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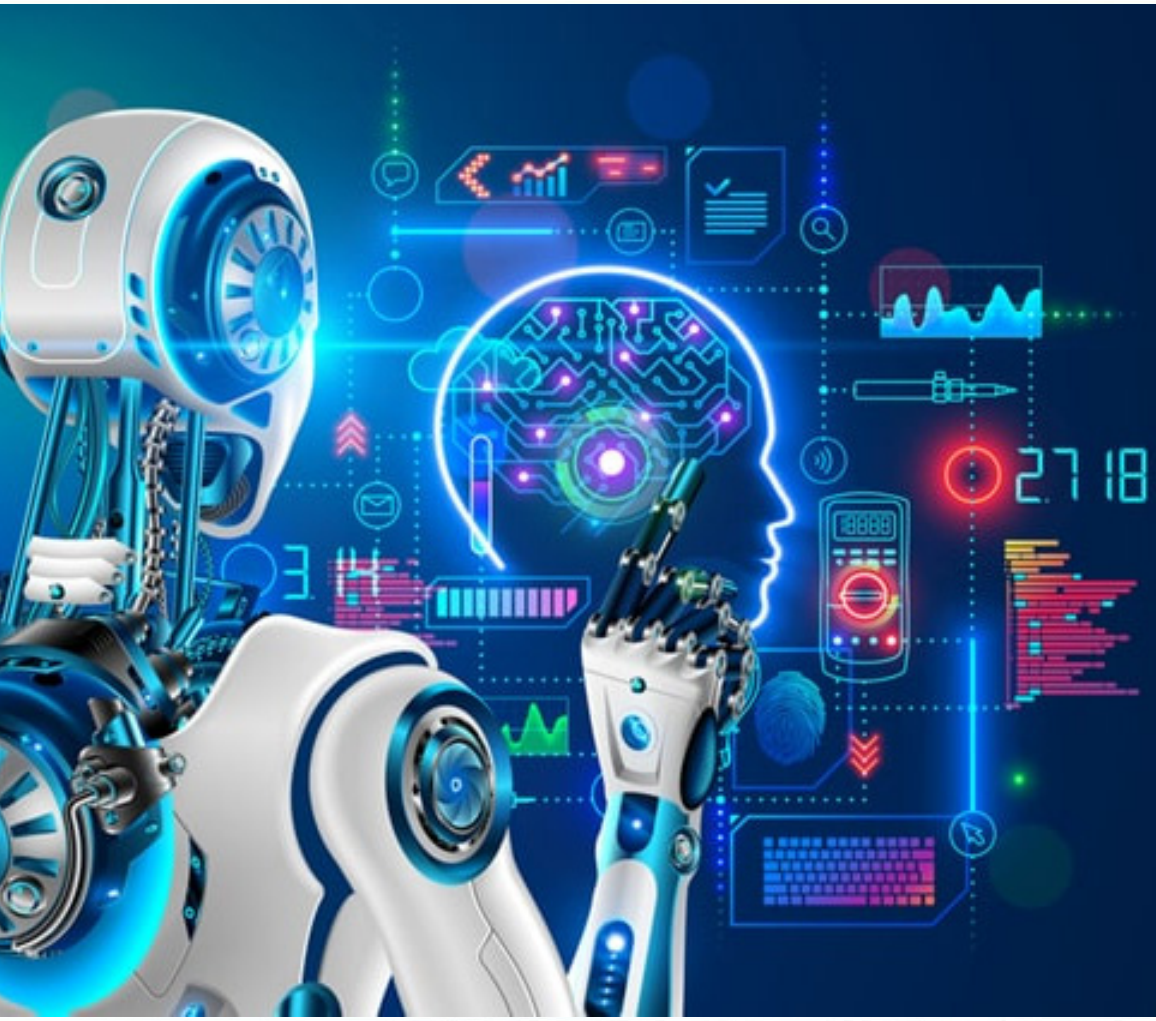

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CONTENTS

CONTENTS

CONTENTS

WAYS TO ADJUST LAND RESOURCE USE MECHANISMS FOR FARMERS BASED ON THE EXPERIENCE OF FOREIGN COUNTRIES

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Abstract: Mazkur maqolada rivojlangan xorijiy mamlakatlar tajribasidan kelib chiqqan holda dehqon xo‘jaliklarida yer resurslaridan foydalanish mexanizmlarini takomillashtirish imkoniyatlari tahlil qilingan. Jahon tajribasidagi ilg‘or agrotexnologiyalar, raqamli boshqaruv, yer monitoringi, ekologik barqarorlik, yerga egalik va foydalanish mexanizmlari asosida O‘zbekiston sharoitiga mos innovatsion yondashuvlar ishlab chiqishning ilmiy-amaliy asoslari asoslab berilgan. Shu bilan birga, dehqon xo‘jaliklarini barqaror va samarali faoliyat yuritishga yo‘naltiruvchi mahalliylashtirilgan mexanizmlarni ishlab chiqish zaruriyati asoslangan.

Key words: yer resurslari, dehqon xo‘jaligi, xorijiy tajriba, foydalanish mexanizmi, agroekologiya, boshqaruv modeli, innovatsion texnologiyalar, barqarorlik.

Annotatsiya: This article analyzes the possibilities for improving land resource use mechanisms in farming enterprises based on the experience of developed foreign countries. The scientific and practical foundations for developing innovative approaches adapted to the conditions of Uzbekistan are substantiated, taking into account advanced agrotechnologies, digital management, land monitoring, environmental sustainability, and land ownership and use mechanisms applied in global practice. In addition, the necessity of developing localized mechanisms aimed at ensuring the sustainable and efficient operation of farming enterprises is justified.

Kalit so‘zlar: Land resources, farming enterprises, foreign experience, use mechanism, agroecology, management model, innovative technologies, sustainability.

Аннотация: В статье на основе опыта развитых зарубежных стран анализируются возможности совершенствования механизмов использования земельных ресурсов в фермерских хозяйствах. Обоснованы научно-практические основы разработки инновационных подходов, адаптированных к условиям Узбекистана, с учётом передовых агротехнологий, цифрового управления, мониторинга земель, экологической устойчивости, а также механизмов владения и пользования землёй, применяемых в мировой практике. Кроме того, показана необходимость формирования локализованных механизмов, направленных на обеспечение устойчивой и эффективной деятельности фермерских хозяйств.

Ключевые слова: Земельные ресурсы, фермерское хозяйство, зарубежный опыт, механизм использования, агроэкология, модель управления, инновационные технологии, устойчивость.

INTRODUCTION

In the modern world, approaches to working with land resources are changing. Developed countries are introducing strategic approaches aimed at ensuring the harmony of ecological, social and economic interests in relation to land in the agricultural sector. Among these experiences, advanced systems aimed at supporting peasant farms, strengthening their legal status over land, automating use mechanisms and increasing land productivity occupy a special place. Land resources play a decisive role in the economic, ecological and social development of any country. This is especially relevant for countries specializing in the agricultural sector, including Uzbekistan. A large part of the territory of Uzbekistan consists of arid and semi-arid regions, and there are factors such as limited water and land resources, soil degradation, salinization, erosion, technogenic impacts and a decrease in land productivity as a result of improper land cultivation. These circumstances directly affect the activities of peasant farms and limit their opportunities for sustainable development.

REVIEW OF LITERATURE ON THE SUBJECT

Advanced foreign experiences and scientific approaches in the use of land resources are one of the priority areas of agrarian policy at the level of dehkan farms. In international literature, this issue is covered based on various concepts and methodological approaches, most of which are aimed at increasing the efficiency of resource use [1].

The Sustainable Land Management (SLM) approach developed by FAO is seen as a model that combines environmental sustainability, economic efficiency and social equity [2]. IFAD reports have highlighted the important role of financial services, agronomic advice and marketing networks in supporting smallholder farmers [3].

In the European Union countries, the rights of farmers to own and use land are clearly defined, which ensures the transparency of the land market. In Germany, it is noted that the use of land resources is managed on the basis of multi-year leases and environmental standards [4]. In France, mechanisms have been developed to increase the technological literacy of farmers through agro-service networks [5].

In the United States, a system of land resource management, environmental monitoring, and support for innovative technologies has been established through methodological guides developed by the USDA and Farm Bill programs [6]. In Canada, it is emphasized that small farms can achieve high efficiency through digital land monitoring and agroclusters [7].

Japan and South Korea have widely implemented “technologically intensive farming”, “smart farming”, artificial intelligence, and drone-based land monitoring systems, and these approaches are helping to increase productivity and reduce degradation [8].

While Turkey has developed a model of shared resource use through agricultural cooperatives, China has shown that land pressure has been reduced through digital farming and the modernization of rural infrastructure [9].

Although local scientific literature covers issues of land resource use, insufficient attention is paid to developing mechanisms for adapting foreign experiences to national conditions, creating a scientific gap [10].

Based on the analysis The analysis of the above literature shows that many models and mechanisms have been developed worldwide to increase the efficiency of land resource use by dehkan farms. The main principles of these approaches are sustainability, digitalization, cooperation, environmental safety, a disciplined approach to land, and resource conservation. It is on the basis of these principles that the efficiency of land resource use can be significantly increased by developing innovative approaches suitable for the conditions of Uzbekistan.

RESEARCH METHODOLOGY

In this study, the following scientific and methodological methods were used to study foreign experiences in increasing the efficiency of land resource use in dehkan farms and identify opportunities for adapting them to national conditions. Systematic and comprehensive analysis method. The process of land resource use was considered as a complex of socio-economic, environmental and institutional factors, and the interrelationships between state policy, economic entities and infrastructure systems were analyzed. Comparative method. The experiences of FAO, IFAD, the European Union, the USA, Canada, Japan, South Korea, Turkey and China were studied and their land resources management mechanisms were compared with the practice of Uzbekistan. Structural-functional analysis. The functions of the main entities involved in the use of land resources (state, peasant farms, service organizations, financial institutions) and their interrelationships were identified. Statistical and dynamic analysis. Trends in productivity, land degradation, and resource use efficiency were assessed based on time series of land resource use indicators in dehkan farms. Geoinformation analysis (GIS). GIS technologies were used to identify regional differences in the condition of the land fund, land reclamation indicators, the level of degradation, and agro-ecological zones. Expert assessment and questionnaire methods. Through surveys conducted among farm managers, agronomists, and specialists, opportunities for introducing foreign experiences, existing problems, and promising areas were identified. This set of methods made it possible to systematically analyze foreign experiences in the use of land resources and draw scientifically based conclusions on their adaptation to the conditions of Uzbekistan.

Analysis and results. Dehkan farms are the most important part of agricultural production in Uzbekistan. They play an important role in meeting the population’s food needs, increasing employment in rural areas, strengthening the family budget, and supporting rural infrastructure. At the same time, the level of resource provision, access to technologies, and knowledge and skills of these farms in land use often remain low. This situation leads to low agricultural efficiency and a lack of principles of sustainability in the relationship with land. Today, the issue of effective use of land resources is relevant on a global scale, and many international organizations and developed countries are conducting in-depth scientific research in this area.

In particular, modern mechanisms for the use of land resources have been developed in countries such as the European Union, the USA, Japan, South Korea, Turkey, China, Australia and Canada. The experience of these countries has formed a comprehensive system in such areas as improving the culture of land use of dehkan farms, introducing agrotechnologies, developing agroservice infrastructure, digital monitoring, cooperation networks, and ensuring environmental safety.

In particular, in Germany, farmers share technical equipment through cooperatives, in Japan, land use allocated to farmers is strictly monitored, and in South Korea, innovative technologies are provided to farmers through effective cooperation between the public and private sectors. In China, land cultivation and environmental protection are implemented together through the concept of “One Land - Two Goals”. All this has formed a culture of high productivity, sustainability and resource efficiency for farmers’ farms.

By adapting these advanced practices to the conditions of Uzbekistan, it is possible to significantly increase the efficiency of land use of dehkan farms. However, this process requires not only the transfer of experience, but also a thorough study of the existing socio-economic and agro-ecological conditions, adaptation to national legislation, and taking into account cultural and institutional factors. Because Uzbek dehkan farms often operate on small land areas with limited technical capabilities. Therefore, foreign approaches should be applied not directly, but in a modified, localized form. Also, looking at the issue of land resource use mechanisms not only from an economic or technical point of view, but also based on ecological, social and institutional approaches is the most appropriate strategy today.

Among the approaches aimed at increasing the efficiency of resource use, a special place is occupied by an integrated management system, digital technologies, water-saving agrotechnical measures, effective land monitoring systems, farmer cooperation, agrotechnologies based on renewable resources, and clear approaches to land rights. The land reforms carried out by the President of the Republic of Uzbekistan, the introduction of a digital cadastre system, the promotion of water-saving technologies, and a number of decisions aimed at strengthening the legal status of dehkan farms can be practical solutions to these problems. At the same time, the existing legislation, institutional framework, and financial and technical infrastructure do not fully comply with modern global approaches. This increases the need to adapt foreign experiences on a scientific basis. Scientific research shows that the following conditions are important for the sustainable development of peasant farms: maintaining a balance of freedom and responsibility in the use of land resources, the availability of a system of technological services, a developed marketing infrastructure, the stability of financing sources, and the availability of human resources with knowledge and skills. All of these are mechanisms that are clearly based on foreign experience and have proven themselves in practice.

This article examines the most effective aspects of land resource utilization mechanisms in the experience of foreign countries. In particular, it analyzes the guarantee of land ownership and use rights for peasant farms, the development of cooperation between small farms, the introduction of subsidy and grant systems, the system of agro-technological services, land monitoring and digital mapping, resource utilization strategies based on ecological standards and agro-ecosystem principles.

Analysis of international experience shows that the efficiency of land use of dehkan farms is being increased not only by an economic approach, but also by a combination of ecological, institutional, social and technological approaches. In developed countries, advanced practices that serve the effective functioning of the dehkan system are actively working, including cooperation, digital land monitoring, subsidy systems, agro-service networks and knowledge exchange systems. Based on these experiences, there is a need to develop models adapted to existing policy and management systems and adapted to national conditions to improve the activities of dehkan farms in Uzbekistan. Today, dehkan farms face many ecological and technological risks, and they have a low level of access to machinery, credit, and use of digital technologies. In such conditions, coordinated, localized and integrated systems based on foreign experience are needed. In conclusion, by adapting foreign approaches to the conditions of Uzbekistan, the attitude of dehkan farms to land, land use culture, level of environmental responsibility and economic efficiency can be significantly increased. This will require systemic reforms that combine public policy, scientific research, technological approaches, and public participation.

1. Develop a national model based on international experience. Based on the experience of developed countries in effective land resource use systems, a special national mechanism should be developed, taking into account the specifics of Uzbek dehkan farms. This model should include land rights, environmental standards, digital monitoring, financial incentives, technical services, and scientific approaches.

2. Create digital agro-service platforms for farmers. Based on the experience of China and South Korea, it is necessary to introduce a system where each farmer can monitor his land area, technological needs, and resource use status through a digital platform. This system provides continuous information on agro-services, consultants, market information, and crop status.

3. Encourage development based on cooperation and partnership. Instead of individual activities of farmers, it is necessary to develop a technical base, market network, water supply and processing infrastructure that can be used in cooperation, based on the experience of Turkey, Germany and Canada.

4. Specialization of subsidy and grant systems. State financial support should be specialized, as in foreign countries, aimed at climate security, transition to environmentally friendly technologies, increasing productivity, saving water, or using digital technologies.

5. Strengthening environmental monitoring of land resources. Using the experience of the United States and Canada, it is necessary to introduce systems for continuous assessment of the ecological state of land use. In this case, factors such as soil quality, salinity, water scarcity, and erosion will be under constant control.

6. Expand training, advisory, and technological support centers for farmers. Based on the experience of European countries, agro-service centers should be established in each region and farmers should be provided with ongoing training in agro-technologies, ecological approaches, and modern methods of land cultivation.

7. Introduce clear strategic planning for the use of land resources. Long-term plans should be developed at the level of each district or region based on an analysis of land resources, which should take into account resource potential, demographic factors, water supply, and agro-climatic conditions.

8. Land cultivation based on digital maps. Based on the experience of Germany and the United States, land cultivation will be planned with precise calculations through the establishment of digital cadastre and monitoring systems based on satellite images.

9. Strengthening the principles of ecological safety in legislation. It is mandatory for every farmer to adhere to ecological standards when cultivating the land, which will increase his responsibility as a land user. This approach is working effectively in the experiences of Japan and Europe.

10. Testing and popularization of science-based, adapted technologies. Localized, environmentally friendly agrotechnologies that are suitable for land conditions should be developed in collaboration with scientific institutions and introduced at the level of smallholder farms. The experience of China and Turkey serves as an important basis for this.

CONCLUSION AND SUGGESTIONS

In conclusion, at a time when Uzbekistan's agricultural sector is rapidly developing, studying, analyzing and adapting the best practices of foreign countries to local conditions can strengthen the land use potential of dehkan farms, ensure their economic stability and strengthen environmental safety. This can become an important factor in increasing the competitiveness and ensuring sustainable development of the entire agricultural system. This study has examined the key directions for improving land resource use mechanisms for farmers through the adaptation of advanced foreign experiences. The analysis demonstrates that countries with successful agricultural systems have achieved sustainable land use by integrating digital land monitoring, transparent land tenure arrangements, agroecological management practices, and effective institutional support.

The results indicate that the adjustment of land resource use mechanisms should be implemented in a комплекс manner, combining technological innovation, regulatory reforms, and capacity-building for farmers. In particular, the introduction of digital cadastral systems, GIS-based monitoring, and smart farming technologies can significantly improve land productivity and reduce degradation risks.

Furthermore, the research confirms that foreign practices cannot be directly transferred without modification. Instead, they must be localized in accordance with national legal frameworks, environmental conditions, and the socio-economic characteristics of rural areas. Strengthening cooperation between government agencies, research institutions, and farming communities is also essential for ensuring the practical effectiveness of these reforms.

In conclusion, the study substantiates that the systematic adaptation of foreign experience in land resource management will contribute to improving the efficiency, sustainability, and resilience of farming enterprises, thereby supporting long-term agricultural development and rural welfare.

References.

1. FAO. (2020). Global Framework for Sustainable Land Management. Rome: FAO.
2. FAO. (2019). Sustainable Land Management Guidelines. Rome: FAO.
3. IFAD. (2021). Smallholder Farming and Land Use Efficiency. Rome: IFAD.
4. Federal Ministry of Food and Agriculture of Germany. (2020). Land Tenure and Environmental Standards in Agriculture. Berlin.
5. Ministry of Agriculture and Food of France. (2019). Agro-services and Farmer Advisory Systems. Paris.
6. USDA. (2020). Farm Bill and Land Resource Management Programs. Washington, DC.
7. Agriculture and Agri-Food Canada. (2021). Digital Land Monitoring and Agro-clusters. Ottawa.

8. MAFF Japan. (2020). Smart Farming and Intensive Agriculture Development. Tokyo.
9. Ministry of Agriculture and Forestry of Turkey; Ministry of Agriculture and Rural Affairs of China. (2021). Agro-cooperation and Digital Farming Practices. Ankara - Beijing
10. Karimov, R. (2022). Problems of land resource use in peasant farms in Uzbekistan. Agroeconomics, 4(2), 44–51.

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