STUDIES ON A POPULATION OF *TYLENCHULUS SEMIPENETRANS* FROM CHILE

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Summary. The first attempt to determine the biyotypes of *Tylenchulus semipenetrans* occurring in Chile indicates that the "citrus" biotype is present in the country. The results of this test show that sour orange and Troyer citrange may be succesfully used as rootstocks for the management of the Chilean population of the citrus nematode.

Citrus is an economically important and developing industry in Chile. The citrus nematode, *Tylenchulus semipenetrans* Cobb, was reported for the first time in Chile in 1969 (Allen *et al.,* 1969) and is widespread in the country (Gonzáles, 1984, 1987), where it seems to be a major constraint of citrus production (Aballay, 1996; Magunacelaya and Dagnino, 1999). However, no information is a vailable on the biotypes of *T. semipenetrans* (Inserra *et al.,* 1994) occurring in Chile.

Recently, an apparently very aggressive population of *T. semipenetrans* was detected in declining citrus groves at Hijuelas in the V Region of Chile. Therefore, it was considered useful and interesting to determine the biotype represented and the citrus rootstocks available to control its attacks.

MATERIALS AND METHODS

To determine the biotype of the population identified as *T. semipenetrans*, six- month-old seedlings of *Citrus macrophylla* Wester, *Olea europaea* L. cv. Liguria and *Poncirus trifoliata* (L.) Raf. cv. Roubidoux and rooted cuttings of *Vitis vinifera* L. cv. Shyra and *Diospyros lotus* L. cv. Principe Hito were planted in steamed light soil (1:1 sandy:loamy soil). The soil was, collected from the infested citrus grove at Hijuelas, and, after steaming, was used to fill 1 l black plastic bags with holes at the bottom to allow escape of excess water.

Eggs of *T. semipenetrans* were obtained from lemon roots collected at Hijuelas by dispersing the egg masses in a blender with a 0.5% aqueous solution of sodium hiypochlorite. Nematodes, at an inoculum density of 130,000 eggs per pot, were poured in 50 ml of water suspension on the plant roots at planting. There were five plants, one to a bag, for each plant species inoculated. They were maintained for seven months in a glasshouse at 26± 2 °C and *ca.* 80% relative humidity at the University of Chile in Santiago, Facultad de Ciencias Agronómicas.

The experiment was terminated seven months after the nematode inoculation. The numbers of mature females and eggs of *T. semipenetrans* were determined after extraction of 10 g aliquots of roots using a blender, as previously indicated for the extraction of the eggs. To evaluate the effect of the nematodes on plant growth, top and root weights were measured and compared, by the Student's "t" test, with weights of control plants grown in steamed soil to which no nematodes were added.

Citrus aurantium L. and Troyer citrange [*P. trifoliata* x *C. sinensis* (L.) Osteck] were added to the list of the differential hosts to asses their suitability as rootstock for the management of this population of *T. semipenetrans*.

RESULTS AND DISCUSSION

The citrus nematode reproduced well on *C. macrophylla, V. vinifera* and *D. lotus*, barely on *O. europaea* and not at all on *P. trifoliata* (Table I). This indicates that, according to the Inserra's *et al.*, (1994) test, the population of *T. semipenetrans* from Hijuelas may be included in the "citrus" biotype.

The results of this experiment also show that Chilean populations of the citrus nematode can suppress growth of grapevine and persimmon (Table I). Such populations of *T. semipenetrans* reproduced moderately on sour orange and perhaps occasionally on Ttroyer citrange (Table I), on which, however, they did not cause any significant growth reduction. Therefore, it may be possible to use *C. aurantium* and Troyer citrange to control the citrus nematode in Chile.

Table I. Reproduction of *Tylenchulus semipenetrans* on differential hosts and effect of the nematode on plant growth.

Plant species	Nematodes on 10 g roots		Plant weights (g)			
			Top		Roots	
	Mature females	Eggs	Inoculated	Control	Inoculated	Control
Citrus macrophylla	456	3,698	120	115	47	43
Vitis vinifera	200	999	10 *	18	12 *	27
Olea europaea	12	22	64	35	45	27
Diospyrus lotus	2,217	5,143	3 *	13	10 *	42
Poncirus trifoliata	0	0	48	25	40	27
C. aurantium	90	334	108	77	52	42
Troyer citrange	0	30	89	87	33	51

* Difference statistically significant (P = 0.05) with respect to the control, according to Student's "t" test.

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Accepted for publication on 23 July 2004.