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Recent outbreak of *Trichoderma* damage in shiitake cultivation

Recently Korean shiitake mushroom industry has been suffered from mushroom flies which feeds on mycelium of shiitake mushroom during its cultivation. The damages of shiitake bed-logs are assumed to be caused not only by the insect pest but also its fungal associates. From the examination of fungi derived in and out of the bodies of adults of mushroom flies that were reported as major pest in Shiitake cultivation using sawdust-medium 1249 isolates were obtained and classified into 5 genera and 15 species. *T. harzianum* was found to be dominant. To get information on the six *Trichoderma* groups, their cultivation, growth, biochemical properties, scanning electron microscopic images of microstructures and nucleotide sequences of EF-1 alpha gene were investigated and compared. The results of a chromogenic media-based assay for extracellular enzymes showed that these *Trichoderma* species have the ability to produce amylase, carboxyl-methyl cellulase, avicelase, pectinase and β-glucosidase that degrade wood components of log-beds. A dual culture assay on PDA indicated that *T. harzianum*, *T. atroviride*, and *T. citrinoviride* were antagonistic against the mycelial growth of a shiitake strain (*Lentinula edodes*). Inoculation tests on shiitake bed-logs revealed that all the four species were able to damage the wood of bed-logs. Eleven fungicides including azoles types and fenarimol were tested against the *Trichoderma* spp. to select effective agent. Some of the tested fungicides inhibited the mycelial growth of few of the *Trichoderma* spp. Benomyl inhibited mycelial growth and spore germination of all the six *Trichoderma* spp. at MIC 10 μg/ml.

Biography

Seong Hwan Kim has completed his PhD and Postdoctoral studies from University of British Columbia. He is a Professor of Dankook University. He has published more than 90 papers in reputed journals and has been serving as a Member of Board of Directors of Korean Society of Mushroom Science, Audit of Korean Mycological Society and an Editorial Board Member of *Journal of Microbiology and Biotechnology and Journal of Odor and Indoor Environment*.

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