

EVALUATION OF PESTICIDES FOR CONTROL OF ROOT-KNOT NEMATODE INFESTATION OF RUBBER (*HEVEA BRASILIENSIS*) SEEDLINGS

Plant parasitic nematodes cause considerable loss by damaging cultivated crops. In rubber plantations, the occurrence and infestation of plant parasitic nematodes have been reported (Raveendran and Nadackal, 1975; Rajendran and Jayarathnam, 1977; Nehru *et al.*, 1991). Rubber seedlings grown in nurseries where population of *M. incognita* is above 40 per cent showed symptoms of root-knot infestation (Thankamony *et al.*, 1996). The nematode infested rubber seedlings had conspicuous swellings on the lateral roots and exhibited symptoms of wilting, dwarfing, discoloration and shedding of leaves.

A complete control can be achieved only by the application of nematicides in soil (Singh and Prasad, 1973; Amaranatha and Krishnappa, 1992; Poornima and Vadivelu, 1993). Soil application of nematicides prevents emergence of the larvae from cysts and larval penetration and development in the host roots (Kaul and Sethi, 1988). The incidence of root-knot nematode, *M. incognita*, in rubber seedling nurseries is now becoming a noticeable problem and therefore, necessitates proper control measures.

Efficiency of four granular pesticides against *M. incognita* was evaluated in field trials. The experiments were laid out in an infested area at the regional nursery of the Rubber Board at Kadackamon, Punalur for three years from 1994-95 to 1996-97. Carbofuran 3 G, phorate 10 G, aldicarb 10 G and sevidol 4:4 G were tested at three

different concentrations of 6, 10 and 15 kg per ha per application. Each treatment was replicated five times in a randomised block design in beds of 3 x 1.8 m size planted with 100 seedlings in four rows. For each application, the specified quantity of pesticide was mixed with dry soil, applied uniformly to the beds and dibbled in, during September and December. The control beds received all the operations other than the pesticide application. The beds were irrigated regularly and were kept free of weeds.

Observations were made after six months of first application. Five plants, at random, were carefully removed with the root system intact from every bed, washed free of soil and different growth parameters such as shoot length, shoot weight, girth, nematode galls per plant, root-knot index and nematode population per g root recorded. Root-knot index was calculated (Verma, 1993) on a 1 to 5 scale (1 = no galling; 2 = 1-25% roots infested; 3 = 26-50% roots infested; 4 = 51-75% roots infested; and 5 = 76-100% roots infested).

The analysis of the results revealed significant differences between the treatments for all attributes under study. Of the pesticides evaluated, growth parameters of carbofuran and phorate treated plants were on par during 1994-95, but during 1995-96 and 1996-97, carbofuran appeared to be more effective at 15 kg per ha (Tables 1&2). All the treatments at the higher dose (15 kg/ha) significantly increased plant