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Compost Based Bio-pesticide to Control the White Root Disease caused by *Rigidoporus microporus* of Rubber Growing Lands in Sri Lanka

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Abstract

White root disease caused by *Rigidoporus microporus* is the most destructive root disease in rubber plantations of Sri Lanka. *Trichoderma* is a useful, filamentous fungus, widely used as bio-control agents for controlling soil borne diseases of plants and as growth promoters. An attempt was taken to use a compost based bio-pesticide as environmental friendly and low cost substitution against *R. microporus*. Soil samples were collected from different rubber growing districts and antagonistic fungi were selected using dual plate culture test. Among the antagonistic fungi, the best performing two isolates, which showed more than 80% inhibition against *R. microporus* were identified. The two fungi were used for the production of the bio-pesticide. Fungi were inoculated in to compost media ($7.5-7.8 \log_{10} \text{CFUg}^{-1}$) and shelf life time was monitored. The effectiveness of the media under field conditions was evaluated using a pot trial. The results of the study revealed that in compost based media, the most effective fungus was proven to be *T. harzianum*. Compost based formulations of *Trichoderma* have shelf life of 8 months. As the nutrient content of the compost medium is high, an increment of the CFUg^{-1} was observed within the first six weeks. The reduction of the nutrient content and production of toxic metabolites due to the high population could be the reason for the gradual decrease of CFUg^{-1} after ten weeks. The pot trial carried out using the compost based biopesticide gave promising results. Based on the results, handling convenience, additional nutrition of medium etc., compost based bio-pesticide has been identified as successful in the prevention of white root disease in rubber plants.

Keywords: White root disease, *Trichoderma*, Shelf life, Compost based bio-pesticide