



Cycles of pedogenesis in the Bohemian Karst, Czech Republic

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The structure of soil cover was predominantly formed in a karst-type landscape under natural conditions of a deciduous forest. Of all Palaeozoic periods, the surface geology of the area is dominated by the Devonian and Silurian. From the Late Cretaceous on, the landscape of the Bohemian Karst was subject to planation. The research was conducted in the Protected Landscape Area of Bohemian Karst SW of Prague including the city margins. The most characteristic soil sequences lie at the altitude of 237–490 m. Particle-size distribution, pH values, CaCO₃ contents, cation exchange capacity, Cox, Nt and micromorphological properties were studied for different soil types on different types of parent materials.

Albic Luvisol (loess), Eutric Cambisol (diabase), Rendzic Leptosol (limestone), buried Rendzic Leptosol (calcareous tufa), Calcaric Leptosol (calcareous schist) and Terra Fusca (limestone) *sensu* Kubiěna were identified as non-buried paleosols in the territory of the Bohemian Karst.

The most characteristic soil types in the most typical sequences are Rendzic Leptosol and Terra Fusca. Accompanying soil types in the structure of the soil cover are Albic Luvisol, Eutric Cambisol and Calcaric Leptosol.

The stages of soil development were determined on the basis of micromorphological characteristics. The distribution of pores, skeleton, amorphous forms of CaCO₃, calcite needles and calcite rhombohedra in the soil profile depend on the type of parent material. Braunlehm plasma and braunlehm nodules are present only in non-buried paleosols.

Buried Rendzic Leptosols occurring in the upper part of the sedimentary sequence are

autochthonous (in most of the cases) or semi-autochthonous. Rendzic Leptosol represents the Holocene cycles of pedogenesis.

Terra Fusca is characteristic for the karst type of relief. First stages of soil development were identical for these soils. Illimerization, brown earthification and pseudogleyization took place in the next stages in some non-buried paleosols. The oldest stages of pedogenesis can be dated to the Last Interglacial but may be even older. Further soil development was controlled by climate oscillations or by relief. The autochthonous position of Terra Fusca indicates a territory with no processes of erosion.

Soil development in the Bohemian Karst was controlled mainly by the relief and changes in climatic conditions. The Pleistocene cycles of soil development have very specific characteristics indicating development under climatic and environmental conditions different from those encountered in the present territory of the Czech Republic. Under present climatic conditions of the Bohemian Karst, only Rendzic Leptosol can develop on limestones.

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