

MANAGEMENT OF LAND RESOURCE USE OF AGRICULTURAL ENTERPRISES: EUROPEAN INTEGRATION VECTOR

УПРАВЛІННЯ ВИКОРИСТАННЯМ ЗЕМЕЛЬНИХ РЕСУРСІВ АГРОПІДПРИЄМСТВ: ЄВРОІНТЕГРАЦІЙНИЙ ВЕКТОР

Agriculture is the driving force that ensures the efficiency of the Ukrainian economy. Having received the status of a candidate country for membership in the European Union, we are already taking the first steps on this path – a number of legislative acts have been adopted, land reform has been implemented, and the work of the land market has been launched. Russian aggression against Ukraine, occupation of territories, mining of fields, damage to infrastructure, violations of logistics, fires in warehouses have negatively affected the agricultural industry, the consequences of which are felt throughout the world and threaten famine in certain regions of Africa. In connection with the change in legislation, the adoption of several normative legal acts on the regulation of land ownership, land management by agricultural enterprises is gaining particular importance.

Key words: agribusiness, land use, environmental safety, yields, products, exports, land fund, land market.

Сільськогосподарська галузь є рушійною силою, що забезпечує ефективність української економіки. Отримавши статус країни-кандидата на вступ до Європейського Союзу, ми вже здійснюємо перші кроки на цьому шляху – прийнято ряд законодавчих актів, проведена земельна реформа, запущена робота земельного ринку. Російська агресія проти України, окупація території, мінування полів, пошкодження інфраструктури, порушення логістики, пожежі на складах негативно вплинули на сільськогосподарську галузь, наслідки яких відчуваються в усьому світі та загрожують голодом в певних регіонах Африки. У зв'язку із змінами законодавства, прийняттям кількох нормативно-правових актів регулювання земельної власності, управління земельними ресурсами сільськогосподарськими підприємствами набуває особливе значення. Для ефективного функціонування аграрного сектора необхідно стабілізація законодавчого поля, створення прозорих механізмів землекористування, забезпечення екологічної безпеки, підтримка виробників та захист їх прав на землю. Розвиток земельного ринку має сприяти подоланню наслідків війни та відновленню українського аграрного потенціалу. Впровадження сучасних технологій цифровізації аграрного сектора дозволить підвищити ефективність виробництва та оптимізувати процеси управління земельними ресурсами. Інтеграція української сільськогосподарської продукції до європейських ринків вимагає дотримання високих стандартів якості та безпеки харчових продуктів. Державна підтримка малих та середніх фермерських господарств є критично важливою для забезпечення продовольчої безпеки країни. Створення ефективної системи страхування сільськогосподарських ризиків допоможе захистити виробників від непередбачуваних втрат. Залучення іноземних інвестицій в аграрний сектор має відбуватися з урахуванням національних інтересів та збереження стратегічного контролю над земельними ресурсами. Розвиток органічного землеробства та екологічно чистого виробництва відкриває нові можливості для експорту української продукції на премійні ринки. Формування сучасної логістичної інфраструктури є необхідною умовою для забезпечення безперебійних поставок сільськогосподарської продукції на світові ринки.

Ключові слова: агробізнес, землекористування, екологічна безпека, урожайність, продукція, експорт, земельний фонд, земельний ринок.

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Statement of the problem. In the conditions of the intensification of the European integration processes, the issues of land resource management by agricultural enterprises, social well-being and environmental safety in specific territories is extremely important for the national economy.

The most optimal is the European way of Ukrainian agricultural development, which will lead to the socio-economic success of the entire population and the economy as a whole. Having received the status of a candidate country for membership in the European Union, we are already taking the first steps on this path – a number of legislative acts have been adopted, land reform has been implemented, and the work of the land market has been launched. However, military actions make certain corrections, but effective

management at the macro and micro levels will allow Ukraine to maintain its position on the world market.

Russian aggression against Ukraine, occupation of territories, mining of fields, damage to infrastructure, violations of logistics, fires in warehouses have negatively affected the agricultural industry, the consequences of which are felt throughout the world and threaten famine in certain regions of Africa.

In connection with the change in legislation, the adoption of several normative legal acts on the regulation of land ownership, land management by agricultural enterprises is gaining particular importance.

Analysis of recent research and publications. The issues of agricultural business development have been thoroughly studied in the works of foreign and

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domestic scientists, including Barabash N., Boiko M., Lazareva O., Mas A., Borysevych K., Samaychuk S., Skiba M.

Barabash N. has conducted extensive research on agricultural business development, with particular emphasis on operational efficiency optimization in agricultural enterprises. Her scholarly contributions focus on the systematic analysis of adaptation mechanisms that enable agricultural producers to navigate contemporary market volatility and regulatory changes [4].

Boiko M. has established himself as a prominent researcher in strategic agribusiness management, with his publications addressing the multifaceted nature of competitiveness enhancement in agricultural production. His research methodology incorporates comprehensive market analysis, competitive positioning strategies, and value chain optimization approaches [5].

Lazareva O. specializes in the economic foundations of agricultural sector development, with her research portfolio encompassing financial management, investment attraction mechanisms, and capital structure optimization in agricultural enterprises. Her scholarly work provides detailed analysis of funding sources, risk assessment methodologies, and return on investment calculations specific to agricultural operations [8].

Mas A. focuses on technological innovation adoption within agricultural enterprises, examining the transformative impact of precision agriculture, automation systems, and digital management platforms on production efficiency. His research addresses the economic viability of technology investments, implementation barriers, and measurable productivity improvements resulting from modernization initiatives. Mas's work includes longitudinal studies on technology adoption rates and their correlation with enterprise sustainability metrics [8].

Borysevych K. has developed comprehensive theoretical frameworks for organizational management in agricultural enterprises, with particular attention to production process optimization and resource allocation efficiency. Her research encompasses supply chain management, operational restructuring strategies, and performance measurement systems tailored to agricultural production cycles [9].

Samaychuk S. specializes in management theory applications within the agricultural context, focusing on leadership effectiveness, human resource management, and organizational behavior in rural enterprises. His research addresses the unique challenges of managing seasonal workforces, implementing quality management systems, and developing sustainable business practices [7].

Skiba M. conducts comprehensive analysis of agribusiness development trends, with his research encompassing market dynamics, competitive

landscape analysis, and industry transformation patterns. His scholarly contributions include detailed examination of external factors influencing agricultural competitiveness, including policy changes, climate variability, and global market integration effects [10].

Despite the comprehensive nature of existing research on agricultural business development, there remains a significant research gap concerning the specific management practices for land resource utilization in agricultural enterprises. The complexity of land management decision-making, regulatory compliance requirements, and sustainable land use practices requires dedicated scholarly attention to develop evidence-based management frameworks.

The purpose of the study is to develop approaches to managing of land resource use of agricultural enterprises. The information base of the article is represented by regulatory and legal acts, statistical bulletins, Forbes Ukraine research, scientific works of domestic and foreign authors.

The basis of the research is scientific methods, namely: analysis and synthesis, comparison, systematization, idealization and abstraction, the methodological technique of generalization is used in the formation of conclusions based on the results of the conducted research.

Presentation of the main research material. In the first section of the main part of the article, was conducted the development of agribusiness in Ukraine, were analyzed the dynamics of the number of economic entities in the agrarian sector of Ukraine in 2012–2022, as well as the dynamics of the sown area of agricultural crops in Ukraine during 2012–2022, the list of the top 10 European countries in terms of export of plant products was determined for 8 months of 2023. The second section is devoted to the characteristics of the management of land resource use of agricultural enterprises. In the third, the key factors of increasing the efficiency of the use of land resources are singled out.

Development of the agricultural sector of Ukraine. According to the State Statistics Service, out of the total number of registered business entities in Ukraine in 2022, 53 281 are engaged in agriculture. Compared to 2012, their number has decreased significantly, which is due to the ongoing military operations in Ukraine and the temporary occupation of certain regions, which makes it impossible for enterprises to engage in this type of economic activity (Figure 1).

The impact of the aforementioned factors is also confirmed by the dynamics of the sown area of crops for 2021–2022 (Figure 2). Since the beginning of the full-scale invasion of the Russian Federation into Ukraine, it has significantly decreased by 21.22%.

Of course, such dynamics leads to a reduction in the volume of crop products, income from the sale of products, and the number of employed workers in the

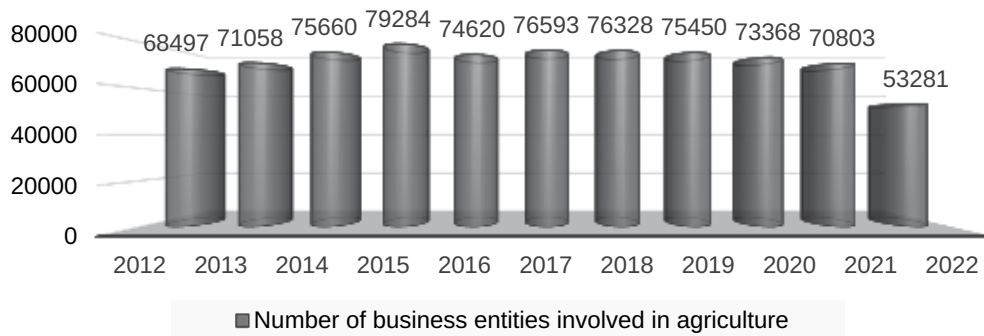


Figure 1. Dynamics of the number of business entities in the agricultural sector of Ukraine in 2012–2022

Source: compiled by the authors according to data of the [1]

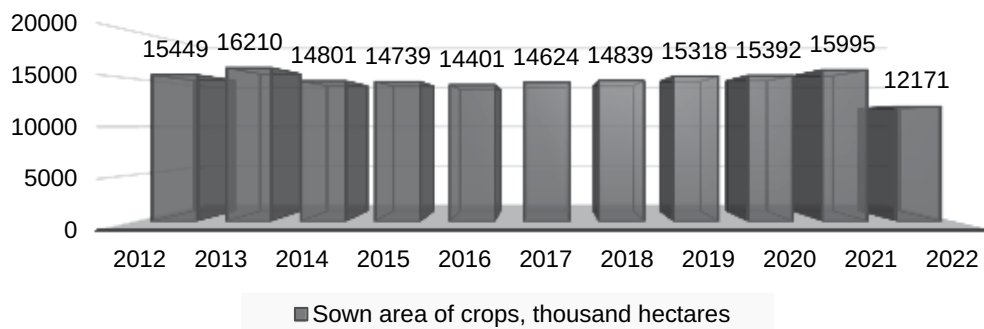


Figure 2. Dynamics of the sown area of crops in Ukraine in 2012–2022, thousand hectares

Source: compiled by the authors according to data of the [1]

agricultural sector of the Ukrainian economy (State Statistics Service, n.d.).

In addition to the problems of resource scarcity, damage and destruction of agricultural infrastructure and equipment, occupation of enterprises, the impossibility of carrying out technological operations, and power outages, the biggest challenge for the Ukrainian agricultural business has been the blockade of ports. Before the full-scale invasion of the Russian Federation into Ukraine, about 95% of all agricultural exports were carried out by sea. Since the end of February, virtually all ports have been blocked, except for the Danube ports. Of course, the “grain agreement” mediated by the United Nations and Turkey partially solved the problem, but a large number of ports remained blocked. This led to a 2-3-fold increase in logistics costs.

Due to the Russian aggression against Ukraine, the agricultural sector has suffered indirect losses of USD 34.25 billion: logistics and the decline in prices for export-oriented goods – USD 18.5 billion; reduced production of crops – USD 11.2 billion; losses due to the decrease in the yield of winter crops in 2023 are expected to be \$3 billion; increased production costs – USD 0.9 billion; reduced production of animal products – USD 0.3 billion [2].

Since the change in land legislation, from July 1, 2021, to December 31, 2022, 171 000 hectares of land were subject to purchase and sale transactions. 51 000 sales transactions were concluded. A separate problem was the contamination of territories. As of the first year of the war, an estimated 15% of all agricultural land has been contaminated. In addition, 13.6 million hectares are potentially dangerous territories where military operations have taken place or are ongoing.

However, despite the rather pessimistic scenario and existing customs restrictions, Ukraine does not give up its leading position on the world stage. The export-dependent Ukrainian economy in 2023 continues to struggle with the consequences of the reduction in the volume of deliveries of Ukrainian goods abroad due to the full-scale invasion of Russia [2].

In January–August 2023, Ukraine exported goods worth USD 24.5 billion (Figure 3), of which USD 465.8 million was received to the budget as a result of the payment of export duties.

Exporters received 15% less revenue compared to the same period in 2022 (USD 28.9 billion) and 41% less than USD 41.8 billion for eight months in 2021 (Forbes Ukraine magazine, 2023) [1].

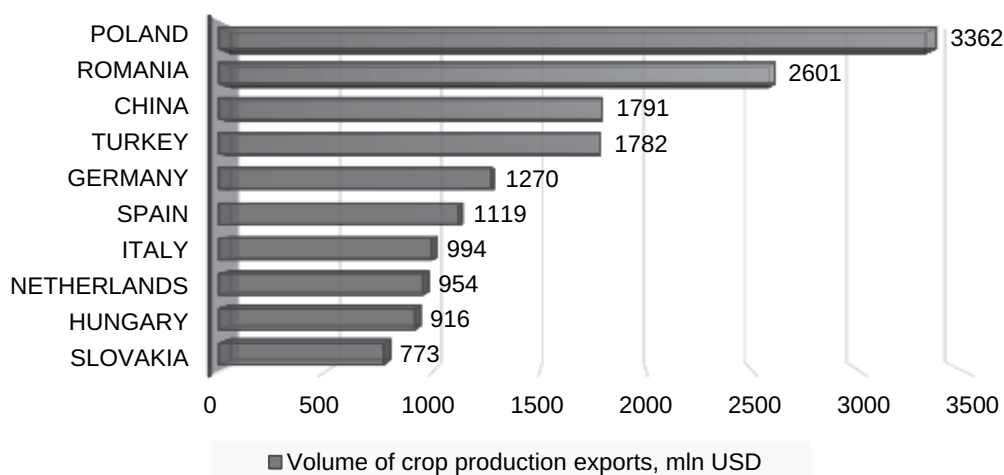


Figure 3. Top 10 European countries by exports of crop production in January–August 2023, USD million

Source: compiled by the authors according to [3]

Of the rest of the non-European countries that consume Ukrainian exports in the top 20, only Egypt, India, and the United States, each of which, together with Moldova and several EU member states, purchased Ukrainian goods worth between USD 200 million and USD 700 million since the beginning of 2023 [3].

Assessment of the use of land resources by agricultural enterprises. Land is the important element of national wealth and the means of production in the agricultural sector of the economy. To assess land use, the use of land resources is studied and analyzed, the classification of which is given in Figure 4.

The key tasks of the assessment of the use of land resources are: studying the composition and structure of the land fund, identifying violations in land use and identifying reserves for expanding and improving agricultural land, assessing the efficiency of land use and developing measures aimed at its improvement (Barabash, 2005).

Agricultural land in agricultural enterprises is divided into two main groups: agricultural and non-agricultural (Figure 4).

In the agricultural sector of the economy, the process of transformation of land is ongoing, i.e., the transfer of certain types of land to others. Part

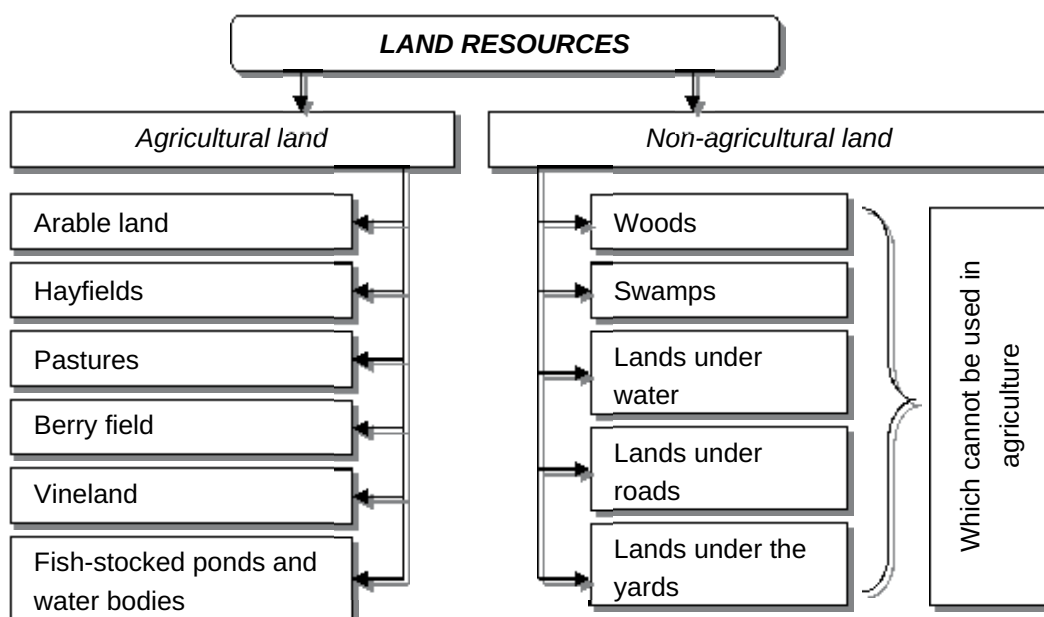


Figure 4. Classification of land resources

Source: compiled by the authors.

of non-agricultural land is converted into agricultural land, and, at the same time, a certain part of agricultural land is allocated for the construction of cities, housing, industrial and cultural facilities, roads, i.e., withdrawn from economic circulation. In the absence of proper control, this situation causes an absolute and relative decrease in productive land [10, p. 100–101].

Therefore, when analyzing land resources, changes in the ratio of agricultural and non-agricultural land, trends and rates of these changes are studied. This makes it possible to prevent or limit the use of agricultural land, especially its intensive part, for needs not directly related to crop production.

An important place is given to the analysis of the justification of projects for the placement of buildings, structures, etc., that is, as in other cases, the analysis of land use should have a clearly expressed preventive orientation.

To analyze the potential of soils, it is necessary to have information about their types and soil differences. For a particular agricultural enterprise, it is also important to know the content of humus and mobile nutrients in the soil, which ultimately determines the fertilization system for a particular crop and its yield. With information on the specific content of nutrients available to plants in the soil and the amount of fertilizers applied, it is possible to determine how well they have ensured the yield level of individual crops, as well as the completeness of the use of the soil fertility potential [5, p. 180–181].

Agrarian enterprises are faced with the task of using every hectare of land to the fullest extent possible. Thousands of hectares of deposits, low-productivity hayfields and pastures, shrubs, and wetlands can be converted into productive land. Therefore, when analyzing the use of land resources, it is necessary to study changes in the size of land use and identify opportunities for further expansion of arable land, improved hayfields and pastures in each farm.

During the analysis, it is necessary to compare the actual data on the size of land use in the current year with the planned data and data from previous years. This makes it possible to determine changes in the total amount of land resources, the area of agricultural land in general and by types of land use [8, p. 4–5].

When analyzing the implementation of the plan of meliorative works, special attention should be paid to identifying opportunities for expanding the area of agricultural land, while determining the feasibility of certain measures with specialists. In particular, when determining the feasibility of measures to convert one type of land use into another, it is necessary to use data on the output of feed units per 1 hectare, labor costs, the cost of a feed unit and the content of nutrients in it. In practice, sometimes measures to improve forage lands provide additional output with lower production costs than when converting

these lands into arable land. When determining the feasibility of converting natural forage lands into arable land, it is necessary to use data on yield and production costs not for one year, but on average for 3–5 years.

In connection with the change in the size of land use, their transformation, significant changes are taking place in the structure of land resources: the share of some types of land use increases, while others decrease.

Evaluating agricultural land from the point of view of the intensity of their use, it should be noted that arable land is used most intensively and gives the best return, followed by improved hayfields and pastures and natural meadows and pastures. Therefore, to assess the degree of land use intensity in the economy, it is necessary to consider the indicators of the share of each type of land in the total area of agricultural land in dynamics, as well as in comparison with the data of competing enterprises, the best and average for the region or industry [9, p. 31–32].

In the future, based on the specific conditions of the activity of an agricultural enterprise, it is necessary to establish what measures are advisable to take to increase the area of arable land as the most productive type of land. This can include plowing of unnecessary internal roads, clearing fields of shrubs, boulders, rational placement of buildings, elimination of small-contourity of plots, etc. The identification of reserves for increasing the area of arable land in each farm has not only economic but also educational significance. Putting things in order on the land is the basis of skillful and efficient management.

To analyze the general resources, it is necessary to make an economic assessment of the land, the efficiency of the use of agricultural lands, and identify reserves for its improvement.

Economic assessment of land is the determination of its comparative value as a means of agricultural production or the determination of the profitability of land.

To assess the efficiency of the use of land resources, a system of generalizing, partial, and auxiliary indicators is used. Generalizing indicators include the value of produced products (including crop production), the output of feed units, the amount of net profit per 100 hectares of agricultural land (according to the 100-point cadastral assessment). Partial indicators are the yield of crops, the output of products in feed units from 1 hectare of individual lands, the volume of milk production, meat per 100 hectares of compared agricultural lands [10, p. 97–99]. The compared (cadastral) area is determined by multiplying each type of land by the soil rating and dividing the result by 100. Auxiliary indicators include the cost of production, capital intensity, labor intensity, profitability of 1 hectare of land, and payback of costs (the ratio of the value of

the products obtained from 1 hectare to the average costs per 1 hectare).

Taking into account the importance of monitoring the use of reclaimed lands, it is necessary to consider indicators that characterize the output of gross production or the output of feed units per 100 hectares of these lands in the analysis.

During the economic analysis, the dynamics of the listed indicators are first studied, the plan is fulfilled for their level. Then, factors and reserves for improving the efficiency of land use are identified.

Factors for improving the efficiency of land use. One of the most important factors in increasing the efficiency of land use is the extended restoration of soil fertility. Science and practice are familiar with fast-acting and long-lasting soil remedies. Fast-acting remedies include regulating soil moisture, applying fast-acting mineral fertilizers, and loosening soils; long-term remedies include systematic soil enrichment with organic fertilizers, calcifying acidic soils, and reclamation of lands with unfavorable natural characteristics [7, p. 8].

Organic fertilizers and post-harvest residues are the main sources of humus replenishment in the soil. When applying only mineral fertilizers, the humus content in the soil decreases year by year. To maintain the optimal concentration of humus in the soil, at least 13–15 tons of organic fertilizers should be applied annually per 1 hectare of arable land.

To maintain a deficit-free and beneficial balance of humus, it is necessary to expand the sowing of perennial grasses and post-harvest crops. After plowing perennial grasses, the humus content in the soil increases by 0.2–0.3 %. Land productivity increases by 18–20 % by sowing green manure crops in combination with fertilizer application. Green manure enriches the soil with organic substances and is an effective means of controlling weeds and plant pests. This is also facilitated by clean steam, which increases grain yields by 20–30% [2].

A significant factor in increasing land productivity is the regulation of the water regime: filtration of water withdrawal in wet times and irrigation in dry times. Land reclamation is an integral and powerful means of increasing the sustainability and productivity of agriculture. An important condition for the protection and rational use of land is a system of measures to protect the soil from water and wind erosion, namely: minimal tillage, soil-protective crop rotations with strip placement of crops and fallows [4, p. 25].

Combating soil compaction is a factor in increasing land productivity. Under the influence of heavy tractors, harvesting and transportation equipment, the level of compaction of a significant part of arable land exceeds the optimal level. Under such conditions, the root system of plants functions poorly, resulting in deterioration of their vital activity, increased clogging of fields, which causes a shortage

of harvest. Land compaction is reduced with the use of lighter equipment, wide-cut tillage machines. You should also loosen the soil every 3–4 years to a depth of 50–80 cm without turning the layer.

Weed and crop pest control has a significant impact on increasing land productivity. Experts estimate that potential crop losses for this reason are up to 35%. The main methods of plant protection include biological, mechanical, and chemical. The first two are environmentally friendly. Recently, however, there has been an obvious emphasis on the use of chemicals that are hazardous to humans and the environment. It is advisable to use such remedies only when alternative options have been exhausted.

The efficiency of land use can be improved by liming acidic and gypsuming saline soils. According to experts, crop losses due to unfavorable soil acidity amount to about 10% annually.

Further increasing the productivity of agricultural land is closely related to the significant improvement of natural forage lands, hayfields and pastures, which occupy a significant share in the total area of agricultural land. Intensive forms of meadow management, the creation of perennial cultural pastures can have no less effect than their conversion into arable land [6].

The efficiency of land use can also be improved by using more productive zoned varieties, improving the crop structure, carrying out all field work in optimal time, improving the qualifications of workers, and agricultural culture, etc.

The impact of the listed factors on the level of indicators of land use efficiency can be studied experimentally by comparing the output of products from 1 hectare of land, on which the relevant measures were carried out and the land on which they were not carried out. The resulting difference is multiplied by the area on which the given measure was not carried out, and the result is divided by the total cadastral area of agricultural land. The calculation of reserves for increasing output per 100 hectares of agricultural land is carried out according to the following algorithm [4, p. 25–26]:

$$P_e = \left(\frac{V_1 + P_V}{S_1 + P_S} - \frac{V_1}{S_1} \right) \times 100 \quad (1)$$

where P_e – is the reserve for increasing the efficiency of land use (output of gross production per 100 hectares of agricultural land);

V_1 – is the actual volume of gross production in monetary terms;

P_V – is the reserve for increasing gross production;

S_1 – is the actual area of agricultural land;

P_S – is the reserve for expanding the area of agricultural land.

Similarly, you can calculate the increase in net profit, income (revenue) from the sale of products, the volume of milk production, meat per 100 hectares of land

Conclusions. In conclusion, the rational use of land resources by agricultural enterprises is of great importance for the development of the domestic economy, determination of the volume of agricultural production and food security of the state. Each enterprise must use land efficiently, take care of it, increase its fertility, prevent soil erosion, waterlogging, weed growth, etc. The application of the proposed approaches to the assessment of the use of land resources will ensure the creation of an effective system of management of agricultural enterprises.

The management of the efficiency of land use in agricultural enterprises in Ukraine is of extremely important importance both at the micro and macro levels. Ukraine occupies leading positions in the export of crop products, despite such problems as the shortage of resources, damage and destruction of agricultural infrastructure and equipment, occupation of agricultural enterprises, the impossibility of carrying out technological operations, power outages, and the blockade of ports.

In this regard, the issue of further research should be the search for ways to overcome these problems, as the reduction of the activities of agricultural enterprises, as one of the structural sectors of the Ukrainian economy, leads to a reduction in the volume of crop products, income from the sale of products, the number of employed workers in the agricultural sector of the Ukrainian economy and is a prerequisite for the emergence and aggravation of crisis phenomena in the economy.

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