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COMPREHENSIVE STUDY OF ECOLOGICAL STATE OF SOIL COVER ACCORDING TO PROFILE OF TERRITORY EXPERIENCING ANTHROPOGENIC LOAD

Keywords: *soil cover, biological activity, soil.*

V.I. Vernadsky considered the soil “the main substrate of life,” “the main element of the biosphere.” Soil cover as one of the key components of the biosphere undergoes transformation as a result of increasing human impact on the environment, which leads to changes in various soil indicators, depriving it of the ability to perform key environmental functions [1]. The biological activity of the soil, the qualitative and quantitative composition of the soil microbiota immediately respond to any anthropogenic effects. Therefore, land cover indicators can be considered as reliable and informative indicators reflecting the state of the environment.

Purpose: to conduct a comprehensive study of the ecological state of the soil cover according to the profile of the territory experiencing anthropogenic load.

Tasks:

1. Study physical and agrochemical indicators characterizing the ecological state of the soil;
2. Assess spatial change of soil biological activity within different areas of urban environment by methods of enzymatic activity study.

Soil samples from 7 points located in the area of Akademgorodok in Irkutsk were taken for research. These are the territories located in the housing estate (points 1 and 7), on the Angara River (point 3 and point 2 - Warm Lakes), in the forest (points 4, 5, 6). All points are located in areas to varying degrees subject to anthropogenic load [2]. The Orlov-Grindel spectrophotometric method was used to determine the humus content. According to the results of the studies, the largest humus content was recorded at point 1, located in the Akademgorodok housing estate, confined to spruce vegetation. The smallest content of humus is at point 3, which is located on the banks of the river. Angara is composed of river alluvium.

Soil biological activity (BAP) of the study areas was evaluated through cellulolytic, protease and urease activity. As a result of the experiment, it was shown that samples 2 (10-15 cm), 4 (5-10 cm), 7 (5-10 cm) had the highest percentage of destruction. The high activity of cellulase here is explained by the

richness of the soils of these territories with nitrogen (points 4 and 7), mobile forms of potassium (points 2 and 7) and phosphorus (points 2 and 7) - this was established during experiments

Soil protease activity was determined by photo paper. The method is based on microbiological splitting of gelatin available in the emulsion layer of photo paper. According to the results of the study, the darkest color was recorded in samples 7 (5-10 cm), 5 (10-15 cm), 2 (10-15 cm) and in the control sample, which is associated with the highest protease activity of the soil. A larger percentage of the decomposition of photo paper was recorded mainly (except for point 1) at a depth of 10-15 cm, which is explained by the large presence of organic matter in the upper horizon of soils.

To determine the urease activity of the soil, the express method of T.V. Aristovskaya, M.V. Chugunova was used [3]. It was found that the most intense color (blue) was recorded at point 7, which indicates a high biological activity of the soil at this point. For soil taken from this territory, the reaction of ammonia release proceeded much faster (2 hours) compared to other areas under study. Also, a high BAP is noted at point 1, but the color change rate of the indicator is much lower here.

References:

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THE ANATOMICAL FEATURES OF GENUS PINUS FOR IDENTIFICATION DURING EXPORT ABROAD

Keywords: *genus Pinus, Pinus sibirica, Pinus sylvestris.*

Relevance: The forest resources of the Russian Federation account for a fifth of the total world timber reserves, a significant share of which is concentrated in the Siberian and Far Eastern federal districts, accounting for 40 and 24.9% of