HETEROBASIDION ANNOSUM S.L. IN PICEA ABIES UNDERSTORY: INCIDENCE AND IMPACT ON RADIAL GROWTH OF TREES

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Abstract. Norway spruce (Picea abies (L.) Karst.) is one of the most economically valuable tree species growing in Europe. As it is commonly affected by Heterobasidion annosum s.l., great effort has been made on research to understand the impact of H. annosum on trees forming the canopy, but information on its impact in Norway spruce understory trees is scarce. The aim of this study was to evaluate incidence, extent of decay column in stem and the impact of H. annosum on radial growth of Norway spruce trees growing in understory of Scots pine (Pinus sylvestris (L.)) stands in Myrtillosa and Hylocomiosa forest types. Data for this study was obtained from spruce trees growing in the understory of three pine stands (115 and 126 years old in Myrtillosa and 121 years old in Hylocomiosa forest types) located in Kalsnava (managed by LSFRI Silava and the LUA National Research Forest Agency ‘Forest Research Station’). A total of 708 sample discs (508 in Myrtillosa sites and 200 in Hylocomiosa site) of spruce trees at stump height were obtained and tested for the presence of H. annosum. Later, for H. annosum infected trees on each plot, tree height, root rot height, diameters of tree with bark and without bark, root rot diameters at stump and breast heights were measured. Sample discs at breast height were collected to evaluate radial growth of the analysed trees. As a control, the same numbers of healthy trees with similar diameters at breast height were located within the stand and measured. Results show that the lowest incidence of H. annosum in examined understory spruce was 12.0% (24 trees) in the Hylocomiosa stand, the highest incidence was 29.5% (76 trees) in the 115-year-old Myrtillosa stand and in the 126-year-old Myrtillosa stand incidence of H. annosum was 16.4% (41 tree). Diameter increment at breast height of spruce trees in understory for the last five year (2005-2009) period was smaller for healthy trees than for infected trees in the Hylocomiosa stand (0.38±0.03cm: 0.40±0.04cm), while in Myrtillosa stands healthy trees had larger diameter increment than infected trees (0.44±0.03cm: 0.42±0.02cm). In both stand types the difference between diameter growth of healthy and H. annosum infected understory spruce trees was insignificant (p>0.05). Regarding spread of H. annosum in spruce stems, the average diameter of H. annosum rot at stump height was 5.9±0.3 cm (64.8±2.3%) in Myrtillosa stands and 5.7±0.4 cm (75.9±2.0%) in the Hylocomiosa stand. The ratio between diameter of rot at stump height and rot height in tree was 1:40.7±1.9 in Myrtillosa stands and 1:39.0±3.1 in the Hylocomiosa stand. This study showed that there was no significant difference in radial increment between understory spruce trees infected with H. annosum and healthy trees.

Key words: Picea abies, understory, Heterobasidion, radial growth.