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Effect of Neem (*Azadirachta indica*) on the Root-knot (*Meloidogyne javanica*) of Sweet gourd

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Abstract: In the mortality test of *Meloidogyne javanica*, Marygold extract of neem seed was found to be more lethal to the juvenile compared to extract of bark and leaf of neem.

Key words: Effect, neem, root-knot, sweet gourd

Introduction

Sweet gourd (*Cucurbita moschata* Duchesne), is an important, popular, cheap and mostly available vegetable in Bangladesh. The common species of root-knot nematodes are *meloidogyne incognita* Chitwood, 1949 and Meloidogyne javanica (Treub, 1885 and Chitwood, 1949 which attack most of the vegetable crops including sweet gourd. Neem is being used by the farmers in various ways in Sri Lanka (Ganesalingam, 1986). Neem seed Karnel extracts have been effectively used to control field crop pests, in extension experimental plots as well as in fields of vegetable growers (Fagoonee, 1986). Chemical control is discouraged now-a-days all over the world to avoid environmental pollution along with cost (Alam, 1987). Organic amendments with indigenous plant extracts is one of the useful method for controlling root-knot diseases (Ahmad, 1977; Mian and Rodriguez-kabana, 1982; Mahmood *et al.*, 1982; Sartaj *et al.*, 1985; Pathak *et al.*, 1989; Stephan *et al.*, 1989 and Ahmad and Karim, 1990). Organic amendments like seed, bark and leaf of neem are cheap and easily available in Bangladesh. Hence the present study is undertaken to see the effect of extracts of seed, bark and leaf of neem on the incidence of root-knot disease caused by *Meloidogyne javanica*.

Materials and Methods

In this study, effect of three extracts of neem viz. Seed, bark and leaf along with a control (distilled water) were taken for the mortality test of juveniles of *Meloidogyne javanica* in the laboratory ranged from September 1999 to January 2000. Neem seed (Unripe), bark and leaf (green) were collected from Hajee Mohammad Danesh University of Science and Technology, Dinajpur, Bangladesh Campus. The gram of neem seed was taken and then macerated in an electric blender and soaked separately in 100 ml distilled water and filtered with the help of funnel. This collected extract was considered as standard (S) solution. Twenty five gram neem bark and the same amount of leaves were washed carefully in running water and chopped. Then, macerated in an electric blender and soaked with 100 ml distilled water and filtered with the help of a funnel. These collected extracts were considered as standard (S) solution for neem bark and neem leaf, respectively. Subsequent dilutions S/2, S/10 and S/100 were also prepared by addition of distilled water in 6 cm diameter petri dishes, separately. Three replications were followed for each treatment.

After 12, 24, 48, 72 and 96 hours, the dead and surviving nematodes were counted with laboratory counter. Mean per cent mortality was calculated of the juveniles at different concentrations.

Results and Discussion

Extract of neem seed was found to be more toxic to the juveniles followed by neem leaf extract and neem bark extract (Table 1). Standard concentration (S) of all extracts of neem showed 100% mortality within 12 hours. IN case of bark extract, the mortality ranged from 80-100%, 82-100%, 84-100%, 85-100% and 90-100% among the tested solutions of S/2 after 12, 24, 48, 72 and 96 hours, respectively between the extract of neem bark and seed. The juvenile mortality was found to increase with the increase of concentration and exposure period (Table 1). Similarly, a mortality ranged 50-80%, 52-82%, 55-85%, 58-90% and 60-95% were observed among the S/10 solutions after the same intervals between neem bark and seed extracts. Regarding S/100 solutions it was 30-62, 32-65, 35-70, 40-75 and 48-80% after the aforesaid intervals. These results revealed that all neem extracts had nematicidal properties. Amongst them, neem seed extract was found superior in action to other extracts. Kashem *et al.* (1992) working with garlic extract and Hassan (1992) with ginger extract found that even at lower concentration (S/100) of both the plant extracts suppressed the nematode activity as was evident with out findings. Singh (1986) also observed that neem karnel extract was found to be the most-active followed by seed coat extract and fallen leaf extracts on the suppression

Table 1: Effect of extracts of seed, bark and leaf of neem on juvenile mortality of *M. Javanica*

Plant extract	Exposure	Concentration dose/per cent mortality				
		Control	S	S/2	S/10	S/100
	12	0	100	80	80	62
	24	0	100	92	82	65
Neem seed	48	0	100	100	85	70
	72	1	100	100	90	75
	96	3	100	100	95	80
	12	0	100	80	50	30
	24	0	100	82	52	32
Neem bark	48	0	100	84	55	35
	72	3	100	85	58	40
	96	4	100	90	60	48
	12	0	100	95	65	50
	24	0	100	100	70	52
Neem leaf	48	0	100	100	72	55
	72	2	100	100	75	60
	96	3	100	100	80	68

Each value is an average of three replications, S = Standard solution

of *Meloidogyne javanica*.

References

Ahmad, M. U., 1977. A review of plant parasitic nematodes in Bangladesh, A paper presented in a seminar in the Imperial College of Science and Technology, Univ. London, U. K. pp: 3.

Ahmad, M. U. and M. R. Karim, 1990. Effect of extract of indigenous plant on galling and growth of brinjal infected with *M. javanica*. Intl. Nematol. Network Newsl., 7: 5-7.

Alam, M. M., 1987. Pollution free control of plant parasitic nematodes by soil amendments with plant wastes, 22: 75-79.

Fagoonee, I., 1986. Use of neem in vegetable crop protection. Third Int. Neem Conf. Nairobi, Kenya, 10-15 July, 1986: 46.

Ganesalingam, V. K., 1986. The use of neem (Azadirachta indica) in Sri Lanka. Third Int. Neem Conf. Nairobi, Kenya, 10-15 July, 1986: 46.

Hassan, O.I., 1992. Nematicidal use of ginger against root-knot disease of brinjal caused by *Meloidogyne javanica*. An M. Sc. Thesis, submitted to the Dept. Of Plant Patho., BAU, Mymensingh.

Kashem, M. A., 1992. Effect of extract of garlic on the control of root-knot nematode *Meloidogyne javanica* of brinjal. An M.Sc. thesis, submitted to the Dept. of plant Path., BAU, Mymensingh.

Mahmood, I., S. K. Saxena and Z. Uddin, 1982. Effect c certain plant extract on the mortality of Rotylenchulu reniformis and *M. incognita*. Bangladesh J. Bot., 11: 154 157.

Mian, I. H. and R. Rodriguez-Kabana, 1982. A survey of th nematicidal properties of some organic materials availab in Alabama as amendments to soil for control c Meloidogyne arenaria. Nematropica, 12: 154-157.

Pathak, K. N., R. P. Nath and A. K. Jha, 1989. Effect c some aqueous leaf extracts on the larval hatch of root-kn nematodes (*M. incognita*) in situ conditions. Nemato Abstr., 59: 92.

Sartaj, A., J. M. Tiyagi and M. Maskoor, 1985. Preliminar studies on the nematicidal nature of two plants of th family compositae. Int. Nematol. Network Newsl., 2: 1 21.

Singh, R. S., 1986. Comparison of antifeedant efficacy ar extract yields of neem (*Azadirachta indica* A. Jus ecotypes and parts of a neem tree. Third Int. Neem Con Nairobi, Kenya, 10-15 July, 1986: 26.

Stephan, A., M. Zuhair and Al-Askari Ali, 1989. Effect c *Haplophyllum tuberculatum* plant extracts on root-kn nematode. Int. Network Newsl., 6: 31-32.