

Soil scientific investigation in Székesfehérvár

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In the course our work we examined the chemical and physical parameters of soils in Székesfehérvár and agricultural and forested lands, which are in pertaining to town. Our main aim, was to recognize the mutual effect between the town and its environment.

Within the scope of research we collected altogether 288 sample on 144 point from two depth of soil (0-10 and 10-20 cm) in spring-summer period of 2011. We characterized the individual point in locality, and described the property of soil layers. We analysed the collected soil samples in laboratory.

On the basis of watery pH-measurement the 85% of upper part of soil (0-10 cm) is slightly alkaline, 7% is neutral, another 7% is alkaline and 1% is slightly acidic (Figure 1.). In lower layer are also predominate the soil samples, which have slightly alkaline pH (79%), as well as there are alkaline (13%), neutral (6%), slightly acid (1%) and acid (1%) category pH-values. The carbonic chalk content of upper layer in 42% of samples is very high, in 49% is high, in 9% is medium, in 2% is low and in 2% of samples we not detected carbonic chalk. In lower layer the values of carbonic chalk are about similar to upper part.

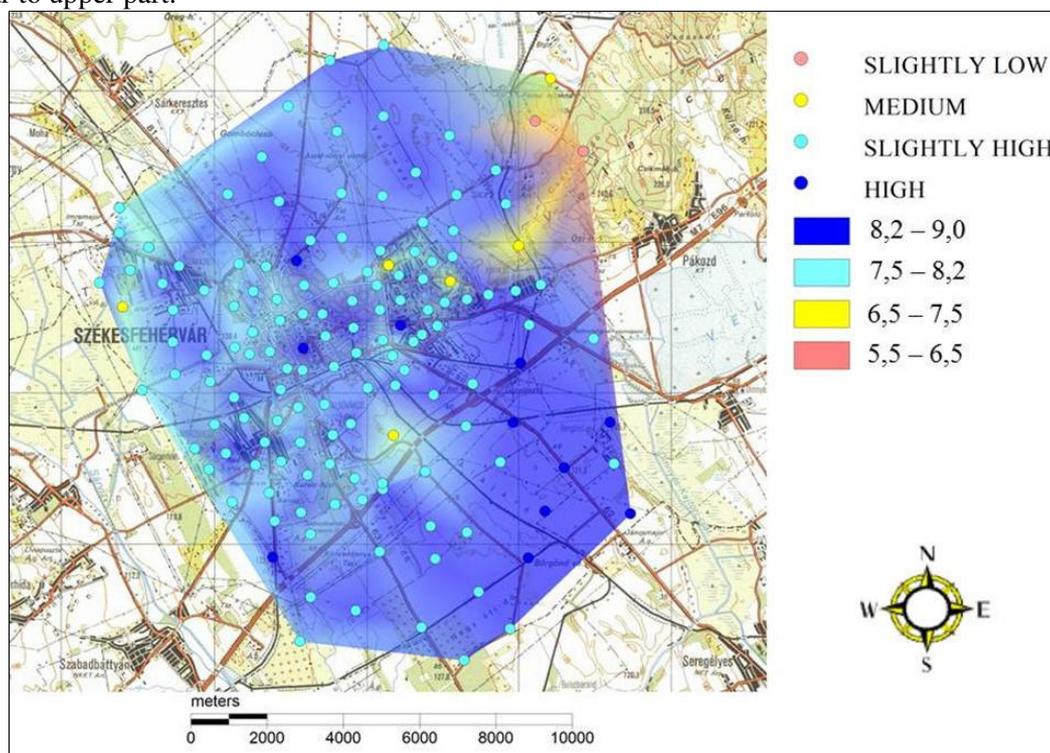


Figure 1. The soil pH values ($\text{pH}_{\text{H}_2\text{O}}$) in upper part (0-10 cm)

On the basis of the particle size distribution and the Arany-type compactness analysis the greater parts of samples are loam (31%), clayey loam (24%) and sandy loam (23%) physical assortment. In smaller rate there are the clay (13%), heavy clay (6%) and the sand (3%) in amongst physical assortment. In the lower layer the distribution of physical assortment is the following: loam 33%, sandy loam 26%, clayey loam 22%, sand 13%, clay 5% and rough sand 1%.

On the strength of total nitrogen content investigation the upper soil layer well supplied with nitrogen in 83%, medium supplied in 16% and slightly supplied in 1%. The lower layer well supplied with nitrogen in 72%, medium supplied in 26%, slightly supplied in 1% and very little supplied in 1%.

In 0-10 cm depth more than half of the samples belong to the slightly humic category, one third of samples to humic class. In the 10-20 cm depth two-thirds of samples fall into slightly humic category,

one fifth of samples in humic class and one-eighth of samples in poorly humic category. It is interesting, that a significant part of the humic area is located within the city. The soil of the surrounding agricultural territory is mainly slightly humic.

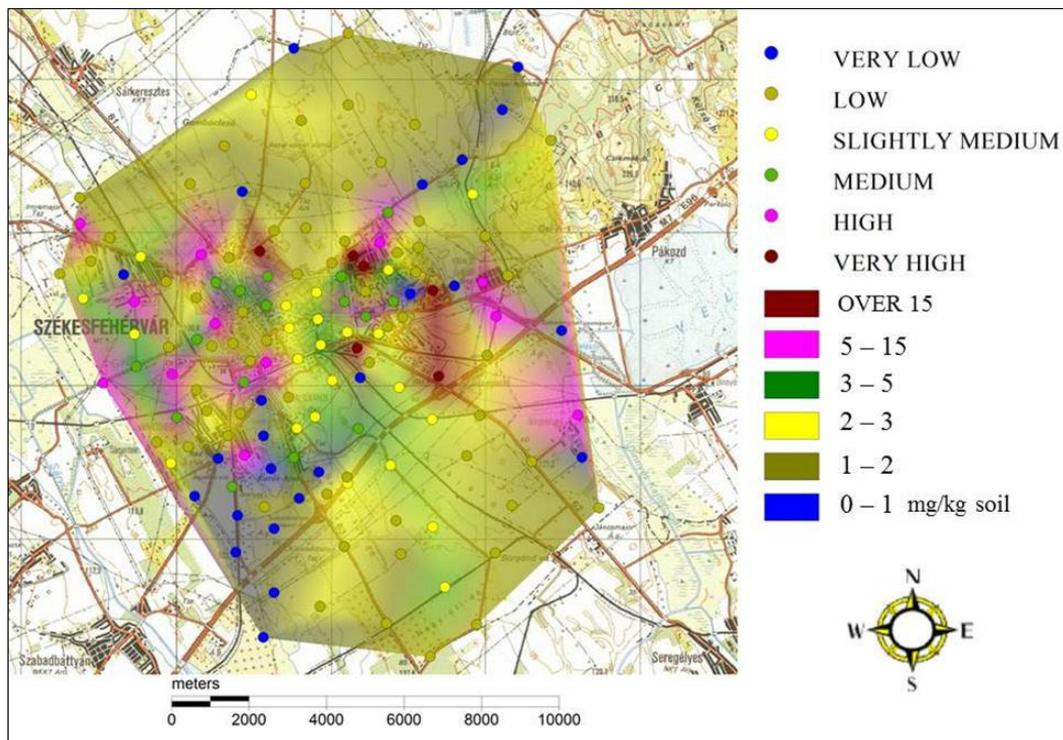


Figure 2. The copper content in the upper layer (0-10 cm)

In the course of ammonium-lactate-acetic acid (AL) solvent potassium content measurement we detected the following data: 28% is very high, 20% is high, 16% is good medium, 19% is moderately medium, 13% is low and 3% very low potassium content in the upper layer. The potassium content of soil samples in the lower part: 19% is very high, 10% is high, 17% is good medium, 17% is moderately medium, 23% is low and 14% is very low. We discovered the highest potassium values in Börgöndi street in both soil layers. According to AL solvent phosphorus measurement results, that the 67-77% of soil samples contained more than 36 mg phosphorus refer to 100g soil. We measured very low values for example the west part of Velence-hills.

The KCl solvent magnesium content measurement showed, that the values fall in between 0,1-0,2 g/kg category the larger frequency in both layers. We detected the highest magnesium values in Seregélyesi street in both soil layers. On the basis of the KCl solvent calcium measurement obtained between 0,34 and 5,75 g/kg. The highest values was descended from next to the Téglagyári- and Horgásztó.

On the strength of ethylene-diamine-tetra-acetic acid (EDTA) and diethylene-triamine-penta-acetic acid (DTPA) measurements of metal element the iron content was formed between 0,8 and 422,7 mg Fe/kg soil. The EDTA/DTPA solvent manganese values fall between 3,9 and 253,3 mg Mn/kg soil in both layers. We detected the highest iron and manganese contents in Csalai forest, which situated NE from the town. The EDTA/DTPA solvent copper values were between 0,51 and 174,02 mg Cu/kg soil, and the highest copper values were in Máriavölgy street in both layers, which we detected next to the main road in suburb district. The EDTA/DTPA solvent zinc values of soil samples changed between 0,42 és 311,22 mg Zn/kg soil, and the salient values founded in Szárazrét (west part of town) from industrial area by railway line.

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