Characterization of the Antagonistic Activity of *Trichoderma aureoviride* Against *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4

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The study offered an alternative to chemical fungicides used against fusarium wilt in banana plants caused by *Fusarium oxysporum f. sp. cubense* Tropical Race 4 (*Foc* TR4) using a biological control agent *Trichoderma aureoviride*. To determine the antagonistic activities of the experimental biocontrol agent, *Trichoderma aureoviride* strain BIOTECH 3109 and *Trichoderma harzianum* strain BIOTECH 3001 from PNCM were tested for inhibition effects against *F. oxysporum f. sp. cubense* Tropical Race 4 (*Foc* TR4) *in vitro*. The dual culture method was used in three treatments (positive, experimental, and negative) of 9 replicates each to observe for antagonistic activities for twenty-one (21) days. One-way analysis of variance (ANOVA) was used for statistical analysis and Tukey's HSD post hoc test for comparing at α=0.05. The results showed that the colony growth of the pathogen *Foc* TR4 was slightly higher in T_1 (positive) than in T_2 (experimental) and statistical analysis yielded comparable observations making both fungal strains to be at par with each other when it comes to inhibiting mycelia growth. However, the positive control agent *T. harzianum* failed to inhibit the aerial hyphae of the pathogen as opposed to *T. aureoviride* which indicates a difference in their antagonistic activities. The inhibitory effects of the *Trichoderma* species were attributed to cell wall-degrading enzymes and mycoparasitism. Thus, *T. aureoviride* is a potential biological control agent against *F. oxysporum* f. sp. *cubense* Tropical Race 4. Field experiments and other *in vivo* tests on bananas planted in infested soils are recommended to study the actual effects of *T. aureoviride* on *F. oxysporum* f. sp. *cubense* Tropical Race 4 and the banana plants.

Key Words: Environment-Friendly Alternative, Biological Control, Mycoparasitism, Dual Culture Method, PSHS-SMC Microbiology Labor