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# Early detection of root rot using geophysical methods

Applying geophysical methods to detect *Heterobasidion* spp. root rot in Scots pine (*Pinus sylvestris*) trees

The highly destructive fungi *Heterobasidion* spp. causes major economic losses in the forest industry, estimated to more than 800 M€ annually in Europe alone.

Infection of *Heterobasidion* spp. is difficult to detect in pine in earlier stages without using destructive excavation methods, due to the infection mainly staying in the roots and not causing clear visible symptoms on the tree.

In my thesis project the geophysical methods of DCIP (direct current induced polarisation), SIP (spectral induced polarisation) and GPR (ground penetrating radar) will be used to investigate the roots of pine trees and the surrounding soil, in the laboratory and in the field. The outcome of this work should be a first step to evaluate if geophysical methods can

help to detect *Heterobasidion* spp. in pine trees at an early stage.

Early detection allows you to protect sites located close by from infection spread, by for example using preventative biological control in the form of the fungus *Phlebiopsis gigantea*. By detecting the fungus early, you can also harvest infected trees before the weakening caused by *Heterobasidion* decreases their economic value. It is also possible to in the future change the planted species in the infected location to a less susceptible species for one or more generations.



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IN COOPERATION WITH



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