

Ecological Characterization of the green areas in Sopron by Plant Chemistry and Hyperspectral Recording

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Urban environmental conditions significantly affect the quality of life. The environmental impacts and their results coming from the operation of the settlement can be characterized by the measurement of the environmental components.

The chlorophyll content of photosynthetically absorbed radiation, the canopy water content and soil nitrogen content are important parameters which affect the land ecosystem primary productivity and plant health. The decrease of chlorophyll content can be regarded as a useful biomarker for detection of gaseous pollutants. The active oxyradicals generated by CO₂, NO₂ and O₃ react with cell membrane and the membrane molecules resulting the decrease of its amount. Our objectives included the ecological characterization of the green areas in Sopron by the examination of chlorophyll content distribution of the leaves, the establishment of correlations between the chlorophyll content and the quality and quantity of air pollutants and the validation of the raw chlorophyll values come from hyperspectral images by the results of the laboratory examinations.

Leaf samples were collected at the same time of hyperspectral recording on 26th of August 2011 from 5 places. 5 samples were taken from each sampling place. Spectrophotometric analysis were taken from surface of the leaves immediately of their arriving. After the sample preparation and extraction the colouring matters were separated by thin layer chromatography and the quantity of chlorophyll a and b were determined. Multivariate data analysis was carried out on the water content and chlorophyll content.

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