

## EXPERIENCES IN DEVELOPING AN AVOCADO GROVE



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I have been asked to tell you some of my experiences in developing a young avocado grove in the San Luis Rey Heights section of the Fallbrook area. This property, purchased in 1943, was raw undeveloped land in sagebrush with no water system or roads in the tract. We were living in La Habra but hoped to develop this place into a grove and home.

First, going a long way back, in 1911 my folks bought property in La Habra and planted the first avocado trees in that area. I remember very little of the start of this development as I was a little tow-head at the time; although, I do remember crawling along in the nursery rows breaking off a bud or two and being chastised for it.

In 1912 none of the present recommended commercial varieties were recognized so this place was planted to such varieties as the Walker, Ganter, Lyon, Challenge, Stephens 15, Northrup, etc., none of which are in good standing today. A few of these trees are still in existence but have long since ceased being commercial producers because of poor soil and poor care given by several subsequent owners. Marketing in those days was an individual problem in salesmanship. Fruit properly handled and sold brought as much as a dollar a pound or ten to twelve dollars a dozen in the better markets.

In 1920 father bought and started developing a new grove in La Habra Heights a little farther back in the hills. This was a more suitable property for avocados having much better soil, better water and weather conditions. By now newer varieties had been introduced and this planting was made primarily to Fuerte and Puebla. These were alternately planted to further cross pollination to increase fruit set. Here I had an experience with an extremely thick planting and later the thinning and grafting over of large trees. Trees were set on a sixteen foot square pattern and soon reached a stage of severe crowding. The first thinning of one-half the trees left the planting about twenty-three feet apart on a diagonal pattern. The second thinning was done partly by grafting over some trees and partly by tree removal to leave the final and present thirty-two foot square planting which is one-fourth of the original trees. The trees grafted were worked

over to Hass and Silliman and these have proved to be much better producers than the Puebla and some better than the Fuerte. That grove is now thirty-two years old, in good health, and with good production record.

With these experiences and problems as guides we planned to develop the land in San Luis Rey Heights—20 acres with a hill crown near the north side and a dominant south-east slope of five to fourteen degrees. The soil is of decomposed granite with depths of two to four feet. The development was planned on paper until all factors were in proper order. Factors to consider were basic planting distances, varieties, and irrigation system—all to correlate with the planned cultural practice.

To assist in planning, a map of the property was secured from the sub-divider. This map showed every five foot elevation contour on a one inch to one-hundred foot scale. On this map I plotted in the trees on a twenty-two foot square pattern. This is a compromise spacing to allow reasonable time before thinning will become necessary and still have enough trees for early production.

The irrigation system had to be plotted in next. It should be adequate to supply a good head of water and flexible enough to allow for spot and special irrigation. To do this I planned two large size main lines with short lateral lines, mostly seven tree runs. To make it flexible I laid it out semi-portable with a faucet, hose, and sprinkler for each eight trees. This makes water available any place at any time.

With planting distances and irrigation system outlined, the next problem was varieties and their location on the plot. I planned about 50% Fuerte, 10% Hass, 10% Anaheim, and 10% other or experimental varieties. These were plotted in solid block planting to keep each variety to itself in order that special care and picking could be done easily. The Fuerte (being the more hardy) was planned for the lower, colder, and more exposed area. The Hass was planned for the upper south-east exposure; and the Anaheim on the east and more wind-protected area in double set hedgerow pattern (eleven by twenty-two feet). The Anaheim in particular needs wind protection to keep from severe scarring of the fruit.

All this was plotted on the map where it is much easier to move a dot or line than it is to move a tree or pipe in the field. When all appeared to be in satisfactory order, the paper plot plan was transferred to the field by means of survey transit, tape, and stakes.

To facilitate the laying out and to prepare the ground, the ground was rough plowed the fall before planting and disced and smoothed the following spring. Thus we had a level, brush-free area to plant and with loose soil for making basins.

The nursery trees were raised on the place as standard nursery except for the first 300 Fuertes. These were the first commercially grown tip-graft trees that I raised at La Habra. Actual work was started in May 1947. The line ditches were dug, pipe line laved, and trees planted, as the trees in the nursery came into proper condition to plant. So the trees were not all planted until some time in July. The trees were provided with medium size basins with straw mulch and thoroughly watered in to settle the entire basin area. They were watered each week for the first season. The nursery stake was all the support supplied the first year. There was no shade or other protection.

Real trouble came the first fall when a heavy flash rain ran off the surface of the smooth

dragged soil and cut in two or three small washes and took off a lot of top soil. Since then the place has had a natural growth cover and no loss has occurred from rain.

Later on in January I had my next loss. It was cold that spring. There was some frost damage on my lower ground that extended part way up the hill and the cold settled into the basins and froze the young stock of some of the trees. The following spring I replanted where necessary and made some precautions for the future. I followed the practice of hilling soil up around the base of the tree over the bud union and broke down the edge of the basin to prevent cold air pockets from forming. This first spring I also replanted any trees that had not made proper growth.

As irrigation is a matter of prime importance in avocado culture, I used the following practice. The first season a small basin was used which was filled each week on regular schedule. The second season the basins were enlarged and again filled each week. The third and fourth seasons a half circle spitter-type sprinkler was used on alternate sides of the trees at regular intervals of about ten days. The fifth season the spitter was replaced by a full circle star-type sprinkler. This was used to irrigate the total area on an alternate panel pattern and timed to supply water to each tree on one side at ten day intervals. I plan to carry this type of irrigation for the next few years. Basic water schedules were planned for the summer season with changes as the weather or tree needs indicated.

Directly tied to irrigation is the problem of weed control as any growth in the .rooting area of the tree is in direct competition for the water supplied. Weeds should be kept entirely away from very young trees and controlled around larger trees by cutting or oiling. Adequate control is a must.

I have used a concentrate form of nitrogen for fertilization through the development period starting with very small amounts applied frequently in the basin during the first year. The amount was increased from year to year until now I am using about one and one-third pounds of actual nitrogen per tree per year in four applications. I plan to supplement this with bulky organic manure as the soil and trees indicate need.

Tree pruning and training is a very controversial subject with as many ideas and theories advanced as there are people to talk about them. I have done very little pruning on my young trees but did keep them tied to a substantial stake for three seasons to lead up a center stock and to prevent some wind damage. My present plan is to let the tree grow and produce as much foliage as possible with only minor nipping back of some of the strong side arm limbs. The extra foliage on the tree means more root growth and general vigor to the entire tree. Some cutting will have to be done later to completely balance the tree.

In five years time from planting, what is there to show for the effort? A well established grove of 1500 trees that have had some production for three years. About 500 pounds the third year—mostly Hass; about 10,000 pounds the fourth year—again mostly Hass; and the present crop at five years of about 45,000 pounds. I believe this is good progress. By the way, I keep a book record of every tree based on a pre-pick estimate in boxes of fruit and a record of fruit size, tree size, and tree condition of each tree. I believe this record will be very valuable in later years when tree thinning or replacement will be necessary.

What has been learned during this development period? First, that a good pre-planting plan is necessary to fit ideas and programs to the soil, water, and climatic conditions as they exist on the particular parcel that is to be developed. Second, secure and plant the best of trees. Third, use the proper precautionary measures to combat any possible adverse weather conditions. Fourth, give the trees the best possible care, being sure that good free-growing conditions exist at all times. Fifth, and this is important, see that all necessary work is done for each and every tree when conditions indicate need and not if and when convenient to do so.

How have I done this while living in La Habra? Well, I did it the easy way. I had a very good man familiar with Fallbrook conditions to do the work. I checked the progress nearly every week to see what was being done and to plan further work and after doing this for five years. I have decided to come here to live.