

## Random Remarks on Avocados

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This paper is not intended as an expert treatise, but a series of notes by an interested observer.

Avocado culture on the Central west coast of Florida in Pinellas, Pasco and Hillsborough counties in particular, is still decidedly an infant industry. A number of plantings have been made, though none are large. Many problems have arisen, a few have been partially solved, most have not.

There are in this locality at least two interesting avocado trees. Some data on them and regarding propagation and culture constitute the main items of this discussion.

The first to be mentioned is a tree, which has been called a Fuerte, on the grounds of Dr. E. E. Schmitt at Blanton, in Pasco County. The writer visited Dr. Schmitt and examined the tree recently in company with Mr. M. F. Goering, an interested grower of Pinellas County.

Many people have heard of it, through magazine articles, and the advertising of a commercial nursery which has leased the propagation rights. I understand that it has been the subject of a pollination investigation by officials of the department of agriculture this spring, and hope some expert testimony will be given at this meeting regarding it.

Some data concerning the tree may be of interest. According to information given by Dr. Schmitt on April 30 of this year, it is at present six years and nine months old. It appears to be between fifteen and twenty feet in height, with about the same spread, and is a healthy vigorous appearing tree. When visited it was carrying a number of fruit of sizes varying from half grown to fruit just set, as well as blossoms. Dr. Schmitt also said that he had the day before picked six matured fruit, and that since there was some question about the tree being a Fuerte, it was to be called the Schmitt Everbearing Avocado.

His account of its origin is as follows: That it was a seedling from one of one hundred fruit sent him from Tampico, Mexico. A folder which he gave me, apparently a reprint from an article in last October's "Citrus Industry" by A. G. Mann leaves the impression that it is a budded Fuerte avocado. In habit of growth it resembles a budded or grafted tree rather than a seedling, branching close to the ground and having the low headed spreading characteristics of grafted trees.

It bore its first crop at two years, its second at three, when it carried 800 fruit, at four years 1371 as counted by Lindley Heimburger, at five years 2108. These are figures given by Dr. Schmitt. He does not expect the tree to produce a crop of this size during the coming season on account of the severe pruning for budwood it has had. The writer was told that the tree had been fertilized mainly with poultry and sheep manure, only a

few light applications of commercial fertilizer having been given. The soil is a very good grade of high citrus land, the tree being located on a hilltop overlooking the surrounding country. Adjoining trees had been scorched by frosts, but this one showed no signs of damage. All things considered, it appears to be an unusual tree, and it is to be hoped that trees propagated from it can be grown satisfactorily. The second tree which seems worthy of study is located on the property of M. F. Goering before mentioned, located at An on, a few miles south of Clearwater in Pinellas county. It was one of a number of budded trees purchased by Mr. Goering from Mr. John B. Beach. The variety is Gottfried, and the tree is of interest because of its fruitfulness and vigor. It will be four years old June 15, 1926, and on April 30, 1926 measured as follows:

Circumference of trunk at the ground 36 inches; eight inches above ground 33½ inches; height is approximately 23 feet, and the spread is 25 feet.

It matured two fruit at two years of age, and 251 at three years, the fruit beginning to ripen in July. It should carry from 250 to 400 this year, having many more than that number set, though Mr. Goering feels that he has damaged its fruit holding capacity this season by cultivating with a tractor and disc.

This tree has been fertilized almost entirely with poultry manure, and has had no special attention more than other varieties in the same planting which are about the usual size for trees of that age. The soil is quite uniform and the trees have nearly all been set in places where citrus trees died out in the grove. The particular space in which this tree is located is surrounded for two or three rows by other varieties, a Fuerte of the same age, about six feet high, being the nearest tree.

One interesting fact stands out in connection with the two trees mentioned. In contrast to the average avocado, at least so far as the writer's observation is concerned, these two have extremely vigorous root systems. In addition a plentiful supply of crown and lateral root, the ground is filled with fibrous feeder roots, almost from the trunk out. Other trees nearby in both plantings exhibited no such condition. It would appear that the root stock is a contributing factor at least in their unusual vigor. Consequently specimens of roots have been taken from the Gottfried tree and sent to the Experiment Station at Lake Alfred, in the hope that they can be induced to throw up shoots, producing trees which may later be used to obtain cuttings, and these cuttings rooted with the idea of obtaining extra vigorous root-stocks. This attempt may be visionary and impracticable, though it is hard to find any other method of reproducing the clone of the root-stock.

The next question arising is whether or not the cuttings will root in a large enough percentage for the method to be commercially practicable, and if so, whether the rooted cuttings will be satisfactory stock plants. All this in turn is predicated on success in reproducing the clone of the root-stock, and the writer will appreciate any information which will help in finding a way to force an avocado root, to throw out a sprout, as the rough lemon does when the root is severed from the trunk.

If any other method is available, suggestions as to its use will be appreciated. The request for this information is one of the major reasons for the presentation of this paper.

Mr. Goering has been propagating avocados in a small way for three years. The press of other work, and non-delivery of seed for stock plants, prevented his doing so this season, and in consequence he has no plants for sale. He has, however, been very successful in the percentage of buds made to take, using the following method, for which no originality is claimed. As soon as the stock plants are large enough to receive buds, he buds with a modified patch, the eyes being cut approximately the same as a citrus bud, but instead of making a T cut and slipping the bud under the bark as in citrus work, a patch corresponding as nearly as possible to the bud is removed from the stock. The bud is then laid on, and tailor's mending tissue, cut in strips about one-fourth inch wide, is used to bind it tight. When this wrapping is completed leaving only the eye exposed melted paraffin is brushed over bud, tape and all. A paraffin melter such as described in Dr. Morris' work on nut growing and brought to the attention of the Horticultural Society by Mr. Barney, is used. By this method. Mr. Goering averages about ninety per cent successful buds. He insists that the most important matter is that of selecting budwood at the proper stage of growth, this being roughly just after the last leaf of the current growth has turned green, i. e., has reached normal or nearly normal size, and has lost the red tint which shows when the leaves first appear. The bud wood can be used from that time until the next flush begins.

Now for some random remarks concerning growth. Two factors seem largely responsible for slow growth or loss in grafted or budded avocados. The first is mainly the responsibility of the grower, and in one word is— water. Avocados, especially young trees, demand enormous quantities of water in comparison with a citrus tree of the same age. They should be set with basins which will hold a barrel of water, the basin mulched, and the soil kept moist if it takes two or three barrels a week per tree. Fertilizer, and lots of it in organic forms, can be profitably used, but water they must have.

The other factor is the size of the tree when set. From personal experience, it appears that the sooner a seedling can be budded after the sprout has appeared, and the sooner the tree can be set in the place it is to grow after the bud has caught, the better will be the chance for successful and rapid growth of that avocado tree.

Many people have bought budded avocados, set them carefully, watered them faithfully and, while they did not die, they did not grow off. The chances are that the tree was root-bound in the box, and like Kathleen Mavourneen, "it might be for years and it might be forever" before the tree would start to grow.

This is not the fault of the nurseries entirely. They are not in business for philanthropic purposes, and must supply what the growers demand. So far the demand has been for large thrifty trees, and it is a hard matter to convince a customer that a sprout six inches high will make a large tree quicker than one half an inch in diameter and a foot or more in height. Yet this is the only way to keep the plants from being root-bound before being set, unless excessively large boxes are used.

Unless the writer is badly mistaken, this is one of the most important matters in avocado propagation, so far as getting plants to grow off vigorously in the field is concerned. It is open to the objection that more care and protection of the new set plants is necessary. If one is not prepared to give them excellent care and attention for the first year, budded

avocados are splendid things to leave alone—the money invested is very likely to be wasted. If an avocado grove is absolutely necessary under such circumstances, plant the seed where the trees are to grow and bud them later.

If all of our nurserymen would throw out every seedling, which did not grow off vigorously, then discard all which did not catch at the third budding attempt at most, and would then insist on growers planting them as soon as there was a certainty that the bud was growing, we would have fewer losses.

This is not meant as a reflection on our nurserymen. With few exceptions, all known to the writer are honest, conscientious men, really striving to deliver high grade products. It is simply a question, provided what has been said in regard to size of stock is true, of molding public opinion to the desirability of setting the stock as young as possible.