

Converting Citrus to Avocados From Grapes to Oranges to Avocados—in Sixty Years

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This is the history of a district extending along Prospect Avenue, three miles east of Santa Ana—this district has been known as "The Gravel" since the days of the pioneers. In the 80's the Santa Ana Valley Irrigation Company brought good gravity water to this land. During this decade, when Orange County had many thousands of acres of fine vineyards, "The Gravel" excelled in the production of Muscats for raisins and table use. The farmers, who had cleared off the sage brush and cactus and hauled away the largest rocks, thought that here, in the "New West," was an industry that would rival the prosperous vineyards of France and Italy.

But soon there was disappointment, and from an unknown cause, the vineyards suddenly began to decline and in a year or two were dead. Not knowing the reason, the more courageous owners pulled the stumps and replanted their vineyards—only to have the vines wilt and die again in a few years. The plague was called the Anaheim Grape Disease, which in recent years has been identified as a virus disease, and is now called "Pierce's Disease"—after the pioneer pathologist, Dr. Newton B. Pierce.

After failing with grapes, some farmers in this area set out peaches, apricots, almonds, prunes and olives, and others planted many varieties of citrus, including Mediterranean Sweets, St. Michaels, Blood oranges, Lemons, Australian and Washington Navels, and some Valencias.

When these various plantings came into bearing, the California winter orange (The Navel) seemed to offer the most promise. Almost every other fruit, whether sold fresh or dried, consistently returned "Red Ink". So the original orange trees were budded to Navels, and new Navel orchards were planted. Again, "The Gravel" gained recognition for its quality fruit—this time Navels, which were sweet and fine appearing, and brought fair returns. Navels, however, were not destined to be the trees for the ultimate use of "The Gravel".

The third cycle was in the making and was speeded by Mr. C. C. Chapman of Fullerton, known as the father of the Valencia industry. He foresaw the possibilities of the summer orange, and planted several hundred acres of Valencias. He also built a modern packing house and personally sold his famous "Mission" brand Valencias at unheard of prices in eastern markets. "The Gravel" again top-worked its orange trees—this time from Navels to Valencias.

In 1920, the writer became a partner in the purchase of 50 acres on Prospect Avenue. This orchard, known as the Prospect Ranch, then had Navel trunks budded to Valencias. It also had some of the original Valencia trees.

During the past several years many of the orchards in this district have experienced considerable tree decline from Psorosis (Scaly Bark), and root difficulties. With the best

of care, it has quite generally been found impossible to bring Valencia replants into satisfactory production "on gravel". Due to this condition, several growers have planted avocados where an occasional orange tree was pulled, with very satisfactory results. This may be the beginning of the fourth cycle of planting in the district.

With our gravelly type of soil, and climatic conditions, we decided that Avocados offered good possibilities. So in 1940 we began a program of converting a major portion of our old Valencia grove to avocados, planning to maintain orange production as long as possible.

Question of Varieties Very Important

The first question was that of variety. This was a real problem, as there were no commercial avocado orchards in the vicinity. There were occasional Avocado trees of different varieties. The Fuerte had been recognized as the most acceptable variety for marketing, but in this district had proved erratic in production. However, we decided to plant mostly Fuertes, with some Ryans and Henry Selects for diversification.

With an interplanting program, the next problem was where to place the new trees. The decision to plant in the tree row was made in preference to planting in the middle of the square, as we felt the orange tree could be maintained longer in this place, even though the avocados might grow more slowly.

Three different methods of planting have been used, which are interesting to compare: One third of the trees were regular standard nursery trees, with bud growth three to five feet in height; another third was started from seed in place in the orchard; the remainder were "Tied up Buds".

Before any of the trees, or seed, were planted, strips, four feet in width, cross-ways in the orchard, were sub-soiled to a depth of three feet. This was done to eliminate competition from the orange roots, and also to put the soil in good condition for planting. Sub-soiling was repeated the second year to cut the orange roots on either side of the newly planted avocados.

After planting the trees and seed, basins three feet in diameter were made and filled with a good mulch. Between irrigations, the trees were tanked with a small amount of fertilizer added to the water.

As anticipated, the seed in place method, developed into a lot of work. After the first sub-soiling was completed, about two cubic feet of the gravel soil was replaced with sandy loam, to serve as the seed bed. Carefully selected Northrup and Ganter seed were planted twelve inches apart in each space. The seedlings had to be regularly watered, hoed, protected from rabbits, budded, and often re-budded once or twice to eventually get a 100 percent stand. At best, nursery results could not be obtained, as the orange trees gave some root competition, as well as shading, which retarded both the seedlings and the buds. Probably too, where all labor was employed, there was no saving in the final cost in comparison with purchasing and planting balled trees.

Avocado trees, known by some nurserymen as "Tied up Buds", have been used to a limited extent for several years. The seedlings are budded in the late fall. They are then

headed to force the buds. In the spring during the first flush of growth, but before any of the leaves show chlorophyll, the trees are balled for planting. In contrast to the typical large balled tree, where the top is out of proportion to the roots included in the ball, the "Tied up Bud" tree has the balance in favor of the root system. This is a distinct advantage. Since these trees can be planted at the most favorable time of the year, our experience has been that there is very little setback in moving the tree. The result is a very satisfactory growth the first summer. This kind of a tree must be handled most carefully, as the bud is very easily broken off. Some of the nursery work, of course, has to be completed in the orchard, such as staking, tying, shading, cutting off the seedling above the bud, and sealing the cut.

Comparing the advantages and disadvantages of planting conventional large balled trees, seed in place and "Tied up Buds", our experience is that the most satisfactory results can be obtained in planting where most of the roots are included in the ball. For this reason, "Tied up Buds" or balled trees that have gone through only one growth, are preferred.

Results After Five Years

After five years of continual care and attention, we have more than 2500 good, healthy avocado trees interplanted between oranges. The avocados are now giving the old orange trees stiff competition. One block of orange trees, and other scattered trees, which have become non-producers, are being pulled this year. The sides of the remaining orange trees have, from time to time, been cut back to give the avocado trees ample spacing. The three varieties planted had a limited production in the fourth year. Without materially reducing the production of oranges during the change-over period, we have a new tree crop coming along.

Many years of farming have demonstrated that where land is used for field crops, rotation should be practiced to obtain the most satisfactory results. From the experience during the past sixty years in "The Gravel", trees must also be changed to fit new conditions.

The vineyards were wiped out by Pierce's Disease; deciduous fruits were not profitable; Navels and other oranges were found to be less suitable than Valencias; the Valencias are now going out of production with Psorosis and other causes. Now a new trend is toward avocados in this area.

From our foregoing experience we have come to the conclusion that the avocados can be brought into production in a space where replanted orange trees have failed several times. We have observed that the avocado can be successfully interplanted in a declining citrus orchard. In all cases we recognize that the young tree must have very special care.