

Classification of anthropogenic soils by new diagnostic criteria involved in the Slovak Soil Classification System (2014)

Jaroslava Sobocká (1), Juraj Balkovič (2), and Zoltán Bedrna (2)

(1) National Agriculture and Food Centre - Soil Science and Conservation Research Institute, Bratislava, Slovakia (j.sobocka@vupop.sk), (2) Comenius University, Bratislava, Slovakia (balkovic@iiasa.ac.at, bedrna@fns.uniba.sk)

Anthropogenic soils can be found mostly in SUITMA areas. The issue of adequate and correct description and classification of these soils occurs very often and can result in inconsistent even in contradictory opinions. In the new version of the anthropogenic soil classification system in Slovakia some new diagnostics criteria were involved and applied for better understanding the inherent nature of these soils. The group of the former anthropogenic soils was divided following scheme of soil reference groups in the WRB 2014 (Anthrozem and Technozem). According to the new version of the Slovak anthropogenic soils classification (2014) there have been distinguished 2 groups of anthropogenic soils: 1) cultivated soils group including 2 soil types (in Slovak terminology): Kultizem and Hortizem and 2) technogenic soils group having 2 soil types: Antrozem and Technozem. Cultivated soil group represents soils developing or forming “in-situ” with diagnostic horizons characterized by human deeply influenced cultivated processes. Technogenic soil group are soils developing like “ex-situ” soils. The key features recognizing technogenic soil group are human-transported and altered material (HTAM = ex-situ aspect), and artefacts content. Diagnostic horizons (top and subsoil) were described as various material affected by physical-mechanical excavation, transportation and spread, mixing, and containing artefacts (the new diagnostic feature).

Kultizems are differentiated by cultivated horizon(s) and Technozems by anthropogenic horizon(s). Cultivated horizons are mostly well-known described horizon in many scientific references. Anthropogenic horizons for Technozem are developed from the human-induced transported and altered material which origin is from the other ecological locality that adjacent area. Materials (or substrates) can consist of various material (natural, technogenic or their mixing) with thickness ≥ 60 cm. Artefacts are the second diagnostic feature which presence authenticates the “artificial origin” of the soil. Natural material contains ≤ 10 % artefacts; natural-technogenic 10-40 % artefacts; and technogenic ≥ 40 %. In the soil survey anthropogenic transported or altered layer is very simply recognizable in soil profile if it is compared with adjacent natural horizons. The classification problem is to define and distinguish not only artefacts in soil profile but recognize the origin of the material. The completed manual for these issues is missing. In the contribution, there graphically individual basic soil types of Antrozems and Technozems with some subtypes will be illustrated. Also the basic schema of classification units in Slovakia will be depicted.