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Ability of the Native Antagonistic Fungi Against *Rigidoporus microporus,* to tolerate the Usage of Fungicides for White Root Disease in Rubber Growing Soil in Sri Lanka

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Abstract

Natural rubber, *Hevea brasiliensis,* is one of the major economically important crops in Sri Lanka. Diseases play a significant role to reduce the production of rubber cultivations. Among them White Root Disease is the most destructive root disease which has caused a huge economic loss to the country. *Rigidoporus microporus* is the causative pathogen of White Root Disease. In order to control the pathogen, Tebuconazole and Hexaconazole can be used as systemic fungicides. However, due to the toxicity of these chemicals, antagonistic fungi can be used as an environmental friendly solution to reduce the usage of chemicals. Hence an attempt was taken to find out the ability of native antagonistic fungi to tolerate the chemical fungicides. Soil samples were collected from different rubber growing soils in Sri Lanka and using dilution plate technique fungi were isolated. After preparing pure cultures antagonistic ability against *R. microporus* was tested using dual plate culture test. More than 60% inhibition showing fungi was selected and subjected to Poison Food Technique (PFT) test. 5, 10, 25, 50, 75 and 100 ppm concentrations of the two fungicides were used to test the ability of tolerance by the isolates. According to the results, twenty-three effective fungi isolates were selected. Fourteen isolated fungi were identified as *Trichoderma* spp., three as *Aspergillus* spp. and the rest were unidentified. Three *Trichoderma* isolates and one *Aspergillus* isolate showed the radial expansion even at 50 ppm concentration of tebuconazole. Five *Trichoderma* isolates showed the growth at 100 ppm concentration of the Hexaconazole. The radial expansion of *R. microporus* has been totally inhibited at 25 ppm of tebuconazole and 50 ppm of hexaconazole. Therefore these antagonistic fungi can be used even at the higher concentrations which are fatal to *R. microporus.*

Keywords: White root disease, Tebuconazole, Hexaconazole, Native antagonistic fungi