IRSTI 68.75.13
UDC 338.43 https://www.jpra-kazniiapk.kz
Research Article https://doi.org/10.46666/2025-1.2708-9991.05

ENSURING FOOD SECURITY IN DAIRY MARKET OF THE REPUBLIC OF KAZAKHSTAN

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ СҮТ ӨНІМДЕРІ НАРЫҒЫНДА АЗЫҚ-ТҮЛІК ҚАУІПСІЗДІГІН ҚАМТАМАСЫЗ ЕТУ

ОБЕСПЕЧЕНИЕ ПРОДОВОЛЬСТВЕННОЙ БЕЗОПАСНОСТИ НА РЫНКЕ МОЛОЧНОЙ ПРОДУКЦИИ РЕСПУБЛИКИ КАЗАХСТАН

A.S. BELGIBAYEVA*
C.E.Sc., Associate Professor
Sh. Ualikhanov Kokshetau University, Kokshetau, Kazakhstan
** corresponding author's e-mail: a.belgibayeva@gmail.com*
А.С. БЕЛЬГИБАЕВА*
э.ғ.к., қауымдастырылған профессор
Ш. Уәлиханов атындағы Көкшетау университеті, Көкшетау, Қазақстан
**автордың электрондық поштасы: a.belgibayeva@gmail.com*
А.С. БЕЛЬГИБАЕВА*
к.э.н., ассоциированный профессор
Кокшетауский университет им.Ш.Уалиханова, Кокшетау, Казахстан
** электронная почта автора: a.belgibayeva@gmail.com*

Abstract. *Objective* - study the current state and determine the prospects of milk and dairy products market of Kazakhstan in the context of ensuring food security of the country. *Methods* - in theoretical section of publication, general scientific methods were used, which made it possible to ensure the validity and reliability of generalizations, conclusions and proposals. The information base of scientific work consisted of materials of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, current regulatory legal acts. Secondary information was collected and analyzed. The initial data were indicators of development of dairy sector for 2022-2024. *Results* - the situation in the dairy subcomplex of the republic was analyzed, the existing trends were identified. It is shown that despite the reduction in the number of cows in agricultural enterprises (from 9.3% in 2022 to 8% in 2024), the share of milk production in them increased, respectively, from 15.8 to 19.3% in 2024, which is explained by growth in the efficiency of dairy farming industry in economic entities. The increase in volume of cow's milk produced in agricultural enterprises was achieved due to excess of the rate of increase in livestock productivity compared to dynamics of their population growth. *Conclusions* - it has been determined that one of the main reasons limiting the potential of dairy cattle breeding is shortage of feed, production volumes of which are significantly less than required in accordance with zootechnical standards. The factors influencing the level of food security of dairy segment of agro-industrial complex are identified, and measures of state support are proposed as main guarantor of its provision. The low level of profitability of milk production does not contribute to attracting investment. It is necessary to develop strategy aimed at import substitution, increasing competitiveness of national product, maintaining economic and physical accessibility for the population.

Аңдатпа. *Мақсаты* - елдің азық-түлік қауіпсіздігін қамтамасыз ету контекстінде Қазақстанның сүт және сүт өнімдері нарығының қазіргі жай-күйін зерттеу және перспективаларын айқындау. *Әдістері* - жарияланымның теориялық бөлімінде жалпылаудың, тұжырымдар мен ұсыныстардың негізділігі мен сенімділігін қамтамасыз етуге мүмкіндік беретін жалпы ғылыми әдістер қолданылды. Ғылыми жұмыстың ақпараттық базасын Қазақстан Республикасы Стратегиялық жоспарлау және реформалар агенттігінің Ұлттық статистика бюросының материалдары, қолданыстағы нормативтік құқықтық актілер құрады. Қосымша ақпаратты жинау және талдау жүзеге асырылған. Бастапқы деректер ретінде сүт секторының 2022-2024 жылдарға арналған даму көрсеткіштері пайдаланылды. *Нәтижелері* – республиканың сүт шағын кешеніндегі жағдайға талдау жүргізілді, қалыптасқан тенденциялар анықталды. Ауыл шаруашылығы кәсіпорындарында сиыр санының азаюына қарамастан (2022 жылы 9,3%-дан 2024 жылы 8%-ға дейін), олардағы сүт өндірісінің үлес салмағы тиісінше

2024 жылы 15,8%-дан 19,3%-ға дейін ұлғайды, бұл шаруашылық жүргізуші субъектілерде сүт шаруашылығы саласының тиімділігінің өсуімен түсіндіріледі. Агроөнеркәсіптерде өндірілген сиыр сүті көлемінің ұлғаюына олардың санының өсу динамикасымен салыстырғанда мал өнімділігінің өсу қарқынының артуына байланысты қол жеткізілді. *Қорытынды* - сүтті мал шаруашылығының әлеуетті мүмкіндіктерін шектейтін негізгі себептердің бірі мал азығының тапшылығы болып табылатыны анықталды, олардың өндіру көлемі зоотехникалық нормаларға сәйкес талап етілетіннен едәуір аз. Агроөнеркәсіптік кешеннің сүт сегментінің азық-түлік қауіпсіздігінің деңгейіне әсер ететін факторлар белгіленді, оны қамтамасыз етудің негізгі кепілі ретінде мемлекеттік қолдау шаралары ұсынылды. Сүт өндірісінің төмен рентабельділігі инвестицияларды тартуға ықпал етпейді. Импортты алмастыруға, ұлттық өнімнің бәсекеге қабілеттілігін арттыруға, халық үшін экономикалық және физикалық қолжетімділікті қолдауға бағытталған стратегияны әзірлеу қажет.

Аннотация. *Цель* - исследование современного состояния и определение перспектив рынка молока и молочной продукции Казахстана в контексте обеспечения продовольственной безопасности страны. *Методы* - в теоретическом разделе публикации применялись общенаучные методы, позволившие обеспечить аргументированность и достоверность обобщений, выводов и предложений. Информационную базу научной работы составили материалы Бюро национальной статистики Агентства по стратегическому планированию и реформам Республики Казахстан, действующие нормативно-правовые акты. Осуществлен сбор и анализ вторичной информации. В качестве исходных данных использовались показатели развития молочного сектора за 2022-2024 годы. *Результаты* - проведен анализ положения в молочном подкомплексе республики, выявлены сложившиеся тренды. Показано, что несмотря на сокращение поголовья коров в сельхозпредприятиях (с 9,3% в 2022г. до 8% в 2024г.), удельный вес производства молока в них увеличился соответственно с 15,8 до 19,3% в 2024г., что объясняется ростом эффективности отрасли молочного животноводства в хозяйствующих субъектах. Увеличение объемов произведенного в агропредприятиях молока коровьего достигнуто благодаря превышению темпов наращивания продуктивности скота по сравнению с динамикой прироста их численности. *Выводы* - установлено, что одной из главных причин, ограничивающих потенциальные возможности молочного скотоводства является дефицит кормов, объемы изготовления которых значительно меньше, чем требуется в соответствии с зоотехническими нормами. Обозначены факторы, влияющие на уровень продовольственной безопасности молочного сегмента агропромышленного комплекса, предложены меры государственной поддержки как основного гаранта ее обеспечения. Низкий уровень рентабельности молокопроизводства не способствует привлечению инвестиций. Необходима разработка стратегии, направленной на импортозамещение, повышение конкурентоспособности национального продукта, поддержание экономической и физической доступности для населения.

Keywords: agricultural sector, dairy cattle breeding, dairy farm, milk and dairy products, forage base, rational consumption rates, cow productivity, food security.

Түйінді сөздер: аграрлық сектор, сүтті мал шаруашылығы, сүт-тауар фермасы, сүт және сүт өнімдері, жемшөп базасы, тұтынудың ұтымды нормалары, сиырлардың өнімділігі, азық-түлік қауіпсіздігі.

Ключевые слова: аграрный сектор, молочное скотоводство, молочно-товарная ферма, молоко и молочная продукция, кормовая база, рациональные нормы потребления, продуктивность коров, продовольственная безопасность.

Received: 24.01.2025. Approved after Peer-reviewed: 07.03.2025. Accepted: 18.03.2025.

Introduction

Food security remains a crucial global issue, influenced in recent years by numerous factors such as population growth and increasing demand for food, declining purchasing power due to inflation, degradation of natural resources, climate change, as well as rising political risks, conflicts, and migration processes.

The analysis of food security status is one of the key areas receiving significant attention in economic literature. This is because food security reflects the ability of the agro-industrial sector not only to supply the population with food but also to maintain a balance between domestic production and imported food supplies.

The decisive condition for food security is self-sufficiency (food independence), which means satisfying the population's needs for basic food products to the maximum extent

possible through domestic production. The importance of the dairy industry is recognized by the state, and the production of milk and dairy products is considered an important element of the country's food security (Ushvickij L.I., Didenko E.S.) [1].

The concept of food self-sufficiency is of great importance, as it directly affects a country's ability to provide its population with the necessary food products. Some countries do not have an adequate level of food self-sufficiency due to extremely unfavorable natural resources, which forces them to import the products needed to meet these demands (Brankov T., Matkovski B., Jeremic M. et al.) [2].

Global changes threaten food systems and food security (Campbell B., Vermeulen S., Aggarwal P. et al.) [3]. The need to identify issues in the production and consumption of dairy products is particularly important in the context of ensuring food security in the Republic of Kazakhstan as a whole.

Agriculture is the foundation of food supply and, consequently, food independence for most countries. According to expert estimates, producing about 80% of food is sufficient for a country's food security, with the remainder being able to be imported from other countries. The development of dairy farming is one of the key areas that ensures the rational provision of the population with food products and the country's food security (Vinnichek L.B.) [4].

The dairy subcomplex, playing a key role in domestic production, is an important structural element of the agro-industrial complex. Its significance is determined by the high value of the final products for the population, and increasing the volumes of milk and dairy production is a primary task for ensuring the country's food security.

It should be noted that the strategy for the development of Kazakhstan's agro-industrial complex is aimed at ensuring stable growth in agricultural production volumes through the rational use of resource potential, including land, material, labor, and financial resources. Key areas include the modernization of food and light industry enterprises, the development of human capital in the agro-food sector, and, as a result, improving the level of food provision for the country's population.

The existing issues in dairy farming have determined the timeliness, relevance, and purpose of this research - to outline the trends in milk production and the prospects for food security in the Republic of Kazakhstan. Despite a considerable number of scientific studies on this issue, it continues to require constant investigation at various stages of its development.

Literature Review

Despite the economic growth in many countries, one of the main problems the world facing is the problem of food security. The increasing importance of food security has been greatly influenced by the decline in purchasing power of the population due to inflation, degradation of natural resources, climate change, population growth and demand for food, growing political risks, conflicts and migration (Koç G., Uzmay A.) [5].

Wagler A., Schober G., Chavez-Baray S.M. et al. [6] defined food security as reliable access for people to have sufficient, safe, and nutritious food to maintain their normal growth, development, and an active, healthy lifestyle. This multidimensional concept involves the availability, accessibility, utilization, and stability of food supplies (Derso A., Bizune H., Keleb A. et al.) [7].

In the study conducted by Luo P., Tanaka T. [8] it is noted that the domestic food production and consumption is one of the most important pillars of national sovereignty and is perceived as a critical factor in food security. Food production is an important aspect of both food security and food safety (Chhikara N., Abdulahi B., Munezero C. et al.) [9].

National nutrition and food security are linked to dietary patterns and human health and are influenced by agricultural production activities, resource and environmental pressures, and patterns of food supply and demand.

Buletova N.E., Sharkevich I.V. [10] believe that the comparison of approaches to determining the level of food security at the international and national levels requires a detailed measurement of food independence, the achievement of which depends on natural and climatic conditions and resource availability for agricultural production The system of food security indicators includes both very common and typical for cross-country comparison, and those taking into account trends in the caloric content of the available diet and gender, age characteristics in situations of food insecurity, malnutrition, and acute food shortages. In general, these indicators are divided into 4 groups: availability, access, stability, and utilization.

In the study conducted by Barcho M., Alekseenko L., Denisova O. et al. [11], it is noted that against the background of the state's achievements in the field of food supply, the development of the agricultural sector is becoming a key role. Food security depends, first of all, on the volume of agricultural production. In an agrarian country, there are still many unresolved problems that hinder the resolution of issues of food supply for the population

within scientifically based standards (Moldashev A.B.) [12].

Materials and methods

In the process of studying the state and prospects of the dairy products market in the Republic of Kazakhstan, general scientific methods such as analysis and synthesis, comparison, deduction, and generalization were applied. These methods ensured the argumentation and reliability of the generalizations, conclusions, and statements made in the work.

The theoretical and methodological foundation of the research was based on the scientific works of leading domestic and foreign scholars on food security issues. The main methods used were analytical and balancing methods, as well as historical and theoretical methods of knowledge.

To achieve the stated goal, the author employed various general scientific approaches, differing at each stage of the research. The theoretical part was developed through a review of scientific works, including publicly available publications, as well as other international and domestic scientific literature accessible through various information resources and databases.

An economic and statistical analysis of official data for 2022–2024 was conducted to identify trends in milk production and consumption. The information base of the research consisted of materials from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, current legal acts, scientific literature, and periodicals. Secondary (preliminary) data were collected and analyzed. The initial data included indicators of the development of the dairy industry for the years 2022-2024.

Results

In the Republic of Kazakhstan, the livestock population of cattle at the end of 2024 amounted to 7 842.6 thousand head (a 19.9% increase compared to 2022), including 4 380.1 thousand cows, which is 28.9% higher than the 2022 (table 1).

Table 1 - Cattle Population in the Republic of Kazakhstan, 2022-2024

Categorie of farms	All categories of farms		Including					
			agricultural enterprises		individual entrepreneurs and peasant or farming household		households of the population	
	head	%	head	%	head	%	head	%
2022								
Cattle	6 536 282	100	806 691	12.3	2 693 686	41.2	3 035 905	46.4
Including cows	3 397 350	100	317 231	9.3	1 562 104	45.9	1 518 015	44.6
2023								
Cattle	6 616 836	100	866 323	13.1	2 826 131	42.7	2 924 382	44.2
Including cows	3 658 678	100	347 997	9.5	1 688 482	46.2	1 622 199	44.3
2024								
Cattle	7 842 572	100	835 618	10.6	3 480 588	44.4	3 526 366	45.0
Including cows	4 380 081	100	352 015	8.0	2 028 833	46.3	1 999 233	45.6

Note: calculated by the author based on data from the (Bureau of National Statistics of the Agency…) [13]

The share of cows in agricultural enterprises is decreasing (from 9.3% in 2022 to 8% in 2024), however, the share of cow's milk production is increasing (from 15.8% in 2022 to 19.3% in 2024) (table 2). This is related to the improvement in the efficiency of dairy farming in agricultural enterprises.

Further mechanization of dairy production raises questions about the size and duration of the workforce in the dairy industry and is likely to reinforce the existing trend of displacing small-scale dairy producers from competitive markets (Bojovic M., McGregor A.) [14].

Table 2 presents the structure of milk production across all categories of farms in the Republic of Kazakhstan.

Table 2 - Milk production in all categories of farms in the Republic of Kazakhstan.

Year	All categories of farms, tons	Including					
		agricultural enterprises		individual entrepreneurs and peasant or farming households		households of the population	
		tons	%	tons	%	tons	%
2022	3 308 439.8	522 741.5	15.8	666 901.1	20.2	2 118 797.2	64.0
2023	3 420 415.6	600 406.8	17.6	687 836.8	20.1	2 132 171.9	62.3
2024	3 571 965.3	688 118.0	19.3	704 629.3	19.7	2 179 218.0	61.0
Note: calculated by the author based on data from the (Bureau of National Statistics of the Agency…) [13]							

By the end of 2024, 39.3% of the total cow's milk production in Kazakhstan was accounted for by 4 regions of the country, which is 2/5 of the total share (Turkestan region - 12.5%; North Kazakhstan region - 10.4%; Almaty region – 8.1%; Abai region - 8.3%) (table 3).

Table 3 - Structure of cow's milk production in all categories of farms, %

Region	Agricultural enterprises			Individual entrepreneurs and peasant or farming households			Households of the population		
	2022	2023	2024	2022	2023	2024	2022	2023	2024
Abay	0.8	1.1	0.9	12.5	12.8	12.8	9.5	9.1	9.1
Akmola	14.9	12.2	10.6	2.1	2.2	2.2	6.2	6.3	6.7
Aktobe	2.9	2.8	2.2	3.9	4.7	4.8	5.9	5.9	5.9
Almaty	7.2	5.9	6.8	7.3	7.5	8.0	8.1	8.3	8.5
Atyrau	0.6	0.5	0.4	0.7	0.7	0.8	0.9	1.0	1.1
West Kazakhstan	2.5	2.2	1.3	9.2	8.2	6.9	6.9	6.9	6.9
Jambyl	1.1	0.7	0.5	6.3	6.2	6.1	8.2	8.3	8.2
Zhetysu	2.9	2.8	2.8	5.4	5.2	5.2	7.5	7.4	7.4
Karagandy	1.5	0.9	0.4	12.6	12.9	13.1	5.2	5.2	5.3
Kostanay	12.7	12.2	10.4	1.5	1.5	1.6	5.3	5.5	5.7
Kyzylorda	1.3	1.1	1.0	0.7	0.6	0.6	2.1	2.1	1.7
Pavlodar	13.6	14.6	13.8	8.8	8.8	8.3	3.9	3.9	3.8
North Kazakhstan	23.7	25.1	24.0	8.8	8.6	8.8	6.6	6.5	6.6
Turkestan	6.4	9.5	16.3	1.6	1.7	1.7	15.8	15.4	14.8
Ulytau	0.0	0.0		7.1	7.0	6.9	0.7	0.7	0.7
East Kazakhstan	6.1	5.5	4.4	11.3	11.2	11.8	5.3	5.4	5.8
Total	100	100	100	100	100	100	100	100	100
Note: calculated by the author based on data from the (Bureau of National Statistics of the Agency…) [13]									

Currently, Turkestan region holds a leading position in milk production, increasing its production volumes from 378 118.4 tons in 2022 to 447 085 tons in 2024. One of the region's priority development areas is ensuring the regional center with locally produced food products. To achieve this goal, the creation of a food belt around the city of Turkestan has begun, including a number of large-scale projects, such as the construction of dairy farms. As a result, the share of this region in the total milk production in the country grew from 11.4% in 2022 to 12.5% in 2024. Agricultural enterprises in Turkestan region produced 3.3 times more milk in 2024 than in 2022. However, milk production in the households of this region is declining (in 2022 - 333 873.3 tons, in 2024 – 323 115 tons).

A quarter of the milk produced by agricultural enterprises comes from the North Kazakhstan region. The share of agricultural enterprises in the total milk production in the country increased from 23.7% in 2022 to 24% in 2024. In absolute terms, the increase in milk production by agricultural enterprises in the region amounted to 41 404.7 tons (from 123 890 tons in 2022 to 165 294.7 tons in 2024).

The largest volume of milk produced by individual entrepreneurs and peasant or farming households comes from Karaganda region (13.1%), Abai region (12.8%), and East Kazakhstan region (11.8%).

Agricultural enterprises account for 1/5 of all the cow's milk produced in the country (19.3% in 2024). The increase in cow's milk production in agricultural enterprises was

achieved due to the faster growth rate of cow productivity compared to the growth rate of their population. Specifically, the number of cows increased by 11% (from 317 231 heads in 2022 to 352 015 heads in 2024), while their productivity grew by 27.4% (from 4 693 kg in 2022 to 5 981 kg in 2024).

Next, it is necessary to assess the data on the balance of food supply in the country for milk and dairy products in accordance with the existing optimal food consumption standards (table 4).

Table 4 - Volumes of production and self-sufficiency of the population of Kazakhstan in milk and dairy products, 2022-2024.

Year	Production total, tons	Total consumption (according to standards calculated per capita), tons	Self-sufficiency of the country (production / total consumption), %
2022	3 308 439.8	5 870 450.9	56.4
2023	3 420 415.6	6 030 186.4	56.7
2024	3 571 965.3	6 129 961.3	58.3
Note: calculated by the author based on data from the (Bureau of National Statistics of the Agency…) [13]			

As a result, it is evident that the country has a food balance deficit in milk production of approximately 2 558 thousand tons.

Thus, ensuring food security is a key task for the state. Despite the approved priority directions for the development of the economy and agriculture, issues of physical and economic provision for the population should become a priority at this stage of societal development.

The dairy industry still faces many challenges. The government is actively supporting and encouraging the establishment of dairy farms to increase domestic production of high-quality milk and reduce import dependence. Overall, the number of dairy farms in the country has increased to 446 over the past three years (State support and scaling …) [15].

The activities of enterprises engaged in both milk production and processing are influenced by numerous factors. One of them is the dependence of processing companies on raw milk supplies. It is important to note that for processing companies, the primary priority is the stability and quality of incoming raw materials.

It should also be considered that agricultural development has its own specifics, requiring a long investment payback period due to the extended reproduction cycle. Additionally, the current state of transport and logistics infrastructure in the milk and dairy production sector has a significant impact on the situation.

A country's food security is ensured through domestic production, an optimal volume of imports, strong export competitiveness, the level and pace of development of the agro-industrial complex and food industry, the availability and size of strategic and operational food reserves, as well as the stable functioning of the country's agri-food sector.

In the process of developing an efficiently functioning market for agricultural raw materials and food products, and achieving higher efficiency through significant production growth under import substitution conditions, the need arises to regulate the balance between production, imports, and exports of key food products. The main criterion for such a balance is the degree to which the population's needs for essential food items are met.

The high share of dairy imports can be explained by a shortage of raw milk for the processing industry, which is compensated by imported dairy products, as well as the technological backwardness of processing enterprises.

State subsidies for milk producers are provided in ten areas: acquisition of breeding livestock, maintenance of breeding bulls in public herds, reduction of milk production costs, reduction of feed costs, and others. In 2023, compared to 2021, the volume of state subsidies for milk producers increased by 1.5 times, from 23 billion to 35 billion tenge.

Currently, the main limiting factor for the development of dairy cattle breeding is the shortage of feed, with the volume of production in the country being half of what is required according to zootechnical standards. In the structure of sown areas, the share of forage crops is only 13.4%, while the standard is 30%.

Thus, the main part of milk production in the country is seasonal. Production takes place in the summer period using pasture feeds. The seasonality of milk production leads to a shortage of raw materials for processing enterprises. Ensuring the stability of milk production is only possible in dairy farms that have a strong feed base and practice year-round stall housing of the dairy herd.

The main task in the context of increasing food security is the development of the agro-industrial complex. This sector plays a key role in the production of food products, which, with increasing volumes, will enter the domestic market, which contributes to increased availability and increased consumer activity. Among the main problems of food security are the following: insufficient milk consumption caused by underdevelopment of dairy cattle breeding, significant crop losses, imperfect food supply and fertilizers, shortage of labor resources and migration of the population to urban areas, as well as urbanization.

Therefore, to ensure food security, it is necessary to implement measures aimed at the stable development and efficient functioning of the country's agricultural sector, as well as the protection of the domestic food market and the economic interests of local producers. This includes regulating foreign trade in agricultural and food products.

Discussions

Food security is considered one of the key factors influencing the preservation of sovereignty and effective governance in the country today. The success of the government in ensuring food security depends on the country's ability to withstand various threats and disasters, the level of agricultural development, and the growth of key economic indicators.

To achieve the global goal of eliminating hunger and ensuring food security, countries must become food self-sufficient. Climate change, economic crises, biodiversity loss, human impact, geopolitical conflicts, disruptions in international food supply chains, and underdeveloped rural infrastructure create challenges for the sustainable development of agriculture and food supply systems.

In these conditions, many countries strive for the highest possible level of autonomy in food production (Tleuberdinov A., Nurlanova N., Alzhanova F. et al.) [16].

The conducted research has shown that the dairy industry of the Republic of Kazakhstan plays a key role in ensuring the population's access to domestically produced milk and dairy products. The development of the dairy industry is one of the priority areas of the state policy in the agricultural sector of the country, as it contributes to addressing issues of food independence, improving the efficiency of labor resource utilization, and enhancing the social conditions of the rural population.

Thus, the primary mechanism for ensuring food security is stable domestic agricultural production, which guarantees the physical availability of food and its consumption by the population in the required volumes.

The increase in the cost of dairy products over the past three years has led to a decline in consumption and production in the traditional dairy processing industry (Erzhanova Zh. K., Ahmetzhanova N., Zhajtleuova A.) [17]. In the future, the main drivers for shaping trends in the development of the dairy market will be consumer preferences, purchasing power demand, and the environmental sustainability of production.

Existing problems in the dairy industry hinder the achievement of necessary self-sufficiency indicators for milk and dairy products, which calls for the implementation of new organizational, managerial, and financial measures to accelerate the development of the dairy farming sector. One such measure is the approval of a roadmap for the development of dairy farming for 2024-2026, aimed at increasing the volume of cow's milk for processing enterprises to 620.6 thousand tons.

Conclusion

1. Food security reflects the ability of the state to guarantee the satisfaction of the population's food needs at a level that ensures normal living conditions through domestic production.

2. The development of the milk and dairy products market is a priority direction of state economic policy, which is explained by the social importance of dairy products for the population of the Republic of Kazakhstan.

3. The analysis of the dairy industry’s state has shown that, despite the leading role of its products in the structure of the population's consumption, there are several issues that need to be addressed. First and foremost, it is necessary to increase the share of domestic production to 90% of the total volume of domestic milk and dairy product consumption.

4. To increase the share of domestically produced dairy products in the regional market, state support and a scientifically grounded comprehensive system for the development of dairy farming are necessary.

5. Currently, the main limiting factor for the development of dairy cattle farming is the feed shortage, with the volume of production in the country being half of what is required according to zootechnical standards. At present, ensuring the stability of milk production is only possible in dairy farms that have a strong feed base and use year-round stall housing for the dairy herd.

Conflict of interest: The author declare that there is no conflict of interest.

References

[1] Ушвицкий, Л.И. Проблемы обеспечения продовольственной независимости России в сфере молочной промышленности / Л.И. Ушвицкий, Е.С. Диденко // Вестник Северо-Кавказского федерального университета.- 2023.- № 3 (96).- С.171-177. https://doi.org/10.37493/2307-907X.2023.3.19

[2] Brankov, T. Food Self-Sufficiency of the SEE Countries; Is the Region Prepared for a Future Crisis? /T.Brankov, B.Matkovski, M.Jeremic, I.Đuric // Sustainability.- 2021.- №13.- 8747. https://doi.org/10.3390/su13168747

[3] Campbell, B. Reducing risks to food security from climate change / B.Campbell, S. Vermeulen, P. Aggarwal, C. Corner-Dolloff, E. Girvetz, A. Loboguerrero, J. Ramirez-Villegas, T. Rosenstock, L. Sebastian, P. Thornton, E.Wollenberg // Glob Food Secur, 2nd International Global Food Security Conference.- 2016.- Vol. 11.- P.34-43. https://doi.org/10.1016/j.gfs.2016.06.00

[4] Винничек, Л.Б. Повышение эффективности интенсификации молочного скотоводства: тенденции и направления / Л.Б. Винничек // Исследование проблем экономики и финансов.- 2021.- № 1.- С.1-10. https://doi.org/ 10.31279/2782-6414-2021-1-4-1-10

[5] Koç, G. Construction of a Farm-Level Food Security Index: Case Study of Turkish Dairy Farms / G. Koç, A. Uzmay// Social Indicators Research.- 2024.- Vol. 175.- P. 687–714. https://doi.org/10.1007/s11205-024-03406-8

[6] Wagler, A. Food and housing security at a US hispanic-serving institution: an examination before and during the COVID-19 pandemic / A. Wagler, G.S. Schober, S.M. Chavez-Baray, J. Ayala, P.R. Dessauer, E.M. Moya // Front. Public Health. -2022.- Vol. 10.- 918955. https://doi.org/10.3389/fpubh.2022.918955

[7] Derso, A. Food insecurity status and determinants among urban productive safety net program beneficiary households in addis ababa, Ethiopia / A. Derso, H. Bizuneh, A. Keleb, A. Ademas, M. Adane // PLoS ONE. - 2021.- Vol. 16(9).- e0256634. https://doi.org/10.1371/journal.pone.0256634

[8] Luo, P. Food import dependency and national food security: a price transmission analysis for the wheat sector / P. Luo, T. Tanaka// Foods.-2021.- Vol.10. -№8.-1715. https://doi.org/10.3390/foods10081715

[9] Chhikara, N. Exploring the nutritional and phytochemical potential of sorghum in food processing for food security / N. Chhikara, B. Abdulahi, C. Munezero, R. Kaur, G. Singh, A. Panghal // Nutrition & Food Science.- 2019.- Vol.49.- No. 2.- P.318–322. https://doi.org/10.1108/NFS-05-2018-0149 49

[10] Булетова, Н. Приоритеты продовольственной безопасности в контексте национальной политики социально-экономического развития / Н.Е. Булетова, И.В. Шаркевич // Экономическая безопасность. – 2024. – Т. 7. – № 5. – С. 1239–1256. https://doi.org/10.18334/ecsec. 7.5.121107

[11] Барчо, М. Развитие АПК как фактор обеспечения продовольственной безопасности России /М.Х. Барчо, Л.Д. Алексеенко, О.Г. Денисова, В. Кирячек// Вестник Академии знаний. – 2023. – № 54(1). – С. 45–50.

[12] Молдашев, А.Б. Продовольственная безопасность Казахстана / А.Б. Молдашев // Проблемы агрорынка.-№1.- 2020 г.- С.11-18.

[13] Бюро национальной статистики Агентства по стратегическому планированию и реформам Республики Казахстан [Электронный ресурс]. – 2025. – URL: https:// www.stat.gov.kz/ru/ (дата обращения: 04.01.2025).

[14] Bojovic, M. A. Review of megatrends in the global dairy sector: what are the socioecological implications? / M.A. Bojovic, A.McGregor //Agric Hum.- 2023.- №40.- P.373-394. https://doi.org/10.1007/s10460-022-10338-x

[15] Господдержка и масштабирование опыта СКО: Как Казахстан развивает молочное производство [Электронный ресурс].- 2024.- URL: https://www.primeminister.kz/ru/news/gospodderzhka-i-masshtabirovanie-opyta-sko-kak-kazakhstan-razvivaet-molochnoe-proizvodstvo-28592 [дата обращения: 14.12.2024].

[16] Tleuberdinov, A. Food security and self-sufficiency as a factor of country's sustainable development: assessment methods and solutions / A. Tleuberdinov, N.Nurlanova, F.Alzhanova // Discov Sustain.- 2025.- Vol. 6.- Article 50. https://doi.org/10.1007/s43621-025-00849-y

[17] Ержанова, Ж., Молочная отрасль Казахстана: тенденции повышения эффективности / Ж.К. Ержанова, Н.А. Ахметжанова, А.А. Жайтлеуова // Проблемы агрорынка.-2023.- N3.-С.141-148. https://doi.org/10.46666/2023-3.2708-9991.14

References

[1] Ushvickij, L. (2023). Problemy obespechenija prodovol'stvennoj nezavisimosti Rossii v sfere molochnoj promyshlennosti [Problems of ensuring Russia's food independence in the dairy industry]. *Vestnik Severo-Kavkazskogo federal'nogo universiteta*, 3(96), 171-177. DOI: 10.37493/2307-907X.2023.3.19 [in Russian].

[2] Brankov, T., Matkovski, B., Jeremic, M., Đuric, I. (2021). Food Self-Sufficiency of the SEE Countries; Is the Region Prepared for a Future Crisis? *Sustainability*, 13, 8747. https://doi.org/10.3390/su13168747 [in English].

[3] Campbell, B., Vermeulen, S., Aggarwal, P., Corner-Dolloff, C., Girvetz, E., Loboguerrero, A., Ramirez-Villegas, J., Rosenstock, T., Sebastian, L., Thornton, P., Wollenberg, E. (2016). *Reducing risks to food security from climate change. Glob Food Secur, 2nd International Global Food Security Conference,* 11, 34-43. https://doi.org/10.1016/j.gfs.2016.06.00 [in English].

[4] Vinnichek, L. (2021). Povyshenie jeffektivnosti intensifikacii molochnogo skotovodstva:

tendencii i napravlenija [Increasing the efficiency of dairy cattle breeding intensification: trends and directions]. *Issledovanie problem jekonomiki i finansov*, 1, 1-10. DOI: 10.31279/2782-6414-2021-1-4-1-10 [in Russian].

[5] Koç, G., Uzmay, A. (2024). Construction of a Farm-Level Food Security Index: Case Study of Turkish Dairy Farms. *Social Indicators Research*, 175, 687-714. https://doi.org/10.1007/s11205-024-03406-8 [in English].

[6] Wagler, A., Schober, G., Chavez-Baray, S., Ayala, J., Dessauer, P., Moya, E. (2022). Food and housing security at a US Hispanic-serving institution: an examination before and during the COVID-19 pandemic. *Front Public Health*, 10, 918955 [in English].

[7] Derso, A., Bizuneh, H., Keleb, A., Ademas, A., Adane, M. (2021). Food insecurity status and determinants among urban productive safety net program beneficiary households in Addis Ababa, Ethiopia. *PLoS ONE*, 16(9), e0256634. https://doi.org/10.1371/journal.pone. 0256634 [in English].

[8] Luo, P., Tanaka, T. (2021). Food import dependency and national food security: a price transmission analysis for the wheat sector. *Foods*, 10(8), 1715. https://doi.org/10.3390/foods 10081715 [in English].

[9] Chhikara, N., Abdulahi, B., Munezero, C., Kaur, R., Singh, G., Panghal, A. (2019). Exploring the nutritional and phytochemical potential of sorghum in food processing for food security. *Nutrition & Food Science*, 49(2), 318–322. https://doi.org/10.1108/NFS-05-2018-0149 [in English].

[10] Buletova, N., Sharkevich, I. (2024). Prioritety prodovol'stvennoj bezopasnosti v kontekste nacional'noj politiki social'no-jekono-micheskogo razvitija [Priorities of food security in the context of national socio-economic develop-ment policy]. *Jekonomicheskaja bezopasnost'*, 7(5), 1239-1256. DOI: 10.18334/ecsec.7.5. 121107 [in Russian].

[11] Barcho, M., Alekseenko, L., Denisova, O., Kirjachek, V. (2023). Razvitie APK kak faktor obespechenija prodovol'stvennoj bezopasnosti Rossii [Agro-industrial complex development as a factor in ensuring Russia's food security]. *Vestnik Akademii znani, Bulletin of the Academy of Knowledge*, 54(1), 45-50 [in Russian].

[12] Moldashev, A.B. (2020). Prodovol'stvennaja bezopasnost' Kazahstana [Food security of Kazakhstan]. *Problemy agrorynka – Problems of AgriMarket*, 1, 11-18 [in Russian].

[13] Byuro nacional'noj statistiki Agentstva po strategicheskomu planirovaniyu i reformam Respubliki Kazahstan [Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan] (2025). Available at: https://stat.gov.kz (date of access: 04.01.2025) [in Russian].

[14] Bojovic, M., McGregor, A. (2023). A review of megatrends in the global dairy sector: what are the socioecological implications? *Agric Hum*, 40, 373-394. https://doi.org/10.1007/s10460-022-10338-x [in English].

[15] Gospodderzhka i masshtabirovanie opyta SKO: Kak Kazahstan razvivaet molochnoe proizvodstvo [State support and scaling of the North Kazakhstan Region experience: How Kazakhstan develops dairy production] (2024). Available at: https://primeminister.kz/ru/news/gospodderzhka--i--masshtabirovanie--opyta-sko--kak-kazakhstan-razvivaet-molochnoe-proizvodstvo-28592 (date of access: 14.12.2024) [in Russian].

[16] Tleuberdinov, A., Nurlanova, N., Alzhanova, F. (2025). Food security and self-sufficiency as a factor of country's sustainable development: assessment methods and solutions. *Discov Sustainability*, 6(1), 50. https://doi.org/10.1007/s43621-025-00849-y [in English].

[17] Erzhanova, Zh., Ahmetzhanova, N., Zhajtleuova, A. (2023). Molochnaja otrasl' Kazahstana: tendencii povyshenija jeffektivnosti [Kazakhstan's dairy industry: efficiency improvement trends]. *Problemy agrorynka - Problems of AgriMarket*, 3, 141-148. https://doi.org/10.46666/2023-3.2708-9991.14 [in Russian].

Information about authors:

Belgibayeva Anargul Sarsenbayevna - **The main author**; Candidate of Economic Sciences, Associate Professor; Professor of the Department of Business and Services; Sh. Ualikhanov Kokshetau University; 020000 Abay str., 76, Kokshetau, Kazakhstan; e-mail: anar.belgibayeva@gmail.com; https://orcid.org/0000-0001-5583-0624

Авторлар туралы ақпарат:

Бельгибаева Анаргуль Сарсенбаевна - **негізгі автор**; экономика ғылымдарының кандидаты, қауымдастырылған профессор; «Бизнес және қызметтер» кафедрасының профессоры; Ш.Уәлиханов атындағы Көкшетау университеті; 020000 Абай көш., 76, Көкшетау қ., Қазақстан; e-mail: anar.belgibayeva@gmail.com; https://orcid.org/0000-0001-5583-0624

Информация об авторах:

Бельгибаева Анаргуль Сарсенбаевна **- основной автор**; кандидат экономических наук, ассоциированный профессор; профессор кафедры «Бизнеса и услуг»; Кокшетауский университет им.Ш.Уалиханова; 020000 ул.Абая, 76, г.Кокшетау, Казахстан; e-mail:anar.belgibayeva@gmail.com; https://orcid.org/0000-0001-5583-0624