

Control of the Root-knot Nematode, *Meloidogyne arenaria* in Brinjal Nursery with the Fungus, *Paecilomyces lilacinus* and the Systemic Nematicide Carbofuran

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The root-knot nematodes, *Meloidogyne incognita*, *M. arenaria* and to a lesser extent *M. javanica* affect brinjal in Tamil Nadu, India causing an yield loss of 20-30%. The nematodes infect the crop invariably in the nursery, since farmers use repeatedly the same field for this purpose.

Two field trials were carried out to evaluate application of the systemic nematicide carbofuran and the fungal biocontrol agent, *Paecilomyces lilacinus*, for the management of the root-knot nematode, *M. arenaria* in brinjal nursery.

Raised seed beds of 1 m² were formed in a loamy, *M. arenaria*-infested (110±20 juveniles per 100 ml) soil with an interspace of 30 cm between beds. Well decomposed farm yard manure was applied at the rate of 200 g per bed and incorporated into the soil by light hoeing. The treatments consisted of application of carbofuran 3% granules at 1 or 2 g a.i. per m², the fungus contained in 20 g of sorghum grains, equivalent to 49 x 10⁸ spores per m² and the nematicide at either dosage

plus the fungus (20 g per m²) combination treatments and an untreated control, thus totally forming six treatments, each replicated four times. The fungus required for the experiment was cultured on soaked and autoclaved sorghum grains, incubated at 25°C and 15-day-old cultures used in the experiments. All the treatments were given on the day of sowing. The required quantities of the nematicide and the fungus were applied to the seed beds and lightly hoed. Each bed was sown with 1 g of brinjal seeds (cv. MDU 1) and the beds individually watered daily with a rose can. The first experiment was conducted during July-August and the second during November-December, 1991. The experiments were terminated 60 days after sowing and observations on the growth of seedlings and level of nematode infestation recorded. Ten seedlings were removed from each replicate and the total number of nematode galls was counted and the mean arrived at. The fresh weight of seedlings was taken as an index of growth and for this purpose 25 seedlings were selected at random with roots intact, washed free of soil, excess

Table 1. Control of *M. arenaria* in brinjal nursery*

Treatment	Fresh weight of 25 seedlings (g)	No. of galls/plant
Carbofuran 1 g a.i./m ²	116.7 ^c	18.5 ^b
Carbofuran 2 g a.i./m ²	125.7 ^b	9.1 ^c
Carbofuran 1 g a.i./m ² + <i>P. lilacinus</i> 20g/m ²	135.3 ^a	9.0 ^c
Carbofuran 2 g a.i./m ² + <i>P. lilacinus</i> 20g/m ²	136.8 ^a	4.5 ^d
<i>P. lilacinus</i> 20g/m ²	121.8 ^c	18.9 ^b
Untreated control	109.0 ^d	32.4 ^a

* Pooled data from two independent trials conducted during two different seasons

moisture removed and weighed. The data from the two trials were pooled and analysed statistically.

In both the experiments, no treatment gave nematode-free transplants. The seedlings in combination treatments consisting of carbofuran and the fungus were superior to those in all the rest of the treatments in growth while the nematicide at 2 g a.i. per m² plus the fungus gave the least nematode infection. The biocontrol agent also gave significantly better growth of seedlings and lesser nematode infection when compared to the control, but was inferior to carbofuran application at 2 g a.i. per m², but on a par with 1 g a.i. per m².

The results eventhough establish the antagonistic activity of the fungus against the root-knot nematode and its compatibility with carbofuran, has limited value, because certain reports indicate that the fungus could

be hazardous to humans (Agarwal *et al.*, 1979; Petit *et al.*, 1980; Rockhill and Klein, 1980). Hence, application of carbofuran 2 g a.i. per m² at the time of sowing is suggested, for the management of root-knot nematode in brinjal nursery.

KEY WORDS : *Meloidogyne arenaria*,
Paecilomyces lilacinus,
biological control

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