

## The Future Profitable Orchard

**Carter Barrett**

*Avocado Specialist*

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One of the most acute problems of all the varied fruit-growing industries of California is that of the so-called marginal groves. That is, those groves which, because of location, soil conditions, water and labor costs, and other economic factors, cannot pay a profit, except under the most favorable seasonal and market conditions. Such groves can never be a source of profit to their owner over a period of years, and may frequently, by the mere fact of adding unprofitable quantity in a time of weak market conditions, cause the difference between profit and loss for the well situated, well managed grove. The time has arrived in the avocado industry, when we must look this problem squarely in the face. Avocado growers have now reached the point in the commercial production of their fruit where the net return has become low enough to make the cost of production take its place as the deciding factor as to whether a grove is to be an asset or a liability.

What points are we to consider in arriving at a conclusion as to the possibilities of present and future profits from a particular avocado grove? There are many. Among the most important are capital investment, soil, water, frost, quality and variety of stock with which planted, and susceptibility of the location to wind damage.

First, let us consider capital investment. Cost studies carried on under the direction of Mr. Wahlberg, Farm Advisor in Orange County, show an average cost of more than \$3,000 an acre to bring those groves in the study up to a reasonable producing point. There are other groves that have been more costly, without doubt. It is easy to see in the light of present economic conditions and future price outlook that many of the groves representing such a high capital investment will fail to produce sufficiently to succeed. Interest charges and depreciation, alone, will be strong, determining factors. Too high prices have been paid for the land and its preparation for use, for the trees, for water distribution systems, and unnecessary labor costs.

Soil is the second factor. Contrary to what seems to be the prevailing opinion, the avocado is not a shallow-rooted tree, and, naturally, will thrive and produce most satisfactorily on a deep, well-drained loam soil—a soil which the roots can easily penetrate and allow easy aeration. Richness of the soil does not seem to be so imperative as easy root penetration, as most of the lack of plant food can be met by an intelligent fertilizing program.

Too light soils, unless fed properly, are apt to cause mottling and off-shape fruit. On the other hand, heavy soils of the adobe type are apt to sour and rot the roots off, causing early degeneration and death unless water and cultivation are handled with extreme

care and wisdom. Undoubtedly, the best trees and best production occur on fine, well-drained soil of considerable depth and such trees will be longer lived. This soil must lie on very easy slopes or comparatively level land so that water and fertilizer applications may be efficiently made over the whole rooting area. The soil must not contain a surplus of objectionable mineral matter, nor be lacking in some essential constituent. We see the result of these factors in the large number of chlorotic trees in some localities.

Water is the next factor to look at. As a broad statement, water must be available at reasonable rates and in somewhat larger quantities than for citrus trees. It must be free from any dangerous overload of minerals, and be available at rather more frequent intervals than the average citrus schedule allows.

Now let us consider frost. Hillsides of the secondary ranges generally show the greatest freedom from frost. However, because of poor, shallow soils, high water rates due to great pumping lifts, and inability to apply water and fertilizer efficiently and economically over the whole of the rooting area, these hillside groves in many cases will be unable to compete with a grove on fine, deep soil, with lower water costs, situated on very gentle slopes, where the frost hazards are far greater. The frost hazard can be more economically met with modern heater protection.

Wind is quite a decisive factor in some localities. Practically no growing area in Southern California is entirely free from the effects of damaging winds. Some localities are visited once in several years by destructive winds and others several times in the average year. High desert-type winds are very serious in some localities. There are heavy losses from dropped and scarred fruit, distressing breakage of the trees, and a stunting effect, due to the desiccating character of such winds. Groves in such districts lose considerable producing acreage from the start, because of the necessity of heavy windbreak plantings.

As concluding factors, let us look at quality of stock and selection of varieties. The grove that is planted from strong, healthy nursery trees, grown from selected seed, and budded from bearing record trees that are given adequate and proper care the first three years, thus insuring sound, well formed trees for production to begin with, will unquestionably pay better than poorly grown, stunted trees budded from any tree that is handy. Poor trees may bear early, but they will be short lived and shy in total production. This means that intelligent planting, staking, watering, cultivation, pruning, and fertilization will have to be practiced so that the tree will attain the necessary stamina and vigor to withstand the drain of future heavy crops. Also, that a well balanced, strong framework will have to be developed to prevent breakage of limbs from the weight of foliage and fruit.

Many of the older groves are doomed to failure even though properly situated as regards growth factors, because of poor root systems or a large number of varieties on a small lot, many of these varieties being nearly worthless. The day is past when any avocado is valuable just because it is an avocado. Too many varieties scattered about in a small grove make picking expenses very high. In the aggregate, production from many such groves weakens the market, because of the lack of a standardized product that the public knows and can ask for with confidence. Probably, aside from two or three trees for home use, no five-acre orchard should consist of more than one variety nor a

ten-acre grove of two varieties. Five acres, in most cases, will be the minimum unit to produce a living.

Where the mistake has been made of planting the wrong or too many varieties, the trees may be top-worked, providing the location and the condition of the individual tree offer a sound basis for doing so. The first consideration in deciding on this expensive course of action is to check up on each of the elements, as enumerated, that enter into a successful grove. It is no use to alter the variety if all the other factors are against future profit. If the owner decides favorably on the basis of a study of these fundamental factors, then he should make a survey of the individual trees, eliminating all the weak ones, those with a bud union where the new graft will have to be placed above that point, and those with any disease such as sunblotch. Then he must decide what variety is apt to be most commercially profitable in his community, and whether that variety will propagate on large stocks successfully and economically.

The whole situation is most confused in the Los Angeles metropolitan area and even elsewhere by the question of the residential and other desirability of certain locations. Here the owners or prospective buyers are too apt to have their judgment of commercial producing value overshadowed by actual or potential residential value or other extraneous reasons. The existence of many of these groves, pleasing as they are from an aesthetic viewpoint and to their owners as long as they have an income from other sources, would be impossible to maintain on the basis of their net returns. They present a problem in the marketing of the total crop at the price levels that will be obtained in the future on commercial scale production.

Probably, only the economic strain affecting individuals, such as we see in operation at the present time, can eliminate many of the groves that properly come under the head of marginal production. It would seem that with a wider dissemination of the knowledge now available regarding success factors and a more serious consideration of them by prospective buyers, many individuals and the industry as a whole could be saved some of the serious penalties of grove development foreordained to eventual failure.