# Impact of COVID-19 on the Russian Agricultural Sector

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Keywords: COVID-19, agricultural sector, impact, activity, digitalization.

Abstract: From the very beginning of the COVID-19 pandemic, proactive measures were needed to maintain open intra-regional and international trade, expand the scope of social protection programs, preserve agricultural food chains and support agricultural production. Russian agriculture was not officially recognized as affected by the COVID-19 pandemic, but many sub-sectors felt the negative consequences. In particular, the meat and dairy sub-sectors, as well as producers of organic products, suffered to a greater extent than crop production. The pandemic has impacted those involved in the processing, shipping and distribution, and those involved in the food service sectors. Small and medium-sized agricultural enterprises suffered the most, especially producers of perishable products, seedlings and flowers. However, the pandemic also had positive consequences, in particular, attention increased to such parameters of food security as import independence, and the processes of automation and digitalization accelerated. The main negative and positive consequences of COVID-19 on Russian agriculture are discussed.

## 1 INTRODUCTION

FAO research has shown that the COVID-19 pandemic has threatened not only lives, but also livelihoods that provide food. Soaring unemployment, loss of income and rising food prices have threatened access to food in both developed and developing countries. Global food markets are not protected from negative developments (NovelCoronavirus (COVID-19), 2019). However, they have been less affected compared to other sectors that are more dependent on logistics disruptions and weakening demand (Market Monitor, AMIS, 2020). FAO research showed that small farmers experienced the most difficulties, while finding it difficult to purchase seeds and fertilizers due to rising prices and declining incomes. They were experiencing the consequences of destroyed logistics schemes and a lack of labor. Closed borders required agricultural enterprises to resolve issues of storing and transporting products, as well as processing them to minimize losses. Closed restaurants and retail outlets led to a temporary oversaturation of the market and a reduction in production volumes (COVID-19), 2019;Belaya, 2020).

One of the global trends during the pandemic has been the digitalization of economic sectors and social security of the world's population. In 2019–2021, the average global growth rate of the fleet of industrial robots and the Internetization of the population has reached, according to expert estimates, 10–12%. The share of Internet coverage of the world population has grown to almost three quarters (The pandemic has accelerated, 2021).

An important conclusion of the pandemic is that most agricultural enterprises have not been ready to work in these difficult conditions. For example, illness among workers at pig slaughter plants in Germany led to serious supply disruptions (Hogan, Hunt, 2020). Advances in digitalization in countries around the world before the pandemic made it easier to function during lockdowns (Sedova, Nazarenko, 2022).

Russian agricultural production suffered less than other sectors of the economy. A serious challenge was the breaks in agricultural food chains, the depreciation of the ruble, the fall in household

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incomes, which had led to a decrease in demand and a change in its structure, a reduction in the volume of interregional and international trade, a lack of seasonal workers, etc. (Kolomeitseva,Glotova, 2023). The pandemic marked the deglobalization of the Russian economy, regionalization and renationalization of domestic and foreign policy. The role of the state as a guarantor of food security and a regulator of the development of the agricultural sector has increased (How has Russia's economy, 2021). An analysis of the negative and positive consequences of the pandemic on the Russian agribusiness is provided.

## 2 MATERIALS AND METHODS

In the process of analyzing the indicators of the agribusiness for the first half of 2020, the development trends of the program for digitalization of the agricultural sector and the development of proposals to reduce risks in the agricultural food sector, methods of monographic, comparative and other types of analysis were used. The research process used official data from FAO, AMIS, the Russian Federal State Statistics Service, the Ministry of Agriculture of Russia, as well as scientific research by Russian and foreign scientists.

## 3 RESULTS AND DISCUSSION

Although the Russian agricultural sector was not recognized as affected by the COVID-19 pandemic, many sub-sectors felt the negative consequences. The volume of agricultural production in the first six months of 2020 increased by 3%, while for basic types of economic activity it decreased by 4.1% (Rosstat - Wholesale trade, 2021). However, this increase was achieved mainly due to crop production. The meat and dairy sub-sectors, aquaculture, and organic producers were hit more than crop production.

The most serious challenge was transport restrictions, both within the country (problems with obtaining work permits and transporting food and equipment), and at the intercountry level (difficulties with importing day-old chicks, seeds, vitamins, plant protection products and food ingredients) (Dmitrieva, 2023;Ryazantsev,Vazirov,Khramova, Smirnov, 2020).

In the context of ruble devaluation, agricultural production dependent on imported inputs faced increased production costs. Thus, at the beginning of 2020, prices for vitamins and feed amino acids, which were not produced in the country, increased by 30-50%. This affected the cost of feed, the share of which in the cost of milk and meat was up to 75%. The costs fell on all sectors of livestock farming, and ultimately on the consumer. According to the Russian Federal State Statistics Service average retail prices for milk and dairy products increased by 5.4% in annual terms over the six months of 2020 (Fig. 1) (Rosstat - Wholesale trade, 2021).

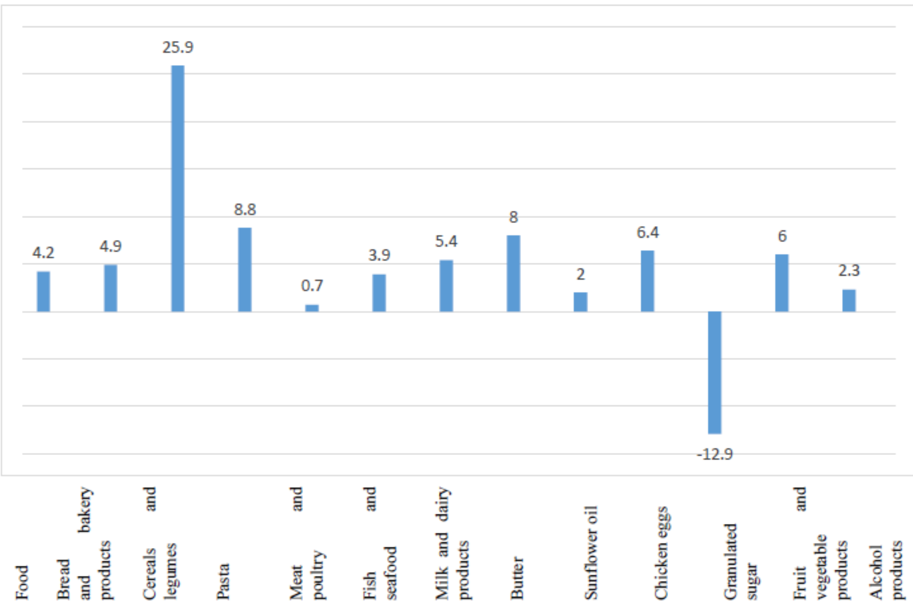


Figure 1: Dynamics of average retail prices of food products by category January-June 2020. Source: Russian Federal State Statistics Service.

In the meat industry, there has been a shift in demand from highly processed products to cheaper cut meat. With the increase in feed costs, there was a decrease in meat prices. In the poultry industry, for example, against the backdrop of declining wholesale prices, low demand and increased pork production, wholesale prices for poultry meat fell below cost levels in May 2020. At the same time, the cost has increased and the supply of imported hatching eggs has decreased, which initiated projects to build our own production facilities (Rosstat - Wholesale trade, 2021, Marinchenko, 2023). Beef consumption also declined amid growth in pork and chicken meat.

The dairy market is largely domestic. Falling incomes and the self-isolation regime have reduced the consumption of dairy products. Milk is a product of inelastic demand, but dairy products have lost in consumption volumes, in addition, the volume of government purchases has decreased due to the closure of child care institutions (Burdenko,Bykasova, 2021).

A serious negative effect of COVID-19 was a drop in household incomes, which resulted in a reduction in demand for more expensive categories of products, including organic products. Large food manufacturers, for example, the Cherkizovo Group and Miratorg Agricultural Holding, were forced to optimize the range of meat products. During a period of uncertainty and restrictions on freedom of movement, the population tended to purchase products with long shelf life, which led to an increase in demand and a subsequent rise in prices for cereals and legumes (Fig. 1). The population is more conservative in its choice and prefer to eat at home (Ukolova, 2021).

With a general decline in income, average food expenses increased. If, on average, 31.7% of a family’s income was allocated for food in May 2019, then it was already 41.5% in May 2020, while income decreased by 13.5% (Fig. 1) (Rosstat - Wholesale trade, 2021)

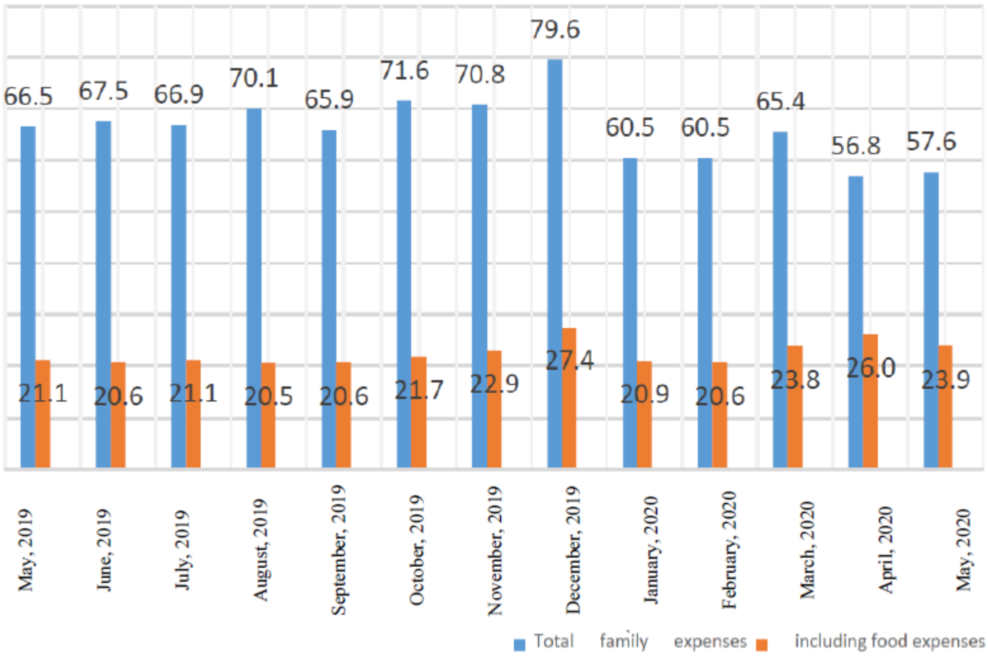


Figure 2: Dynamics of total expenses and food expenses.
Source: Russian Federal State Statistics Service.

Another example is the losses of producers of perishable products associated with the severance of logistics connections and the closure of regional and municipal borders (How has Russia’s economy, 2021). The profitability of the greenhouse business, for example, has decreased from 15-20% to just above zero. On average, retail prices for cucumbers in Russia fell by 15% and by 23% for tomatoes from May to June, while the demand for fresh produce decreased by 30% during self-isolation. The industry's losses amounted to at least 6.2 billion rubles (Rosstat - Wholesale trade, 2021).

Small farms selling products at fairs and markets that were closed during the self-isolation period suffered more. The farmers who specialized in growing spring flowers and seedlings in greenhouses suffered the most. They were forced to dispose of their products. Local authorities also joined in the sale of products in “manual control” mode (Ukolova,2021).

During the COVID-19 pandemic, Russian agricultural exports have changed. There has been a reduction in sales channels. The share of raw materials with low added value increased, which was the result of a decrease in global effective demand and increased competition, while in monetary terms the volumes increased. In the first 6 months of 2020, Russia exported food worth $11.9 billion, which was 14% more than that in 2019 (Rosstat - Wholesale trade, 2021).

At the same time, the pandemic also had a positive impact. Thus, the investment agenda has changed. Food security as a state priority raising the issue of import substitution influenced decisions on investing in projects in the field of import substitution (Marinchenko,2023). The emphasis has changed from the question of whether the product will be cheaper than an imported one to the factor of import substitution.

The next effect was the acceleration of automation and robotization of agricultural production. Agricultural enterprises with the capacity to process perishable products were able to obtain value-added products instead of their losses. Experts suggest, and the author supports this proposal, to return to the practice of minimum balances, in which products are procured with a small reserve, which makes it possible not to disrupt the supply of products if it is necessary to ensure quarantine measures (Ukolova,2021).

The change in the structure and format of consumption led to the development of new forms of doing business, and those companies that were able to quickly adapt received advantages, were able to expand their markets and change their position in value chains. Digitalization processes have intensified. For example, retail trade has become a driver of digital transformation, an important sales channel and a source of demand for human capital efficient in the digital economy (Sedova,Nazarenko, 2022). During quarantine restrictions, its online sales tripled (Ukolova,2021).

The state’s priorities in the field of digitalization of the agricultural sector are outlined in the departmental project titled “Digital Agriculture”. The evolution of the project’s development is indicative.

The project purpose was the digital transformation of agricultural enterprises through the introduction of digital technologies and platform solutions to ensure a technological breakthrough in the agribusiness and achieve a 2-fold increase in productivity in “digital” agricultural enterprises by 2024.

The project included activities for the implementation, among others, the national platform for digital public management of agricultural enterprises called “Digital Agriculture”, for identifying and analyzing problems and conditions hindering the digitalization of the agricultural sector, identifying the most promising digital technologies, accumulating data on agricultural land, creating an information base for market participants, and ensuring control over the quantity and quality, processing, transportation and sale of products (Marinchenko,2021).

The national platform with the Agrosolutionssubplatform should ensure a 2-fold increase in labor productivity per employee, a 1.5-fold reduction in unit costs for business administration and a reduction in the share of material costs in the cost of a unit of agricultural products (fuels, fertilizers, electricity, planting material, feed, etc.) by 20% or more.

The concept of the 2020 “Digital Agriculture” national platform already planned to include more than 50 services for managing the agribusiness and six subplatforms for land use and land management, product traceability, agrometeorological forecasting, and collection of industry data, information support and provision of services and storage and distribution of information materials (Marinchenko, 2021. Digital technology).

The departmental digital transformation program for 2021-2023 of the Russian Ministry of Agriculture provides for the interaction between participants in the agribusiness in electronic form, and increasing the transparency and predictability of processes for market participants and financial institutions that finance targeted industry programs.

The unified digital platform for agriculture in 2022 has already united all industry information systems. Information is collected and processed within the framework of the Single Window information system. It is planned to create a unique digital ecosystem around the agribusiness uniting multi-level management systems of the agricultural sector, related industries and departments (The Ministry of Agriculture, 2021). Thus, the state vision of the functionality of the digital ecosystem of the agribusiness has come a long way since the beginning of the pandemic.

## 4 CONCLUSIONS

The COVID-19 pandemic has had enormous consequences for the global economy, in addition to threatening life, and has revealed the risks of insufficient food supply for the population of many countries around the world.

The Russian economy features deglobalization, regionalization and renationalization of politics, growing state influence on the agricultural sector. The priority of investments in import-substituting projects has increased.

The main negative consequences of the COVID-19 pandemic, which led to losses for agricultural farms and farmers, were restrictions on the import of means of production, a decrease, and in some cases, the cessation of sales of goods, a shortage of labor, loss of markets, a decrease in household incomes, a reduction in demand and a change in its structures, etc.

A feature of these consequences was the multidirectionality of influences at the level of sub-sectors, when some of them increased production, while others experienced a crisis. It is advisable for enterprises to organize the practice of minimum balances, which will allow the formation of a stock of products at agricultural enterprises.

In addition, long-term consequences emerged, in particular, the pandemic accelerated the modernization and digitalization of the agricultural sector and contributed to the diversification of agricultural production. Thus, in particular, the program for digitalization of agriculture has changed. From a national platform aimed at increasing the efficiency of agricultural production, it has become more complex to a concept to an ecosystem for managing the agribusiness. Experience in online sales of agricultural products has been formed.

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