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**EXPERT AND ANALYTICAL TOOLS OF THE LAND RESOURCE MANAGEMENT SYSTEM OF  
AGRICULTURAL ENTERPRISES**

**ЕКСПЕРТНО-АНАЛІТИЧНІ ІНСТРУМЕНТИ СИСТЕМИ МЕНЕДЖМЕНТУ ЗЕМЕЛЬНИХ  
РЕСУРСІВ АГРАРНИХ ПІДПРИЄМСТВ**

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*Стаття присвячена визначення та обґрунтування процедур застосування експертно-аналітичних інструментів системи менеджменту земельних ресурсів аграрних підприємств. Розглянуто проблеми та перспективи економічної оцінки земельного використання в сільському господарстві України в контексті сучасних ринкових умов. Запропоновано послідовність застосування експертно-аналітичних процедур в аналізі землекористування аграрних підприємств, який включає збір і систематизація відомостей про земельні ділянки, аналіз придатності земельних ресурсів для сільськогосподарської діяльності, оцінка ризиків та можливостей, пов'язаних з сільськогосподарською діяльністю, прогнозування розвитку аграрного підприємства, розробка стратегій управління земельними ресурсами та систематичний моніторинг ситуації з землекористуванням і коригування стратегій відповідно до змін умов. Визначено перелік спеціальних аналітичних документів та форм для ефективного збору, систематизації та якісного використання інформації. Обґрунтовано необхідність удосконалення методів оцінки земель, зокрема через зміни, що відбулися в економічній ситуації та відносинах власності на землю, росту вимог до якості сільськогосподарської продукції та необхідності збалансованого використання ґрунтів. Висвітлено проблему застарілої економічної оцінки земель та необхідність оновлення її результатів у змінених умовах. Також визначено важливість переходу до ринку земель та впровадження нових стандартів оцінки для врахування ринкової вартості. В останній частині статті розглядається пропозиція щодо розробки єдиного методичного підходу до оцінки, який враховуватиме як економічні, так і екологічні аспекти використання сільськогосподарських земель, що сприятиме ефективному управлінню цими ресурсами.*

**Ключові слова:** аналіз, експертний аналіз, оцінка, інструменти менеджменту, сільськогосподарські угіддя.

*The article is devoted to defining and substantiating the procedures for applying expert analytical tools to agrarian enterprises' land resources management systems. The problems and prospects of economic evaluation of land use in Ukraine's agriculture in modern market conditions are considered. The sequence of application of expert-analytical procedures in the analysis of land use of agricultural enterprises is proposed, which includes the collection and systematization of information about land plots, the analysis of the suitability of land resources for agricultural activity, the assessment of risks and opportunities related to agricultural activity, forecasting the development of an agricultural enterprise, and the development of strategies land management and systematic monitoring of the land use situation and adjustment of strategies by changing conditions. A list of particular analytical documents and forms is defined for effective collection, systematization, and quality use of information. The need to improve methods of land assessment is substantiated, in particular, due to the changes that occurred in the economic situation and land ownership relations, the growth of requirements for the quality of agricultural products, and the need for a balanced use of soils. The problem of outdated economic assessment of land and the need to update its results in changed conditions are highlighted. The importance of the transition to the land market and the introduction of new valuation standards to consider the market value is also noted. The last part of the article considers a proposal for developing a single methodical approach to assessment, which will consider both economic and ecological aspects of the use of agricultural land, which will contribute to the effective management of these resources.*

**Keywords:** analysis, expert analysis, assessment, management tools, agricultural land.

### Introduction

Expert analytical tools in agricultural enterprises' land resource management system make it possible to use available land resources and optimize their use effectively. These tools provide an opportunity to comprehensively analyze agricultural lands, assess their potential for various agricultural activities, and forecast possible risks and challenges arising in connection with changes in the agricultural sector. Expert analytical tools allow enterprises to quickly respond to changes in the agricultural sector and make informed decisions on improving land resource management. They also improve production planning and marketing strategies and manage the company's financial resources,

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ensuring its stability and market competitiveness. Using these tools also contributes to increasing the transparency of land management, which is essential for attracting investments and maintaining consumer confidence in the products of the agricultural sector.

When analyzing recent research and publications, it becomes evident that the issues of analytical support for the use and improvement of agricultural land use have been extensively explored in the works of T. Bincharovs'ka, R. Brukhans'kyj, O. Harazhai, V. Zhuk, A. Martyn, T. Mashkova, T. Ostapchuk, S. Rudenko, O. Shevchenko, and other researchers [1-8]. However, the application of expert analytical tools and procedures in the management of owned and leased land resources of agrarian enterprises and their optimal combination to maximize profits and strengthen competitiveness remain areas that have not been fully addressed, particularly in the context of the agricultural land market in Ukraine and the challenging conditions of wartime.

### **Formulation of the goals of the article**

This article defines and substantiates the procedures for applying expert-analytical tools to agrarian enterprises' land resources management systems. By doing so, we aim to provide a comprehensive understanding of how these tools are used in this field.

### **Presentation of the main research material**

Developing land use and the land market is significant for agricultural enterprises. Many aspects of these issues require an immediate response from enterprise management, as the current state of the land market, according to experts, could be more stable and transparent.

It is necessary to have complete information about the state of the land market, its participants, power, and processes to study the land use of agricultural enterprises of Ukraine in modern conditions; we considered the analysis as one of the management tools that can significantly increase the effectiveness and efficiency of management and developed a general algorithm for the application of expert analytical procedures in the analysis of land use of agricultural enterprises.

The application of expert analytical procedures in the analysis of land use of agricultural enterprises can be described as follows:

1. Collection and systematization of information on land plots, their location, sizes, geological and climatic characteristics, as well as information on agricultural activities conducted on them;
2. Analysis of the land resources themselves, including their suitability for various types of agricultural activities, the potential for growing certain crops, the availability of opportunities for the introduction of modern agricultural techniques, etc.;
3. Assessment of risks and opportunities, where expert analytical tools make it possible to assess the risks associated with certain types of agricultural activity in specific areas, as well as identify opportunities for optimizing production and increasing profitability;
4. Based on the analysis of land resources and potential risks, forecasts are created regarding the development of an agricultural enterprise, including forecasts of yield, income, as well as possible consequences of changes in climatic conditions or market factors;
5. Land management strategies are being developed, including land use planning, rational use of resources, and implementation of innovative approaches to agricultural production.
6. After implementing management strategies, systematic monitoring of the land use situation is carried out, which allows timely identification of shortcomings and adjustment of strategies by changing conditions.

This process ensures efficient use of land resources and increases the competitiveness of agricultural enterprises.

Summarizing, two critical categories of solutions aim to achieve the maximum economic result for agricultural enterprises. These solutions require implementing a complex analysis system that allows processing information of both an internal nature (to optimize the enterprise's internal land use) and an external nature (to increase its land resources under economically favorable conditions). Accordingly, it is proposed that agricultural enterprises' analytical support of land use processes be divided into internal and external analyses.

The functioning of agricultural enterprises in market conditions is distinguished by their uniqueness, manifested in their activities and relations with other market participants. Based on the principle of free entrepreneurial initiative, agricultural enterprises have complete freedom in choosing decisions related to production and financial processes. This means they can freely choose areas of activity, resources, and partners. Thus, the management of the enterprise independently forms a specialization strategy, production structure, technical, technological, resource support, and much more. In this context, providing the enterprise with land resources becomes one of the main tasks.

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In addition, within the framework of a market economy, the principle of free entrepreneurial activity and competition is essential, which is a key aspect of economic theory. Competition is defined as competition between different business entities for better operating conditions, such as increasing market share, improving financial performance, increasing access to resources, and other factors. In this context, providing agricultural enterprises with land resources is one manifestation of such competition.

So, in modern conditions, the activity of agricultural enterprises in Ukraine directly interacts with the influence of market mechanisms at all management levels. By this, an essential task of analyzing land resources is the development of a comprehensive system of information support and support for management decision-making processes aimed at gaining competitive advantages in food markets in Ukraine and beyond.

The above list is a key information component in the context of competition for access to land plots for an enterprise that analyzes land resources to determine the possibility of increasing land area.

It is essential to consider the need to create particular analytical documents and forms for effective collection, systematization, and quality use of information. We recommend the development of the following documents:

1. Registers of land resources will contain all the necessary accounting, financial, management, and analytical data to ensure completeness and analytical information.

2. Portraits of land security and land use will help form an understanding of objects and subjects of the land market, their strengths and weaknesses, and the history of relations for the development of appropriate management tactics.

3. Various summaries on legal features, user behavior, and land quality provide generalized information for managers when making decisions.

4. Cards of land plots as documents containing all processes and operations related to each land plot for their rational fixation.

The possibility of tracking the economic profit from using land plots contributes to developing additional tools for detecting deviations from the planned indicators and their quick correction. One such tool is the comprehensive automation of agricultural production, which combines the use of modern reading devices such as sensors and chips, as well as the use of uncrewed aerial vehicles as scanners. In this context, using the achievements of scientific and technical progress and accounting and analytical activities is a critical factor in the development of agricultural enterprises and one of the conditions for achieving a high level of competitiveness, including competition in the land resources market.

Therefore, the activity of agricultural enterprises is inextricably linked with the market environment, which covers various areas, such as product markets, markets of financial and labor resources, and the market of agricultural land is significant. This poses complex tasks for the heads of enterprises, for which complex accounting and analytical support for management decisions are needed, aimed at effectively using available land resources and attracting additional land plots. Today's agricultural land market is very competitive, as transnational corporations and large Ukrainian agricultural companies show great interest in Ukrainian land. In this context, an essential tool for managers can be a complex analytical system that will provide operational accounting of transactions with land plots, as well as a flexible system of management reports that fully reflect the information needs of management.

According to the Law of Ukraine «On Land Valuation,» the objects of land appraisal are territories of administrative-territorial units, appraisal districts and zones, land plots, and their rights within Ukraine. According to Article 22 of the Land Code of Ukraine, agricultural land includes various elements, such as land, land with buildings for agricultural production, farm roads, etc. In the scientific world, agricultural land is considered a natural resource with various uses and is the object of land relations. Therefore, when determining their value, it is necessary to consider all the functions of the structural elements of these lands and the individual characteristics of each object of assessment.

Appraisal of agricultural land begins with determining the goals, which depend on the customer determining the value of the land.

Various interested parties, such as landowners, the government, creditors, investors, or even, to some extent, shareholders, can commission the valuation of agricultural land. This creates a conflict of interest between the initiators of the assessment, as each has its own motivations.

The economic evaluation of agricultural land is based on the concepts of fertility and differentiated rent. This means that it is based on a comprehensive analysis of the quality of the land (soil grading) and an assessment of its location.

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The economic evaluation of agricultural land is based on the concepts of fertility and differentiated rent. This process takes into account land quality (soil grading), location, and economic factors to evaluate land as an agricultural resource, taking into account differences in income and costs.

The main difference between the economic evaluation of agricultural land and soil grading is that during grading, land is considered only as a natural resource with properties that affect productivity without taking into account production conditions, labor costs per area, location, points of sale products and other production conditions that are taken into account during the economic evaluation. For agricultural land's economic assessment, indicators approved back in 1974 are used: yield, gross product value, cost recovery, and differential income. It is also essential to consider the form of land use, the type of agricultural activity that can cause pollution of the territories, and methods of pest and weed control, which are also taken into account during the assessment of land.

The study of economic evaluation methods and their results indicate the need for their improvement in modern market conditions. This is due to the economic situation that arose as a result of the introduction of private ownership of land, society's growing need for high-quality, competitive agricultural products, the need for balanced use and increased soil fertility, and changes in the technological characteristics of land and methods of growing the main crops.

The last economic valuation of land in Ukraine was carried out in 1988, and the results are still used to determine the indicators of the monetary value of land. However, the law provides for an economic valuation to be carried out at least once every seven years. However, in the changed conditions of the modern economy, these data become less relevant and valuable, so they require immediate updating. It is on these data that the monetary assessment, planning, and economic calculations for regulating economic and land relations are based.

With Ukraine's introduction of a free land market, since the moratorium on purchasing and selling agricultural land was lifted, these plots became the subject of commercial and financial relations. This means that it is necessary to evaluate their market value, which requires introducing new land evaluation standards in the conditions of forming a free land market.

In contrast to the economic evaluation of land, the monetary evaluation is aimed at determining the current value of the land plot as real estate without connection with its potential income in the future. According to the Law of Ukraine "On Land Valuation", monetary valuation is divided into normative and expert. The beginning of normative monetary valuation of agricultural land dates back to 1995, when the relevant methodology was approved. This methodology considers rental income from grain crop cultivation and the 1988 economic assessment results. It is worth noting that the normative monetary assessment is based on fixed indicators and coefficients that do not consider changes in the economy and agriculture that have occurred since then. These indicators only consider the change in food prices with the help of the index, without considering the increase in the cost of production, changes in the structure of cultivated areas, the use of fertilizers, and modern technologies.

In fact, at the moment, the normative monetary valuation is used to determine the size of several payments and mandatory contributions, such as land tax and state duty, when exchanging, bequeathing, or donating land plots by current legislation. In addition, it is used when calculating the rent for land plots that are in state or communal ownership, is taken into account in the case of losses in agriculture and forestry, as well as in the development of indicators and mechanisms for economic stimulation of rational use and protection of land.

Land valuation is essential in determining payment for land use and regulating land relations, including taxation and concluding civil law agreements. It is part of the state land cadastre system. This assessment is based on land rent, defined as the difference between the expected income from production on a plot of land and the production costs, including profit. Land rent is a form of economic remuneration for the use of land.

It can be noted that land assessment has several different aspects, summarizing the previous presentation:

- credit assessment based on soil characteristics and climatic conditions
- economic evaluation, which takes into account both natural and economic factors of production, as well as the location relative to points of sale of products, industrial zones, and transport highways
- monetary valuation of land plots, which is divided into normative and expert (market) valuation

However, the existing methods developed in accordance with the current legislation assess only the economic benefits of using agricultural land and do not take into account the environmental

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consequences arising from agricultural production. Therefore, a methodology for assessing ecological aspects of agricultural lands is needed.

Negative environmental factors arising from agricultural economic activity, natural conditions, and the level of use of agricultural land must be considered. This will help preserve land resources as an essential component of Ukraine's national wealth. However, a system for classifying environmental factors according to their origin and impact has yet to be developed, which should be considered when evaluating land.

In the context of the transition to the land market, it is proposed to develop a single methodical approach that will allow taking into account the criteria for acceptable and ecologically safe use of agricultural land. This approach aims to form a single information base for determining the market value of agricultural land plots. The state of land resources today is critical due to the imperfection of the organizational and economic mechanism for using, protecting, and reproducing agricultural lands based on information about their assessment.

### Conclusions and prospects for further research

In the modern conditions of managing agricultural enterprises in Ukraine, analyzing their land use and ownership becomes extremely important for achieving competitive advantages in the market. Providing complete information about the state of the land market and studying the processes of land resource management using expert and analytical methods are essential to increase management efficiency and achieve sustainable development of agricultural enterprises. A comprehensive approach to analysis, consideration of socio-economic aspects, and coordination of management strategies are critical elements of successful functioning in the modern market environment.

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