

Comparison of some element ratios of various Hungarian soil types

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The residues of organic matter in the soil are transformed biologically over a shorter or longer period. In the humification process, a part of the organic decomposition products formed the dark-colored humus. The other part of the organic matter is also decomposed by the activities of heterotrophic organisms, in which inorganic substances are produced from the organic matter. The direction and intensity of the transformation, however, depends not only on the organic material stock of the soil, but also on the organisms in the soil, which are closely related to soil properties, natural fertility, environmental factors and applied agrotechnical processes. The rate and speed of humus formation and mineralization determine the soil organic matter stock and the set of nutrients that can be taken up by plants during the degradation of organic matter (Füleky and Rajkainé 1999).

Nutrient elements extracted from the soils with cultivated plants can be replaced by inorganic and/or organic fertilizers or other alternative nutrients that contribute to the soil fertility (Loch 1999). Soil organic matter has a primary important role in soil properties and preservation of fertility. Since significantly fewer organic and manure fertilizers are formed in the last few decades, there are countless experiments to replace the organic matter of soils. The transformation of alternative plant nutrient organic matter (composts, green manure, sewage sludge, slurry etc.) is determined by the living organisms with different activities in the soil.

In our publication the most important physical and chemical properties of 12 different soil types in eastern part of Hungary (chernozem, meadow, marsh, brown forest soil, blown sand, and solonetz) were analyzed. Vegetation of soil types were winter wheat, orchard, oak forest and natural grassland. There were investigated the available nutrient content of the soils (nitrate, CaCl₂ extractable phosphorus and sulfate content). There were also determined the total content (stock) of some elements (C, N, S, P) in the soils and were compared the ratios of the soils element ratios (C/N, C/S, N/S). Based on the results, there was also calculated the proportion of the available and the total element content of soils.