

## NURSERY TREE CERTIFICATION INSURANCE AGAINST ROOT-ROT

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Avocado root rot, caused by the fungus *Phytophthora cinnamomi*, has caused more loss to California avocado growers than any other orchard problem.

Between 4,000 and 5,000 acres of trees, about 15% of the planted acreage, is already dead or dying as the result of the growth of this fungus.

The University of California Agricultural Experiment Station and Extension Service are carrying on a recently expanded research program to learn more about the fungus.

The aims of this research are to find out how it spreads; how to eradicate it; how to reduce the damage it does; and finally to locate, develop and test resistant root stocks. These investigations are badly needed and much appreciated but take years to complete, and their success cannot be predicted.

While there are many orchard areas where this fungus is already established, there are many others where it is not present. Every reasonable means should be exerted to prevent spread to clean areas. Once established in an avocado orchard, root rot is a growing cancer that cannot be permanently eradicated. Root rot just spreads and spreads.

There is ample evidence that spread has been caused by drainage from infected to clean lands, by orchard equipment or tools carrying contaminated soil to a clean orchard, and by infected nursery stock, both avocados and ornamentals.

Nurserymen, particularly the long established and reputable ones, have become increasingly careful in their selection of clean nursery sites, or soil for containers, and of seed. In most avocado areas there have been cases where root rot infected nursery stocks have introduced this fungus into soils previously free of this fungus. Ornamental trees and shrubs can also carry this fungus, so avoid planting them around your orchard.

Certainly, if I owned a choice piece of land that I intended to become a profitable avocado orchard, I would want to plant only certified disease-free trees. The slight extra cost of certified trees is simply sensible insurance in protecting the investment in land, trees, irrigation system (possibly home-site), etc., from the destruction that would follow the introduction of root-rot by infected nursery trees.

Farmers long ago learned the lesson of disease free or certified stocks. Nursery stock is inspected to be sure it is free of insects; soil for raising plants in flats is sterilized; weed-free or disease-treated seeds are standard; not to mention baby chicks and heifers; are common examples of "it pays to buy the best."

Until recently, there was no system by which an avocado planter could be sure that the nursery trees he bought were free of this fungus.

Fortunately, a system has recently been developed by which nursery trees can be grown absolutely free of cinnamomi fungus, and when so grown, can be certified by the Nursery Service of the State Department of Agriculture.

Here are the essential details. For a nurseryman to qualify for official certification, he must:

1. Obtain approval of the location, facilities and sanitary conditions where the nursery stock is to be grown.
2. Seed eligible for use-in growing certified stock shall first be immersed in hot water at an even temperature of 120° F. for 30 minutes.
3. Seedlings must be grown in treated soil in disease-free clean containers. The soil, or planting mixture, must be treated either by
  - a. Fumigation with methyl bromide at 3 lbs. per 100 cubic feet for 24 hours in a fumigation chamber or under a gas-tight tarpaulin; or
  - b. Treated with steam to raise the soil temperature to 180° to 212° F. for 30 minutes.

Containers must be similarly treated unless new and clean. Balled trees in burlap cannot be certified.

4. After treatment; containers, soil and seed must be kept from contact with the ground. Benches, walk-ways and other areas shall be treated as recommended by the inspectors.

Department officials will make periodic inspections to ascertain compliance with these regulations, and make tests to be sure there is no cinnamomi fungus present.

5. The nurseryman must make application for certification, and pay a fee of \$25.00 for each lot of avocado seed treated, plus an additional fee and certification for each lot of seed planted. Soil and seed treatments are done under the visual supervision of a Nursery Inspector.

If all these requirements are met, the Department will issue certification tags to be attached to the nursery trees offered for sale, so that the buyer may know that such trees have met the requirements for protection against infection by cinnamomi fungus.

It is obvious that a nurseryman who goes to the trouble and expense of meeting these requirements (seed and soil treatments, fees, etc.) incurs additional expenses not previously included in the growing of nursery trees. Hence, he must increase his sale price sufficiently to cover these added costs.

Now, the question is: "Will nurserymen grow and offer for sale certified trees?"

The logical answer is "Yes, to the extent that the demand develops for certified trees."

The owner of a clean piece of land suitable for growing avocados, and which is free of this fungus (by sampling and testing if necessary) should demand certified trees. He will doubtless need to contract for them in advance, to protect both buyer and seller.

The extra cost of certified trees will be amply justified. Uncertified trees may be mostly clean, but, even an occasional infected tree will introduce the fungus into a new orchard and start it spreading to the other trees, with eventual disastrous results. An obvious case of false economy.

The informed and wise grower will demand and pay for certified trees.