Developing the grain sector of Russia’s agriculture: current challenges and development factors

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Abstract. The grain complex of the agro-industrial complex of Russia (AIC) is considered in the article as the basic and strategic industry of the agro-industrial complex of the national economy. The grain sector is the basis for the sustainable functioning of the entire AIC. The problems of the development of the grain sector of the agro-industrial complex in the Russian Federation, as well as the main factors for increasing the efficiency (sustainability) of its operation in the agro-industrial complex of Russia, are discussed in the article.

1. Introduction

The grain sector is a backbone sector of the agro-industrial complex for the national economy of Russia (AIC). It is the basis of its sustainable functioning. The grain sector is the basis of crop production and total agricultural production. In the economy of the country’s agro-industrial complex, the grain subcomplex is of paramount importance. Its economic role is determined by the significance of products (grain and its products) and its impact on other branches of the agro-industrial complex.

The grain sector can act as a “benchmark for developing and improving market relations in other sectors of the agro-industrial complex and individual product markets of the country” [2]. The share of grain is more than 1/3 of the value of gross output and more than half of the marketable products of the crop industry, almost 1/3 of the forage feeds of the livestock industry. 15% of the total number of workers employed in the agro-industrial complex work in the grain subcomplex [1].

The development of the entire agro-industrial complex depends largely on the level of development of the grain subcomplex, due to its extensive links with other branches of agriculture. The uniqueness of the grain industry in the Russian agro-industrial complex is explained by a number of factors:

First, grain is the raw material for the production of bread, bakery and pasta, cereals, and bread is the staple food of the majority of the Russian population and satisfies up to 40% of the daily human need for energy. As well as the produced feed grain is the basis of the nutrition of animals and birds.

Second, the level of development of the grain industry is an indicator of the economic well-being and prestige of the state and indicates the degree of socio-political and economic stability in the country. State food security depends on the state and level of development of the grain industry.

Third, the unique characteristics of grain as a commodity: universality, the ability for long-term storage and transportation, qualitative homogeneity, divisibility, interchangeability.

Fourth, the share of profits from the sale of grain is 75% of the total profits of agricultural organizations.
Meeting the needs of the population in the grain (full self-sufficiency in grain crops), focusing on the export of grain crops and products of its processing, creating the state reserves of grain and seed funds for uninterrupted supply of grain are the main goals of the grain sub-complex of the AIC, leading to better food security of the Russian Federation.

2. Research Goals
The main objectives of the study are:

1. To consider the main problems in the development of the grain sector of the agro-industrial complex of Russia as a backbone branch of the agro-industrial complex
2. To determine the main factors of increasing the efficiency (sustainability) in the development of the grain sector of the agro-industrial complex of Russia.

3. Results and Discussion

3.1. The main challenged to the development of the grain sector of agriculture in Russia.

Just over 3% of world grain production is produced in the Russian Federation, and 6% of the world’s grain crops are located here. Despite the fact that the Russian Federation is the leader in the number of cultivated areas (43,012,661.56 million hectares [12]), the vast majority of these areas are fertile, a low percentage of production and crops is associated with the traditionally low yield of grain crops in Russia, which is approximately 1.5 times lower than the average world level, 3.6 times lower than in the USA, 4 times lower than in France, 1.6 times lower than in Canada.

The formation process of the modern domestic grain subcomplex took place in unfavorable external and internal economic conditions:

- Uncontrolled liberalization of prices for the means of production in the early 1990s;
- A sharp reduction in investments of structural and investment purposes in the development of the domestic agricultural sector (including the grain sector);
- Decrease in solvency of the population.

According to S. Alekseeva, the changes in the crops of grain crops and grain production in the Russian Federation during the transition from a planned to a market economy after the collapse of the USSR are associated with many internal and external causes. The main ones include the following: abolishing mandatory grain supplies to the state and granting agricultural producers the right to independently choose production and commercial activities without creating a developed market infrastructure, with a sharp decline in state support for the grain industry and removing the state from active state regulation of the grain market; the increase in the volume of their imports and, as a result, the steady decline in the number of livestock and poultry and the demand for feed grain [4].

At the present stage, the Russian Federation needs to resolve a set of problems that do not give a stable and sustainable development to the grain sector of the agro-industrial complex:

1. Insufficiently high competitiveness of domestic grain in the global and domestic markets, due to the high cost of production of grain and the availability of production costs.
2. Technical backwardness of agricultural machinery and deterioration of agricultural equipment. Low equipment does not contribute to productivity growth in agriculture, leads to a violation of the terms of field work and yield losses [13]. Physical and moral deterioration of agricultural machinery leads to a sharp exacerbation of the problems of technical support of the industry. [14]
3. Low level of profitability of agricultural producers due to insufficient subsidies from the state.
4. High degree of debt load on agricultural producers, high cost of credit.
5. Insufficient level of using the means of selection and seed production in grain production.
6. Significant differences in the economic characteristics of the Russian grain market from the characteristics of grain markets in countries with developed market economies: uneven and meeting the demand for grain between regions; unregulated shipments of grain from grain producing regions.

7. The lack of a mechanism for introducing innovations and developments into the grain industry, despite the relatively high level of development of domestic agricultural science, as well as the lack of a sufficient material base for this. I. A. Altukhov notes that if innovation activity in grain farming is the foundation of its effective functioning in many economically developed countries, it is still available only to certain economically strong grain-producing farms of mainly grain regions in the Russian Federation [5].

Currently, the Russian Federation can be called a grain state. However, after the transition period from a planned to a market economy, many unresolved problems remain that impede the sustainable and effective development of the grain sector of the country’s agro-industrial complex.

3.2. Factors of increasing the efficiency of development of the grain sector of the agro-industrial complex in Russia.

Sustainable development of the grain sector of the agro-industrial complex is the guarantor of the country’s food security and a favorable socio-economic situation in the country.

There are two groups of factors that influence the increase in the stability of the grain subcomplex. Natural factors associated with an increase in the yield of grain crops through the use of innovative technologies belong to the first group.

The first group includes the following factors:

The widespread use of land improvement measures. If melioration had been developed in arid zones such as the Volga region and the North Caucasus, it would be possible to produce an additional up to 10 million tons of grain. With an increase in the area of reclaimed land to 15 million hectares, the “cushion” of grain security of the Russian Federation would have been 30 million tons [6].

The development of breeding and seed production. Russian breeders annually produce more than 100 new varieties and hybrids of grain crops with an improved degree of yield. It is necessary to create conditions for their active use in grain production.

However, the introduction of new varieties and hybrids requires a certain agrofund, which is difficult for Russian agricultural producers to produce.

Providing manufacturers with plant protection products, a sufficient amount of fertilizer, which would feed crops and help restore soil fertility; reduction of energy intensity of production.

Economic and technical factors that increase the yield of grain crops (optimization of the structure of crops, government regulation of the grain sector, providing agricultural enterprises with the necessary highly qualified personnel) belong to the second group of factors.

Of great importance among these factors is the technical equipment of agricultural producers. The supply of agricultural enterprises with new technical equipment will significantly increase the volume of grain production.

Insurance should contribute to increasing the economic sustainability of agricultural producers, when the state pays compensation to producers depending on the level of their incomes fall. Today, the low share of insured areas in Russia is associated with both the unattractive insurance conditions and the lack of sufficient funds for agricultural producers.

Gritsenko, G. M., and Kalkaev, I. G., developed a classification of conditions for the sustainable development of the grain subcomplex according to the degree of regulation. All conditions conducive to the sustainable development of the grain subcomplex are presented in Figure 1.
The conditions that are formed under the influence of natural and climatic factors (rainfall, length of the growing season, provision of land) belong to the first group of conditions.

Conditions that are formed simultaneously under the influence of natural and economic factors, but are manageable: soil fertility, the structure of land belongs to the second group.

The third group includes the conditions that arise as a result of the implementation of certain measures for the development of agriculture: the availability of material and technical resources, the solvency of agricultural producers, the possibility of innovative development [7].

It should be noted that improving the sustainability of the grain sector of the agro-industrial complex requires significant changes in the entire structure of grain production, changing a number of organizational, infrastructural, and technical measures in order to increase the sustainability of this basic branch of the agro-industrial complex.

Based on the considered factors of the sustainable development of the grain sector of the agro-industrial complex of Russia, it can be concluded that the state influences the sustainable development of the grain complex in the long-term perspective as the main manager. The state should provide specific measures to support agricultural producers. These include:

1. Granting loans to commodity producers on preferential terms, as well as the allocation of subsidies and subsidies to agricultural producers for the purchase of new agricultural machinery;
2. Insurance of agricultural producers in case of falling profitability of enterprises;
3. Rural development (infrastructure first);
4. The establishment of a specific volume of mandatory state purchases of grain from agricultural producers, etc.

4. Conclusion
As one can see, the Russian grain sector has a lot of problems. Increasing the volume of grain, as well as the realization of the export potential, will make it possible to occupy a stable position in the world grain market. This will help to overcome negative trends and the formation of effective and sustainable agro-industrial production, increase the level of food security of the country. Improving the economic efficiency and sustainability of the development of the grain sector requires a significant change in the structure of the grain complex, a significant improvement and change in the technology of applying a wide range of organizational, technical, economic, environmental measures in order to increase its manageability.

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