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Comparison of noncapillar porosity in genetic horizons from silt deposits derived lessive soils

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The aim of the work was the comparison of macropores size and shape in genetic horizons of two lessive soils profiles derived from loess and loess-like deposit.

Loess derived soil was the forest soil located on Miechów Upland and loess-like deposit derived soil, located on Wieliczka Foothill, was arable used.

Soil samples with natural texture were taken from all genetic horizons to steel boxes (10x10x4cm). Soil material was prepared as non-transparent soil slides. Colour film photographs were changed into digital layout using scanner with 850 dpi resolution. Further photographs arrangements were performed with image analyse software Aphelion version 3.1.

Objects (pores) were analysed after being brought to binary system and use of morphological filters. During next operations were taken into account only pores with diameter more than 8,5 μm. Pores were divided on the basis of one morphological parameter called „circularity" in 3 groups (regular, irregular, elongated). The second division was carried out according to pores diameter in 5 groups: 8,5-10 μm, 10-15 μm, 15-30 μm, 30-50 μm, 50-100 μm and beyond 100 μm. The data was statistically analysed using Tukey test for different numbers of samples.

Noncapillar porosity was found higher in genetic horizons of lessive soil derived from loess than in comparable horizons of soil derived from loess-like deposit and in humus horizons amounted respectively 12,2 and 4,37 $cm^3 100 cm^{-3}$.Those foundines show difference on land use of investigated soils. Humus horizon of forest soil was characterised by the highest amount of elongated pores with diameter more than 100 μm, which is conected with the higher faunal activity. In horizon Ap of loess-like

derived soil predominated irregular pores with diameter 30-50 μm. Eluvial horizons were characterised by the highest noncapillar porosity in both investigated soils. In these horizons predominated elongated pores with diameter more than 100 μm. It was found in illuvial horizons a decreasing amount of the biggest pores. In parent rock horizon of loess derived soil was found higher noncapillar porosity than in loess-like deposit derived soil. The amount of elongated pores wider than 100 μm contained more than 50 % of total pores in parent rock horizon of loess derived soil. In comparable horizon of the second soil profile only 35% of total pores was contained in this pores type.