ISSN: 2775-5118 VOL.4 NO.2 (2025) I.F. 9.1

ECONOMIC-STATISTICAL ANALYSIS OF THE DEVELOPMENT OF THE AGRICULTURAL SECTOR

Zakirova Umida Maxamadaminovna

PhD, associate professor, Tashkent State University of Economics

, Tashkent, Uzbekistan

Abstract. *This article provides a comprehensive factor analysis of the development of the agricultural sector in Uzbekistan and the degree of influence of factors influencing its development using statistical methods. The influence of enterprises and organizations operating in the network, in particular household farms, on the development of the network is shown. The impact of the agricultural sector on macroeconomic indicators is also described in detail.*

Key words*: Macroeconomics, agriculture, GDP, peasant and household farms, organizations engaged in agricultural activities, farms, methods of economic and statistical analysis, statistical grouping, analysis and synthesis, correlation and regression analysis.*

1.Introduction

In the context of intensifying global competition in the world, the importance of the processing industry and the agricultural sector, which meets the needs of the population for agricultural raw materials and food products, is increasing. According to statistics, “today, world agriculture provides employment for more than 1 billion of the economically active population, and this sector accounts for about 5 percent of the total world production. Forecast data show that by 2050, the world population may reach 9.1 billion people. In this case, the demand for meat and dairy products of the world population is expected to increase by 2.5-3.0 times compared to the present”[1].

In the field of socio-economic processes, the study of the specific sectoral characteristics of regions and the specific aspects of their development increases the accuracy of the structural analysis of the entire region. Although the share of the agricultural sector in the structural structure of our country's economy has so far occupied a significant share among the main sectors and industries, as a result of the structural changes being implemented, the share is decreasing, while the volume of agricultural products created is increasing. The main reason for such changes can

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be indicated by the rapid development of industry, services and other sectors in the national and regional sectors of the economy[2].

The emergence of instability in the world economy requires special attention to the study of problems related to food security and the conduct of expanded scientific research in this area. In these studies, the development of a strategy for the economic development of the agricultural sector, ensuring the proportionality of the growth of the population and its demands with the increase in the volume of agricultural production, sustainable development of the agricultural sector, specialization of production processes, increasing the level of economic efficiency of economic entities through the use of modern innovative technologies and methods, comprehensive statistical research of factors affecting their activities, ensuring their competitiveness are the priority areas of scientific research in this area.

In Uzbekistan, the agricultural sector serves to meet the population's demand for food and agricultural products, as well as to increase the country's export potential, and over the past years, special attention has been paid to the issues of stimulating and developing the activities of farms specializing in the sector. In particular, the Development Strategy of New Uzbekistan for 2022-2026 sets out such priority tasks as "... one of the most priority tasks to be implemented within the framework of the development strategy is to radically increase the efficiency of agriculture in the development of the national economy and its diversification, that is, to develop the agricultural sector, process agricultural products on a cluster basis and ensure food security, improve the standard and quality of life of the population living in rural areas, create the necessary conditions for doubling the income of farmers and peasants, and increase the annual growth rate of agriculture to at least 5 percent"[3]. Effective implementation of these tasks requires the development of sound scientific proposals and recommendations for conducting an economic and statistical analysis of structural changes in farms in the agricultural sector, assessing the factors affecting their economic development processes based on econometric models, and forecasting their medium-term prospects.

Agricultural development is one of the most powerful tools for ending extreme poverty, improving overall well-being, and feeding a projected population of approximately 9.7 billion by 2050. Agriculture is also crucial for economic growth: it accounts for 4% of global gross domestic product (GDP), and in some developing countries, this figure exceeds 25%[4].

International statistics show that over the past 20 years, the average annual growth rate of the world's population's demand for agricultural products has been 5-7 percent.[5] Sustainable development of the sector, making extensive use of the experiences of the European Union, the

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United States, Japan, and Israel in overcoming the problems facing agriculture today, such as climate change, water scarcity, restrictions on international markets, labor shortages, land degradation,

pests and diseases, and food waste (product waste), will create a basis for ensuring the well-being of the population, along with the economic development of our country.

Along with climate change as a global problem, the issue of providing the population of countries with sustainable quality food products in the context of a pandemic has proven that the development of the agricultural sector of each country is a necessity, and this requires special attention to studying the problems related to food security that have arisen in the world, as well as conducting expanded scientific research in this regard.

Currently, research is being carried out in the world to ensure the sustainable development of farm production activities in the context of limited land and water resources, to fully and effectively use the potential of economic resources. In this regard, research is being carried out on ensuring the uninterrupted supply of raw materials to industrial sectors, attracting labor to other sectors by optimizing employment in agriculture, further improving the standard of living and well-being of the population by increasing the volume of industry production, and creating a new generation of econometric models for the development of farm economic activities in the context of global changes.[6]

Agriculture, despite being a sector with low economic efficiency, is an extremely important sector in economic and social terms. Therefore, the definition of the tasks of "...radically increasing the efficiency of agriculture and diversifying it, that is, developing the agricultural sector, processing agricultural products on a cluster basis and ensuring food security, improving the standard of living and quality of life of the population living in rural areas, creating the necessary conditions for doubling the income of farmers and peasants, and increasing the annual growth rate of agriculture to at least 5 percent"[3] in the Development Strategy of New Uzbekistan for 2022-2026 indicates that the agricultural sector is extremely important for the sustainable development of our country in the coming periods.

Today, farms form the basis of the agricultural sector in our country. A farm is a business entity engaged in the production of agricultural products using leased land plots and other types of activities not prohibited by law[7].

The socio-economic content and mode of operation of a farm vary in different countries and are determined by factors such as the level of development and characteristics of agricultural

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The Decree of the President of the Republic of Uzbekistan "On Approval of the Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030" provides for ensuring food safety and improving consumer diets in our country, developing and implementing a state food safety policy that provides for the production of food products in the required amount, developing a quality control infrastructure, encouraging exports, increasing competitiveness in target international markets, increasing labor productivity in farms, and improving product quality[8].

In order to ensure food security of the population, create a favorable agribusiness environment and value added chain, reduce state participation in agricultural management and increase investment attractiveness, ensure rational use of natural resources and environmental protection, develop a system of science, education, information and advisory services in agriculture, develop a transparent system of sectoral statistics, and due to the lack of a long-term strategy for the development of agriculture, the "Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030" was developed. In our country, farms, dehkan (private

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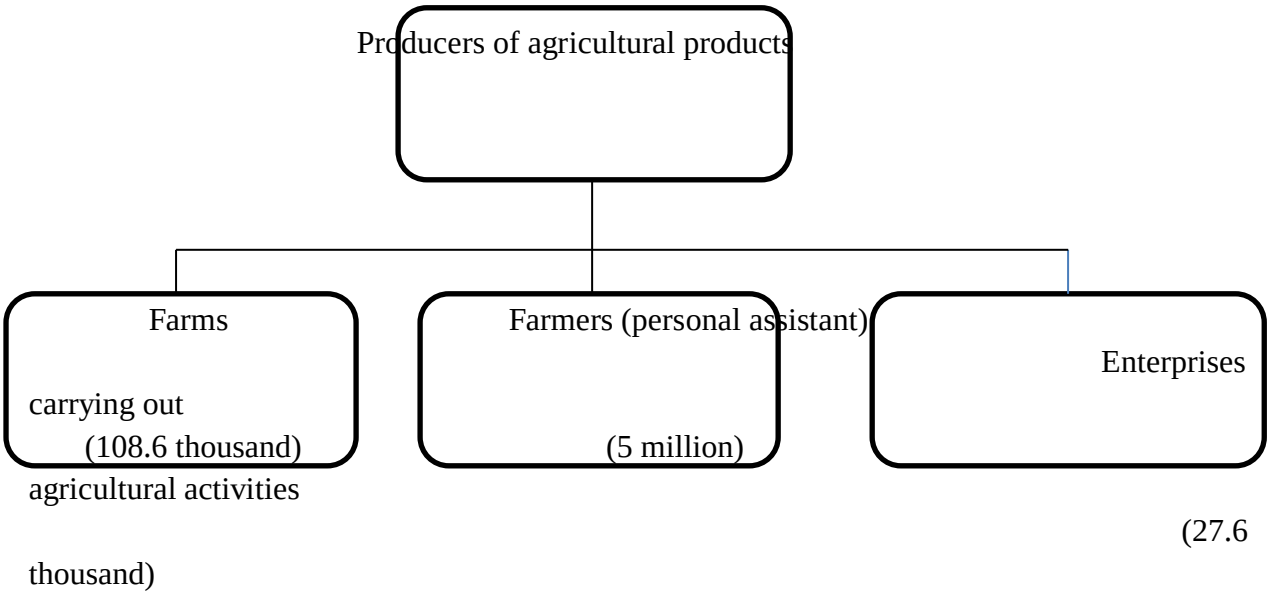
subsidiary) farms, and enterprises engaged in agricultural activities operate in the agricultural sector (Figure 1).



A farm is an independent economic entity engaged in the production of agricultural goods using leased land plots. The head of a farm is the founder of this farm - a farmer. A citizen of the Republic of Uzbekistan who has reached the age of eighteen and has the appropriate qualifications or work experience in agriculture may be a farmer. In relations with other legal entities and individuals, the head of the farm acts on behalf of the farm. The transfer of the rights and obligations of the head of the farm to another person is prohibited, except for cases provided for by law. A farm is organized on lands intended for agriculture and on reserve lands. In our country, various financial incentives are being created to support the movement of farmers and provide them with broad opportunities to increase the efficiency of their activities, and regulatory legal acts are being adopted to guarantee the safety of their activities. In particular, commercial banks were assigned the right to allocate long-term preferential loans and provide leasing services for the development of farms at an interest rate not exceeding the refinancing rate of the Central Bank of the Republic of Uzbekistan in the following areas in accordance with the established procedure:

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to purchase modern resource-saving agrotechnologies, advanced technologies for growing agricultural crops and agricultural machinery;

to purchase technological equipment for the preparation, storage, processing of agricultural products, as well as for the provision of service;

to form start-up capital in order to organize multidisciplinary activities on farms;

to purchase agricultural products for subsequent processing;

farms may combine their financial and other resources to establish cooperatives engaged in the preparation, storage, transportation, processing and sale of agricultural products;

Instructions were given that cooperatives established by farms should carry out their activities on the basis of the charter approved by the founders, having received the status of a legal entity.

In the context of market adaptation of farms, it is important to identify development factors and the natural climatic conditions of the regions in which they are located. Taking this into account, we divide the factors affecting the development of farms into three groups. Namely: the first group is macroeconomic factors; the second group is territorial (regional) factors, and the third is internal economic factors.

2.Literature review

The research conducted shows that in the scientific research of Jean Mathis Schurbach, the role of the agricultural sector in macroeconomic indicators (gross domestic product, gross value added), food security issues, economic development of agricultural sector farms in exchange for attracting investments in agriculture (including foreign direct investment), cooperation issues in farm activities, and through them, the opportunities, advantages and possible disadvantages of farms were studied on the basis of statistical models and relevant scientific conclusions were drawn.

The scientific research of Chanposuk Tantaphon[9] focused on the systematic statistical analysis of farms, their evolutionary development, monitoring of farm activities, and technical progress.

In the scientific research of Susan Shiona[10], the statistical description and specific aspects of farms, main economic indicators and technical efficiency indicators were statistically studied.

The issues of systematizing mathematical statistical methods in economic research were dealt with by local scientists T.Sh. Shodiev[11] and others. In the works of D.S. Ashurova, the main attention is paid to the issues of assessing and forecasting the agricultural sector and its sectors based on econometric models. Also, in her scientific work, the complex economic relations

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in agrarian economic processes were statistically analyzed, the possibility of determining the probability at specific levels, and the implementation of forecasting and planning the level of agricultural development for the future through a system of specific indicators were studied[12].

Also, the scientific research work of local economists E.I. Ergashev[13] covers the directions of development of the agricultural sector, in particular, horticulture and viticulture, the factors influencing them, and the issues of financial and economic support of the sector, while the scientific research work of U.S. Muhitdinova[14] covers the development of the market for fruit, vegetables and grape products, the formation of agroclusters, and the improvement of the marketing system. The scientific research work of I.K. Jumayev[15] covers the theoretical and methodological foundations of studying the main trends in the development of farms in our country based on the marginal concept, econometric modeling, forecasting, and scientific proposals aimed at ensuring their future innovative and sustainable development, rational use of various resources, and increasing economic efficiency.

In the scientific research work of T.Y. Dadabayev[16], issues of improving the organizational and economic aspects of specialized farms were studied.

3.Methodology

In the process of conducting a study on the statistical analysis of the impact of agricultural enterprises on the sustainable development of the economy and the adaptation of statistical data to international standards, various statistical analysis methods were widely used, such as statistical tables and graphs, induction and deduction, statistical grouping, expert assessment, scientific abstraction, analysis and synthesis, dynamic series and economic indices.

The object of our research work is to provide a statistical assessment of the level of impact of agricultural enterprises on the macroeconomic indicators of our country, a system of aggregate statistical indicators expressing the effectiveness of their activities, and the main directions of their adaptation to international standards. The purpose of the study is to develop scientific proposals for the analysis of the impact of the agricultural sector of Uzbekistan on the national economy using statistical methods.

4.Analysis and results

The structural indicators of the GDP of the Republic of Uzbekistan were analyzed based on the data in the following table. This study examines the indicators of such sectors as agriculture,

construction, mining, manufacturing, information and communications, financial activities, and transportation and storage for 2019-2023 (Table 1).

Table-1

Main components of the GDP of the Republic of Uzbekistan, in billion soums

GDP key indicators	2019	2020	2021	2022	2023
Agriculture	129885,0	150494,0	181788,0	208809,0	245223,0
Previous. year vs., %	-	115,9	120,8	114,9	117,4
Construction	45202,0	51927,4	63608,5	73209,4	84944,3
Previous. year vs., %	-	114,9	122,5	115,1	116,0
Mining industry	30865,6	22161,9	28649,4	33396,2	34975,8
Previous. year vs., %	-	71,8	129,3	116,6	104,7
Manufacturing industry	104350,0	127781,0	159764,0	189872,0	225024,0
Previous. year vs., %	-	122,5	125,0	118,8	118,5
Information and communication	8033,0	10110,3	13020,4	17955,9	23552,7
Previous. year vs., %	-	125,9	128,8	137,9	131,2
Financial activity	13860,9	22011,1	20157,4	33778,0	44111,1
Previous. year vs., %	-	158,8	91,6	167,6	130,6
Transportation and storage	32103,6	31088,0	39045,3	47055,1	60551,2

The table above shows that the agricultural sector has been growing steadily over the years. From 129,885.0.0 billion soums in 2019 to 245,223.0 billion soums in 2023, which is a significant increase.

The manufacturing industry is growing steadily, from 104,350.0 billion soums in 2019 to 225,024.0 billion soums in 2023. The information and communication sector is showing the most dynamic growth. It has increased from 8,033.0 billion soums in 2019 to 235,527.0 billion soums in 2023, the development of this sector is associated with technological progress.

In a competitive environment, the quality of products produced increases its competitiveness in the market. The quality of agricultural products is determined by indicators corresponding to their types.

The volume of agricultural products has increased positively over the years by region (Table 2).

Table-2

Volume of agricultural production by region, billion soums

№	Regions	2019	2020	2021	2022	2023	in 2023 compared to 2019. change %
1	Uzbekistan Res.	216283,1	250250,6	303415,5	345191,7	405418,0	187,4

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2	Karakalpakstan Res.	8208,1	9751,6	11511,8	13348,2	15212,1	185,3
3	Andijan	23686,7	26096,1	30413,0	35587,4	41035,7	173,2
4	Bukhara	19182,1	23876,0	28529,3	32867,5	37174,5	193,8
5	Jizzakh	13720,1	16352,8	20471,1	23239,2	26730,0	194,8
6	Kashkadarya	19933,9	23777,8	28275,6	32240,7	38462,6	193,0
7	Navoi	9467,8	11309,7	14547,2	15151,7	18318,9	193,5
8	Namangan	15509,0	17913,1	21596,1	25157,7	30015,6	193,5
9	Samarkand	28379,5	32158,0	38549,7	40428,1	49025,9	172,8
10	Surkhandarya	17844,1	19424,0	23415,5	26755,7	32849,3	184,1
11	Syrdarya	7401,5	8002,0	9755,0	11523,3	13241,2	178,9
12	Tashkent vil.	20417,1	23875,1	29538,3	33010,7	38779,8	189,9
13	Fergana	18532,2	21455,5	27501,2	32737,0	38326,0	206,8
14	Khorezm	14001,0	16258,9	19311,7	23144,5	26246,4	187,5

From the data in the table above, the highest volume of agricultural production fell on the share of Samarkand (49,025.9 billion soums), Andijan (41,035.7 billion soums) and Tashkent (38,779.8 billion soums) regions.

The volume of agricultural production in our country has maintained a constant growth trend for years (Figure 3).

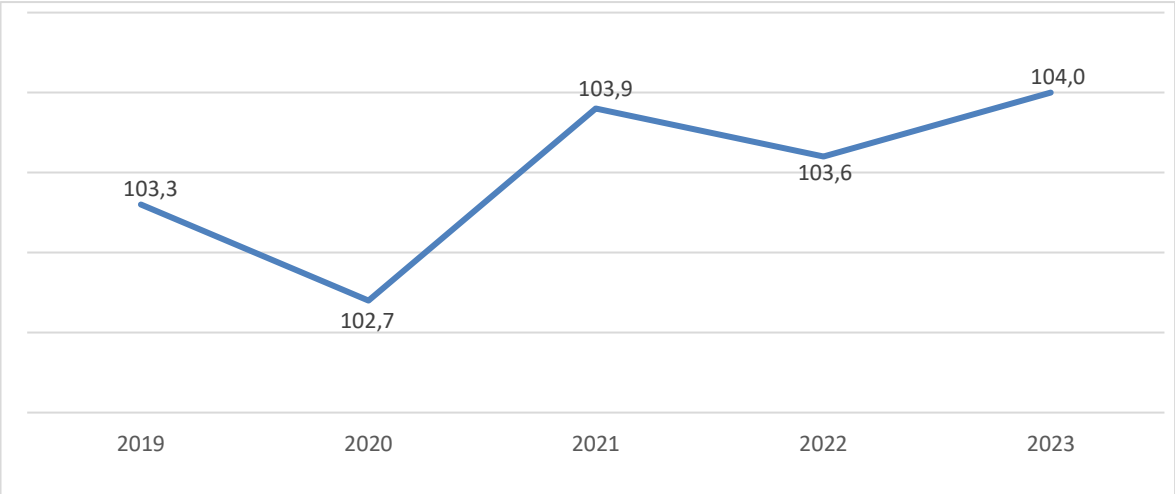

Fig.1. Change in agricultural production in Uzbekistan, compared to the previous year, %

The figure above shows the change in the volume of agricultural production in Uzbekistan from 2019 to 2023 compared to the previous year.

An increase of 103.3% was observed in 2019, 102.7% in 2020, 103% in 2021 and 2022, and 104.0% in 2023.

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The share of farms operating in this sector is also important for the development of the agricultural sector. We analyze the share of dehkan and household farms, organizations carrying out agricultural activities, and farms in the total volume of agricultural products (Figure 4).

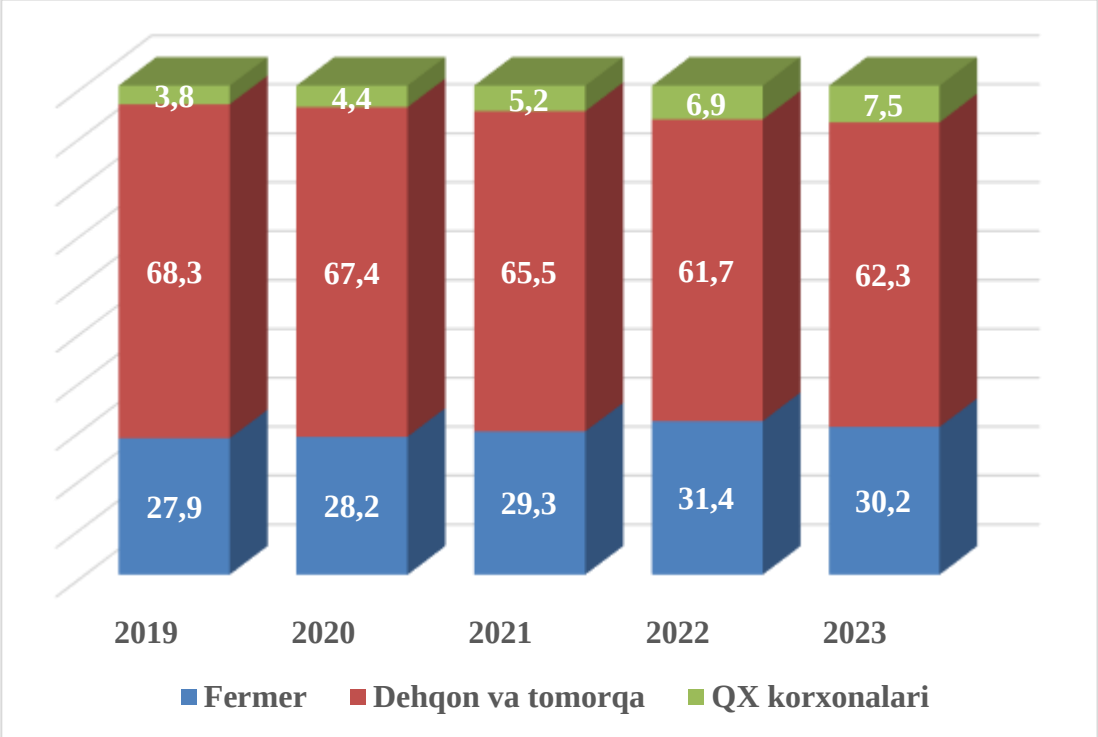

Fig.2. Share of farms engaged in agriculture, %.

From the data presented in the figure above, we can see that during the years under analysis, peasant and household farms had the main share in the total volume of agricultural products, while organizations carrying out agricultural activities had the lowest share, and farms had an average share. When analyzing (annual) changes in the total volume of agricultural, forestry and fishery products (services), it is necessary, first of all, to pay attention to the absolute and relative changes occurring in it (Table 3).

Table-3

Total volume of agricultural, forestry and fishery products (services) (annual), billion soums

Yillar	Mahsulot hajmi	Mutloq o'zgarish		Nisbiy o'zgarish	
		Zanjirli	Bazisli	Zanjirli	Bazisli
2010	32746,5	-	-	-	-
2011	48068,3	15321,8	15321,8	146,8	146,8
2012	58549,3	10481	25802,8	121,8	178,8
2013	69391,3	10842	36644,8	118,5	211,9
2014	85101,7	15710,4	52355,2	122,6	259,9
2015	103302	18200,3	70555,5	121,4	315,5

2016	119726,7	16424,7	86980,2	115,9	365,6
2017	154369,4	34642,7	121622,9	128,9	471,4
2018	195095,6	40726,2	162349,1	126,4	595,8
2019	224265,9	29170,3	191519,4	115,0	684,9
2020	261892,2	37626,3	229145,7	116,8	799,8
2021	317027,6	55135,4	284281,1	121,1	968,1
2022	362898	45870,4	330151,5	114,5	1108,2
2023	426030,2	63132,2	393283,7	117,4	1301,0

From the table above, the relative changes in 2010-2023, when calculated using the chain method, reflect constant stable indicators. In this case, we believe that it is necessary to use in-kind indicators to objectively assess the changes taking place in agriculture.

The growth rate (annual) of the volume of livestock products produced by farms, dehkan and household farms operating in the agricultural sector, as well as organizations carrying out agricultural activities, is presented in the figure below (Figure 5).

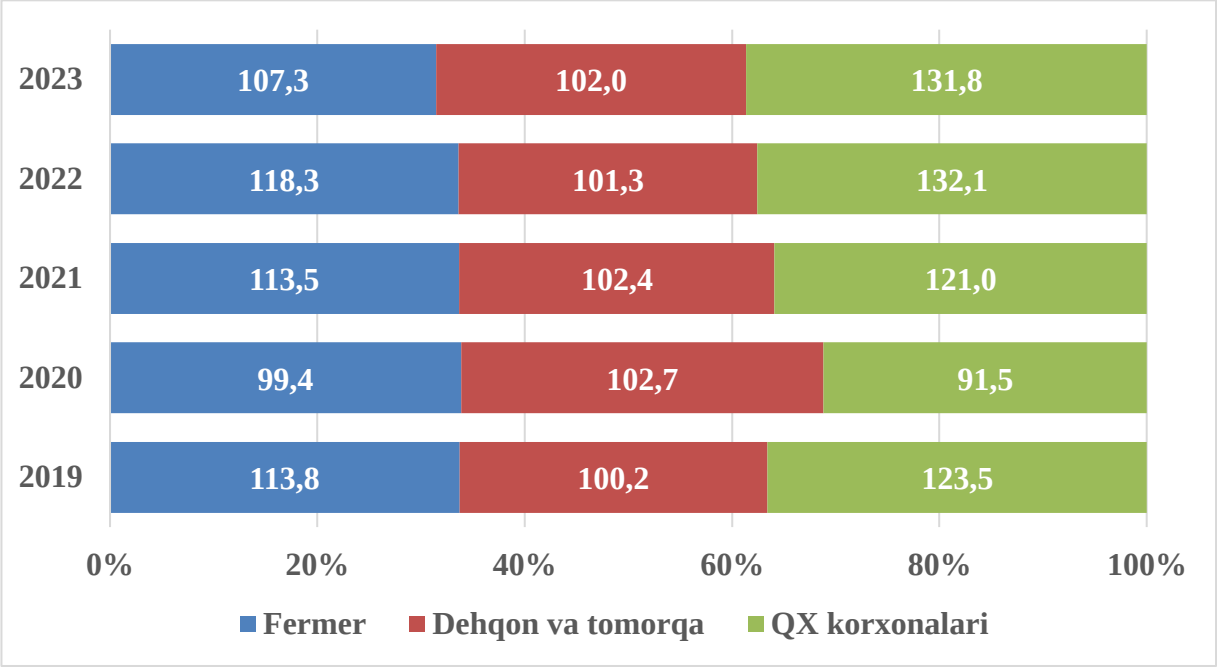

Fig.3. Growth rate of livestock products produced in the agricultural sector (annual), %

In the figure above, the volume of livestock products produced in the agricultural sector in 2019 and 2023 increased by 113.8% and 107.3% in farms, 100.2% and 102.0% in dehkan and household farms, and 123.5% and 131.8% in organizations carrying out agricultural activities. It is noteworthy that although there was a high growth rate in organizations carrying out agricultural activities and farms, in 2020 it was 99.4% and 91.5%, respectively, compared to the previous year.

5.Conclusions

In conclusion, the innovative development of the agricultural sector should become a strategic priority for Uzbekistan, since our country has all the conditions for taking a leading position in the production of quality food products. The concept of managing the innovative development of the agricultural sector of Uzbekistan takes into account the multifunctional importance of this sector and is based on the existing opportunities for achieving synergistic effects due to systematic inter-sectoral relationships. Currently, it is important to eliminate factors that negatively affect the sustainable development of agriculture, further strengthen state support for farming, create conditions aimed at ensuring its transformation into a leading force in society, and find optimal solutions to issues aimed at further increasing farmers' incomes through diversification of production. For the successful formation and development of farms in Uzbekistan, it is necessary to raise the development of the cooperative movement in the countryside to such a level that it covers not only production, but also the processing and sale of products.

References:

1. http://www.uz.undp.org/content/dam/uzbekistan/docs/Publications/economicgovernance/Improving_Productive_and_Export_Potential/un_uzb_Improving_Productive_%20and_Export%20Potential.pdf

2. 2. Akhmedova M. Sh. Main statistical indicators of the effective activity of farms and their analysis. International scientific and practical conference on the topic "Reforms in the theory and practice of statistics in the new Uzbekistan: problems and solutions". (E)ISSN: 2181-1784 3(24), Dec., 2023.www.oriens.uz

3. Chanphasouk Tanthaphone “An impact assessment of farmers’ acceptability 0f farming systems research activities in Namo district, udomxay province, Lao PDR.” A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science Agricultural Systems and engineering. Asian Institute of Technology School of Environment Resources and Development Bangkok, Thailand, December, 2007

4. Susan Chiona, BSc “Technical and allocative efficiency of smallholder maize farmers in Zambia” A thesis submitted to the University of Zambia in partial fulfillment of the requirements of the degree of Master of Science in Agricultural Economics, The University of Zambia Lusaka, 2011. – p.64.

5. Шодиев Т.и др. Эконометрика: Учеб. пособие для студентов экономических вузов.- Т.Шарқ 1999, - 240 с.

ISSN: 2775-5118 VOL.4 NO.2 (2025) I.F. 9.1

6. Ashurova D.S. Econometric analysis of the preparation and distribution of fruit and vegetable products in conditions of market competition (on the example of collective farms for production and production). Dissertation for the degree of Doctor of Economic Sciences - T.: 2001. - P. 60.

7. Ergashev E.I. Main directions of development of the horticultural and viticultural sector in the conditions of economic liberalization. Dissertation for the degree of Doctor of Economic Sciences - T.: 2009. - p. 22.

8. Mukhitdinova U.S. Directions of development of the market of fruit and vegetable products in the conditions of economic modernization. - T.: 2010. - p. 36.