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Soil investigation in cities of West Hungary

A. Bidló, P. Szűcs, A. Horváth, O. Kámán, and E. Németh

Department of Forest Site Diagnosis and Classification, University of West Hungary, Sopron, Hungary (E-mail: abidlo@emk.nyme.hu)

The antropogene effects have an influence on the environment since the flow of materials and energy is continuous and mutual. In order to investigate the soil properly we have collected samples from sample spots in three West Hungarian cities (Sopron, Szombathely and Székesfehévár). The soil samples were taken from 0-10 and 10-20 cms depth in each city within a standard network and also at industrial territories. The number of the sampling spots were between 104 and 144, depending on the size of the city and the problematic places in town. We have noted the GPS-coordinates of the point, the elevation over sea level, the date of collecting, the type of the urban area, the information about land usage, vegetation, grass covering, the type of cover and the origin of soil.
We described the following characters of soil: the borderline between two layers, the amount of humus, the structure, the compactness, the root system, the skeletal percent, the color, the physical assortment, the separated element and the soil defect. We measured the soil samples in laboratory according to the following parameters: acidity (pHH_2O, pHKCl), lime content, hidrolitical and exchange acidity, amount of exchangeable cation, the humus content, the total nitrogen content, the ammonium-lactat-acetous acid (AL) solvent potassium and phosphorus content, the KCl solvent magnesium and calcium content, the strength of ethylene-diamin-tetra-acetous (EDTA) and diethylene-triamin-penta-acetous (DTPA) measurements of manganese, copper, zinc and iron element, as well as the particle size distribution.
The results of field and laboratory investigation are represented in a GIS system. We attempted to draw a conclusion in connection with the condition, contamination and history of contamination of soil. The results showed that there is close connection between the soil parameters and geological conditions. However, this connection shows a decrease in the centre of the city. The acidity and calcic soils are determined fundamentally by the parent material, but in the city center the acidity of soils were alkaline (by the greatest number of point). The cause of this is the calcareous deposited debris. The particle size distribution of soils showed various appearances, but there was not possible to discover the tendencies. In most cases there was a high value of organic substance in the downtown area, partly due to frequent grass fertilisation and soil spreading. We detected the amount of easily solvent nutrients and we established, that the value of nutriment element did not show significant differences in connection with usage.
Our work will be continued and we are currently measuring heavy metal content of soil, and searching for the connection between the urban area and condition of soils.

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