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Article

Scientific and Methodological Approaches to Improving The Economic Efficiency of The Holticultural Sector

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Abstract: The importance of this article is rounded analysis of the formation system at social services sphere of Uzbekistan and its connections with key macroeconomic indicators. Design/methodology/approachThe goal of the study is to determine the utility relationship between social service output and GDP, public spending, employment rate, inflation and demographic factors. Methods: The research implements a systematic approach, statistical dynamics, comparative analysis, and correlation methods. The results show that social services, economic growth and government spending were positively related. Development financing of education and healthcare greases the wheels of human capital accumulation and macroeconomic stability. Simultaneously, inflation rates and changes in the job market can impact the value of social service delivery as well. The article's scientific contribution is the establishment of an integrated analytical framework that elucidates the transmission mechanism through which investment in social sectors modulates macroeconomic performance. We argue that this highlighted the role that the efficiency of social services plays as an important condition for inclusive and sustainable economic growth, a finding called out early on in the study.

Keywords: Gross Revenue, Intensive Horticulture, Farms, Productivity, Agriculture

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1. Introduction

In the Republic of Uzbekistan, large-scale reforms have been implemented in the conditions of economic liberalization, particularly in the fields of horticulture and viticulture. These reforms are aimed at increasing agricultural productivity, improving food security, and strengthening the country's export potential [1].

The Republic of Uzbekistan has accumulated many years of experience in the cultivation, storage, and marketing of horticultural products. Horticultural products have a stable market that has developed over centuries due to favorable natural and climatic conditions, convenient geographical location, the availability of storage and transportation infrastructure, a rich genetic pool of plants, and the high quality and taste of fruits, including their high sugar and vitamin content [2].

In recent years, horticultural products grown in the country have increasingly gained their own segment in international markets. At the same time, new organizational and economic relations are being introduced in agricultural production, along with new fruit varieties and modern agricultural technologies [3]. These developments positively affect the lifestyle of rural populations and increase the efficiency of agricultural production.

Today, horticulture is one of the most important sectors in the republic in meeting the population's demand for high-quality and safe food products. Compared to traditional horticulture, intensive horticulture requires significant initial investment and advanced technical equipment. However, it allows higher productivity and improved efficiency of land use [4].

The diversity of natural and climatic conditions in the country, as well as differences in the availability of natural resources across regions, create favorable conditions for the development of horticulture. These differences can also be observed in the distribution of orchard areas across regions [2].

As of 2025, the total area of orchards in Uzbekistan amounted to 348.9 thousand hectares, which represents an increase of about 24% over the past five years.

Currently, an average of about 70% of existing orchards are in the harvesting stage, which indicates the active use of new agrotechnologies and improved fruit varieties in the horticultural sector.

In particular, if we analyze the situation by region, some regions have the largest areas of orchard land, while others have significantly smaller areas. Natural and climatic conditions are one of the key factors determining the development of horticulture in different regions. Interest in horticulture is especially growing in regions with cooler climates and relatively low precipitation during the spring season.

This development is also influenced by the increasing attention paid to horticulture not only by farmers and agricultural enterprises but also by individual households. Both new varieties and traditional cultivation methods are being used.

In particular, in 2021, 51.2% of the total orchards were established by farms, while 25.5% were established by peasant farms. By 2025, these figures increased to 58.4% and 28.9%, respectively. This indicates a gradual increase in the role of agricultural enterprises in horticultural production.

Significant results are being achieved in the country as a result of organizational and economic reforms aimed at intensifying horticulture, expanding cultivated areas, and creating new varieties [1]. Special attention is also being paid to the renewal and reconstruction of old orchards.

2. Material and Methods

This study is based on statistical analysis and comparative evaluation of horticultural development indicators in Uzbekistan for the period **2021–2025**.

The research uses official statistical data on the total area of orchards, harvested areas, and the distribution of horticultural production among different types of farms. The methods applied in the research include statistical analysis, comparative analysis, and evaluation of agricultural development indicators [3], [4].

3. Results and Discussion

Dynamics of Changes in the Total Orchard Area

Table 1. Dynamics of changes in the total area of orchards in the Republic of Uzbekistan in 2021–2025

Indicators		Years				
		2021	**2022**	**2023**	**2024**	**2025**
Total garden area, thousand hectares		336,6	336,6	344,2	348,9	348,9
The area of orchards that have been harvested from this	*Total, thousand*	232,2	232,2	242,5	256,2	257,2
	Share, in percent	69,0	69,0	70,4	73,4	73,7

By farm	Fermer xo'jalik-lari (farmer enterprises)	*Share, in percent*	172,4	172,4	180,4	189,4	192,4
		Share, in percent	51,2	51,2	55,0	57,2	58,4
		Of this, a thousand hectares were harvested.	128,6	128,6	131,8	133,6	138,6
	Dehqon xo'jalik-lari (peasant farm)	*Share, in percent*	85,8	85,4	86,9	88,2	88,7
		Share, in percent	25,5	25,4	26,3	28,5	28,9
		Of this, a thousand hectares were harvested.	82,9	82,9	85,3	87,5	88,9
	Agricultural enterprises	*Share, in percent*	78,4	78,4	80,6	82,4	82,9
		Share, in percent	23,3	23,3	31,5	33,4	34,9
		Of this, a thousand hectares were harvested.	20,7	20,7	28,7	29,9	30,2

The development of horticulture has significant economic importance for the agricultural sector. High initial investment per hectare and the need for modern technical equipment require strong state support for business entities engaged in horticultural production.

The development of horticulture contributes to the introduction of modern technologies in agriculture and improves the level of technical equipment used in agricultural production. As a result, the efficiency of using agricultural land resources increases significantly due to the production of larger quantities of marketable agricultural products per unit of land.

In addition, the development of horticulture increases the income of rural families, particularly in mountainous and foothill areas where traditional agriculture often provides lower economic returns. The expansion of horticulture also creates new employment opportunities in rural areas and contributes to the growth of export-oriented industries [5].

However, the horticultural sector has specific risks compared to other agricultural sectors. One of the main risks is the damage caused by early spring frosts during the flowering period of fruit trees. If crops are damaged during this period, they cannot be restored within the same year. As a result, orchards may not generate economic returns while still requiring maintenance costs.

In contrast, in other types of crops, damaged areas can often be replanted during the same season. Fruit orchards, however, require farmers to wait until the next year for recovery.

Therefore, it is recommended to introduce a system for compensating crop losses caused by natural disasters in the horticultural sector. This is particularly important because existing agro-insurance systems are often insufficient to cover such risks [6].

To support horticultural development, several mechanisms are proposed [7].

The first direction is economic support for horticultural entities that produce high-quality and marketable products in intensive orchards [8].

The second direction involves compensation based on the adoption of modern technologies. Farms that implement water- and energy-saving equipment and digital agrotechnical methods may receive compensation for losses [9]. If such technologies are implemented on at least 60% of the orchard area, farms may receive 60% compensation. If

implemented on more than 80% of the area, full compensation (100%) may be provided [10].

The third direction involves incentives based on value-added creation in horticultural farms. This includes activities such as fruit storage, packaging, processing, and independent marketing systems [11].

If the value added in the farm is not less than 20% of the value of the harvested fruits, 60% of losses caused by natural disasters may be compensated. If the value added exceeds 50%, full compensation (100%) may be provided [12].

The proposed sources of financing for this compensation system include:

1. The State Fund for Support of the Development of Entrepreneurship under the Cabinet of Ministers of the Republic of Uzbekistan
2. The Fund for the Development of Horticulture and Greenhouse Farming

These measures are aimed at protecting business entities from losses that are not covered by the agro-insurance system [13], [14], [15].

4. Conclusion

The development of horticulture in Uzbekistan plays a crucial role in improving agricultural productivity, increasing rural incomes, and strengthening the country's food security. The analysis shows that the total orchard area and the share of productive orchards have increased in recent years due to the introduction of modern agricultural technologies and improved management practices.

At the same time, the horticultural sector remains vulnerable to natural risks, particularly frost damage during the flowering period. Therefore, the introduction of effective compensation mechanisms for losses caused by natural disasters is essential for ensuring the stability and sustainability of horticultural production.

The implementation of targeted state support policies, including incentives for technological modernization, export-oriented production, and value-added processing, will significantly increase the economic efficiency and long-term development of the horticultural sector.

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