

Innovative directions of agricultural development aimed at ensuring food security in Russia

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Abstract. The article emphasizes that for the innovative development of the Russian agricultural industry and ensuring the national food security, it is necessary to create a research and development sector in the field of food production; reform the education system for the innovative development of the agricultural industry; re-equip the agricultural industry; build a system of agricultural advisory support for producers; create an intellectual property protection system; improve legal standards for regulating innovation, research and development; pay attention to the needs of agriculture and agro-business, etc.

1 Introduction

For the development of the agricultural industry of the Russian economy, it is necessary to use innovative technologies. This is due to such distinctive features of agriculture and external economic factors as:

1. Increased competition on the markets of goods, services, capital and other components of the economic development of the agricultural sector.
2. Competitiveness and active implementation of the import substitution policy in the Russian agri-food market under the WTO and anti-Russian sanctions.
3. Low labor productivity in the agricultural sector of the Russian economy.
4. Irrational use of production factors.
5. The low level of socio-economic development of villages.
6. Impossibility of providing the population with affordable and high-quality domestic food to meet rational, scientifically based nutritional standards [1–3].

In this regard, transition to progressive technologies and forms of agricultural production and an accelerated approach to world achievements is required. In the Russian agrarian sector, there are obsolete technologies that have not been used for a long time in the agricultural sectors of developed countries. The main industries where modern production technologies are applied are pig breeding, poultry farming and vegetable growing. The lag is exacerbated by the presence of backward domestic technologies which ensure the implementation of mainly extensive and traditional technologies. Russian technology lags behind foreign analogues in terms of reliability by more than 6 times. It is clear that the rational use and development of the existing agri-food potential due to the mass introduction of innovative agrotechnologies is able to provide a solution to the food security of countries. [4, 5].

In the crop industry, more than half of agricultural producers produce products using extensive and outdated technologies. Seeds of poor quality are used.

Mineral fertilizers are applied in limited quantities, and protective measures against diseases and pests are not implemented. At the same time, approximately 20 % of farms use resource-saving traditional technologies, and 10–15 % of farms use more efficient technologies [6].

In addition, in Russia, there are land resources that have a good agroclimatic potential for the production subject to the application of innovative technologies. This can increase the profitability of cereal production over 20 % [7].

In the livestock industry, especially dairy cattle breeding, farms are poorly mechanized, which significantly reduces the ability to ensure cost-effective milk production. For beef cattle breeding, the problem is the lack of primary processing of livestock in the countryside [8, 9].

One of the reserves for the application of innovative agricultural technologies is the processing and storage of agricultural products. Recently, a significant re-equipment of production capacities was carried out at the expense of imported equipment. It should be noted that the innovative development of the agro-industrial complex is possible not only through the use of imported resources, but also through trained highly qualified Russian personnel and the experience of foreign countries [10].

Under these conditions, import substitution is becoming relevant, which is directly related to the national food security. But in these conditions, Russia has faced many problems that need to be addressed in the short term. Russia has many advantages, an opportunity to restore or increase the competitiveness of the main sectors of the economy

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2 Materials and methods

There is an increase in investment in greenhouses growing tomatoes, cucumbers, etc., due to the restriction of imports from the EU and Turkey. Russian producers can provide the population with 95 % of potato. The main problem is the storage of vegetables. At present, Russia produces only 30 % of required vegetables (800 thousand tons). To increase this indicator, production should be 1.8 million tons per year. But this cannot be achieved very quickly and it may take at least five years. Thus, an increase in the agricultural production volumes and construction of vegetable stores will take a rather long time [11, 12].

Russia has reached self-sufficiency in such crops as onions, carrots and zucchini. The average profitability of fruit and vegetable crops in Russia is 10 %.

In the last two years, there has been an increase in the export of grain and seeds from Russia. In 2016, Russia began to export pork and poultry [13].

As for dairy products, investments in this sector are more long-term. Russian farmers produce cheese, but due to the fact that incomes are significantly reduced, consumers prefer to buy cheaper Belarusian cheese. Everyone knows that good cheese cannot be cheap because of complex production and storage technologies. Foreign producers are interested in lower purchase prices; therefore, the profitability of raw milk production is reduced. Agricultural enterprises produce up to 80 % of the volume of raw milk.

At the same time, there is a shortage of raw materials on the market, because of which Russian manufacturers cannot supplant imported products. The main importer is Belarus, whose dairy products are bought by Russian consumers. This leads to a decrease in the production of dairy products (butter, cottage cheese, milk powder) [14, 15].

As for fruits, the situation is ambiguous. Due to the embargo, apples were imported from Poland. Currently, Polish apples are packaged in Belarus and imported to Russia in smaller quantities. In 2016–2017, a sufficiently large amount of investments was announced for horticulture and the arrangement of orchards. But the return in agriculture is long-term [16].

Fish and fish products are quite expensive. Consumers buy poultry, pork and beef, which are much cheaper. A reduction in prices in the fishing industry should be promoted by the state support program in the form of the use of a floating export duty whose size will decrease with an excess supply and an increase in case of shortage. Up to 70 % of the domestic consumption of fish products is accounted for pollock, cod, salmon and herring. This forms the basis of the Russian fish exports. Currently, there is an increase in fish catch and a decrease in imports of fish products by 9 %.

Frozen capelin, herring and salmon are purchased in much smaller quantities. The anti-Russian sanctions contribute to an increase in the supply of Pacific herring by 5 times (up to 190 thousand tons) [17–19].

Currently, import substitution in Russia is 30 %, the country provides the population with 30 % of goods and services of its own production. In the next 3–5 years,

imports of products are expected to decrease to 50 % [20].

The main products of the import substitution strategy are grain and fish. The leading sectors of import substitution are horticulture and vegetable growing.

The problems of import substitution are the situation on the labor market in the agricultural sector. In Russia, the possibilities for attracting highly qualified specialists to expand import-substituting industries are extremely limited. Most of the products are produced by small and medium-sized businesses, which are characterized by low labor productivity.

Therefore, the state needs to develop a strategy to support such enterprises at the federal level. Moreover, the support should be provided in the framework of the “green box”, which is not bound by the reduction obligations in the context of Russia's membership in the WTO [21].

According to experts, Russian producers will not be able to meet the needs of the population in the near future due to the need to increase the dairy herd, improve the infrastructure of the village, purchase equipment, etc. The volume of investments should be 200–500 billion rubles. This cannot be done in a short time; therefore, Russia will still depend on imports of dairy products from Belarus and other countries.

Therefore, the Russian Federation needs to take measures to protect the dairy and other sectors of agriculture. Complete import substitution will be unprofitable for the economy and will increase inflation, reduce savings, investment activity, and a deficit in the balance of payments [22, 23].

For the innovative development of the agro-industrial complex of Russia and ensuring the food security of the country, it is necessary to implement the following areas:

1. Creation of the research and development sector in the field of genetic engineering, biotechnology, breeding, veterinary medicine and food production, ensuring the national food security;
2. Reforming the education system for the innovative development of the agro-industrial complex to develop skills and knowledge of the agro-industrial complex;
3. Technical re-equipment of agricultural production;
4. Development of the agricultural consulting support system for producers through the single information system containing a single database of existing innovations, creation of educational and experimental farms and agricultural parks;
5. Creation of a system of protection of intellectual property and improvement of legal norms for regulating innovation, the results of scientific research and development;
6. Implementation of resource-saving technologies and biotechnologies;
7. Orientation of scientific research to the needs of agriculture and agribusiness;
8. Development of resource-saving, environmentally friendly and high-performance technologies;
9. Competitive selection of the most promising projects aimed at the innovative development of agricultural sectors and agribusiness as a whole, as well as their financing.

10. Implementation of projects and programs. It is necessary to ensure the operation of innovation centers or business incubators for the implementation of new technologies or management methods [24–25].

3 Results

Thus, the main directions of import substitution are as follows: production of milk and dairy products, pork, poultry, fish, greenhouse, gardening. But all these areas have both strengths and weaknesses.

Farmers are supported by the government. But they experience difficulties in organizing and registering their own businesses, selling their products to the consumers. The elimination of a large number of intermediaries and bureaucratic obstacles will allow farmers to increase their profits and reduce production costs.

The need for the state support is confirmed by the practice of development of many countries. At the same time, features that determine the directions, forms and methods of state support should be taken into account. Firstly, in agriculture, land is used as the main means of production. Therefore, the state should participate in the formation of land relations – forms of land ownership and land use rules. State support is required to maintain the required level of fertility in order to restore soil nutrients and its quality indicators (humus content, acidity, water-air regime, etc.), which require significant material and technical and financial investments. Secondly, agricultural production is less efficient than most sectors of the economy. Investments are less profitable. Thirdly, the implementation of technological achievements requires a longer period. This feature requires the inflow of additional capital to create scientific and technical potential, the development of agricultural science and education. Fourth, agriculture is a conservative and inelastic industry. Due to its characteristics, it cannot adequately respond to market conditions and requirements, since with increasing demand for agricultural products it is not possible to increase production. It is impossible to increase the area of cultivated land, even when creating the required conditions. Fifth, in the liberal market economy, prices for industrial goods and services in monopolized sectors of the economy are growing more rapidly than in the agricultural sector due to the production of products that are socially significant for most segments of the population.

The analysis of the agro-industrial complex of Russia identified its strengths:

- large-scale agricultural land;
- availability of undeveloped land suitable for growing crop and livestock products;
- target programs; government subsidies
- development of the agro-industrial complex is a core of the Food Security Concept.

The weaknesses are as follows:

- dependence on imports of foreign components for the implementation of domestic production of agricultural products;
- no equipment;

- dependence on weather conditions and seasonality;
- dependence on government subsidies;
- a significant shortage of highly skilled workers;
- high transportation costs when implementing the producer-consumer chain

The opportunities for domestic agriculture are as follows:

- increasing the competitiveness of Russian agricultural producers;
- increasing exports volumes and the number of markets;
- tangible growth in innovation potential and research.

The significant threats to the implementation of the import substitution policy in Russia are as follows:

- higher prices on world markets increase prices on the domestic market, as there is a direct dependence of production on imported components;
- due to the lack of sufficient funding and the reduction of the budget deficit, the state may reduce the volume of investments in some areas of the Food Security Doctrine;
- low competitiveness of Russian agricultural producers on world markets;
- an increase in imports of cheap low-quality products due to the impossibility of one hundred percent supply of consumer goods to domestic producers. Domestic products are sold at prices which are higher than their foreign counterparts.

According to the results of the study, it should be noted that Russia has assets to achieve the goals set by the State Program for the Development of Agriculture and the regulation of agricultural products, raw materials and food markets for 2013–2020. Moreover, it has the vast area of agricultural land, factors of production, labor resources, etc. It is necessary for the state to organize their effective use to achieve the objectives and provide the required support.

The Russia's strategic resource is its natural resources which can provide the population with food and give an indispensable export advantage.

Reducing the volume of food imports led to the fact that competition has weakened and domestic producers began to increase food prices. This decreased the purchasing power. The situation is aggravated by the depreciation of the national currency and acceleration of the inflation. This situation could not but affect the food security of the country, which directly depends on the efficient use of available resources and economic development in the agricultural sector.

The need for the state support is evident. At the same time, directions, forms and methods of state support should be taken into account. Firstly, land is used as the main means of production, and the subject of labor. Therefore, the state should participate in the formation of land relations – forms of land ownership and land use rules.

To ensure the innovative development of the Russian agricultural sector and food security, the state should control the implementation of innovative projects in the agricultural sector. At the same time, insufficient and untimely financing may lead to a complete lack of research results.

4 Conclusion

In the Russian Federation, the main directions of import substitution have been identified in order to ensure food security. The priority ones are as follows: production of milk and dairy products, pork, poultry, fish. [1]; greenhouse farming, and gardening. All these areas have both strengths and weaknesses.

Farmers are supported by the government. But they experience difficulties in organizing and registering their own businesses, selling their products to the consumers. The elimination of a large number of intermediaries and bureaucratic obstacles will allow farmers to increase their profits and reduce production costs.

Russia has assets to achieve the goals set by the State Program for the Development of Agriculture and the regulation of agricultural products, raw materials and food markets for 2013–2020. Its most important advantages are the vast area of agricultural land, factors of production, labor resources, etc. It is necessary for the state to organize their effective use to achieve the objectives and provide the required support. Russian trade on the international market within the WTO has certain advantages and disadvantages. But this makes it possible for the government to increase production capacity and competitiveness of Russian products, taking into account existing opportunities and threats.

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