

Screening of *Trichoderma* isolates as biocontrol agents against banana wilt pathogen and evaluating organic biomass wastes for mass production of conidia

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Fusarium wilt disease of banana is a serious threat in the banana growing areas in the world including Sri Lanka and no effective fungicide or resistant cultivars are available to date. Nevertheless, fungicides are extensively being used. Biological control is one of the environmentally sound alternatives in such instances. Therefore, the main objectives of the study were to screen potential *Trichoderma* isolates as bio control candidates and to evaluate cheap, simple and abundant substrates for the mass production of *Trichoderma* for practical application.

Trichoderma spp. isolated from rhizosphere of banana (cv. Kolikuttu) from different areas of commercial banana fields in southern province of Sri Lanka were screened under *in vitro* conditions for their antagonistic potential against *Fusarium oxysporum* f. sp. *cubense*, the banana fusarium wilt pathogen. *Trichoderma* isolate T13 was the most effective in inhibiting the mycelial growth of *Fusarium* in Petri plate assay. Out of four different organic biomass wastes, (straw, banana leaf, banana pseudostem, and banana rind) that were tested for mass production of conidia of T13 *in vitro*, straw was found to be the best supportive organic material to enhance conidia production in broth cultures. Strain T13 was colonized in straw within 7 days and exhibited high spore density (3.167×10^{13} conidia/mm³) and absorbance ($\lambda_{550} = 4.4890$) with a strong positive correlation ($r = 0.986$). Those two parameters were significantly different ($p < 0.001$) compared to other treatments. Thus, the results revealed that the applicability of straw could be used as a congenial substrate for mass conidia production of *Trichoderma* isolate T13.

Keywords: *Trichoderma*; *Fusarium oxysporum*; mass production; Fusarium wilt

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