

AGRICULTURE IN RUSSIA

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Annotation. Russia is the largest nation in the world; its climate varies significantly across its vast territory. Only the western parts experience certain climatic conditions that are required for successful crop cultivation. Grain crops such as wheat, barley, oats, and rye are the principal crops grown in Russia. Other crops such as corn, sunflower seeds, soybeans, and potatoes are also grown. Agriculture remains one of the most important sectors in Russia's economy and the country's authorities perceive it as one of potential economic growth drivers. The last few years have seen agriculture emerge as a real success story of the Russian economy. This is the reason for enthusiasm about food as a driver for Russia's rise. This paper introduces the reader to the practice of agriculture in Russia.

Key word: agriculture, farming, USSR, Soviet, Russia, Russian agriculture, Soviet agriculture, traditional agriculture.

INTRODUCTION

Russia is the largest nation by area, spanning over 17 million square kilometers. It is located in both the Northern and Eastern hemispheres. Its enormous area covers one-sixth of the earth's surface, and its climate ranges from Arctic Siberia in the North to the almost tropical Caucasus in the South. Figure 1 shows the map of Russia [1]. The population of Russia as of January 1, 2023 was approximately 146,400,000 people. Some 160 ethnic groups populate its vast terrain, adding to the various regional affiliations that Moscow has to balance to govern the nation. Russia is generally regarded as a "European" nation, although a huge part of its territory is in Asia. (One quarter of its territory is in Europe and three quarters in Asia.) Russia has more time zones than any other country in the world; it used to have 11, but this was culled in 2010 to only nine. The nation's sheer size and complexity mean that its governing system historically has been highly centralized. The harsh climate considered inhospitable in many regions has limited settlement and economic activities, leading to low population density in the northern and eastern parts of the country. Russia is rich in a variety of natural resources, including oil, gas, minerals, and forests. Russia specializes in various industries such as energy, petroleum, defense and aerospace, mining and metals, agriculture, science and technology, and nuclear power. Petroleum was the central economic focus.

Agriculture in Russia is an important component of the economy of the Russian Federation. Agriculture in Russia is illustrated in Figure 2 [2]. Russia has vast agricultural lands, and its agricultural sector specializes in producing wheat, barley, corn, sunflower seeds, and other crops.

For example, in 2017, Russia was the world's largest exporter of wheat, the second-largest producer of sunflower seeds, the third-largest producer of potatoes and milk, and the fifth-largest producer of eggs and chicken meat. Wheat is the most exported agricultural commodity of the nation. Russia is the world's leading wheat exporter, following China, US, and India. Russian wheat exports have pushed out those of the US in Egypt and made inroads into key French markets like Senegal and Morocco. Figure 3 shows a typical wheat farming in Russia [3]. The global dependence on Russian grains was highlighted in 2022 when Russia invaded Ukraine (on February 24, 2022). Following the invasion, the United States enacted a range of sanctions targeting Russian trade. Wheat prices are surging globally in the wake of the conflict between Russia and Ukraine. Besides wheat, Russian agriculture is also among the top grain exports like corn, barley, and oats.

Russian agriculture today is characterized by three main types of farms. Two of these farm types – corporate farms and household plots – existed all through the Soviet period. The third type – peasant farms – began to re-emerge only after 1990, during the post-Soviet transition. Consolidated “superfarms” will bring improved technology, such as increased use of drones, robots, and driverless equipment. It will also lead to a rise in fertilizer use. The localization of the wheat crop in Russia resulted in a strong division of the country into two groups of regions—“consumption” and “productive.” Eastern Europe generally has less favorable climate conditions for agriculture than western Europe. The South has unique comparative advantages within Russia, involving soil and climate, geography, infrastructure, and institutions. In Siberia and the Far East, the most productive areas are the southernmost regions. Northern regions concentrate mainly on livestock and the southern areas and western Siberia produce grain.

RUSSIA’S AMBITION AS A SUPERPOWER

After Moscow originally believed that Russia could become an “economic superpower” and then switched to visions of an “energy superpower,” the latest twist is to make it a “food superpower.” Since Vladimir Putin took power in 2000 as the President of the Russian Federation, Russia has earned a reputation for being a petrostate. In his December 2015, Putin claimed that Russia could become “the largest world supplier of healthy, ecologically clean and high-quality food.” He announced that Russia plans to become self sufficient for its food resources by 2020. His new ambitions imply that the country’s annual export is to increase by 12% a year for the next four years. Figure 4 shows President Putin taking a stroll through a barley field with a farmer [4].

The partnership of the state and agricultural business aims to achieve ambitious goals set by Russian President Vladimir Putin. Russia wants agriculture to fuel its rise. The government also has made it a priority to increase domestic production of agricultural equipment. The country should be transformed into a net exporter of agricultural and food products by 2022, and increase food exports to \$45 billion by 2024. Wheat ranks first in the list of top produced commodities. Russia’s trade in agricultural and food products has experienced significant changes. However, as production of smallholders remains traditional and subsistence oriented, they are not able to help Russia’s emergence as a global food superpower [5]. The country supplies numerous markets with Egypt, Iran, Turkey, and other countries in the Middle East, all of which are authoritarian.

FACTS ABOUT RUSSIAN AGRICULTURE

While Russia has a predominantly cold climate, it has developed various techniques to grow food even in such conditions. The techniques include [6].

- *Greenhouses:* These enable farmers to control temperature, light exposure, and humidity, creating suitable conditions for plant growth throughout the year.

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- *Crop rotation*: This involves alternating the types of crops grown in the same area over several seasons.
- *Permafrost farming*: In regions with continuous permafrost, farmers use techniques like frost-resistant crop varieties and raised beds.
- *Dryland farming*: In arid regions, farmers employ techniques such as water-efficient irrigation systems, drought-resistant crops, and conservation tillage methods to utilize available water resources more efficiently.
- *Hydroponics and aeroponics*: These are soil-less cultivation techniques that provide a controlled environment for plants to grow.
- *Traditional preservation*: Additionally, Russians have a long history of preserving food through techniques like pickling, drying, and fermenting.
- *Importing food*: While Russia strives to be self-sufficient in terms of food production, it also imports certain items to meet consumer demands.
- *Crop Selection*: To cope with the challenging climate, Russian farmers have adapted by selecting crop varieties that are more tolerant of cold temperatures, short growing seasons, and limited water availability.
- *Irrigation*: Irrigation systems are installed for watering crops, utilizing techniques such as drip irrigation and sprinkler irrigation.

The following acts about Russian agriculture are worthy of note [4]:

- Russia's agriculture sector is enjoying a boom.
- The sector is vulnerable to fluctuating commodities markets.
- Counter-sanctions and climate conditions are fueling an increase in grain production.
- The domestic population and export infrastructure may not absorb the increase.
- Russia will likely only continue to export unprocessed grain.
- Russia's revenues from food exports have outstripped those from weapons exports.
- Cultivated land increased from 43.3 million hectares in 2006 to 47.1 million hectares in 2016.
- Demographic changes would seem to support predictions that food demand will grow.
- Russian food exports are often of low quality and are sold mainly in peripheral markets like Egypt, Turkey, Iran and Indonesia.
- Certain regions of Russia have better agricultural conditions compared to others.

HISTORY OF RUSSIAN AGRICULTURE

Russia, with its vast land mass, went through a number of fluctuations during the 19th and 20th centuries. Russian Old Believers settled in Ynegetai at the beginning of the 17th century. The Old Believers are populations of Russians who did not accept reforms made in the Russian Orthodox Church in the 15th century. They have a strong cultural heritage to agriculture and working the land. They were less harsh than those of former tsars. Large numbers of Old Believers resettled in Siberia, bringing their seeds and agricultural knowledge from the west. During Soviet collectivization, the Old Believers lost their religion but not their traditional way of life.

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Imperial Russia (officially founded in 1721 and abolished in 1917) was among the largest exporters of agricultural produce, especially wheat. Imperial government officials stressed the role of agriculture in supplying food for the urban population, taxes to pay for government support of the industrial sector and exports to pay for industrial technology from abroad. Throughout the 19th century the Russian wheat crop developed into a significant export commodity. By the eve of the 1917 Revolution, the garden economy was developing quickly. Russia's autocratic state had been able to exploit its peasant population and agricultural economy to generate the resources. The Russian Empire was not able to compete economically and militarily with the more "developed" nations of north-western Europe, North America, and Japan in the last few decades of its existence [7]. In the Soviet planned economy, farms received specific allocations of inputs tied to mandated output targets. Most agricultural output came from large state and collective farms. These farms did not have decision-making power over their input use or output choice. Producers faced no competitive market pressure to be efficient, reduce waste, or economize on inputs. The Soviet planners generally followed an agricultural policy of product non-specialization. Stalin's campaign of forced collectivization, which began in 1929, confiscated the land, machinery, livestock, and grain stores of the peasantry. By 1937 the government had organized approximately 99 percent of the Soviet countryside into state-run collective farms. Until the 1980s, most agricultural land in Russia was in state ownership, and the transition to a market-oriented economy had to start with privatization of land and farm assets.

During the height of the Cold War, the balance of power was arrived at by diplomacy of all kinds, including wheat. There were years when the Union of Soviet Socialist Republics (USSR) experienced shortages in wheat production, and the United States sold them their much-needed grain. Before the 1991 dissolution of the USSR, an impressive packet of agricultural reform legislation was passed in 1990, largely chaperoned by Boris Yeltsin, then Chairman of the Russian Supreme Soviet and subsequently the first president of Russia. Whereas the Yeltsin reform policies (1991-1999) were largely concerned with dismantling the command economy and removing the state from agriculture, the policies of the Putin–Gordeev era (2000-2009) were about reestablishing a role for the state in agriculture.

After the collapse of the Soviet Union in 1991, the low-yield lands which required great resources were left fallow, with farmers looking at a better return for their labor. Large collective and state farms, the backbone of Soviet agriculture, had to contend with the sudden loss of state-guaranteed marketing and supply channels. The agriculture industry slowed down significantly and was in decline. Russia is gradually shifting towards more climate-resilient farming practices such as conservation tillage, drip irrigation, intercropping, applying organic fertilizers, and crop rotation.

Russia's transition from a centrally planned economy to a market-based economy began in the early 1990s. During that period, the former state and collective farms inherited from the Soviet period were forced to reorganize. The agricultural sector survived a severe transition decline in the early 1990s as it struggled to transform from a command economy to a market-oriented system. The Russian Government and agricultural establishment regarded the output decline during the 1990s as a calamity, and in 2005, the Government identified agriculture as a national priority area that would receive more funding.

Russia has experienced a remarkable agricultural recovery during the past 20 years. Legislation enabling independent private farms outside the collectivist framework was passed only in November 1990. The Russian agricultural sector fared poorly during the transition period of the 1990s. Starting in 1993, privatized kolkhoz and sovkhos units became corporate farms. These farms were legally reorganized as common-stock companies, limited-liability partnerships. The land-code

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reform of 2002, advanced by President Vladimir Putin, called for the ownership of real-estate objects [8]. Russian agriculture has shown stable growth since 1999, in spite of intervening periods of economic and financial crises. During the 1990s, the transition from state and collectivized to private farming brought severe disruptions. In 2016, for the first time since the end of the Russian Empire, Russia reemerged as the world's largest exporter of wheat. In 2018, the government announced a \$51 billion plan to boost domestic agricultural production, setting the ambitious goal of increasing food exports by 70% by 2024.

MODERN AGRICULTURE

The Ministry of Agriculture is the federal executive body responsible for developing and implementing government policies and legal regulations in the agriculture and related industries. It takes care of the domestic market. It expects Russia will be self-sufficient in agricultural products within few years. Plans to support the development of more meat and dairy farms will help achieve targets for domestic and export food production. The ministry also plans to increase the size of grants given to farmers engaged in meat and dairy cattle breeding.

Primary agriculture in Russia continues to be dominated by inefficient, Soviet-type collective farms with outdated technologies and management skills. The economic reform that began in Russia in the early 1990s reduced Russia's livestock sector. Agrohholdings as an agricultural-economic phenomenon began to emerge in Russia at the end of the 1990s, and for the last twenty years, they have held the attention of many researchers and journalists. The term "agroholding" essentially signifies a "holding company in agriculture." The motivation for the emergence of agroholdings is to be sought in the institutional and economic environment of the late 1990s in Russia [9].

The dissolution of the Soviet Union in 1991 gave rise to the need for transforming Russian agriculture. In a market economy, agricultural production can be performed by various types of organizations such as the production cooperative. Agricultural production cooperatives in Russia have replaced some of the Soviet collective farms and state farms. The cooperatives have been successful due to their strong market position and high market shares in several regions of Russia [10].

Over the past two decades, Russian agriculture has undergone an intensive modernization process. Russia has transformed its agriculture sector from a modest level of production in the 2000s to a significant contributor to the economy and growing global player, competing with the US in the global wheat market. Common agriculture products in Russia include wheat, barley, oats, rye, potatoes, sugar beets, sunflowers, vegetables, fruits, nuts, and berries. Dairy products, such as milk, butter, and cheese, are also important agricultural products. Livestock, including cattle, sheep, and pigs, are also raised in Russia.

As part of the agricultural modernization process, new policies were adopted to better suit the age of globalization. While becoming part of the global agricultural economy, Russia started to import seeds, livestock, and Western farm machinery. Yet, the Russian agricultural sector still observed deficiencies that were not being tackled.

BENEFITS

Agriculture is one of the most important sectors of the national economy in Russia because it provides a significant raw material base for production and it provides citizens with food products. Oil is Russia's key commodity export. Russia is a major regional and global agricultural producer and consumer. It has re-emerged on the world arena as a food exporter and now ranks among the leading exporters of wheat and vegetable oil. The two main factors behind the surge in production

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have been favorable weather and the Russian counter-sanctions that were introduced in retaliation for Western sanctions over Russia's aggression against Ukraine. Other benefits of Russian agriculture include the following [11,12]:

- *Agricultural Reforms*: This has proved to be a tough challenge for Russia during its transition to a market economy. The challenge comes from the legacy of the Soviet period and from systemic cultural biases against individualism. Because of agriculture's vital economic role, large-scale agricultural reform is necessary for success in other sectors. In the mid-1990s, however, private initiative was not rewarded, and inefficient input distribution and marketing structures failed to take advantage of agricultural assets. The Gorbachev agricultural reform program aimed to improve production incentives. The Yeltsin regime attempted to address some of the fundamental reform issues of Russian agriculture. The main thrust of Yeltsin's agricultural reform has been toward reorganizing state and collective farms into more efficient, market-oriented units.
- *Sustainable Agriculture*: The concept of sustainable development was reflected in the system of goals and objectives of agricultural development. Sustainable agriculture becomes responsible for the social, environmental, and biological aspects of the agricultural products. The agriculture industry has identified directions and tools to reduce adverse economic, social, and environmental effects and increase sustainability.
- *Organic Farming*: The organic agricultural sector in Russia has been steadily growing since the beginning of 2000s. The amount of land used for organic agriculture almost doubled, while the organic market has grown 10 times in value over the last 15 years. Russia's organic sector remains underdeveloped compared to leading countries in organic production and consumption. According to the International Federation of Organic Agriculture Movements (IFOAM), there are four principles of organic agriculture: health, ecology, fairness, and care [13]. Figure 5 shows organic farming in Russia [14].

CHALLENGES

While Russia seems to have successfully tackled its historic problem of food shortage, the nation is already facing a new set of challenges. Russia's climate and short growing season have a major impact on food production. The cold and unpredictable climate makes it difficult for crops to survive for long periods, resulting in a lower yield. Farmers are dissatisfied with the poor working and living conditions. Figure 6 shows some angry farmers protesting in Russia [15]. Most farmers could no longer afford to purchase new agricultural machinery, grain-storage facilities, and other capital investments. There is no mechanism currently in place to enable banks to evaluate the value of land based on its productivity before issuing loans. There is an acute need for modernized agricultural machinery in Russia. Russia's agricultural research system has been described as disconnected from the majority of farmers. Agricultural growth and rural development are constrained by underutilization of Russia's agrarian potential. Since food processing industry remains greatly underdeveloped, the country has to import most of its refined food. Other challenges of Russian agriculture include the following [6,16]:

- *Food Security*: The Green Revolution, based on industrial agricultural practices, reduced food insecurity in developing nations. The most important tool of the economic policy of the Russian Federation in the agricultural sector is the Food Security Doctrine. By moving toward self-sufficiency in food production, Russian government hoped there would also be gains in food safety, ensuring that Russian consumers had access to healthy foods. In addition to the boom in

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grain production, Russia is now a net exporter of poultry, self-sufficient in pork, and making strong headway in beef. There is a boom in greenhouse construction for vegetable production.

- *Banning Imports:* Russian agriculture as a strategic sector came with the 2014 introduction of Russian countersanctions, banning imports of agricultural goods from countries that participate in sanctions against Russia over its actions against Ukraine. Russia closed its markets to countries that in 2013 had accounted for more than half of its imports of pork, poultry, fish and seafood, vegetables and dairy products.
- *Quality:* The key question is whether Russian agriculture will, in economic jargon, be able to “climb the quality ladder.” In some regions, 78.3% of cheese and 25% of other dairy products had been adulterated in 2015.
- *Climate:* Climatic conditions determine agriculture in relation to crop composition, productivity, and fluctuations in yields. Russia experiences extremely cold temperatures in many regions due to its vast size and continental climate. Such cold conditions make it unsuitable for cultivating crops. Wheat is very vulnerable to cool weather and soil acidity. Because of the severe climate conditions, average crop productivity in Russia has always been lower than in Western European countries and the United States. The most remarkable feature of Russian agriculture determined by climate was the great fluctuations in yields. For example, it is too cold in Russia to grow corn because corn requires temperatures of at least 16°C (61°F), while Russia has a temperate continental climate which is favorable for growing wheat. Russians have adapted to their climate by developing plants and animals that are able to survive in cold climates.
- *Labor Shortage:* By 2030, the world might face a drastic shortage of highly qualified personnel. For Russia, this could lead to a shortage of 2.8 million highly skilled workers that could cause \$300 billion in losses for businesses. For example, the population of Russia's far eastern states has been declining. Fear of foreigners, and especially Chinese, is strong in Russia. Restrictive immigration policies and an aging population have led to a shortage of labor in the agricultural sector. Shortage of skilled workers and low technological development remain factors, which prevent growth of the sector. It is difficult for companies to find experienced and qualified specialists in agriculture.
- *Land Reduction:* The changes that began at the end of the 20th century greatly affected agriculture. Agricultural production has been sharply reduced; and there was a significant reduction in arable land in a number of regions.
- *Crimes in Rural Areas:* Most farming facilities are remote and are easy targets for theft. It is important that each farmer protect his farm and investment. The visual presence of security cameras alone will often deter criminals from targeting the property. Law Enforcement resources are already razor thin and this means that response times are far greater in rural areas, manpower is thinner in remote areas, and more crimes go unsolved in rural areas.

The future of the Russian agricultural industry largely depends on how quickly and successfully these challenges are resolved. This will encourage the World Bank to deepen its work in partnership with the government and support Russian agriculture in realizing its full potential. This will make agriculture one of the most attractive sectors of the Russian economy.

CONCLUSION

Russian agriculture has been one of the fastest growing segments of the economy in recent years.

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It is a **sector with immense potential, but low contribution to the GDP**. Its agricultural and rural policies are intimately connected with the transition from the command to market economy. Food production and processing represent a key component of Russia's economy. Over the past 10 years, the import of food processing and packaging equipment has doubled in Russia. The ban on imports of food from many countries implies that the Russian food industry will continue to develop and enjoy a favorable competitive environment [17]. Food commodity exports are now worth more to Russia than its arms shipments, earning the country some \$25 billion in 2019.

Over the past 20 years Russia has sought to bring policy up to speed with developing nations and the age of globalization. From a business standpoint, there are favorable conditions for producers and exporters of Russian food commodities. Agriculture in Russia is booming and quickly gaining prominence. The country is regaining its status as an agricultural superpower. Russia's importance in the global agricultural market is increasing. The future for agricultural production and grain looks bright. More information about agriculture in Russia can be found in the book in [18-22].

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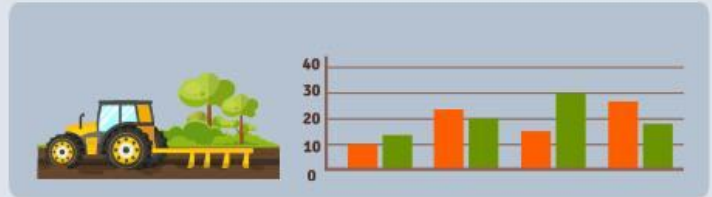
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Figure 1 The map of Russia [1].

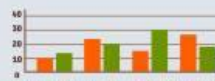
AGRICULTURE IN RUSSIA



13% of land agriculture lands are captured for the production of sugar beet, wheat and potatoes.



06% of the total Russian GDP occupied by the agriculture industry



16% of the employment opportunities are generated by agriculture.



70% of the total grain produced in the country.



Figure 2 Agriculture in Russia [2].



Figure 3 A typical wheat farming in Russia [3].



Figure 4 President Putin taking a stroll through a barley field with a farmer [4].



Figure 5 Organic farming in Russia [14].



Figure 6 Farmer protest in Russia [15].