urea is the most commonly applied fertilizer. Fertilizer application is either by broadcast or added to the water in the case of drip irrigation. Some growers supplement the chemical fertilizer with manure applications every other year. A foliage spray of trace elements is considered to be a useful fertilization practice.

IRRIGATION

Irrigation cost variations are caused by several factors including application methods, location, topography, soil type, and tree size. For instance, water requirement for furrow irrigation runs approximately 3 to 4 acre feet per year while drip irrigation and low volume sprinklers use between 2 and 2 1/2 acre feet per year.

The Riverside - San Bernardino area groves water supply comes from a number of sources including the Bear Valley Water District, Gage Canal Company, Western Municipal Water District, and Temescal Water Company. Water costs run from as low as \$40 per acre foot in the Bear Valley Water District (Redlands) to up to \$288 per acre foot in the Gavilan Hills. (Refer to Appendix for detailed water cost information.)

PEST AND DISEASE CONTROL

Pesticides are commonly applied for control of mites, scale, thrips, snails, and squirrels. Amounts, frequency, and methods of treatment result in considerable cost differences for citrus pest control among growers. Brown rot and other diseases are treated as needed.

WEED CONTROL

The typical weed control practice for a grove includes two herbicide applications per year. Some growers include spot spraying for pipelines and young trees.

PRUNING

For oranges, hedging one-quarter of a grove each year is a common practice in the Riverside - San Bernardino area. Tree topping is done about every seventh year. Some growers do inside pruning which can cost as much as \$60 per acre. Lemons are usually topped and hedged every other year and interior pruned on alternate years. Because lemons respond differently, interior pruning is done much more often than with oranges.

FROST PROTECTION

Frost protection costs vary widely according to an orchard's altitude, slope, and the type of management used to combat frost hazards. During the past few years growers with electric powered wind machines have been given the option of selecting the rate schedule on which they are to be billed. Because of recent mild winters in many areas of the southwest, many users have found it more economical to pay the higher kilowatt cost of the GS-1 schedule and pay only for power actually used thus avoiding the fixed standby charges of the GS-2 and PA-1 rate schedules. The opposite would be true in more severe winters. In some cases, wind machines are supplemented by running irrigation water. Due to high fuel prices, the use of heaters is diminishing. During the period of the study, little if any, protection has been required with equipment maintenance being the major cost.

MISCELLANEOUS TREE CARE AND REPLACEMENT

A tree replacement rate of two trees per acre per year is assumed. This rate is representative of groves in the 5 to 25 year-old range, but the rate would be higher for many of the 50 to 60 year-old groves.

LAND AND TREE VALUES

Open land price for citrus acreage in the Riverside - San Bernardino area ranges from \$10,000 to \$20,000 depending on the location and upon the speculative demand at the time of purchase. For this study, both land and tree values reflect a low economic outlook for citrus groves.

ANALYSIS OF PRODUCTION COSTS

The cost of production for an acre of citrus in the Riverside - San Bernardino area as presented in the table on the next page, is estimated to be \$3,466. Cultural operation costs account for 31 percent of this total cost, and pest management and water costs are the major items in the cultural operation expenses.

Investment costs comprise 60 percent of the total cost and interest on land investment is the major item of the investment cost. The remaining 9 percent

