

## **High Quality Avocado Nursery Trees**

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When a man builds a house he is careful to see to it that the concrete mix used in the foundation is of the best quality. When planting an avocado orchard it is equally important to be sure that the nursery trees are of the best quality. Many failures have resulted from planting nondescript nursery trees.

But how is a newcomer in the industry to judge quality? I shall outline some of the many factors which should be taken into consideration, in an attempt to help such persons to properly discriminate in favor of the best quality. It should be realized that the growing of avocado nursery trees is a rather highly specialized business, and inexperienced persons will do well to purchase budded trees to start with.

### **Root-Stock**

The many kinds of avocados grown in California are classified in three groups.

The Mexican group is hardy, fruit small, green or colored, skin very thin, season of maturity fall and early winter.

The Guatemalan group is tender to cold, fruit large, green or colored, skin thick, season of maturity summer and early fall.

The Hybrid group, of which the Fuerte is predominant, is medium sized, skin of intermediate thickness, and season of maturity late November to June 1st.

Experience has proved the Mexican to be best for root-stock, and it is now used exclusively for commercial plantings in California. But there are many kinds of Mexicans, and by no means all of them are suitable. Some kinds produce very weak and unsatisfactory root-stocks. Knowledge as to the best kinds has developed very slowly over many years. At present painstaking nurserymen use seeds from old thrifty individual seedling trees which have undergone nursery tests and have shown themselves to be free from the virus disease known as "Sunblotch", and to produce strong thrifty nursery plants which are easy to bud. They also use seeds, so far as they are at present available, from budded trees of certain named Mexican varieties which have proved satisfactory. In the latter case, special care is necessary to avoid virus disease which is transmitted through the buds. So far the Mexicola, Topa Topa and Ganter varieties are approved. Several others of considerable promise are now being tested and may later prove themselves to be as good or better than those mentioned.

Nurserymen should be able to assure the prospective buyer of nursery trees as to the exact source of the root-stock used. It is risky business to buy trees grown on stocks, the seed for which is miscellaneous Mexican gathered from some windbreak or bought

from some dealer in cull fruit.

### **Nursery Soils**

Avocado nursery trees should be grown on good, deep, well drained soil of medium loam type. Such a soil should ball well, but should not contain enough colloidal matter to bake hard on drying. There should be no layer of clay near enough to the surface to be included in the bottom of the ball when dug. Soils often vary, and if an otherwise good plot of nursery land includes a quarter or on eighth of an acre of clay pan, there is a temptation to plant it rather than leave a vacant space in the nursery. Trees dug from such an area are likely to fail or at least do poorly. In nursery lands which are not well drained the cinnamon soil fungus, which is one factor in the cause of the much discussed decline disease, may become established and be included in the balls. In this way this dangerous soil fungus may be transported to lands where it may not have previously been present. For these reasons it is a good idea to examine the nursery soil as well as the trees before making a purchase.



First Class Avocado Nursery Trees

### **Selection of Buds Most Important**

It is now generally accepted that the Fuerte variety includes several variants known as strains. These differ widely in bearing habits, some being almost barren. Lack of this knowledge in former years has resulted in badly mixed plantings in many if not most of the older orchards, where some trees bear regularly while many bear little or almost nothing. It is not possible, so far, to distinguish between the barren and fruitful strains by looking at the leaves, fruit, bark, or any other part of the tree. They can be identified only by keeping a careful record of yields over a period of several years. The factors of fruitfulness or barrenness are transmitted to nursery trees through the buds used in

budding. The planter of a new orchard should make certain that his trees have all been budded from a healthy and fruitful strain.

This is not as yet an altogether easy matter. Citrus nurserymen are in a better position because a large number of fine healthy orange and lemon trees have been examined, tested, and approved by agents of the State Department of Agriculture. These are publicly registered as satisfactory mother trees from which buds may be purchased and cut with assurance. Unfortunately it has not so far been practicable to do this with avocados.

A very small proportion of the buds on a full grown, heavy bearing Fuerte tree is at any one time in the proper vegetative condition to grow when inserted in a stock. Usually less than 500 viable buds can be found at one time on such a tree. Therefore the larger commercial nurserymen who need twenty to thirty thousand buds at a time, must either have available a very large number of tested mother trees, or they must use buds from younger orchards which supposedly have been budded from tested mother trees. I say "supposedly budded" because there are so many chances for errors and mistakes.

For the same reasons it is objectionable to use buds resulting from the topping of nursery trees. As time passes, more of the younger orchards which are positively known to have been budded from tested mother trees will come into full bearing. After these have been proved by yield records, they will furnish an abundant supply of good buds. Nurserymen should always cut their buds personally and be present all the time if the buds are being placed by contract budding crews.

### **Form Specifications**

Two and a half to three years are required to produce a first class avocado nursery tree. Grading should be by caliper or diameter an inch above the bud union. Trees less than one-half inch caliper require more care to get them started in the orchard. Trees over one inch caliper are over sized and should be dug with extra large balls. My ideal is a stocky tree of about three-fourths inch caliper. A strong stiff trunk is desired and is produced by shortening back all side branches rather than removing them. A tree of this type can usually be grown in orchard form without any stake or burlap shelter. This saves a lot of unnecessary labor and expense. Such a Fuerte tree can usually be depended upon to form a good head with little or no attention as to pruning. The nursery stakes should not be too large. An ordinary building lath ripped in two lengthwise is large enough and is less in the way during transportation. A day or so before digging, Fuerte tops should be cut back strongly to a point just above a group of dormant buds on the main stem. At the same time a part of the leaves should be removed to minimize the shock of balling. Trees should be dug when dormant or between flushes of growth. Digging when in flush produces a much greater shock and such trees will be slower to start new growth in the orchard.

### **Balling**

It is important to have the soil moisture content just right for good balling. If too wet the soil is likely to be puddled. It is not easy to get water to the center of a puddled ball after

planting, and this results in a slow start or even entire failure. Great care should be used in balling, and if an occasional ball is broken, the tree should be thrown away. Bailers who work by the hour are likely to do better work (though more costly) than those who do piece work.

### **Sunburn**

When a tree is dug it has lost a large part of both root and top. Circulation of sap is temporarily slowed down almost to a standstill. Until new growth of leaves and root fibers start again, the trunk, particularly just above the bud-scar, is very subject to sunburn. As each tree is balled, it should be set with the top leaning toward the sun until it can be promptly moved to a lath-house or other suitable protection. I once called at a nursery in the morning and ordered two trees to be balled and held ready for me to pick them up in the late afternoon. A laborer who was at once sent to dig the trees carried them out to the driveway and set them with tops leaning toward the Northeast. When I called for them I found them severely sunburned with a narrow strip of dead bark extending from the bud-union for a foot or more up the trunk. This was caused by the sun striking the trunk at right angles, and the trees were practically ruined.

### **Curing**

While it is possible to move trees directly from nursery to the orchard, it is much better and has become standard practice, to keep them in a lath-house for ten to twenty days, or until they get over the shock of digging. When the leaves freshen and dormant buds begin to swell they are in the right condition to transport and plant. While curing the trees should be lightly sprinkled by hand each morning as needed to keep the outside of the balls moist. In case of heavy rain a tarpaulin should be thrown over the lath-house to prevent the balls from becoming soaked and later settling and becoming turnip shaped. This results in a set back.

In every lot of trees in the nursery there are a few here and there, perhaps one to five percent, whose taproots grow sideways instead of downward. It is perhaps unavoidable that such trees when balled have very little roots left in the ball. They will usually wither and die within a few days while in the lath-house. They are segregated and discarded before the stock is delivered to the planter. When planted directly from the nursery such trees die in the orchard to the distress of the planter and the discredit of the nurseryman.

### **Handling**

Avocado nursery trees are much more delicate than citrus trees and must be handled with more care. Never move a tree by the trunk, but with one hand under the ball and the other at the side of the ball they should be carried like a baby. Truck floors should be well bedded with straw before loading, and if to be hauled for any distance the trees must be well protected from the wind caused by the speed of the truck. In like manner, great care should be used in handling from truck to planting hole. Shade should be

provided for any trees which are not planted immediately. Ignorant or careless laborers should be made to observe these rules.

## **Conclusion**

Not all trees in a nursery reach standard marketable size at the same time. Consequently there are some weak trees left after the first dig over. These, if well cared for, come to size later. The best quality trees come out of the first dig. The later ones should be classed as second grade and not mixed with first grade trees of the succeeding year. A slow tree in the nursery is likely to be a slow tree in the orchard. Such may be sold perhaps to chiseling bargain hunters who have not yet learned to appreciate the much greater value of first grade high quality trees.

It is usually a good plan to visit nurseries in October or December, make selections of trees, and contract for their delivery the following spring. Planters who delay the purchase of trees until the planting season is upon them are very likely to find the nurseries pretty well picked over and only second grade stock left.

The demand for nursery trees varies widely from year to year according to avocado fruit market prices and many other factors. Inasmuch as it requires two to three years to grow a good tree from seed, nurserymen are hard put to it to adjust their volume to fit unknown future demand. We shall probably continue to have shortages and surpluses in nursery stock supply with consequent fluctuations in the price of trees. In years of shortage, newcomers, eager to plant at once, may be seriously tempted to purchase second grade or even cull stock. A lot of this has happened in the past. I cannot emphasize too strongly that in such cases the planter would be far better off to wait a year if necessary in order to get and plant quality trees. It costs more to grow an orchard of scrub trees than it does to grow good trees. A vast amount of disappointment and heart-ache would be avoided if growers would plant only high quality avocado nursery trees.