

UDC 332.33

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## **THEORETICAL AND METHODOLOGICAL PRINCIPLES OF ASSESSING THE EFFICIENCY OF THE USE OF AGRICULTURAL LANDS**

*The paper substantiates the theoretical and methodological principles of evaluating the efficiency of agricultural land use. The purpose of regulating land use and agricultural production is substantiated, the essence of which is to ensure national food security and preserve and improve agroecosystems as the most important component of the natural and economic potential of the country as a whole. In the context of the specified goal, the principles of effective use of agricultural land resources are defined. It was established that the effectiveness of the agricultural land management system at the micro level reflects a number of indicators and criteria, which are divided into economic, ecological and social. It is substantiated that the principle of rational use and protection of land resources now acquires special importance from the standpoint of maximizing the final results of economic activity of land users. It has been established that the promising areas of agricultural land use include: the development of an adaptive landscape system of agriculture that meets the needs of society, the requirements of agricultural crops, natural conditions, the level of production and the requirements of minimal risk of contamination of products and the environment; the use of resource-saving technologies based on cost reduction through minimal tillage, the use of a new generation of agricultural machines and aggregates; carrying out an inventory of agricultural lands; increasing the professionalism of workers involved in the production of agricultural products; creation of conditions for preservation and effective use of especially valuable productive agricultural lands, establishment of their boundaries; implementation of measures to restore and preserve the reclamation complex in the regions.*

**Key words:** efficiency, rationality, land, agriculture, environmental friendliness

JEL classification: Q 15; R 52

DOI: <https://doi.org/10.31649/ins.2022.4.180.185>

### **1. INTRODUCTION**

The results of the production of agricultural products are largely determined by the efficiency of the use of production resources available to the agricultural organization, primarily land. Land as a necessary means of production and as a natural working condition of workers in the agricultural sector is a necessary basis for any production process in this field.

Effective use of land resources is one of the primary tasks facing agricultural producers. At the stage, the problem of efficiency ceases to be new, it has existed since the period of material production. The efficiency of the use of land is determined by comparing the production results with the land area, the value of the gross product or the costs of its production. However, one

cannot fail to take into account the specificity of this resource (limited size, long recovery period, etc.), as a result of which the evaluation of the effectiveness of the use of land resources will differ from a similar process for other types of production resources.

### **2. ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS**

The following scientists made an important contribution to the consideration of the problem of effective use of land resources, reforming land relations: P.Sabluk, V.Andrijchuk, V.Yurchyshyn, P.Hajduts'kyj, O.Onyschenko, V.Trehobchuk, L.Novakovs'kyj, A.Tretiak, A. Danylenko, H. Sharyj, V. Nosik, O. Bulatov, M. Komov, V. Horemykin, R. Humerov,

E. Kryladykh. The practice of the economic development of agriculture in the last decade has shown the insufficient development of many theoretical and practical issues of agricultural production in the conditions of increased requirements for rational and efficient use of land resources, both at the current moment of time and in the future. There was a need to substantiate new methods of assessing the effective land use of agricultural organizations, which take into account modern economic conditions, on the one hand, and agro-ecological requirements, on the other.

### **3. FORMULATION OF THE OBJECTIVES OF THE ARTICLE**

The purpose of the article is to substantiate the theoretical and methodological principles of evaluating the efficiency of agricultural land use.

### **4. PRESENTATION OF THE MAIN MATERIAL OF THE RESEARCH WITH FULL JUSTIFICATION OF THE OBTAINED SCIENTIFIC RESULTS**

Agriculture and the agro-industrial complex in general represent a complex system that functions entirely in the natural environment. The state of the ecological environment largely depends on the extent to which natural conditions are taken into account during the functioning of this system, how it is integrated into them. Therefore, the deepening of the specialization of farms, the organization of land use, the location of production, including crops, livestock farms, the applied equipment and technology must be environmentally safe.

Agricultural zoning should act as a way of regulating land use aimed at preventing the process of eroded land, preserving soil fertility, and increasing the production of agricultural products. District administrations and land users should be responsible for the preservation of agricultural lands. Within the zones, land resources must be used exclusively for agricultural purposes.

Land resources act as a strategic resource for every society. Therefore, all layers of society will carefully monitor the forms, methods and methods of land use in agriculture, the effectiveness of which determines food security in the country. In this connection, land relations are one of the special objects of control of state authorities. The concept of sustainable land use

due to the exhaustion, irreplaceability and ecological vulnerability of land resources involves the activation of state intervention in the field of land relations in order to comply with the most important principles - fairness of distribution, efficiency of use and environmental safety of land resources and agriculture in general. At the same time, the state regulation of land use is considered as a process of optimizing the use of certain methods and tools that allow directly or indirectly to influence the level of efficiency of the use of land resources from the position of observing the interests of society and specific land users. The basis of land management should be the implementation of state policy aimed at high-tech, environmentally safe land use, which corresponds to the nature of a regulated, socially oriented market economy [1].

The study of issues of ensuring the efficiency of the use of land resources by agricultural enterprises has many scientific developments and is quite widely covered in specialized economic literature. At the same time, the key areas of research are aimed at the study of technologies contributing to the improvement of the efficiency of land use by enterprises of the agricultural sector and at the ecological and economic aspects of land use [2].

Budziak V. notes that in order to use land effectively, it is necessary to first consider existing environmental problems in agricultural land use and find optimal ways to solve them [3].

Thus, the majority of environmental problems in agricultural land use are associated, firstly, with the involvement of agricultural land at a much higher than ecologically acceptable level, and secondly, with exceeding critical indicators of anthropogenic (agricultural) load on these lands.

M. Palyanychko believes that «modern ways of using land resources in Ukraine do not meet the requirements of balanced nature management. The negative consequences of the violation of the relationship between the lands lead to the strengthening of degradation processes (water and wind erosion); loss of soil fertility (reduction of humus content, soil compaction, disturbance of the balance of biogenic elements, secondary geochemical anomalies, etc.) and impoverishment of biodiversity and, as a result, to a decrease in land productivity» [4].

The following principles govern the effective use of agricultural land resources:

- plurality and legal equality of land ownership forms;
- target designation of agricultural lands;
- equality of subjects using land with the right of independent management;
- land use fees, taking into account the rational use of land resources;
- sustainability of the right to land and its protection and greening of economic activity;
- priority of agricultural land use;
- protection of lands from negative anthropogenic influence in the process of their economic use;
- responsibility for violation of the requirements of land legislation and the regime of use of land resources.

The main goal of regulating land use and all agricultural production is to ensure national food security and preserve and improve agroecosystems as the most important component of the natural and economic potential of the country as a whole.

The main goal of regulating land use and all agricultural production is to ensure national food security and preserve and improve agroecosystems as the most important component of the natural and economic potential of the country as a whole.

No less important is the presence of an economic reason for financial support of the agricultural sector by subsidizing domestic agricultural production, which has a significant multiplier effect on the development of other industries and sectors of the national economy.

As for land resources, such measures, first of all, create many stimulating conditions for expanding the area of agricultural land, optimizing distribution (redistribution) schemes, and improving the efficiency of land resource use.

Economic efficiency is understood as a category that reflects the actions of economic laws and that is in the form of the most important aspect of the activity of any production, such as productivity. The measure that is taken into account by society in determining the degree of production efficiency is perceived as an efficiency criterion that reflects the purpose of any type of production activity with an indication of the characteristics, parameters of the indicators.

Currently, the assessment of the effectiveness of the use of land resources for agricultural purposes is based on the system of physical and value indicators. The main value indicators include the amount of gross (commodity) production of agriculture or crop production per unit of land area, gross (net) income, profit from sales per unit of land area.

Natural indicators of the efficiency of land use are: yield of agricultural crops; production of the main types of crop production (grains, sugar beets, potatoes, etc.) per 100 hectares of arable land (quintals); production of milk, meat of cattle and sheep in live weight, wool for 100 hectares of agricultural land, (quintals); production of pig meat in live weight per 100 hectares of arable land, (quintals); production of poultry meat (quintals), eggs (thousands), for 100 hectares of grain crops.

In addition to the listed indicators, additional indicators characterizing the level of efficiency in the use of land resources at agricultural enterprises are distinguished: the share of agricultural land in the total land area; the share of arable land in the structure of agricultural land; the share of agricultural crops in the arable land area.

The effectiveness of the land resources management system at the enterprise is reflected by a number of indicators and criteria, which are divided into economic, ecological and social. They are listed in more detail in the table. 1.

In the existing economic conditions, the use of land resources in agricultural production is considered efficient and rational when not only the output per unit of area increases and costs per unit of production are reduced, but also soil fertility is preserved and increased, and environmental protection is ensured. It is necessary to solve the problem of effective land use systematically, focusing on the implementation of both internal and external factors.

Conditions for effective use of land resources:

- Internal: internal economic organization of the territory; specialization and concentration of production; increasing fertility, selection of crops, varieties, breeds, organization of production processes, motivation of workers.
- External: natural and climatic conditions; organizational and economic conditions; methods of state regulation of land relations

(monitoring, land cadastre); economic policy of the state; financial and credit policy; relations with partners in the agro-industrial complex system at various levels; market regulation.

It should be noted that the basis of the mechanism of state regulation of sustainable land use is a number of basic and clarifying principles. At the same time, the principles of regulation of land use and land relations in general in connection with the scale and degree of importance of their influence on the processes of development of economic sectors, first of all, the agrarian sector, are divided into general and departmental, which characterize the conditions of use of a certain category of land fund. Thus, the general principles of land use regulation can include the following.

First, achieving the unity of political, legal, organizational, economic, technological and ecological approaches to the mechanism of land relations regulation allows to achieve an adequate level of political and economic goals (freedoms) of the combination of administrative and economic methods of management and regulation. Today, economic methods are becoming more and more effective and efficient

and are gradually replacing administrative methods. The latter means, in particular, that in all branches of the economy there is a transformation of team management methods to functions and methods characteristic of state regulation in market conditions.

The second principle provides for the need to ensure the diversity and equality of different forms of ownership, possession and use of land. In this case, a mandatory condition of this principle is the possibility of independent land management. It is important that the land policy is subordinated not so much to the change of forms of land ownership, but to the formation of a complex of factors and conditions that ensure the preservation, efficiency and sustainability of the use of land resources.

An equally important general principle of land use regulation is the need to ensure the vital interests and safety of the individual, society and the state in land use. The legal basis for the implementation of national interests, life and safety of the individual, society and the state is formed within the framework of national laws and regulations.

Table 1

**Performance indicators of the land resources management system of the agricultural enterprise**

Economic efficiency	<ul style="list-style-type: none"> <li>- the value of additional products obtained due to the placement of crops on ecologically suitable lands;</li> <li>- the cost of additional products obtained by optimal predecessors;</li> <li>- payback of expenses during the cultivation of agricultural crops;</li> <li>- the level of land use efficiency;</li> <li>- increasing the efficiency of land use due to the organization of the territory;</li> <li>- net income, profit;</li> <li>- the value of additional products obtained as a result of reducing the negative impact on the land.</li> </ul>
Social efficiency	<ul style="list-style-type: none"> <li>- creation of land management conditions for different forms of ownership;</li> <li>- wage growth;</li> <li>- improvement of working conditions;</li> <li>- level of social infrastructure development;</li> <li>- increase in satisfaction with work on the land, reduction in staff turnover, etc.</li> </ul>
Environmental efficiency	<ul style="list-style-type: none"> <li>- indicators of land reclamation condition;</li> <li>- indicator of landscape stability;</li> <li>- indicator of ecological activity;</li> <li>- improvement of the structure of land and cultivated areas;</li> <li>- the level of humus mineralization in the soil;</li> <li>- improving the quality of technogenically polluted and degraded and unproductive lands;</li> <li>- indicators of placement of crop rotations on ecologically suitable lands.</li> </ul>

*Source: developed based on [5, 6, 7]*

Legal support for land use regulation means that all binding decisions must be made only by authorized bodies, and the procedure for making such decisions must be strictly regulated. This principle is based on the provision that under the rule of law, any management actions without their appropriate legal support can be challenged and will prove to be useless from the point of view of the financial, material, technical and human resources spent on their implementation.

The central problem of any land policy and land use regulation mechanism is to ensure the rational use and protection of land resources [8]. Characterizing various aspects of land management, the principle of rational use and protection. land is the most common in economic literature. The latter, connecting together the achievement of the necessary effect from economic activity, with the simultaneous preservation and improvement of lands in the process of their use, is nothing more than a single economic-ecological concept. Therefore, in the process of forming a specific land use, it is necessary to take into account environmental requirements along with the legal regime of use, since economic activity on the use of agricultural land is also characterized as environmental protection.

The principle of rational use and protection of land resources now acquires special importance from the point of view of maximizing the final results of economic activity of land users. Based on this, the measures of rational use and land protection allow to maximally combine obtaining the necessary effect from economic activity with a minimum of costs.

In the system of modern land use, there is a need to form an adequate economic mechanism of land use regulation, which allows for more effective management of land resources under market conditions, to gradually transfer the system of land relations to the rails of sustainable ecological and economic development.

It should be noted that promising directions for the use of agricultural land resources include:

- the development of an adaptive landscape farming system that meets the needs of society,

the requirements of agricultural crops, natural conditions, the level of production, as well as the requirements of the minimum risk of contamination of products and the environment;

- use of resource-saving technologies based on cost reduction through minimal tillage, use of a new generation of agricultural machines and aggregates (allowing to restore soil fertility, significantly reduce or eliminate the effects of water and wind erosion);

- carrying out an inventory of agricultural lands, works on the study of their qualitative and quantitative condition of the lands in order to obtain the most reliable information;

- increasing the professionalism of workers involved in the production of agricultural products;

- creation of conditions for preservation and effective use of especially valuable productive agricultural lands, establishment of their borders;

- implementation of measures to restore and preserve the reclamation complex in the regions.

## 5. CONCLUSIONS FROM THIS STUDY AND PROSPECTS FOR FURTHER INVESTIGATION IN THIS DIRECTION

The study of the main principles and efficiency criteria of the economic and ecological mechanism of agrarian land use made it possible to identify the most optimal elements of the mechanism of greening of agrarian land use. It should be taken into account that the comprehensive use of the main principles and criteria of land use efficiency is a necessary attribute of ensuring food security and sustainable growth of the agrarian economy.

Only by improving the efficiency of the use of land resources for agricultural purposes can the trend of steady reduction of the cultivated land area, characteristic of the last decade, be changed. And this, in turn, will create favorable conditions for the growth of the production of agricultural products and the incomes of rural producers, increasing the degree of food security.

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#### Анотація

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#### **Теоретико-методологічні засади оцінки ефективності використання земель сільськогосподарського призначення**

У роботі обґрунтовано теоретико-методологічні засади оцінки ефективності використання земель сільськогосподарського призначення. Обґрунтовано мету регулювання землекористування та сільськогосподарського виробництва, сутність якої полягає у забезпеченні національної продовольчої безпеки та збереження та покращення агроєкосистем як найважливіша складова природно-економічного потенціалу країни в цілому. В контексті зазначеної мети визначено принципи ефективного використання земельних ресурсів сільськогосподарського призначення. Встановлено, що ефективність системи управління сільськогосподарськими угіддями на мікрорівні відображає низка показників і критеріїв, які поділяються на економічні, екологічні та соціальні. Обґрунтовано, що принцип раціонального використання та охорони земельних ресурсів нині набуває особливого значення і з позиції максимізації кінцевих результатів господарської діяльності землекористувачів. Встановлено, що до перспективних напрямів використання сільськогосподарських угідь можна віднести: розробку адаптивно-ландшафтної системи землеробства, що відповідає потребам суспільства, вимогам сільськогосподарських культур, природним умовам, рівню ведення виробництва та вимогам мінімального ризику забруднення продукції та навколишнього середовища; використання ресурсозберігаючих технологій, заснованих на скороченні витрат шляхом проведення мінімальної обробки ґрунту, застосування нового покоління сільськогосподарських машин та агрегатів; проведення інвентаризації сільськогосподарських земель; підвищення професіоналізму працівників, залучених до виробництва аграрної продукції; створення умов для збереження та ефективного використання особливо цінних продуктивних сільськогосподарських угідь, встановлення їх кордонів; реалізація заходів щодо відновлення та збереження меліоративного комплексу в регіонах.

**Ключові слова:** ефективність, раціональність, земельні угіддя, сільське господарство, екологічність

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Стаття надійшла до редакції 12.12.2022 р.

#### **Бібліографічний опис статті:**

Багін М. Л. Теоретико-методологічні засади оцінки ефективності використання земель сільськогосподарського призначення. *Innovation and Sustainability*. 2022. № 4. С. 180-185.

Bahin M. (2022) Theoretical and methodological principles of assessing the efficiency of the use of agricultural lands. *Innovation and Sustainability*, no. 4, pp. 180-185.