*Research Paper :*

# Biomanagement of root-knot nematode using AM fungus *Glomus fasciculatum* in tomato

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## SUMMARY

**A field study was conducted by using *Glomus fasciculatum* @ 50, 100 and 200 spores/g. of soil and Carbofuran 3G @ 0.3 g. a.i/m² individually against root-knot nematode, *Meloidogyne incognita* infesting tomato cv. PUSA RUBY. Carbofuran 3G @ 16.6 g/m² significantly reduced the soil nematode population and recorded better germination percentage in the nursery compared to all other treatments. However, in the main field, *Glomus fasciculatum* @ 200 spores/g. of soil was found to be effective in improving the plant growth parameters like shoot length ( 105 cm), shoot weight (103.5 g), root length (27.5 cm), root weight ( 20.32 g), yield per plot (3.54 kg) and C:B ratio (1: 3.26) and reducing soil nematode population by 84.51 per cent with less number of galls per plant (18.08), egg masses per plant (8.37) and root-knot index (2.75) over inoculated check.**

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Tomato (*Lycopersicon esculentum*) is one of the most important commercial and widely grown vegetable crops. Tomato crop is being grown throughout the year and is attacked by 60 species of phytoparasitic nematodes from 19 genera. Among these, major damage is caused by root-knot nematode with an yield loss of 35 per cent (Jonathan *et al*., 2001).

Management of root-knot nematode, *Meloidogyne incognita* in solanaceous crops using environmentally safe and economical techniques *viz*., botanicals, bioagents, antagonistic crops, resistant or tolerant varieties and their combinations etc., are now being emphasized to reduce or phase out the use of synthetic chemicals. Keeping these facts in view, a field study was carried out to evaluate bioagent *viz*., *Glomus fasciculatum* at different spore load in comparison with Carbofuran 3G against *M. incognita* in tomato.

## MATERIALS AND METHODS

### Nursery:

The experiment was conducted in a *M. incognita* infested field belonging to Nematology Section, Department of Plant Pathology, GKVK, UAS, Bangalore. Twenty raised nursery beds each measuring 1 x 1 $M^2$ were prepared. The treatments included were $T_1$ = Carbofuran 3G (0.3 g a.i/$m^2$), $T_2$ = *G. fasciculatum* @ 50 spores/g of soil, $T_3$= *G. fasciculatum* @ 100 spores/g of soil and $T_4$ = *G. fasciculatum* @ 200 spores/g of soil and $T_5$= Inoculated check. Treatments were imposed in the nursery at the time of sowing. Nursery beds were irrigated daily for first seven days and later irrigation was done every alternate day. Percentage germination and nematode population in the nursery at the time of transplanting was recorded.

### Main field:

Thirty days old seedlings from the treated nursery were transplanted to the infested main field with plot size of 2 x 2 $m^2$ plots. The treatments were allotted in a randomized complete block design with four replications. Normal package of practices were followed in raising the crop. The observations on shoot length, shoot weight, root length, root weight,