НАЦІОНАЛЬНА АКАДЕМІЯ АГРАРНИХ НАУК УКРАЇНИ
ІНСТИТУТ ЗЕМЛЕКОРИСТУВАННЯ

ФОРМУВАННЯ СТАЛОГО ЗЕМЛЕКОРИСТУВАННЯ: ПРОБЛЕМИ ТА ПЕРСПЕКТИВИ

Матеріали IV Міжнародної науково-практичної конференції

16-17 листопада 2023 року

Київ 2023

УДК 332.36

Формування сталого землекористування: проблеми та перспективи : матеріали IV Міжнар. наук.-практ. конф. (м. Київ, 16-17 листопада 2023 р.). Київ : Редакційно-видавничий відділ НУБіП України, 2023. 290 с.

Видання містить матеріали IV Міжнародної науково-практичної конференції «Формування сталого землекористування: проблеми та перспективи». Тематика конференції відображає комплексність, міждисциплінарність і багатовекторність проблем формування сталого землекористування та інноваційних підходів до їх вирішення. У тезах доповідей учасників представлено технічні, організаційні, економічні, екологічні та соціальні засади забезпечення формування сталого землекористування.

Матеріали збірника будуть корисними для фахівців у сфері землеустрою, геодезії, картографії, містобудування, геоінформаційних технологій та ін.

The publication contains materials of the IV International scientific-practical conference "Formation of sustainable land use: problems and prospects". The theme of the conference reflects the complexity, interdisciplinarity and multi-vector nature of the problems of sustainable land use formation and innovative approaches to their solution. The participants' reports present the technical, organizational, economic, environmental and social principles of ensuring the formation of sustainable land use.

The materials of the collection will be useful for specialists in the field of land management, geodesy, cartography, urban planning, geographic information technologies, etc.

Матеріали подано в авторській редакції

Materials are submitted in the author's edition

Рекомендовано до друку вченою радою
Інституту землекористування Національної академії аграрних наук України
(протокол № 11 від 23 листопада 2023 р.)

ISBN 978-617-8171-09-4

Sopov D.S.
PhD of Geoscience, Assoc. Prof.
State Biotechnological University
Kharkiv, Ukraine
Sopova N.V.
Senior Lecturer at the Department
State Biotechnological University
Kharkiv, Ukraine
Mokierova N.V.,
Senior Lecturer at the Department
State Biotechnological University
Kharkiv, Ukraine

REGARDING THE METHOD OF DETERMINING THE ENVIRONMENTAL DANGER COEFFICIENT OF AGRICULTURAL LAND USE IN THE TERRITORIAL COMMUNITY

A developed and generally accepted scientific and conceptual basis for solving the problem of optimizing the rational use of land at the regional level (in different geological-tectonic, landscape conditions, in territories with different degrees of anthropogenic load on the environment) does not yet exist, nor has a single integrated indicator of ecological the state of the land fund and the optimality of the land use structure. The recommendations of A. M. Tretyak [1] and others are designed to solve this problem to some extent, but they cannot take into account the regional features of land use caused by a wide variety of natural and social factors.

For example, siltation of water bodies, which is one of the links of the ecological chain, is an important ecological consequence of the processes of planar washing and linear erosion, accelerated by excessive use of agricultural land (especially arable land). That is, the action of natural factors, although enhanced by economic activity, is obvious and can be considered objective. But such a factor as the ratio of environmentally stabilizing and destabilizing types of land has a purely subjective nature, since in various territorial communities (hereinafter - TG) due to the lack of a strategic approach to land use problems, the planning of the structure of agricultural land is often subordinated only to current interests.

The systematic approach involves establishing the main environmental problems and carrying out a systematic analysis of natural-technogenic or natural-anthropogenic factors, developing evaluation criteria and indicators (in particular, land disturbance and the state of the land-use structure), developing an expert assessment scale, calculating evaluation points for all indicators-factors in any TG, ranking, and finally - zoning of the territory of the TG according to environmental hazards in the field of agricultural land use.

A number of spatial (quantitative and qualitative) indicators serve as criteria for assessing the ecological state of lands, and an integral assessment is carried out on the basis of a certain number of the most representative indicators.

Nowadays, many methods of determining the integral indicator of land disturbance by various factors have been developed, but they can be considered acceptable only for

specific territories with specific situational conditions and with a very specific purpose [2; 3].

The statement of V. P. Rudenko that "the structure of land use is not a simple sum of its types (including branches of agriculture) is correct, because it does not fully take into account the interrelationship and conditionality of the considered types of land use and the effectiveness of its implementation" [4] and that "due to the complexity of the problem under consideration, scientists have so far failed to develop a sufficiently acceptable and practically applicable methodology for taking into account the synergistic effect of joint use of land resources. None of the land use optimization models proposed today have been numerically implemented in real conditions" [4].

The opinion of O. G. Topchiev [5] completely coincides with his statement, who believes that the relationship between qualitative and quantitative characteristics in modern geography is as complex and insufficiently developed as in other branches of science.

For the integral assessment of the state of land resources for agricultural use, a system of indicators is being developed, which includes a group of data on natural factors and data characterizing anthropogenic action.

Forest cover, steepness of slopes (specific gravity of different gradations), i.e. tension of relief, area of slopes with a steepness of more than 2° are taken as natural. Anthropogenic factors include plowing, the specific weight of environmentally stabilizing lands (or the stability of the structure of agro-landscapes), erosion of arable land, soil erosion, land quality, etc.

The integral indicator of the danger of agricultural land use must be determined by the method of comprehensive ecological assessment of lands and types of agricultural land use as a result of adding different types of assessment according to the formula:

$$Кен = \sum_{i=1}^{n} \frac{Rk_1 + Pwk_2 + Vgk_3 + Zpk_4 + Zlk_6 + Bdst/stk_7 + Pnk_8}{Lk_9 + Wk_{10}}$$

$K_{ен}$ – environmental hazard coefficient;
R – poverty;
Pw – specific weight of arable land on slopes of more than 2°;
Vg – loss of humus;
Zp – plane wash;
Zl – linear blur;
$Bdst/st$ – balance of environmentally stabilizing and destabilizing soils;
L – area of forests;
W – the area of water bodies;
Pn – the area of disturbed and unusable land;
k – coefficients of components.

Our vision of the means of determining the comprehensive assessment of land use efficiency at the TG level is based on the analysis and component assessment of natural and anthropogenic-technogenic components. The specific features of each type of land

use require their evaluation in a differentiated way, taking into account their role in the general process of nature use.

References

1. Tretyak A. M., Tretyak A. R., Shkvar M. I. (2001). Methodical recommendations for assessing the ecological stability of agricultural landscapes and agricultural land use. K.: VUAAN. 15 p.

2. Kanash O. P., Dobryak D. S., Rozumny I. A. (2001). Classification and ecologically safe use of agricultural land. Kyiv: Institute of Land Management of the Ukrainian Academy of Sciences. 308 p.

3. Lazareva O. V. (2015). Socio-economic and ecological features and assessment of the level of agricultural land use. *Herald of Agrarian Science of the Black Sea Region*. Volume 1. Issue 2(83). P. 102–107.

4. Rudenko V. P. (2010). Geography of Ukraine's natural resource potential. In 3 parts: textbook. Chernivtsi: Zelena Bukovyna. 552 p.

5. Topchiev O. G. (2005). Socio-geographic research: methodology, methods, methods: education. Manual. Odesa: Astroprint. 632 p.

Regarding the method of determining the environmental danger coefficient of agricultural land use in the territorial community

Abstract. Rational use of the land fund requires a thorough analysis and assessment of the land use structure. Based on this analysis, the state and factors of land use structure formation are assessed, which is the basis for developing strategic ways to optimize land use, taking into account the environmental consequences. It is quite obvious that the factors of natural and anthropogenic pressure on land, and thus the qualitative and quantitative characteristics of its environmental consequences, cannot be summarized as unambiguous and equivalent, since they are not always interconnected and interdependent. Hence, there is a need to determine an integral indicator of the hazard of agricultural land use for a territorial community.