Indian J. Nematol. 16(1), (1986) : 48-50

EVALUATION OF NEMACUR AGAINST *MELOIDOGYNE INCOGNITA* IN A CARDAMOM NURSERY*

S. S. ALI

Nematology Laboratory, Central Plantation Crops Research Institute, Research Centre, Appangala, Coorg District, P.O. Heravanad—571 201, Karnataka

Abstract : Nemacur 400 E.C. @ 5, 10 and 15 kg a.i./ha when used as soil drench as well as foliar spray, on 2 months—old cardamom seedlings against *Meloidogyne incognita*, in an infested nursery significantly reduced the nematode population. There was no difference between the two methods of application. With an increase in nemacur dosage, the vigour of the seedlings increased. In general, soil drench treatment yielded better plant growth than foliar spray.

Key words : *Meloidogyne incognita*, nemacur, cardamom

The most important nursery problem in cardamom (*Elettaria cardamomum*, Maton) is root-knot nematode, *Meloidogyne incognita*. A survey of nurseries, in Tamil Nadu, Kerala and Karnataka, revealed 100 per cent root and soil samples infested with root-knot nematodes. The seedlings exhibited poor rhizome development, stunted growth, drying of leaf tips alongwith excessive branching of roots and were prone to fungal diseases like rhizome rot and damping—off of seedlings. After transplanting in secondary nursery and in main field, survivors were poor in growth and produced profuse sterile tillers and rosetting of leaves. An experiment was, therefore, initiated to evaluate efficacy of nemacur as a nursery treatment.

MATERIALS AND METHODS

An infested nursery site, constantly in use for raising cardamom seedlings for more than 3 years, was selected at the Central Plantation Crops Research Institute, Research Centre, Appangala (Karnataka). The seed, a high yielding cultivar, C1.-37, was sown in 6 × 1 m beds prepared with humus rich soil and raised 30 cm above the ground. Overhead coir mat covering was provided and mulched with paddy straw. At 2-3 leaf stage, thinning of seedlings was done, leaving 200 in each bed.

Two months—old seedlings were treated with nemacur 400 E.C., by soil drench as well as foliar spray, at 3 rates and replicated 3 times. For foliar spray, the soil surface, among the rows and interspaces between the seedlings, was covered with polythene sheets before spray was given by a hand atomizer. For drench application, the plots were irrigated to field capacity, before application. Untreated plots served as control. Test site was kept free from weeds and irrigated on every alternate day.

Prior to the application of the nematicide, roots (5 g) and soil (250 g) samples were drawn from each plot for assessment of nematode population. After 3 months, 10 seedlings were removed with intact roots, at random from each plot, for recording plant growth and nematode population in roots (stained with boilng acid-fuchsin-lactophenol for 3 minutes) and soil (250 g).

*Contribution No. 469 of CPCRI.

TABLE 1. *Effect of Nemacur against* Meloidogyne incognita *in a cardamom nursery (Mean of 3 replicates)*

Treatment (kg/ha)	No. of tillers	Leaf		Shoot		Root		Rhizome		Root-knot population (Per g of root and 250 g of soil)	
		Length (cm)	Breadth (cm)	Length (cm)	Weight (g)	Length (cm)	Weight (g)	Girth (cm)	Weight (g)	Post-treatment	
										Soil	Root
Drenching 5	1.6	10.9	1.9	17.1	8.8	11.9	8.1	3.8	3·3	63.7 (287.0)	109.7 (483.0)
„ 10	2.0	12.9	2.8	19.1	10.0	13.8	9.3	4.6	4.4	44.7 (312.7	57.7 (444.0)
„ 15	2.4	13.8	3.3	23.0	12.0	14.2	11.4	6.4	6.1	26.3 (309.3	49.0 (546·0)
Spraying 5	1.4	10.7	1.8	10.1	9.4	11.0	7.5	4.0	2.7	85.3 (323.3)	138.0 (501.0)
„ 10	1.6	12.2	2.6	20.7	10.1	11.8	8.6	4.7	3.5	57.7 (312.3)	80.0 (508.7)
„ 15	1.9	13.7	3.2	24.3	12.6	13.2	11.2	5.7	5.5	33.7 (304.3)	65.7 (503.0)
Control	1.0	9.4	1.5	15.3	5.9	7.8	4.0	3.0	1.8	336.7) (219.0)	(663.3) (477.7)
CD	0.2	0.3	0.1	3.7	1.3	0.9	1.0	0.5	0.5	—	54.0

Figures in parenthesis are per-treatment populations.

RESULTS AND DISCUSSION

All treatments significantly reduced the nematode population with the higher doses being better than the lower ones. Rao *et al.* (1979) reported 100 per cent nematode control in tea nursery by drenching nemacur as against 55-77 per cent reduction by foliar spray. However, in present study, 100 per cent control by drenching was not recorded by any treatment, both methods being at par.

Plant growth was also significantly better than untreated at all levels with maximum number of tillers, better rhizome development, increase in root, shoot and leaf area being recorded at 15 kg/ha level. There was a slight phytotoxicity (pale yellow discolouration of leaf lamina) when foliar spray @ 15 kg/ha was given. However, new emerging leaves, 15 days after the application, were normal. Generally, plant growth was better with soil drench than foliar application.

The author is grateful to Dr. K.V. Ahmad Bavappa, Director, Central Plantation Crops Research Institute, Kasaragod and to the previous Scientist-incharge of the centre, Dr. G. Subbarao for providing the facilities. Thanks are also due to Mr. Jacob Mathew, Head of Statistics Section, CPCRI, Kasaragod for the statistical analysis of data.

REFERENCES

RAO G.N., MURTHY, R.L.N. & CHANDRASEKHARAN R. (1979). Evaluation of some new systemic nematicides for basipetal effect to control tea root-knot nematodes in nurseries. *Proc. 2nd. Ann. Symp. Plantation Crop*. pp. 3-15.

WAIKWA, J.W., WAIHENYA, W.W. & GICHURE, E. (1978). Control of root-knot nematode, *Meloidogyne africana* in a coffee nursery using a systemic nematicide. *Kenya coffee*, 43 (509) : 233-236.

Accepted for publication : March 1985