

STOCKS AND PROFILE DISTRIBUTION OF BIOPHILIC ELEMENTS IN NATURAL AND ANTHROPOGENICALLY TRANSFORMED SOILS OF ZAONEZHIE

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The dynamics of biophilic elements' stocks in natural and anthropogenically transformed soils of Zaonezhye has been studied. The soil cover of Zaonezhye is unique in that the soils in the most of the territory are formed on the eluva-deluvium of shungite schists. Quantitative assessment of biophilic elements stocks has been carried out on different types of soils typical for the region. It was found that when transferring agricultural lands to fallow lands, the stocks of biophilic elements were reduced, but their maximum content is still noted in the old arable horizon. The soils on shungite schists are characterized by maximum reserves of biophilic elements. The profile distribution of the content of organic carbon, total nitrogen and total phosphorus has been studied in various types of soils with different degrees of cultivation. It was revealed that the main features of the distribution of biophilic elements in the profiles of light-loamy and gray-humus dark-profile light-loamy soils in the three land use systems were associated with the morphological differences of the profiles. At the transition of arable soils to fallow, overgrown with forest, ex-arable horizon were stratificated into two sub-horizons, and in the natural biocenoses the gradually decreasing distribution of biophilic elements becomes sharply decreasing. At the conclusion of the agricultural turnover, arable soils on shungite schists quickly return to their original state, because arable horizons of shungite soils, both in their morphological structure and physical and chemical properties, slightly differ from the upper horizons of soils formed under natural forest vegetation on materials rich in shungite schists.

Keywords: biophilic elements, carbon, nitrogen, phosphorus, shungite soil, land use systems, long-term arable lands.