

## Condition of soil in Sopron

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Not only the environment affects the town but the town affects the environment as well, and there is a continuous substance, energy and information flow between them. Our main aim sets out from this mutual connection, namely, to become familiar with the interaction of the town and its environment on a more scientific level. In the course of our examinations in 2011 we have collected 208 samples from two kinds of layers (0-10 and 10-20 cm) at 104 points of the town and its outskirts. We noted the parameters of the soil samples and the sampling place, then we measured the most important chemical and physical characteristics of soils in a laboratory. The acidity of Sopron town's soils is affected by the geologic circumstances and the character of the chalk sediment on the downtown areas. On the basis of watery pH 60% of the samples in two depth of soil fall under weakly alkaline class, 15% or rather 24% from the samples are neutrality, in the rest of the samples strongly acid and slightly low acidity. The samples from the Sopron-hills belonged to the acidic categories according to the bedrock (Figure 1.), while the samples from the downtown fall into alkaline category.

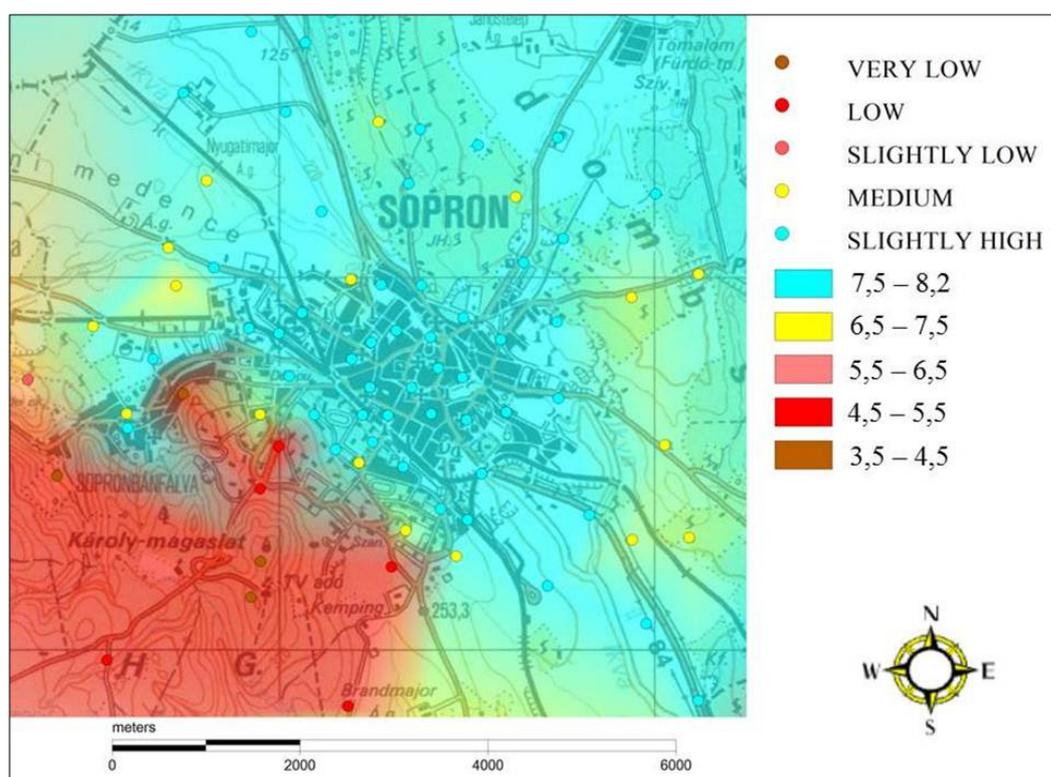


Figure 1. The soil pH values ( $\text{pH}_{\text{H}_2\text{O}}$ ) in upper part (0-10 cm)

Quarter of the samples doesn't contain carbonic chalk due to the character of the Sopron-hills and the too much moisture. We measured in the 43% of upper layer a lot of lime content and in case of 29% of the samples we detected between 1-3% lime content. We measured the maximum value in both layers in the sampling spot between Piusz and Sopronpuszta. We established the physical assortment of the soil on the basis of particle size distribution and the Arany-type compactness restriction analysis. In addition physical assortment of samples in the upper part is the following: 28% heavy clay, 31% is clay, 21% is clayey loam. The last 20% belonged to sand, loam, sandy loam category. In the 10-20 cm layers clayey loam and clayey soils are still typical, while loam soils only appeared in a small percentage during the measurements. According to the examinations of the

integral substance content of the soils 8 samples contained more than 10% humus, the other 70 samples are strongly humic, 22 samples belong to the 2-4% humic category. In the 10-20 cm depth the quantity of the humus decreased, because 45% of the samples fall into the strongly humic category, the other samples are humic or slightly humic. We discovered more than 10% humus in the soils of the forest next to the TV tower. On the basis of total nitrogen content investigation the upper soil layer is well with nitrogen in 71%, this proportion is only 41% in the samples taken from a lower layer. We discovered the highest nitrogen values also in the upper layer of the forest next to the TV tower. We measured high nitrogen value in lower layer in the soils of Balf. There's a distribution of value in connection with the ammonium-lactat-acetous acid (AL) solvent potassium content. In the lower layer three-quarter of the samples belong to very low and low category. We measured highest potassium on the sampling point next to the Sopron-Győr railway and in the soils of the Gidai-patak street in both layers. 55% of every 100 grams of soil contained more than 26 mg phosphorus as it turned out during the investigation of AL-solvent phosphorus content next to traffic roads. According to calcium and magnesium examination in every layer the most magnesium values fall in between the 0,08-0,16 g/kg category. The content of magnesium had a similar distribution, the 80-90% of values was classed in below 0,32 g/kg category. The values of the examination of calcium fall between 0,05 and 6,47 g/kg. For the measurements we used ethylene-diamin-tetra-acetous (EDTA) and diethylene-triamin-penta-acetous (DTPA), depending on the pH of the samples. The results of the iron concentration was under the 100 mg/kg limit in 74-76%, the other samples with a higher level were collected from forest areas. We measured the highest values concurrently with the iron values in the Sopron-hills in many samples. The zinc content is between 2,5-8,5 mg/kg, but there are higher values in both layers in the downtown area, especially near the busy roads in the centre and near the bus station. While measuring the copper in the Virágvölgy and the suburb district in the town, we found significant values (Figure 2.).

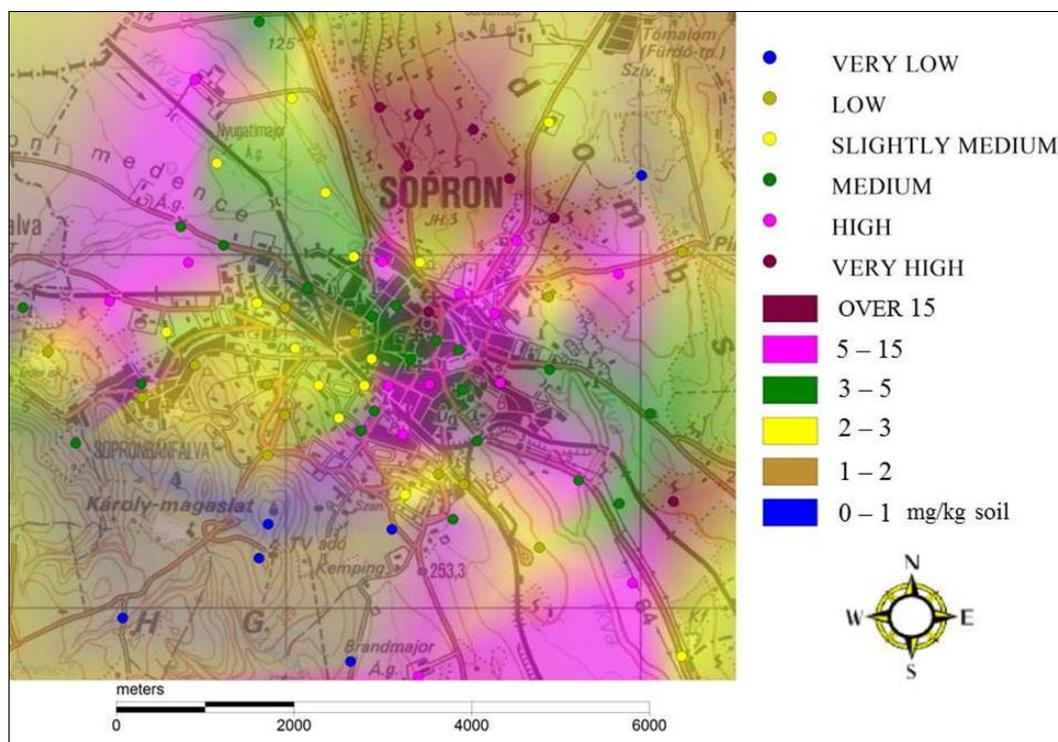


Figure 2. The copper content in the lower layer (10-20 cm)

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