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Матеріали 101 – ї підсумкової наукової конференції професорсько-викладацького персоналу вищого державного навчального закладу України «Буковинський державний медичний університет» (м. Чернівці, 10, 12, 17 лютого 2020 р.) – Чернівці: Медуніверситет, 2020. – 488 с. іл.

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У збірнику представлені матеріали 101 – ї підсумкової наукової конференції професорсько-викладацького персоналу вищого державного навчального закладу України «Буковинський державний медичний університет» (м.Чернівці, 10, 12, 17 лютого 2020 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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MONITORING OF SOILS OF POKUTSKO-BUKOVYNIAN CARPATHIANS BY SANITARY-HYGIENIC AND MICROBIOLOGICAL INDICATORS

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The soils are an important component of mountain ecosystems. Violation of the balance of development of the region leads to the depletion of soils, alters their enzymatic activity, leads to degradation of the soil cover and violates the environmental safety of natural complexes. Protected areas with long-term conservation regimes can serve as a benchmark for soil monitoring. It should be noted that the use of sanitary-microbiological soil indicators for monitoring the status of nature conservation objects is sporadic (O.V. Mudrak, 2012; V.P. Patika, L.Y. Symochko, 2013) and does not apply to individual functional zones of these territories.

Among soil quality indicators, we studied total microbial counts, perfusion titers, enterococci titers, thermophilic bacteria counts, nitrogen compounds content, and urease activity. Our studies have shown that soils of anthropogenically altered landscapes are characterized by high levels of sanitary bacteria. Soils outside the National Natural Park (NNP) are characterized by high biological activity, as evidenced by the level of urease enzyme activity and the ratio of the major forms of nitrogen compounds in them. A comparative analysis of the soils of the territories where the economic activity is developed, and which differ only in environmental status, showed that the soils of the NPP economic zone contain less nitrates and ammonium and are inferior to the content of sanitary bacteria. As for the activity of the enzyme urease, it is approximately the same in different areas of economic activity.

According to the indicators of total microbial number (TMN) and titer of bacteria of the group of Escherichia coli (BGEC), the soils selected in the protected area of the NPP according to the scale proposed by A.M.Golovko, I.O.Rublen (2010), correspond to the level of "pure". Clostridium perfringens and gram-positive cocci were also not found in the soils of the conservation area, as evidenced by the corresponding perfringence titers and enterococci titers. The presence of these microorganisms in the soil is a sign of contamination with fresh or ancient faeces. So, the soils of the conservation zone do not contain fecal bacteria, and in terms of thermophilic gram-positive bacteria the soils of the protected zone also correspond to the level of "pure". Assessment of soil microbiological status in the area of in-patient recreation indicates an increase in the soil samples by almost an order of magnitude of the TMN and a corresponding decrease in the BGEC titer. The indices of perfringer titer, enterococcus titer and thermophilic bacterial counts fluctuate within the range. In the soils of the economic zone there is a significant (almost two orders of magnitude) increase in the number of thermophilic bacteria. The increase in the number of thermophilic microorganisms indicates an overuse of local organic fertilizers of animal origin. Over the last 10 years, there has been a tendency in the region for significant microbiological contamination of soils that are heavily affected by the local population.

Thus, it can be argued that the number of microorganisms studied and the biological activity of soils of different functional zones of the areas of the nature reserve fund depend on the level of anthropogenic loading. The activity of soil microorganisms is a highly sensitive indicator of soil biological activity. This is of particular importance for monitoring the status of reference (protected) territories and maintaining their ecological safety. Studying their condition makes it possible to predict environmental changes in the long run.

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