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# Magnetic properties of soils in boreal regions. Case study from Ukraine

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The investigation of soil magnetism is a part of the general soil researching for solving soil science and agronomy tasks. Soils are rather magnetic and sometimes they are the main near-surface object, which generates local magnetic anomalies.

Soils have been studied within the main soil-climatic zones of Ukraine: Polesie, Forest Steppe, Steppe, Dry Steppe, Crimean and Carpathian mountains. The investigated soils types are: soddy-podsolic, gray forest, chestnut, chernozems leached, typical, ordinary, southern, and meadow, turf, bog soils, brawn and mountains soils. A part of Ukraine soils are from boreal regions. Among them are chernozems of Polesie soil-climatic zone. This territory was under influence of ice age. Another part of Ukraine boreal region is Carpathian maintains with special type of climate, landscapes and soils.

The comprehensive analyze of Ukraine soils from the boreal territories and other parts is presented. Soil magnetism increases from North to South in the transition between the soil-climatic zones of Ukraine. The most magnetic are ordinary and south chernozems. The least magnetic are soddy-podzolic, meadaw and bog soils. The maximal values of the magnetic parameters are fixed in the watersheds, plateaus of the landscapes, minimal values are fixed in the floods, ravines, bor terraces.

Magnetic susceptibility mapping is useful for agricultural mapping of lands, investigation of erosion, soil fertility, the necessity for mineral and organic fertilizers. Magnetic methods of investigations are high speed, effective and low-cost. Moreover, the magnetic methods a very important if the dangerous soil processes could not be fixed with visual image. In the same time, these hazards effect on the conditioning and the productivity of agricultural land. We have marked the decreasing of the magnetic susceptibility values within the risk of erosion sections of the catena.