Agriculture as the main factor of food security in Russia

A L Zolkin, E F Amirova, B S Strigin, A M Kuzmin and S V Shamina

1 Povolzhskiy State University of Telecommunications and Informatics, Samara, 443010, Russia
2 Kazan State Agrarian University, 65 Karl Marx St., Kazan, Russia
3 Mytishchi Branch of Federal State Budget Educational Institution of Higher Education “Moscow State University of Civil Engineering (National Research University)”, Mytishchi, Moscow Region, 141006, Russia
4 National Research Mordovia State University, Saransk, 430005, Russia
5 South Ural state agrarian University, Gagarin street 13, Troitsk, Chelyabinsk region, 457100, Russia

* E-mail: alzolkin@list.ru

Abstract. The leading role in the issue of ensuring the food security belongs to the agricultural sector, which, in the context of the introduction of anti-Russian economic sanctions, was forced to mobilize in a short time and begin to accelerate the production of those types of agricultural products, the deficit of which was previously filled by importing food products from abroad. The main and important thing for the development of all branches of the agro-industrial complex is the increase in the gross grain harvest. Grain production is one of the most important foundations of the crop industry and all agricultural production. There is a close relationship between grain production and certain sectors of the agro-industrial complex and industry. And the main strategic importance in the production of grain and ensuring the food security of our country is to solve a number of important issues - increasing and improvement of the efficiency of grain production, improvement of the gross yield of various grain crops, as well as expansion of sown areas in agriculture. According to many experts the importance of development of a strategy in agricultural production shall rely on its main feature - all production facilities and divisions of this industry are connected with the production of agricultural products as with the main specialization. An important principle, which shall be followed by the formation of a strategy for the development of the grain product sub-complex of the agro-industrial complex, is the mandatory processing of its strategic goals with various factors that are determined by its natural and economic potential. The agrarian policy of modern Russia shall be comprehensive, based on sufficient funding and a stable legislative framework. Also it shall take into account the significant regional differentiation in the levels of agricultural development.

1. Introduction
In recent years, the problems of the country's food security have been actively discussed in Russia. At the same time, the problem is reduced only to the level of self-sufficiency in food, respectively, to the development of its own agricultural sector and agricultural protectionism.

Currently it is necessary to master new modern technologies and introduce the achievements of science into the production process in order to increase the income of processing organizations and
meet the needs for grain products in a wider range. Grain is the most important and strategic good, the production, circulation and consumption of which is an important factor in the confidence and stability of the national economy and the basis of the country's food security.

High social and economic significance also applies to the agro-industrial complex. And it shall be noted that on efficiency of agro-industrial complex depends not only the efficiency of agricultural production, but also the efficiency of other industries [1,2,3].

At the same time, it is important to take into account the risks in the implementation of the strategy for the development of the agro-industrial complex of Russia. For example, it includes the possible influence of natural and climatic conditions, the peculiarities of plant biology, the study and development of demand among the country's population and dependence on certain types of agricultural products and essential goods.

2. Problem statement
It shall be noted that only the system of ensuring the food security creates conditions and forms mechanisms aimed at counteraction of economic threats, development of reproductive processes in agriculture as a basis for production and increases the level of self-sufficiency of regions with food.

To solve the problem of ensuring the national food independence, it is necessary to create conditions for the active development of the agrarian sector of the economy based on the accelerated modernization of its technical and technological base, the improvement of the state regulation system and the widespread development of innovations. It determines the relevance of the economic justification for selection of priority areas and development of organizational and economic mechanisms for ensuring food security in Russia.

3. Research questions
Grain production and processing is one of the largest branches of agricultural production, which is of great economic and social importance. Its proper development and regulation can directly affect the efficiency of the entire agro-industrial complex. This industry provides the population of our country not only with bread and bakery products (in other words with food) but also provides feeding stuff for various animals.

Currently the Russian grain economy has reached a level of production where it is practically impossible to ensure the gross harvest of grain crops in the amount of up to 100 million tons per year. The social significance of bread and bakery products as a product of ensuring the food security has already been mentioned in many works [4,5], while it shall be said that grain is also the most important element of the feeding base for the development and spread of animal breeding in the regions of our country. The use of grain in other industries (for example, in the food industry) makes it possible to provide one workplace with 10 workplaces, in other sectors of the economy of the agro-industrial complex and even more.

The leading role in the issue of ensuring the food security belongs to the agricultural sector. In the context of the introduction of anti-Russian economic sanctions agricultural sector was forced to mobilize in a short time and begin to accelerate the production of those types of agricultural products, the deficit of which was previously filled by importing food products from abroad. Unfortunately, it was not possible to fulfil the needs of population with milk, cattle meat and certain types of crop products, as well as refuse to import vegetables and fruits (production of which, due to the country's climatic characteristics, is not possible all-season and on a large scale) in full scope [6,7,8].

4. Materials and methods
The declared indicators are quite high, especially for vegetables, gourds, fruits and berries, since in the conditions of the natural and climatic nature of the Russian Federation it will be quite difficult to provide the population with these types of products at an affordable price [9,10,11].

It is due to the climate, which is unfavourable in most of the country, and due to the fact that year-round provision of these types of products using greenhouses will have a high cost, and, as a result, a
high final price for the consumer, which already violates one of the principles of ensuring food security about economic accessibility for the population.

One of the methods of food security in the Russian Federation is also shall be noted. The method is an assessment of the physical availability of food. It is determined using the coefficient of physical food availability, which is calculated as the ratio of the average actual food consumption per capita to the recommended nutritional standards. The economic affordability of food largely depends on the level of prices and real incomes of the population. The implementation has been achieved by studying the existing problems of food security as the basis of economic security. The methodological basis of the study is systemic and structural approaches, which are characterized by a holistic consideration, the establishment of the interaction of factors of food and economic security.

5. Results
In the Russian Federation, almost all main types of products show an increase in production volumes. The largest increase in production was achieved in the category of fruits and berries, since this type of product currently remains one of the most vulnerable in terms of self-sufficiency at the expense of Russian farmers. Relatively high growth rates are observed in the production of grain, meat and fish and fish products in live weight. Judging by the low growth in the production of milk and vegetables, in practice it is quite difficult to solve the problem of self-sufficiency of the population with these types of products. This is explained by the fact that for year-round production of vegetables and widespread distribution, large capacities are required in the form of specialized greenhouses and a developed logistics network, which requires large financial and time costs. Negative dynamics is noted in the production of potatoes, but even with a reduction in potato production, the level of provision of the population with this type of product corresponds to the value of the target indicator indicated in the Doctrine [12, 13, 14].

The provision of the population with basic types of food products as of 2019 meets the target indicators indicated in the doctrine for meat and potatoes.

The smallest shortfall to the level of the target indicator is observed in self-sufficiency in vegetables (-2.3%), then in the provision of milk (-6.1%), and the largest gap is to be increased in self-sufficiency in fruits and berries (-19.8%).

Analysing the volume of imports by main food groups it is found out that the import of fruits and berries in 2015 was two times higher than their production, and in 2019 the excess of imports over production was reduced to 1.5 times.

An increase in the share of imports relative to production volumes is observed in the category of fish and eggs, in other categories there is a decrease in the indicator. The greatest progress in reducing the share of imports in production is observed in the meat category. The share of imports in milk production has been reduced by more than 5%, although the share of milk imports relative to production volumes still remains quite high - over 20%, only the fish category is higher. As for vegetables its’ import is about 15% higher than the volume of production. Of course, such trends are positive, but still the changes cannot be called dynamic, except for the category of fruits and berries, which indicates the need to continue activities and update them in a dynamically changing environment in terms of support of domestic agricultural producers and strategies for the proper use of anthropogenic resources [15].

In order to develop a strategy for the proper use of anthropogenic resources during formation of technologies for the cultivation of grain crops and other crops, it is necessary to understand the nature of their interaction with natural resources. According to many authors, the conditions for the formation of crop yields have been generalized into groups according to their significance. And the limits of their contribution have been established (see Table.1).
Table 1. Parameters of the factors contributing to the formation of crop yields

| Groups by importance   | Factors             | Contribution limits, % |
|------------------------|---------------------|------------------------|
| Dominant influence     | Weather conditions  | 10-70                  |
|                        | Fertilizers         | 30-50                  |
|                        | Soil                | 20-40                  |
|                        | Plants protection   | 10-50                  |
| Moderate influence     | Variety             | 10-15                  |
|                        | Crops rotation      | 5-16                   |
|                        | Landscape           | 2-50                   |
| Unstable influence     | Ratio of agricultural lands | 2-5          |
|                        | Soil treatment      | 0-10                   |

In resource-saving technologies for the cultivation of grain crops, it is more expedient to talk about the conditions for the greatest efficiency of the used factors and the rational use of the resource potential [16].

Currently, the agro-industrial sector of Russia remains one of the locomotives of the domestic economy, but lags behind the world leaders in the field of innovation. Without innovations it is impossible to implement an innovative model of agricultural development. The share of high-tech and knowledge-intensive industries in the Russian economy amounted to 21.3% in 2018. And in 2016 and 2017, this value has stopped at around 21.6%. The use of innovative potential in agriculture is only 4-5%, and in countries with developed economies this figure is 50% or more [17].

According to the study, the agricultural innovations are carried out at the own expense - 46.7%, the share of budgets is about - 11.1% and foreign investment is only 2.0%. The low innovative activity of domestic agribusiness is also evidenced by data on the use of precision farming technology, which ranges from 5 to 10% (in the European Union - about 80%, in the USA - 60%), and IoT technologies are used by only about 0.05% of producers. Technological dependence in poultry farming reaches 90%, in potato and beet growing it reaches 80% [18]. In order to increase the use of innovative technologies in the agricultural sector of Russia, it is necessary to attract large business structures that can finance scientific research in the field of agricultural science, and to introduce the results obtained into production, since it is large companies that have the required resources [18].

6. Findings

The production of crustaceans has increased by 2.2 times. It is associated with the deterioration of relations with a number of European countries that has replenished the internal deficit before the introduction of anti-Russian sanctions. Pork production has increased by almost 60%. In fact it is noticeable even in the Kursk region, where a large number of pig farms have been built in a short period and there has been no shortage of pig and poultry products on the shelves of hypermarkets in recent years. The production of fresh and frozen meat has increased by more than 20%, but the problem of its deficit is still quite acute, since, compared to pig production, the beef production cycle is longer and more costly and it does not allow to sell products at the same affordable price as poultry and pig products. A separate issue is the production of fish meat and fish fillets, which has increased by almost 30% during the studied period.

Before the introduction of anti-Russian sanctions, most of the fish caught in Russian sea waters went for processing to Scandinavian countries, after that it returned to Russian shelves already under the guise of imports, therefore, with a change in the foreign policy situation, the fish processing industry of the Russian Federation received a good impetus in development, and this, of course, is a positive moment.

The priority areas for ensuring the country's food security are:
1. growth of competitiveness of agri-industrial production and product quality;
2. selection-genetic and technical-technological modernization of the agri-industrial complex, the introduction of high technologies;
3. creation of export-oriented industries and export food resources;
4. strengthening the policy of agrarian protectionism;
5. increasing the contribution of the regions to the formation of the country's food resources.

Objectives:
1) prevention of threats to food security, increasing the level of public confidence in the ongoing food policy;
2) sustainable development of domestic production of agricultural raw materials and food;
3) ensuring the physical and economic accessibility of high-quality and environmentally friendly food for all segments of the population;
4) others (formation of state reserves of strategic food stocks).

The implementation of priority areas for ensuring the country's food security involves achieving people's satisfaction in nutrition (their basic physiological need) that is sufficient in quantitative and qualitative terms for health and life [19].

7. Discussion
It is important to emphasize that there are differences in the definition of food security between different levels of food security. Thus, global food security features the food security of all states at the supranational level and (among other factors), is determined by the presence of world food reserves and the possibility of their redistribution in order to eliminate hunger and eliminate the problem of malnutrition around the world. National food security is determined by socio-economic relations within a particular state regarding the provision of its population with physically and economically accessible food products in the quantity and quality necessary for a healthy lifestyle. The food security of the country as a system is included in the general system of national security [20,21].

As a result of the analysis, the following list of potential risks and threats to the country's food security can be identified:
1. Internal:
   1.1. Ecological, natural and climatic:
   - natural disasters;
   - soil and surface water pollution;
   - destruction of the fertile soil layer, changing of its composition;
   - excess or lack of precipitation;
   - freezing of crops;
   1.2. technical and technological:
   - high dependence on imports of seed material, highly productive livestock breeds, machines and technologies;
   - low level of production power supply;
   - high degree of physically and morally obsolete means of mechanization;
   1.3. financial and economic:
   - lack of own financial resources, high price and low availability of borrowed capital;
   - high unit costs of production;
   - low effective demand for products;
   - high rates of inflation;
   - non-equivalent exchange between branches of the agri-industrial complex;
   - low competitiveness of domestic food;
   1.4. organizational and legal:
   - corporatization of a large share of the largest agricultural industries by foreign capital [22];
   - shadow processes in financial, credit and land relations in the agricultural sector of the economy;
   - lack of conditions for innovative activity.
1.5. Social:
- lack of confidence of part of the population in the effectiveness of the ongoing agrarian policy;
- low income of a significant part of the country's population;
- undeveloped industrial and social infrastructure of the agricultural sector;
- lack of qualified personnel;

2. external:

2.1. Environmental, natural and climatic:
- natural disasters;
- soil and surface water pollution;
- destruction of the fertile soil layer, changing of its composition;
- excess or lack of precipitation;
- freezing of crops;

2.2. Macroeconomic:
- a high level of production risks and, as a result, the instability of agricultural production in the world;
- withdrawal from circulation of agricultural land for the production of biofuels;
- reduction in the level of world food supplies;

2.3. Biological:
- use of genetically modified products, production of products from cloned animals;

2.4. opportunistic:
- the introduction of various types of sanctions and restrictions on import-export operations with food;
- increase in tariffs for power resources;
- unstable conjuncture of the world financial and energy markets;
- change in the exchange rates of the national currency;
- fluctuations in world food prices

2.5. military and political:
- escalation of military conflicts related to the redistribution of zones of influence;

2.6. man-induced:
- accidents and catastrophes affecting the functioning of population life support systems [23,24].

8. Conclusion

Thus, it can be noted that the policy of import substitution in the Russian Federation has provided the clear results, and there is already a positive trend in production volumes for many categories of food products. The financial conditions that become more complicated and all new precedents that give rise to the extension and strengthening of anti-Russian sanctions cannot but affect the domestic economic situation. And, unfortunately, without state support, the agricultural sector is not yet able to move along the path of import substitution with high efficiency. Therefore, in our opinion, it is necessary to support the direct consumer, processor and end consumer, limiting the resellers who ultimately receive most of the benefits, which is unfair to the rest of the chain participants.

The agrarian policy of modern Russia shall be comprehensive, based on sufficient funding and a stable legislative framework. Also it shall take into account the significant regional differentiation in the levels of agricultural development.

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