



The early stage of soil formation and weathering of mantle loam components under impact of forest and meadow communities

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Mineralogical composition of clay fraction from the less developed soils of the model large lysimeters have been studied after 30-year period of soil formation. The parent material for experiment is mantle non-calcareous silty clay loams that are widespread in the center of the Russian Plain. X-ray diffraction and term gravimetric methods for determination clay minerals and organic matter are used. The mineralogical composition of clay fraction sampled from mantle loams is represented the paragenetic association of follow minerals: smectite phase (40-60%), hydromicas (30-50%), kaolinite, chlorite (sum 7-16%) and traces of clay-sized quartz. The smectite phase consist of complex irregular interstratified mica-smectite with high and low contents of the smectite layers, chlorite-smectite with different ratios between chlorite and smectite layers, chlorite-vermiculite and individual smectites. The hydromicas comprises tri- and dioctahedral subgroups. At the early stage of soil formation during 30-year period, the accumulation of humus and the weakly pronounced eluvial-illuvial redistribution of clay fraction appears in the upper 0-10 cm layer. There is a trend of partially destruction of smectite phase, and relative accumulation of hydromicas and kaolinite in the upper layer. Intensity of soil profile differentiation depends on plant community. Spruce stands produce acid reaction of soil solution, therefore podzolic process starts. Mixed oak and maple stands don't change reaction of soil solution and promote the depletion of smectite phase from the upper horizons due to lessivage.