

USE OF A BENEFICIAL STRAIN OF *TRICHODERMA* TO PROTECT *PINUS SYLVESTRIS* SEEDLINGS

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In forest nursery practice, the mechanism of phytopathogen suppression by soil saprophytes is used to protect seedlings against root rot. An important stage is the formation and maintenance of a microbial association which will provide extended inhibition of phytopathogen development and growth of healthy seedlings.

To guarantee the effectiveness of seedling protection from pathogen infection and to maintain soil microbic coenosis stability in forest nurseries, the screening of active biocontrol strains is needed. Some of the prominent fungi for biological activity against fungal diseases belong to the genus *Trichoderma*. Strong antagonistic activity has been found in this genus toward phytopathogenic organisms. Therefore, one of the most important factors promoting successful introduction is to find the most active strains of fungi in this genus.

The purpose of our research was to search for strains that are active antagonists toward pathogens of pine seedlings, mainly damping-off caused by *Fusarium* spp. Five of the most promising isolates of *Trichoderma* were selected for inclusion in a disease suppression test. Isolates were screened for antagonistic activity towards the major damping-off pathogens of pine seedlings in the genus *Fusarium*. The best biocontrol candidate (strain MG) was selected. It was identified as

Trichoderma anamorph *Hypocrea gelatinosa*. Also, the best biocontrol candidate was examined for biotechnological indexes: dry weight of mycelia and yield of conidia. Next comparative studies were conducted on features of growth and sporulation on the various plant substrates obtained from post extraction residuals of *Picea* and *Larix* bark and solid residuals of *Heliontus tuberosus* L.

Our work has demonstrated that beneficial *Trichoderma* strains can be used against phytopathogens in the genus *Fusarium*. From our experiment, we concluded that selected isolates are potentially biocontrol agents. The ability of *Trichoderma* strain MG to utilize plant substrates allows for creation of cheap biopreparations and will enable the use of this agent commercially. Preparation of the best biocontrol candidate for experimentation was prepared, and was called Trichodermin MG-97.

In our research during 1998-1999, the biopreparation MG-97 was tested for its effectiveness in the protection of *Pinus sylvestris* L. seedlings in forest nurseries nearby Krasnoyarsk (56° 04'N, 92°42'W). Results of our nursery experiments showed that biopreparation MG-97 may be effective in *Pinus sylvestris* seedling establishment.