

Research Article

Population's Supply with Dairy Products in Certain Russian Regions

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ABSTRACT

Introduction. The relevance of the study is determined by the fact that supplying its population with food is a top priority for any country. Russia is the largest state in the world, with significant mineral deposits, which allows it to take the leading position among the countries. Also, the Russian Federation pays great attention to the country's food sovereignty, which is achieved with various tools. This article aims to study how well the population of certain Russian territories is provided with dairy products.

Materials and methods. The study is based on the official data provided by the Federal State Statistics Service. The paper explores the dynamics of dairy cows population and presents data on milk production by various organizations, as well as the share of imports and exports of these products.

Results. Having studied the statistical data, the authors identified a negative trend in the volumes of dairy products. Similarly, production of milk and dairy products has gone down in certain territories of the Russian Federation. It is worth noting that during the period under study the population reduced the consumption of dairy products by an average of 4 kg per capita per year. In the current conditions, Russia cannot fully supply its population with this type of products. The Food Security Doctrine says that the country's self-sufficiency in milk and dairy products should reach at least 90%, but this figure has not been achieved yet.

Discussion. According to the revealed trends and the data studied, the authors propose to create a separate project for each type of products included in the list of the Food Security Doctrine of the Russian Federation, in particular for dairy products, which will outline the main measures aimed at increasing its supply.

Conclusion. Self-sufficiency should be seen as an unstable system as it largely depends on various external and internal factors, ranging from geographical location, climatic factors to the pressure of the import.

Keywords: food security, dairy cows population, self-sufficiency, export and import products

INTRODUCTION

Food security is an essential component of economic security. The development of agriculture, in particular dairy cattle breeding, increasing the efficiency of business processes in this sector of the agro-industrial complex will undoubtedly lead to such a situation on the dairy market when Russia will be able not only to fully provide for the domestic consumption of dairy products, but will also become a major player in the market.

Currently, there is a stable annual growth in the consumption of dairy products all over the world which is due to the growing population. It is worth noting that in different countries the recommended dietary intake levels can vary significantly.

Having studied how well the Russian Federation, the Volga Federal District and the Nizhny Novgorod region are provided with dairy products, the authors can note that the share of

imports is quite high, and this indicates that Russia cannot yet provide its population with necessary food. Insufficient milk production in Russia necessitates importing some of the dairy products. The aim of the study is to explore ways of providing the population with dairy products in certain territories of the Russian Federation.

In the current circumstances, Russia adopted the Doctrine of Food Security. In accordance with this Doctrine, the country's self-sufficiency in milk and dairy products should be at least 90%. The same figure for this group of products is also given in the State Program for the Development of Agriculture and Regulation of the Agricultural Products, Commodities and Food Markets for 2013-2020. The Doctrine of Food Security of the Russian Federation implemented in the framework of the National Security Strategy of the Russian Federation until 2020 emphasizes the issues of food security of the country. Obviously, this topic is extremely relevant nowadays as food security is directly related to the economic development of the country.

MATERIALS AND METHODS

The study is based on the data provided by the Federal State Statistics Service [1], as well as programs for the development of agriculture and the Doctrine of Food Security of the Russian Federation [2].

RESULTS

To cover their needs in dairy products, the country or certain territories should invest money in livestock breeding complexes, to purchase livestock breeds that have the highest productivity, to create cooperative associations, to reduce the cost of milk production and sale, as well as to upgrade their facilities. In turn, in order to attract investments and innovation in this sector, the state should support domestic producers by developing programs to increase the efficiency of milk production, to supply the market of the entire region and the whole country with this product.

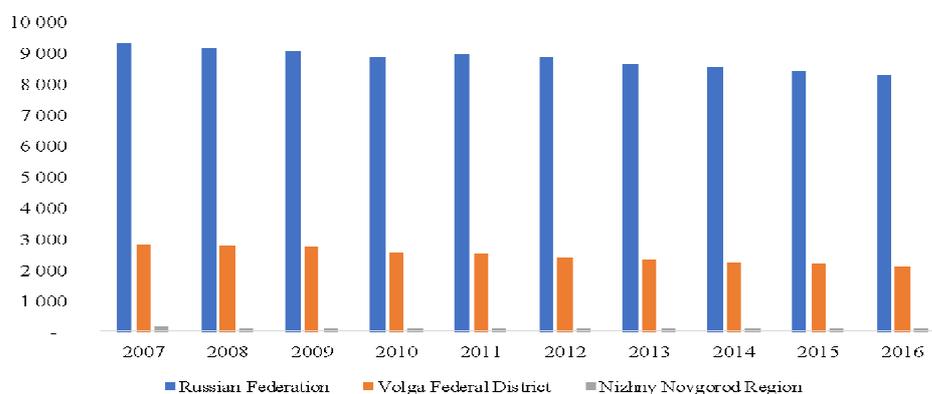


Figure 1. Dynamics of the dairy cows population, thousand head. *

* according to the official data of the Federal State Statistics Service

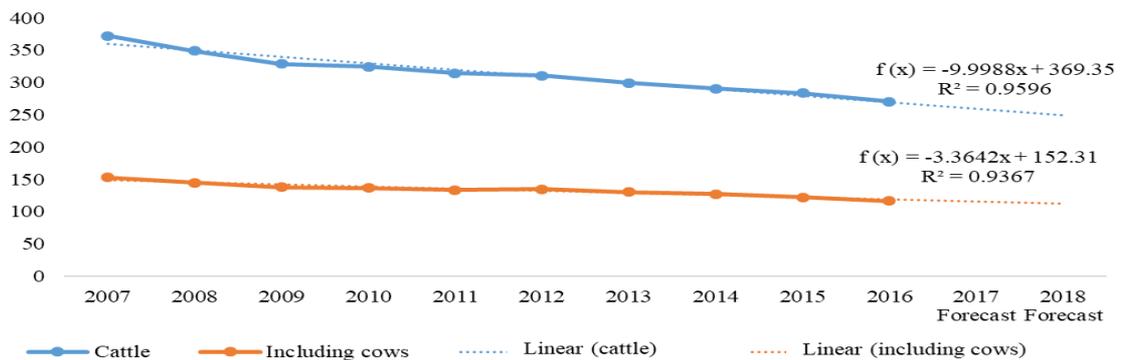
Having considered the dynamics of dairy cows population for the period from 2007 to 2016, it is worth noting that there was a decrease in the livestock in the country as a whole by 1,057 thousand head (11.3%), in the reporting year the figure estimated 8,264 thousand head. A significant reduction took place in the Volga Federal District and estimated 25.2% compared to the level of the base year. The same situation is observed in the Nizhny Novgorod region, where on the whole the decrease estimated 36 thousand head or 23.8%. In the reporting year, the region's indicator was 117 thousand head in all categories of farms.

Taking into account the annual reduction in the population of dairy cows and the current trend, the country will not be able to reach a high level of self-sufficiency in dairy products and will depend on imported products.

The Volga region has a great potential for the development of the agricultural market, but to increase its efficiency, it is necessary to improve the cooperation of industrial enterprises by strengthening integration and links of production processes.

To promote efficient development of agricultural organizations, it is necessary to create the economic environment which would enable profitable production and marketing of agricultural products.

Figure 2 – Dynamics of cattle population in the Nizhny Novgorod region, thousand head *



* according to the official data of the Federal State Statistics Service

The ongoing trend associated with the reduction in dairy cows population resulted in a drop in gross milk production, thereby destabilizing the milk processing industry and the supply of dairy products to the domestic market. After the alignment of the time series (livestock dynamics) according to the linear trend, the equation takes the following form: $y = -3.3642x + 152.31$, which means that the average population of dairy cows in the Nizhny Novgorod region reduces annually by 3 thousand head; the validity of this equation is $R^2=0.9367*100=93.67\%$.

In order to ensure Russia's self-sufficiency in terms of food security, it is necessary to solve a number of major problems, which will allow significantly increasing the volumes of domestic products and improve their quality. It is crucial to control the quality of imported products and ensure their compliance with sanitary norms and to reduce interest on loans for agricultural producers [3].

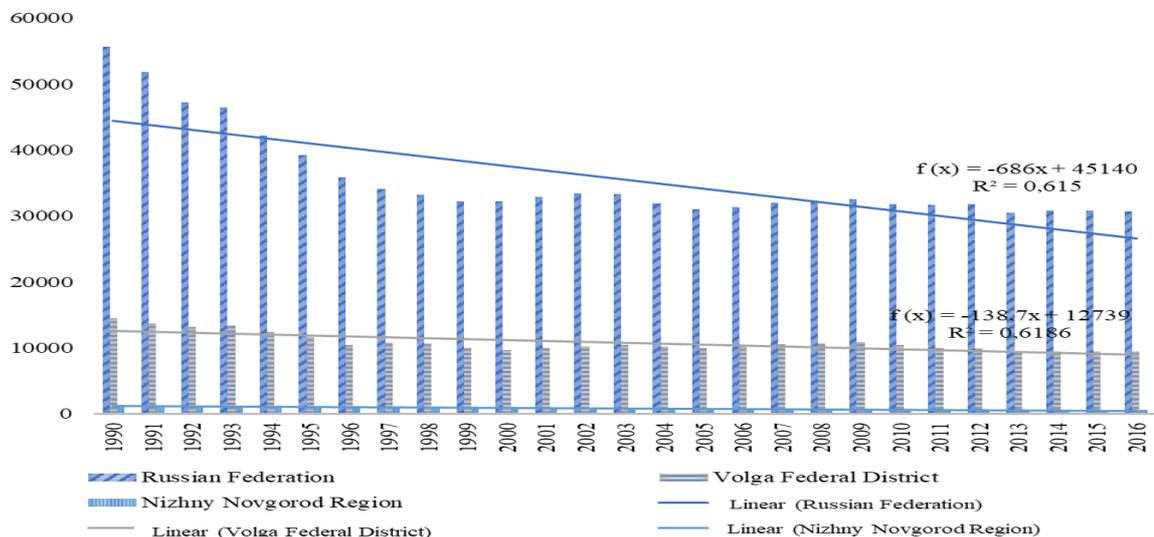


Figure 3 – Milk production at all categories of farms, thousand tons*

* according to the official data of the Federal State Statistics Service

After the analytical alignment of the time series according to the linear trend, the equation takes the following form: $y = -686x + 45140$, which means that the average milk production in our country reduces by 686 thousand tons per year; the validity of this equation is 61.5%. In 2016, the production of milk in all categories of farms in the Russian Federation amounted to 30,758.5 thousand tons. For the Volga Federal District, the analytical alignment of the time series according to the linear equation: $y = -138.7x + 12739$, which means that the average milk production in the Volga Federal District reduces by 138.7 thousand tons per year. In the Nizhny Novgorod region, there is also a trend for a reduction in milk

production by an average of 28.7 thousand tons per year. The validity of this conclusion is $D = R^2 \cdot 100\% = 86.2\%$. There is a clear trend denoting the reduction of milk production in Russia as a whole and in its individual regions.

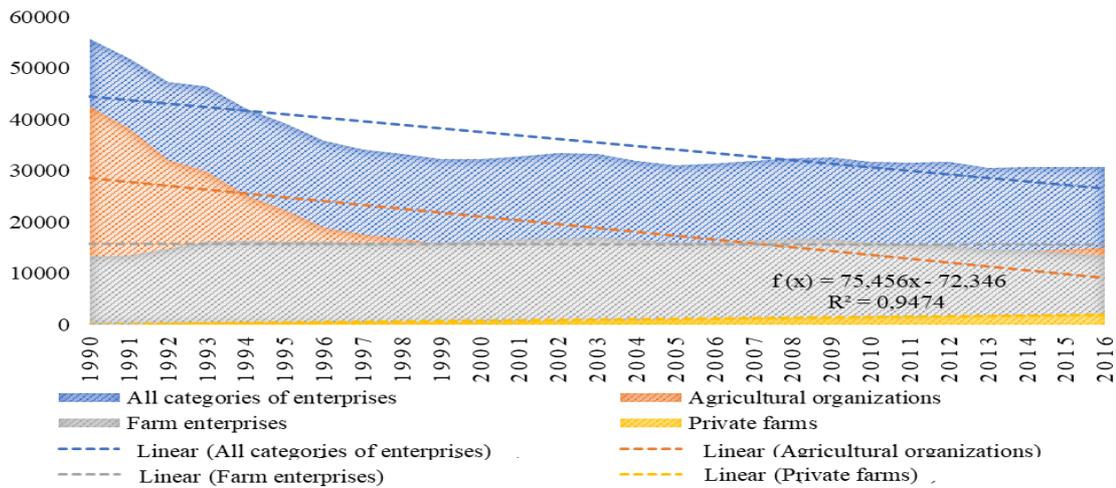


Figure 4 – Milk production by categories of enterprises, thousand tons *

* according to the official data of the Federal State Statistics Service

There is a downward trend for milk production in all categories of enterprises; however, compared to the level of 1990, farm enterprises demonstrated a trend for increasing milk production. After the alignment of the milk production in the Russian Federation in the farm enterprises according to the linear trend, the following equation was obtained: $y = 75.456x - 72.346$, which shows that the annual production of milk in Russia in the farm enterprises increases by an average of 75.456 thousand tons. The validity of this conclusion is $D = R^2 \cdot 100\% = 57.3\%$.

After the alignment of the milk production in the Russian Federation in agricultural organizations according to the linear trend, the following equation is obtained: $y = -750.83x + 29349$, which shows that the production of milk in Russian agricultural organizations annually decreases by the average of 750.83 thousand tons. The validity of this conclusion is $D = R^2 \cdot 100\% = 57.3\%$.

There is also a decrease in the milk production at private farms, which also has a negative impact on the country's self-sufficiency in dairy products.

The milk yield per head in the Russian Federation tends to increase. After the alignment of the milk yield per head in Russia according to the linear trend, we obtain the following equation: $y = 441.82x + 1900$, which shows that the annual milk yield increases by an average of 441.82 kg per year. The validity of this conclusion is $D = R^2 \cdot 100\% = 93.89\%$. It should also be noted that the cattle population is decreasing, but this reduction is combined with an increase in gross milk yield per head; therefore, it can be assumed that the production of milk uses a breed of cattle with a higher productivity and the cattle diet has been optimized (that is, livestock management has been improved).

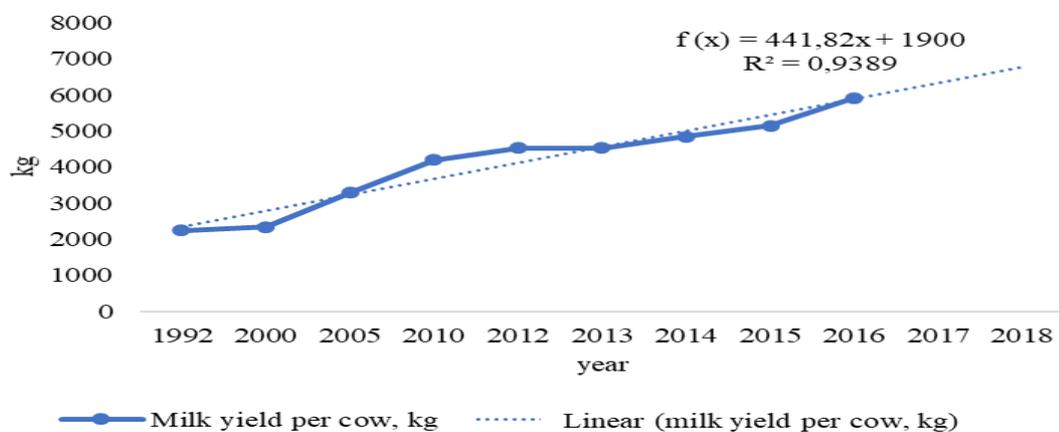


Figure 5 – Dynamics of milk yield per cow in the Russian Federation *

* according to the official data of the Federal State Statistics Service

To support domestic producers, it is necessary to conduct a constant monitoring of the import dependence of all categories of farms in particular regions and the whole country. The policy of import-substitution should lead to higher competitiveness of local products, increasing production volumes and marketing them to neighboring regions and abroad [4].

Russian agricultural producers are capable of increasing production. The actual consumption of dairy products ranges from 200 to 250 kg per capita, while the normative values of dairy consumption are 325 kg per capita. The policy of import substitution adopted by the government allowed Russian agricultural producers to increase the volume of domestic production of dairy cattle, but there are some factors that impede the development of the domestic dairy industry.

Table 1 – Sources and use of milk and dairy products in the Russian Federation, thousand tons*

Index	1990	1993	1996	1999	2002	2005	2008	2011	2014	January - September 2017	Absolute deviation, (+, -)
Sources											
Inventory at the beginning of the year	3450	2491	2426	1195	1415	1693	1926	1866	1982	1746	-1704
Production	55716	46524	35819	32274	33462	30826	32363	31646	30791	24253	-31463
Import	8043	5761	4530	4718	4989	7115	7315	7938	9155	4765	-3278
Total sources	67209	54776	42775	38187	39866	39634	41604	41450	41928	30764	-36445
Use											
Productive consumption	7314	7519	6667	5295	5246	4097	4308	3622	3482	2332	-4982
Losses	62	35	51	34	30	17	21	30	36	16	-46
Export	335	90	490	208	460	493	612	614	629	453	118
Household consumption	57233	43591	34236	31328	32744	33250	34566	35189	35661	25929	-31304
Inventory at the end of the reporting period	2265	3541	1331	1322	1386	1777	2097	1995	2120	2034	-231

* according to the official data of the Federal State Statistics Service

Production of dairy products decreased more than twice during the analyzed period. In 1990, this figure estimated 55,716 thousand tons, in 2017 – only 24,253 thousand tons, which is lower than the level of 31,463 thousand tons. Special economic measures introduced in 2014 by Russia towards a number of countries that had previously supplied significant volumes of dairy products to the country created a niche in the domestic market by reducing imports by more than 20%. However, they also significantly hindered the possibilities to expand the presence of domestic producers in the Russian market. Upon the introduction of the policy of import substitution the volume of imported products estimated 9,155 thousand tons, whereas already in 2017 the volume of imports decreased by 4,390 thousand tons or almost twice.

Demand is a key factor for the development of milk production, as well as for the development of agriculture in general. Milk consumption during the Soviet period was relatively high due to large subsidies to dairy production. However, household consumption of milk throughout the analyzed period has significantly decreased, which was mainly influenced by the purchasing power, per capita income of the consumer. In the Soviet period, household consumption of milk estimated 57,233 thousand tons, whereas in 2017 this indicator was only 25,929 thousand tons. This indicator decreased slightly more than twice or by 31,304 thousand tons.

High competitiveness of Belarusian products contributed to the expansion of Belarus's dairy export to the vacant Russian market and increasing price competition, while the growing production costs in Russia and the inaccessibility of credit resources at current rates led to a significant decrease in the profitability of milk producers and milk processing enterprises. Such a situation resulted in many enterprises finding themselves hardly profitable or unprofitable. Thus, the volume of milk production and the industry producibility are declining. The volume of exports reached a relatively high level of 453 thousand tons: compared to the level of the Soviet period this indicator increased by 118 thousand tons. However, if we

consider the volume of exports for 2014, when sanctions were imposed, then we can see a decrease in this indicator by 176 thousand tons.

Table 2 – Sources and use of milk and dairy products in the Nizhny Novgorod region, thousand tons *

Index	2001	2004	2007	2010	2013	2016	Absolute deviation (+, -)
Sources							
Inventory at the beginning of the year	43.6	51.6	50.4	56.6	50.6	50.4	6.8
Production	847.1	696.9	640.6	592.4	611.9	598.2	-248.9
Import	108.6	247.7	319.1	365.6	423.7	402.5	293.9
Total sources	999.3	996.2	1010.1	1014.6	1086	1051.1	51.8
Use							
Productive consumption	125.9	98.5	75.6	64.4	63.2	54.4	-71.5
Losses	0.2	0.2	0.3	0.1	0.1	0.1	-0.1
Export	80.4	129.5	117.4	122.1	151.1	176.8	96.4
Household consumption	758.8	721.9	748.3	779	817.1	779.2	20.4
Inventory at the end of the reporting period	34.3	46	68.5	49	54.1	40.5	6.2

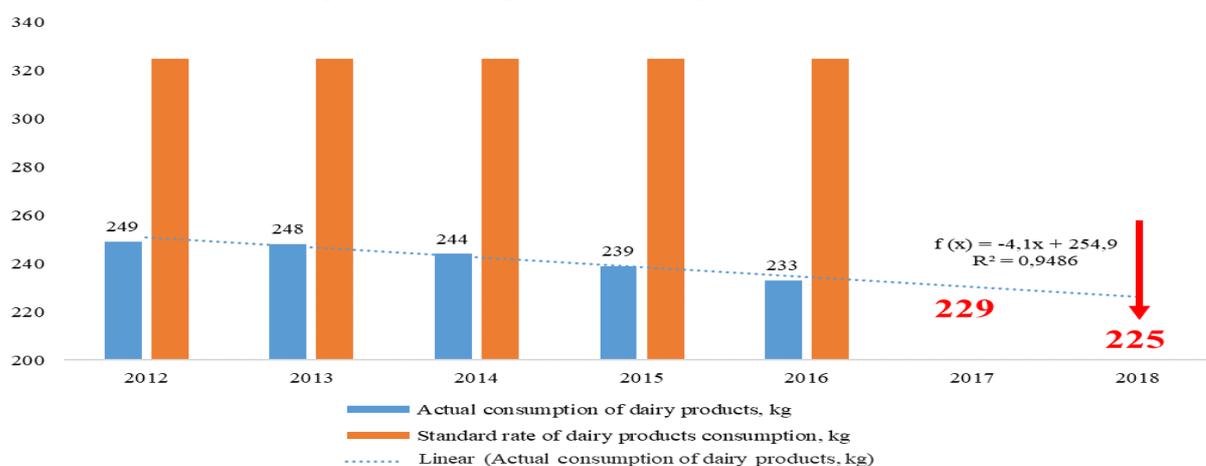
* according to the official data of the Federal State Statistics Service

Having considered the sources and use data in the Nizhny Novgorod region, it should be noted that the volume of imported products increased by 293.9 thousand tons. However, the volume of dairy production, like in the whole of Russia, is significantly reduced. In the reporting year, the volume estimated 598.2 thousand tons, which is 248.9 thousand tons below the level of the base year. In turn, the use of milk in the region decreased by 71.5 thousand tons, while in 2016 this figure was 54.4 thousand tons, and there was an increase in household consumption by 20.4 thousand tons.

Having analyzed the current consumption of foods with highest social value and comparing it with the basic norms, the authors identified that the real consumption was significantly lower than the accepted norms, in particular dairy products. The characteristics of consumption depend almost entirely on the sufficient saturation of the consumer market with products, and, as a consequence, the production volume and the efficient use of raw materials. The level of people's supply with socially important foods indicates that over several recent years the food producers of the region were not working efficiently as they did not take into account such criteria of foods as safety and environmental friendliness [5].

Dietary intake levels are defined by the Order of the Ministry of Health and Social Development of the Russian Federation. Dietary intake corresponds to "The Norms of Physiological Needs for Energy and Food Substances for Various Population Groups in the Russian Federation" and gives the average value (calculations per capita) of the necessary intake of food and biologically active substances that ensure the optimal functioning of physiological and biochemical processes in the human body [6].

Figure 6 – Dynamics of dairy products consumption in Russia, kg/Year*



* according to the official data of the All-Russia Directory "Dairy Industry-2017"

The actual consumption of dairy products in Russia tends to decrease (as well as milk production). In 2016, milk consumption was below the norm by 92 kg. After the alignment of the dynamics of dairy

products consumption according to the linear trend, the following equation was obtained: $y = -4.1x + 254.9$, which shows that the annual consumption of dairy products in Russia decreases on average by 4.1 kg. The validity of this conclusion is $D = R^2 \cdot 100\% = 94.8\%$. According to the forecast, in 2018 the actual consumption of dairy products will estimate 226 kg per capita.

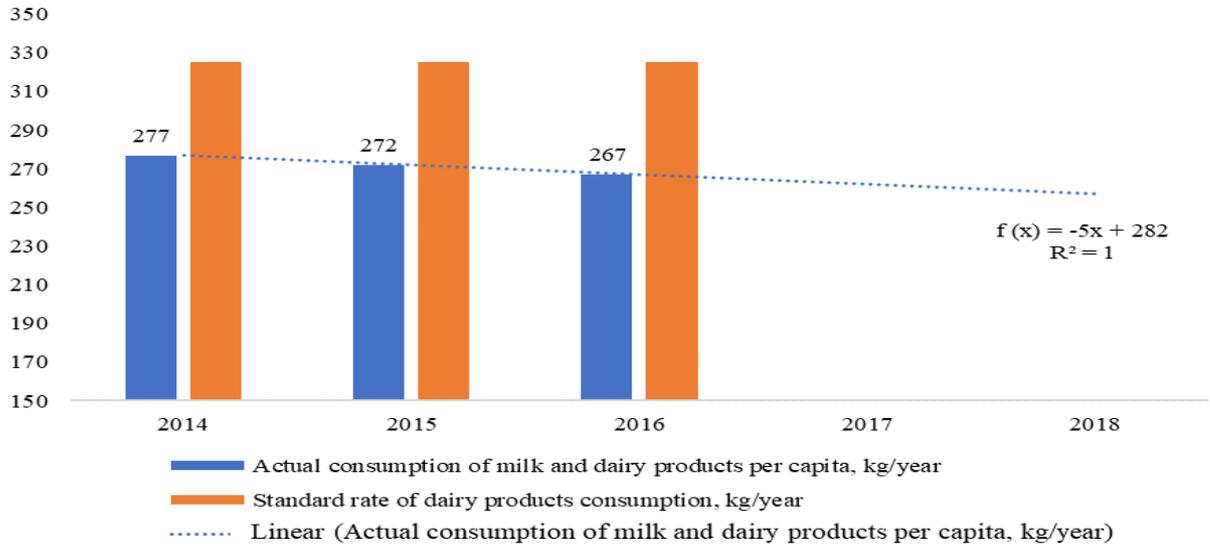


Figure 7 – Dynamics of dairy products consumption in the Volga Federal District, kg/year *

* according to the official data of the All-Russia Directory "Dairy Industry-2017"

In the Volga Federal District, the dynamics of actual consumption of dairy products is negative. After the alignment of the dynamics of the actual consumption of dairy products in the Volga Federal District, the following linear trend was obtained: $y = -5x + 282$, which shows that the annual consumption of dairy products there decreases on average by 5 kg. The validity of this conclusion is $D = R^2 \cdot 100\% = 100\%$.

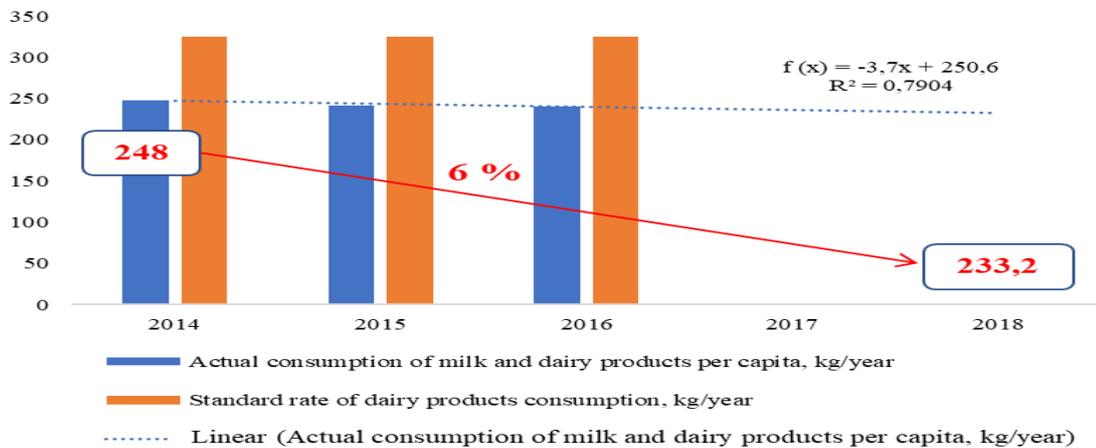


Figure 8 – Dynamics of dairy products consumption in the Nizhny Novgorod region, kg/year*

* according to the official data of the All-Russia Directory "Dairy Industry-2017"

In the Nizhny Novgorod region, there is also a decrease in the consumption of milk and dairy products. In 2016, the Nizhny Novgorod dweller consumed 240.6 kg/year, with the dietary intake level of 325 kg/year, which is significantly lower the recommended rate. After the alignment of the dynamics of the milk and dairy products actual consumption in the Nizhny Novgorod region, the following equation was obtained according to the linear trend: $y = -3.7x + 250.6$, which shows that the annual consumption of dairy products in the region decreases by an average of 3.7 kg. The validity of this conclusion is $D = R^2 \cdot 100\% = 79\%$. It can be noted that in 2018 in the Nizhny Novgorod region, the household consumption of milk per capita per year will estimate 233.2 kg, which in turn is lower than medical rates

by almost 100 kg. Over the last five years the consumption of dairy products in the Nizhny Novgorod region has reduced by 6%.

Within the structure of dairy products, pasteurized milk takes the leading position and makes up for over 20 percent, the rest of the market is occupied by milk processing products. Despite the variety of dairy products and physical accessibility, it must be said that their prices are growing significantly. Due to this, products of vegetable origin occupy the niches traditional for dairy products. It is commonly known that the use of animal fats largely increases the cost of production, while the use of vegetable analogues allows entering the market with more favorable prices. For instance, the use of palm oil does not cause so much concern among Russians as it was 5 years ago. However, the use of such products, as well as their consumption should be under strict supervision of regulatory agencies.

The pressure of sanctions imposed by the Western countries stimulates the state to self-sufficiency, which facilitates measures for increasing the production of agricultural products. The support of agro-producers in the framework of state programs is an important external factor in the dairy production sub-complex, both regarding the production of raw materials and in the manufacturing industry. The development of related components, such as marketing activities, improving cooperative and integrated production, ensuring high product competitiveness, and insurance are important aspects in the development of food security.

The relations between processors and agricultural organizations and, above all, the equivalence of prices for industrial and animal products should determine the country's self-sufficiency in milk. At the same time, adequate measures should be urgently taken to ensure compliance with food safety requirements in the country.

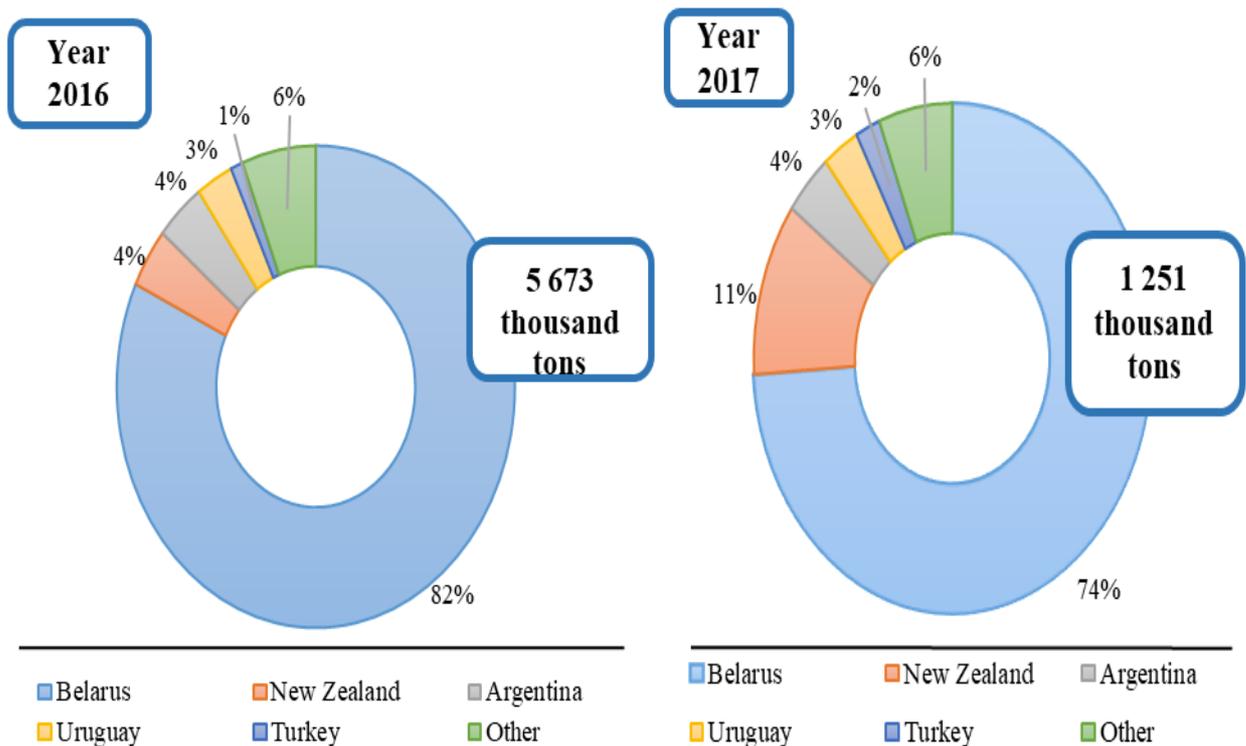


Figure 9 – Structure of milk and dairy products imports (equivalent to milk) in Russia *
 * according to the official data of the All-Russia Directory "Dairy Industry-2017"

Having considered the main countries that supply milk and dairy products to the Russian market, it is worth noting that the changes occurred only in terms of structure, whereas the countries largely remained the same. Belarus is the first and certainly undoubted leader regarding dairy products import. On the one hand, the increase in imports of certain types of dairy products in 2016 after a decline in 2015 is due to

the growth of Belarusian supplies to the underserved Russian market that is free from competition with European suppliers. On the other hand, it is a consequence of the general decline in world prices for dairy products in the first months of 2016, accompanied by relatively low prices for dairy products of certain trading partners (for example, Turkey) [7].

Member of the Academy of Sciences V.V. Miloserdov in his studies rightly argues that for many types of products, in particular for milk and dairy products, it will not be possible to increase the volumes of production sufficient for import substitution within 1 year since it is a rather long process [8].

The growth of imports in early 2017 was due to a change in the structure of demand (increasing demand for cheeses) and high price competition with external suppliers of dried milk and butter. As a result, imported dairy products are often cheaper than domestic products. In 2017, Russia reduced the volume of imported products from Belarus by 8 thousand tons or by 10%. At the same time, supplies from New Zealand increased by 7 thousand tons, or almost three times. Russia also imports products from Argentina, Turkey, Uruguay and other countries.

Russian consumers, who changed their behavior model towards rational spending and economic consumption, noticed the current increase in prices. As a result, we see a decline in sales in almost all categories of dairy products.

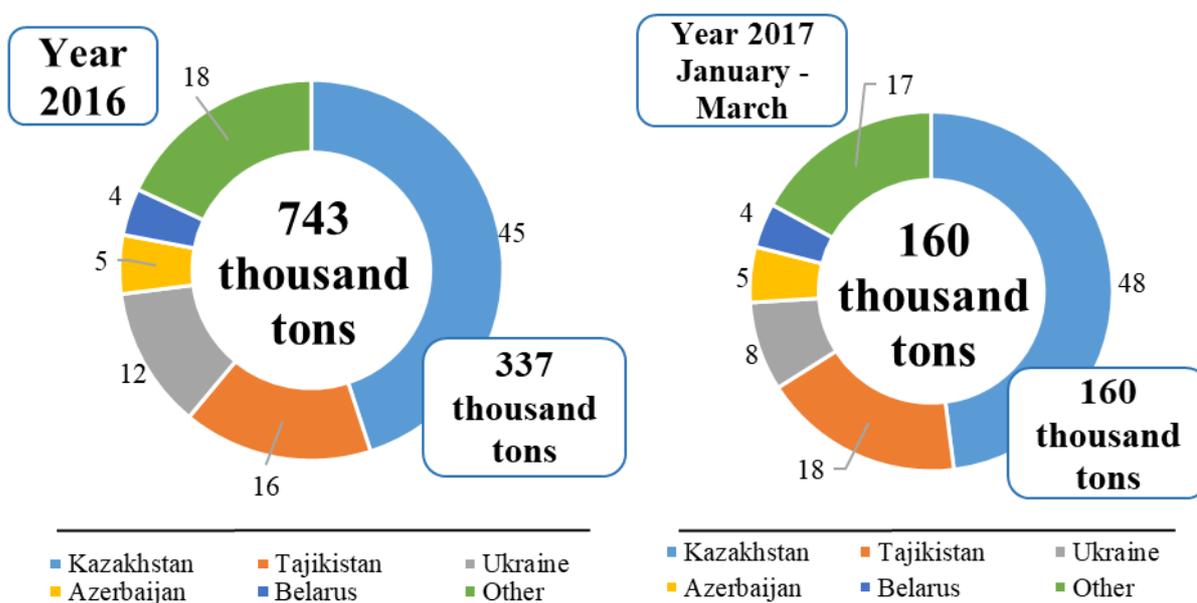


Figure 10 – Structure of milk and dairy products exports (equivalent to milk) in Russia, % *

* according to the official data of the All-Russia Directory "Dairy Industry-2017"

Export of dairy products from Russia remains relatively small; however, in 2016, there was an increase in the dairy products export compared with 2015. According to preliminary data, the volume of export shipments of dairy products was 11% higher in 2016 than in 2015 and amounted to 743 thousand tons (USD 267 million), while the cost of exports increased by only 6%, which indicates a decrease in the average export prices for dairy products.

In 2016, the share of export products to Kazakhstan was 45%, while in January-March

2017 this share already estimated 48%. It is worth naming the top five importing countries: they are Kazakhstan, Ukraine which ranks second, Belarus occupying the third position, while the fourth and the fifth places were taken by Tajikistan and Azerbaijan, respectively.

Sanctions and tit-for-tat sanctions between Russia and the European Union also hinder the export of dairy products to Europe. High custom duties, occupied market and a negative attitude towards Russia – all this impedes the development of the market for dairy produced in Russia. In the Russian Federation, the embargo that was imposed in 2014 made it possible to implement a number of projects for the development of the dairy sector, both in the Nizhny Novgorod region

and in the Volga Federal District. However, a number of organizations cannot obtain credits for the modernization of the equipment, while it is difficult to get access to large retail chains.

DISCUSSION

Food security is the basis of the national security of any developed country. The national protection in the food sector means that the state provides its population with various food products. The country's food security implies that the country can provide itself with the necessary quantity of products, as well as ensure their proper quality [9].

Food security can be defined in different ways. Some authors claim that this concept denotes the country's self-sufficiency in food products. However, international experts note this term has a different meaning, and that it is often not related to the level of self-sufficiency.

Some scientists [10-14] in their papers point out that food security is a condition of the country.

In their works, A.I. Altukhov, V.V. Drokin, and A.S. Zhuravlev note that food sovereignty is determined by the level of the country's self-sufficiency in food supply, as well as satisfaction of the basic needs of society with its own production [15, p. 30].

Many researchers [16, 17] claim that self-sufficiency of the country is a complex task of the Agro-industrial complex of the Russian Federation. These authors argue that self-sufficiency is the main component of the country's food sovereignty.

The authors of this article share the opinion of the abovementioned researchers; however, it should be noted that the food sovereignty means that the society must be supplied with food products according to the medical standards and taking into account various factors (effective demand, age and sex groups, and various regions).

In her works, T.E. Rodina considers the food supply of the region from the economic perspective, and says that it can be defined as an intellectual combination of factors, processes and results of reproduction of productive forces, social and labor aspects and production relations directly aiming to meet the needs of the population [18, p. 75].

In some works, food security is viewed as a state of the market when supply and demand for food products are balanced [19, 20].

A.V. Kurdyumov writes that it is difficult to agree with some researchers that food security is the same as economic security. It also includes environmental, information, biological and other aspects [21].

Solving the problems of food security is an urgent issue both at the international and national levels.

Food supply of the population both in a particular region and the whole country is an important strategic task. Food's availability, quality, and accessibility directly determines the satisfaction of one of the most important human needs, which greatly influences the public mind and quality of the life of the population, as P.D. Kosinsky notes in his works [22, p. 280].

The main condition for providing the population with food is the ability of the country to cover the current needs with its own production [23].

The Russian Federation must formulate requirements aimed at scientific and technical modernization and increasing investment in animal husbandry, as well as facilitate the operation of Russian companies responsible for logistics, production of feedstuffs, various feed additives, and effective veterinary services. The country should create favorable conditions for the development of the infrastructure in rural areas, so that it is possible to attract competent agriculture workers. The level of state support should be increased to promote the production in the livestock sector [24].

To solve various problems in the field of agriculture, first of all, it is necessary to take into account the industry specifics of organizations in the agro-industrial complex, as well as the territorial features of large, medium and small businesses in agricultural production. In addition to these factors, one should consider differences in the natural and climatic conditions of different regions of the country [25].

The issue of the population's supply with food products is being analyzed regarding its numerous aspects. More and more people do not have enough food and suffer from malnutrition. The main reason for such a trend is the production and consumption of resources. When

devising the long-term monitoring of the development of Russia's food complex, it is crucial to consider the potential for overcoming structural decline and take into account the country's specifics. In this regard, let us identify the following features:

- a dramatic decrease in soil fertility;
- smaller support to agricultural production, lack of scientific experiments of theoretical and applied nature in the field;
- reduction of jobs, due to agricultural organizations closing down [26].

Therefore, in order to ensure the food security in the regions of the Russian Federation in the current market conditions, it is advisable to apply innovative methods and technological processes of modeling and planning of the regional development.

Certain steps must be taken to achieve this. First, it is necessary to create a unique state form of an innovative organization which would promote intellectualization of agricultural production, processing industry and product logistics [27-29]. The main goal of the country is to introduce new approaches to the production and consumption of resources which should provide the society with products necessary for life [30, 31].

According to the research of leading experts, at the moment, Russia's production does not cover all the needs of the domestic market for a number of food products. The self-sufficiency in meat and meat products, milk and dairy products in Russia is clearly below not only the levels of the Doctrine of Food Security, but also the indicators of the Soviet period.

In his paper, I.M. Mikhailenko also touches upon the problem of food security, in particular, dairy products. He says that at the present stage, only a comprehensive solution would enable to restore the industry. It is necessary to automate milk production management systems, which will form the basis for animal health management [32].

The authors point out that it is necessary to solve a number of problems related to food security, regarding self-sufficiency in food. This problem is currently considered a global one. Competition is seen as one of the reasons for the emergence of this problem. Resource conflict is one of its main drivers. Competition is a struggle not only for

water and land, but it leads to a deterioration in working conditions and degradation of the environment. This results in the "extinction" of some types of small organizations engaged in the food production. Thus, agricultural organizations alone cannot fully meet the needs of the population since this can only be done in collaboration with all categories of farms.

CONCLUSION

The crucial role in the structure of the industry under consideration should belong to agriculture as its main component. Dairy cattle breeding plays the most important role in its structure as it provides one of the most important products in the human diet – milk, whereas this industry is currently in crisis. It's time to take urgent measures to ensure the fulfillment of the country's food security doctrine regarding milk and dairy products. This primarily requires improving the situation with dairy cows population – the basis of the dairy sector.

Food security is the main task, solving which would ensure products are available to the country's population. In terms of economic availability, it is necessary to assess the size of the living wage in different regions of the country, and the size of wages. In turn, the income of the country's population should allow them to purchase necessary foods at the given prices in the amount and range not lower than the established rational consumption rates. Organizations located in rural areas should ensure the physical availability of food.

The findings obtained in this research may be used by the authorities and management of the agro-industrial complex when preparing recommendations on the creation of a fundamentally different strategy for the development of the agricultural sector, modernization of the methodology for agriculture strategic planning, development of tools for forecasting and analyzing the outcomes of the agrarian and food policies carried out in Russia, as well as devising models for diagnosing the effectiveness of financial resources and rational development of the agrarian potential of the regions [33].

Food self-sufficiency should be seen as an unstable system since it largely depends on

various external and internal factors, ranging from geographical location, climatic factors to the pressure of imports.

Food self-sufficiency as an economic system regarding its systemic properties can be described as an artificial conditionally open system being one of the spheres of human activity.

The authors propose to devise a separate project for each type of product included in the list of the Doctrine of Food Security of the Russian Federation. Most importantly, this approach (unlike, for example, the project on the construction of an animal farm) will take into account the already achieved level of production in the region.

Today, the most urgent problem of human civilization is the availability of normal nutrition for every person, regardless of the place of their residence. That is why at present moment such criteria as economic, physical and social availability are the crucial ones.

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