REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philopsophy

IMPROVEMENT OF STATE REGULATION IN AGRICULTURE OF THE REPUBLIC OF AZERBAIJAN

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GENERAL DESCRIPTION OF RESEARCH

Relevance and study level of the topic. The relevance of the research topic can be associated with the following factors related to the characteristics of the country's agricultural sector and the strategic importance of this sector for the sustainable development of the national economy:

The development of agriculture, which acts as the most important sector of the economy in terms of solving the problem of food security at the global and local levels, is in the focus of attention of every state. Agriculture is also an important component of the Azerbaijani economy. In addition to providing employment for a large part of the population, the sector also makes a significant contribution to the country's food security. For the current period, the issues of providing the country's population with necessary and safe food products and increasing the level of self-sufficiency with these products are among the particularly urgent problems of state regulation.

Secondly, climate change, which has been intensifying in recent times, significantly affects the state of the agricultural sector. This requires the development of new approaches to state regulation aimed at ensuring the resilience of agriculture to natural disasters and adverse weather conditions. In this regard, issues such as supporting farmers during droughts, floods and other natural disasters, as well as promoting the use of environmentally friendly technologies and sustainable agricultural practices, are considered to be urgent problems of state regulation for the current period.

Thirdly, Azerbaijan's accession to various international and regional organizations and the development of economic relations with countries require the adaptation of local agricultural production to international product quality and safety standards. In this context, one of the current trends is to increase the export potential of agricultural products and improve state regulatory mechanisms related to strengthening Azerbaijan's position in world markets.

Finally, the increasingly acute competitive environment requires agriculture to adopt innovative approaches, including digitalization and

the application of modern technologies. In this regard, the creation of favorable conditions for the application of digital solutions and innovations by farmers in the current period is one of the most urgent issues of state regulation in the field of agriculture.

Thus, for the current period, the improvement of state regulation in agriculture in Azerbaijan acts as an important factor in terms of the sustainable socio-economic development of the country, which determines the relevance of the research topic.

The current level of development of the topic "Improvement of state regulation in agriculture of the Republic of Azerbaijan" reflects the interest of scientists and specialists in the agricultural sector and its regulation at both the national and international levels. In the works of many foreign scientists and economists, special attention is paid to various aspects of state regulation of agriculture, including issues such as ensuring food security, developing rural infrastructure, improving state support for this area, stimulating innovations, and sustainable agriculture. Among the scientists who have made particularly significant contributions to scientific research in this direction is J.H. Davis, M. E. Porter, J. K. Galbraith, J. M. Keynes, L. R. Klein, A. Marshall, A. C. Pigou, J. A. Schumpeter, P. A. Samuelson, R. M. Solow, M. Friedman, P.M. Lukichev, V.V. Sidorenko and others can be mentioned.

Scientific research on state regulation of agriculture in Azerbaijan is mainly focused on issues of increasing agricultural productivity, sustainable development and adaptation to changing economic conditions. In the research conducted by local economists, special attention is paid to the implementation of state programs aimed at supporting farms and developing rural areas and improving the legal aspects of regulation. Among local scientists who have made a great contribution to the study of these issues, we can mention Z.A. Samadzade, N.A. Javadov, H.A. Khalilov, F.P. Rahmanov, A.I. Mammadov, A.T. Ahmadov, A.H. Valiyev, H.B. Allahverdiyev, I.H. Aliyev, V.H. Abbasov, I.S. Garayev, S.V. Salahov, V.A. Gasimli, R.Z. Huseyn, Y.H. Hasanli and others.

Despite the serious interest in the research topic at both the local and global levels, there are certain gaps in the study of modern

mechanisms and strategies of state regulation of agriculture in the context of new economic and environmental challenges, which necessitates a more in-depth review of the research topic. In this regard, the analysis of issues such as determining priorities that can make the greatest contribution to development in the agricultural sector, ensuring international comparability, and integrating sustainable development principles into the process is relevant. On the other hand, issues such as adapting existing regulatory models applied in order to increase the effectiveness of state regulation to global climate change, as well as integrating them into digital development and international economic processes should also be kept in the spotlight.

The object of the research work is the system of state regulation of agriculture of the Republic of Azerbaijan. This includes the activities of state agencies, mechanisms, laws and programs aimed at developing the country's agricultural sector, supporting farmers, ensuring food security and sustainable growth in agricultural production. **The subject** of the research covers the processes and tools for improving state regulation in agriculture in Azerbaijan.

Goals and objectives of the research. The goal of the research work is to determine the directions for improving this regulation based on assessing the effectiveness of state regulation in the agricultural sector in Azerbaijan. The main tasks to achieve this goal are the following:

• to analyze existing theoretical approaches to state regulation in the agricultural sector, to review the experiences of individual countries in this area and international challenges;

• to examine existing methodologies for assessing the effectiveness of state regulation of the agricultural sector;

• to review the historical evolution of state regulation of agriculture in Azerbaijan, to study the current situation and to assess the effectiveness of regulation;

• to formulate specific proposals for improving state regulation of agriculture in the country based on the assessment conducted.

Research methods. The research work used the methods of analysis, generalization, analysis-synthesis, comparison, statistical

analysis and econometric evaluation of the theoretical foundations of state regulation in the agricultural sector. It should be noted that currently, a number of international organizations, such as the Food and Agriculture Organization of the United Nations (FAO) and the Organization for Economic Cooperation and Development (OECD), are conducting regular research on state regulation in the agricultural sector. In the dissertation work, a special approach was taken to assessing the effectiveness of state regulation in the agricultural sector. Initially, the scale of state regulation in the sector was determined using the OECD methodology, and then the relationship between the volume of total support provided to producers and the added value created in the agricultural sector was evaluated using econometric methods. In this way, the effectiveness of the total (both direct and indirect) support provided to farmers was determined.

The main provisions submitted for defense. The following provisions were defended in the research work:

• ***The need to improve the system of state regulation of agriculture in the Republic of Azerbaijan***. Taking into account modern challenges such as climate change, globalization of the economy and the need to introduce innovations, the existing state regulatory system requires updating and adaptation to ensure sustainable development of the agricultural sector.

• ***Increasing the effectiveness of state support mechanisms***. The development of agriculture largely depends on state support mechanisms, including subsidies, tax breaks and loans. Improving these mechanisms should be based on stimulating innovation, increasing productivity and sustainable development of agriculture.

• ***Developing value chains for agricultural production***. Agricultural processing in the country should be expanded and the production of products that create more added value per hectare or per animal should be encouraged.

• ***Implementation of sustainable agricultural practices.*** State regulation should facilitate the transition to environmentally friendly and sustainable farming methods, which should help mitigate the effects of climate change and increase the resilience of the agricultural

sector to natural disasters, while improving the quality of agricultural products.

Scientific novelty of the research. The main scientific innovations obtained in the research work are as follows:

1. Based on the analysis of the current situation and historical data in Azerbaijan, the main factors affecting the effectiveness of state regulation of agriculture were identified;

2. Based on the conducted research, the development priorities of state regulation in this field were determined, taking into account the strategic development goals of the agricultural sector in Azerbaijan;

3. The formation of an information and advisory system in order to increase the knowledge and skills of agricultural producers in the country regarding agro-technical norms and market activities was substantiated;

4. Based on the conducted analyses, the conditions for expanding the use the economies of scale in the agricultural sector in the country, increasing the competitiveness of local agricultural producers and the development of the agricultural sector in general, updating state regulation mechanisms in the field of establishing farmer cooperatives and applying the best practices of foreign countries were substantiated;

5. A grouping of approaches and methodologies used to assess state regulation of the agricultural sector at the international level, as well as existing state regulation tools in the agricultural sector in Azerbaijan, was carried out;

6. A synthesis of econometric evaluation and OECD methodology was carried out and the effectiveness of state support provided to the agricultural sector in the country was assessed;

7. The directions of improving the mechanisms of state regulation of the agricultural sector in Azerbaijan and expanding its efficiency were determined, and specific proposals were prepared in these directions.

Theoretical and practical significance of the study. Thanks to the synthesis of OECD and econometric methods in the study, it was possible to assess the effectiveness of the total support provided to agricultural producers. The assessment conducted on the basis of this methodology allowed comparing the support provided to agricultural

producers in the country with other countries and determining the position of Azerbaijan. As a result of the study, the advantages and disadvantages of state regulation in the agricultural sector in the country were identified. This allows us to determine the directions of improving the state regulation of the agricultural sector in the country.

The results obtained in the study can be used to determine the directions of state regulation of the economy in higher education institutions.

Approval and application. The main theoretical approach, results and proposals of the research work have been published in local and foreign journals, conference proceedings recommended by the Higher Attestation Committee, including 6 articles (one abroad) and 4 conference proceedings (one abroad).

Name of the organization where the dissertation was carried out. The dissertation work was carried out at the Agricultural Research Center under the Ministry of Agriculture.

Structure and volume of the dissertation. The dissertation consists of an introduction (13000 characters), three chapters (Chapter I 75278 characters, Chapter II 82763 characters, Chapter III 47593 characters), conclusion (18000 characters) and a list of used literature (140 titles), and the total volume is 160 pages. The work contains 22 tables, 10 graphs, 7 figures, 1 scheme and 1 appendix. The total text part of the dissertation is 234164 characters.

CONTENT

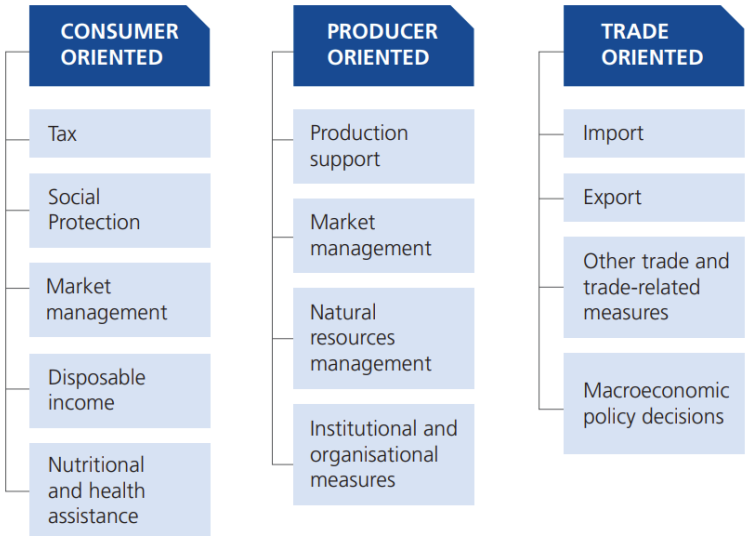
SUMMARY OF THE DISSERTATION

1. Theoretical foundations of state regulation of agriculture. J. Stigler defined economic regulation as the process of using government interventions by interested groups to obtain economic benefits[1]. A. Marshall recognized the necessity of state regulation to promote competition, prevent exploitation and ensure fairness. According to P.M. Lukichev, "*In the short term, state intervention in the economy is usually aimed at solving current problems, and in the long term, at consciously changing the "rules of the game" for firms and households.*" [2] Making a generalization, we can define state regulation of the economy as "a system of legislative, executive and control measures carried out by authorized state bodies and public organizations to stabilize the existing socio-economic system and adapt it to changing conditions." It has been established that state regulation of economic activity has a greater specific weight in developing countries than in developed countries. The main reason for this is that due to the underdevelopment of the market mechanism in developing countries, these countries are unable to effectively implement the necessary functions[3].

Agriculture is one of the sectors most regulated by the state. The need for this regulation can be justified by factors such as the fact that food prices increase at a slower rate than industrial prices (price disparity), and the sector is very sensitive to climate change and price risks. An analysis of the experiences of individual countries shows that state regulation of the agricultural sector is carried out mainly to ensure food security, support farmers and increase the rural livelyhood.

[1] Stigler, G.I. The Theory of Economic Regulation / George Stigler // The Bell Journal of Economics and Management Science, - 1971, vol. 2, No. 1. - p. 3-6.
[2] Лукичев, П.М. Государственное регулирование и его эффективность//Известия Санкт-Петербургского государственного аграрного университета. - 2015 № 38. - с.139-144.
[3] Stiglitz, J. Private uses of public interests: Incentives and institutions / Joseph Stiglitz // Journal of Economic Perspectives, - 1998, vol. 12, no. 2. - p. 3-22.

A detailed classification (FAPDA) covering relevant areas of state regulation in agriculture has been developed by FAO. A generalized scheme of this classification is presented in Scheme 1.



Scheme 1. FAPDA classification[4]

The FAPDA classification considers government regulation at the consumer, producer and trade levels. It should be noted that in most countries, regulatory measures aimed at producers have a larger share.

An analysis of the experiences of the United States, the European Union, Turkiye and China with state regulation in the agricultural sector has shown that these countries use subsidies, price supports, import/export controls and investments in rural infrastructure to protect farmers from market fluctuations and ensure the stability of the food supply. The policy instrument with the largest share in this area is direct support measures that distort the market the most[5]. In addition, due to global challenges such as climate change and resource depletion,

[4] Food and Agriculture Policy Classification, Food and Agriculture Policy Decision Analysis, FAPDA

[5] OECD iLibrary: [Electronic source]. - 23 October, 2022. URL: https://www.oecd-ilibrary.org/search/advancedsearch

sustainability issues are increasingly prioritized in agricultural policies worldwide.

After studying the world experience of state regulation in the agricultural sector, existing methodological approaches to assessing the effectiveness of this regulation were examined. It was determined that such methods can be divided into two groups:

- ***Descriptive assessment.*** This method itself can be divided into two parts: a) assessment of the relationships between individual indicators using mathematical and statistical analysis tools, b) determination of the scale of state support based on the differences between domestic market prices of products and world market prices (e.g. OECD methodology).

- ***Model-based assessment.*** This includes, in addition to simple econometric models, partial and general equilibrium models. Such models allow assessing complex relationships and dependencies between variables and obtaining more reliable results.

The research employed both descriptive and model-based assessments to evaluate the effectiveness of state regulation in the agricultural sector.

2. Study of the current state of state regulation in the agricultural sector in Azerbaijan. The historical development of state regulation of the agricultural sector in Azerbaijan was analyzed during the period of the Union of Soviet Socialist Republics (USSR) (1920-1990) and the period after independence (1991 to the present). It was determined that during the Soviet period, the agricultural sector was centrally managed, so the efficiency of using production factors was high. However, the fact that the country's agriculture mainly served the great Soviet structure, the distribution of economic relations on a regional basis rather than at the national level, as well as the improper specialization of regions by products, created obstacles to the development of agriculture.

We can conditionally divide the period after independence into three sub-periods. ***The period of agricultural liberalization*** (1991-2004) includes efforts to revive local agriculture and increase self-sufficiency against the backdrop of the severance of economic relations with the former Soviet republics, the loss of sales markets for raw cotton, wine,

silk, vegetables and other agricultural products, as well as the cessation of imports of a number of food products to the country. During this period, agricultural reforms implemented under the personal initiative and leadership of President Heydar Aliyev created the foundation for the development of the agricultural sector. ***The period of high oil revenues*** (2005-2014) is characterized by the investment of part of the revenues from oil sales for the development of the agricultural sector and, in return, the acceleration of intensification processes in the sector. ***The post-oil period*** (the period after 2015) is characterized by the decrease in the country's oil revenues as a result of the decline in world oil prices, the emergence of the need to diversify the country's economy and the identification of agriculture as one of the priority sectors. The most recent period can be characterized by the relevance of environmental issues, along with economic issues related to the development of the agricultural sector.

For the current period, the system of state regulation of agriculture in Azerbaijan can be conditionally divided into six main areas: (1) access to inputs, storage, transportation, processing and sale of agricultural products, (2) access to services related to the production of agricultural products, (3) scientific activities in the field of agriculture, (4) creation of an enabling environment in the domestic market, (5) international cooperation related to the development of the agricultural sector, (6) regulatory framework.

The primary focus of state regulation in the country's agricultural sector is the implementation of state support measures, given their significant direct impact on farmers' operations and their substantial share of budgetary allocations. The graph below (Graph 1) provides data on the volume of direct state support extended to farmers.

As can be seen from the chart, the agricultural sector in the country is actively supported and a sharp increase in the volume of support has been observed since 2015.

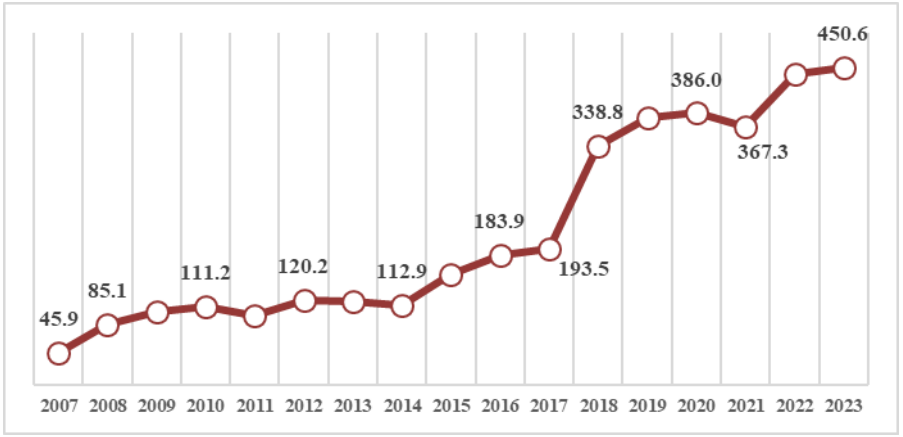


Chart 1. Amount of direct subsidies provided to agriculture in Azerbaijan during 2007-2023, million manats[6]

If we compare this support with the contribution of the agricultural sector to the Gross Domestic Product (GDP) (agricultural orientation index), we can calculate that this indicator for Azerbaijan in 2023 is 47%. This shows that less money is spent on the agricultural sector than its contribution to the economy. More precisely, although the sector is declared a priority area by the state, this is not reflected in budget expenditures. This may have a negative impact on ensuring food security, rural development and poverty reduction. It should be noted that despite the small share of the agricultural sector in GDP in Developed Countries, these countries support the sector more than its contribution. From this we can conclude that the agricultural sector is not only a subject of state regulation due to its economic development potential. Social, political and strategic aspects of regulation in the sector also have a significant share.

Analysis of the state regulation system in the agricultural sector in Azerbaijan has made it possible to determine the need for improvement in the following main areas:

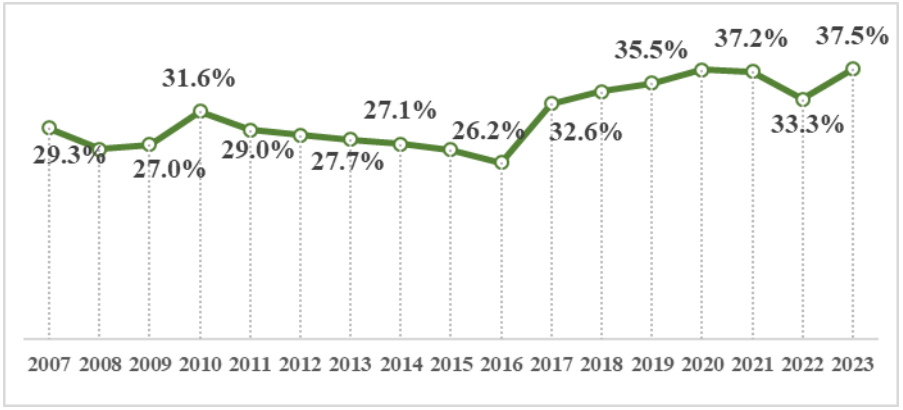
- The ratio of the value-added created in the processing of agricultural products to the value-added created in the production of

[6] Prepared by the author based on the EKTIS (Electronic Agricultural Information System) database.

primary agricultural products in the country for the current period is 0.25, which is a rather low indicator compared to the developing countries.

- The knowledge and skills of local farmers regarding agro-technical norms are not at an adequate level. This is directly reflected in the majority of small-sized, low-yielding and homogeneous family farms. Also, Azerbaijan lags behind many countries in terms of the productivity of agricultural crops. These differences are also observed in agricultural animals.
- The market infrastructure for the sale, storage and transportation of agricultural products in the country is not sufficiently developed.
- Poor organization of the stages after the production of agricultural products leads to low competitiveness of sector players.
- Small farmers often do not have the necessary resources to work directly with large suppliers and, as a result, they operate dependently on intermediaries. The same situation is observed with regard to the export of agricultural products. Here, too, specialized export intermediaries limit the high income opportunities of farmers by forming a supplier monopoly in the market.
- Most of Azerbaijan's agricultural products are exported to only one country (the Russian Federation). The European market is a more attractive market in terms of high import prices. It should be noted that some local products (hazelnut kernels, pomegranate juice, etc.) are exported from Azerbaijan to European countries, albeit in small volumes, and other sectors can also benefit from this experience.
- Although there are many tax incentives in the country related to the production, sale, import, export and processing of agricultural products, in some cases these incentives are not systematic throughout the value chains and lead to disruptions in the process.

In the research, the Producer Support Estimate (%PSE) indicator for 2007-2023 was estimated based on the OECD methodology (Figure 2).



Graph 2. Producer Support Estimate (%PSE) [7]

The fact that the %PSE indicator for 2023 is 37.5% indicates that 37.5% of the total income of farms in the country was formed due to producer support measures. Also, as can be seen from the graph, the share of support provided to producers in their income generally has an increasing trend.

According to the results of assessments conducted by the OECD, support for agricultural producers is higher in developing countries that are not very favorable for agricultural activities in terms of climate (Iceland, Norway, Japan, etc.), while in countries with large arable and pasture areas such as Australia, New Zealand, Argentina and Russia, this indicator is quite low[8]. Azerbaijan is among the countries with a high level support.

In the research, the linear regression relationship between the PSE indicator and the agricultural value-added was evaluated to assess the effectiveness of state regulation in agriculture. Note that the regression analysis covers the years 2007-2021. When data for 2022 and 2023 are added to the time series, the model is not adequate. In other words, we cannot reject the null hypothesis that there is no linear regression relationship between the variables during 2007-2023. It is understandable that such a situation occurs due to the short time series

[7] OECD metodologiyası əsasında müəllif tərəfindən hazırlanmışdır.
[8] OECD: [Electronic resource] https://www.oecd-ilibrary.org/agriculture-and-food/agricultural-policy/indicator-group/english_22d89f8c-en

for objective reasons. A statistically significant relationship between the variables was determined for 2007-2021.

The general form of the regression equation is as follows:

$$\Delta va_t = \beta_0 + \beta_1 \Delta pse_t + \varepsilon_t \quad (1)$$

Here,

va_t – the agricultural value-added in year t,

pse_t – the support provided to agricultural producers in year t,

ε_t – the error margin,

β_0 and, β_1 – the coefficients of the equation,

Δ – the first-order difference.

The analysis was carried out in the STATA program (Figure 1). The coefficient of determination of the equation is 0,33, which means that approximately 33% of the variation in the agricultural value-added can be explained by changes in the PSE during the observed period.

Source	SS	df	MS	Number of obs	=	14
				F(1, 12)	=	7.43
Model	185700.237	1	185700.237	Prob > F	=	0.0184
Residual	299777.94	12	24981.495	R-squared	=	0.3825
				Adj R-squared	=	0.3311
Total	485478.177	13	37344.4752	Root MSE	=	158.06

D.va	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pse						
D1.	.5318143	.1950576	2.73	0.018	.1068202	.9568084
_cons	163.7445	53.66471	3.05	0.010	46.81913	280.6699

Figure 1. Result of the regression analysis

Based on the values of t and p of the independent variable, we can say that the PSE had a significant and positive effect on the agricultural value-added during the studied period.

Thus, as a result of the econometric analysis, it was determined that, with other variables held constant, an increase in support for

producers by 1 unit or 1 million manat leads to an increase in the agricultural value-added by approximately 0.53 units or 532 thousand manat. This indicates a low effectiveness of state support.

3. Directions for increasing the effectiveness of state regulation in the agricultural sector in Azerbaijan. The research identified three key directions to enhance state regulation in the agricultural sector. The first is ***to improve the effectiveness of state support***. Direct subsidies to agricultural producers must align with the strategic goals set by the state for the sector's development. Misaligned subsidies risk inefficient budget utilization and undermine the overall competitiveness of the national economy.

Azerbaijan ranks among the countries providing substantial support to its agricultural sector. However, econometric assessments indicate that the effectiveness of this support remains below expectations. Farmers receive approximately 230-270 million manats annually in crop subsidies, yet these funds primarily incentivize the expansion of crop areas rather than improving productivity. While some agricultural crops receive product-based subsidies, their share is relatively minor. Notably, the total crop subsidies for 2023 amounted to 71.9 million manats, approximately 3.9 times lower than the subsidy levels during the review period.

Considering these findings, it is advisable to increase the share of product-based subsidies within the total subsidy budget to enhance agricultural productivity and promote the sector's intensive development. At present, nearly all agricultural products in the country receive state support. However, subsidies are often extended to areas with sufficient income potential, alongside those genuinely requiring assistance. This misallocation reduces the overall effectiveness of state support, as funds allocated to high-income areas generate less value compared to their potential impact in critical need areas.

To address this issue, the general elimination of crop subsidies, which represent a small share of total costs, could be explored as a policy option. Detailed information on the share of crop subsidies in the cultivation costs of individual agricultural products is provided in Table 1.

Table 1. Share of subsidy in expenditures, 2023[9]

Plants	Cost, manat/ha	Subsidy, manat/ha	Share of subsidy in expenditures
Grains	568.1	214.3	38%
Green tea leaves	1284.4	472.4	37%
Fruits	4472.3	491.2	11%
Rice	3949.8	280.3	7%
Mellows	3398.9	218.9	6%
Vegetable	4621.6	229.5	5%
Potato	4913	251.0	5%
Grape	10567.3	336.7	3%

As can be seen from the table, the share of direct subsidies in the costs for grapes, potatoes, and many fruits and vegetables is quite small. The redirection of support provided to producers of these crops to the production of low-income crops, such as cereals, for example wheat, can increase the country's self-sufficiency.

The next recommended mechanism for increasing the effectiveness of state support is related to resolving the uncertainty in the food wheat sector. Thus, certain inconsistencies are observed in the currently applied mechanism for state support for the food wheat sector. In addition to the exemption of food wheat imports to the country from duties, support is also provided to local wheat production. In other words, cheap imported wheat creates unfavorable market conditions for local wheat producers, and in response, the state actively subsidizes wheat production. Thus, as a result of this policy measure implemented by the state, uncertainty arises in the wheat market. To resolve this uncertainty, specific targets for wheat production in the country should be set. The proposed mechanism in this direction is the introduction of a certain duty on wheat imports and the organization of state purchases of food wheat from farmers. This arrangement will increase the domestic

[9] Prepared based on data from the SSC and the Ministry of Agriculture.

price of wheat. Thanks to this, local producers will be interested in both wheat production and increasing productivity.

The last mechanism recommended in this direction is the introduction of zero-percentage taxation in agriculture in Azerbaijan. Currently, local farmers are exempt from almost all taxes (except for land tax). However, this tax exemption creates difficulties for the state in monitoring the production volume, expenses and general economic indicators of farmers. The introduction of a zero-percentage tax rate for farmers implies their integration into the tax system, while maintaining their existing tax-exempt status. Within the framework of this policy, farmers will be required to register with tax authorities and periodically report on production volumes, expenses, sales and other economic indicators. Although farmers are not required to pay taxes, their registration will create a formal mechanism for the state to collect important financial information.

The second proposed approach to enhancing the effectiveness of state regulation in the country focuses on ***expanding agricultural processing and diversifying exports***. Azerbaijan's agricultural sector demonstrates significant processing potential. Developing value chains for agricultural products is strategically crucial for increasing the production of value-added goods, satisfying domestic market demand, boosting export opportunities, and supporting employment. Achieving these goals requires the implementation of targeted improvement mechanisms, state regulatory measures, and institutional reforms.

Although Azerbaijan has favorable climatic characteristics for the cultivation of many agricultural products, both limited land resources and insufficient water supply require more efficient use of agricultural land. In this regard, local farmers should strive to cultivate crops that bring more income per hectare. This can be achieved by expanding the cultivation of plants with high processing potential. The products with the highest processing potential in the country include fruits and vegetables, cotton, cocoons, and milk.

The current subsidy system has facilitated an increase in the processing volume of certain agricultural products, such as cotton, sugar beet, and tobacco. However, the scale and depth of processing remain insufficient. For instance, cotton processing primarily ends with the

production of cotton and yarn, with minimal activity in producing higher value-added products such as cotton-based clothing. Similarly, sugar production is limited to raw sugar and sucrose, with a negligible share of ready-made food products in export activities.

As a result, the domestic demand for knitted goods and sugar-based products is largely met through imports. In 2023 alone, the country imported over $300 million worth of knitted products, including fabrics and clothing, and $52 million worth of sugar-based confectionery[10]. These figures highlight the need for policies aimed at advancing value-added production in the agricultural sector to reduce import dependency and enhance export potential.

In terms of increasing the processing potential of Azerbaijan, the experience of Italy and Turkiye can be benefited. Although the majority of products are produced in small farms in Italy, processing enterprises aimed at producing export-oriented products such as high-quality wine and olive oil have also developed. The experience gained in this area can be used in the processing of olives, pomegranates, hazelnuts and other fruit and vegetable products in Azerbaijan. The Turkish model can be adapted in the application of modern technologies, the development of agricultural startups, strengthening food safety standards and export strategies.

It is advisable to establish public-private cooperation in terms of increasing the processing potential of agricultural products in the country. For this purpose, the experience of the European Union (EU) can be used. The EU implements a number of policy measures to encourage the governments of member states to cooperate with private companies for the purpose of processing agricultural products. For example, the Horizon Europe Program is the EU's research and innovation program and finances projects in various sectors, including agriculture and food processing. The “Farm to Fork Strategy” tool is used in this direction. This tool aims to make food systems fair, healthy and environmentally friendly. Using the above-mentioned experiences, it is possible to establish effective cooperation between farmers and the state in Azerbaijan. For the current period, the majority of farms in the

[10] State Customs Committee of the Republic of Azerbaijan

country are small in size and cannot bear the necessary investment costs for processing, so it is advisable to initially establish farmer cooperatives in this area, and then establish effective cooperation relations between these cooperatives and the state.

Another issue is the insufficient development of the market infrastructure for most agricultural products in Azerbaijan. The insufficient development of the storage infrastructure in the country leads to food loss, low profitability and limited market activity. Problems related to the sale of agricultural products lead to sharp price fluctuations and the creation of unfavorable market situations. To overcome these problems, it is necessary to strengthen the market infrastructure for agricultural products in Azerbaijan. For this purpose, increasing investments in expanding the cold storage infrastructure can be considered. To solve this problem, the state should apply incentives for the creation of cold storages. This can be implemented within the framework of public-private partnerships, and the state can provide tax breaks, grants or low-interest loans to the private sector for the development of this infrastructure. At the same time, taking into account the fact that farms in the country are mainly small-sized, it can be considered to provide farmers with modular type cold storages, as well as those powered by alternative energy sources (for example, solar energy) on preferential terms.

The next improvement mechanism in this direction is to support the creation of wholesale centers or hubs. In order to regulate the currently unfavorable market situation and increase competition, it is proposed to create several wholesale centers or hubs in different regions of Azerbaijan. These centers should play the role of regional markets that ensure transparent and competitive trade between farmers, traders and suppliers, and also act as aggregation points for export promotion, expanding the export opportunities of small and medium-sized farmers.

Diversification of export markets for agricultural products should also be kept in the spotlight. Azerbaijan's agricultural exports are mainly directed to the Russian market. It should be noted that this market is volatile in terms of trade regulations, and is also a cheap market compared to the European Union (EU) market. Dependence on one

market not only limits the country's agricultural export potential, but also makes the sector vulnerable to economic and political risks.

The EU market can be considered as an alternative to Russia. One of the most important issues in terms of access to this market is that farmers should be provided with appropriate certificates (e.g. GlobalGAP, HACCP, ISO 22000, etc.). It is proposed to develop a special incentive policy to make these certificates accessible to farmers.

The last direction proposed for improving the state regulation of agriculture in the country is ***to ensure sustainable development in agriculture by increasing the knowledge and skills of farmers***. Sustainable development is one of the most important problems facing agriculture at the global level for the current period. Sustainable development primarily involves the effective and economical use of natural resources (soil, water, air, etc.). Agriculture is the sector that uses land and water resources the most, as well as acting as one of the main sources of greenhouse gases emitted into the atmosphere. Therefore, the sustainability of the agricultural sector is extremely important in terms of protecting the environment, including natural resources.

The research study explored the sustainable development of agriculture, focusing on enhancing the knowledge and skills of farmers, who are key stakeholders in the sector. Findings revealed that farmers in the country generally possess limited knowledge and skills related to the implementation of agro-technical measures. This deficiency not only restricts their income potential but also adversely impacts the environment, underscoring the need for targeted educational and capacity-building initiatives.

One of the most effective ways to increase the knowledge and skills of farmers is to ensure the availability of quality agricultural information and advisory services. The EU's experience in this area is interesting. The EU Agricultural Knowledge and Innovation System (AKIS) is an initiative designed to strengthen the flow of knowledge and innovation in agriculture[11]. The proposed mechanism is the creation of

[11] Agricultural Knowledge and Innovation Systems (AKIS): [Electronic resource] / European Comission, - 2024. URL: https://ec.europa.eu/eip/agriculture/sites/default/files/eip-agri_agricultural_knowledge_and_innovation_systems_akis_2021_en_web.pdf

an agro-information portal that will allow for the collection of a wide range of information related to the production, transportation, sale, storage, import-export, processing, marketing and consumption of agricultural products. In addition to collecting knowledge related to the sector in one center, this portal should also allow for interactive communication between users, provide immediate answers to questions addressed by farmers, researchers and other market players, as well as create conditions for the use of modern capabilities such as artificial intelligence, machine learning, and GIS technologies.

0An essential aspect of improving farmers' knowledge and skills is the promotion of cooperative relationships in agriculture. The predominance of small-scale farms in Azerbaijan limits the ability to achieve economies of scale, resulting in reduced productivity and profitability. Surveys indicate that many farmers are reluctant to join cooperatives, primarily due to a lack of understanding of their benefits and shortcomings in the legislative framework governing cooperatization.

To address this challenge, there is a pressing need to enhance state support measures in this area and to develop alternative incentive mechanisms that encourage cooperative participation, enabling farmers to capitalize on collective efficiency and shared resources.

In countries such as Italy and Denmark, government incentives have played an important role in the creation of agricultural cooperatives. For example, in Italy, cooperatives receive tax breaks, subsidies and technical assistance, which helps them grow and provide better services to their members[12]. The process of cooperatization can also be expanded in Azerbaijan by providing financial incentives. These incentives may include tax breaks, soft loans, and grants for the purchase of common equipment, such as irrigation systems or agricultural machinery.

The final direction in terms of increasing farmers' knowledge and skills is to educate them on environmental sustainability. In Azerbaijan, farmers' improper use of water and land resources, including the

[12] Bono, P. Support for Farmers' Cooperatives; Country Report Italy: [Electronic resource] / Wageningen: Wageningen UR, - 2012, - p. 66. URL: https://edepot.wur.nl/244801

prevalence of traditional irrigation methods, as well as the widespread misuse of fertilizers and pesticides, leads to soil degradation and harms the environment. Environmental sustainability can be ensured by informing farmers about the environmental impact of their activities and encouraging them to expand the use of sustainable methods.

In Azerbaijan, subsidies are provided to farmers for the adoption of modern irrigation systems; however, there is limited interest in this incentive. This reluctance is primarily due to the initial investment costs associated with such systems, coupled with farmers' insufficient understanding of their long-term benefits. To address this issue, it is essential to not only expand state incentive measures but also consider addressing the adoption of modern irrigation as a subject of administrative regulation. This could help facilitate greater awareness and encourage broader implementation of efficient irrigation practices in the sector.

In conclusion, in terms of promoting sustainable agricultural practices, it is recommended to expand activities related to the identification of Globally Important Agricultural Heritage Systems (GIAHS) in the country. It should be noted that although some work is currently being done in the country to identify Nationally Important Agricultural Heritage Systems (NIAHS), it would be appropriate to accelerate this activity and include it in the state's incentive programs.

The main scientific results and provisions were published on the following scientific articles and abstracts:

1. P.F.Əliyev, "Azərbaycan Respublikasında kənd təsərrüfatı və ərzaq məhsullarının ixracının dövlət tənzimlənməsinin nəticələrinin qiymətləndirilməsi" / Kənd Təsərrüfatının İqtisadiyyatı elmi-praktik jurnalı // -Bakı, 2021, № 1(35), s. 63-72

2. P.F.Əliyev, "Azərbaycan Respublikasında ərzaq və kənd təsərrüfatı siyasətinin MAFAP metodologiyasi ilə monitorinqi və qiymətləndirilməsi" / Kənd Təsərrüfatının İqtisadiyyatı elmi-praktik jurnalı // -Bakı, 2021, № 2(36), s. 9-18

3. F.F.Fikrətzadə, P.F.Əliyev, "Azərbaycan Respublikasında suvarma suyu üzrə tənzimləmə sisteminin təkmilləşdirilməsi istiqamətləri / Kənd Təsərrüfatının İqtisadiyyatı elmi-praktik jurnalı // -Bakı, 2022, № 1(39), s. 9-24

4. F.F.Fikrətzadə, P.F.Əliyev, "Azərbaycan Respublikasında aqrar sahənin dayanıqlı inkişaf prinsipləri baxımından tənzimlənməsi" / Kənd Təsərrüfatının İqtisadiyyatı elmi-praktik jurnalı // -Bakı, 2022, № 3(41), s.9-32

5. P.F.Əliyev, "Azərbaycanda yerli heyvandarlıq təsərrüfatlarının rəqabət qabiliyyətliliyinin yüksəldilməsi məqsədilə yem idxalının vergi və rüsumlardan azad edilməsinin effektivliyinin qiymətləndirilməsi / Azərbaycan Dövlət İqtisad Universitetinin elmi xəbərləri // -Bakı, 2022, № 9(9), s. 111-120

6. П.Ф.Алиев, "Оценка аграрной политики в Азербайджане по методологии ОЭСР (Организация Экономического Сотрудничества и Развития)" / Экономика и редпринимательство // № 16(6), s. 511-515

7. P.F.Aliyev, "State regulation on the management of natural resources in the field of agriculture in Azerbaijan" / International Scientific-Practical Conference on "Economic growth in the Conditions of globalization" // - Chisinau, 2022, pp. 429-436

8. P.F.Əliyev, "Azərbaycanda kənd təsərrüfatı məhsullarının emal potensialının artırılması sahəsində dövlət tənzimlənməsinin təkmilləşdirilməsi" / Azərbaycan Respublikasının sosial-iqtisadi inkişafının aktual problemləri respublika elmi konfransı" / - Bakı, 2022, s. 378-382

9. P.F.Əliyev, "Azərbaycanda regionların sosial-iqtisadi inkişafının təmin edilməsində aqrar sahənin dövlət tənzimlənməsinin rolu və istiqamətləri" / Ümummilli lider Heydər Əlirza oğlu Əliyevin anadan olmasının 99-cu ildönümünə həsr olunmuş "İqtisadi İnkişafda Qlobal Çağırışlar və Perspektivlər" adlı Respublika elmi konfransı // - Sumqayıt, 2022, s. 227-230

10.P.F.Əliyev, "Azərbaycanda aqrar sahəyə dövlət dəstəyinin effektivliyinin ekonometrik qiymətləndirilməsi" / Azərbaycan Əmək və Sosial Münasibətlər Akademiyasında "Sosial-iqtisadi və tarixi-mədəni əlaqələrin strateji prioritetləri" mövzuzunda keçirilən I Beynəlxalq Sosial Elmlər Konfrans // - Bakı, 2022, s. 150-153

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