**California Avocado Society 1955 Yearbook 39: 81-83**

# NEMATODES AND THE AVOCADO

**S. A. Sher**
*Assistant Nematologist, University of California at Riverside.*

*(An address given at the annual meeting of the California Avocado Society, June 4, 1955)*

Nematodes, as many of you know, are small, usually microscopic wormlike animals that occur everywhere in this world. A small part of this large group of animals are parasitic forms which live on plants and animals. Some common nematodes which have plagued man personally are hookworm and *Trichinella,* the cause of trichinosis. The plant parasitic nematodes have been known as early as 1745 but haven't received much attention because of their small size and usual underground habitat. Another reason might be that nematodes rarely kill plants and the damage done is sometimes obscured by the many related factors that exist in the complex situation of soil, roots, and numerous organisms in the rhizosphere. They are often, though, the instigators of wounds that enable other organisms to obscure their role as primary pathogens. Sometimes this gains for them a harmless record and prevents their true nature being discovered.

The citrus nematode is a good example of the above. For many years after its discovery in California orchards this nematode was not considered a pest because of its wide distribution in apparently healthy groves as well as poor groves. V. e now know that the citrus nematode can cause from 10 to 50% reduction of fruit and a preplanting fumigation for citrus nematode is now standard practice in citrus groves.

As far as we now know we do not have a nematode problem on avocados in California. In the limited survey of avocados in southern California made during the last year, there has been no one nematode found associated with avocado roots. Instead, at least six different species of plant parasitic nematodes have been found. What effect any of these nematodes have on avocado growth is unknown. Despite this, nematodes can not be overlooked as a factor in avocado culture because of the past experience with nematodes in other tree crops and the nematode situation in other avocado areas. As an example of the latter, Florida has been plagued by a nematode disease called "spreading decline" the most important citrus disease in that state. This disease has also appeared in avocado groves in that state, causing a similar spreading decline. This disease is not known in California yet but the nematode that causes it has recently been found in nursery stock here imported from Hawaii and Florida.

As nematodes do not kill trees, they may seem rather benign and not a serious problem. This often means that the grower will pamper a poor tree for years and spend much money and time, and still end up with a poor tree. If a tree dies at least it’s definite.

Other reasons for the apparent lack of a nematode problem might be that avocados are a rather recent crop in California, and avocado groves are not old enough to be replanted yet. The replant problem in orchard crops is one of the biggest problems in fruit and nut culture all over the world and is often caused by the large populations of nematodes built up during the life of the tree. Another reason for the unimportance of nematodes in California avocado groves is the importance of *Phytophthora cinnamomi,* the cause of root rot in avocado. A person doesn't concern himself too much with a 10 to 20% loss in tree size when another disease is taking 100% of a tree.

Control of nematodes, as with many other plant diseases, has been approached along a number of lines—rotation, resistant varieties, and chemicals. There are no resistant varieties known where nematodes are a problem in avocados, which leaves chemical control as our best prospect.

Chemical control of nematodes around trees has been rather disappointing in the past because the materials used have not only killed the nematodes but also the trees. In recent years there has been a great deal of work done by the chemical companies and experiment stations in screening chemicals to find a better nematocide. Out of this work has come three compounds which I would like to mention today because they have recently been put on the market for sale. Nemagon, a Shell product related to D-D but not having phytotoxic effects around established plants, has been tried on a number of tree crops with good control of nematodes. This chemical is not soluble in water and has to be injected with a hand gun or chiseled in at about 10 inches.

V-C 13 nemacide, a product put out by the Virginia-Carolina, Chemical Corporation for sale in the East, is an organic phosphate not recommended for edible fruit or nuts yet. It can be applied in a water solution, and it has been very effective in controlling nematodes in turf and ornamental plants with no damage to the plant.

Vapam, put out by the Stauffer Chemical Company, has shown much promise as a fungicide and nematocide. It is a water soluble chemical which is easy *to* apply. Nematode counts made around avocado trees where Dr. Zentmyer has been testing this material against avocado root rot has shown good nematode kill. This material is phytotoxic though and where Dr. Zentmyer has been testing this material against avocado root rot has shown good nematode kill. This material is phytotoxic though, and whether we can kill enough of the pathogens without killing the tree is still to be seen.

In summing up, we can say that nematodes are not considered a serious problem in southern California on avocado. There are nematodes that could become established here and cause that problem. As our groves get older nematode problems will probably increase, and as we solve some of our more important disease problems nematodes will be a lot more conspicuous than they now are.