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STATE REGULATION OF KAZAKHSTAN'S AGRICULTURE IN THE CONTEXT OF GLOBAL CLIMATE CHANGE

Abstract

Environmental problems and climate change have affected agriculture, as in many areas around the world, and have brought the issue of food security to the agenda. Hunger arising from climate change and drought exacerbates the problem of hunger. Some crops (rice, wheat, etc.) cause economic instability by reducing production and increasing the price of these products. The decrease in water resources with global warming has caused the problem of irrigation of agricultural areas. The problem created by climate change, which is the subject of this study, is the priority issue of today for countries. Food systems cover the existence of food, access to food (purchase, allocation and preference) and the use of food, which includes production, distribution and exchange. Climate change can change food system in markets, food prices and supply chain infrastructure. In the article general situation of agriculture and animal husbandry in Kazakhstan is explained, the problems of these sectors will be explained. The article reveals low market mobility due to the seasonality of the production cycle, as well as the dependence of final results on natural and climatic conditions, which are changing significantly in the context of global climate change. Recommendations for state support of the country's agricultural sector are concretised, and the increasing role of production infrastructure of Kazakhstan's agriculture under global climate change is shown.

Keywords: agriculture, climate change, food security, government regulation, environmental problems, problem of hunger, water resources.

Introduction

The purpose of the study is to substantiate the need for state regulation of agriculture under global climate change, which is a necessary process to maintain the competitiveness of the country's grain and livestock products and strengthen its food security.

It is revealed that if before the adoption of the new AIC Development Programme for 2021–2025 the state regulation of agriculture consisted in subsidising agriculture from the state budget, now the authors propose to provide fixed subsidies to unprofitable agricultural enterprises. The assistance should be targeted, specific with a full report at the end of the calendar year on the use of these funds.

To achieve the goal of the study it is necessary to solve the following problems:

- ♦ to show the objective dependence of (actual) yields of cereal crops, particularly wheat, on climate change. Specifically, a decrease in the amount of precipitation during the growing season of grain crops maturation;

- ♦ low efficiency (more often unprofitable) of using imported hybrids and breeds for a long period (up to 4 years);
- ♦ provision of favourable lending to the agricultural sector using leasing.

Although the degree varies from country to country, agriculture is an important sector for every country. For this reason, every element that negatively affects this sector worldwide is treated as a global problem. Agriculture accounts for 70% of total employment in developing countries and also makes a significant contribution to GDP. In underdeveloped countries, agriculture constitutes the engine of growth and contributes to growth in the other sectors. Agriculture has a function such as providing inputs to other sectors such as industry and services. These industries process and export agricultural products [1].

Environmental problems and climate change have affected agriculture, as in many areas around the world, and have brought the issue of food security to the agenda. Agriculture is a sector that contributes significantly to climate change and is also affected by this change. Agricultural activities are responsible for about 20% of the increasing greenhouse gases on Earth [2].

Environmental pollution and climate change caused by global warming have led to reductions in agricultural production. Although some regions may be more affected by climate change, some high latitude regions, CO fertilization, higher temperatures and precipitation increases may be experienced. These will have negative consequences on agriculture [3]. The famines that arise due to climate changes and drought increase the problem of hunger, some crops (rice, wheat, etc.) has caused economic instability by reducing its production and increasing the prices of these products. The decrease in water resources with global warming has caused the problem of irrigation of agricultural areas. On the other hand, it is estimated that the demand for agricultural production will increase by 50% by 2030 due to global population growth [4]. Production stability, agricultural productivity, income and food security is negatively affected by changing climate. Therefore, agriculture must change according to present situation for meeting the need of food security and also withstanding under changing climatic situation [5].

In the works of Sun Y., Yu R., Cheng [6], Sahu G. and others [5], Trentinaglia M.T., Baldi L., Peri M. [1], Porter, Stephen and Reay, Dave [7] examines how climate change negatively affects production stability, analyses the efficiency of food supply chains.

Authors Alston, Julian and Pardey and others argue that «Economic problems arise because agricultural research is subject to various market failures, because the resulting innovations and technological changes have important economic consequences for net income and its distribution, and because the consequences are difficult to recognise and attribute» [8].

In the article by Laborde D., Mamun A., Martin W., Piñeiro V. и Vos R. [9], Mamun, Abdullah [10] state support for agriculture.

Works by Zarubina V. and others [11, 12] are devoted to the production of sustainable products and services using digital 'green' technologies.

Materials and methods

The main research methods were deductive and comparative. The deductive method allowed analysing the state of state support from the general to the particular. The comparative method allowed us to compare the volume of financial resources allocated in the time lag. In addition, it allows us to analyse the indicators with those of competitors.

Dialectical materialism as a method of cognition of the laws of development of nature, society and thinking is used both in natural and social sciences. To correctly identify the essence of state regulation of agriculture, it is necessary to dissect it into the simplest constituent elements, respectively, to subject each of these elements to a detailed study, to identify the role and importance of each element within the whole. In other words, to analyse. In studying the issue of state regulation of agriculture in the context of climate change, methods of materialistic dialectics, method of comparison analysis of statistical information of state support of producers in different countries from 2011–2022, market price support in some countries, method of historical and logical, in the formation of agricultural and economical foundations of food security of Kazakhstan, and induction and deduction methods were used.

Results

There are many factors that affect agricultural production other than the climate price fluctuations in agriculture, technology possibilities, land use regulations, the incentive policies of the state, transport capacity, transportation to water resources, soil fertility and quality [13].

The problem created by climate change, which is the subject of this study, is the priority issue of today for countries.

Every country has food system. Food systems cover the existence of food, access to food (purchase, allocation and preference) and the use of food, which includes production, distribution and exchange. Climate change can change food system in markets, food prices and supply chain infrastructure [14]. The negative change in the food system has brought the problem of food security [15].

The agricultural sector is a sector in which the state should intervene with regulations and supports. Today, international organizations various program such as FAO, the UN Development Program, and the UN Environment Program support agricultural incentives [16].

Anderson and Hayami in their analysis conducted in the 1980s suggested that government intervention in the agricultural sector would lead to market distortions in all countries [17]. This is especially not true for developing countries. Because the conditions that will ensure the efficient operation of markets in these countries, i.e. equal access to productive resources, symmetry in information, etc. there is no. In other words, market failure is common. One of the important tasks of the state is to eliminate market failure [18].

As in other sectors, the state's support for the agricultural sector can be in three ways. These are; direct subsidies, tax incentives and regulations. Direct subsidies are monetary payments made to farmers at input and output levels or for specific production from budget. The main input consists of subsidies, fertilization, irrigation, electricity and credit subsidies [19]. Tax incentives are incentives such as tax exceptions and exemptions for agricultural sector taxes. Another the state's support is "market price support". Market price support refers to the transfer to agricultural producers through national prices that are higher than international prices in accordance with trade policies [20]. One of the types of regulation is "market price support" that raises prices by restricting imports. The regulation includes certificates, standards and legal regulations to improve environmental and economic results. The regulatory role of the state is to provide adequate and timely loans, especially to agricultural producers, and to ensure a fair, competitive market [21].

Many countries have provided different supports in response to the increase in input costs in agriculture [9].

The problems of climate changes listed above bring with them the use of technology compatible with climate change in agriculture today. These technologies require high financial support. Governments play an important role in this transformation [1].

Four economies – China, Japan, the European Union, and the United States – account for roughly 70% of all positive producer support over the past 20 years. However, the relative shares among these economies have changed dramatically over this time. In 2000–2002, the European Union accounted for the largest share with 30% of all positive producer support, followed by Japan (17%), the United States (17%) and China (7%). In 2021–2023, China represented about 45% of producer support, while the European Union (15%), the United States (7%) and Japan (4%) collectively provided about 26% of producer support. India's already large share of implicit taxation among countries has grown from 61% of all negative support in 2000–2002 to 75% in 2021–2023. "Other EE" refers to Argentina, Brazil, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam [22].

The decrease in the prices of domestic agricultural products with the policies followed makes the negative market price support. Import tariffs and quotas are the most commonly used positive market support tools. Export restrictions and quota forbidden taxes are negative market price support practices. The countries with negative market price support in 2022 include Indonesia, India, Kazakhstan, China, Argentina, Russia, the United Kingdom and Ukraine. The largest negative support for market prices in 2022 is in Kazakhstan. This country is followed by India. There is no negative market price support in terms of the European Union average. From the point of view of the OECD, negative market price support is greater than positive market price support (figure 1). In countries with negative market price

support, there is a share of taxes levied on agricultural producers. In addition, in countries with a low average market price support rate, certain products are given higher support, while other products are not supported or taxed relatively [22].

Table 1 – Producer support by country, 2011 to 2023, USD billion

Category	China	European Union	United States	Japan	India	Other OECD	Other EE
2011	110,8	106,9	30,4	53,1	30,2	78,3	67,2
2012	176,6	109,0	33,4	57,8	28,9	75,7	70,2
2013	209,5	119,0	27,8	42,4	28,7	66,3	72,0
2014	214,3	102,8	38,1	35,5	29,0	61,2	64,3
2015	224,2	91,7	34,8	30,0	31,9	60,8	60,5
2016	213,0	89,0	32,9	38,1	29,9	59,8	59,6
2017	205,1	93,1	25,9	37,8	42,0	60,7	59,1
2018	187,5	103,7	37,6	36,8	40,3	58,0	50,7
2019	196,5	99,2	40,1	37,3	54,2	54,4	47,1
2020	256,2	96,7	38,3	40,3	55,5	62,4	42,9
2021	297,6	90,0	53,0	32,7	62,2	73,0	54,8
2022	282,5	88,1	40,7	23,3	72,4	56,5	52,1
2023	263,6	100,6	34,9	21,3	63,3	73,5	48,6

Note: Compiled from source [22].

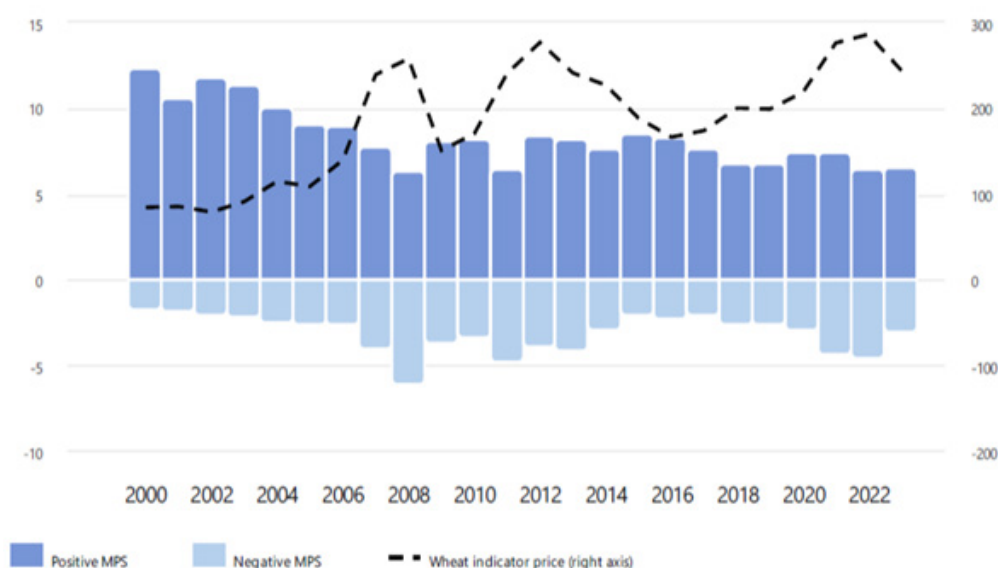


Figure 1 – Market price support (MPS) and global wheat indicator price, 2000 to 2023 % of gross farm receipts (left axis) and USD/t (right axis)

Note: Compiled based on the source [22].

After the general situation of agriculture and animal husbandry in Kazakhstan is explained, the problems of these sectors will be explained.

The agricultural sector in Kazakhstan is deeply dependent on state subsidies. According to OECD estimates, total budget support to agriculture in Kazakhstan in 2022 was about \$1. 7 billion or 0.8% of GDP. Since 2020, support has increased, while its share to GDP has declined, possibly due to faster GDP growth than budget expenditures following the recovery from the COVID-19 pandemic.

According to OECD data, subsidies to producers in Kazakhstan accounted for 4.5% on average of gross farmer receipts in 2020–2022. Within this, the share of transfers to the most market-distorting producers – mainly market price support and unconstrained use of variable inputs – was 59% on average over the same period.

Despite the budget support provided, tax revenues from agriculture are low. For example, in 2019, T356 billion was spent from the republican budget to improve the efficiency of agricultural production, and about T200 billion from regional budgets.

At the same time, the state received all taxes from agriculture in 2019 in the amount of only T66 billion (taxes on income of legal entities and individuals, social taxes, VAT, land tax, etc.). Thus, in 2019, the state provided budgetary assistance to agriculture 8 times more than the industry paid taxes.

In general, the instruments of support for agriculture in Kazakhstan range from direct subsidies from the budget and soft loans to various investment and tax incentives and restrictions in foreign trade [24].

For decades, the government has focused on and spent large amounts of money on the development of this sector of the economy through various strategic development programs. However, despite government support for agriculture, the agricultural sector is growing slowly and still remains uncompetitive.

The modern formation of the agrarian sphere of the economy is based on completely different economic and labor relations, with the change of ownership forms from predominantly state ownership to private ownership.

These factors have affected the pace of growth of the agribusiness sector. The proportion of agricultural sector in the country's GDP for the last 15 years does not exceed 5 per cent. The share of agricultural goods in total exports is also not significant, and for the last 5 years is 4%.

Table 2 shows the composition of agricultural production. The volume of agricultural output increased from 4497.5 billion tenge in 2018 to 8281,9 billion tenge in 2024. While the share of gross crop production is 60 % (4954,5 billion tenge), the share of gross livestock production in the total output of agriculture is 40 % (3269 billion tenge).

Table 2 – Key indicators of agricultural production, billion tenge

Main indicators of agricultural production	2018	2019	2020	2021	2022	2023	2024
Gross output of products (services) of agriculture, forestry and fishery in current prices	4497,5	5239,9	6363,9	7375,6	8774,2	7576,5	8281,9
including:							
Gross crop production	2411,4	2896,9	3687,3	4232,4	5513,0	4552,4	4954,5
Gross livestock production	2050,4	2306,4	2637,4	3104,5	3216,1	3012,5	3269
Note: Compiled from source [25].							

Positive dynamics of growth of gross output of crop and livestock is formed due to inflation and implementation of diversification policy in crop production.

Production of agricultural products for the last 5 years increased by 1.5 times, there is an increase in total exports of agricultural products for 2024 by 24.5 per cent, including exports of processed products increased by 3.5 per cent.

Nevertheless, the absolute indicators of agricultural development have not grown significantly, and significantly lag behind the world indicators.

There is a significant disproportionality in trade with other countries. For a long time there is a negative balance of trade turnover from 500 million to 1 billion USD. In other words, imports of agricultural products exceed exports. It should be emphasised that about 80% of agricultural products produced in Kazakhstan are exported as raw materials, without processing, and are sold with very low added value. The average price of Kazakhstani exports is USD 200 per tonne, while the price of imports exceeds exports. The average price of Kazakhstani exports is USD 200 per tonne, while the price of imports of finished food is 5 times higher.

The yield of agricultural crops is significantly influenced by natural and climatic conditions, precipitation levels, land fertility, and other factors (table 3).

Table 3 – Yield of Main Agricultural Crops in Kazakhstan, c/ha

Year	Grains and Leguminous Crops	Sugar Beet	Potato	Vegetables
2019	11	326	203	261
2020	13	323	207	266
2021	10,4	275,5	207,4	268
2022	13,8	341,4	205,4	271,3
2023	10,3	379	205,5	274,6
2024	15,2	507,3	219,1	284,2
Note: Compiled from source [25].				

Table 4 shows that today about 65 % (22.7 million hectares) of the sown area of grain crops is occupied by cereals, 0.8 % (3 million hectares) by oilseeds and 32.5 % (11 million hectares) by fodder crops. In order to implement state programmes, efforts continue to diversify sown areas and switch to the manufacture of highly remunerative crops.

Table 4 – Structure of Sown Areas of Agricultural Crops in Kazakhstan in 2024 (thousand, hectares).

Years	Total	From it						
		cereals (including rice) and legumes	oilseeds	cotton	sugar beet	open field vegetables	gourds	fodder crops
1991	34935	22752	303	116	45	75	38	11371
1995	28679	18877	548	109	40	76	27	8788
2000	16195	12438	448	151	22	102	38	2823
2005	18445	14841	669	204	17	110	43	2380
2010	21438	16619	1748	137	11	120	63	2555
2015	21022	14982	2009	99	9	139	94	3497
2020	22582	15878	2905	126	15	163	101	3197
2022	24016	17480	2799	116	19	164	107	3137
2023	23311	16676	2934	106	25	125	98	3221
2024	23190	16746	2898	106	25	126	98	3065
Note: Compiled from source [25].								

Since 2010, as a result of the crop diversification policy, the sown area of wheat has been reduced from 14.8 million hectares to 11.4 million hectares, which is 25%. Over the last 10 years, the sown area of oilseeds has grown 2.5 times, and the sown area of grain legumes has increased from 65,000 ha to 470,000 ha. It should be noted that the quality of grain produced is several times lower than 10 years ago. Thus, if in 2011 88 % of the harvested crops belonged to the 3rd class, now this indicator has decreased to 40–45 %.

Creation of a sustainable fodder base is one of the main factors of high efficiency of livestock production.

The number of livestock and birds, as well as the output of selected livestock products in Kazakhstan in the period from 1991 to 2024 are presented in table 5.

Despite the fact that the Republic has a large internal reserve to increase exports of livestock products, and primarily beef, mutton and pork, the volume of exported livestock products has tended to decline in recent years. In order to eliminate this situation, from the second half of 2018, the

country started implementing the Program for the Development of Meat Livestock Production for 2018–2027. In accordance with this Program, meat cattle breeding are assigned the dominant direction of development. It is planned to increase the number of cattle up to 15 million heads, sheep - 30 million heads. Beef and mutton production is planned to reach 1.6 million tones (table 5).

Table 5 – Number of Livestock and Poultry in Kazakhstan (thousand heads)

Years	Cattle	Horses	Pigs	Sheep and Goats	Birds (Million Heads)	Camels
1991	9592	1666	2976	34555	60	145
1995	6859	1556	1622	19583	20	130
2000	4106	976	1076	9981	19	98
2005	5457	1163	1281	14334	26	130
2010	6175	1528	1344	17988	32	169
2015	6183	2070	887	18015	35	170
2020	7850	3139	816	20057	43	227
2021	8192	3489	776	20876	47	243
2022	8538	3856	705	21786	49	259
2023	6536	3790	509	18842	45	253
2024	7842	4217	467	20175	45	281
Note: Compiled from source [25].						

At the same time, there is an insufficient level of milk production in the country, professional agrofirms are underdeveloped, and the republic remains import-dependent on milk, dairy products and butter. Due to the lack of capital, there is moral and physical deterioration of agricultural machinery and equipment, soil fertility deteriorates, livestock productivity decreases, competitiveness is lost and unstable agro-formations go bankrupt. Extensive methods of farming continue to prevail in the country. One of the most important indicators of the country's food independence is agricultural output per capita. As previously stated, the food security of Kazakhstan is 87%.

The shortage of agricultural specialists, veterinary protection, violation of the basics of agricultural culture are problematic issues in rural areas. The average salary of rural residents is strongly subject to seasonal fluctuations and on average is the lowest compared to other sectors in the country.

Despite these shortcomings, Kazakhstan is among the countries with the potential to attract foreign investments in the agricultural sector [21].

Discussion

Theoretical foundations of state regulation of agriculture.

The problem of state support of agriculture is relevant for all countries, including Kazakhstan.

Despite the fact that the market mechanism is a rather attractive way of production and distribution of goods, the lack of market sometimes lead to some miscalculations in economic activity. The state can try to prevent or minimise these mistakes. Its role in modern society is to ensure the efficient functioning of the economy, to correct the unfair distribution of income, and to support economic growth and stability [26].

In the context of global food shortages in the world, when 9.2% of the world's population is undernourished, practically experiencing hunger, the issue of state support for agricultural production becomes particularly relevant not only in Kazakhstan, but also worldwide.

At the first stages of formation of market relations in agriculture of Kazakhstan (1992–1995) it was considered that agriculture as a branch of national economy is most adapted to the market of perfect competition and can do without the system of state regulation. But the practice of management quickly showed the inconsistency of this approach. Now in Kazakhstan there is a clear understanding

that the formation and functioning of market relations without state intervention and regulation is impossible.

The state support of the agrarian sector of Kazakhstan's economy is motivated, in our opinion, by the following quite objective circumstances:

- ♦ dependence of the volumes of agricultural products grown on natural and climatic conditions. If we take into account that the production of grain products is the basis of food security of Kazakhstan, and its export is one of the factors of improving the trade balance of the country, it becomes clear why it is necessary to support agriculture in financial, technical and other plans;

- ♦ the noted dependence is especially characteristic for grain production in the Northern regions of Kazakhstan, where most of the exported food and fodder grain is grown. Kazakhstan's entry into the world food market as one of the world's ten largest producers of grain and flour objectively requires reducing this dependence on natural and climatic conditions, which in turn causes the need to increase state support in agricultural production;

- ♦ receiving the result from production activities, as a rule, at the end of the year or, if it is the production of beef meat, horse meat, milk, etc., in two years or more. This fact also requires financial resources before the gross income from production is received after the sale of agricultural products. As a rule, this occurs at the end of the calendar year;

- ♦ the most important, determining role in the development of agriculture belongs to the improving means of labour – the most important element of the productive forces of society. In this regard, K.Marx noted that «economic epochs differ not by what is produced, but by how it is produced, by what means of labour» [27]. Consequently, effective investment activities of the state aimed at the introduction of advanced achievements of STP in agriculture creates adequate conditions for the competitiveness of its products;

- ♦ the lack of financial resources in the agricultural sector is compensated in various ways. For example, in the production of grain products, financial resources are usually insufficient to purchase agricultural machinery, which is very expensive and mostly produced by foreign companies. To solve this issue it is necessary to use financial leasing as the purchase of equipment by a specialised financial company (including on credit) with its subsequent leasing out. Consequently, various types of financial leasing are possible, which are used in the practice of agrarian production in various countries. Only the state can organise such financial leasing.

It should be noted that in developed countries the state allocates subventions for producers of agricultural machinery and other agricultural goods, thus overcoming monopolism and dictate of these industries «at the entrance» to agricultural production, which is not the case in the current conditions of management in Kazakhstan. These measures are taken by the state in order to compensate for losses and ensure profitability while maintaining low prices for agricultural inputs. In addition, agricultural enterprises are given favourable tariffs on fuel and lubricants, energy, and agriculture itself «receives general subsidies and loans at low interest rates, so that the peasant farms can generally provide expanded reproduction» [28].

Calculations made over the last 5 years show that reduction of precipitation during the growing season to 15–20% in the northern grain regions of Kazakhstan due to global changes in climatic conditions, leads to a decrease in grain yields by 25–30%. The data of a typical peasant farm 'Galix' convincingly show that with an average yield of 15 centners/ha they get already 10.5 centners/ha. Such a yield allows them to barely recoup the costs. Therefore, subsidising the production of grain and livestock products becomes objective.

Unfortunately, in order to maximise productivity and increase profitability, many agricultural producers in Kazakhstan are switching to the use of imported hybrids and breeds. At the same time, traditional breeds of farm animals and birds adapted to natural and climatic conditions of sharply continental climate are gradually disappearing. As a consequence, the productivity of imported breeds in a year or two falls sharply, mortality increases, especially among young animals, and the effect in the long term disappears. This is evidenced by numerous reports of agricultural producers on livestock breeding. Therefore, it is necessary to carry out breeding work with local, adapted breeds, which, with the appropriate feed base, give the proper effect.

Lack of financial resources, constant growth of prices for agricultural machinery, fertilisers and hybrids cannot be solved independently by agricultural formations of various forms of ownership.

Therefore, agricultural production objectively needs state support that would stimulate it. Consequently, the most important task is a gradual transition from direct subsidising of the agro-industrial complex to the provision of affordable loans: all allocated funds should be used effectively.

As for the impact of climate change on natural and climatic conditions of Kazakhstan, the following trend is observed. If 7–10 years ago on the territory of Northern Kazakhstan in winter period there were stable frosts with deep snow cover, and in summer there was stable warm weather, in some years with hot summer, and precipitation in the form of rain was barely enough during the growing season of grain crops maturation, then for the last 5 years the situation has changed significantly, in winter it can rain, and in summer it can be cold (up to -5 C) with excessive precipitation. This situation has a negative impact on the process of maturation of grain crops, respectively on the yield and quality of grain. As a result, it leads to a decrease in competitiveness, especially of durum wheat, which has been the brand of Kazakhstan's grain exports to European countries. Unprecedented flooding in 2024 in Kazakhstan once again demonstrates the impact of global climate change on the country's agricultural production.

State regulation of agriculture in Kazakhstan in the context of global climate change should, in our opinion, be oriented on the following:

- ♦ state support (financial subsidies) should be provided to agricultural organisations that do not work unprofitable. This assistance should be targeted, specific, with a full report at the end of the reporting year on the use of funds received;
- ♦ organise an 'Agrobank' with preferential loans only for agricultural enterprises of various forms of ownership (similar to the former 'Agrobank of the USSR');
- ♦ export precisely finished, processed agricultural products with a high share of added value. This will solve the problem of 'raw material dependence syndrome';
- ♦ increase the production of agricultural machinery, freeing ourselves from dependence on foreign machinery;
- ♦ for agriculture fuels and lubricants at favourable prices during the sowing and harvesting campaign 60% of the market prices for fuels and lubricants.

Kazakhstan has huge potential resources for increasing agricultural production. There are 23 million hectares of land suitable for growing crop production, primarily grain crops. A quarter of this land is suitable for the production of hard varieties of wheat, which are in high demand in the European market. Increasing exports of such varieties and receiving export revenues is associated with three main problems, which can only be solved by a well-considered agricultural export policy of the state:

1. Implementation of breeding work.
2. The largest elevators, which provide a strategic stock of grain products for the international market in order to preserve potential consumers, are unfortunately privatised. New farms do not update outdated equipment and their main goal is '...private interest' – short-term profit.
3. There is a constant shortage of grain wagons for the transport of grain. Kazakhstan, having no access to cheap sea routes, has to spend significant financial resources on transporting grain products, which leads to their appreciation on the international market.

The way out of this situation is seen in the sale of ready-to-eat long-life products made of this grain (pasta, biscuits). Another equally important factor is the sale of not frozen meat, but again ready-to-eat products from it (tinned products for long term storage, etc.). To realise these tasks it is necessary to build plants for processing agricultural products grown in the country. This problem can only be solved by the state, not by individual entrepreneurs of agricultural production.

Conclusion

Agriculture in any country objectively requires state support to maintain its competitiveness to a greater or lesser extent depending on a number of natural and climatic conditions. The latter, according to D. Ricardo's theory of comparative advantage, objectively create favourable conditions for the cultivation of certain crops and animals. The sharply continental climate of Kazakhstan allows growing mainly grain crops and zoned breeds of domestic animals, agrarian production is supported by financial means to strengthen its competitiveness and ensure food security of the country.

In modern conditions, when competition is intensifying not only in the international market of agricultural products, but also within the country between domestic commodity producers, the issue of state support of agricultural organisations of various forms of ownership becomes especially relevant. In these conditions, national interests should be in the foreground to preserve food security of the country. The solution of this problem, quite naturally, objectively requires overcoming the ‘syndrome’ of raw material dependence of Kazakhstan, when a large share of agricultural products grown in the country is exported in raw form. Thus, a significant share of the national wealth created in the country is transferred abroad.

The state, in our opinion, should allocate financial resources for marketing research on the promotion and sale of agricultural products.

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ЖАҒАНДЫҚ КЛИМАТТЫҢ ӨЗГЕРУІ ЖАҒДАЙЫНДА ҚАЗАҚСТАННЫҢ АУЫЛ ШАРУАШЫЛЫҒЫН МЕМЛЕКЕТТІК РЕТТЕУ

Аңдатпа

Экологиялық мәселелер мен климаттың өзгеруі әлемнің көптеген басқа аймақтарындағыдай ауыл шаруашылығына әсер етті және азық-түлік қауіпсіздігі мәселесінің маңыздылығын арттырды. Климаттың өзгеруі мен құрғақшылықтан туындаған аштық азық-түліктің жетіспеушілігін күшейтеді, ал кейбір дақылдар (күріш, бидай және басқалары) өндірісті қысқарту және осы өнімдердің бағасын көтеру арқылы экономикалық тұрақсыздық тудырады. Жағандық жылынуға байланысты су ресурстарының азаюы егістік жерлерді суару мәселесіне әкелді. Климаттың өзгеруінен туындаған проблемалар қазіргі әлемдегі барлық елдер үшін өзекті мәселеге айналды. Азық-түлік жүйелеріне өндіріс, қол жетімділік (сатып алу, тарату және артықшылық) және азық-түлікті пайдалану, соның ішінде өндіріс, тарату және сауда аспектілері кіреді. Климаттың өзгеруі нарықтардағы өзгерістер, азық-түлік бағалары және жеткізу инфрақұрылымы арқылы азық-түлік жүйесіне әсер етуі мүмкін. Бұл мақалада Қазақстандағы ауыл шаруашылығы мен мал шаруашылығының жалпы мәселелері талқыланады. Мақалада өндірістік циклдің маусымдылығына, сондай-ақ түпкілікті нәтижелердің жағандық климаттың өзгеруі жағдайында айтарлықтай өзгеретін табиғи-климаттық жағдайларға тәуелділігіне байланысты төмен нарықтық ұтқырлық анықталды. Елдің аграрлық секторын мемлекеттік қолдау бойынша ұсынымдар нақтыланды, климаттың жағандық өзгеруі жағдайында Қазақстанның ауыл шаруашылығының өндірістік инфрақұрылымының өсіп келе жатқан рөлі көрсетілді.

Тірек сөздер: ауыл шаруашылығы, климаттың өзгеруі, азық-түлік қауіпсіздігі, мемлекеттік реттеу, экологиялық проблемалар, аштық мәселесі, су ресурстары.

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ГОСУДАРСТВЕННОЕ РЕГУЛИРОВАНИЕ СЕЛЬСКОГО ХОЗЯЙСТВА КАЗАХСТАНА В УСЛОВИЯХ ГЛОБАЛЬНОГО ИЗМЕНЕНИЯ КЛИМАТА

Аннотация

Экологические проблемы и изменение климата затронули сельское хозяйство, как и во многих других регионах мира, и поставили на повестку дня вопрос о продовольственной безопасности. Голод, возникающий из-за изменения климата и засухи, усугубляет проблему голода. Некоторые культуры (рис, пшеница и др.) вызывают экономическую нестабильность, сокращая производство и повышая цены на эти продукты. Сокращение водных ресурсов в связи с глобальным потеплением вызвало проблему орошения сельскохозяйственных территорий. Проблема, вызванная изменением климата, которая является предметом данного исследования, является приоритетным вопросом сегодняшнего дня для стран. Продовольственные системы охватывают существование продовольствия, доступ к нему (покупка, распределение и предпочтение) и использование продовольствия, которое включает производство, распределение и обмен. Изменение климата может изменить продовольственную систему в части рынков, цен на продовольствие и инфраструктуры цепочки поставок. В статье описывается общая ситуация в сельском хозяйстве и животноводстве Казахстана, объясняются проблемы этих секторов.

Ключевые слова: сельское хозяйство, изменение климата, продовольственная безопасность, государственное регулирование, экологические проблемы, проблема голода, водные ресурсы.

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