**HOW IS *Tricholoma matsutake* MYCORRHIZATION AFFECTED BY POTENTIALLY COMPETING MICROORGANISMS?**

Akiyoshi Yamada1, Yu Tateishi1, Hiroki Misawa1, Masaki Fukuda1, Takashi Yamanaka2

*1Faculty of Agriculture, Shinshu University, Minami-minowa, Nagano, 399-4598, Japan*

*2Forestry and Forest Products Research Institute, Tsukuba, Ibaraki, 305-8687, Japan*

E-mail: akiyosh@shinshu-u.ac.jp

**Key words:** Ectomycorrhiza, Edible mushrooms, Interaction, Matsutake, Soil microorganisms

In vitro ectomycorrhization of *Tricholoma matsutake* with pine host is a tool to examine the interaction between these two organisms. However, in nature, their interaction is affected by various biological and abiological factors. In the present study, we focused on the soil organisms that could affect ectomycorrhization of *T. matsutake* in the natural habitat. Cultured fungal strains of *Suillus bovinus* (ectomycorrhizal competitor) and *Umbelopsis versiformis* (saprotrophic competitor) were selected and secondarily inoculated to already established *T. matsutake*–*Pinus densiflora* mycorrhizal system in vitro. In addition, a bacterial community (microbe competitors) extracted from a *T. matsutake* colony in the natural habitat was also inoculated to the matsutake–pine mycorrhizal system. Six months following the inoculation with each competitor, the ectomycorrhization of *T. matsutake* was measured and compared between treatments. Plant inoculated with *S. bovinus* showed significantly larger number of ectomycorrhizal tips than those of the control treatment without ectomycorrhizal competitor inoculation. In addition, *S. bovinus* inoculation brought the largest host pine biomass than any other treatments. Inoculation with *U. versiformis* showed the same level of matsutake ectomycorrhizal tips in comparison with the control plants. In contrast, plants inoculated with an extracted bacterial community showed significantly less matsutake ectomycorrhizal tips than the control plants. In the *S. bovinus* treatment, both *S. bovinus* and *T. matsutake* ectomycorrhizas developed: it is suggested that *S. bovinus* inoculation increased the host biomass including the root system, which contrary to expectations harbored *T. matsutake* ectomycorrhizas even under probable competition between *S. bovinus* and *T. matsutake.*

**TOPIC:** Cultivation