Citrus-Root Nematodes on Olive

pest pathologically and morphologically similar to that on orange roots infests and reproduces on olive roots

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The olive is a new host of the citrus-root nematode.

Studies revealed that the citrus-root nematode, *Tylenchulus semipenetrans* Cobb, from orange roots and olive roots are similar although the olive belongs to a family—*Oleaceae*—considerably removed from the family—*Rutaceae*—which contains the other known hosts of the pest.

Greenhouse tests showed that the nematode infested and reproduced on olive roots although less readily than on sour orange roots. This checks with observations of olive roots infested naturally in the field at Riverside.

In one of the greenhouse experiments, a rooted olive cutting of the Sevillano variety and a small orange seedling of the Standard variety were planted in opposite sides of nine root-observation boxes.

One week after planting, each tree of the first three boxes received 260 nematode larvae taken from olive roots. Each tree in three other boxes was inoculated with 5,000 larvae obtained from orange roots. Three boxes were kept for controls.

Four months after inoculation the roots against the glass of the boxes were examined for female citrus-root nematodes.

A few females were found on the roots of three orange and one olive tree that were inoculated with larvae from olive roots. Numerous females were found on the three orange trees that were inoculated with larvae from orange roots, but no infestation was observed on the olive roots in the same boxes. Many of the olive roots appeared to have died, which may have affected the results.

Nine months after inoculation the roots of the trees were removed and examined for colonies of citrus-root nematodes.

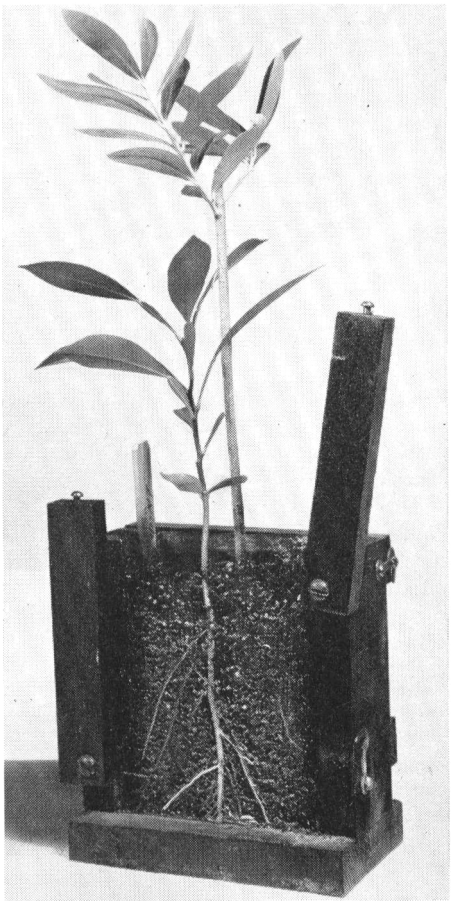
Mature females developed on the roots of all the orange and olive trees that were inoculated with larvae from olive or orange roots.

A greater number of females developed on the orange than on the olive roots of the trees inoculated, regardless of the source of the inoculum.

No infestation developed on the control trees.

A second greenhouse test studied the effect of host association on infestation.

A Mission olive and a Homosassa sweet orange seedling were planted together in six-inch pots. Olive and orange seedlings also were planted separately in other pots. Two pots of each of the three lots were inoculated nine and 30 days after planting. Each pot received approximately 26,300 larvae obtained from sour orange roots. A similar number of trees was maintained uninoculated for controls. The trees stayed in the greenhouse for five months, then the degree of infestation on the roots was determined.



Small olive and orange trees in root-observation box used for inoculations. Side of box has been removed to show orange roots near surface. One-third actual size.

In the pot where the olive and orange trees were planted together, one gram of roots of the olive tree averaged 119 larvae, while the orange trees averaged 775 larvae.

The olive trees planted separately contained only 12 larvae on one gram of roots. The orange trees planted alone averaged 727 larvae.

No infestation developed on the roots of the control trees.

These results show that the degree of infestation was less on olive than on orange roots regardless of whether the two hosts were growing in the same pot or separately. A slightly larger number of larvae was obtained from the olive roots when grown in association with the orange than when grown individually in the pots. Such differences should be attributed largely to an increase of the nematodes on orange roots and to subsequent infestation of olive.

These cross inoculation studies and microscopic examinations revealed that the citrus-root nematodes from orange and olive roots are similar pathologically and morphologically. While orange roots are infested more readily than olive roots, the olive should not be overlooked in any control program.

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RESISTANCE

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ever, the citricola scale obtained for the laboratory studies may not have been from the most resistant groves as field observations have shown that very poor kill is obtained with HCN fumigation in these resistant areas in central California.

The following tabulation gives the results of the experiments conducted in the three localities in southern California.

Resistance of Citricola Scale to HCN Fumigation

Location of grove	Dosage schedule	Mortality		
		Pre-treatment	Post-treatment	Net mortality
Temescal	20 cc.	49.9%	77.1%	54.2%
Canyon	22 cc.	44.5	75.3	55.5
Arlington Heights	22 cc.	14.2	29.2	17.5
Redlands	20 cc	41.4	64.2	38.9
	22 cc.	52.2	65.3	27.4

The groves located in the Arlington Heights and Redlands areas had been

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