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«SPECTRAL CHARACTERISTICS OF WATER-SOLUBLE AND ALKALINE-SOLUBLE ORGANIC SUBSTANCE OF FALLOW LIGHT-GRAY FOREST SOILS»

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Problem statement

• The goal of research: Evaluation of the content of water and alkaline soluble OM in different ages fallow light gray forest soils and the direction of its qualitative change.

• The objects of study are the conjugate plots of different ages (7 and 75-80 years-old) fallow light gray forest soils.
The labile fractions of the soil OM were extracted with hot water using the Kershens method and a mixture of Na$_4$P$_2$O$_7$-NaOH using the Konova and Belchikova methods.

The absorption spectra of the water-soluble and alkaline-soluble fractions were carried out on a Lambda 35 spectrophotometer (PerkinElmer, USA) in the 450-250 nm wavelength range.

For the qualitative characteristics of the selected OM fractions, the SUVA$_{254}$ criterion and the Sr criterion were calculated from the absorption spectra.

The SUVA$_{254}$ criterion has a close direct correlation with the degree of condensation of dissolved natural agents, the Sr criterion has an inverse correlation with molecular masses of agents (Weishaar et. Al., 2003, Helms et. Al., 2008)
With age of deposits, a significant change in the quantitative content and qualitative composition of OM in general and its individual labile fractions is observed. As a result of changes in the qualitative composition of labile OM fractions with age of deposits, it can be concluded that the factor of selective preservation of OM compounds resistant to destruction is relevant, first of all, for the stability of only the labile water-soluble fraction. The stability of alkaline-soluble OM fractions of fallow soils is most likely determined by their spatial inaccessibility to heterotrophic microorganisms due to the formation of organic and organic-mineral associations. The results of the study can be used to assess the dynamics of changes in the qualitative composition of OM of fallow soils when they are returned to agricultural use.
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