

RESISTANCE OF SUBTROPICAL PLANTS TO PHYTOPHTHORA CINNAMOMI

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With a considerable avocado acreage affected with the root disease, there is interest in other tree crops as possible replants for the avocado in southern California. A number of other plants have been tested for resistance to *Phytophthora cinnamomi*, the fungus causing root rot, and observations have been made on the response of some of these plants when replanted in areas of disease in the field. This is a preliminary report on the current status of this phase of root rot investigations.

Seedlings of the macadamia nut (*Macadamia ternifolia*), two species of persimmon (*Diospyros lotus* and *D. kaki*), cherimoya (*Annona cherimola*), and sweet and sour orange (*Citrus sinensis* and *C. Aurantiurn*) have been tested for resistance. Tests have been made in the greenhouse on the Riverside campus, both in soil brought in from areas where avocado trees are affected with root rot and in soil inoculated with cultures of *Phytophthora cinnamomi*. Results from the tests to date indicate that all the above plants are highly resistant if not immune to the avocado root rot disease.

In one experiment young seedlings of avocado, macadamia, persimmon, and cherimoya were transplanted into pots of soil taken from around diseased trees in San Diego County. The pots were waterlogged for one week shortly after transplanting, by immersing the lower portion in water. The avocado seedlings wilted and showed typical symptoms of root rot within two weeks, and made no further growth. The other plants showed no harmful effects and made excellent growth. (Fig. 1) *Phytophthora cinnamomi* was isolated from a few dead roots on one of the macadamia seedlings and from one of the persimmons (*D. kaki*). It apparently was not causing damage to the root system, but merely living on the dead tissue. The macadamia seedlings have since been transplanted into larger containers and are making excellent growth two years after the initial inoculation.

In a recent experiment each of four citrus seedlings (two sweet and two sour) was planted in a five gallon can of soil from which diseased avocado seedlings had just been removed. Cultures showed that the cinnamon fungus was present in abundance. These seedlings have all made good growth, and after 6 months the *Phytophthora* population in the soil was reduced considerably. The soil will be replanted to avocado seedlings after varying lengths of time to determine if the cinnamon fungus will die out during the time that the soil is planted to citrus.

There are no definite data available yet on replanting these various sub-tropicals in areas in the field where avocado trees have died from root rot, except in the case of

citrus. There are a number of cases where citrus trees have been replanted in root rot soil, and have shown no harmful effects.



Fig. 1 *Relative resistance of (from left to right) avocado, macadamia nut, cherimoya, and two species of persimmon seedlings to avocado root rot. Seedlings planted in diseased soil.*