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Soil Classification of Typical Technosols in China

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Abstract

We selected 17 soil profiles with artificial and technical characteristics from Beijing, Hebei, Henan, and Guangdong, China. Then we categorized them in the 3rd edition Chinese Soil Taxonomy (CST, 2001), World Reference Base for Soil Resources (WRB, 2015), and U.S. Soil Taxonomy (ST, 2014) based on their diagnostic horizons and characteristics. The results showed that these soils were classified as Technosols in WRB, and some of them were classified in ST as subgroups of different great groups of Entisols. However, these soils do not have a proper attribution in the 3rd edition CST, as the current classification does not reflect soil artificial and technical characteristics.

We proposed the following revisions for CST, with reference to WRB, ST, and research on nearly a hundred similar soil profiles in China. Firstly, a new Manufactured layer needs to be established, and the connotation of the Anthroturbic layer should be expanded. Secondly, an Artificalic Anthrosols suborder under the Anthrosols order needs be established, which can be divided into Transporti-Artificalic Anthrosols and Alteri-Artificalic Anthrosols groups. Furtherly, each soil group can be divided into four subgroups: Anthropollic, Anthrodensic, Intrusionic, and Typic. And each soil family can be named with the following prefixes according to the actual situation: Relic-, Toxic-, Radiohazic-, Ekranic-, Linic-, Reconstructic-, Truncatic-, Wastic-, and Anthroturbic-. Thirdly, adding the "T" layer symbol to the soil description reflects this special diagnostic layer.

The practice has proved that our suggested revisions can effectively reflect the artificial and technical characteristics of the sampled soil profiles in the categories of the taxonomy results. We aim to provide helpful information and suggestions for the coming 4th edition of CST, in line with international soil classification systems.