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## **Biological control of the rootknot nematode, *Meloidogyne javanica* (Chitwood) using *Bacillus* isolates, on soybean**

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### **Abstract**

In this study, the biocontrol potential of *Bacillus* isolates was investigated in laboratory and greenhouse experiments. Five out of 70 bacterial isolates from the root-zone of crops and a goat pasture caused second stage juvenile (J2) mortality greater than 50% *in vitro* after 24 hours. Three of the five selected isolates (BC27, BC29 and BC31) which were isolated from the root-zone of a goat pasture caused J2 mortality greater than 80% at  $10^8$  spores  $ml^{-1}$  *in vitro* after 24 hours, with BC27 causing 100% J2 mortality after 3 hours. Seed treatment of soybean with Isolates BC27 and BC29 caused a reduction in rootknot galling and egg mass counts ( $P \leq 0.0001$ ) and also caused a significant increase in shoot weight ( $P \leq 0.0001$ ), when compared to the Control. Blast analysis revealed that the two select isolates, BC27 and BC29, had similar sequences to *Bacillus* spp. T2 and *Bacillus* spp. KT18, as listed on the Gen-Bank, respectively.

**Keywords:** soybean; *Bacillus* spp.; nematodes

### **1. Introduction**

Soybean (*Glycine max* (L.) Merr.) has a high protein and oil content. It also has a high nitrogen fixing potential and hence it may play an important role in rotation systems, especially in Africa (Sinclair et al., 2014). Soybean production is affected by plant parasitic nematodes, resulting in significant yield losses (Oyekanmi and Fawole, 2010). The sedentary nematodes, *Meloidogyne*

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