

Juliet Akello, [Danny Coyne](#), Arthur Wasukira and Thomas Dubois
International Institute of Tropical Agriculture, P.O. Box 7878, Kampala, Uganda. d.coyne@cgiar.org

Background

Bananas and plantains are key components for food security and income for resource poor farmers in Africa. *Radopholus similis* (burrowing nematode) is a principal biotic constraint to the production of bananas. There are several possibilities available for the management of nematodes, including resistance breeding, cultural, chemical and biological means with variable levels of success. *Beauveria bassiana*, an entomopathogenic fungus, is effective against >200 species of insects. Recent work has shown that the fungus, when introduced endophytically into banana plants, offers promising banana weevil control. This current study additionally evaluates the potential of endophytic *B. bassiana* for *R. similis* control in tissue culture banana plants.

Approach

- Under screen house conditions at IITA-Uganda
- Tissue culture banana inoculated with *B. bassiana* (strain G41) suspension of 1.5×10^7 conidia/ml of
- 2000 mixed stages of *R. similis* inoculated at 1, 2 or 3 months after *B. bassiana*
- Terminated and assessed for growth and nematode parameters at 12 weeks later

Findings

- *B. bassiana* inoculated plants had better growth than control plants ($P < 0.05$)
- *B. bassiana* plants had higher necrotic root index compared to control plants
- Controls generally had higher mean nematode scores than *B. bassiana* plants, (Wilcoxon rank sum test and Kruskal-Wallis test)
- Reduced % re-colonization of *B. bassiana* (18.5, 17.1 and 10.4, at 4, 5 and 6 months) with post-inoculation duration.



Tissue culture banana

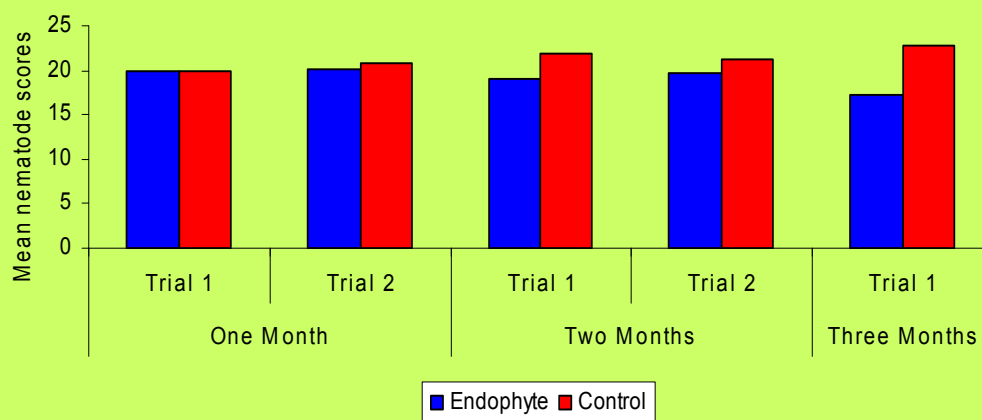


Toppled banana plant



Infested banana roots

Nematode mean scores of 4, 5 & 6 months old *B. bassiana* inoculated banana plants



Conclusion

- *B. bassiana* is antagonistic against and will reduce *R. similis* in banana roots
- *B. bassiana* needs to be introduced into the plant prior to planting to be effective
- Endophytic *B. bassiana* offers promise as a novel biocontrol agent for banana pests
- A number of mechanisms appear to be involved in this bio-protection of bananas other than a mechanical (physical) barrier