

---

\*Corresponding author: rdaguna@yahoo.com

## **Mass production and determination of shelf-life of two *Trichoderma* sp. in compost formulation**

Fernando T.H.P.S.\* and Shehani K.L.K.

*Department of Plant Pathology and Microbiology, Rubber Research Institute of Sri Lanka.*

*Trichoderma* isolates have emerged as biological control agents which have been found effective against *Rigidoporus microporus* which is the cause of white root disease in rubber trees. Compost has been used to formulate biocontrol agent multiplied by liquid fermentation. A formulated product for agricultural applications should have abundant viable propagules with good shelf life. An attempt was taken to test the shelf life of compost-based formulation of *Trichoderma* isolates prepared by liquid fermentation. Soil samples were collected from rubber growing soils to isolate the most abundant and visually-different soil fungi. Out of isolated fungi, ten *Trichoderma* isolates were selected based on morphology to be tested for the antagonistic ability against *R. microporus*. Two fungal isolates which showed the highest inhibition towards *R. microporus* were identified. *Trichoderma* were inoculated into potato-glucose broth for mass production. After 2 weeks, *Trichoderma* inoculated broth was added into compost. Colony forming units (CFU) of *Trichoderma* inoculated compost were estimated by dilution plate method to test the shelf life. Population effects were statistically analyzed using Duncan's multiple range test, at a probability level of 0.05. According to results, *T. koningii* and *T. harzianum* showed the highest inhibition. In broth, maximum growth of *Trichoderma* showed after 2 weeks. Initially, CFU count in compost formulation was  $7.740 \log_{10} \text{CFUg}^{-1}$  which fell to  $7.079 \log_{10} \text{CFUg}^{-1}$  at 14 weeks. After 18 weeks, formulation retained a population of more than  $5 \log_{10} \text{CFUg}^{-1}$ . Within six weeks, an increment of  $\text{CFUg}^{-1}$  was observed as the nutrient content of compost medium was high and fungi willingly grew. There was a gradual decline in population due to the production of extra-cellular enzymes. The population of *T. harzianum* was significantly higher than that of *T. koningii* ( $p < 0.05$ ). The formulation retained good numbers of viable propagules for more than 20 weeks of storage.

**Keywords:** *Trichoderma* sp., Compost formulation, Shelf life

\*Corresponding author: sarojinifernando787@gmail.com