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RESEARCH NOTES

PATHOGENIC EFFECT OF VARIOUS POPULATION LEVELS OF *HELICOTYLENCHUS INDICUS* ON TOMATO AND ONION SEEDLINGS

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In February 1984, roots of tomato plants (*Lycopersicon lycopersicum* (L.) Karsten) grown at Crop Diseases Research Institute, Karachi, were found infected for the first time by females and juveniles of Indian spiral nematode (*Helicotylenchus indicus* Siddiqa). The infection was responsible for reduced root and shoot development and wilting of the affected plants. In Pakistan, this nematode was previously reported to occur on *Achras zapota*, *Prunus amygdalus*, *P. americana*, *Mangifera indica* and on citrus plants (Ahmad, 1983). This research note reports the effect of various soil population levels of *H. indicus* on the development of tomato and onion (*Allium cepa* L.) seedlings.

Naturally infested soil, collected from Crop Diseases Research Institute, University of Karachi, was mixed thoroughly and the population level of *H. indicus* was determined by processing the soil sample using Bearman's funnel technique (Southey, 1970). The soil was found to have an average of 308 nematodes/100g of soil. Various population levels, i.e. 308, 246, 184, 123, 61 and 0 nematode/100g soil were obtained by diluting the infested soil with steam sterilized soil collected from the same locality. Twenty pots were filled with soil of each inoculum level. Ten pots of each inoculum level were planted with one week old five seedlings either of tomato or that of onion. Later, the pots were thinned to one seedling per pot. The pots were kept at room temperature and watered frequently. The experiment was terminated after six weeks and fresh weights of different parts of plants were recorded to determine the correlation coefficient between population level of nematodes and the weight of different parts of tomato and onion plants. It was found that with an increase in the number of nematodes, there was a corresponding decrease in the weight of different plant parts (Table 1).

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Table 1. *Weight of tomato and onion plant parts at different populations of the Helicotylenchus indicus*

Population level (nematodes/100g soil)	Average weight* (g)				
	Tomato		Onion		
	Top	Root	Top	Bulb	Root
0	55.09	7.64	34.80	16.46	0.64
61	32.20	3.25	26.40	15.00	0.51
123	8.24	1.62	25.26	16.32	0.62
184	0.36	0.91	28.80	14.25	0.54
246	0.11	0.65	22.00	3.25	0.43
306	0.10	0.62	5.62	1.20	0.19
Correlation coefficient	0.89	0.85	0.84	0.87	0.86

*Average of ten plants.

The plants that were grown in nematode free soil, i e. zero population level, were more vigorous in their root and shoot development in contrast to those growing at increasing level of nematode population. This was on account of the increased stunting effect of the nematodes on shoot and root development with corresponding increase in the nematode population. Although other soil micro-organisms present in natural field soil may influence growth to some extent, yet it seems imperative to control this nematode especially when present at high population levels, adopting both preventive and curative control measures.

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