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Efficacy of native bacterial isolates against root-knot nematode, *Meloidogyne incognita*

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Abstract

Plant-parasitic nematodes (PPNs) are known to be the most destructive groups of crop pathogens and cause annual crop losses of approximately $125 billion globally (Chitwood, 2003). Chemical nematicides are commonly used to control root-knot nematodes, RKN, but these toxic chemicals pose a significant threat to the soil ecosystem and human health (Oka, 2010). Hence, the development of affordable and environmentally friendly bio-agents has become imperative due to restrictions on the use of nematicides. Using of biological control agents is an alternative method for sustainable management of RKNs. Considering the importance of the damage done by RKNs in Manipur, an investigation was carried out to know the efficacy of native bacterial isolates against root-knot nematode, *Meloidogyne incognita* in *in-vitro* condition. Effect of bacterial isolates on egg hatching and second stage juvenile (J2) mortality of *M. incognita* were observed. A total of 100 numbers of eggs as well as second stage juvenile (J2) of *M. incognita* were used for the study. Results of the efficacy of native bacterial isolates against *M. incognita* revealed that, among the bacterial isolates namely *Bacillus megaterium* (MF36134), *B. amyloliquefacience* (OR304217), *B. subtilis* (OR298285), *Providencia rettgeri* (OR294194) and *P. vermicola* (OR335551), *B. subtilis* showed the lowest percentage (18.70 per cent) of egg hatching and highest percentage of juvenile mortality (83.50 per cent) followed by *B. amyloliquefacience* (24.77 per cent) in egg hatching and 80.83 per cent in juvenile mortality over control. The above findings resulted that the antagonistic effect of bacterial isolates against *M. incognita* gave positive response.

Keywords: Root-knot nematode, plant parasitic nematodes, biological control agents, sustainable, *Bacillus subtilis*, *B. amyloliquefacience*

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