Cardamom 12/9/80

Indian J. Nematol. 6 (1976) : 174-175

75

SHORT COMMUNICATIONS

ON THE INCIDENCE OF ROOT-KNOT NEMATODE IN CARDAMOM NURSERIES

BY

P. K. KOSHY, C. P. RADHAKRISHNAN NAIR, V. K. SOSAMMA and P. SUNDARARAJU

Central Plantation Crops Research Institute, Regional Station, Kayangulam, Krishnapuram-690533, Kerala, India

Cardamom, *Elettaria cardamomum* Maton., cultivated mostly in the evergreen forests o Kerala, Karnataka and Tamil Nadu states is parasitised by a number of nematodes. Kumar *et al.* (1971) reported *Meloidogyne incognita*, *M. javanica* and *Radopholus similis* from cardamom. Observations made on the incidence and control of root-knot nematode on cardamom seedlings are reported here.

Root systems of plants removed at random from secondary nurseries at the Cardamom Research Station, Pampadumpara, and from Cardamom Board nurseries at Vandiperiyar and Amaravathy were washed free of soil for recording gall counts on roots. Later, roots were cut into pieces of 3 cm length, mixed well and an aliquot of 5 g stained in acid fuchsin-lactophenol for 5 minutes, and blenderised in 150 ml water. The nematode population was recorded by counting 3 aliquots of 5 ml each of the suspension. The average number of galls per 10 cm of root and the total population (females, males, larvae, eggs) per gram of root were 7.6/4665, 4.9/844 and 3.1/134 in the roots from nurseries at Pampadumpara, Vandiperiyar and Amaravathy respectively. It may be seen that at Pampadumpara nursery the incidence of root-knot is the maximum, presumably because of the use of the same nursery beds for over 10 years compared to five and two years at Vandiperiyar and Amaravathy respectively.

Infested seedlings used for transplantation often serves as an important source of inoculum in the main field. For instance, transport of young tea plants from infested nurseries to planting sites is known to be one of the prime causes of spread of *Pratylenchus loosi* infestation in the tea areas of Ceylon (Hutchinson & Vythilingam, 1963). Heavy incidence of *M. incognita* in the cardamom nurseries of the High Ranges in Kerala as revealed in the present survey would obviously result in the distribution of the nematode in the main field unless suitable control measures are adopted to prevent this. Regulatory measures exist in Brazil according to which owners of coffee nurseries have to treat the nursery soil with nematicides (Lordello, 1972) to avoid introducing nematodes from infested nurseries. Rao (1966) reported control of root-knot in tea nurseries of South India by DBCP or metham sodium treatment of nursery beds. All government nurseries in Kerala treat pot mixture used for raising pepper cuttings with methyl bromide (Koshy, unpublished).

Dip treatments of seedlings in DBCP at 1000 ppm and 500 ppm concentrations for different durations (1, 3, 5, 10 and 15 minutes) were therefore tried to evolve a suitable dip treatment of infested seedlings. The nematode population in roots prior to treatment was assessed as described earlier. After the treatment the seedlings were raised individually in 10 cm earthen pots filled with sterilised soil along with untreated control. Though none of the treatments was found effective for complete control, in general, it was seen that with increase in strength and durations

there was corresponding increase in root growth of the treated plants and decrease in root galls compared to the untreated plants. No phytotoxic symptoms were seen on the plants even 3 months after the dip treatment in both concentrations and at the different durations mentioned earlier.

The higher incidence of root-knot causes poor stand of transplanted seedlings in the main field, render the plants less resistant to drought and may also predispose them to clump rot disease. Screening of different cultivars of cardamom and possibilities of using non-host shade trees in cardamom plantations to root-knot therefore invite immediate attention. As a cultural method of control repeated use of the same nursery bed year after year, now practised in almost all nurseries, should be avoided. Preplant fumigation of nursery beds with nematicides could be adopted.

The authors wish to express their thanks to Dr. K. V. Ahmed Bavappa, Director and Dr. (Mrs) K. Radha, Plant Pathologist in-charge, Central Plantation Crops Research Institute, Regional Station, Kayangulam for supporting this study. Their thanks are also due to Dr. K. I. Wilson, Plant Pathologist, Cardamom Research Station, Pampadumpara and Shri K. V. George, Director, Cardamom Board, Cochin for proving nursery seedlings.

REFERENCES

HUTCHINSON, M. T. & VYTHILINGAM, M. K. (1963). The distribution of *Pratylenchus loosi* Loof among tea estates in Ceylon, with particular reference to altitude. *Tea Q.* **34**: 68-84.

KUMAR, A. C., KASI VISWANATHAN, P. K. & D'SOUZA, G. I. (1971). A study of plant parasitic nematodes of certain commercial crops in coffee tracts of South India. *Indian Coffee* **36**: 1-3.

LORDELLO, L. G. E. (1972). *Economic Nematology*. Academic Press, London, New York, pp. 268-284.

RAO, G. N. (1966). *Report of the Scientific Department, United Planters' Association of South India*, 1965-66, pp. 43-59.