

Abstract

In contrast to the bulk soil environment, plant roots represent a habitat with higher nutrient availability due to the supply of photosynthesis-derived C-containing compounds. The roots thus support the life of various microorganisms that use such compounds, but the root-associated microbes in the same time may face a limitation in N and P availability. Unlike bacteria, many filamentous fungi are able to transport these compounds from soil and their mycelia thus typically extend into this environment. Ectomycorrhizal fungi are a typical example of this nutrition strategy. Tree roots produce exudates, that differ in their composition for each species and they can also differ among individuals. It causes a high diversity of root-associated fungi. Soil is also inhabited by parasitic and saprotrophic fungi. Composition and activity of microbial communities in the rhizosphere differ from the bulk soil. This work points at the differences of the rhizosphere and bulk soil, the importance mycorrhizal fungi and it presents an overview of fungal species that have been found on the roots of spruce – *Picea abies*.

Key words: fungi, mycorrhiza, soil, rhizosphere, *Picea abies*