OBSERVATIONS ON SAMPLING TOOL, VERTICAL DISTRIBUTION AND WEED HOSTS OF *PRATYLENCHUS JORDANENSIS* IN AN ALFALFA FIELD

A. Mani[1] and Muzna S. Al-Hinai

Ministry of Agriculture and Fisheries, Agricultural Research Station, Rumais, PO. Box 50, Postal Code-121, Sultanate of Oman.

Summary. A population of *Pratylenchus jordanensis* was high when soil samples were collected using garden trowel when compared with auger. Nematode population was higher at 0-15 cm depth than at 15-30 depth. Seventeen weed species were recorded as hosts of *P. jordanensis* and monocotyledons supported fairly higher nematode populations than dicotyledon species.

The root-lesion nematode, *Pratylenchus jordanensis* Hashim, is widely distributed in the Sultanate of Oman where alfalfa is grown and is considered as an important parasite of the crop (Mani and Al-Hinai, 1997; Mani *et al.*, 1997). For investigations, soil samples are usually collected from the rhizosphere of plants using a garden trowel, soil corer or auger. However, for the alfalfa crop there is little information available on the most suitable sampling tool and depth of sampling. Hence, the present study was carried out to identify the sampling tool and optimum depth of sampling for estimating populations of *P. jordanensis*.

An alfalfa, *Medicago sativa* L., field infested with *P. jordanensis* was selected during the growing crop season at Rumais in the Batinah region based on previous experience (Mani and Al-Hinai, 1997). Soil samples were collected up to 15 cm distance from the base of plants and at 0-15 and 15-30 cm depths. On one side of the plant, soil was collected using a 2 cm diam. spiral auger and on the opposite side with a garden trowel. Fifteen soil samples were collected using each tool at each depth covering 1.5 ha cropped area. Each soil sample was thoroughly mixed and 250 cm^3 sample was drawn and processed by Cobb's sieving and decanting technique, followed by modified Baermann funnel method. Nematodes were collected after 36-48 hr using a 38 µm sieve and counted in one ml aliquot of the suspension under a stereo binocular microscope.

Weeds were collected from nematode-infested alfalfa fields at Rumais. Roots were washed free of soil, cut into small pieces, macerated with a blender at low speed and the suspension was incubated for 36-48 hr in a modified Baermann funnel containing water. Nematodes were counted in one ml aliquot of the suspension under a stereo binocular microscope. Identification of weed specimens was performed using Ghazanfar (1992) catalogue.

Results revealed that the nematode population was high at both depths when soil samples were collected using a garden trowel and it was almost double when compared with the auger (Table I). However, the population was higher at 0-15 cm depth than at 15-30 cm depth irrespective of the sampling tool used. The high population up to 15 cm depth could be due to the distribution of fibrous roots in the top layers of soil, although tap roots grow even up to a depth of one meter. Thus, the data clearly suggest that a garden trowel is a suitable tool and 0-15 cm the optimum depth for collecting soil samples from alfalfa crop for quantitative estimation of *P. jordanensis*.

Although seventeen weed species growing in alfalfa fields were recorded as hosts of *P. jordanensis*, only four species *viz.*, *Cyperus* sp. (92 nematodes per g root), *Echinochloa colona* (L.) Link (102 nematodes per g root), *Portulaca quadrifida* L. (10 nematodes per g root) and *Se-*

Table I. Effect of sampling tool and depth of sampling on populations of *Pratylenchus jordanensis* on alfalfa.

Sampling tool used	Nematode population in 250 cm^3 soil at different depths[1]	
	0-15 cm	15-30 cm
Auger	109 Ab	16 Aa
Garden trowel	207 Bb	40 Ba

[1] Data followed by different letters are significantly different at P = 0.05 (capital letter for equipment and small letter for depth of sampling).

[1] Current address: Florida Department of Agriculture and Consumer Services, Gainesville, Florida 32608, U. S. A.

taria intermedia Roem. *et* Schult. (30 nematodes per g root) were found to be new hosts in the present study and the remaining were reported to be hosts in an earlier survey conducted in Oman (Mani *et al.*, 1997). Nematode populations ranged from 30-102 per g root in case of monocots whereas it was less than 30 per g root in dicots. Monocot weeds belonging to the families Cyperaceae *viz., Cyperus conglomeratus* Rottb. and *Cyperus* sp., and Poaceae *viz., Chloris barbata* Sw., *Cynodon dactylon* (L.) Pers., *Dactyloctenium aegyptium* (L.) B., *E. colona* and *Paspadlidium geminatum* Forsskal were found to support 50-100 nematodes per g root. The results indicate that weeds growing in alfalfa fields help in the maintenance, multiplication and spread of the nematode within a field resulting in greater damage to the crop leading to a quick decline of alfalfa crop. Thus, these observations emphasize the role of weeds as a reservoir of nematode inoculum in cropped fields and suggest the need for implementing efficient weed management practices to reduce the severity of nematode damage as observed with root-knot nematode (Dabal and Jenser, 1990).

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