

Control of *Meloidogyne incognita* on *Coleus forskohlii* with *Paecilomyces lilacinus* in Farm Yard Manure Amended and Non Amended Soil

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Coleus forskohlii (Willd.) Briq. (Labiatae), a spice and condiment crop, is highly susceptible to the rootknot nematodes, *Meloidogyne* spp. Using it as a test plant, the influence of amending soil with organic manure, on the biocontrol of *Meloidogyne incognita* with *Paecilomyces lilacinus* was investigated in glass house.

A red loamy soil (pH 8.0) with an organic matter content of 0.2% was selected for the experiment. Air-dried soil free of nematodes was inoculated with an identical soil containing a monoculture of *M. incognita*, to obtain a population density of 0.5 juveniles per g. Clay pots of 2.5 kg capacity, were filled with the nematode infested soil and planted with one terminal stem cutting of *C. forskohlii*, (12 cm long and 0.5 cm diam.) per pot. The experiment had the following four treatments :

- (i) Control (applied 2 g of autoclaved standard PDA)
- (ii) Autoclaved farm yard manure at 4% (W/W) (FYM)

(iii) 2 g of standard PDA containing a 15-day old culture of *P. lilacinus* (PL) and

- (iv) Autoclaved farm yard manure at 4% (W/W) + 2 g of PDA containing *P. lilacinus* (FYM + PL) (Combination of treatments ii and iii).

A randomized blocks design with six replicates for each treatment was used. The treatments were given one month after planting. The fungal culture in PDA or plain PDA was well macerated in a waring blender and incorporated in the top 10 cm of soil in pots. Autoclaved and well powdered farm yard manure was also applied in a similar manner. In addition to the respective treatments, the pots also received 1 g each of urea, superphosphate and potassium sulphate. The experiment was concluded four months after planting. The roots were gall indexed on a 1-5 scale (Table 1). The number of egg masses parasitized by the fungus was counted from a random sample of 50 egg masses, by examining for the presence of the fungus and egg necrosis.

Table 1. Control of *M. incognita* on *Coleus forskohlii* with farmyard manure and *Paecilomyces lilacinus*

Treatment	Fresh weight of shoot (g)	Fresh weight of root (g)	Fresh weight of tuber (g)	Gall index*	No. of egg masses/g of roots	% egg masses parasitized
Control	170.4 a	5.6 a	78.8 a	5.0	29.0 c	—
Farmyard manure	215.3 b	7.7 b	94.6 b	5.0	17.3 b	—
<i>P. lilacinus</i>	174.9 a	6.2 a	74.3 a	5.0	26.2 c	6.7
Farm yard manure + <i>P. lilacinus</i>	238.3 b	12.4 c	110.4 c	5.0	12.2 a	25.8

* 1 = no galls; 2 = 1-25% roots galled; 3 = 26-50% roots galled

4 = 51-75% roots galled; 5 = above 75% roots galled

Column figures followed by different letters are significantly different from each other by L.S.D. (P = 0.05)

More than 75% of the roots were galled in all the treatments thus recording an index of 5, but the FYM + PL and FYM treatments had significantly fewer egg masses when compared to the control and PL treatments, which were on a par (Table 1). Egg masses were parasitized to the extent of 6.7 and 25.8% respectively in PL and FYM + PL treatments.

Shoot weight was on a par in FYM and FYM + PL treatments, but significantly higher than the control and PL treatments. Root development was significantly better in FYM + PL treatment when compared to the rest. The yield of tubers was highest under FYM + PL treatment followed by FYM, both the treatments significantly differing from control. The PL treatment was on a par with control.

Successful trials with *P. lilacinus* have been conducted mostly in soils amended with various types of organic amendments, but the role of these amendments which are known to

control nematodes has not been separately evaluated with suitable controls (Rodriguez Kabana and Morgan Jones, 1988). The results of the present studies indicate that *P. lilacinus* controls *M. incognita* in a soil of very poor organic matter status only when amended with farm yard manure. It will not be practicable to apply the high dosage of farm yard manure (4% W/W) used in the experiment, under field conditions. So there is a need to identify effective, cheap, easy to apply and easily available organic amendment for use with *P. lilacinus*.

Key words: *Paecilomyces lilacinus*,
Meloidogyne incognita,
Coleus forskohlii

REFERENCES

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