HOSTS OF TYLENCHULUS GRAMINIS AND T. PALUSTRIS

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The citrus nematode, *Tylenchulus semipenetrans* Cobb, 1913, has several physiological races that attack citrus (*Citrus* spp.). Nematodes considered to be races of this species that do not attack citrus and parasitize only noncultivated plants were reported in Florida (4,5,6,7). These "wild" races which were previously subject to the same regulatory restrictions as *T. semipenetrans* infecting citrus, were recently separated into two species, *Tylenchulus graminis* and *T. palustris* Inserra et al., 1988 (3). Characterizing the "wild" races as two new species that differ morphologically and biologically from each other and also from *T. semipenetrans* (2) has now made large areas of noncultivated lands available for citrus nurseries. In the past these lands did not meet site approval requirements because they were infested with these "wild" races. Although *T. graminis* and *T. palustris* are not regulated species, it is necessary to identify them to prevent confusion of them with *T. semipenetrans* which is a regulated species. Very often identification is difficult (2) because only one or a few second stage juveniles (J2) may be present in samples. The probability of detecting *T. graminis* and *T. palustris* is increased by knowing the hosts of these two parasites and taking the samples from these hosts in potential citrus nursery sites. Because *T. graminis* and *T. palustris* have been found on several noncultivated plants indigenous to Florida, a survey was conducted during two and one half years to determine the hosts of these two species. The results of the survey are presented here.

IDENTIFICATION

Determination of new hosts was based on the presence of mature adult females infecting the roots of plants collected from noncultivated vegetation. To detect swollen adult females on the suspected hosts, roots were washed gently with tap water and observed in water with the aid of a stereomicroscope using transmitted and incident illumination. Adult females present in the roots were teased from the root tissues, mounted in water agar (1) and identified with a compound microscope.

HOSTS

*T. graminis* was found infecting four species of monocots which are widespread in Florida (Table 1).

<table>
<thead>
<tr>
<th>Nematode species</th>
<th>Scientific Name</th>
<th>Plant Host</th>
<th>Common Name</th>
<th>County of detection</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>T. GRAMINIS</em></td>
<td><em>Andropogon virginicus</em> L.</td>
<td>broomedge</td>
<td>Glades, Hernando, Highlands, Lake, Putnam, Sarasota, Sumter, and Taylor</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Axonopus curvatus</em> (Flugge) A. Hitch.</td>
<td>carpet grass</td>
<td>Glades</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Eremochloa ophiuroides</em> (Amiro) Hack.</td>
<td>centipede grass</td>
<td>Taylor</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Schizachyrium rizomatum</em> (Swallen) Gould</td>
<td>-----</td>
<td>Highlands (6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Sporobolus juncus</em> Kunth</td>
<td>wire grass</td>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td><em>T. PALUSTRIS</em></td>
<td><em>Baccharis halimifolia</em> L.</td>
<td>salt bush</td>
<td>Dixie</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Fraxinus caroliniana</em> Mill.</td>
<td>pop ash</td>
<td>Dixie, Polk, and Taylor</td>
<td></td>
</tr>
</tbody>
</table>

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The most common host of T. graminis was broomsedge, Andropogon virginicus L. (Fig. 1). Two strains of broomsedge, one with hairless and another with hairy leaves and stems, were infected with this species in the field. Nematode infectivity was confirmed on these two strains in greenhouse tests on seedling plants grown for six months in 25-cm-diam. pots containing soil infested with 1000 J2 per pot. Other broomsedge species such as Andropogon glomeratus (Wal.) B.S.P., also widespread in Florida, were not found infected with T. graminis during our field investigations. Differentiation of broomsedge species is difficult, especially if the plants are lacking inflorescences. The inflorescence is denser and larger in A. glomeratus than in A. virginicus (Fig. 2).

Adult females of T. graminis were also found infecting the roots of other native grasses reported in Table 1 (Figs. 3,4,5). These grasses are perennial and regenerate new sprouts and stolons after flowering, thus providing roots receptive to nematode invasion year after year. In Florida, these
plants are common in flatwoods and marshes and are widely distributed along with *T. graminis* in the northern, central, and southern parts of the state.

The hosts of *T. palustris* are reported in Table 1 (Figs. 6,7). The host range of *T. palustris* was confined to nonrustaceous dicots growing in swamps mainly in northern Florida.

Population densities of *T. graminis* and *T. palustris* on native hosts were lower than those of *T. semipenetrans* on citrus and rarely were greater than 1 nematode/cm² of soil, compared with *T. semipenetrans* densities ranging from 30 to 150 nematodes/cm² of soil (8).

**SURVEY AND DETECTION**

In surveying noncultivated areas destined for commercial citrus nurseries, all the plants reported in Table 1 can be selected to detect *T. graminis* or *T. palustris*; however, broomedge (Fig. 1) and pop ash, *Fraxinus caroliniana* Mill. (Fig. 7) are the key hosts for *T. graminis* or *T. palustris*, respectively, as shown by the wide distribution of the two nematodes on these hosts in several Florida counties (Table 1). Samples taken from these selected hosts usually contain all developmental stages of the two nematodes, facilitating their correct identification (2). In noncultivated lands destined for potential citrus nurseries, any disturbed site should be sampled
separately to detect accidental introduction of regulatory nematodes. If the land has a history of citrus cultivation, samples should be taken from any citrus sprouts present after tree removal.

ACKNOWLEDGEMENT


LITERATURE CITED