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WHAT WE HAVE LEARNED FROM THE 23 YEAR AVOCADO COST STUDY IN ORANGE COUNTY

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Twenty-three years of analyzing the production end of the avocado enterprise in Orange County has given us and the cooperating growers who have made this study possible an insight into the grass roots factors that can be influenced by the grower himself. After his fruit leaves the orchard, there are many other tangents which are often beyond his control.

First, let's look at our cooperators—the orchard owners who have made this study possible. They might be placed in four categories:

1—The grower who depends on his orchard entirely for his income.

2—The part time farmer who secures supplemental income from another source.

3—The retired business man or farmer who is interested in the recreational or health phase of the outdoor enterprise.

4—The investment farmer, the absentee owner who hires all work done.

The size of the orchard, therefore, generally reflects the grower's requirements, as indicated by his individual interests. In this study the avocado orchards reporting varied from 2 acres, to 75 acres in size.

A SUCCESSFUL AVOCADO ENTERPRISE

It is evident from review of the numerous records summarized during the 23 years that a successful avocado enterprise depends on at least five factors:

a. A good yield per acre.
b. Good fruit quality.
c. Sufficient acreage to provide the income volume dt sired.
d. Economical cost of production.
e. Efficient marketing outlet.

We have found in this study that the principal factors of orchard management that influence yield and quality of fruit are:

1—Tree heritage or tree selection.

2—Tree health and freedom from disease and pests.

3—Good deep well drained soil with minimum cultivation.

4—Efficient irrigation practice.

5—Sufficient fertilization.

6—Protection from frost and wind.

7—Tree spacing.

Let's examine these factors briefly, as revealed in the analysis of the records and inspection of the orchards reporting.

TREE SELECTION. If the parent trees of the orchard planting are diseased or low producers, there is nothing one can do to change the character of those trees. Topworking to better varieties of high yielding strains can be done on healthy stumps. Diseased trees should be removed and replaced. Only varieties adapted to the locality will give satisfactory yields.

TREE HEALTH. Sun blotch virus and root rot fungus are the more wide spread diseases that defeat high yields. Replacement is the best cure for sun blotch in severe cases. Root rot caused by excessive moisture associated with cinnamon fungus attacks, is a difficult problem. Trees thus affected should be removed as soon as recognized in order to reduce source of infestation and spread. Control the irrigation practice to avoid excess moisture. Shallow, poorly drained soils are especially susceptible. Pest control is still a minor problem in most orchards, but should be pursued when occasion requires.

SOIL AND CULTIVATION. There is a direct relationship between deep soils and better yields. The records show that the higher yields occur more frequently through the years on the deeper, well-drained soils, such as the Yolo loams, than on the Ramona series with the heavier subsoils. Cultivation should be kept at a minimum. Many of the higher yielding orchards report low cultivation costs. The less the soil is cultivated the less the shallow roots are disturbed in the upper root zone where the highest concentration of plant foods and fertilizer resides. Many avocado growers have adopted the non-tillage system. It is recommended after the trees have attained sufficient size to shade about 50 percent of the ground.

IRRIGATION. Mature avocado trees are sensitive to irrigation practice. Weather conditions greatly affect the use of water by trees. Soils vary in their capacity to hold and give up water, depending on type and depth. Water should be applied only when the soil becomes dry from root activity. Root rot is encouraged by excessive use of water and poor drainage of the soil.

During the past 5-year period the average use of water reported in this study was 19.2 acre inches per acre. Average use the previous 5-year period was 15.7 acre inches per acre. The tendency has been to increase the water applied. The average age of trees has also increased in that period from 15 to 19 years, which may justify some of the water increase. However, caution must be emphasized about the danger of excessive water in orchards on tighter subsoils.

FERTILIZATION. 200 pounds of actual nitrogen per acre per year was the average amount reported by our cooperators during the past 10 years. This is 3 pounds per tree

where the trees are 25 feet apart. For wider spacing and larger trees, say 35 feet apart, the average application would he 5 pounds of nitrogen per tree. In 1952 the cost of nitrogen varied from 15 cents per pound to over a dollar per pound, depending on the material used. The tree knows no difference between cheap and expensive nitrogen. Definite savings can be made. Ask the Farm Advisor in your county for a chart of comparative fertilizer values.

ORCHARD PROTECTION. The avocado is quite susceptible to frost injury. If the orchard is subject to frost frequently enough, some means of frost protection will be needed to maintain normal yields and vigor of the trees. Fall winds come at a time when fruit is heavy on the trees. Frequently a large portion of the crop has been lost through heavy winds. A windbreak is an essential adjunct to the orchard in exposed areas.

TREE SPACING is another important factor that must be considered in planning for maximum production per acre when the orchard is mature. This study, as well as field observations, has shown that crowded trees produce less fruit because of excessive shading thus depressing the yield per acre.

COST OF ESTABLISHING AN AVOCADO ORCHARD. A detailed and itemized chart has been prepared showing the various costs involved in establishing a new avocado planting. Copies are available at the Farm Advisor's Office (Orange County).