

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Bachelor Thesis

The Economy of the Agricultural Sector of Kyrgyzstan

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

BACHELOR THESIS ASSIGNMENT

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Business Administration

Thesis title

The Economy of the Agricultural Sector of Kyrgyzstan

Objectives of thesis

The main objective of the thesis is to describe the main problems of the agricultural sector of Kyrgyzstan. The main leitmotif of this work is strongly tied with the analysis of the state of the following sector and understanding the reasons behind a never-ending recession in the agriculture of Kyrgyzstan. Kyrgyzstan, undoubtedly, possesses a large territory to make the most of out it and make the economy flourish. Apart from defining possible reasons behind the stagnation, the author in her thesis will offer a series of solutions that will significantly help the country in its pursuit of economic well-being.

Methodology

In order to accomplish the goals set in the objectives of the thesis, the author uses a deep analysis of fundamental microeconomic and microeconomic indicators, analysis of self-sufficiency, break-even points which are bound to shed a brighter light on whether local producers are independent of government subsidies or they are not.

In addition, a series of interviews with local producers will be conducted in order to understand the main reasons behind the recession by the experience of producers who know the problem from the reality of life in Kyrgyzstan.

The proposed extent of the thesis

40 – 60 pages

Keywords

LDC, Economy, agriculture, corruption, crisis, political instability

Recommended information sources

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Declaration

I declare that I have worked on my bachelor thesis titled "The Economy of the Agricultural Sector of Kyrgyzstan" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any their person.

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The Economy of the Agricultural Sector of Kyrgyzstan

Abstract

This bachelor's thesis examines the state of the agricultural economy of the Kyrgyz Republic, assesses the state and analyses the problems and tasks facing the leadership for the development of the agricultural sector of the economy, based on the research obtained, suggest ways to solve these problems.

The main purpose of the dissertation is to study the main problems of the development of the agricultural sector of Kyrgyzstan.

The main leitmotif of this work is closely related to the analysis of the state of the next sector and understanding the reasons for the ongoing decline in agriculture in Kyrgyzstan. Kyrgyzstan undoubtedly has sufficient agricultural resources, has a large territory, the effective use of available territorial and technical resources will solve the main problems of the economic development of the republic.

Keywords: Agriculture, economy, crisis, GDP, Kyrgyzstan, organic, distribution, natural, analysis, environment.

Ekonomika zemědělského sektoru Kyrgyzstánu

Abstrakt

This bachelor's thesis examines the state of the agricultural economy of the Kyrgyz Republic, assesses the state and analyses the problems and tasks facing the leadership for the development of the agricultural sector of the economy, based on the research obtained, suggest ways to solve these problems.

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Klíčová slova: Zemědělství, ekonomika, krize, HDP, Kyrgyzstán, organický, distribuce, přírodní, analýza, životní prostředí.

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List of abbreviations

NSC KR – National Statistical Committee of the Kyrgyz Republic

NB – National Bank

GDP – Gross domestic product

EAEU – Eurasian Economic Union

AOF – Agricultural Organic Farming

WTO – World Trade Organization

FAO – Food and Agricultural Organization

USAID – The United States Agency for International Development

USD – United States Dollars

Aimag – Organic aimag is a Kyrgyz model of integrated sustainable development of rural communities.

1. Introduction

The Kyrgyz Republic is located in the northeast of Central Asia. The country is landlocked and shares borders with Kazakhstan, Tajikistan, Uzbekistan and China. The Republic is rich in natural resources, including minerals, large areas of forests, arable land and pastures, and has significant potential to expand its agricultural sector, increase hydroelectric power generation and develop tourism, while being classified as a low-income state.

The economy of Kyrgyzstan is vulnerable to external shocks due to its heavy dependence on international remittances (25% of GDP) and gold production (about 10% of GDP and 40% of exports).

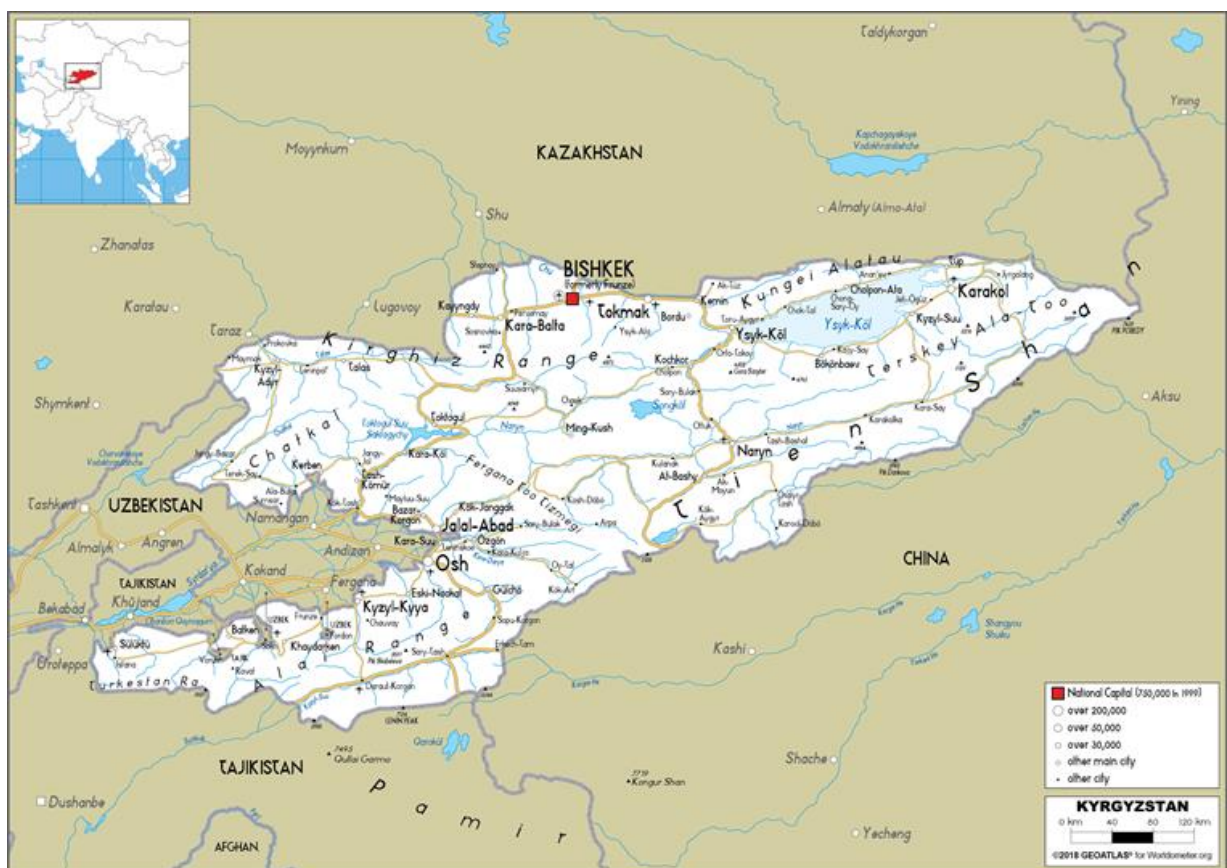


Figure 1. Map of Kyrgyzstan. Source: worldmeters.info

Agriculture plays an important role in the structure of the economy, accounting for 13.5% of the country's GDP in 2020 (Table 1).

Name of indicator	2020	2021	Growth rate 2020/2021	
GDP, billion USD	7,7	7,74	0,04	1%
GDP per capita, USD	93,8	99,8	6	6%
Share of agriculture in GDP, %	13,5	14,7	1,2	8%
Population, million people	6636	6698	62	1%
Inflation rate, %	6,3	11,2	4,9	44%
Urbanization, %	36,9	39,2	2,9	7%
Unemployment rate %	1,8	2,9	1,1	38%
Retail trade turnover, USD billion	4,4	4,8	0,4	8%
Import of agricultural products, mln USD	594,5	629,0	34,5	5%
Export of agricultural products, million USD	250,6	179,0	-71,6	-40%
Turnover of agricultural products, mln USD	845,0	-6,8	-851,8	12526%

Table 1. Main indicators of economic development of the Republic of Kyrgyzstan for 2020 – 2021

In 2020, the pandemic led to an 8.6% reduction in GDP compared to 2019, significant job losses and an increase in poverty.

In 2021, GDP grew by only 1%, but nevertheless it did not decrease, and this was important for the republic.

Average annual inflation increased from 1.1% to 6.3% with the weakening of the national currency and rising prices for imported foodstuffs.

Sectors with high labour intensity suffered the most: tourism, transport, trade and construction, agriculture also suffered significant losses in 2021 as a result of the impact of adverse climatic conditions in the spring and summer of 2021, including lack of irrigation water during the growing season, led to a decrease in the growth of the agricultural sector.

The general economic growth of the Kyrgyz economy in 2021 is estimated at about 4.7 percent, according to the National Bank.

2. Objectives and Methodology

2.1 Objectives

The main goal of the bachelor's work is to study the state of the agricultural economy of the Republic of Kyrgyzstan, to assess the state and analyze the problems and tasks facing the leadership in the development of the agricultural sector of the economy, based on the results obtained during the research, to propose ways to solve these problems.

The main purpose of the dissertation is to study the main problems of the development of the agricultural sector in Kyrgyzstan.

The main leitmotif of this work is closely related to the analysis of the state of the next sector and understanding the reasons for the ongoing decline in agriculture in Kyrgyzstan. Kyrgyzstan, undoubtedly, has sufficient agricultural resources, has a large territory, the effective use of available territorial and technical resources will solve the main problems of the economic development of the republic.

2.2 Methodology

The set large-scale goal of the study determined the range of tasks such as:

- to conduct a deep analysis of the state of fundamental microeconomics and microeconomic indicators of the state of the region's economy;
- study of the structure of import and export of agricultural products in the Republic;
- research and study of the degree of dependence of agricultural producers on state support,
- conduct a series of interviews with local producers to understand the main causes of the recession from the experience of producers who know the problem from the realities of life in Kyrgyzstan;
- study of prospects for the development of agricultural activities in the sector of production of environmentally friendly products for domestic consumption and for export.

3. Literature Review

3.1 The concept, role and structure of the agricultural complex in the country's economy

Agricultural economics is an economic science that studies agriculture as a complex industry that produces agricultural products. The theoretical and methodological basis of this science is economic theory. It studies the laws of social production and consumption of food, goods and services at various stages of the development of human society.

Agricultural economics is the study of the operation of objective economic laws and the forms of their manifestation in agriculture. Economics studies production relations in the agricultural sector in conjunction with other areas of material production and is based on the results of research in the field of natural, technical and other sciences.

Accounting and objective use of the action of the entire system of economic laws are aimed at meeting the growing needs of the population and the free comprehensive development of all members of society.

Agricultural economics, as a branch of science, draws practical conclusions and develops ways to apply and use the basic economic laws in the specific conditions of the development of the agro-industrial complex.

The subject of the science of agricultural economics studies the production relations of people in interdependence and interaction with the development of productive forces. An important task of the subject is to determine the effectiveness of the agricultural machinery and equipment used, agro technical, technological and other measures.

An important role in the study of this topic is given to the deep assimilation of knowledge of previous technological (agriculture, crop production, agro chemistry, mechanization and electrification, animal husbandry, storage and processing of agricultural products, vegetable and fruit growing, etc.) and economic (mathematics, political science, economic theory, planning and forecasting in agriculture, distribution of productive forces, computer technology and computer technology, computer science, statistics, regulation and labor protection) sciences. At the same time, agricultural economics, as a branch of science, provides a basis for studying subsequent disciplines of an economic profile, such as: organization of agricultural production, analysis of economic activity, economic and mathematical methods, financing and lending, agricultural production management, international economic relations, entrepreneurship, agricultural markets, etc.

The agricultural sector of the economy, which began its formation in prehistoric times, is now an independent and very important sector of the national economy for society. The features of the agricultural complex have been studied by a large number of scientists and practitioners around the world, the most famous researchers in the economics of agriculture in European countries include Albrecht Daniel Thayer, Justus von Liebig, John Bennet Loos, Hermann Hellriegel, Robert Bakewell, Norman Borlaug, Luther Burbank, George C. Clerk, René Dumont. Among the researchers of Kyrgyzstan, one can name such as: Dzhumakova A.A., Turdiev T.I., Osmanalieva D.A., Bakirova G.V., Akinin P.V., Magomedov Sh.A.

The modern branch of agriculture is, as a rule, a large sphere of production, which is part of the national economy of any country.

Agriculture is a part of the economy that differs from the rest in its goals, objectives, place and originality of the products produced and the means and objects of labor necessary for this.

The specifics of agricultural production determine its dependence on state support, and not only in times of crisis, but on an ongoing basis. demand for food due to population growth and the increasing need of the people for quality food. In addition, the products of the industry and the ability of industry enterprises to independently satisfy the demand for manufactured products to a large extent determines the issues of food security of the state.

3.2 External and internal factors of agricultural production

Agricultural production is influenced by a fairly large number of factors, the main of which were listed above.

These factors determine the features of agricultural production, which are absolutely insignificant for most other sectors of the economy. Among the main objective factors that affect the degree of organization and the level of efficiency of the agricultural sector of the economy, one can single out the following:

- natural and climatic conditions;
- seasonality of the production cycle;
- low level of return on investment;
- dependence on macroeconomic conditions, etc.

All factors that have a significant impact on agricultural production can be divided into two large groups: internal and external.

Table 2 presents the main internal and external factors that affect the efficiency of agricultural production.

Factor name	Characteristics of the factor on agricultural production
External	
Dependence on the market for means of production and their prices	<p>With uneven rates of increase in prices for agricultural products and industrial means of production, energy and services, their reusable disparity arises. Enterprises engaged in the agro-industrial complex act as monopolists in relation to agriculture, which is very convenient, since they begin to dictate their terms and set prices. But if the set prices are high, then this leads to a deterioration in the material and technical equipment of farms, an increase in the timing of work, loss of products, and a weakening of resistance to the adverse effects of the external environment.</p>
Dependence on the natural environment (type of soil, climate, microorganisms, natural vegetation, etc.)	<p>It is an unavoidable feature of agriculture, however, using the achievements of scientific and technological progress and taking into account the laws of nature, the agricultural producer can mitigate their adverse impact.</p>
Seasonality of production and use of means of labor arises in the event of a mismatch between the time period of production necessary for the production of products and the working period	<p>During the year, the labor force and the means of agricultural production are used unevenly. The duration of the working period is much shorter, there is a long gap between the production time and the working period, this is a natural process of development of plants and livestock. The influence of this factor can be mitigated a little, but it is completely impossible to level it.</p>
Dispersed production	<p>The volume and perishable nature of products entail high transportation costs, increase product costs, make it difficult to market, require predominantly better and more mobile equipment, high energy costs, and cause losses of such products as crop and livestock. A decrease in the degree of influence of this factor is possible with a regular increase in investment in the industry.</p>

Stagnation of the national economy	Dispersal also affects the degree of concentration of production and cooperation, the growth of agricultural production is impossible without the development of transport and logistics infrastructure.
Non-priority of the agricultural sector in the national economy	The lack of budgetary financial support for developing industries, the orientation of financial policy towards short-term investments, the growth of unemployment, have a negative impact on the development of the agricultural sector.
Internal	
Domestic consumption of a significant part of the output	In agriculture, part of the output is annually used in the industry itself, which reduces the level of marketability and necessitates additional funds for the creation of reserve funds and storage. Each enterprise should pay special attention to the quality of finished products, which will be sent to the next production cycle, and reduce the costs of obtaining it (seeds, feed, replacement young animals).
Poor material and technical base of agricultural enterprises	As a rule, agricultural enterprises do not have the necessary material and technical base, low volumes of investment in this area.
Low level of education of farm workers	Farms do not consider it necessary to train their workers and improve their professional qualities, which does not allow improving the quality of their work, does not allow the introduction of advanced equipment and production technologies. the low legal preparedness of farmers also leads to ignorance of their rights and the legislative and legal framework for their activities.

Table 2. Internal and external factors determining the efficiency of agricultural production

Investigating the influence of the main factors of production on the efficiency of agricultural production, it is also necessary to consider some of the conditions in which agricultural enterprises have to operate, such as:

- the growth of environmental pollution and, as a result, the limitation of the use of chemical means of production and the increase in taxes on the restoration of the environment;
- high growth of scientific and technical progress in the world - development of equipment and advanced technologies that reduce the cost of human labor in agricultural production;

- a sharp breakthrough in the biological and technical field (achievements in animal husbandry, breeding of new high-yielding plant varieties, creation of new methods for protecting crops and trees, breeding of new animal breeds with targeted qualitative characteristics).

The size and quality of the material and financial resources of agricultural enterprises depend to a decisive extent on the financial condition of the country and the enterprise. Material and monetary resources constitute the fixed and working capital of the country and the enterprise.

3.3 Problems of development of the agricultural sector of the economy of the Kyrgyz Republic

Agriculture is one of the most important sectors of the economy of the Kyrgyz Republic. About 40% of the economically active population is employed in agriculture. In 2020, the share of agriculture in the structure of GDP was 20.5%, which is 1.8 percentage points more than in 2019 and 0.7 percentage points more than in 2016.

The volume of agricultural production in 2020 increased by 12.9% compared to the previous year and amounted to 249.5 billion soms (~3.2 billion US dollars): crop production accounted for 50.4% of the total agricultural production, livestock - 46.6%.

In value terms, the volume of crop production in 2020 amounted to 125.7 billion soms (~1.6 billion US dollars), an increase of 13.5% compared to 2019. Crop production is dominated by the production of vegetables, fruits and grains. The most actively growing production of cereals (+7.4% compared to 2016) with an increase in the gross harvest of barley (+22.9%) and corn (+10.1%).

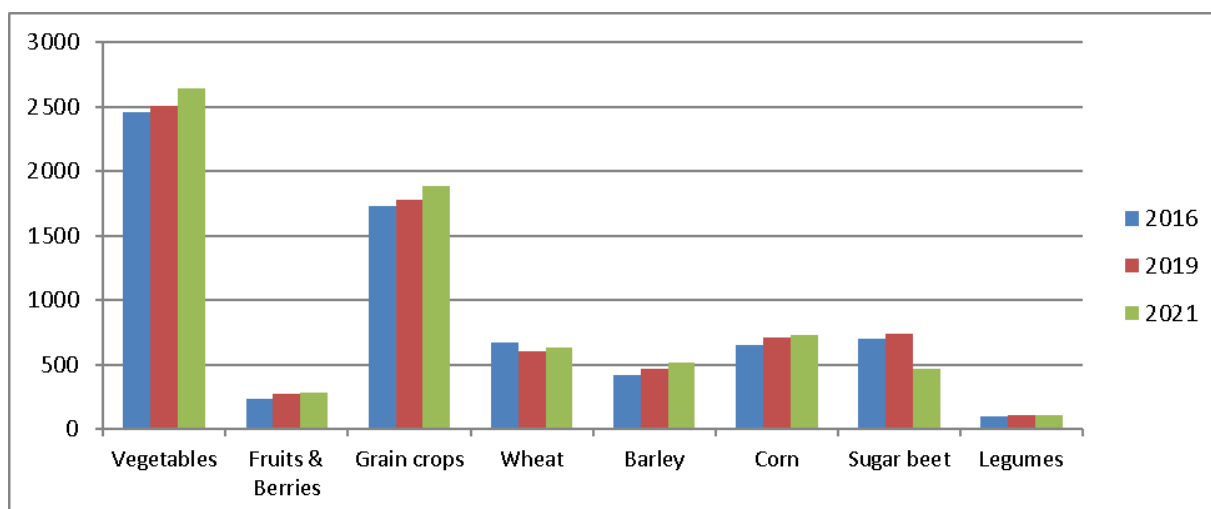


Figure 2. Dynamics of crop production (thousand tons). Own creation

Livestock production in 2020 amounted to 116.3 billion soms (~1.5 billion US dollars), an increase of 11.8% compared to 2019. The dairy industry dominates in the livestock structure; in 2021, 1,898.0 thousand tons of raw milk was produced, which is 2.5% more than last year.

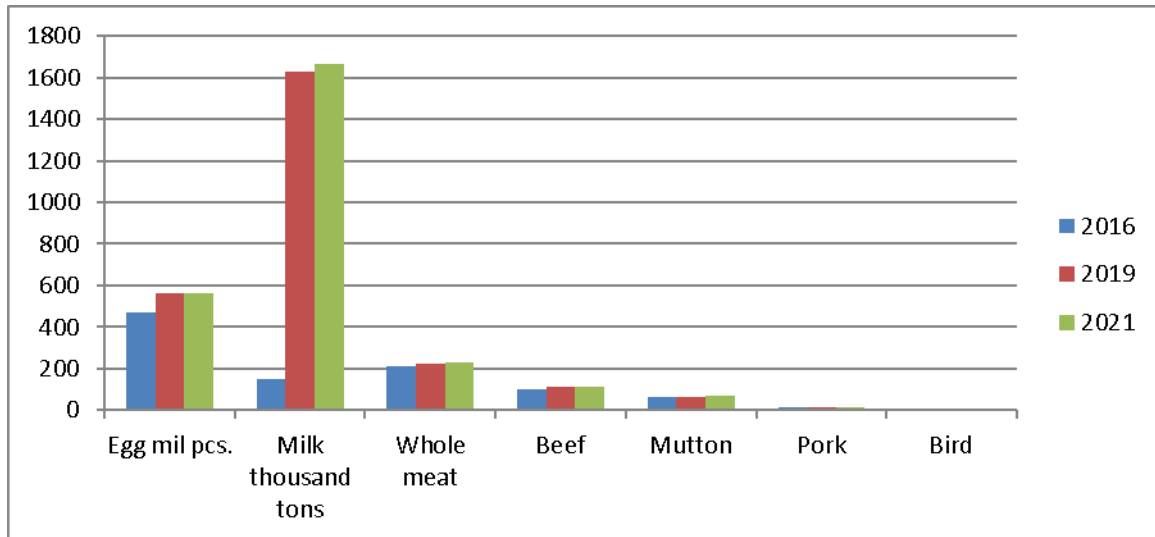


Figure 3. Dynamics of livestock and crop production (thousand tons). Own creation

Of the total milk produced, 98.6% came from cows. In the structure of meat production (in terms of slaughter weight), a significant share is occupied by beef - 49.7% and mutton - 29.1%. The production of all types of meat is growing, with the exception of pork (-20.7% compared to 2016). Egg production amounted to 562.0 million pieces, remaining at the level of the previous year.

Despite the fact that the agricultural sector of the Republic's economy accounts for about 20% of GDP, unfortunately, this sector is being modernized slowly, and growth rates are insufficient to reduce poverty and ensure food security in rural areas. Mishandling and inefficient practices have led to the degradation of agricultural land.

In many villages, the problems of lack of drinking water, good roads, quality medical care, cultural leisure, the level of teaching in schools, the lack of kindergartens, the lack of textbooks, and so on have not yet been resolved. This situation prompted the rural population to migrate to the cities of the republic and abroad in search of income. As a result, many rural areas began to experience a shortage of labor resources. Degradation of arable land is increasing, animal diseases are becoming more serious, and seed production and breeding of new breeds of livestock have actually begun. The use of mineral fertilizers is very low (about 10 times lower than in the union), and the use of herbicides can cause deterioration of the irrigation system. The technical equipment of agriculture

is in an extremely unsatisfactory state: the equipment used at the facilities of the industry is morally and physically depreciated by 85%.

A big insoluble problem is the storage and processing of agricultural products. The main problem is: lack of financial resources, but other factors can have a negative impact.

The accession of Kyrgyzstan to the Customs Union opened up certain opportunities for the export of agricultural products. Based on this, we can safely say that the republic does not use these opportunities effectively. It should be noted that these factors are that the scale of distribution of farms is small, and the level of economic literacy of new owners in agriculture is usually low, which reduces the efficiency of production in the industry. The lack of an effective system for purchasing products, the lack of own cheap credit resources also has a significant impact, although it should be noted that recently there has been a slight increase in them, this is also a factor causing negative consequences.

Recent years in the economy of the Republic are characterized by crisis, in the agricultural sector, the volume of production in this sector did not decline as catastrophically as in some other industries. However, as we have pointed out, the production of most crops and livestock productivity is still below the level of producers. These figures are improving, but progress is slow. This decentralized process shows that the mentality of farmers in our era is adapted not to collective work, but to individual work. I must say that we are talking about private household lands - these are personal subsidiary plots.

In fact, these are gardens and orchards of the villagers. Traditionally, the analysis of statistics shows high rates for this category. But most importantly, these private farms are only a part of the peasant economy. An analysis conducted by the National Statistical Committee of Kyrgyzstan showed that more than half of the farms produce agricultural products for their own consumption for sale on the market, of which 22.7% and 21.7% provide products for further processing.

Thus, more than half of the output produced by farms is used for own needs, forming the basis of a subsistence economy rather than a market economy. Naturally, this is largely due to the lack of sufficient financial resources, technical problems, appropriate qualifications, etc. However, from this point of view, working only for yourself will lead to a certain degree of stagnation and weaken the positive impact on the country's economic growth. As I have already noted, the problems in the country's agriculture that have arisen since independence, although partially resolved, still exist today. Based on the above, they can be divided into four categories:

The first is organizational issues. Today there are more than 384,000 farms in the country. The number of large farms is small and is decreasing every year. As a result of the split, the number of peasant farms increased. The government does not have a well-organized and efficient

procurement of products produced by farmers. The export system has not been adjusted, it is not debugged.

The analysis of export volumes shows that the data on the export of agricultural goods from did not change significantly. In 2020, exports amounted to USD 250.6 million, which is 0.2% less than in 2019, but 34.5% more than in 2016.

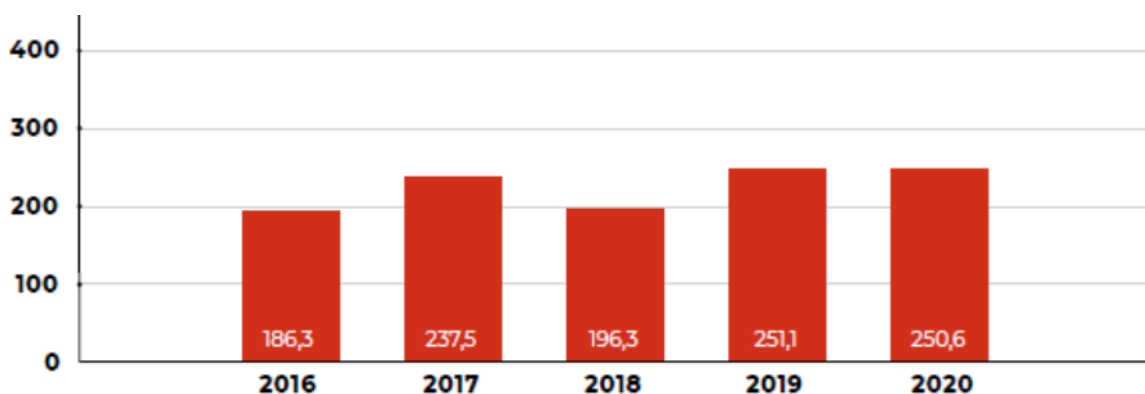


Figure 4. Dynamics of exports of agricultural products of Kyrgyzstan in million US dollars.

The second is the lack of resources. State support, which is increasing year by year, has not yet reached the required level, state subsidies are insignificant, there are not enough cheap loans, and in general there is a shortage of loans. Generally speaking, in Kyrgyzstan the level of subsidies is about 3-5% of the total output of the industry, and according to various estimates in the Soviet period, the level of subsidies was from 20% to 35% of the entire industry. As a result, there is a lack of quality seeds, genealogical livestock, fertilizers, veterinary drugs, equipment, etc.

For example, the National Program for the Development of the Food and Processing Industry 2017-2021 aimed at increasing agricultural production and creating new logistics centers for storage and distribution, as well as at least ten new processing enterprises. Specific programs or “visions” have been developed in the following areas: breeding of fine wool sheep (program 2015-2020), conservation and improvement of soil fertility (2017-2020), cotton cultivation (2017-2021), development of organic agriculture (2017-2022), food security and nutrition (2019-2023), and development of trade and logistics centers (2019-2023).

Nevertheless, all these support measures turned out to be unfulfilled, the unfolding crisis in the country did not allow 100% funding of programs, and some were simply frozen due to lack of resources.

In addition to reviewing basic agricultural financing mechanisms, such as preferential subsidies, the Kyrgyz authorities are exploring the possibility of implementing preferential insurance schemes, creating industry associations and supporting potential exporters in their participation in

international fairs and exhibitions. An organic certification scheme is also envisaged, including the labeling of honey, fruits (fresh or dried), nuts and vegetables.

The third is the low level of agricultural technology and economic (professional) knowledge of the new owners of the agricultural sector. The lack of knowledge among farmers is a serious obstacle to the development of this industry. It should be noted that the low level of relevant knowledge required for agricultural production is one of the factors causing negative consequences. If workers directly involved in agricultural work have a certain level of necessary knowledge and skills, then these categories are faced with agriculture only in their gardens. Of course, during these years, farmers were self-taught, compared to the first years of independent farming, they mastered a certain level of professional knowledge. But they are still not enough.

The fourth is the poor state of the agricultural infrastructure. These include problems with the functioning of irrigation systems in rural areas of the republic, poor living conditions of rural residents, broken roads, abandoned pastures, deforested forest belts, as well as degraded and abandoned land plots.

In 2019, for the convenience of monitoring and legal regulation in the country, agricultural infrastructure was combined with rural infrastructure in order to have a direct impact on the level of agricultural production. This has led to large-scale migration of the rural population to cities and abroad in search of higher incomes.

Due to rapid urbanization, the rural population abandoned their place of residence, lost agricultural skills, and the level of consumption of machinery exceeded 85%. In addition, over the past five years, the number of large farms has decreased: today the agro-industrial base of the republic consists of farms, the number of which exceeds 400 thousand. At the same time, most of them are agricultural lands with a dedicated arable area of 1 to 3 hectares.

The fifth is the irrigation system. We have already noted that irrigated agriculture is, without exaggeration, of strategic importance for our republic. The failure of the irrigation system can lead to the collapse of the industry. Today, half of the villages of the republic have no drinking water, water pipelines have been destroyed. An urgent, extensive plan for the reconstruction and restoration of irrigation networks, based on a public-private partnership system, is needed. Today, in Kyrgyzstan, about 30 thousand kilometers of irrigation systems are turned off annually on agricultural land and on the lands of private subsidiary farms.

The state irrigation fund of the country includes inter-farm canals with a length of 5,598.8 km, hydraulic structures - 6,719 units, metering units - 2,948 units, pumping stations - 107 units, drainage and drainage networks with a length of 1,176 km, reservoirs - 33 units with a total

capacity of 1,617 cubic meters, also a 10-day regulating reservoir (BDR), comprising 10 units with a total capacity of 45.97 million cubic meters.

Any farm before the beginning of field cultivation establishes an irrigation system. But the fact is that not all farmers have additional funds to clean up or expand new irrigation networks. During the year of operation, irrigation ditches can be completely blocked and filled with earth. If these ditches are not cleared in a timely manner, then the water supply in such systems leads to its losses by almost 50%. We can say that only a small part of the water that is so important for irrigation comes from point A to point B. Almost all farmers, without exception, complain of an acute shortage of irrigation water at the height of the season.

All these issues are interrelated, negatively affect the development of the industry and should be addressed comprehensively. Each of them has effective solutions that can automatically improve the situation of other problem groups. Since there are not enough funds in the country, it is necessary to apply a mixed approach to solving the problem. For example, strengthening the existing integrated agricultural technologies and veterinary, economic research among farmers should have a certain effect. The organization of this training is entirely under the jurisdiction of the Ministry of Agriculture and other departments. It is obvious that, all other things being equal, capable farmers will be more effective in developing the agricultural sector of the Kyrgyz economy.

Theoretically, it is believed that large farms have more opportunities to solve many problems of agricultural production. Objectively, they are more productive. Indeed, any economist knows that the accumulation of resources and land from large agricultural producers will allow them to use their available resources more efficiently. The use of new technologies and new equipment that small farms cannot purchase allows large producers to create financial resources for the purchase of additional production equipment, high-yielding seeds, more productive livestock, chemical fertilizers, the use of new technologies and scientific developments, etc.

Nevertheless, the practice available in the Republic shows that in the current crisis conditions, agricultural corporations and large producers of agricultural products in Kyrgyzstan are currently lifeless. Not only has their number not increased, on the contrary, their number is decreasing every year.

Moreover, their labor productivity is below the average level of peasant farms. Today's agricultural corporations are not as efficient as peasant farms.

In order to revive and actively develop the agricultural sector of the republic's economy, it is necessary first of all to focus on supporting successful forms of organization of agricultural

enterprises that can demonstrate high economic returns and efficiency with small financial investments.

It is also easier to produce organic products at small enterprises; it is this direction in the development of the agricultural industry in the world that has the greatest prospects for development.

Naturally, the question arises here why it is necessary to pay attention to small farming enterprises. I believe that a gradual and progressive movement towards the development of farming enterprises will lead to their unification into larger associations, and unification. Since it is precisely such associations that will allow farmers to have access to financial resources, educational resources, and also count on support from the state in the form of subsidies, benefits and preferences. And here another question arises, what legislative and financial benefits can the state provide. How to attract small business owners? Due to the lack of funds in the state budget, there is no reason to hope for the provision of large subsidies to such associations. Therefore, there is currently no need to accelerate the creation of agricultural associations and corporations. And since there is such a situation, it is necessary to look for other ways out of the current crisis and this way may be the reorientation of farms and the introduction of organic production of plant and animal products.

On the other hand, it is necessary to support both large and profitable enterprises from the point of view of organization and management. It is necessary to buy land from less successful farms and transfer them to farms with 100-150 hectares of irrigated arable land. Such consolidation and cooperation can also be effective and bring its own positive effect. It is necessary that this unification takes place in a natural evolutionary way without strong pressure.

In the development of a well-thought-out strategy and further development of land reform, one can see a solution to the problem of expanding farms.

Thus, summing up this section of the work, we can say that the agricultural sector of Kyrgyzstan has significant potential for further growth.

Compared to neighboring countries, Kyrgyzstan has rich water resources, but faces problems related to the suitability of land and its degradation. Most farms are small and farmers lack knowledge about modern farming methods. Land productivity is relatively low. Support services and infrastructure that would allow small farmers to increase productivity are largely absent. Although the common market of the Eurasian Economic Union (EAEU) opens up new opportunities for Kyrgyzstan, their use requires an improvement in the quality of regulation and transportation, modernization of processing capacities, transition to innovative technologies for the production of agricultural products.

It is clear that the economic situation in the republic works according to its own laws: farmers have almost completely replaced fine-wool sheep breeding with meat, switched to high-yielding varieties of sugar beet, genetically modified varieties of corn, sunflower and wheat, etc. All these products cannot be called organically pure, the yield of high-quality organic wool and meat in the republic is practically zero.

But from the point of view of future opportunities for membership in the CU, it is necessary not only to be based on the cultivation of cotton, tobacco and the breeding of fine-wooled sheep, but also to develop and this development should go in the direction of the production of organic products that are increasingly in demand. The reason is obvious in the world, most agricultural land is poisoned with chemicals, soil fertility is greatly reduced, the earth's population is growing and it needs high-quality and organically pure products more and more, therefore, in my opinion, one of the directions of development of the agricultural sector of the economy of the republic should be precisely the orientation of farms of the republic on the production of organic products with high demand and high profitability in the global market.

4. Practical Part

4.1 Development of organic agriculture in the Kyrgyz Republic: economic and environmental sustainability

4.1.1 Economic and historical prerequisites for the development of organic agriculture

The Republic of Kyrgyzstan is an agro-industrial country with a very backward agricultural infrastructure, lacking a system of control and certification of agricultural producers. The availability of available natural resources and agricultural land, as well as Kyrgyzstan's accession to the EAEU, allowed the country to take a direction for the development of organic agriculture. Of all the EAEU member states, Kyrgyzstan and Kazakhstan have sufficient land resources for the development of organic agriculture, it owns the largest area of certified organic land among Central Asian countries, 150,000 hectares.

In addition, the territory of Kyrgyzstan is divided into regions that differ in geographical and climatic conditions, which gives certain comparative advantages. For example, in the Chui region, sugar beet is the dominant agricultural product; Issyk-Kul region is known for apples and pears; in Batken region, farmers grow apricots (and dry them); Osh and Jalal-Abad regions are the largest producers of cotton and nuts; Naryn region is famous for cattle; Talas region is the largest exporter of beans and soybeans. From an economic point of view, the Kyrgyz Republic meets all the requirements to be a producer of organic agricultural products. Since most of the agricultural products produced by Kyrgyz farmers, such as apples, melons, cotton, rice, potatoes, honey and other fruits and vegetables, are mainly exported to neighboring as well as more developed countries. In the period from 2000 to 2016, farmers in the country annually receive about 35-160 c/ha of basic crops. This is a pretty good indicator of agricultural success. Kyrgyz farmers, especially in the Naryn region, grow potatoes, which are in great demand in Kazakhstan. In addition, approximately 1,000 farmers in the country grow organic products, mainly for export under international programs such as USAID, GIZ or with the support of donor countries such as Germany, Switzerland and others.

In the Kyrgyz Republic, organic production is carried out by farms of organic aimags and cooperatives that have foreign certificates for organic production. Some manufacturers can be classified as quite large.

Thus, the Issyk-Kul Organica cooperative unites 226 farms, and the Biofermer cooperative includes 1,427 members. But the bulk of organic producers are small farms of organic aimags, which are certified according to the locally oriented certification System (Participant Guarantee System - PGS), organized by the Organic Movement Federation "BIO-KG" with an orientation to the IFOAM regulations. Such a certification system is an alternative. Due to the low costs associated with participating in this system, it is targeted at small farmers and local markets. With the entry into force on November 21, 2019 of the law "On Organic Agricultural Production in the Kyrgyz Republic" dated May 18, 2019, No. 65, farms of organic aimags with PGS certificates will not officially be considered producers of organic products. The Issyk-Kul and Talas oblasts are the regional leaders in Kyrgyzstan, where up to 700 farms are concentrated. Osh and Chui regions with intensive agriculture have practically no producers of organic products.

Kazakhstan ranks second in the EAEU in terms of the number of organic producers. The main area occupied for its production is located in Kostanay region (70%). The drivers of the development of organic farming, the production of organic fertilizers and seeds are large agricultural enterprises. Active promoters are foreign companies that find local producers and offer conditions for the production of organic products with certification in a foreign country, as a result of which guaranteed sales of organic products for export are achieved.

Agricultural commodity and service cooperative "Bio Farmer" has been officially producing organic cotton in Kyrgyzstan since 2007 with the support of the Swiss corporation Helvetas.

The graph in Figure 5 shows that from 2007 to 2020, the number of farmers involved in organic production doubled from 649 to 1300, respectively. Along with the increase in the number of farmers, the area of land used for growing organic cotton also increased during this period from 257 to 740 hectares.

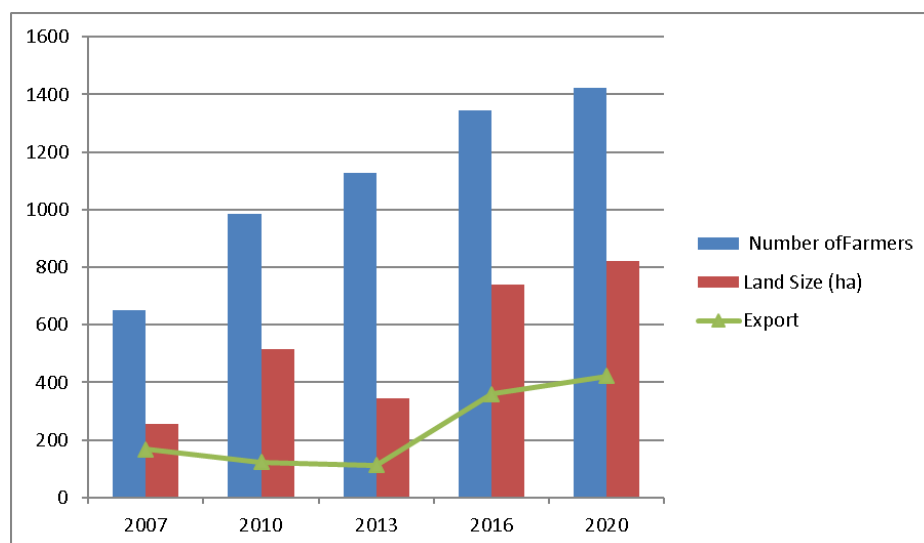


Figure 5. Organic cotton exports in 2007-2015 (in tons). Own creation

It is extremely important to note that cotton exports almost doubled from 167 to 359 tons, despite some fluctuations during this period. Consequently, the general growth trend can be traced in Figure 5, illustrating the increased interest and demand for organic cotton in some developed countries.

It also shows that Kyrgyzstan can adapt to organic agriculture in a rapidly changing economic environment. Moreover, farmers employed in this sector will have the opportunity to generate sustainable income through the production of high-quality organic crops. The Kyrgyz Republic will further position itself as a country producing organic crops at the international level.

Over the past three decades, environmental issues have attracted increased attention and are often on the agenda of high-level meetings. Environmental problems such as climate change, greenhouse gases, deforestation, soil degradation and others have become a threat to all mankind. Currently, the Kyrgyz Republic is facing environmental problems related to the agricultural sector. Due to the excessive use of chemical fertilizers by farmers, the quality of the soil is constantly deteriorating. To date, more than 50% of the country's arable land has lost its production potential over the past twenty years. As a result, farmers have recently started using genetically modified seeds that are able to grow even in harsh climatic conditions. In this regard, a consistent transition to organic agriculture will be the best option for solving many environmental problems in the country. Consumers from Kyrgyzstan will also benefit from the availability and consumption of organic food, as an increasing number of people are currently suffering from food allergies.

4.1.2 Analysis of the importance of using environmental products for the population

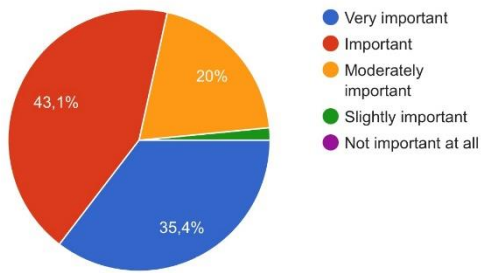
In the course of my research, in order to substantiate the economic feasibility of the transition of agriculture in Kyrgyzstan to organic production, a survey was conducted among the population, which confirmed the importance and significance of the consumption of organically pure products. The questionnaire is presented in the appendix to the work (Appendix 1).

During the survey, about 130 responses to the questionnaire were received, among the respondents, 51.5% of the respondents aged 18-24 years, 23.8% aged 25-34 years, 14.6 aged 35-44 years, and 10% aged 45 years. Of the total number of respondents, 90% of the urban population and only 10% of the rural population, about 62.4% of them are working, about 57% are students, no more than 1.5% are pensioners, housewives and the unemployed are only about 15%.

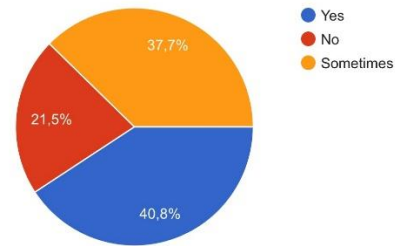
Of those who answered the question about food preferences, 94.6% answered that they eat ordinary food without giving preference to some kind of diet.

The respondents were also asked to answer questions about whether they pay attention to the prefix "eco" in the name of the product, and whether the quality of food consumed is important for them. The results of the answers are clearly shown in Figures 6 and 7.

6. Is the quality of the food you eat important to you?



7. Do you pay attention to the sign "eco products" on the product packaging?



Figures 6 and 7. Results of survey responses. Own creation

To the question of how important it is for the respondent to consume organically pure products, the answers were distributed as follows:

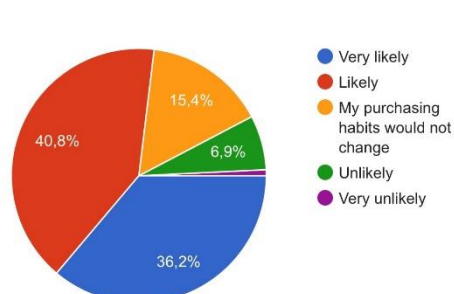
It is very important for 17.7% of respondents, 43.1 believe that it is important, 26.9% answered that it is a "moderately important moment" for them, 8.5% believe that it is not very important and the remaining share of 3.8% believe that it is not important at all.

To the question of whether the respondents know how harmful products with chemicals are, the answers were distributed as follows: 58.5 answered that they understand, 20% answered that they do not know, and 21.5 found it difficult to answer this question. Which indicates a low awareness of the importance of organic nutrition among the population.

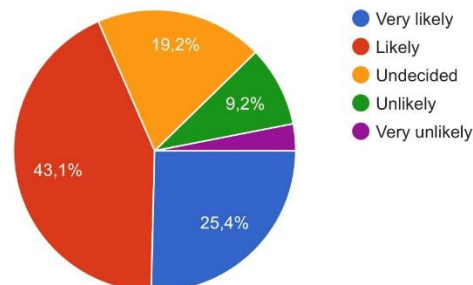
More than 77% of respondents responded positively to the question about the probability of stopping their consumption of products with chemical additives (probably and very likely), about 15.4% would not change their buying habits, about 6.9% of respondents would change their habits if they had the financial opportunity and only 1.2% of respondents would not change anything in their consumption.

And the last question in the questionnaire was about the willingness of the respondents to pay a higher price for organic products (Figure 8 and 9).

10. How likely would you be to stop buying vegetables/fruits/meats, etc. grown with chemical additives?



11. Would you pay more for organically grown produce?



Figures 8 and 9. Results of survey responses. Own creation

No more than 25.4% answered positively (very likely), 43.1% are certainly willing to pay more, 19.2 found it difficult to answer, for 9.2% of the population it is unlikely and for 2.1% it is impossible.

As can be seen from the results of the study, a large proportion of the active and passive population are willing to pay more for organic products, as they clearly understand the importance and significance of consuming high-quality and organically clean products without chemicals.

Based on the survey data, we can safely say that organic agricultural products will be in demand and the market for these products will only expand.

4.2 Problems and obstacles in the development of the organic agricultural sector of the Kyrgyz economy.

The main limitation is the low purchasing power of the population. This is confirmed by the analysis of household expenditures: a significant share of them falls on the purchase of ordinary food, and the lower the income of the population, the higher the share of food expenses. Thus, in Armenia, Kazakhstan and Kyrgyzstan in 2017, up to 45% of the population's expenditures were food, it should be noted that in Kyrgyzstan more than 20% of the population lives below the poverty line. Under these conditions, the acceptable price premium for organic products, according to the results of consumer surveys, cannot exceed 10-30%.

An important limitation of the development of organic agricultural production is the high logistics costs of organic products, the sale of which is concentrated in megacities or abroad. Remote

regions where organic production can be developed are unattractive to investors due to weak infrastructure, including transport and logistics.

The introduction of organic agriculture in the Kyrgyz Republic will face serious obstacles, especially with regard to legislation. This is due to the fact that after Kyrgyzstan joins the Eurasian Economic Union, the country must coordinate and discuss most of the laws of economic significance with other members of the Union. In addition, banning the import of seeds, mainly genetically modified and chemical fertilizers that have toxic elements for plants, soil and even human health, will be economically unprofitable for farmers and irrational for consumers. As a result, the members of the Union will not be interested in the development and adoption of laws on organic agriculture in the near future. Nevertheless, the Kyrgyz Republic will be able to approach organic agriculture through education. In particular, the country can start training future agricultural technicians and agronomists by creating a new specialization in agricultural universities.

At the moment, there are many successful examples of organic farming, both in the developing countries of Southeast Asia and Africa, as well as in the developed countries of Western and Northern Europe. One of the most inspiring and unique cases is Hansalim¹, a non-profit organization in the Republic of Korea established in 1986. It is based on a voluntary agreement and mutual support for the practice of organic agriculture by farmers and consumers, despite the rapid development of agricultural technologies and the increased use of chemical fertilizers of that time. There are a number of important factors, such as climatic conditions, demand in the domestic market, culture and traditions of farming, which could be unacceptable and difficult during the economic transition for Kyrgyz farmers.

The Kyrgyz Republic differs in many ways from Korea, for example, the size of the domestic market or the price sensitivity of consumers. However, the practice and methods of Korean organic farming may be applicable to farmers in Kyrgyzstan.

There are a number of successful examples of the development of organic agriculture in the country. In 2013, more than 1,279 farmers passed environmental certification and managed about 15,000 hectares of organic land. As mentioned above, the main organic products produced by Kyrgyz farmers are cotton, peas, beans, apricots and medicinal herbs.

Another problem on the way to the development of organic agricultural production is extremely vulnerable to price changes on international markets, since it depends on imports of fuel and food products, with the exception of dairy and meat.

Other most important challenges and obstacles to the successful conduct of organic production are:

- lack of targeted public policy in this sector;
- weak and slowly growing demand from the population;
- lack of state subsidies and other incentive mechanisms;
- undeveloped infrastructure of the agricultural sector.

In addition, the psychological complexity of the transition to organic agricultural production after many years of intensive farming practice, low level of information and knowledge about methods and approaches to organic farming, additional costs for certification, a ban on the use of synthetic preservatives in products can shorten the time for the implementation of the tasks.

4.3 Risks of organic agricultural production

In organic agricultural production, there are also certain following risks:

Organizational-legal and socio-political risks:

- imperfection of the legislative framework for organic producers;
- lack of any government support for the development of the organic products market;
- tougher competition in the domestic and foreign markets after the accession of the Kyrgyz Republic to the EAEU and the Republic of Kazakhstan to the WTO.

Economic risks:

- instability of the economic situation in the agricultural sector due to the economic crisis;
- low availability of loans or lack of financial resources.

Environmental risks:

- reduction of precipitation, reduction of water reserves, disappearance of glaciers, which lead not only to a decrease in crop yields, but also to soil degradation, water and wind erosion of land, drought, and ultimately - desertification;
- increase in environmental pollution, deterioration of water, land resources, reduction of biodiversity;
- intensive use of mineral fertilizers, chemical means of weed control, pests of agricultural crops;
- an increase in the volume of supplies of genetically modified organisms to the republic and pollution of organic lands with waste and emissions from industrial enterprises.

Climate risks:

- global climate changes (global climate warming) can pose a threat to the sustainable functioning of organic agricultural production, negatively affect the processes of growth and development of organic crops, and biodiversity.

Force majeure risks:

- natural disasters and man-made disasters that have a negative impact on the development of organic production.

To build a sustainable risk management framework, it is necessary:

- increasing the capacity of state and local self-government bodies in assessing and monitoring natural disaster risks and improving the early warning system;
- carrying out preventive measures to reduce disaster risks;
- development and implementation of training programs for rural producers, taking into account the relationship of disaster risk management with the development of organic agricultural production;
- conducting regular training, covering the most vulnerable aiyl aimags and organic territories in case of a possible declaration of risks;
- raising the level of public awareness of risks;
- increasing readiness for possible challenges and risks by responding effectively at all levels.

4.4 Competition in the field of organic agriculture

Kyrgyzstan is a neighbor of two large countries, China and Kazakhstan, as well as the third most populous country, Uzbekistan. The first two are also interested and actively participate in the export of organic agricultural products. China is the fourth country in the world producing organic agricultural products. Kyrgyzstan and Kazakhstan have just started working in this direction.

Table 3 shows that, despite the small territory and population, there were a significant number of farmers engaged in organic agricultural production in Kyrgyzstan at the end of 2020.

Competitor country	Share of organic production	Number
China	0,5	11235
Kazakhstan	0,1	32
Kyrgyzstan	0,1	1038

Table 3. Organic agriculture by country, by share and number of producers, 2020

This is due to international projects for the development of organic agriculture, which have been implemented by FAO, USAID, the Swiss Office for Cooperation and other organizations. In addition, Kyrgyzstan has reached only 0.1% of the share of organic agricultural production from the total area of the country. It is mainly allocated for the cultivation of organic cotton.

Based on a survey prepared by the Research Institute of Organic Agriculture (FiBL) in 2017, China is one of the largest exporters of organic agricultural products worldwide, and Kazakhstan is among the top ten countries with the largest areas of land allocated for organic farming. Thus, Kyrgyzstan, with a small market, will face difficulties in competing with China and Kazakhstan. This situation is reflected in Table 4, where Kyrgyzstan has the smallest territory for the cultivation of cereals and oilseeds.

Country	Type of organic products	The territory of cultivated land (thousand hectares)
China	Cereal crops	688404
Kazakhstan		130882
Kyrgyzstan		1166
China	Oilseeds	421704
Kazakhstan		82793
Kyrgyzstan		40
China	Vegetable products	45324
Kazakhstan		21035
Kyrgyzstan		66

Table 4. Organic agriculture by country, product and territory, 2019

Summing up, we can say that we are witnessing a slow and gradual, but sustainable development of organic agriculture in Kyrgyzstan. If the Government of Kyrgyzstan finalizes legislation and other issues related to organic development, this will greatly contribute to supporting farmers in growing organic products and attracting the population to their use and consumption.

4.5 Ways and measures of further introduction and development of organic agricultural production in Kyrgyzstan.

The analysis of the current state of affairs in the Republic in the field of development of organic agricultural production allows us to make reasonable assumptions about the expected scenarios for the development of this sector of the country's economy. When forming national scenarios, global trends in the production and consumption of organic products were taken into account, as well as the influence of the main scenario-forming factors in the respective countries.

The group of scenario-forming factors, universal for Kyrgyzstan, includes:

1. Development (or stagnation) of the domestic market of organic products.
2. Development (or stagnation) of organic exports (creation of an export ecosystem).
3. Harmonized (or not) with international standards, the national regulatory framework for agricultural and organic products.

In Kyrgyzstan, there is still no term (label) "organic products" which should be equivalent to "bio" and "eco". In other countries, this is not the case, and products with different labels enter into competition with each other for the same (or similar) consumer niche. The presence of such competition has a negative impact on the development of organic production proper.

4. The presence (or absence) of prospects for the expansion of natural resources for the OAF.
5. Presence (or absence) high competition from additional types of agricultural production (biologized, ecologized), which receive a higher priority in national programs for the development of the agricultural sector of the economy.
6. The presence (or absence) of reputable associations of producers, non-financial development institutions that can influence the development of organic production.
7. The presence (or absence) of prospects for the creation of financial institutions to support OAF (specialized state programs for organic producers, specialized banks, etc.).
8. The presence (or absence) of prospects for the creation of logistics and infrastructure of the organic products market. Various variations and combinations of the above factors make it possible to form possible scenarios for the development of OAF in each of the analyzed countries: pessimistic, intermediate and optimistic.

A pessimistic scenario implies that the main scenario-forming factors receive a negative assessment. At the same time, the OFA is stagnating and the production of organic products is not growing.

The optimistic scenario is based on the reverse assumption that the main factors receive a positive assessment. At the same time, there is an influx of investments and the dynamic development of OAF, the production of organic products is growing at a pace comparable to the global ones.

In the future, in order to solve economic and financial issues related to the development of organic agricultural production, it is necessary:

- expansion of the practice of preferential lending to organic agricultural production;
- development of international cooperation in the use of strategies for the use of technologies and means, including financial ones, by supporting initiatives and the transfer of advanced technologies;
- attracting domestic and foreign investments for the implementation of projects in the field of organic agricultural production;
- creation of own capital of organic agricultural production entities for independent financial activities;
- acquisition of marketing and financial management skills by subjects of organic agricultural production;
- introduction of new educational programs, trainings and seminars on environmental issues, as well as raising awareness about organic agriculture at all levels of the educational system;
- active participation of civil society in the promotion of production and access to organic products, which will directly affect the improvement of public health, as well as the state of the environment in general.

4.6 Forecasts and expected results of the development of Organic Agriculture Farming in Kyrgyzstan

At this time, especially after the adoption of the Law of the Kyrgyz Republic dated May 18, 2019 "On organic agricultural production in the Kyrgyz Republic", the further development of organic agriculture can become one of the effective projects of ecological modernization of the country.

The implementation of the measures proposed in the work will allow the country's leadership to obtain a number of certain results:

- to give a new vector to the economic development of agriculture;
- to increase the image of the country as a producer of organic (ecological) products;

- to increase the sustainable production of high-quality competitive organic products and food, both in the domestic and foreign markets;
- to increase the volume of exports of organic products to world markets;
- to improve the health of the nation through the production and consumption of organic products;
- reduce environmental pollution;
- to increase the food security of the country.

Thus, we see that the proposed measures will give a qualitative positive result in the development of the agricultural sector of the country.

5. Conclusion

As noted earlier, the rural population of Kyrgyzstan, which receives income mainly through work in the agricultural sector, can significantly benefit from the practice of using organic agricultural technologies.

In addition, the policy and practice of organic agricultural development and its implementation can be formulated within the framework of the national strategy for sustainable development of the country for 2018-2020. As a result, organic agriculture could improve the investment climate in various regions and attract additional investments and financial flows. The following recommendations are optimal for the Kyrgyz Republic, since these steps will not require radical changes in all areas, they will only complement and improve to achieve sustainable economic development through improvements in education and vocational training:

1. Raise public awareness of the benefits and costs of organic farming through the media. (Ministry of Agriculture and Mass Media);
2. Improve opportunities for training and professional development of current and potential farmers. (Ministry of Agriculture and Ministry of Education);
3. Reorient the relevant universities to organic agricultural education in order to increase the number of qualified specialists. (Agricultural Universities and the Ministry of Agriculture);
4. Expand public and private funding for agricultural development and research activities in order to obtain more informed information and data. (Government of Kyrgyzstan, national and international research institutes - Academy of Sciences, etc.)

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7. Appendix

7.1 Appendix 1: Survey

The importance of using ecological products for the population

Dear Respondent,

I appreciate your willingness to take part in this survey. This survey asks questions about people's attitudes towards organic products (vegetables/fruits/meat).

All data will be kept strictly confidential and only the survey author will have access to all responses. The data in the survey will only be analyzed for the bachelor's thesis of the author studying the business administration program at the Czech University of Life Sciences. By completing the survey, you agree to your participation in the survey.

Thank you very much for your time and support.

1. What is your age?

- 18 to 24 years
- 25 to 34 years
- 35 to 44 years
- 45 years and above

2. To which gender identity do you most identify?

- Female
- Male
- Prefer not to say
- Other:

3. Place of residency?

- Rural
- Urban

4. What is your current employment status?

- Full-time/Part-time employment
- Unemployed
- Self-employed
- Student
- Household
- Maternity leave
- Pensioner
- Other:

5. What is your food lifestyle?

- I eat everything: meat, fish, chicken, dairy products, etc.
- I am vegetarian
- I am vegan
- I am pesceterian
- Other:

6. Is the quality of the food you eat important to you?

- Very important
- Important
- Moderately important
- Slightly important
- Not important at all

7. Do you pay attention to the sign "eco products" on the product packaging?

- Yes
- No
- Sometimes

8. How important is it for you that the product is environmentally friendly?

- Very important
- Important
- Moderately important
- Slightly important
- Not important at all

9. Do you know what effect foods with added chemicals have on your body if you eat them on a regular basis?

- Yes
- No
- Difficult to answer

10. How likely would you be to stop buying vegetables/fruits/meats, etc. grown with chemical additives?

- Very likely
- Likely
- My purchasing habits would not change
- Unlikely
- Very unlikely

11. Would you pay more for organically grown produce?

- Very likely
- Likely
- Undecided
- Unlikely
- Very unlikely