



Short Communication

Plant Nematodes Associated with Almond Seedlings in Kalat District, Balochistan

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ABSTRACT

The research was conducted to study the occurrence of plant parasitic nematodes associated with almond seedlings in Kalat district, Balochistan. The five most prominent nematodes in the nurseries were *Meloidogyne javanica*, *Paratylenchus nainianus*, *Pratylenchus zae*, *Scutylenchus rugosus* and *Zygotylenchus guevarai*. The similarities between nematode assemblages associated with almond seedlings were calculated and were found to be high in general.

Article Information

Received 7 September 2015

Revised 8 January 2016

Accepted 25 February 2016

Available online 1 August 2016

Authors' Contribution

AK conducted survey, collected and identified the nematodes, and wrote the article. SSS statistically analyzed the data.

Key words

Nematodes,
Almond, Nurseries.

Almond (*Prunus amygdalus* Batsch) is one of the economically important fruit plantation of Balochistan. The tree is severely damaged by several diseases including plant-parasitic nematodes, which produce symptoms that are often confused with physiological disorders, nutrient or water deficiency (Sehgal *et al.*, 2004). A number of species of plant nematodes have been reported to damage the crop (Qasim *et al.*, 1988; Khan *et al.*, 2009). The seedlings are more vulnerable to invasion of phytonematodes (Nayak *et al.*, 2004), therefore an attempt was made to survey seedlings from four different nurseries in Kalat district, Balochistan.

Materials and methods

The survey of Almond seedlings of four different nurseries of Kalat district, Balochistan was carried out to study the different plant parasitic nematodes associated with Almond during June 2012. A total of 46 rhizosphere soil samples were collected at a depth of 0–20 cm and a representative sample of 100 ml was processed by Cobb's sieving and decanting method followed by Baermann's funnel technique. The root samples were stained with 0.25% Trypan blue to identify presence of egg masses of root-knot nematodes if any followed by Baermann's funnel technique to get juveniles. Root-knot females were obtained by dissecting root-galls. The nematodes were identified by making permanent slides and the species were confirmed with the aid of keys and literature, while the root-knot nematode juvenile were identified by morphological and morphometric observations based on 25 second stage juveniles (J₂) according to Seinhorst

(1962) and females by preparing perineal patterns as described by Hartman and Sasser (1985).

Similarities between nematode assemblages were calculated using the quantitative similarity index of Bray and Curtis (1957), as follows:

$$S_{ij} = \frac{Zw}{A + B} \times 100$$

Where S_{ij} is similarity between the assemblages i and j, w is the sum of lower values of species common to both samples and A and B are totals for assemblages i and j.

Results and discussion

The five most prominent nematodes recorded were *Meloidogyne javanica* (Treub, 1885) Chitwood, 1949; *Paratylenchus nainianus* Edward and Misra, 1963; *Pratylenchus zae* Graham, 1951; *Scutylenchus rugosus* (Siddiqi, 1963) Siddiqi, 1979 and *Zygotylenchus guevarai* (Tobar Jiménez, 1963) Braun and Loof, 1966.

Similarities between four nurseries (localities) on the basis of nematode assemblages are given in Table I. It is apparent from Table II that the similarities with respect to almond seedling associated nematodes are in general high. The highest similarity is between nurseries of Rod Abdullah and Jamiatabad.

Sethi and Gaur (1989) reported that if seedlings are properly treated and are made nematode free the spread of nematodes to uninfected areas is reduced. It is suggested that almond seedlings provided to the farmers must be nematode free as nematode population even below the detection limit at transplanting time could become dangerous in a matter of a few months especially in sandy soils. Therefore, stringent nematode control measures should be adopted wherever the risk of nematode infection is foreseen.

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0030-9923/2016/0005-1579 \$ 8.00/0

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Table I.- Nematode species identified from almond seedlings.

Nurseries	No. of samples collected	Frequency of occurrence in samples*				
		<i>M. javanica</i>	<i>P. nainianus</i>	<i>P. zea</i>	<i>S. rugosus</i>	<i>Z. guevarai</i>
Kalat town	10	9*	8	6	7	6
Rod Abdullah	16	5	7	12	8	5
Jamiatabad	10	5	7	10	7	5
Kaley Abdullahjan	10	8	8	8	9	4

Table II.- Similarities between localities as calculated by Bray and Curtis index.

	Localities		
	Kalat Town	Rod Abdullah	Jamiatabad
Rod Abdullah	82.2		
Jamiatabad	71.4	95.5	
Kaley Abdullahjan	90.4	86.4	87.3

Acknowledgements

The work was supported by Pakistan Science Foundation, Islamabad.

Statement of conflict of interest

Authors have declared no conflict of interest.

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