

**ISOLATION AND SCREENING OF ENDOPHYTIC
Fusarium oxysporum FOR BIOLOGICAL CONTROL
OF NEMATODES IN TISSUE CULTURE BANANAS**

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**A thesis submitted in partial fulfilment for the degree of Master of Science in
Horticulture in the Jomo Kenyatta University of Agriculture and Technology**

2008

ABSTRACT

Two major banana growing regions namely Meru district (Altitude: 1050 Masl, 06° 34'S, 037° 46' 23 E) and Kilifi (17 Masl 03° 45' 0" 039° 40' 0" E) district) were identified as sampling sites for banana plants to be used for endophytic fungi isolation. Healthy appearing plants in heavily infested fields were sampled for endophytic fungi isolation. Endophytic fungi were isolated from the plant roots, the corm, pseudostem and the pseudostem base. A total of 2,455 *Fusarium* spp isolates were isolated from the two regions. *Fusarium oxysporum* species was the most prevalent endophytic fungi from banana roots and corm. They constituted 15.5% and 44.6% of all fungal isolates from Meru and Kilifi districts, respectively. Twelve isolates belonging to *F. oxysporum* were selected for *in vitro* bioassays against two major species of banana parasitic nematodes in the two regions namely *Pratylenchus goodeyi* and *Helicotylenchus multicinctus*. The selected species of the endophytic fungi were cultured in Potato Dextrose Broth (PDB) media for seven days. Fungal filtrates from the twelve isolates were obtained after sieving and centrifuging the PDB media. One millilitre of the filtrate was used for each treatment consisting of one hundred nematodes suspended in 1 ml of distilled sterile water in sterile 5ml Bjorn bottles. Each treatment was replicated three times and the experiment laid out in complete randomised design. Mortality and paralysis were recorded after 3, 6 and 24 hours time intervals. Corrected mortalities were calculated using Abbott's formula. The mortality significantly ($p < 0.0001$) varied with the time of exposure. Culture

filtrates of *F. oxysporum* isolates significantly ($p < 0.0001$) differed on their mortality effects to the nematodes. Out of the total thirteen endophytic isolates from Meru district, five isolates produced consistent mortalities and paralysis to both *P. goodeyi* and *H. multincinctus*. These isolates included 5JTOC134, 5SOPB11, 4MOC321, 4SIC132 and 5MR11. Similarly five fungal isolates from Kilifi district which demonstrated consistency in causing mortality and paralysis were 7MIC334, 8SIC334, 11MOC143, 11SR23 and 11MOC353. The isolates demonstrated potential biological activity against the major banana parasitic nematodes, and can further be investigated as biological control agents against these nematodes