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## Visualization of interaction between *Pochonia Chlamydosporia* and *Meloidogyne incognita* and their impact on tomato crop

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### Abstract

In present studies, the biocontrol potential of *Pochonia Chlamydosporia* was evaluated against *Meloidogyne incognita*. In *invitro* condition, *P. chlamydosporia* was tested for parasitism of eggs and females of *M. incognita*. The result indicated that this fungus parasitized 87% eggs and 82% females. Culture filtrate (CF) of *P. chlamydosporia* was tested for its larvicidal activity at four different concentrations i.e., 25, 50, 75 and 100 % against *M. incognita* 2<sup>nd</sup> stage juvenile. The mortality of 2<sup>nd</sup> stage juvenile was directly proportioned to the concentration of the CF and to the duration of exposure. The maximum mortality was 97.3% at 100% concentration of the culture filtrate after 96 hours followed by 86.6% at 75% concentration. While minimum mortality was 7.3% in 25% concentration after 24 hrs. The result of the pot experiment proved that *P. chlamydosporia* has reduced the incidence of RKN and improved all tested agronomic growth parameters. The treatment with inoculated *M. incognita* alone reduced plant height, fresh shoot, and fresh root weight by 44.7%, 29.8%, and 32.8% respectively over uninoculated healthy control. *P. chlamydosporia* improved all the tested growth parameters in presence of *M. incognita*. Histopathological studies on the interaction of *Pochonia chlamydosporia* and *Meloidogyne incognita* on tomato roots revealed anatomical changes among treatments. Less number of galls with small in size and scarcer abnormalities in the vascular cylinder was observed in plants inoculated with *P. chlamydosporia* and *M. incognita* than the plants treated with nematode only. The fungus was seen in in the intercellular spaces of cortical and epidermal cells while the vascular bundles of the plant remain intact, inoculated only with *P. chlamydosporia*. The plants treated with both fungus and *M. incognita*, *P. chlamydosporia* was found in the vascular region affected by the nematode. In the infected roots, many mature females were seen which feed on giant cells. The findings also revealed that control healthy plants were not affected and no histological changes were noted.

**Key words:** Histopathology, *Pochonia chlamydosporia*, *Meloidogyne incognita*, tomato

