



## Organic matter of main soils of the Subpolar Ural

Viktor Startsev and Alexey Dymov

IB Komi SC UB RAS Institute of Biology of Komi Scientific Centre of the Ural Branch of the Russian Academy of Sciences, Soil science, Russian Federation, Syktyvkar (vik.startsev@gmail.com)

The Subpolar Ural is the southern border of the permafrost spread in the European North East of Russia. Soil is one of the most important components of the functioning of ecosystems, so the study of various aspects of soil cover is an important task of soil science. Many experts highlight the special role of organic matter (OM) in the evolution of soils formed in mountain regions. Amphiphilic properties of soil organic matter (SOM) characterize its ability to interact with water, migration opportunities. The content and nature of the carbon distribution of water-soluble organic matter affects the formation of the chemical composition of soils, participates in the cycles of transfer of various nutrients.

The object of the study was the soil formed in the Northern part of the national park "Yugyd va", the Kozhim river basin (Subpolar Urals). Were investigated soils of mountain-forest, subalpine, alpine tundra vegetation belts and soils with permafrost icy rocks. A total of 16 soil pits were studied. The study of soil organic matter was performed using the method of densimetric fractionation, chromatography of hydrophobic interaction and assessment of the content of water-soluble organic matter.

The analysis of densimetric fractions of organic matter soils of the Subpolar Urals revealed that the basis of organic matter is a heavy organomineral HF>1.6 fraction (56-99 % mass.). However, the main pool of organic carbon is found in light fractions of organic matter. Maximum concentrations of carbon are characterized by a light fraction of OPOM<1.6 (45 %). It is shown that occluded organic matter is better preserved than free plant residues. This fact may be a characteristic feature of the soils of the northern mountainous regions. The conducted research by the method of hydrophobic interaction chromatography revealed that soils formed in different high-altitude belts have differences in the amphiphilicity of organic matter. In the soils of the subalpine belt is dominated by the hydrophilic fraction. Soils of mountain-forest, alpine tundra belts and soils with permafrost icy rocks are characterized by the maximum content of hydrophobic fractions. In the studied soils, hydrophilic compounds of the first fraction (aliphatic compounds) predominate in the composition of labile soil organic matter) and fifth fraction organics (combined with Fe and Al). As a result of the research it was found that the maximum carbon content of water-soluble organic compounds characterized by organic horizons. The largest carbon content of water-soluble organic matter in the litter is characterized by the soils of the subalpine belt (up to 17.3 mg/g), in mineral horizons – soils of the alpine tundra belt (up to 2.2 mg/g). The nitrogen content of water-soluble compounds has similar regularities. Analysis of the fraction of carbon of water-soluble organic matter from total carbon showed that in the soils of the soils with permafrost icy rocks there is an increase in water-soluble organic compounds in the lower horizons. The research was carried out with the financial support of the project RFBR № 18-34-00618.