Efficacy of Commercial and Non-Commercial Fungal Isolates for Suppression of Root-Knot Nematode on Pineapple

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BACKGROUND

Pineapples (*Ananas comosus*) are hosts to one or more species of plant-parasitic nematodes and are responsible for considerable yield losses. The presence of *Meloidogyne* spp. in root or soil samples has been associated with crop losses. To secure yield and profits, the extensive use of soil fumigants is currently unavoidable.

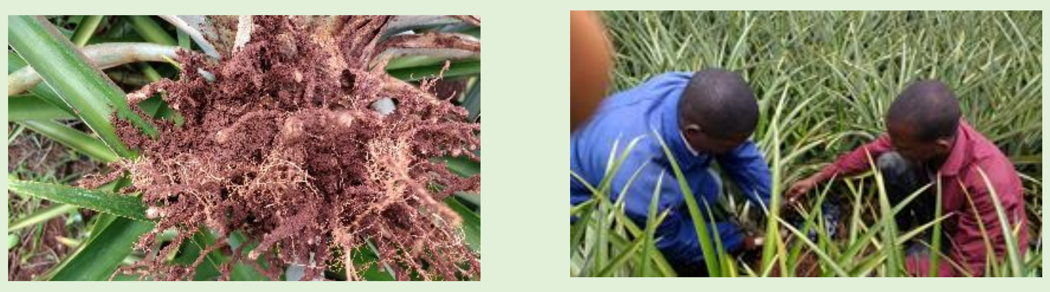
Due to the adverse effect of pesticides on human health and the environment, alternatives that are economically competitive are urgently needed. Biological control is being considered as part of an integrated strategy for the management of plant parasitic nematodes in Kenya.

This study aimed at identifying root-knot nematode species on pineapple and to evaluates the efficacy of endophytic and saprophytic native fungal isolate against *Meloidogyne* spp. on pineapple.

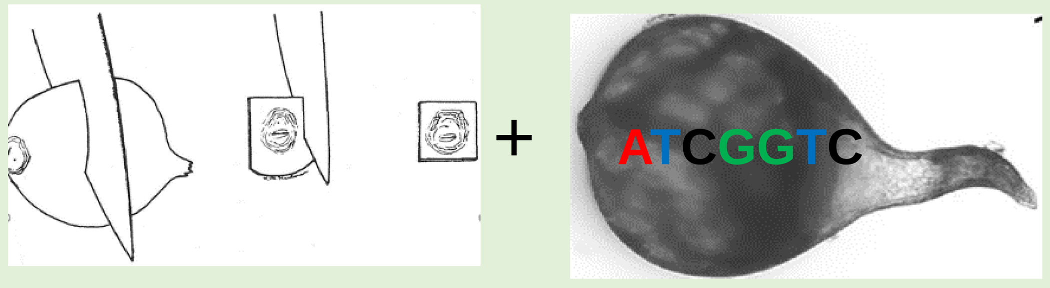
A. Telone® II non-treated and Telone® II treated
***B. Meloidogyne* spp. infected and healthy pineapple**

METHODS

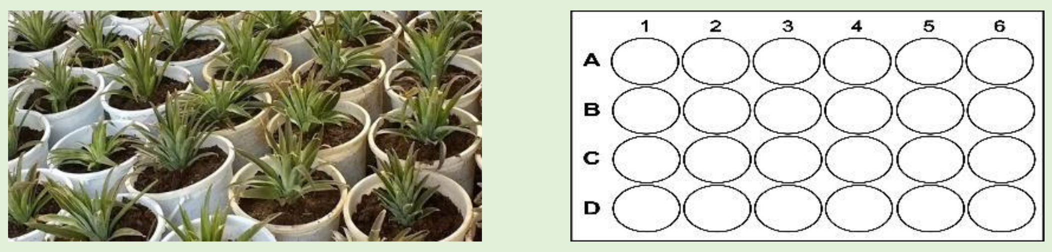
1. Root-knot nematode purposive sample



2. Species identification



3. Biocontrol assays



RESULTS

Overview of the sequence comparison of between NAD5 mtDNA *M. javanica* and *M. incognita* showing the nucleotide position and position of polymorphic nucleotide positions

NUCLEOTIDE POSITION	238	351	391
Meloidogyne incognita	A	A	A
Meloidogyne incognita	A	A	A
***Meloidogyne incognita* (KU372363 Janssen *et al*., 2016)**	A	A	A
***Meloidogyne incognita* (KU372371 Janssen *et al*., 2016)**	A	A	A
Meloidogyne javanica	G	G	G
Meloidogyne javanica	G	G	G
***Meloidogyne javanica* (KU372397 Janssen *et al*., 2016)**	G	G	G
***Meloidogyne javanica* (KU372408 Janssen *et al*., 2016))**	G	G	G

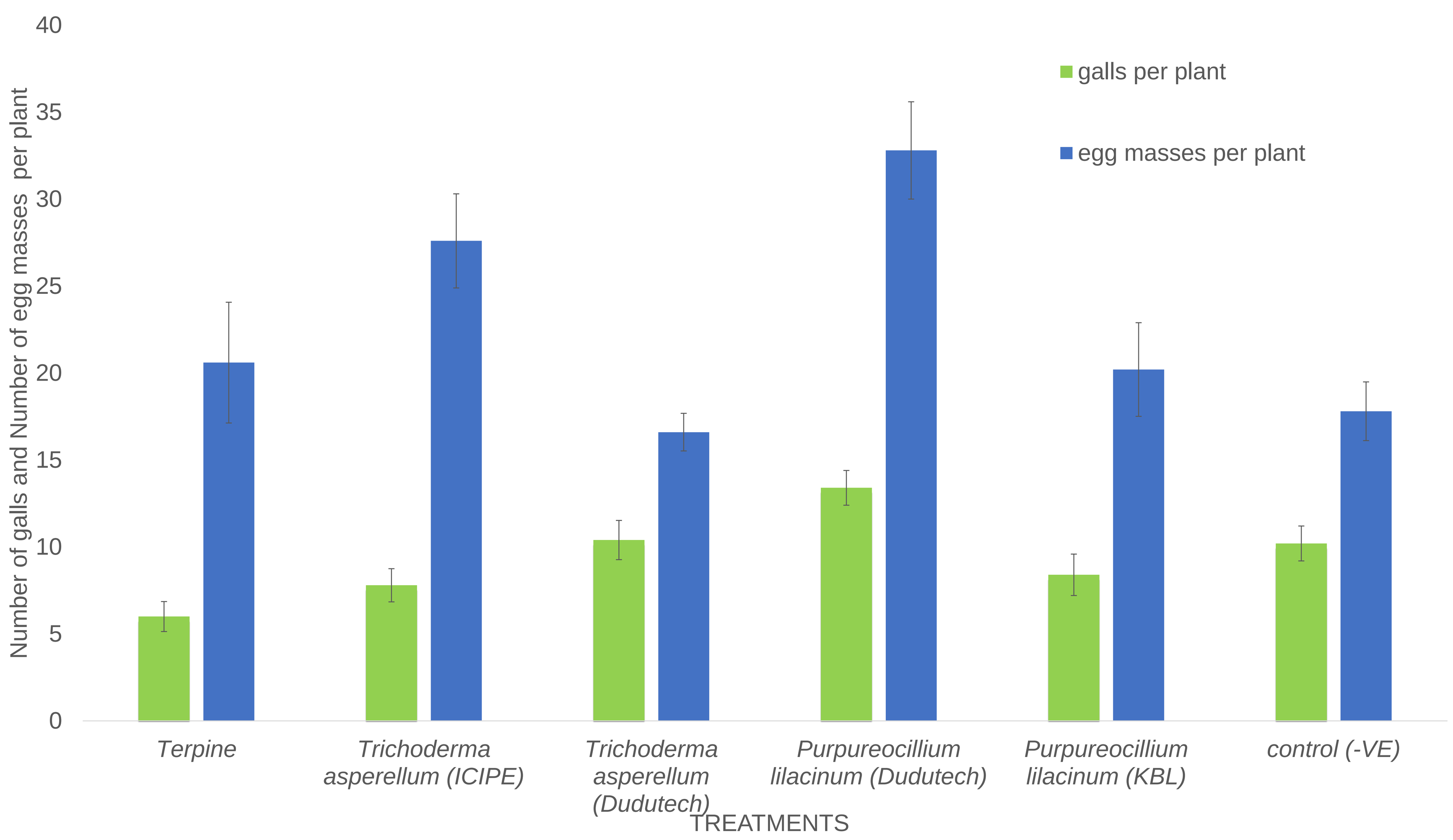
FINDINGS

- ***M. javanica*, *M. incognita* and *M. enterolobii* were identified on pineapple**
- ***M. javanica* is the most abundant species of root-knot nematode identified to be damaging pineapple in Kenya**
- ***Trichoderma asperellum* (M2RT4) can be used against *Meloidogyne* spp. as an egg pathogen**
- ***Trichoderma asperellum* (M2RT4) cause nematode paralysis not necessarily mortality with nearly 100 % nematode recovery after 7-9 days**

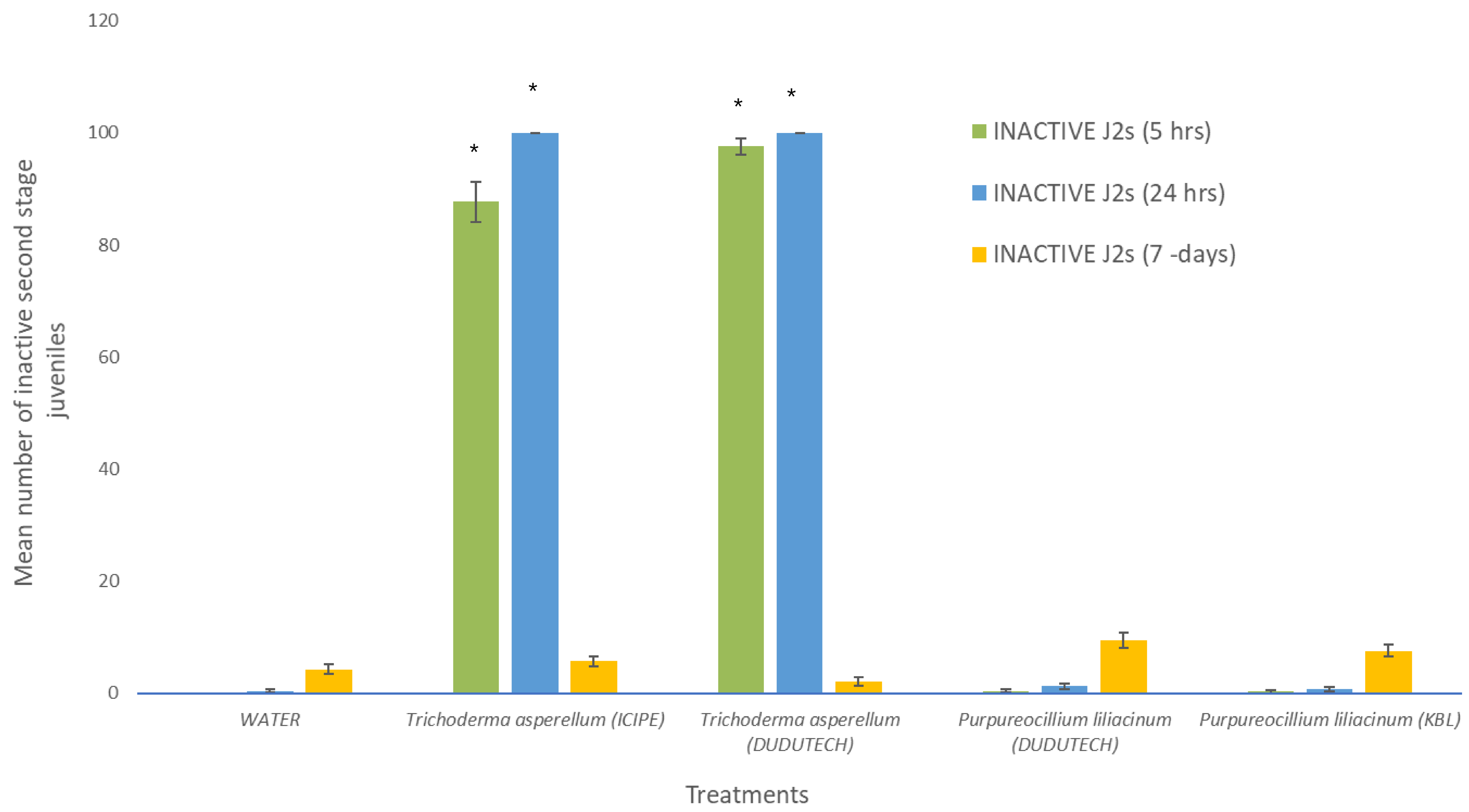
RESULTS

Mean and percentage number of eggs hatched (± SE) of *Meloidogyne javanica* in 1 * 10^8 fungal spore per ml after 8-days' incubation

Fungal spore filtrate	Percent hatch (%)
***Purpureocillium liliacinum* (KBL)**	82%
***Trichoderma asperellum* (DUDUTECH)**	74%
***Purpureocillium liliacinum* (DUDUTECH)**	20%
***Trichoderma asperellum* (ICIPE)**	0%
WATER	100%



Average number of *Meloidogyne javanica* egg masses and the number of galls in pineapple. The control was treated with water, the number of galls and egg masses was evaluated after 12 week



Effect of fungal spore suspension at 1×10 ^{8} spore per ml and water (control) exposed to second-stage juvenile of *Meloidogyne* spp. at 5hrs, 24 hrs and 7-days