**INDICATORS OF SUSTAINABLE DEVELOPMENT OF SAFETY LAND USE AND ASSESSMENT OF DEGRADATION PROCESSES DEVELOPMENT OF SOIL COVER USING GIS MODELS**

V.A. Bogdanets, ***Ph.D. in Agriculture, Assoc. Prof., National University of Life and Environmental Sciences of Ukraine, Kyiv***

*E-mail:* [v\_bogdanets@nubip.edu.ua](mailto:v_bogdanets@nubip.edu.ua)

V.G. Nosenko, ***Ph.D. in Agriculture, National University of Life and Environmental Sciences of Ukraine, Kyiv***

**Summary**

The article describes some of the UN-adopted indicators of sustainable development of land use safety associated with the development of soil degradation processes, approaches to assessing the development of soil degradation using mathematical modeling tools, namely geoinformation models.

Indicator 15.3.1 of sustainable development goals reflects the ratio of the area of degraded land to the total land area of the assessed area, and degradation is considered as an integral indicator of such parameters as land productivity, soil organic matter content and type of land use. It is established that when using remote sensing data obtained from open sources, which serve as a basis for calculating land degradation indices by the Trends.Earth tool via QGIS software, it is possible to establish such changes at the administrative level (map scale 1: 100000) and spatio-temporal analysis of such changes.

At the same time, it is difficult to ensure higher spatial resolution, which would allow the analysis at the level of an individual farm or an enterprise. This is due to the spatial resolution of the data that form the basis for such a calculation. In the Forest-Steppe zone of Ukraine, the predominant type of land use is agricultural activity with land plowing. Some farms practice minimizing tillage, which, in particular, should affect the value of the indicator of land degradation.

With some convention of such an approach, the indicator allows to display in the map space the data of changes in the condition of the land, the loss of soil organic carbon according to remote sensing data and the nature of soil degradation for the selected time interval. Due to difficult economic conditions, part of the lands for the period 2001-2019. was not used in agricultural production, some fields were overgrown with woody vegetation and were not actively cultivated, which was reflected in the indicators of indicator 15.3.1. At the same time, most of the lands (over 66%) did not undergo positive or negative changes during the studied period.

The use of indicators of soil condition, monitoring of the development of degradation processes based on operational data and the possibility of their comparison for different time intervals plays a particularly important role in the context of the impact of global climate changes on the soil cover, prospects for agricultural production and, in general, on the quality of life of people.

*Keywords: sustainable development goals, soil degradation, land use indicators, geoinformation models, remote sensing data.*