

TRUNK CANKER OF AVOCADO CAUSED BY PHYTOPHTHORA HEVEAE

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In the 1975 California Avocado Society Yearbook Zentmyer, Schieber, and Popenoe (5) reported a canker disease of avocado trees in Guatemala caused by a species of *Phytophthora* different from *P. cinnamomi*. At that time the fungus was not definitely identified.

We have recently identified the pathogen on avocado in Guatemala as *Phytophthora heveae*. This species has not been described previously from avocado.

The cankers were called to our attention by the late Dr. Wilson Popenoe and Dr. Eugene Schieber in 1973. Affected trees were three to four years old, in a variety planting at Aposentos, Guatemala. The diseased trees had cracked and bleeding cankers on the lower trunk and upper portion of the rootstock; the lesions were generally in the outer bark but in some cases extended into the outer wood.

When the bark was cut, the cankers were seen to have reddish-brown margins. Most of the affected trees were making very little growth, with off-color foliage and dieback in some cases. Several trees had died from the disease by 1974.

The trees had been grafted in the nursery on local Guatemalan criollo rootstocks. Both rootstocks and scions were affected. Scions included several from Guatemala, Honduras, and Hawaii: Siquinala, Chocola 5, Rinconada, Zamorano¹⁰, and Haakuu Hawaii. Approximately 15 percent of the trees in the small 100-tree variety planting were affected.

The same fungus was recovered from cultures from bark cankers in 1973 and in 1974. The cultures were distinguished from *Phytophthora cinnamomi* by the production of oospores in single culture and by differences in type of sporangia and growth on culture media. The Guatemalan isolates differed from the other homothallic species of *Phytophthora* described from avocado, *P. citricola*, in the different type of antheridia (amphigynous instead of paragynous). Examination of cultures of other species of *Phytophthora* in our collection and comparison with descriptions in the literature showed that the new isolates from Guatemala belonged in the species *P. heveae*. When Topa Topa seedlings were inoculated with *P. heveae*, stem cankers developed as rapidly as on similar plants inoculated with *P. cinnamomi*.

P. heveae has previously been reported as the cause of black stripe and pod rot of rubber and pod rot of cacao in Malaysia. This species also was isolated from a primitive conifer, *Agathis australis* in New Zealand, from pine soil in the southeastern United States, and from Brazil nut (*Bertholletia excelsa*) in Brazil. The origin of this new species of *Phytophthora* on avocado in Guatemala is difficult to identify. This species of

Phytophthora has never been reported from any plant in Central America. The land used for the avocado variety planting is part of a general fruit tree nursery planting of the Ministry of Agriculture. The young trees were grown in a nursery in the same area and no disease was found on the young trees prior to planting in the field.

This is the third species of *Phytophthora* to be identified as causing cankers on avocado trunks. We have isolated *P. cinnamomi* from cankers on avocado trees in California and Latin America (2, 4); this species has also been found on avocado trunks in Cameroun in West Africa. *P. citricola* has been reported as an occasional problem on avocado in California (3). Another species of *Phytophthora*, *P. palmivora*, causes a seedling blight of avocado in nurseries in Florida (1) and in Honduras (2) but has not been reported as the cause of trunk cankers of avocado. *P. palmivora* causes a branch canker of avocado trees in Honduras (2).

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