

PROPAGATION OF AVOCADO NURSERY TREES

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The aim in avocado tree production is to propagate trees that will bear abundantly and regularly—trees that are free of virus disease, and as far as possible resistant to avocado root rot caused by the fungus *Phytophthora Cinnamomi*. These objectives are only partially attainable at the present time. However, there are steps the nurseryman can take to approach this goal.

For suitable growth the nursery site must have a light to medium textured well-drained soil, ample water and relative freedom from frost. Also, the area must be free of soil borne fungus diseases. Locating the nursery on virgin soil is the surest way of avoiding trouble with field grown stock. Soil fumigation should be practiced in questionable areas.

To preclude subsequent contamination from the outside, nursery areas should be above and at some distance from old avocado orchards or yard plantings that could be a source of infestation. Spores can be carried in run-off water and in soil attached to equipment or carried on the feet of humans or animals.

Choice of a rootstock poses some problems. From an effect on production standpoint, there seems little choice between members of the Mexican and Guatemalan races. Within the Mexican race there again is no marked preference from a production standpoint. However, most nursery trees are propagated on Mexican rootstocks because of their generally satisfactory performance and resistance to freezing temperatures. In addition, the Duke variety of Mexican rootstock does show considerable resistance to *Phytophthora Cinnamomi* as compared to other commonly used Mexican seedlings and varieties. The several avocado relatives that show resistance or immunity to *Phytophthora Cinnamomi* are not compatible with our present varieties, and consequently not usable as rootstock.

When it comes to selecting the individual seed parent tree it must be healthy, productive and free from sun blotch. It is desirable to use seed from proven parent trees, as an apparently healthy tree with no external symptom of sun blotch on tree or fruit may be a carrier of the sun blotch virus and this may appear in the progeny.

To prevent the introduction of *Cinnamomi* fungus with the seed, all fruit should be picked from the tree or picked up as it falls or is knocked off the tree. Fruit left lying on the ground may become infected with the fungus and this may penetrate the seed if left on the ground long enough. If there is any question as to the cleanliness of the seed it should be treated by being immersed in hot water at a temperature of 120° F. to 122° F. for thirty minutes. Germination of the seed can be hastened by removing the seed coat prior to planting. Further time can be gained by cutting a thin slice off the basal or both

ends of the seed.

Mexican seeds are planted in the fall. In the field they are usually planted under cone-shaped paper drinking cups. In enclosures or greenhouses the seeds are planted in tar paper cylinders filled with sterilized soil. The seedlings are normally ready to bud or in greenhouses tip-grafted the following summer and fall.

Selection of a bud source is of major importance. First a variety must be selected suited to the area in which it is to be planted. The parent tree must be inspected for freedom from sun blotch. It should have a good production record. The production record is especially necessary for the Fuerte variety because of its erratic bearing habit. Fuerte buds taken from a block or strain without checking the individual tree records may result in many non-productive trees.

Bud take is still a major problem in propagating the Hass variety. Poor take or loss of buds by shelling is common. In general, recently matured summer buds inserted in young stocks seem most successful.

The latest development in the avocado nursery business is the production of certified trees guaranteed to be free of *Phytophthora Cinnamomi*. In order to sell certified trees the operator must grow the trees in accordance with procedures outlined by the nursery service of the State of California Department of Agriculture, for the production of certified avocado nursery stock. In general, this involves container grown trees in enclosed areas. The soil and seed must be treated prior to planting and proper sanitation procedures followed. Certification tags will be issued on this stock if found to be free of fungus when ready for sale.

For additional reference on avocado propagation please refer to (1) and (2).

- (1) Walter R. Beck—1958. "Good Nursery Practice." California Avocado Society Yearbook, p. 61.
- (2) A. W. Christie—1959. "Nursery Tree Certification Insurance Against Root-Rot." California Avocado Society Yearbook, p. 73.