DII 11 Evaluation of *Trichoderma*isolates and Zinc sulfate for the control of Panama wilt disease of Banana

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Fusarium oxysporum f. sp. *cubense* (Foc) is a soil-borne fungus that causes Panama wilt disease of banana. The disease causes great economic losses to the farmers in different parts of Sri Lanka. Effective control options based on either chemical or biological methods are not available for this disease for the moment. Using Petri Plate assay effective two *Trichoderma* isolates (T13 & Ts), isolated from disease free banana cultivation areas of Ambalantota, were identified as potential biological control agents depending on the antagonistic properties. *A* single application of both *Trichoderma* isolates to the potting mix showed a significantly higher percentage of disease control ($P<0.05$) under glasshouse conditions for three months old tissue cultured banana plants and triggered the growth of banana plants compared to the untreated control. $ZnSO_4$ at 3000 ppm suppressed the mycelial growth of *Fusarium oxysporum*f. sp. *cubense in vitro* and was able to provide a significant protection from Panama wilt disease in pot experiments. However, this concentration had a negative effect on *Trichoderma* isolates *in vitro*. Therefore, 1500 ppm of $ZnSO_4$ in combination with *Trichoderma* isolates were used but did not as effective as a single application of either *Trichoderma* strain. Furthermore application of $ZnSO_4$ to the *Trichoderma* pots had suppressed significantly the biocontrol ability of isolate Ts than T13 indicating that the biocontrol mechanism/s may be governed by different factors. Present study indicates that the combine applications of *Trichoderma* isolates and $ZnSO_4$ to control Foc are not compatible.

Keywords: biological control, *Fusarium oxysporum* f. sp. *cubense* (Foc), *Trichoderma* spp., $ZnSO_4$