Testing the efficacy of *Phlebiopsis gigantea* and *Trichoderma* sp. against spore infection by *Heterobasidion* in log pieces of spruce

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Since 2006, experiments have been carried out in Latvian State Forest Research Institute „Silava” to find effective Latvian strains of *P. gigantea* for stump treatment. Strains were tested in laboratory and field experiments. A new method (‘pit method’) was developed to analyse the growth rate of different *P. gigantea* strains in coniferous wood. With this method it is possible to analyse more than 10 strains in the same log piece and control more exactly the amount of inoculum. The efficacy of different *P. gigantea* strains in controlling *Heterobasidion* infection was tested in log pieces of spruce and pine, using both conidiospores and basidiospores of *Heterobasidion*. The log pieces were treated first with an oidial suspension of *P. gigantea*. Then a part of them was sprayed with a suspension containing conidia from two *H. parviporum* and two *H. annosum* s.s. isolates, while the other part was placed in forest close to active fruit bodies of *Heterobasidion* on spruce trunks and stumps, to subject the log pieces to basidiospore infection. As a result of these experiments we have found three strains of *P. gigantea* that are as effective as the Finnish Rotstop strain.

In 2010, a study was started to test the efficacy of mixtures containing *P. gigantea* and *Trichoderma*. The *Trichoderma* strain was selected from 24 strains; their antagonistic activity was evaluated on agar medium at three temperatures (21, 15 and 4°C) against three strains of *H. annosum* s.s. and four strains of *H. parviporum*. The selected *Trichoderma* strain, two *P. gigantea* strains, and their mixtures were used in efficacy test against *Heterobasidion*; it was evaluated in 45 log pieces of spruce (9 replicates). Spore concentrations in the treatment suspensions were: *P. gigantea* ca. 5000 oidia ml⁻¹, *T. viride* ca. 10⁶ cfu ml⁻¹, and *Heterobasidion* ca. 500 conidia ml⁻¹. Sample discs were cut from the log pieces after 4 weeks incubation outdoors. The area occupied by *P. gigantea* and *Trichoderma* on the discs was measured at two levels (3 and 8 cm from cutting surface) with a planimeter. The area occupied by *Heterobasidion* was determined under dissection microscope by placing a net on the disc and counting the squares (0.7 x 0.7 cm) where conidiophores were present.

The efficacy against *Heterobasidion* was: *P. gigantea* (1) 51%, *P. gigantea* (2) 75%, *Trichoderma* 58%, *P. gigantea* (1) + *Trichoderma* 63%, and *P. gigantea* (2) + *Trichoderma* 75%. *Trichoderma* proved to be more effective against *H. annosum* at depth of 8 cm than 3 cm. At the depth of 8 cm the area occupied by *P. gigantea* in spruce wood decreased in treatment variant *P. gigantea* +*Trichoderma*.

In future investigations our plan is to analyse the efficacy of different concentrations of *Trichoderma* in the treatment suspension.

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