



**STUDIES ON THE INTERACTION OF
ROOT-KNOT AND RENIFORM NEMATODES
WITH FUNGI ON TOMATO**

ABSTRACT

THESIS

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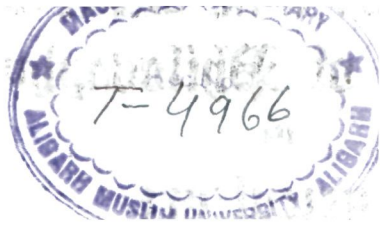
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STUDIES ON THE INTERACTION OF ROOT-KNOT AND RENIFORM
NEMATODES WITH FUNGI ON TOMATO.

ABSTRACT

In the present study in all 21 fungi were isolated from rhizosphere of tomato plants cv. Pusa Ruby. The frequency of rhizosphere and rhizoplane fungi increased with increase in age of plant. The frequency of A. niger and A. flavus was highest in rhizosphere and rhizoplane respectively.

The growth of R. solani and P. aphanidermatum was most inhibited by A. fumigatus; of F. oxysporum f.sp. lycopersici by A. nidulans and of A. solani by A. candidus. Least inhibition in the growth of all the fungi except R. solani was by R. nigricans.

The damage to plant was more at higher inoculum densities of nematodes/fungi. The nematode multiplication declined with the increase in the level of inoculum. The minimum threshold for nematode and fungi are 1000 J2/g.f. and 0.50 g. mat per kg soil respectively.

Least germination of seeds of tomato was observed when the seeds were infested with F. oxysporum f.sp. lycopersici, F. moniliforme, P. aphanidermatum, P. debaryanum, R. solani and C. lycopersici. These fungi adversely effect both the plumule and radicle.

There no germination of seeds in standard (S) concentration of culture filtrates of the fungi F. oxysporum f.sp. lycopersici was most damaging at emergence stage when inoculated separately. Highest post emergence damping-off was caused by P. aphanidermatum. However, seed germination has been most inhibited when soil was infested with both nematodes together with R. solani, A. solani, F. oxysporum f.sp. lycopersici and P. aphanidermatum. Infection with M. incognita caused more damping-off than R. reniformis with various fungi in separate inoculations.

Standard concentration of culture filtrate of all the rhizospheric fungi has been highly inhibitory to larval hatch. The inhibitory affect of culture filtrate decreased with increase in the dilution. In the culture filtrate of A. flavus, A. niger, A. tenuis and C. dematium the mortality was highest and hatching least.

Simultaneous inoculation of plants with both the nematodes and fungi caused more damage to tomato than sequential inoculation in all the combinations. Sequential inoculation with nematode one week prior to the fungus inoculation caused more disease incidence than nematode inoculated after fungus. The multiplication of both the nematodes has been adversely affected when inoculted with A. solani, R. solani, F. oxysporum f.sp. lycopersici, P.

aphanidermatum and A. niger. The numbers of M. incognita have been more adversely affected than that of R. reniformis. A. niger enhanced the damage to plants when inoculated with F. oxysporum f.sp. lycopersici.

Leaf extracts of plants increased the growth of all the saprophytic fungi to a varying degree. The growth of A. nidulans and A. fumigatus was highest in the medium with the extract of M. indica while that of A. flavus, A. niger and A. nidulans in the medium with the leaf extract of R. communis. The leaf extracts has also resulted in higher mortality and at the same time inhibited hatching of larvae. Soil amendment with chopped leaves of tested plants improved tomato plant growth at the same time reduced multiplication of M. incognita and R. reniformis. A. indica was also very effective in improving the growth of plants and minimising the damage to plants by inoculation with nematode + fungus (Pathogenic) or nematode + fungus (Saprophytic) + fungus (Pathogenic).