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Diversity and biocontrol potential of bacterial consortia associated to root-knot nematodes

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ABSTRACT

The bacteria associated to egg masses and second stage juveniles (J2) of root-knot nematodes (*Meloidogyne* spp.) were studied using three different soils from naturally infested farms in Apulia (Italy). The species were isolated and identified with 16S rRNA sequencing or characterized with metabolic profiles. They included members of genera *Pseudomonas* and *Bacillus*, together with *Lysinibacillus sphaericus* and an unclassified *Chryseobacterium* sp. To identify potential biocontrol agents, a greenhouse assay was carried out with isolates of *B. cereus*, *B. licheniformis*, *L. sphaericus*, *P. fluorescens* and *P. brassicacearum*. The bacteria were introduced in soil on tomato seedlings before inoculation with juveniles of *Meloidogyne incognita*, and significantly reduced the nematode densities after two reproductive cycles. However, plants and root weights were not affected by treatments. In a second assay with higher bacterial inocula, *B. licheniformis* and *P. fluorescens* significantly reduced the J2 galling on tomato roots, at 21 dpi. The potential of rhizosphere bacteria in management of root knot nematodes is discussed.

Keywords Bacteria, *Bacillus*, biocontrol, *Meloidogyne*, nematode, parasitism, *Pseudomonas*

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