

From the used analyses it can be assumed that habitats, plant communities and plant species themselves are affected by several ecological and environmental factors with a synergetic effect.

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MORPHOMETRIC CHARACTERISTICS OF DOMINANT PLANTS ON MINING DUMPS WITH DIFFERENT MINERALOGICAL COMPOSITION (CENTRAL SLOVAKIA)

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The aim of the contribution is to compare the influence of contaminated soil substrate on the assimilation apparatus of one of the most dominant pioneer tree *Betula pendula*. As study areas, copper deposit Podlipa and mercury deposit Veľká Studňa were selected in the vicinity of Banská Bystrica (Central Slovakia). The results were compared respectively with relevant reference areas.

Field research was realized from June to September 2016. In the soil samples, taken from root balls of 16 individual trees (5 from each heap and 3 from each reference area), pH values were measured. The results for Veľká Studňa indicates neutral conditions (pH 7 in av.), which could be caused by small local occurrence of limestones in the volcanic mountains Kremnické vrchy. On the contrary, the soil substrate of copper deposit Podlipa has an acidic character (pH 5 in av.), whereby the geological base has also the volcanic character, always without limestones. In the all soil samples, Bureau Veritas Minerals laboratory (Vancouver, Canada) by ICP – MS analytical method has determined the contents of 35 chemical elements including several heavy metals. For each individual of *Betula pendula* was also determined leaf area surface, 25 leaves in total (after 5 leaves from 5 branches). Computer software Plant Image Analyses – Easy Leaf Area was used for this purpose.

We compared the differences in the size of assimilation apparatus of *Betula pendula* in pairs of data sets from both dump-fields, as well as from their corresponding reference areas, where we have confirmed statistically significant differences at the 0.01 level of significance using the paired Student's t-test.

Various mineralogical compositions of two heaps were also confirmed by the Two-Sample Assuming Equal Variances at the 0.01 level of significance in the concentration of chemical elements in the soil, especially Cu, Mg, Ca, K, As and Zn. The impact on the assimilation apparatus of the studied wood species on each of the four localities was tested by multiple analysis of variance (ANOVA), but there was not found any significant correlations. However, the results of leaf area surface show a significant influence of habitat conditions on the assimilation apparatus among studied trees, but it is not probably caused by investigated heavy metals and another chemical elements. The anomalies are with high probability results of a synergistic effect of several ecological and environmental factors that should be an object of further research.

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