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FOOD SECURITY MAINTENANCE BASED ON THE DEVELOPMENT OF THE MILK AND DAIRY MARKET IN FOREIGN COUNTRIES AND RUSSIA

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Abstract

The aim of the article is to identify the most important areas of ensuring food security in foreign countries and Russia based on the development of the milk and dairy products market. The main organization performing the task of providing the population with high-quality products is the Food and Agriculture Organization United Nations - FAO. The authors analyze the production and processing of milk, the productivity and number of cows, and the condition of the feed base. An analysis of the development of the feed base indicates that the specific feed intake in Russia is 1.4-1.5 times higher than in developed countries. This problem can be solved through the intensification of field fodder production and the radical improvement of natural forage lands. To increase the efficiency of the industry and develop the market for milk and dairy products, the authors consider it appropriate to implement a set of measures, such as state interest, development of feed production, re-equipment of processing enterprises and the creation of new high-quality products, equalization of per capita incomes.

Key words**:** *import and export, food security, milk and dairy products market, agriculture*

INTRODUCTION

An important role in the food security system of any country is played by livestock production. To make management decisions aimed at eliminating the problems facing agriculture and the processing industry, a comprehensive analysis of the relevant markets is needed. Social-economic development and transformations of the last decades in many countries of the world economy demonstrated the potential developments in the ways of conducted reforms and strategies of transformations [5].

The main objective of ensuring food safety is the production and sale of high-quality and competitive dairy products both on the world market and within a single country. In the modern world, milk is no longer just a food product. First of all, milk is considered as a unique and most valuable source of protein, the deficiency of which is experienced by most countries of the world. Moreover, the need for this protein is growing every year with the growth of the world's population and its well-being.

The quality of raw materials and food products must meet established requirements and guarantee safe consumption. A person should receive with food the whole complex of substances necessary for the normal development of the body and at the same time be sure of its safety, i.e. in the absence of substances harmful to health and the environment [8].

MATERIALS AND METHODS

The period analyzed in this research was 2010-2018. The main data was obtained on the official website of the Food and Agriculture Organization of the United Nations, the Federal State Statistics Service of the Russian Federation, the Ministry of Agriculture of the Russian Federation and other sources. Research methods - monographic, economic-statistical, abstract-logical, balance, analysis method.

RESULTS AND DISCUSSIONS

The issue of food security in the world is addressed by the Food and Agriculture

Organization United Nations - FAO [1]. Each state should strive to ensure the consumption of food products in the country at the level of 70-80% due to domestic food production. Vital food products, such as milk, meat, grain, butter and others, are produced in the agricultural industry. Economic development of countries results in a decreasing share of agricultural production in the Gross Domestic Product (GDP) structure. On the one hand, this is conditioned by a low elasticity of agricultural products demand, on the other hand by low efficiency of production factors in the agriculture in relation to other economic sectors, whereas an improvement in agriculture productivity is a prerequisite for the stable economic development [3].

Table 1 presents the GDP of some countries for 2017-2018.

Table 1.Gross domestic product, USD bln.

Country	2017	2018	2018 in comparison with 2017, %
European Union	17,345	18,749	108.1
Eurozone	12,635	13,670	108.2
Great Britain	2,609	2,808	107.6
Germany	3,618	4,029	111.4
Spain	1,302	1,437	110.4
Italy	1,895	2,087	110.1
Netherlands	799	821	102.8
Russia	1,442	1,576	109.3
Romania	197	206	104.6
Turkey	769	833	108.3
Ukraine	95	121	127.4
France	2,570	2,795	108.8

Source: [7].

So in 2018, GDP in Germany amounted to 4,029 USD billion, which is 11.3% higher than in 2017. In Russia, this indicator for the year 2018 increased by 9.3%, in Romania by 4.6%. In the USA, in 2018 GDP amounted to 20,494 USD billion. The share of agriculture in Russia's GDP in 2018 was 4.1%, Romania - 10%, USA - 1.9%, Germany - 1.5%, etc.

Models and methods of ensuring food safety in different countries differ from each other. Singapore is the leader this year in the world food safety rating compiled by The Economist, a British magazine. The main emphasis should be directed to the sustainable development of the domestic production of the main types of agricultural raw materials and prepared food, sufficient for both ourselves and for export supplies. Then the income from trade abroad will help close the domestic demand for goods that are not produced in the country - the so-called critical imports.

From the point of view of ensuring food security, the current state and development of agriculture cause some concern. The main reasons for this state of affairs are the lack of a single mechanism for the development of agribusiness, the use of outdated production technologies, poorly developed agricultural infrastructure, underestimation of the role of farmers in the development of agribusiness, low support from the state, while at the same time high lending level [2].

Increase in efficiency of functioning of branch of dairy cattle breeding requires introduction of the mechanism of food communications at which agricultural producers would have a possibility of reliable sale of milk and receiving have arrived [9].

Often in some countries, the market for milk and dairy products is formed through domestic production and imported supplies of inadequate quality. It is difficult to achieve a high level of self-reliance within the country and to prevent the supply of milk and dairy products with a high content of palm oil. At the same time, each state seeks to increase the volume of exported products and establish distribution channels. The policy of import substitution is possible only under the condition of expanded reproduction.

The volumes of export and import of dairy products primarily depend on the volumes of production and processing of milk, the number of cows and their productivity.

In 2018, India became the leader in the number of milk cows - 58.5 million heads. The European Union contains 23.3 million animals, Brazil - 16.21 million animals, the United States - 9.38 million animals, China - 7.2 million animals, Russia - 7 million animals, Ukraine - 2.7 million goals, Belarus - 1.51 million goals, etc.

According to preliminary data from the Organization for Economic Cooperation and

Development (hereinafter referred to as the OECD-FAO), world production of all types of milk in 2018 amounted to 844 million tons, which is 2.5% more than in 2017.Total for the period 2014-2018, milk production increased by 6% [4] (Fig 1).

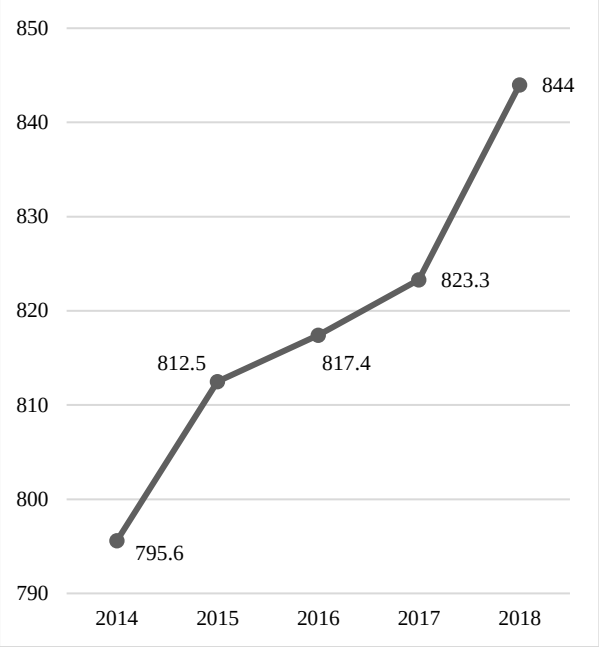

Fig. 1. World milk production in 2014-2018, mln tons
Source: Own design based on the data from [4].

In 2018, the EU countries became the leaders in the production of cow milk in the world - 141.2 million tons, the USA - 97.9 million tons, India - 83.6 million tons. These countries produce 64.3% of the total volume of cow's milk (501.6 million tons). In 2018, Russia produced 30.6 million tons of cow's milk, which amounted to 6.1% of total world production.

The production of the main types of dairy products throughout the EAEU over the past five years has a positive trend. In 2017, it was produced: liquid processed milk - 7,236.2 thousand tons or 3.5% more than in 2013, cheese - 870.1 thousand tons or more by 46.7%, butter - 455.2 thousand tons or more by 32.7%. In Russia, the production of whole milk products, which includes drinking milk, kefir, sour cream, cottage cheese, cream, yoghurts, etc., in 2018 amounted to 11.7 million tons (in terms of milk), which is 1% higher than last year.

In 2018, Russia produced 970 thousand tons of cheese, and by 2021 it will retain these volumes, but the EU countries with the production of almost 10.3 million tons in 2018 and 10.35 million tons in the next in the second, the United States with 5.95 million tons and 6.1 million tons, respectively. At the end of 2019, Brazil - 780 thousand tons and Canada - 519 thousand tons will also enter the top 5 world cheese producers.

The European Union produces more than 30 million tons of liquid dairy products per year, 9.8 million tons of fermented dairy products, 2.3 million tons of butter and milk fats, 9.2 million tons of cheeses.

The main problem today is the low level of consumption of milk and dairy products. So in Russia in 2018, per capita milk consumption amounted to 225.2 kg, with a recommended consumption rate of 325 kg per person. The low level of consumption is explained by the continuing decline in real disposable incomes of the population, an increase in low-quality goods from abroad, as well as an increase in prices for dairy products.

The consumption level for each country is different, for example, according to IDF in the Netherlands, the consumption of liquid milk per capita is 42 kg, butter - 4 kg, cheese - 21.7 kg per year, in Denmark consumption liquid milk per capita - 87.6 kg, oil - 6.2 kg, cheese - 27.5 kg per year, in France the consumption of liquid dairy products - 47.4 kg, butter - 8 kg, cheese - 26.4 kg, in Germany the consumption of liquid dairy products in Germany is per capita - 53.4 kg, oil - 5.9 kg, cheese - 24.3 kg per year.

The development of dairy cattle breeding in all countries depends on the state of the feed base and the balanced diet of cow feeding. The need for feed in agricultural organizations in Russia is satisfied mainly due to field feed production. The main direction of providing dairy cattle with fodder is to improve the structure of sown areas of fodder crops, increase the proportion of perennial grasses; increase in the level of feed production intensity [6]. In Russian farms, specific feed consumption is not only 1.3-1.5 times higher than in developed countries, but also 50-60% higher than zootechnical standards.

In our opinion, the main characteristics reflecting the development of the market for

milk and dairy products are: the availability of a high-quality domestic product in sufficient volume to satisfy the needs of the population, control over the pricing policy for finished products and an equitable distribution of income for each participant the technological chain, the use of milk interventions at the international level, etc.

Also, one of the characteristics of the development of the world market for milk and dairy products is the presence of sanctions (Russian food embargo) against Russia. Since 2014, the export of dairy products from the EU to the Russian Federation is prohibited. On the part of Russia, mutual bans will last until December 31, 2020.

Immediately after the imposition of sanctions, as well as after the first round of ruble devaluation that took place against their background (at the end of 2014-2015), a decrease in imports occurred for all types of dairy products. Since 2014, the import of powdered and condensed milk has more than halved, they began to buy cream butter, cheese and cottage cheese abroad by 1.6 times less. In general, the import of dairy products since 2014 decreased 1.7 times from 4 to 2.3 billion dollars, which became the main driver of growth in domestic production. Another factor restricting the import of dairy products is the import restrictions.

Under the influence of sanctions, the share of imports of dairy products (kefir and yogurt) increased, for example, in 2014 its share in foreign purchases of dairy products was 7%, and today, due to a decrease in the total volume of imports of other dairy products, already amounted to 12%.

At present, Belarus and the EAEU countries are the main partner of Russia in the import of milk and dairy products, so in 2018 almost 82% of imports were covered by Belarusian products. The main suppliers of dairy products to the territory of the EAEU in 2018 were:

- non-condensed milk and cream - Poland - 54% of the EAEU import volumes;
- condensed and dried milk and cream - Uruguay - 15.7%, the Ukraine - 14.5%, Argentina - 12.5% (5%), respectively, as well as New Zealand and Turkey - 13.3% and 12.7%, respectively;
- buttermilk, yogurt, kefir - Ukraine - 38%, Serbia - 18.3%, Switzerland - 13.5%, and Germany - 13.9%;
- milk whey - Argentina - 43.4%;
- butter - New Zealand - 63%;
- cheese and cottage cheese - Serbia and Argentina - 25.5% and 22.4%, as well as the Ukraine - 10.3% and Uruguay - 8.2%.

As for the export of milk and dairy, the main export market for Russia is represented by the countries of the EAEU and the CIS. In 2018, milk exports amounted to 284 USD billion, which is 1.2% lower than the level of the previous year. The decline in exports is associated with a decrease in supplies from Belarus, since domestic producers had to fill in the missing volumes of milk and dairy products in the domestic market, another point is fierce competition in the world market for the cost of production, which entails a decrease in milk prices and loss of profit.

A positive thing to note is Russia's entry into the dairy market of China, since the conflict between the USA and China in 2018 led to a reduction in US exports of whey by 36%, skimmed milk powder - by 54%, whole milk products - by 97%, cheese - by 56%. On the day, the United States lost 26% in dairy exports. China has limited the duration of old import tariffs on American goods. China’s actions open up new stable sales channels for Russia, which in the future will give another impetus to increase production of milk and dairy products.

In 2018, a decrease in the EU intervention fund was observed on the world market of milk and dairy products. After the food embargo was introduced in 2014, the EU authorities bought milk powder from the market for several years in order to support producers. In 2018, the situation changed and the authorities began to sell stocks of dried skimmed milk powder. These actions led to a sharp increase in prices for milk powder, and, consequently, for other dairy products.

The demand for it depends on the price of a product, since most of the population does not have a sufficient level of income. Food security must be stable due to the fact that people have daily needs that should not suffer from sudden changes. Food should be affordable both in

terms of their physical availability and in relation to the purchasing power of the population. There are also two conceptual approaches to food security.

According to the first approach, the required level of security is achieved through the import of food products from several leading world producing countries, while at the same time either tariff barriers and non-tariff barriers for moving food and reducing state support for their agricultural producers are significantly reduced [8]. Another approach characterizes the direct subsidization of agricultural producers and the protection of the domestic food market, carried out by quoting food imports, customs duties to achieve the necessary level of self-sufficiency in basic food products.

CONCLUSIONS

The analysis showed that the global market for milk and dairy products for 2014-2018. unstable and changes under the influence of many factors (the introduction of the Russian food embargo, a reduction in the global intervention fund, rising prices for dairy products, changes in the structure of imports and exports of milk and others).

In order to achieve the goal of increasing milk production, increasing its economic efficiency of production and solving the problem of food security in all countries, more decisive and well-developed actions are needed. Namely:

•improve the regulatory legal framework for the functioning of the agro-industrial complex;
•monitor, forecast and control the state of food security;
•assess the sustainability of the country's economy to changes in world food markets and changes in the natural and climatic nature;
•assess the sustainability of the food supply of cities and regions depending on the external supply of food products;
•create state information resources in the field of ensuring food security.

REFERENCES

[1]FAO, 2020, http://www.agri-outlook.org/, Accessed on Feb. 2020.
[2]Klimova, N.V., 2016, Ensuring Russia's food security as a strategic task of the state. Journal of Economics: yesterday, today, tomorrow, 2, 74-89.
[3]O'Donnell, C. J., 2010, Measuring and decomposing agricultural productivity and profitability change. Australian Journal of Agricultural and Resource Economics, 54, 527-560.
[4]OECD-FAO, January 2020 http://www.fao.org/3/CA1866EN/ca1866en.pdf, Accessed on Feb. 2020.
[5]Rassadin, V.V., Pavlov, A.J., Batova, V.N., Kolesnikov, A.V., 2014, Evolutional – genetic approach to formation of sustainable development indicators of the agricultural territories. Journal of Environmental Management and Tourism, Volume V, 2(10): 230-236.
[6]Stolyarova, O.A., 2015, Domestic dairy cattle breeding in the context of the Russian Federation's membership in the WTO: Problems and Development Prospects. Journal of Regional Economics: Theory and Practice, 394 (19), 55-64.
[7]Take profit, 2020, http://investorschool.ru/rejting-stran-po-vvp-2017, Accessed on Feb. 2020.
[8]Ulanova, O.I., Sologub, N.N., 2018, Problems and main directions of food policy in Russia at the present stage. Problems and main directions of increasing the efficiency of the agricultural sector in the region in the context of globalization and import substitution. Monograph, Penza, Russia, 181-208.
[9]Vinnichek, L, Stolyarova, Y., Stolyarova,O., 2019, The Development of Milk Market in the Conditions of Ensuring Food Security in Russia and Germany. Advances in Economics, Business and Management Research, 79. 322-325.