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Comparative study of organic farming systems in different geographical regions

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Abstract. Among the prerequisites for agricultural production efficiency, improved farming systems that include a cost-effective organic approach to all stages of the production process play an important role. The need for a gradual transition of agricultural land use to biological methods of soil cultivation is relevant given the high level of agricultural landscape destruction and the growing demand for organic products. The purpose of the article was to provide a comparative

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analysis of the current state of development of organic production systems in different geographical regions of Ukraine. The study was conducted using general scientific methods of cognition, the main ones being the method of system analysis and the dialectical method. In the course of the study, the situation in the field of organic farming in the regional context, reserves, and prospects of opportunities in this area were investigated. An analysis of changes in the characteristics of the area and the number of certified organic farming entities in the time period is formed. The expediency of developing organic agronomy in modern economic conditions, as well as the possibility of ensuring the environmental safety of sustainable land use by increasing the share of organic tillage in the overall farming system, is substantiated. The priority vectors of development are highlighted, the regulatory and legal support of the industry is analysed. The specifics of the process of managing enterprises with the use of modern monitoring and investment opportunities are studied, on the basis of which the main measures to optimize the situation are developed, including economic incentives for farmers, the formation of a land bank for organic farming, control of anthropogenic pressure on the environment, compliance with safety requirements and adaptation of quality standards, as well as the preservation of local ecosystems. The practical significance of the research results is manifested in the possibility of using them in the development of sectoral programmes aimed at optimizing the functioning of organic farming systems, increasing their economic efficiency, and forming the concept of transition from conventional to organic farming in Ukraine

Keywords: integrated protection; sustainable nature management; biological processing; agricultural sector; certification

INTRODUCTION

The unsatisfactory ecological condition of landscapes involved in agricultural activities, high rates of ploughed up farmland, and depleted soil fertility have a destructive impact on the quantitative and qualitative indicators of agricultural production. Given the current situation, there is a growing need to transition from traditional forms of land use to organic, ecologically sustainable and environmentally friendly ones. As of 2023, there is a global trend towards the development of organic agronomy and conservation tillage technologies. The situation in Ukraine, given the priority of sustainable development, is characterized by a gradual transition to organic farming, but the scale of the dynamics is not significant. It should be noted that the difference in the geographical location of the country's agricultural regions determines the respective peculiarities of organic land use development, and natural conditions are not always the determining factor in the process. In developed countries, there are numerous programmes and projects to optimize the condition of agricultural landscapes (Mudrak & Mudrak, 2019). Such projects aim to take a holistic approach to the problems of ecosystems affected by agricultural use and to increase the productivity and efficiency of the agricultural sector.

The issue of implementing organic farming systems has been studied in the publications of many researchers. An analysis of the results of scientific developments on the subject of the study allows concluding that most scientists pay maximum attention to comparing the traditional intensive farming system with the organic one. For example, Y.S. Sosnytska *et al.* (2019) study the algorithm of the principles of organic farming in Ukraine, and S. Amons (2022) focuses on the algorithm

of biological plant protection in the system of rational land use. Researchers A. Kharchenko & O. Onyshchenko (2020), at the same time, study the technologies and algorithms of organic land use in agriculture, and V.I. Pichura *et al.* (2022) thoroughly investigate the aspects of economic efficiency in the field.

A number of scientific publications by Ukrainian researchers study the criteria for the development and evaluation of preventive and regeneration measures of environmental, socio-economic and managerial nature aimed at improving existing strategies for the development of the organic farming system in different regions of Ukraine. S.I. Demianenko (2022) focuses on the difficulties of implementing biological land use systems in the transitional conditions of the transitional economic period, in particular, on the need for legislative regulation of activities in the field. L.I. Moklyachuk *et al.* (2020) focus on the peculiarities of the transition from traditional to ecologically oriented organic farming systems in the context of global climate change, the problems of such dynamics and ways to overcome them. A. Mudrak & H. Mudrak (2019) see environmental monitoring of Ukrainian agricultural landscapes as a basis for optimizing their condition and maximizing their efficient use.

Despite the considerable attention to the research issue by the scientific community, the issues of developing an algorithm for effectively stimulating the development of organic farming systems in Ukraine in the regional context, as well as their effective management using the capabilities of economic and legal instruments, remain insufficiently researched and require further scientific consideration. The purpose of the study was to make a comparative analysis of

organic farming systems in different geographical regions of Ukraine, with the identification of priority optimization areas for the development of the industry in the current conditions.

MATERIALS AND METHODS

In the course of the study, a number of general scientific methods of cognition were applied. The theoretical and methodological basis of the study is based on the dialectical method, the systematic approach, and the generally accepted principles of conducting comprehensive research. The systemic approach, in particular, made it possible to study the object and subject of study as a system in the entirety of interrelationships. The method of abstraction was used to identify the main categorical concepts. With its help, the concept of an integral process of the management system in the field of organic farming as a structural and consequential set of interrelations was formed. The abstract-logical and dialectical methods of scientific knowledge, as well as the method of scientific abstraction, were used in the study to clarify the conceptual apparatus, formulate theoretical generalizations and conclusions.

The general scientific methods of analysis and synthesis were used in the course of work on the article to identify the essence of the managerial and economic mechanism of the object under study, as well as to determine the strategic vectors of development of organic farming in Ukraine. In addition, with the help of analytical processing of information arrays, the peculiarities of the relationships between the elements of the phenomenon under study were recorded, the main factors of functioning and priority significant elements of the object under study were identified. The method of specification is used to record the effectiveness and feasibility of a set of management measures for regional land use systems, as well as to identify optimal conditions and solutions for the preservation of agricultural landscapes and mitigation of environmental risks in agricultural production complexes. The comparative method was used in the study to identify the specifics of the dynamics of organic farming systems based on indicators of quantitative and qualitative changes. The general scientific method of induction was used for prognostic analytics of development

features. Deduction is used in the process of formulating proposals for optimizing the management system in the field under study.

The formalization method was used to identify priority vectors for optimizing regional organic farming systems on the basis of green sustainable development, as well as to highlight the research findings that are intended for active practical use in the land use management system in the agricultural sector. In addition, the study used the method of ascending from the abstract to the concrete, in the form of a sequential transition from general abstract informative data on organic farming systems to the situation in different geographical regions of Ukraine and innovative opportunities of biological agriculture. To assess the dynamics of modern organic farming practices in different geographical regions of Ukraine, the article uses statistical data from the Ministry of Agrarian Policy and Food of Ukraine, namely, the structure of sown areas and the number of business entities. The data on quantitative indicators of organic farming were used through the Information and Analytical Portal of the Agro-Industrial Complex of Ukraine and the National Research Centre "Institute of Agrarian Economics" (Organic production in..., 2022; Ukraine ranks 20th..., 2022).

A systematic approach was used to identify the features, advantages, and effectiveness of certain solutions and approaches in the organic farming system. This approach is aimed at a comprehensive search for solutions in the modern agro-industrial complex with a focus on environmental safety, economic efficiency and ensuring the principles of sustainable development. Particular attention is paid to the need to take into account possible obstacles in the practical implementation of the organic farming strategy in the economic realities of developing countries.

RESULTS

According to the operational monitoring carried out by the Ministry of Agrarian Policy in cooperation with foreign certification bodies, as of 2023, the total area of agricultural land involved in organic farming systems was 263619 ha, which is less than 1% of the total area of agricultural land in Ukraine. The total number of business entities in the study area was 462 (Table 1).

Table 1. Organic map of Ukraine as of 2023

Region	Total number of operators [*]	Total area of certified agricultural land, ha	Area of agricultural land with organic status, ha
Autonomous Republic of Crimea	0	0	0
Vinnytsia	52	2753	2618
Volyn	20	5182	5153
Dnipro	24	18451	18362
Donetsk	0	0	0

Table 1, Continued

Region	Total number of operators ¹	Total area of certified agricultural land, ha	Area of agricultural land with organic status, ha
Zhytomyr	24	36796	36077
Zakarpattia	10	1600	1566
Zaporizhzhia	12	32072	24747
Ivano-Frankivsk	14	351	341
Kyiv	24	36796	36077
Kropyvnytskyi	5	11831	11828
Luhansk	1	0	0
Lviv	21	2378	2320
Mykolayiv	23	1598	441
Odesa	40	40831	38729
Poltava	33	24261	24166
Rivne	18	18177	17772
Sumy	17	50	50
Ternopil	8	2080	2080
Kharkiv	16	3808	3790
Kherson	14	29413	29250
Khmelnytskyi	18	10668	10661
Cherkasy	12	2635	49
Chernivtsi	3	190	0
Chernihiv	9	9115	9091

Note: * – including 380 agricultural producers certified to a standard equivalent to EU and NOP organic legislation (USA)

Source: compiled by the authors

Organic farming is one of the most promising areas for the development of the agricultural sector in Ukraine. Over the past few years, the number of farming enterprises in Ukraine has grown significantly. This is due to the increased demand for organic food and the growing awareness of the benefits of organic products among the population. Organic farming uses natural resources and methods that are environmentally friendly and preserve biodiversity. Unlike conventional industrial farming, organic farming does not actually use chemical fertilizers and pesticides, and does not involve genetically modified plants. This makes it possible to produce high-quality and environmentally friendly food that does not pollute the environment and is of great importance for human health.

One of the advantages of organic farming in Ukraine is its economic efficiency. Organic food has a high price on the market, which allows farmers to earn high profits. In addition, organic farming allows for the export of production costs through the use of natural resources and research with pests and natural plants. However, despite the prospects of organic farming in Ukraine, there are certain problems that may slow down its development. One of them is the lack of qualified personnel. In addition, there is a lack of government support and low public awareness of the benefits of organic farming. Exports of organic products from Ukraine are characterized by a

focus on European countries, which accounted for about 80% of all Ukrainian organic exports in 2022 (Organic production in..., 2022). In 2022, 226.4 thousand tonnes of organic agricultural products from Ukraine were imported to European countries, and the trend in 2023 remains positive. In general, in 2022, Ukraine sold organic exports to more than 30 countries, including the USA, Germany, Austria, the Netherlands, Poland, the UK, Switzerland, Italy, Denmark, and Lithuania. At the same time, Ukraine's main organic exports are cereals, oilseeds and berries, as well as sunflower oil, vegetables, and fruits (Ukraine ranks 20th..., 2022). Overall, in 2022, Ukraine exported 13% more organic products to the European Union and Switzerland than in 2021, and the results of 2023 are expected to be no less impressive.

Official statistics show that as of 2002, 31 farms engaged in the cultivation of organic products were registered in Ukraine, and in 2021 there were already 528 organic producers, with the maximum increase in quantitative indicators in the study area observed in 2015-2019. At the same time, after this period, there was a slight slowdown in the positive dynamics, as shown in Figure 2. It should be noted that 2022 brought its own adjustments in the form of Russia's full-scale invasion of Ukraine, which inevitably affected all spheres of economic life. As of 2023, there are 462 certified organic farms in Ukraine (Fig. 1).

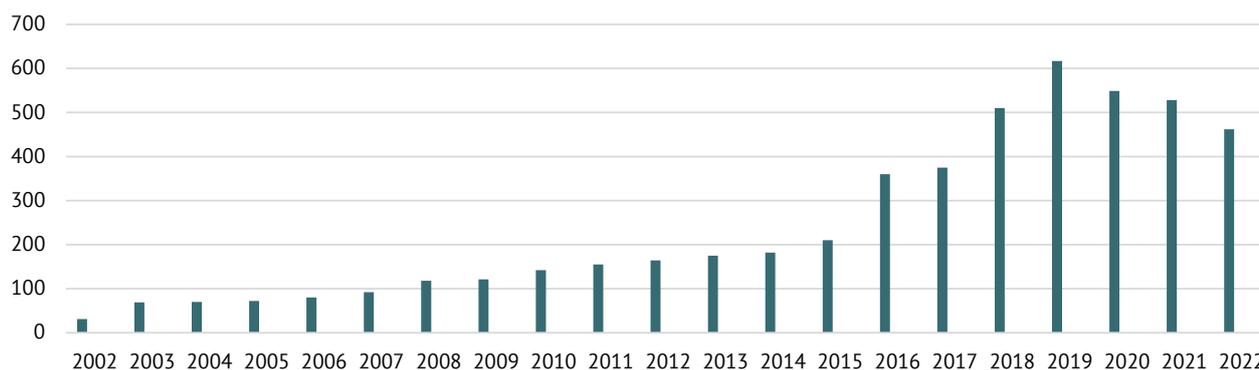


Figure 1. The number of organic farming enterprises in Ukraine in the period 2002-2023

Source: compiled by the authors

In order to ensure a systematic approach to the study of organic farming in Ukraine, it is necessary to take into account its sectoral features and benchmarks that form a model of effective biological land use. Thus, organic farming in Ukraine is a complex production complex, the effective management of which requires taking into account the specifics of the sectoral functioning in terms of resource potential, as well as ensuring its reproduction at the appropriate level. Compliance with the principles of sustainable development requires ensuring a closed production cycle at an agricultural enterprise. In other words, organic farming should be implemented under the influence of reproduction algorithms using the available production factors: organizational, economic, production, material and technical, environmental and social.

In order to minimize crop losses, it is advisable to introduce a stabilization period, which is the period of time required to carry out a set of agrochemical and reclamation measures aimed at eliminating the negative effects of previous land use and improving or stabilizing the quality of soils in order to reduce economic losses due to reduced crop yields during the transition period. This approach requires additional time and money, but it is a necessary step for growing organic agricultural products on land affected by uncontrolled anthropogenic activities and will minimize farm losses during the transition period. It was estimated that up to UAH 79 thousand per hectare of agricultural land would be required to carry out work during the stabilization period to improve the quality of soil. The amount of such costs is usually decisive when making a decision to switch to organic production.

The majority of organic farming businesses are located in Kyiv, Odesa, Kherson, Vinnytsia, Zakarpattia, Poltava, Lviv, and Zhytomyr regions. Certified farms are characterized by different sizes and scales of activity (Organic production in..., 2022). Given the tendency to increase the share of small organic farms, the priority of their specialization in terms of growing fruit and berry products, as well as the export orientation of producers, especially in terms of legumes and berries, is growing.

As of 2023, the largest area of land allocated for certified organic farming was recorded in Odesa (102 thousand ha), Kherson (76 thousand ha), Dnipro (38 thousand ha) and Zhytomyr (32 thousand ha) regions, and the largest number of enterprises in this area was in Odesa region.

Comparing the level of development of organic farming in different geographical regions of Ukraine, it is noted that the tendency of dependence of the efficiency of biological land use implementation on the optimality of natural prerequisites is very conditional. The factors of economic incentives for agricultural producers, availability of regional investment programmes, and the readiness of the agronomic sector to dynamic changes in the management system have a significant impact. Long-term intensive agriculture has led to significant environmental problems. Agroecosystems are inherently extremely energy-intensive, with poor adaptive capacity and potentially high levels of soil fertility depletion (Carter, 2020). The situation is particularly difficult in irrigated vegetable production. An alternative is organic land management, which involves covering the soil with vegetation for as long as possible (Beillouin *et al.*, 2022). Innovative technological techniques and algorithms that allow for a gradual transition from an overly intensive farming system to scientifically based biologisation will make it possible to implement European standards of sustainable development, which are understood by the international community as alternative or regenerative farming in the agricultural sector (Ramesh *et al.*, 2019).

Organic crop production, however, cannot yet fully become an alternative to conventional farming; both areas should be developed synergistically. Until recently, Ukraine has not paid attention to conducting comprehensive research on the cultivation of individual crops using organic farming methods. However, the Institute of Vegetable and Melon Growing of the National Academy of Agrarian Sciences of Ukraine has developed a system of organizational measures and technological techniques that can form the basis of a promising organic agricultural production system. The

main problem in biological farming is the proper reproduction of soil fertility. As of 2023, the ploughed-up rate of agricultural landscapes in Ukraine is 80%, and in some places it reaches 95%. Compared to similar indicators in developed countries, this figure is only 25% in the United States, 37% in Hungary, and 48% in France, Germany, and Canada (Organic production in..., 2022; Ukraine ranks 20th..., 2022). The optimal preventive way to minimize the level of ploughed up agricultural land is to create ecological buffer zones of 10%, which will allow for the preservation of natural biodiversity. Also, the use of special crop rotations is a necessary technological method of organic crop cultivation. In this case, on irrigated lands, crop rotations should be based on plant species that provide preventive protection of soil fertility and intensification of nutrients.

Organic agriculture in Ukraine is characterized by significant opportunities to increase production efficiency. It should be noted, however, that its effective implementation requires a number of managerial, financial and technological measures, including those at the national level. These include providing agricultural producers with access to up-to-date information on innovative tillage technologies and organic quality standards, ensuring certification of products of small agricultural land users, attracting investment opportunities, developing partnerships, developing a communication strategy to raise awareness of farmers, improving agricultural organic policy, stimulating innovation and research in the field of organic land use (Sosnytska *et al.*, 2019; Kharchenko & Onyshchenko, 2020). Organic agriculture has a positive impact on the balance between the economic efficiency of agricultural production and the environmental sustainability of agroecosystems. In addition, it contributes to the protection of biodiversity, the fight against genetically modified organisms, and the maintenance of soil fertility through biological means. The latter include minimizing mechanical tillage, applying organic fertilizers, and individualizing agricultural technologies and processes (Mudrak & Mudrak, 2019). Prospects for the development of organic farming include sustainable development of rural areas, high levels of crop productivity, increased interest in environmentally friendly products, growing opportunities for exporting organic products, simplification of certification and labelling procedures, and the growing role of government incentives for organic land use.

Increasing the share of organic farming will help to solve the problem of employment of the country's rural population, as well as quantitative and qualitative indicators of agricultural productivity. The introduction of a model of agricultural sector development based on organic farming provides for the implementation of the principles of sustainable landscape development and identifies priority vectors for rural development in the future. In view of the above, Ukraine's current agri-environmental policy should pay considerable attention

to the restoration of soil, preventive environmental protection and the provision of environmentally friendly products to the population. At the same time, the agro-landscape management system should be an integral part of organic land use standards. Priority areas for optimizing the industry include the development of new technological capabilities to minimize the destructive impact on soils (e.g., no-till systems) and ensure high economic efficiency of agricultural activities while preventively ensuring a sustainable environment.

It should be noted that Ukraine should take a comprehensive approach to solving these problems. First and foremost, it is about the further formation of ecologically balanced holistic terrestrial ecosystems on the basis of organic farms, which are able to ensure the harmonization of agricultural and natural lands. The NAAS institutions conduct research under the programme "Scientific basis for the development of organic agricultural production and mechanisms of its functioning in Ukraine", which defines the main directions of scientific support for the organic farming industry (Organic production in..., 2022; Ukraine ranks 20th..., 2022). Soil, agrochemical, and soil ecological research is aimed at effective assessment, zoning and regulation of the suitability of soil conditions for organic farming, as well as the development of methods for a comprehensive assessment of the environmental condition of agricultural land for their suitability for organic production and the development of alternative ways to improve and preserve soil fertility.

The development of organic production in Ukraine is hampered by the imperfection of the legislative and regulatory framework that would clearly define the state policy in this area. Other reasons include the predominance of exports, underdevelopment of the domestic market for certified organic products, limited product range (mainly grains and oilseeds), lack of consumer awareness of the benefits of organic products, lack of investment in organic production, and a poor consumer basket of these products. Despite the problems outlined in the research area, organic land use in Ukraine has significant potential that can be unlocked during the post-war recovery period with strong international support and investment opportunities.

DISCUSSION

Most modern scientists consider organic farming systems to be a priority for the sustainable development of the ecological network of agricultural areas, which provides the basis for the effective restoration and rational use of agricultural production resources in the context of reorientation of economic processes towards sustainable development. In particular, scientists T. Tschardtke *et al.* (2021) have proved that the environmental aspects of agricultural development should be based primarily on optimizing the state of the environment and focusing on the renewability of agricultural landscapes.

Scientists emphasize that the vectors of unlocking the ecological and economic potential of agricultural complexes are formed using the optimal design of organic land use development. Such results of research are in line with the findings of the current study.

Modern researcher M. Singh (2021) focuses on the need to ensure that the anthropogenic load is proportionate to the adaptive resources of agricultural ecosystems, without violating the morphological and functional parameters of the environment. It is difficult to disagree with the author, and the current study reveals a similar interdependence of the resource base and methods of its use for economic purposes. It has been established that the tasks of soil cultivation in biological farming are based not only on the economic aspect and ensuring the proper physical condition of the soil cover, but also include environmental and biological indicators, namely: preservation of soil fertility, protection against erosion, minimization of the impact of toxic substances, ensuring proper conditions for seed germination and root development, accumulation of nutrients, and reliable control of pests and diseases. The conclusions of the research by E. Durán-Lara *et al.* (2020), who consider management support for organic farming as the main prerequisite for increasing crop productivity, show that the biological land management system has significantly expanded its implementation functions, becoming a hub for the implementation of sustainable development opportunities in modern agriculture. Scientists emphasize that the processes of transition from intensive to organic farming, in the absence of appropriate preventive measures, are often accompanied by a significant destabilizing transformation of socio-economic processes. In this regard, comparing the authors' conclusions with the results of the current study, it can be argued that the main function of the land use management system is to minimize anthropogenic destructive pressure by regulating the balance between the production and natural environment, as well as appropriate preparatory measures by agricultural market participants.

Scientists F. Eyhorn *et al.* (2019) identify the main reasons for the need to maximize soil protection and conservation within agricultural landscapes, including the disruption of the ecological balance between natural and anthropogenic lands, erosion, agrophysical and agrochemical degradation of soil cover, and disruption of soil nutrient, water and air regimes. Analysing the experience of management systems in the field of organic farming, scientists have found that its functioning is usually implemented in accordance with local needs and preferences. It should be noted that in the case of Ukraine, it is important to formulate an individual strategy for the development of organic land use, which will contribute to the growth of sustainability and competitiveness of agroecosystems. M. Diacono *et al.* (2019) emphasize the fact that intensive land use

has an ecologically destabilizing and degrading effect with varying degrees of intensity in different soil and climatic zones. It is difficult to disagree with the author. In addition, scientists argue that the extremely unfavourable conditions of modern agriculture are not caused by overloading the agroecosystems with excessive doses of agrochemicals, but by violating the basic ecological principle of agrochemical processes, according to which the removal of nutrients from the soil must be compensated for in a timely, complete and high-quality manner. This trend is also evident in different geographical regions of Ukraine. As an alternative, it is worth considering a system of biological regenerative land management, which involves careful selection of crops and varieties, crop rotation design, environmentally friendly fertilization, soil-protective and resource-saving tillage, as well as agrotechnical and biological methods of plant protection. The researchers suggest the use of intermediate green manure crops, which not only enrich the soil with organic matter, but also optimize the phytosanitary situation in the soil environment and protect against erosion processes. In Ukraine, it is possible to recommend such green manure crops as oil radish, white mustard, and ryegrass.

The extensive root system of plants allows the soil to remain loose and aerated, which creates better conditions for growing agricultural products. This is confirmed in the research by M. Krauss *et al.* (2020). Degraded landscapes with minimal or no vegetation cover are vulnerable to precipitation and winds. In addition, the presence of the root system of plants significantly strengthens the soil cover, protecting it from landslides, flooding, and floods. Scientists insist that organic farming, which involves covering the soil with vegetation or its residues for a longer period of the year, is the best way out of the crisis in agricultural landscapes. These research findings are in line with the results of the current work, positioning restorative land use as a priority area for the modern agro-industrial complex. At the same time, the primary segment of the biological farming system is the ecological zoning of agricultural landscapes and soil certification.

In the studies of A. Le Campion *et al.* (2020), the authors note that the primary task of organic land use is the formation of sustainable agroecosystems that can mitigate negative climate change and help the landscape complex adapt to the dynamics of weather and climate conditions. Scientists analyse the algorithmic structure of a typical organic production scheme, arguing for the need to expand technological capabilities and the need to invest in organic farming. It should be added that renewability is a key element of sustainable landscapes, as it is thanks to them that soil and landscape ecosystems regenerate and can function effectively without requiring significant investment.

Researchers A. Gamage *et al.* (2023) actualize the synergy of organic principles of modern land use with

the principles of sustainable development. The scientists argue that organic production balances the socio-economic balance of business and society, while having a positive impact on the natural resource potential of land use. In addition, they emphasize the urgent problems of implementing the principles of sustainable agricultural management, including the difficulties of financing and investment, as well as the availability of qualified personnel. Comparing the conclusions of scientists with the results of the current study, it is worth adding that in the context of post-war recovery, Ukraine has the prospect of attracting international cooperation mechanisms and targeted investment opportunities, which expands the horizons of agro-environmental solutions. Effective incentives at the national, regional and local levels to increase the use of organic farming projects through sustainable development programmes are seen as a priority for optimizing the situation in the industry (Clunies-Ross & Cox, 2023). The expected long-term results of such a management strategy include an improved social and environmental microclimate, increased economic efficiency of projects, and a healthier environment (Parizad & Bera, 2023). Every business entity that aims to develop organic farming should evaluate it as a set of interconnections between processes (crop rotation, tillage system, plant protection, fertilization), as the productivity of the agroecosystem depends on the optimization of all parts of the farming process in terms of synchronization.

In order to preserve agricultural landscapes, it is important to make efforts to develop a sustainable system of land management and governance. Analysing and summarizing the above, the growth of the organic farming function as part of a successful management policy in the agricultural sector of modern Ukraine is becoming a prognostic prospect, which will allow significantly increasing its productivity and implementing relevant solutions in accordance with the principles of sustainable green development. In addition, the shortage of organic products on the world market opens up significant prospects for Ukrainian organic producers.

CONCLUSIONS

The study analysed the multifactorial nature of the effective functioning of agro-landscape complexes based on the principles of sustainable development. It was possible to study the current situation in the field of organic farming in Ukraine in the regional context, as well as the reserves and prospects for opportunities in this area. The changes in the area and number of certified organic farming entities in the time period were analysed. It is established that the development of biological regenerative land use systems is a significant factor in improving economic performance in the field of crop production, strengthening the priorities of agricultural greening, and optimizing the state of the agroecosystems in terms of restoration and recreation.

The expediency of developing organic agronomy in modern economic conditions, as well as the possibility of guaranteeing the environmental safety of sustainable land use by increasing the share of organic soil cultivation in the overall farming system, is substantiated. The specifics of the process of enterprise management with the use of modern monitoring and investment opportunities are investigated, and the main measures to optimize the situation are proposed, including economic incentives for farmers, formation of a land bank for organic farming, monitoring of anthropogenic impact on environmental parameters, introduction of agricultural product quality standards, and preservation of local ecosystems. The author identifies priority vectors of development, including stimulation of organic agricultural production, financial and preferential support from the state, provision of subsidies, creation of a fund of land for organic land use, and introduction of modern technological capabilities.

It is determined that the implementation of these goals should be carried out by optimizing the management policy in the field of research. It has been established that strategic planning, operational management and development of effective regeneration and preventive measures are the top priorities of agroecological landscape complexes management. Such an approach will allow for a prompt response to new challenges, including the transformation of management activities, the growing importance of safety standards, and destructive processes in natural landscape ecosystems. The study focuses on the most important aspects of the problems in the field of implementation of organic farming systems. As a result of the study, inter-sectoral gaps have been identified that require urgent elimination through regulatory and legal regulation, the establishment of strict measures of responsibility for violations, and the involvement of international levers to regulate the situation.

An effective approach to the management system of modern agroecosystems involves a synergy of efforts that can ensure an increase in their functionality, efficiency, and ability to regenerate. As a result of the study, the main directions of promising research on the topic are highlighted. The need to ensure optimization of information support on the possibilities of introducing an organic farming system in different geographical regions of Ukraine is actualized. The need to apply international practical experience in order to optimize the functioning of organic agriculture is substantiated. Such measures will provide the prerequisites for solving current problems in the field of agricultural sector functioning and identifying reserves to improve the efficiency of its activities.

The purpose of promising scientific work in this area is to formulate strategic directions for optimizing the organic farming system in different geographical regions of Ukraine, as well as to form and integrate innovative

monitoring capabilities as a basic resource for analysing and resolving the situation in the industry. At the same time, it is necessary to attract international experience, update existing and develop new methods of agricultural management based on the principles of regeneration and sustainable land use. In addition, the priority area for further research is the improvement of the institutional framework for the functioning of organic

land use within the framework of European integration and post-war regeneration of Ukraine.

None.

None.

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CONFLICT OF INTEREST

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Анотація. Серед передумов ефективності сільськогосподарського виробництва важлива роль належить вдосконаленим системам землеробства, що передбачають ощадливий органічний підхід до всіх етапів виробничого процесу. Необхідність поетапного переходу сільськогосподарського землекористування на біологічні методи обробітку ґрунту є актуальною з огляду на високий рівень деструкції агроландшафтів та розвиток попиту на органічну продукцію. Метою статті є порівняльна аналітика сучасного стану розвитку систем органічного виробництва в різних географічних регіонах України. Дослідження проводилось за допомогою загальнонаукових методів пізнання, основні з яких – метод системного аналізу та діалектичний метод. У ході роботи досліджено ситуацію в сфері органічного землеробства в регіональному розрізі, резерви та перспективи можливостей у даній сфері. Сформовано аналітику зміни у характеристиках площ та кількості сертифікованих суб'єктів господарювання в галузі органічного землеробства у часовому розрізі. Обґрунтовано доцільність розвитку органічної агрономії в сучасних умовах господарювання, а також можливість гарантування екологічної безпеки сталого землекористування шляхом збільшення частки органічного обробітку ґрунту в загальній системі землеробства. Виділено пріоритетні вектори розвитку, проаналізовано

нормативно-правове забезпечення галузі. Досліджено специфіку процесу управління підприємствами з залученням сучасних можливостей моніторингу та інвестування, на основі чого розроблено основні заходи з оптимізації ситуації, серед яких – економічне стимулювання аграріїв, формування земельного банку для органічного землеробства, контроль антропогенного тиску на навколишнє середовище, дотримання вимог безпеки та адаптація стандартів якості, а також збереження місцевих екосистем. Практична значущість результатів дослідження проявляється в можливості використання в ході розробки галузевих програм, що мають на меті оптимізацію функціонування систем органічного землеробства, зростання показників їх економічної ефективності, а також формування концепції переходу від традиційного до органічного землеробства в Україні

Ключові слова: інтегрований захист; стійке природокористування; біологічний обробіток; аграрний сектор; сертифікація
