RESEARCH NOTES—NOTAS DE INVESTIGACION

SUSCEPTIBILITY OF *PITTOSPORUM TOBIRA* 'VARIEGATUM' TO *BELONOLAIMUS LONGICAUDATUS*[1]

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RESUMEN

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En pruebas de invernadero, las poblaciones del nematodo de aguijón (*Belonolaimus longicaudatus*) se aumentaron rapidamente en el Pittosporum japonés (*Pittosporum tobira* 'Variegatum') y causaron síntomas típicos como son raíces gruesas con las puntas hinchadas y con lesiones oscuras. Cuando se transplantaron cortes enraizados a macetas de 15-cm de diámetro infestadas con 1 000 nematodos de aguijón, se observo una disminución en el follaje y en al crecimiento de las raíces a los 13 meses. Las poblaciones de *Dolichodorus heterocephalus, Hoplolaimus galeatus, Paratrichodorus christiei,* y *Pratylenchus scribneri* se redujeron en *P. tobira* y no afectaron su crecimiento.

Palabras claves: arbustos ornamentales, *Belonolaimus longicaudatus, Dolichodorus heterocephulus, Hopolaimus galeatus,* patogenicidad de nematodos, *Paratrichodorus christiei, Pittosporum tobira, Pratylenchus scribneri.*

Japanese Pittosporum (*Pittosporum tobira* 'Variegatum') is used widely as a landscape shrub in Florida and is a host of root-knot (*Meloidogyne* spp.) nematodes (1). Many plantings in the fine sandy soils of the state are infested with these nematodes and frequently exhibit stunted, unthrifty growth. Examination of soil and root samples of poorly growing *P. tobira* in the summer of 1987 revealed not only *Meloidogyne incognita* (Kofoid & White) Chitwood, but also numerous sting nematodes (*Belonolaimus longicaudatus* Rau), and smaller numbers of stubby-root (*Paratrichodorus christiei* (Allen) Siddiqi), lance (*Hoplolaimus galeatus* (Cobb) Sher), and lesion (*Pratylenchus* spp.) nematodes. Since the roots exhibited symptoms of short stubby feeder roots and root lesions typical of nematode feeding, a greenhouse experiment was conducted to determine the possible effects of several important plant nematodes of Florida to *P. tobira*. The experiment was conducted in 15-cm-diam pots containing steam pasteurized Myakka fine sand (92% sand, 6% silt, 2%

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clay). A single 10–12 cm high rooted cutting of *P. tobira* 'Variegatum' was planted in each pot on 15 May 1987, and the pots were arranged in a randomized complete block design with five replicates. During 8–12 June 1987, soil was removed 2–3 cm deep around the plant stems and nematode inoculum suspended in 100 ml of water was added to the rhizosphere as follows: 500 *B. longicaudatus*, 1 000 *B. longicaudatus*, 5 000 *Pratylenchus scribneri* Steiner, 10 000 *H. galeatus*, 1 000 *Dolichodorus heterocephalus* Cobb, or 500 *P. christiei*. Pots to which no nematodes were added served as controls. The nematodes had been obtained from vegetable fields and maintained in pure cultures on suitable hosts in the greenhouse. The experiment was conducted in a greenhouse under 40% shadecloth and maintained at ambient air temperatures of 15–35 C. The pots were fertilized at monthly intervals with 1 g per pot of 10-4-10 N-P-K mixture. The foliage was clipped and weighed four times between 15 May 1987 and 18 July 1988. All but two sprigs of the foliage on the main stem were removed during the first three clippings, whereas the entire plant above the soil line was cut and weighed at the final harvest. Soil samples were collected at 5 months after infestation and at the final harvest with a 2.5-cm-diam probe and 100 cm^3 processed by centrifugal-flotation (2) for nematode population determination. After the final harvest, the roots were washed, examined for nematode injury, blotted dry, and weighed. Roots were incubated for 1 week for extraction of *P. scribneri* (3). Yield data were analyzed following standard procedures for analysis of variance (ANOVA), and differences between means were tested using Fisher's least significant difference.

Of the nematodes tested, only *B. longicaudatus* increased in population (Table 1). Clipping weights of plants initially infested with 1 000 of the sting nematodes per pot were significantly less than check pots for the last three clippings and for total clipping weight. Pots infested with only 500 sting nematodes had significantly lower clipping weights for two of the four clippings and total clipping weight also was significantly less. Root weights were significantly less for the high infestation rate but not for the low; however, severe injury typical of sting nematode symptoms of fewer secondary roots, stubby roots with swollen tips and darkened lesions were present at both infestation levels. Although a few *H. galeatus* and *P. christiei* were present in the soil and *P. scribneri* in plant roots at the end of the experiment, all populations were greatly diminished and root and foliage growth was not affected, indicating that these nematodes are not an important factor in the growth of *P. tobira*. Since *B. longicaudatus* was found to be highly pathogenic to *P. tobira*, it may be an important causal agent of the decline of certain plantings of this shrub in Florida.

Table 1. Effect of nematodes on the growth of *Pittosporum tobira* 'Variegatum'.

Treatment	Nematode populations[x]			Foliage clipping weight[y]					
	Initial	3 November 1988	18 July 1988	9 November 1987	6 January 1988	11 May 1988	18 July 1988	Total	Root[z] weight
Control	0	0	0	24.5	37.9	25.5	66.7	154.6	35.5
Belonolaimus longicaudatus	500	2 100	12 000	26.2	23.8	21.6	33.3	104.9	35.6
B. longicaudatus	1 000	7 350	11 075	18.4	18.0	10.1	27.3	73.8	23.5
Hoplolaimus galeatus	10 000	2 125	325	22.0	37.0	25.6	64.7	149.3	38.1
Pratylenchus scribneri	5 000	0	43	19.9	37.4	21.9	67.8	147.0	36.0
Paratrichodorus christiei	400	125	225	24.3	30.5	31.2	59.8	145.8	34.6
Dolichodorus heterocephalus	1 000	0	0	26.9	28.8	24.9	67.2	147.8	32.8
FLSD (0.05)				NS	10.4	9.0	11.2	15.6	7.9

[x]Number of nematodes in each 15-cm-diam pot.
[y]Grams fresh weight.
[z]Grams moist weight.

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