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Patterns of spatial distribution of mineral components of the complex of gray forest soils Vladimir opolye

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The aim of the work is the analysis of spatial distribution of soil fundamental characteristics - fine fractions content (less than 1, 1-5, 5-10 and more than 10 mkm) and their mineralogical composition.
The experiments were carried out on the experimental field in Suzdal region in a trench (22 m length and 2 m depth) laid in upland, well-drained conditions.
Soil samples from 5 different soil profiles were collected. Fractions were obtained by Gorbunov method. Mineralogical analysis were carried out by universal X-ray diffractometer (Carl Zeiss Jena, Germany).
The dominant fraction is a coarse silt fraction, the sand fraction content is negligible.
The soil is characterized by medium-textured loam composition from the above and a sandy loam composition in the bottom. Textural differentiation occured due to the distribution of clay fraction. The content of this fraction in plough horizons varies depending on addition of part of other horizons during plowing. The plogh-layer of the residual-carbonate agrogrey soil is characterized by higher (20-23 %) amount of fraction less than 1 mkm, in comparison with plough horizon above the second humus horizon (SHH), where the amount of silt is 15-16 %.
The main components of the fraction derived from the rock are complex mixed- lattice formations dominated by mica - smectite with a high proportion of smectite packages, mica - smectites with low content of smectite packages were in subordinate quantity. The next component is hydromica - a mixture of dioctahedral and trioctahedral varieties. Smectite phase and hydromica add up to 85-90 % of the silt component. The amount of kaolinite and chlorite usually range in 7-13 %. Kaolinite is generally imperfect, chlorite is magnesia-ferric. The presence of fine quartz and feldspars (less amount) is revealed.
During the soil formation the redistribution of the above minerals whose behavior is caused by the type of soil is occurring. Agrogrey heavy-textured soils are characterized by textural differentiation of the profile. The main carrier of this differentiation is the silt fraction, mainly its component - the swelling phase.
Smectite phase dominates in silt fraction and it is eluvially distributed within the soil profile. Silty fraction of loess loam contains 72 % of the smectite phase.
Behavior of minerals constituting the sum of kaolinite and chlorite content indicates its relatively uniform distribution. A slight increase in their content is noted in the eluvial part of the profile, mainly due to increasing in the proportion of kaolinite. The amount of hydromica reduces down the profile from 44.2 % to 19.8% in loess loam (soil-forming rock). The ratio of dioctahedral structures of hydromica to trioctahedral changes within the soil profile: trioctahedral varieties are more abundant in the upper part of the profile.