

ANALYSIS OF THE IMPACT OF AGRICULTURE ON THE SOCIO-ECONOMIC DEVELOPMENT OF MUNICIPALITIES

ANÁLISE DO IMPACTO DA AGRICULTURA NO DESENVOLVIMENTO SOCIOECONÔMICO DOS MUNICÍPIOS

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Abstract. The development of agriculture plays an important role in providing the population with food. This topic is relevant in modern Russia in the context of a policy of self-sufficiency and import substitution, especially for traditionally agrarian regions. The purpose of the study is to develop a set of measures to solve the problems of the development of the agricultural sector in the MO "Kosh-Agachsky district". In preparing the article, such general scientific methods were used as: the method of analysis and synthesis, the method of comparison, the method of absolute values, relative values, the classification method, the tabular method. As a result of the conducted research, an analysis of the current state of agriculture in the MO "Kosh-Agachsky district" was performed; production by branches of agriculture was considered; problems in the development of agriculture were found, and a set of measures for the development of the agricultural sector was developed. The conclusions noted that the production of livestock products in farms of all categories of the Ministry of Defense "Kosh-Agachsky district" showed negative dynamics. In order to eliminate the identified problems of agricultural development of the district, it was proposed: to carry out land reclamation work at the expense of state programs, subsidize transport costs, create a Collective Use Center for farmers of the district, in which it was proposed to introduce training programs, provide assistance in the delivery of feed, help to prepare farmers to apply for grant support, etc. The practical significance of the study lies in the fact that the results of the compiled forecast of the economic efficiency of the implementation of the proposed measures and programs of agricultural management can be used in the work of the administration of the Ministry of Defense "Kosh-Agachsky district".

Keywords: agriculture, production analysis, economic efficiency.



Resumo. O desenvolvimento da agricultura desempenha um papel importante no fornecimento de alimentos para a população. Este tema é relevante na Rússia moderna, no contexto de uma política de autossuficiência e substituição de importações, especialmente para as regiões tradicionalmente agrárias. O objetivo do estudo é desenvolver um conjunto de medidas para resolver os problemas de desenvolvimento do setor agrícola no distrito de Kosh-Agachsky do MO. Na preparação do artigo foram utilizados métodos científicos gerais como: método de análise e síntese, método de comparação, método de valores absolutos e relativos, método de classificação, método tabular. Como resultado da pesquisa realizada, foi feita uma análise do estado atual da agricultura no distrito de MO "Kosh-Agachsky"; foi considerada a produção por ramos da agricultura; foram encontrados problemas no desenvolvimento da agricultura no distrito de Kosh-Agachsky e foi desenvolvido um conjunto de medidas para o desenvolvimento do setor agrícola. As conclusões indicaram que a produção de produtos pecuários nas fazendas de todas as categorias do Ministério da Defesa "distrito de Kosh-Agachsky" mostrou uma dinâmica negativa. Para eliminar os problemas identificados no desenvolvimento agrícola do distrito de Kosh-Agachsky MO, foi proposto: realizar trabalhos de recuperação de terras com recursos de programas estatais, subsidiar os custos de transporte, criar um Centro de Uso Coletivo para os agricultores do distrito de Kosh-Agachsky MO, no qual se propôs introduzir programas de capacitação, fornecer assistência na entrega de alimentos, ajudar na preparação dos agricultores para solicitação de subsídios, etc. A importância prática do estudo reside no fato de que os resultados da pesquisa e a previsão da eficiência econômica da implementação das medidas e programas de gestão agrícola propostos podem ser utilizados no trabalho da administração do Ministério da Defesa "distrito de Kosh-Agachsky".

Palavras-chave: agricultura; análise de produção; eficiência econômica"

1. INTRODUCTION

Agriculture plays an important role in the Russian economy. However, the effectiveness of agriculture is influenced by many factors, from financial to natural (Bakharev et al., 2020; Vaslavskaya et al., 2023; Golovina et al., 2022; Pogosyan, 2021a,b; Deryugina et al., 2024).

The agro-industrial complex is significantly dependent on weather conditions, in connection with which both excess profits and large losses can be observed, in connection with which agricultural enterprises may lose the expected profitability and investment attractiveness (Gabdulkhakov et al., 2021; Dudukalov et al., 2022; Gradoboev & Tesleva, 2017; Yemelyanov et al., 2020; Saenko et al., 2019). However, the support measures taken by the state can minimize losses and regain a leading position in the market.

It should be noted that the comprehensive efficiency of the entire Russian agro-industrial complex is influenced by the results and achievements of agriculture at the level of regions and municipalities.

The agro-industrial complex of the Altai Republic is the main sector of the region's economy, including the Municipal Formation "Kosh-Agach District".

It should be noted that the Altai Republic is an agrarian region. The territory of the Altai Republic is 9290.3 thousand hectares, the largest share in the structure of the land fund is occupied by the lands of the state forest fund (40.5%) and the lands of agricultural organizations and citizens (28.2%). Therefore, in the region, great attention is paid by the authorities to the municipal policy for the development of agriculture.

The purpose of this study is to develop a set of measures to solve the problems of the development of the agricultural industry in the Kosh-Agach district.

To achieve this goal, it is necessary to solve the following tasks:



1. to present the current state of agriculture in the Kosh-Agach district;
2. to analyze the development of agriculture in the Kosh-Agach district;
3. to highlight the problems of the agricultural sector in the Municipal Entity "Kosh-Agach District";
4. to substantiate measures to solve the problems of the agricultural sector in the Municipal Entity "Kosh-Agach District";
5. to make a forecast of the economic efficiency of agricultural management in the Municipal Entity "Kosh-Agach District" for 2024-2026.

The object of this research is agriculture as a branch of the municipal economy. The subject of the research is the municipal policy for the development of agriculture in the Kosh-Agach district.

The study showed that at present there is a tendency to reduce the activities of agricultural producers in the Kosh-Agach district and at the same time to increase the volume of state support for this industry, which makes this process economically ineffective. In this regard, the proposed forecast of the effectiveness of the implementation of the recommended measures related to improving the efficiency of agricultural management at the municipal level will contribute to an increase in employment due to the creation of new jobs, an increase in self-employment and the exit from the "shadow" of existing agricultural producers, as well as replenishment of the budget with tax deductions.

2. METHODS

The Kosh-Agach District is geographically located in the mountain-steppe zone in the west of the Altai Republic and occupies an area of 19845 km² (which is 21.4% of the territory of the republic). At the same time, it includes 12 rural settlements and 16 settlements. The administrative center of the territory is the village of Kosh-Agach, which is located 465 km from the city of Gorno-Altai - the regional capital [Charter of the Municipality "Kosh-Agachsky District of the Altai Republic"].

Agriculture of the Kosh-Agach District specializes in beef cattle breeding. About 1/10 of all agricultural products in the region are produced here, while 16% of cattle for slaughter are in live weight. 29% of the livestock of the total livestock in the district is concentrated here.

The availability of a large amount of land resources combined with harsh natural and climatic conditions led to a low return on land resources.

The territory of the district is equated to the regions of the Far North. The fodder base is mainly represented by pasture fodder. The sown area is 990 hectares or 0.9% of the total sown area of the region. Annual and perennial grasses are grown on these areas, the yield on them is 18 c/ha. Natural hayfields with an area of 337 hectares are also used, the yield on them is 9.8 c/ha.

In the Altai Republic, at the moment, a sufficient number of livestock has been accumulated, which is able to provide meat and milk for domestic demand. For these types of agricultural products and finished products, there is a potential to enter interregional markets. The factors inhibiting the development of agriculture are the low provision of fodder, both in terms of quantity and nutritional characteristics, which reduces productivity in animal husbandry.



The introduction of effective technologies for keeping livestock, feeding, and reproduction of herds is hindered by a significant share of personal subsidiary farms in agriculture (Yakovleva et al., 2023; Panova et al., 2021; Voronkova et al., 2022; Razmara et al., 2022). As a result, a type of agriculture is formed, which is characterized by many autonomous small agricultural producers with weak cooperative ties. This type of management is largely dependent on the negative impact of the external environment (price factors, competition, natural and climatic factors), and also does not allow to fully benefit from state regulation.

The region has prerequisites for the development of larger forms of farming, since over the past 5 years the share of livestock kept in peasant farms has been increasing. There are private plots that can become the basis for peasant farms. The program to support agricultural consumer cooperatives has been implemented for the third year.

The second critical factor in the development of agriculture and the agro-industrial complex is the fodder supply of livestock. Due to the low productivity of fodder production, the absence of agricultural organizations specializing in fodder production, the predominance of roughage and pasture fodder in the diet of animals, the productivity of meat, milk, wool decreases. As a result, 1 person employed in agriculture creates added value, which is not able to create accumulation funds and change animal husbandry technologies.

Thirdly, the food industry as part of the agro-industrial complex is experiencing difficulties in providing raw materials, and due to significant fluctuations in their provision during the year. Weak communication between raw material suppliers and processors significantly worsens the commercial efficiency of meat and milk processing projects. Thus, a decrease in the utilization of processing capacities from 100% to 50% increases the payback period of investment projects by 3-4 times.

Also, processors of agricultural raw materials are also experiencing difficulties with initial capital and staffing. At the same time, the market of technological equipment offers processing capacities of small volumes (1-10 tons of milk per day; 0.5-5 tons of meat per day). But for small local farms, investments in the amount of 5-10 million rubles are unaffordable.

The permanent population (as of 01.01.2022) in the Kosh-Agach district amounted to 20286 people, compared to 2020 (19906 people), the number increased by 380 people.

The data characterizing the dynamics of the agricultural sector of the Municipal Entity "Kosh-Agach District" are presented in Table 1.

Table 1. Dynamics of the agricultural sector of the Kosh-Agach District Municipality for 2017-2021

Indicators	Oct. 2017	Oct. 2018	Oct. 2019	Oct. 2020	Oct. 2021	Abs. Deviation for 2017-2021	Growth rate, %
1. Number of agricultural enterprises	348	305	294	197	168	-180	50.59
of which agricultural organizations	29	23	23	22	22	-7	-24.14
2. Number of peasant farms	319	282	271	175	146	-173	-54.23
3. Number of SPOKs	9	9	8	10	10	+1	+11.11
4. Number of private	5830	6152	6152	6152	6252	+422	+7.24

plots							
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The data of Table 1 show that in the agricultural sector of the Municipal Entity "Kosh-Agach District" in 2017 there were 348 agricultural enterprises, of which 29 were agricultural organizations: including 13 SPKs, 4 limited liability companies and 9 SPOKs (agricultural consumer cooperatives), in addition, 3 family tribal communities were registered. agricultural activities are carried out by 5830 personal subsidiary farms [Decree of the Government of the Altai Republic of March 13, 2018].

In order to visualize the dynamics of the number of peasant farms in the Kosh-Agach District Municipality for 2017-2021, let's build Figure 1.

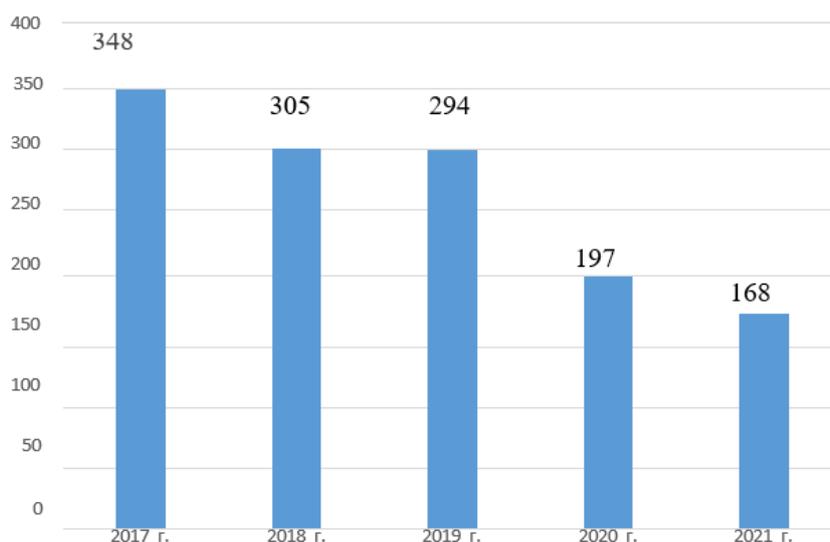


Figure 1. Dynamics of the number of agricultural enterprises in the Kosh-Agach district for 2017-2021

Figure 1 shows a downward trend in the number of agricultural enterprises in the Kosh-Agach District Municipal Entity throughout the entire period of the study, which indicates a decrease in the social attractiveness of this type of economic activity.

The dynamics of the number of peasant farms in the Kosh-Agach District Municipality for 2017-2021 is presented in Figure 2.

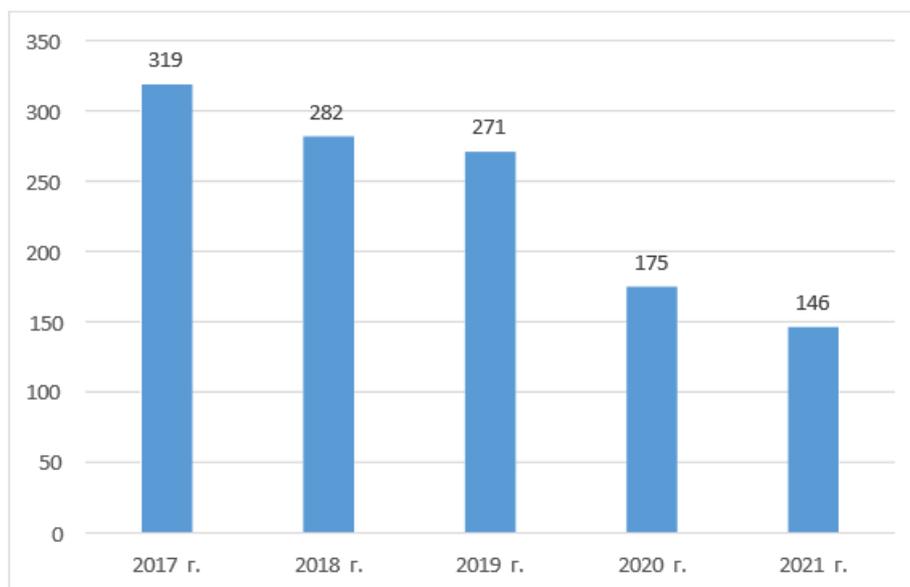


Figure 2. Dynamics of the number of peasant farms in the Kosh-Agach District Municipality for 2017-2021

The dynamics of the number of SPOKs in the Kosh-Agach District Municipality for 2017-2021 is shown in Figure 3.

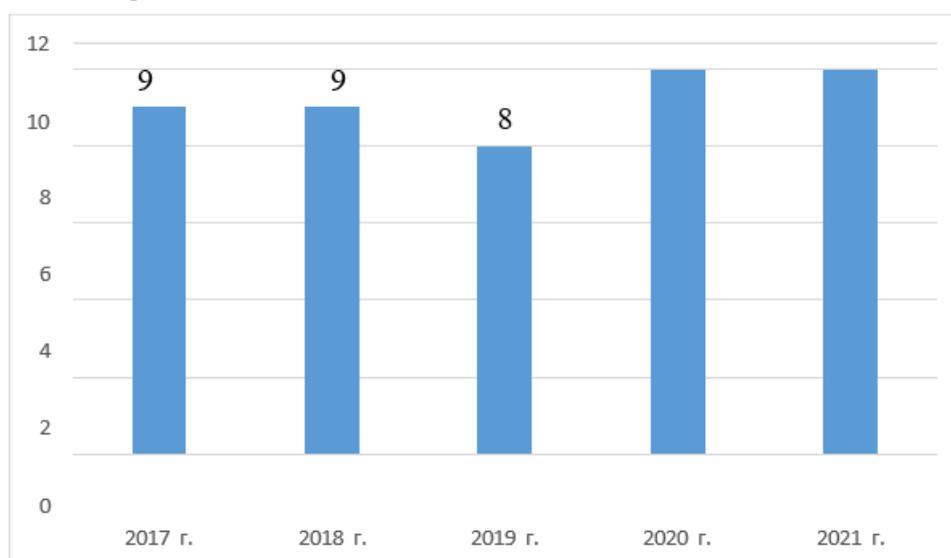


Figure 3. Dynamics of the number of SPOKs in the Municipal Entity "Kosh-Agach District" for 2017-2021

The organization of rural consumer cooperatives, the so-called SPOKs, allows the population to independently regulate the supply, costs of maintaining the water supply and payment for water consumption. The number of SPOKs in the Kosh-Agach District has increased.

Figure 4 shows the dynamics of the number of private plots in the Kosh-Agach district for 2017-2021.

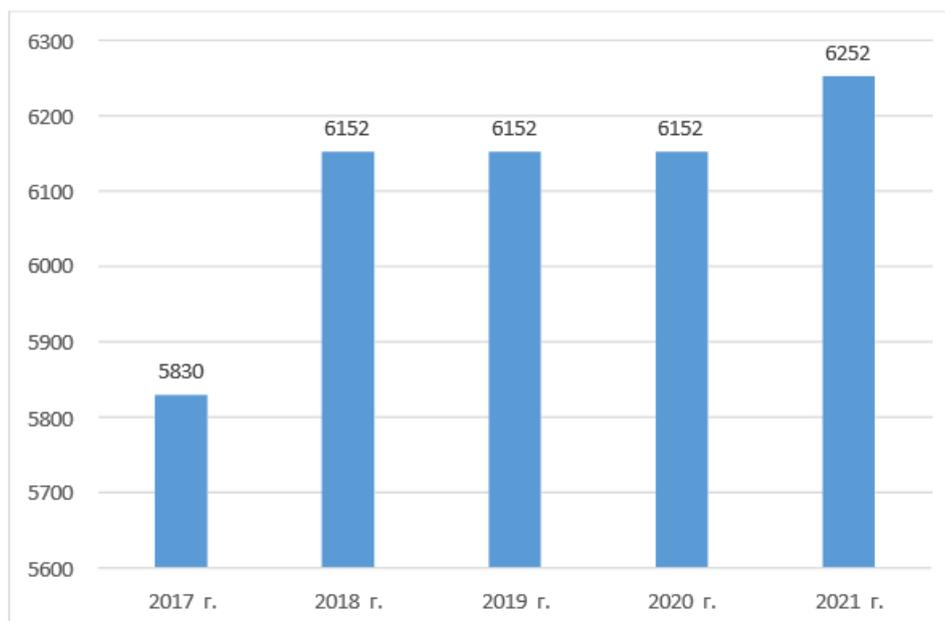


Figure 4. Dynamics of the number of private plots in the Kosh-Agach district for 2017-2021

As of 2017-2022, the number of registered agricultural enterprises in the Kosh-Agach District Municipality decreased by 180 units or 50.59%, which indicates a decrease in the interest of legal entities in agriculture. In addition, the number of peasant farms decreased by 173 units. However, the number of SPOKs has increased slightly, and the number of private plots has also increased.

Let's consider the change in the number of livestock in the Kosh-Agach District Municipality for 2017-2021 in Table 2.

Table 2. Dynamics of livestock in farms of all categories of the Kosh-Agach District Municipality for 2017-2021

Livestock	Oct. 2017	Oct. 2018	Oct. 2019	Oct. 2020	Oct. 2021	Abs. deviation	Growth rate, %
1. Cattle, heads	42318	43155	40539	31417	30940	-11378	-26.89
including cows, heads, of which:	22488	22854	21070	17689	17785	-4703	-20.91
2. Sheep and goats, heads	277721	280509	249281	120170	108106	-169615	-61.07
3. Horses, heads	9720	11501	10630	4033	3909	-5811	-59.78
4. Marals, heads	28	28	26	25	24	-4	-14.29
5. Ptitsa, golov	360	362	372	414	468	+108	+30

The data in Table 2 show that in general, in 2017-2021, there was a decrease in the number of cattle, including cows, as well as sheep, goats, horses and marals. An increase in the number of poultry was recorded only, which is demonstrated in Figure 5.

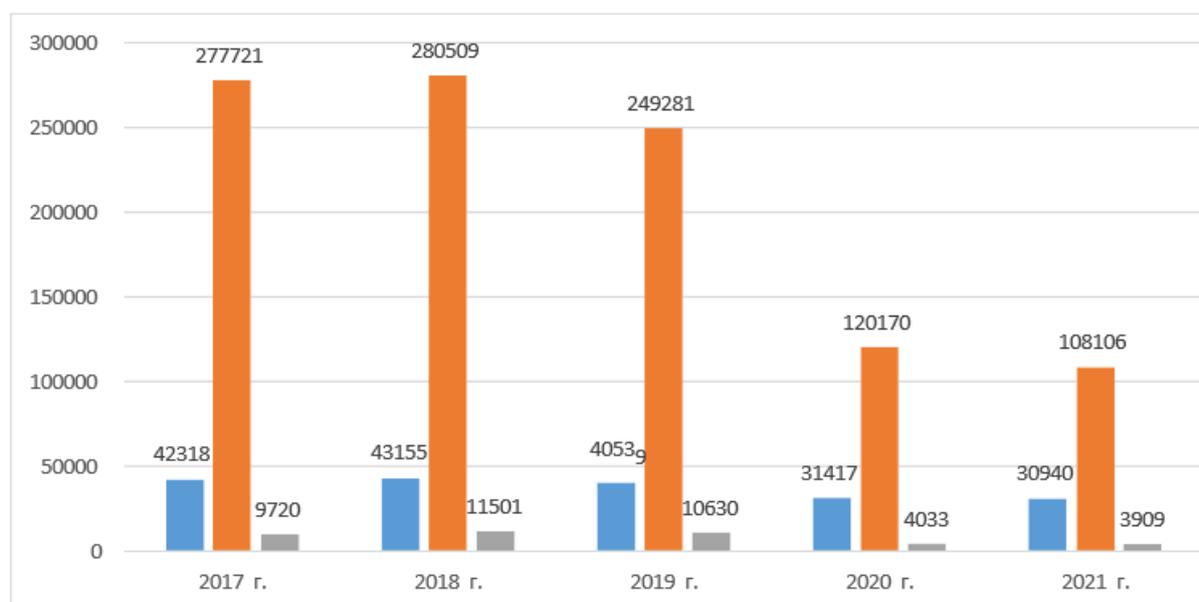


Figure 5. Dynamics of livestock in farms of all categories in the Moscow Region "Kosh-Agach district" for 2017-2021

It should be noted that in 2018, compared to 2017, in the farms of all categories of the Kosh-Agach district: the number of cattle increased by 2.0%, due to the fact that the business yield of calves per 100 heads of ewes was 71.7% since the end of 2017, in 2018 - 65.1%.

In general, in the Kosh-Agach district, there is a decrease in the number of livestock and a tendency to reduce the sown area of crops for the harvest.

Thus, having considered the current state of agriculture in the Kosh-Agach district, we can conclude that in 2017-2022 there is a general reduction in the number of farm animals, mainly cattle, sheep and goats. At the same time, an increase in poultry was recorded.

Thus, the state of agriculture in the Kosh-Agach District has a tendency to deteriorate, and at the same time it is one of the largest and most important sectors of the regional economy.

The dynamics of the volume of agricultural production in farms of all categories in the Kosh-Agach district in 2017-2021 is presented in Table 3 [Official website of the administration of the municipal municipality].

Table 3. Dynamics of the volume of agricultural production in farms of all categories in the Kosh-Agach district in 2017-2021

Indicators	Oct. 2017	Oct. 2018	Oct. 2019	Oct. 2020	Oct. 2021	Abs. Deviation for 2017-2021	Growth rate, %
1. Volume of agricultural production in farms of all categories, million rubles	1330,9	1263,9	1284.2	1097.6	770.3	-560.6	-42.12
incl. livestock products, million rubles	1287,7	1197.8	1223.5	1026.2	708.1	-579.6	-45.01
incl. crop products, million rubles	43,2	66.1	60.6	71.3	62.2	+19	+43.98

2. Agricultural production index, %	100.2	102.7	102.2	94.3	69.3	-30.9	-30.84
incl. livestock products, %	100.1	103,3	103,1	94.2	67.7	-32.4	-32.36
incl. crop production, %	100.5	93.2	87.6	97.2	96.9	-3.6	-3.58

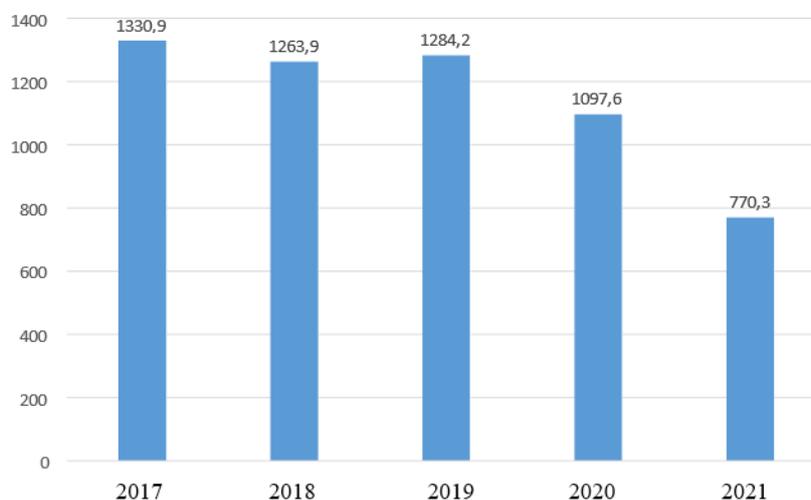


Figure 6. Dynamics of the volume of agricultural production in farms of all categories of the Kosh-Agach District Municipality for 2017-2021, million rubles

The data in Figure 6 show that the volume of agricultural production in farms of all categories of the Kosh-Agach district in 2017-2021 was unstable and generally tended to decrease, which affected the value of livestock production.

Table 4. Dynamics of livestock production in farms of all categories of the Kosh-Agach district for 2017-2022

Indicators	Oct. 2017	Oct. 2018	Oct. 2019	Oct. 2020	Oct. 2021	Absolute deviation for 2017-2021	Growth rate, %
Cattle and poultry for slaughter in live weight, tons.	5497,9	5514,7	7651,6	9105,37	4626,62	-871,28	-15,85
Milk, tons	3126,7	3132,8	3101,9	2900,6	1545	-1581,7	-50,59
Wool, tons	321,5	332,5	305,1	290,05	236,56	-84,94	-26,42
Goat down, tons	45,2	44,9	42,4	21,82	37,59	-7,61	-16,84
Eggs, thousand pcs.	4,6	4	4,1	4,8	5,4	+0,8	+17,39

The data of Table 4 show that in 2018 compared to 2017 in farms of all categories of the Municipal Entity "Kosh-Agach District":

- production of meat for slaughter (in live weight) amounted to 5514.7 tons, an increase of 16.8 tons, which is 0.3% higher than the level of the same period last year, the increase is due to the fact that agricultural producers of all forms of ownership, including private farms, actively participate and sell meat at monthly Republican agricultural fairs;

- milk production in farms of all categories amounted to 3132.8 tons, which is 0.2% higher than the level of 2017 by 6.1 tons, the increase is due to an increase in milk yield of cows of meat and dairy direction in agricultural organizations and peasant farms;
- Milk production in agricultural organizations and peasant (farmer) farms, including individual entrepreneurs, amounted to 457.7 tons, which is 13.8% higher than the level of the same period last year. The increase is due to an increase in the number of dairy cows of the meat direction by 369 heads, a total of 13718 heads. In agricultural organizations and individual entrepreneurs GKFH (growth rate 102.7%, in 2017 - 13349 head cows).
- wool production amounted to 332.5 tons, which is 3.4% higher than the level of the same period last year by 11 tons, the increase is due to an increase in the gross harvest of wool in agricultural organizations and peasant farms.

In 2021, farms of all categories:

- The production of meat for slaughter (in live weight) amounted to 4626.62 tons, which is 49.2% lower than the level of the same period last year. The decrease is due to a decrease in the number of livestock in private plots, also due to the fact that the regionalization of foot-and-mouth disease for the period 2020 to 2021 had a negative impact on the activities of the farms of the district, which led to a decrease in the number of livestock due to the termination of the economic activities of agricultural enterprises (in just 2 years, 144 peasant farms, 5 agricultural enterprises ceased to operate);
- Milk production in farms of all categories amounted to 236.56 tons, which is 18.4% lower than the level of the same period last year. The decrease is due to a decrease in the number of cattle in private farms due to regionalization and the termination of economic activities of agricultural enterprises in the district.
- Milk production in agricultural organizations and peasant (farmer) farms, including individual entrepreneurs, amounted to 205.4 tons, which is 28% lower than the level of the same period last year. The decrease is due to the termination of economic activities of agricultural enterprises of the district;
- Wool production amounted to 163.4 tons, which is 38.9% lower than the level of the same period last year. The decrease is due to a decrease in the number of sheep in private plots due to the termination of economic activities of agricultural enterprises of the district.

Despite the general decrease in the number of livestock and the volume of agricultural output in the Kosh-Agach District Municipal Entity throughout the entire period of the study, much attention is paid to state support for agricultural producers.

Table 5. Dynamics of the volume of state support within the framework of the implementation of the state program of the Republic of Altai “Development of agriculture and regulation of markets for agricultural products, raw materials and food” in the municipal entity “Kosh-Agach district” for 2017-2022

Indicators	Oct. 2017	Oct. 2018	Oct. 2019	Oct. 2020	Oct. 2021	Absolute deviation for 2017-2021	Growth rate, %

Amount of state support	60971	26813	53500	38890	79770	+18799	+30,83
Number of agricultural producers who received state support	179	225	228	119	108	-91	-39,66
Peasant farms and individual entrepreneurs have received state support	161	205	213	108	100	-61	-37,89

The data in Table 5 show that the amount of state support under the state program of the Altai Republic "Development of Agriculture and Regulation of Markets for Agricultural Products, Raw Materials and Food" in the Kosh-Agach District in 2017-2022 as a whole increased, but the number of recipients of this support decreased, which indicates the ineffectiveness of this measure.

Agriculture as a whole has a positive effect on the socio-economic development of the Kosh-Agach district: new jobs are created through self-employment and job creation, additional budget revenues are made in the form of taxes.

Table 6. Implementation of measures and programs related to improving the effectiveness of agricultural management in the Kosh-Agach District Municipality for 2017-2020

Indicators	Oct. 2017	Oct. 2018	Oct. 2019	Oct. 2020	Oct. 2021
1. Employment, including:	1330,9	1263,9	1284,2	1097,6	770,3
• the volume of agricultural production in farms of all categories, million rubles;					
• a peasant farm was created;					
• SPOKs have been created;	319	282	271	175	146
• private household plots were created.	9	9	8	10	10
	5830	6152	6152	6152	6252
2. Income of the population, including:					
• Job creation;	1386	1219	1151	976	776
• the value of the average					
• Wage.	15280	18840	22539	24736	27416
3. Tax revenues to the budget, in million rubles	2,901	2,456	2,144	1,944	1,720

Having conducted a study of the socio-economic development of agriculture of the Kosh-Agach District Municipality, it can be concluded that the ultimate goal of the socio-economic development of rural areas is to improve the life of the rural population. However, in general, there was a decrease in the production of livestock products in farms of all categories of the Kosh-Agach district for 2017-2022. Similarly, the production of goat down decreased by 37.59 tons or 7.61%. However, due to the increase in the number of poultry, an increase in egg production by 800 pieces per year or 17.39% was recorded.

3. RESULTS

Let's systematize the problems of the agricultural industry in the Kosh-Agach district and divide them into several groups:

Problems based on the characteristics of the territory:

1. harsh climate;
2. distance;
3. Highlands;
4. border area;
5. the need for land reclamation;
6. narrow domestic market;
7. high transportation costs;
8. the possibility of infecting animals with diseases from the Mongolian People's Republic.

Low level of market-type management:

1. there is no clear system for processing agricultural products;
2. fixed assets are badly worn out;
3. individual territories of the district are in different economic conditions;
4. engineering infrastructure is poorly developed, there are problems with energy supply;
5. the land fund is used inefficiently;
6. there is an informal sector of the economy, which gives a shortfall in money to local and other levels of the budget;
7. The technological level is insufficient.

Problems of underutilization of local resources:

1. human potential has a highly specialized application;
2. entrepreneurship is poorly developed;
3. there is no processing in the field of agriculture;
4. poor training of existing and potential entrepreneurs;
5. acute shortage of personnel in the basic industries of the region;
6. Local traditional crafts are underdeveloped [Concept of socio-economic development of the municipal formation “Kosh-Agachsky district” for 2008–2022].

The development of agriculture is hindered by the lack of a modern irrigation system [Nikitin, 2016]. In order to minimize or eliminate existing problems, it is necessary to develop measures to improve the development and implementation of municipal policy in the municipality in the Kosh-Agach district.

The lands of the water fund of the Kosh-Agach district include: the Chuya and Argut rivers, the Blue Lake, Lake Maashei, Shavlinsky lakes, as well as many springs and springs.

It should be noted that in the Altai Republic in 2023, it is planned to put into operation 100 hectares of reclaimed (irrigated) land, due to the installation of 2 sprinkler machines of the

"Fregat" type on the territory of the Tarkhatinskaya inter-farm reclamation system of the Tarhatinsky rural settlement of the Kosh-Agach district. Also, due to the implementation of crops of technical measures, to involve 100 hectares of farmland in agricultural turnover.

In addition, it is proposed to carry out land reclamation and subsidize transport costs at the expense of state programs.

At the expense of new development institutions, it is recommended to create a Center for Collective Use for Farmers of the Kosh-Agach District Municipality, in which it is necessary to introduce training programs, provide assistance in the delivery of feed, assistance in preparing farmers to apply for grant support, etc.

The low professional competence of local existing and potential entrepreneurs needs to be raised through training seminars and webinars.

Managers of agricultural production and processing of agricultural products who are able to work in modern conditions in the field of agriculture must be sent for retraining or training at the expense of budgetary funds with the completion of an apprenticeship contract.

In addition, in order to increase agricultural industrial processing capacities, it is necessary, first of all, to stimulate the creation of new processing enterprises in the Kosh-Agach district, for example, the creation of a sausage shop.

We also propose to transfer the collection of funds for veterinary sanitation to rural administrations.

In addition, as noted, there is a narrow domestic market for agricultural products. In this regard, it is proposed to establish contacts with the administrations of the nearby areas of the Altai Republic, as well as to look for access to the market of Gorno-Altai and the Altai Territory.

Information support must be provided on an ongoing basis, through frequent publications in social networks and print media - the editorial office of the newspaper "Chuiskiye Zori", the official website of the administration of the municipal entity "Kosh-Agach district", social networks WhatsApp.

The large wear and tear of agricultural machinery of the Kosh-Agach District Municipality also needs to be eliminated with grant support from the state.

In order to fulfill state powers in the field of the agro-industrial complex of the Altai Republic, the Ministry of Agriculture of the Altai Republic is implementing the state programs "Development of Agriculture and Regulation of Markets for Agricultural Products, Raw Materials and Food" and "Integrated Development of Rural Areas".

All milk processing products are divided into two groups from the point of view of sales markets. Pasteurized milk with different MJ content, fermented milk products, butter are mainly sold in the region and meet the needs of the population, budgetary institutions of the social sphere, and the tourist flow.

There is a small market segment of dairy products of traditional Altai and Kazakh cuisine. Cheese and butter have export potential and are exported outside the region. The export of these products is due not only to their high taste, but also to lower specific transportation costs per ruble of finished products.

The formation of a market infrastructure should depend on the structure of the end-user market. The market is characterized as competitive, where goods of various brands circulate.

Branding and well-established supply and sales channels for final products are of great importance in this market. This market is also characterized by high requirements for the length of the period between the production of raw milk and the sale of the final product. The standard for this indicator is 36 hours.

It is difficult for some small milk processors to independently form a marketing complex for promotion and sales. The process of milk production and processing requires the creation of a highly efficient structure, which, on the basis of mutually beneficial cooperation, should ensure the competitiveness of products of local producers through the introduction of the marketing principle "at the right time, just in time", as well as recognition of the products of local producers at the brand level.

So, having considered the main directions for the effective development of the state of agriculture in the Kosh-Agach district, we can conclude that in general this municipality is very promising for the development of agriculture. Despite the problems in this sector of the economy, their solution will contribute to the formation of a new agricultural market, which currently requires attention from the local administration.

The study showed that on the basis of the priorities defined by the Strategy for the socio-economic development of the Kosh-Agach district until 2035, the development of the agro-industrial complex is defined as one of the strategic priorities for the modernization of the economy.

Taking into account the recommended proposals related to improving the efficiency of agricultural management in the Kosh-Agach District Municipality, we will make a forecast of the economic efficiency of the implementation of measures and programs.

As noted, agriculture has a direct impact on the socio-economic development of the Kosh-Agach district through employment, incomes of the population and taxes.

Table 7. Forecast of economic efficiency from the implementation of measures and programs related to improving the effectiveness of agricultural management in the Kosh-Agach District Municipality for 2024-2026

Indicators	Oct. 2024	Oct. 2025	Oct. 2026
1. Employment, including:			
• the volume of agricultural production of products in farms of all categories, mln. rubles;	841,06	925,16	1017,68
2. Income of the population, including:			
• job creation;	1300	1350	1400
• the value of the average wage.	33503	36853	40539
3. Tax revenues to the budget, in million rubles	3,014	3,314	3,644

The data in Table 7 show that compared to the base year 2022, due to the implementation of the proposed measures and programs related to improving the effectiveness of agricultural management in the Kosh-Agach District Municipality, an annual increase in agricultural production in farms of all categories is projected in the planning period 2024-2026.

In general, it can be concluded that in the forecast period it is expected to increase the indicator due to the creation and improvement of the financial situation of agricultural producers.

Thus, the economic regulation of the agricultural sector in the Kosh-Agach District of the Altai Republic is mainly implemented through the state programs "Development of Agriculture and Regulation of Markets for Agricultural Products, Raw Materials and Foodstuffs" and "Integrated Development of Rural Areas".

8. CONCLUSION

At the same time, in order to increase the effectiveness of the impact of agriculture on the socio-economic development of municipalities, it is necessary to identify the fundamental problems in this area of activity and develop a set of solutions. In order to consider in detail, the process of state regulation of agriculture, this issue was studied on the example of the Kosh-Agach district.

As noted, in 2017-2021, the number of registered agricultural enterprises in the Kosh-Agach district decreased by 180 units or 50.59%, which indicates a decrease in the interest of legal entities in agriculture.

The volume of livestock and poultry for slaughter decreased by 871.28 tons or 15.85%, the amount of milk decreased by 1581.7 tons or 50.59% for the entire period of the study. Similarly, the production of goat down decreased by 37.59 tons or 7.61%. However, due to the increase in the number of poultry, an increase in egg production by 800 pieces per year or 17.39% was recorded.

At the same time, it was noted that the amount of state support within the framework of the state program of the Altai Republic "Development of Agriculture and Regulation of Markets for Agricultural Products, Raw Materials and Food" in the Kosh-Agach District in 2017-2022 as a whole increased, but the number of recipients of this support decreased, which indicates the ineffectiveness of this measure.

In addition, based on the priorities defined by the Strategy for the socio-economic development of the Kosh-Agach district until 2035, it was noted that the development of the agro-industrial complex is defined as one of the strategic priorities for the modernization of the economy.

Taking into account the recommended proposals related to improving the efficiency of agricultural management in the Kosh-Agach District Municipality, a forecast of economic efficiency from the implementation of measures was compiled.

As noted, agriculture has a direct impact on the socio-economic development of the Kosh-Agach district through employment, incomes of the population and taxes.

The calculations showed that compared to the base year of 2022, in view of the implementation of the proposed measures and programs related to improving the effectiveness of agricultural management in the Kosh-Agach district in the planning period of 2024-2026, an annual increase in the volume of agricultural production in farms of all categories, an increase in household incomes and tax revenues to the budget are predicted.

Having considered the main directions for the effective development of the state of agriculture in the Kosh-Agach district, it was concluded that, in general, this municipality is very

promising for the development of agriculture. Despite the problems in this sector of the economy, their solution will contribute to the formation of a new agricultural market, which currently requires attention from the local administration.

REFERENCES

Bakharev, V. V., Kapustina, I. V., Mityashin, G. Y., & Katrashova, Y. V. (2020). Ecologization of retail: An analysis of strategies. *Siberian Journal of Life Sciences and Agriculture*, 12(5), 79-96. doi:10.12731/2658-6649-2020-12-5-79-96

Charter of the Municipality “Kosh-Agachsky District of the Altai Republic” [Electronic resource]. – Access mode: <https://mokoshagach.ru/>

Concept of socio-economic development of the municipal formation “Kosh-Agachsky district” for 2008–2022. [Electronic resource]. – Access mode: <https://pandia.ru/text/78/306/47673-5.php>

Decree of the Government of the Altai Republic of March 13, 2018 No. 60 “On the Strategy for the Social and Economic Development of the Altai Republic for the period until 2035” (as amended on October 28, 2023) [Electronic resource]. – Access mode: https://altai-republic.ru/economy_finances/strategy-of-social-economic

Deryugina, A., Ivashchenko, M., Metelin, V., Kovylin, R., & Ignatiev, P. (2024). Investigation of neutrophils under technological stress in cows by methods of laser interference and electron scanning microscopy. *Siberian Journal of Life Sciences and Agriculture*, 16(2), 11-27. <https://doi.org/10.12731/2658-6649-2024-16-2-1073>

Dudukalov, E. V., Zolocheskaya, E. Y., Sorokina, M. Y., & Mangusheva, L. S. (2022). Structuring the economic space for small business in the agro-industrial complex. *Siberian Journal of Life Sciences and Agriculture*, 14(2), 176-215. doi:10.12731/2658-6649-2022-14-2-176-215

Gabdulkhakov, R. B., Poltarykhin, A. L., Tsukanova, O. M., & Avdeev, Y. M. (2021). Regional competitiveness assessment: prospects for the agro-industrial complex of the region. *Siberian Journal of Life Sciences and Agriculture*, 13(6), 339-361. doi:10.12731/2658-6649-2021-13-6-339-361

Gradoboev, A.V., Tesleva, E.P. (2017). Local mechanical stress relaxation of Gunn diodes irradiated by protons. *Journal of Physics: Conference Series*, 830(1), 012133

Golovina, S. G., Poltarykhin, A. L., Zhuravlev, P. V., & Mikolaychik, I. V. (2022). Income of the rural population is a condition for the formation of human capital in rural areas. *Siberian Journal of Life Sciences and Agriculture*, 14(1), 83-102. doi:10.12731/2658-6649-2022-14-1-83-102

Nikitin M. Yu. (2016). Problems of sustainable development of irrigation in mountain regions (on the example of the Altai Republic). *Strategy for sustainable development of Russian regions*. – 2016. – No. 32. – P. 133-138. – EDN WAPTPX.

Official website of the administration of the municipal municipality “Kosh-Agachsky district of the Altai Republic” [Electronic resource]. – Access mode: <https://mokoshagach.ru/>

On approval of the procedures for providing subsidies for the creation of a support system for farmers and the development of rural cooperation and invalidation of some resolutions of the Government of the Altai Republic: Decree of the Government of the Altai Republic of May 31, 2021 No. 144



[Electronic resource]. – Access mode: <https://www.garant.ru/hotlaw/altay/1470162/>

Panova, E. P., Tjumentseva, E. V., Koroleva, I. A., Ibragimova, E. R., & Samusenkov, V. O. (2021). Organization of project work with the help of digital technologies in teaching russian as a foreign language at the initial stage. *International Journal of Emerging Technologies in Learning*, 16(22), 208-220. <http://doi:10.3991/ijet.v16i22.20573>

Pogosyan, V. G. (2021a). Problem of innovations diffusion: A historical retrospective. *Voprosy Istorii*, 2021(5-2), 24-32. <http://doi:10.31166/VoprosyIstorii202105Statyi30>

Pogosyan, V. G. (2021b). Systemic approach in phenomenon research (a historiographic etude). *Voprosy Istorii*, 2021(4_2), 253-265. <http://doi:10.31166/VoprosyIstorii202104Statyi62>.

Razmara, S., Barzamini, R., & AlirezaIzadi, N. J. (2022). A Hybrid Neural Network Approach for Congestion Control in TCP/IP Networks. *Specialusis Ugdymas*, 1(43), 8504-8518.

Saenko, N., Voronkova, O., Volk, M., & Voroshilova, O. (2019). The social responsibility of a scientist: Philosophical aspect of contemporary discussions. *Journal of Social Studies Education Research*, 10(3), 332-345.

Vaslavskaya, I.Yu., Poltarykhin, A.L., Kolupaev, A.A., Vorobieva, V.G. (2023). Increasing the efficiency of the implementation of national projects in the field of healthcare. *Siberian Journal of Life Sciences and Agriculture*, 15(1), pp. 253–293.

Voronkova, O. Y., Volokhova, T. V., Lebedeva, E. S., Smirnova, A. V., & Tubalets, A. A. (2022). Priorities for the development of medicinal plant growing in a post-pandemic environment. *Siberian Journal of Life Sciences and Agriculture*, 14(1), 436-451. [doi:10.12731/2658-6649-2022-14-1-436-451](https://doi.org/10.12731/2658-6649-2022-14-1-436-451)

Yakovleva, A.A., Movchan, I.B., Medinskaia, D.K., Sadykova, Z.I. (2023). Quantitative interpretations of potential fields: from parametric to geostructural recalculations | Количественные интерпретации потенциальных полей: от параметрических пересчетов к геоструктурным. *Bulletin of the Tomsk Polytechnic University, Geo Assets Engineering*, 2023, 334(11), pp. 198–215.

Yemelyanov, V., Nedelkin, A., & Yemelyanova, N. (2020). Expert System Software for Assessing the Technical Condition of Critical Lined Equipment. *Advances in Intelligent Systems and Computing*, DOI:10.1007/978-3-030-37916-2_92.

