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ACID-BASE BUFFERING AS A DETERMINANT OF SOIL RESISTANCE
TO ANTHROPOGENIC IMPACTS

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An analysis is presented regarding the acid-base buffering capacity of sod-podzolic soils, viewed as a fundamental factor and parameter of soil resilience to anthropogenic impacts. Soil resilience is conceptualized not as an invariant intrinsic parameter, but rather as an integral function of interconnected parameters within a geosystem element—parameters that are shaped by both internal and external factors. An algorithm has been developed for the differentiated regulation of chemical substance concentrations in soils, incorporating soil buffering parameters. Furthermore, a methodology has been devised for the comprehensive assessment of the ecological status of a territory—based on integral parameters of resilience to adverse external impacts—with the aim of optimizing the level of anthropogenic load. An algorithm for differentiated regulation of chemical substance content in soils was normatively formalized through the adoption of: 1) technical code of established practice TKP 17.03–06–2019 (33140) “Environmental Protection and Nature Management. Procedure for Carrying Out Work on Differentiated Regulation of Chemical Substance Content in Lands (Including Soils)” (Resolution No. 1-T of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus dated January 14, 2019); 2) Environmental Norms and Rules EkoNiP 17.03.01–001–2021 “Environmental Protection and Nature Management. Lands (Including Soils). Environmental Quality Standards. Differentiated Standards for the Content of Chemical Substances in Soils and Requirements for Their Application” (Resolution No. 13-T of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus dated November 25, 2021). In order to optimize the level of anthropogenic load was adopted TKP 17.13–25–2025 (33140) “Environmental Protection and Nature Management. Comprehensive assessment of the ecological state of the territory of an administrative-territorial unit (district) based on integral parameters of ecosystem resistance to external negative impacts to optimize the level of anthropogenic load”.

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References: Yeresko M.A., Klebanovich N.V. Integral Assessment of Soil Stability of Territorial Ecosystems to the Impact of Anthropogenic Factors. *Natural resources* 1 (2025), 31–41.

<https://priroda.belnauka.by/jour/article/view/213>

Yeresko M.A., Klebanovich N.V. Indicators of Physical Properties of Soils for a Comprehensive Environmental Assessment of the State of the Soil cover. *Land of Belarus* 3 (2023), 44–52.

<https://belzeminfo.by/index.php/arkhiv#scrollTo>

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