UDC 338:91:63:641(021)

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ECONOMIC GEOGRAPHICAL CHARACTERISTICS OF THE DEVELOPMENT OF LIVESTOCK IN UZBEKISTAN IN THE CONTEXT OF ENSURING THE FOOD SECURITY OF THE REPUBLIC

Abstract. *The article analyzes the dynamics of the development of animal husbandry in Uzbekistan in the post-Soviet period, the factors affecting it, the risks, problems and promising directions for their elimination in the context of the country's food security, providing its population with the most important livestock products. It is noted that during the period of transition to a market economy in the republic, a number of measures were implemented to optimize the development and territorial organization of livestock industries. At the present stage, the key factors that negatively affect the development of animal husbandry in Uzbekistan are the sharp predominance of dekhkan (peasant) and personal subsidiary plots in the structure of production of the industry, with an insufficient level of development of specialized farms and clusters, a reduction in the area under fodder crops, degradation of pasture lands. The dynamic growth of the population in Uzbekistan puts on the agenda the problems of providing the inhabitants of the republic with basic livestock products. The article considers some proposals for solving the relevant socio-economic problems.*

Key words: *agriculture, regional organization, animal husbandry, food, land resources, farming.*

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ЭКОНОМИКО-ГЕОГРАФИЧЕСКАЯ ХАРАКТЕРИСТИКА РАЗВИТИЯ ЖИВОТНОВОДСТВА В УЗБЕКИСТАНЕ В КОНТЕКСТЕ ОБЕСПЕЧЕНИЯ ПРОДОВОЛЬСТВЕННОЙ БЕЗОПАСНОСТИ РЕСПУБЛИКИ

Аннотация. *В статье проанализирована динамика развития животноводства в Узбекистане в постсоветский период, факторы, влияющие на неё, риски, проблемы и перспективные направления их устранения в контексте вопросов продовольственной безопасности страны, обеспечения её населения важнейшими продуктами животноводства. Отмечается, что в период перехода к рыночной экономике в республике был реализован ряд мероприятий по оптимизации развития и территориальной организации отраслей животноводства. На современном этапе ключевыми факторами, негативно сказывающимися на развитии животноводства в Узбекистане, являются резкое преобладание в структуре производства продукции отрасли дехканских (крестьянских) и личных подсобных хозяйств при недостаточном уровне развития специализированных фермерских хозяйств и кластеров, сокращение посевных площадей кормовых культур, деградация пастбищных угодий. Динамичный рост населения в Узбекистане ставит на повестку дня проблемы обеспеченности жителей республики основными продуктами животноводства. В статье рассмотрены некоторые предложения по решению соответствующих социально-экономических проблем.*

Ключевые слова: *сельское хозяйство, региональная организация, животноводство, продовольствие, земельные ресурсы, хозяйство.*

Introduction and problem statement. All branches of the economy of Uzbekistan, including the agricultural sector, are being renewed, new directions of development are expanding. New developments lead to increased employment and income of rural residents. At the same time, the strategy of long-term development of agrarian sectors, as well as agriculture,

effective use of land, labor, equipment and other resources in our country, attracting investments to agro-industrial sectors requires strengthening. In particular, it is necessary to develop agroclusters and support cooperative relations, to widely introduce scientific and theoretical concepts and principles of information and communication technologies and market mechanisms into the practice of the entire agrarian sector. This requires the implementation of complex research work to ensure mutual balance between the agrarian sector and its integral parts.

Ensuring food safety is a guarantee of ensuring the independence of Uzbekistan, socio-economic and political stability in the country. Situations such as natural disasters, lack of water for irrigating land, and droughts on earth as a result of climate change make it difficult to grow food products. As a result, prices in the world food markets are rising. Also, the world financial and economic crisis, which started in 2008 and is still ongoing, is causing this problem to become acute. It is a clear proof that the level of financial condition of families has decreased in 54 countries of the world, the majority of the population of more than 20 countries is suffering from hunger, the average life expectancy of the population has decreased in 12 countries, and more than 840 million people of the world are suffering from hunger in recent years [1]. That is why issues of ensuring food safety are given great importance all over the world.

Study of the problem. Theoretical and general methodological issues of territorial organization of agriculture are well covered in scientific literature. In economic geographical studies (Z.M. Akramov, V.G. Kryuchkov, K.I. Ivanov, K.I. Lapkin, A.M. Nosonov, V.A. Pulyarkin, A.N. Rakitnikov, A.N. Roziev, Yu.I. Ahmadaliev, E.K. Umarov, etc.) regional aspects of agriculture are reflected. Scientific researches in the field of land-water resources, agrolandscape, agroecology A.A. Abdulkasimov, L.A. Alibekov, L.N. Babushkin, Sh.S. Zokirov, A.G. Isachenko, A. Maksudov, V.A. Nikolaev, performed by scientists such as A.A.Rafikov.

Based on the market economy, in scientific works (S.Ch. Djalalov, T.Jumaev, A.N. Nigmatov, E.F. Trushin, H.R. Toshov, I.Hasanov, Sh.Imomov, A.Ro'ziev, Q.Allanov, B.Kalonov, R.Usmonov, A.Kholmirzaev, K.Khidiraliev, M.A. Faizulaev, F.T. Rajabov, J.A. Namozov) [8, 10, 12] more attention is paid to the aspects of the use of land and water resources, territorial organization of agriculture that meets the requirements of the time. In this regard, the regions where the land-water problem is considered acute have also been studied to a certain extent.A.

However, it should be noted that in most of the above studies, the development of agriculture was carried out in relation to the use of land or water resources, and no extensive scientific research was conducted on the territorial organization and development of the livestock industry. In particular, the economic, social, geoecological and geopolitical problems of the regions based on the conditions of economic modernization have not been comprehensively analyzed and researched. In addition, most of the work was done within the framework of the previous planned economy system. Therefore, in this dissertation, the economic-geographic features of the development of the livestock sector in Uzbekistan were studied in the context of the transition to market relations.

The aim and objectives of the work. The main directions of livestock breeding development, which is one of the main branches of agriculture, are analyzed and a number of economic geographical methods are used during the research. To achieve this goal, the following tasks were defined in the research work:

- to carry out literature analysis as part of the research;
- researching the mechanism of using traditional calculated methods for geography in the study of agriculture;
- to study the features of the regional organization of the cattle breeding network and the problems that have arisen in the field with the help of various methods or methods, approaches.

Materials and methods. In the research, an analysis of the literature on the topic was carried out, as well as the information of the Ministry of Agriculture of the Republic of Uzbekistan, the State Statistics Committee of the Republic of Uzbekistan, and the data of the author's direct observation in the regions were widely used. Geographical comparison, systematic approach, logical and comparative methods of analysis, economic-statistical analysis, mathematical statistics methods were used during the research.

Results and its discussion. Agriculture is an important source of meeting the needs of the country's population for food, raw materials of other sectors of the economy. Increasing the production efficiency of this sector has been one of the urgent issues of the economy. Animal husbandry is the most important branch of agriculture. It provides humanity with extremely vital food (meat and meat products, milk and milk products, eggs, honey), light industry with various raw materials (wool, leather, fur, black leather, tweed, etc.) is important [3, 7, 13].

The most recent evidence available suggests that the number of people unable to afford a healthy diet around the world rose by 112 million to almost 3.1 billion, reflecting the impacts of rising consumer food prices during the pandemic. This number could even be greater once data are available to account for income losses in 2020. The ongoing war in Ukraine is disrupting supply chains and further affecting prices of grain, fertilizer and energy. In the first half of 2022, this resulted in further food price increases. At the same time, more frequent and severe extreme climate events are disrupting supply chains, especially in low-income countries [15].

According to the Food and Agriculture Organization of the United Nations (FAO), 40 percent of the value of agricultural products in the world comes from livestock, which provides income and food security for about 1.3 billion people. At the same time, the introduction of efficient and sustainable methods of livestock production can ensure food security for many people and increase the role of livestock production in generating income.

One of the distinctive features of the economic reforms being carried out in Uzbekistan is their comprehensiveness and diversity. In this, of course, the country's spirituality, culture, and its own mentality, as well as its implementation based on the interests of the people, are manifested. After all, the establishment of a stable, developed and efficient economy based on socially oriented market relations requires the implementation of fundamental changes in many areas, including the agricultural sector.

Factors such as rising income levels, changing diets and population growth have made livestock farming one of the fastest growing sectors of agriculture in middle and low-income countries like Uzbekistan. This growth represents a major opportunity for smallholder farmers, agribusinesses and other actors in the chain along the livestock production (feeding) chain. However, on the other hand, this situation increases the demand for feed and land for raising livestock, and has a serious impact on natural resources and the environment [4, 5]. In Uzbekistan, agriculture is important in terms of employment and food security. 30 percent of employment and 25 percent of GDP are created in agriculture, so this sector is the most promising to stimulate the development of other sectors of the economy by providing production resources and products.

Structural changes are taking place in the livestock sector in our country. During the years of independence, the number of large cattle increased by more than 2.4 times, and the number of cows increased by more than 2 times. Also, the number of sheep and goats and poultry increased by more than 2 times during this period (Table 1).

As a result of the increase in the number of livestock, the share of livestock products in the total volume of agricultural products increased from 36.6 percent in 1990 to 41 percent by 2020. This was mainly achieved due to the increase in the number of livestock on farms. In 2020, 94% of cattle, 84.8% of sheep and goats, and 61.9% of poultry were owned by farmers and homesteads. As a result, in 1990-2020, the production of meat (in live weight) increased by 2.9 times, milk by 3.3 times, and eggs by more than 5.3 times (Table 2).

Table 1

The dynamics of the increase in the number of livestock in the Republic of Uzbekistan (at the beginning of the year, thousand heads)

Types of livestock	1991 year	2000 year	2010 year	2016 year	2020 year	In 2020 compared to 1991 in %
Large horned cattle	5112,6	5353,4	9094,7	11641,3	12154,3	237,7
Including cows	2120,2	2343,4	3758,1	4173,5	4729,4	223,0
Sheep and goats	10109,5	8932,5	15340,9	19118,8	22458,8	222,1
Birds	35200,4	14510,0	37733,3	61359,2	89588,7	254,5

It was compiled based on the information of the State Statistics Committee of the Republic of Uzbekistan.

In 2020, the gross product of animal husbandry increased by 2.3 times compared to 2016, from 64.8 trillion soums to 151.4 trillion soums. In 2020, the number of new vacancies in the livestock sector increased by 48% to 18,300. In the current year, almost 1.7 million people, including 458,000 workers, were officially employed in the livestock sector. In 2020, all categories of farms produced 2.6 million tons of meat in live weight (about 1.7 million tons in slaughter weight), which is 16% more than in 2015. In 2020, meat imports amounted to 95.2 thousand tons ($181.4 million), including 60.4 thousand tons of poultry meat ($57.5 million). As a result of the constant increase in the population, the country is not able to fully satisfy its needs with meat and meat products. In 2020, the most meat was imported from Belarus - 46%, Russia - 5% and Ukraine - 6%. Meat imports make up 5.7-6% of the total meat consumption in the country.

Table 2

Volumes of production of the main types of livestock products growth dynamics (thousand tons)

Livestock products	1991	2000	2010	2015	2020	In 2020 compared to 1991 in %
Meat (live weight)	789,1	841,8	1461,4	2033,4	2519,6	319,3
Milk	3034,2	3632,5	6169,0	9027,8	10976,9	361,7
Eggs, million pieces	1231,8	1254,4	3061,2	5535,4	7781,2	631,7

It was compiled based on the information of the State Statistics Committee of the Republic of Uzbekistan.

By the end of 2020, the total number of live cattle increased by 9% compared to 2016 and reached 12,154,000, while the number of cows increased by 10% in the same period to 4,729,000. The number of live goats and sheep increased by 12% and reached 22,458,000 in 2020. Kashkadarya - 1.67 million heads (12.3%), Samarkand - 1.65 million heads (12.1%) and Bukhara - 1.28 million heads (9.4%) are the leaders in terms of the number of cattle. These regions are leaders in the country in terms of supplying meat and milk.

Over the past five years, there has been a positive change in the number of live poultry, from 71,343,000 in 2017 to 93,132,000 in 2019. In 2020, the total number of poultry increased by 26% compared to 2017 and amounted to 89,588 thousand. Tashkent region - 15.5 million (17.3%), Samarkand region - 13.5 million (15.1%) and Fergana region - 8.6 million (9.6%) are the leading regions in poultry breeding. In 2020, 7,781 million eggs were produced, which is 22% more than in 2015.

In recent years, special attention has been paid to the development of fisheries in our country. A total of 173,800 tons of fish were produced in 2021, which is 20.7% higher than in

2020. In 2021, Khorezm (31.1 thousand tons), Samarkand (21.9 thousand tons) and Andijan (17.6 thousand tons) regions took the lead in fish cultivation.

In the rural areas of the country, cattle breeding is important as a guarantee for hard times, a precaution and a means of earning income. Livestock households (or peasants) are essentially semi-subsistence family farmers who farm on very limited land plots, usually less than 0.3 hectares, and sell only surplus products in the market. Despite the fact that farms usually have 3-5 animals, 90.7% of meat, milk and dairy products are supplied by farmers, and the rest is provided by farmers and agricultural organizations, which corresponds to the largest share of the total supply [9, 13, 16].

More than 90 percent of live cattle, 80 percent of goats and sheep, and 58 percent of poultry belong to livestock-raising households. Accordingly, 89% of meat, 94% of dairy products and 61% of eggs are supplied by them. However, the share of households in fish farming is low, and developing the sector or combining the sector with animal husbandry opens the door to additional opportunities for households.

Monthly per capita meat and milk supply has almost doubled over the past two decades, from 1.82 kg of meat in 2000 to 4.04 kg in 2021, while monthly per capita milk production has increased from 12 kg to 27 kg in 2021. increased. During the same period, the total volume of meat supply increased by more than 2 times, and the supply of dairy products increased by 2.2 times. Nevertheless, in the last five years, there have been no significant changes in the supply of meat and milk per capita, this situation is associated with the rapid growth of the population, and with the increase in the supply and productivity of these products, the production possibilities for the available resources in the country have reached their upper limit.

As a result of the implemented institutional reforms, structural changes, production modernization activities, the volume of production in the livestock sector is growing relatively steadily. As a result of the reforms, the activities of 103 cooperative livestock farms in Uzbekistan were restructured, and 36 of them were left as breeding limited liability companies (LLC). It is known that the effective management of the cattle-breeding sector depends first of all on keeping the breed of the sheep on a scientific basis and feeding them with feed based on the ration. In recent years, the main reason for the production and financial condition of the farms specializing in pasture cattle breeding is the loss of the breeding work, the fact that the farms have not been able to raise the female sheep and rams separately on a scientific basis, the measures to improve the biodiversity of the pastures have not been carried out continuously and sustainably, and other such urgent issues. is considered

The results of the research showed that in cattle breeding, pastures should always be seasonally changed, that is, conditions should be created for natural regeneration of pastures, livestock should not be grazed in these areas for a while. The increase in the number of livestock under the management of Karakolchilik breeding LLCs is relatively stable, at a low rate, and it is possible to practice alternating feeding of livestock on pastures. But in some places, the chronic grazing of unaccounted sheep of shepherds and other citizens in the pastures together with the sheep of the LLC causes non-compliance with the system of grazing from pastures. As a result of monographic observations, due to the fact that the population lives in the villages, the number of domestic jaidari, relatively high-productivity livestock belonging to meat breeds is increasing. As a result, there is an increase in the amount of degraded pasture land around villages, wells and wells, the loss of existing desert forage plants, the number of harmful, non-livestock-eating plants and the expansion of the areas they occupy are increasing. According to the results of our scientific observations, local residents in many cases work in the manner of "the more the number of goods, the higher the income" in order to fully satisfy their family needs. As a result, they use pastures around villages for chronic livestock grazing without considering the productivity of available fodder plants. This situation ultimately causes an increase in the amount of degraded areas in these pastures. In recent years, it has been demanded to introduce modern methods aimed at diversifying production in cattle breeding, ensuring product production in accordance with market requirements, and increasing farm income.

It should be noted that the pasture areas used for cattle breeding are not evenly distributed across the regions. In this regard, Navoi region and the Republic of Karakalpakstan occupy the highest place. Farms of Bukhara and Kashkadarya regions have 2.6 and 1.5 million hectares of pasture land. The total area of pastures in the territory of Uzbekistan (desert, semi-desert, foothills and mountains) is 21 million 100 thousand hectares. When analyzing the existing pastures and hay fields in our republic by 4 altitude regions (desert, hills, mountains, pastures): in the desert region, their share is 78.1%, in the hills - 15.2%, in the mountains - 4.5%, and in the pastureland - 2.2%. In the desert region, pasture livestock, especially cattle breeding, is a developed area. Annual precipitation in this region is 100-250 mm, average annual air temperature is around +15 °C. For example, in Termez, the temperature in summer is up to +48-50 °C, and in winter -18-20 °C is cold, while in the northern regions of our republic (the Republic of Karakalpakstan and Khorezm region) in summer the temperature is up to +45-49 °C, and in winter sometimes - 30-35 °C will be cold. If we look at the current condition of the pastures, it shows that almost 40% of the areas used for cattle breeding are in crisis at different levels. In particular, it is 43.8% in Navoi region, 43.4% in the Republic of Karakalpakstan, 37.6% in Bukhara, 23.4-25.4% in Samarkand, Kashkadarya, Jizzakh regions [6].

Analysis of statistical data shows that due to the collapse of pastures, their feed productivity indicators have also decreased significantly in the last 10 years, from 2.4 quintals per hectare to 1.8 quintals, or 21 percent. The decrease in productivity across regions is as follows: Karakalpakstan-27, Bukhara-18.5, Jizzakh-16.9, Navoi-26.5, Samarkand-11.0, Kashkadarya-6.2, Surkhandarya-17.4%. The factors causing the crisis in the republic's desert-pasture animal husbandry are certainly different: for example, their total number is more than 45, and 87 percent are directly related to human activity; the remaining 13 percent are natural processes. For example, the highest crisis (about 44 percent) corresponds to changes in vegetation cover; the rest (56%) are cumulative factors, including deflation (sand migration) - 12%, salinization - 9%, water erosion - 6%, man-made and other factors - 31% [2, 11].

A number of government programs have been developed in the field of agriculture, including increasing the production of livestock products, eliminating existing problems, and developing the sector. In particular, by the decision of the President dated 8.02.2022, the program for the development of the livestock sector and its branches in the Republic of Uzbekistan for 2022-2026 was approved. The program is aimed at ensuring food security by increasing the production of livestock products, wide introduction of modern methods of production, development of cooperative relations, state support of the livestock sector. Its priorities are:

- stable provision of livestock products to the population and expansion of production opportunities in livestock and its industries;
- to strengthen quality control in the livestock sector, to increase the volume of production of competitive export-oriented products;
- effective use of natural resources and systematic implementation of environmental protection, taking measures for rational use of land and water resources;
- further development of infrastructural services in the field of animal husbandry, improvement of their quality and expansion of types, wide introduction of modern market principles in this field;
- to modernize the livestock production network, to diversify and support the sector, to increase the flow of private investment and foreign capital, as well as to introduce mechanisms to increase investment attractiveness;
- development of standards for products produced from one hectare of irrigated and dry land in order to increase productivity of livestock and ensure efficient use of allocated areas.

Also, the "Roadmap" for the implementation of the tasks set in the program for 2022-2026 for the development of the livestock industry and its industries in the Republic of Uzbekistan in 2022 was approved.

In recent years, the number of plants in grassland-desert regions has been decreasing in Uzbekistan, especially plants with high nutritional value. In fact, the productivity of pasture land is not very high, in good years it is possible to harvest only 3-4 centners per hectare. Today, 21 million people live in the grassland-desert region of Uzbekistan. 23 million per hectare. sheep and goats are being grazed. Deserts such as Kyzylkum, Qarnobchol, Karakum play a special role in the development of pasture livestock. The decline in productivity of these fields has intensified in recent years. As a result, pastures were degraded. The first sign of this is when the desertification process increases. For example, while 85 types of plants were found in Karnobchol, today you can find only 4-5 different types of plants. In addition, the fact that most of these plants are not suitable for livestock feed makes the issue of increasing nutritional plants in pastures urgent. Therefore, in the first direction, it is necessary to increase the seeds of high-nutritive and productive plants and plant them in the pastures, and thus the productivity of the pastures can be increased.

In the intensive development of animal husbandry, it is appropriate to pay attention to the production of fodder from irrigated lands. There are very productive crops that produce at least 10-20 thousand units of food per hectare. It is possible to create new varieties of them, introduce them into production, introduce them to farmers, and then move on to the main process of reducing the cost. Breed is of great importance in reducing the cost of animal husbandry. Then there is the preparation of the feed ration of the animal, prevention of health care, etc. If the factors listed above are one side of increasing productivity, fodder production itself is one side, that is, fodder production is 60 percent. It follows that the work should begin with the cultivation of food. If we pay attention to the USA or developed European countries, it is precisely because of the high feed unit that led to the achievement of high indicators in animal husbandry. In the intensive development of animal husbandry, the strength of the feed base plays a key role. The country does not have a lot of land resources, but it is possible to use it effectively, and the nutritional value of the product can be doubled as a result of secondary processing.

In the livestock sector, traditional methods are mainly used, and the scope of using modern technologies for farming methods without land areas and pastures is limited. Today, the following main problems have arisen in the livestock sector:

- High dependence on livestock feed imports and limited areas for fodder cultivation. In the 1990s, the area devoted to livestock feed was about 1 million hectares, and in the past two decades, the livestock sector has doubled, but the area devoted to animal feed has shrunk by a factor of three. Meanwhile, the population increased by 15 million people. Only 40% of livestock feed is produced in the country, the rest is imported. In 2021, Uzbekistan imported $163 million worth of feed and fodder, including $3.8 million from Kazakhstan, $26 million from Russia, $3.5 million from Ukraine, $58 million from Argentina, $25 million from Latvia, and $22 million from Lithuania.

- Degradation of pasture lands. The total pasture area in Uzbekistan is 23 million hectares or half of the entire territory. In the last 15-20 years, pastures have been degraded (especially in deserts) due to improper use of pastures and lack of necessary agrotechnical measures. The main causes of land degradation are wind and water erosion processes. Hillside plowing, improper irrigation practices, and livestock grazing have led to extensive erosion of all types of soil. In most areas with a large number of livestock, pasture management is not well established at the local level, which has a negative impact on the overall development of farmers [17, 19]. In addition, in Uzbekistan, farmers engaged in animal husbandry, planting and cultivation of fodder crops, storage of feed, standard feeding are not kept.

- Low productivity on farms. The main part of livestock products falls on the share of households, but in these farms, the annual milk production per cow is 1.5% less than that of large farmers, slaughter animals weigh 30% less, and the number of eggs obtained by farmers from each hen is 2 times lower. According to the World Bank, there is a huge untapped potential for more rapid development of agricultural holdings and high employment of many

unemployed people in rural areas, as well as creating opportunities for income generation. However, this requires the training and education of professionals for the sector, as the methods used by them need to be radically modernized to meet the growing demand. Smart feeding of livestock and timely detection of diseases should be the most important goal of training. The share of large commercial farms is not very large compared to peasant farms. Therefore, if measures are taken to support them, Uzbekistan can turn from a net importer of livestock into a net exporter. In particular, it allows reducing the impact of external shocks on food prices and meeting the growing demand in the market [18].

- Disproportion of land areas allocated for livestock feeding to the number of cattle. That is, no matter how much a farmer wants to expand cattle breeding or beef farming, he will not be able to develop his business if he is not allocated enough arable land. Therefore, the amount of meat and dairy products he produces will not increase. In addition, there are also problems with buying mixed fodder from stock exchanges. No attention is paid to proper feeding of imported cattle based on rations, and there are not enough qualified specialists in the treatment of diseases. Most of the farms are keeping livestock with low productivity. There are almost no large fattening farms producing meat products. Livestock development is hindered by circumstances such as the fact that incomes from the sale of products are not transferred through bank accounts, and the system for working with processing enterprises has not been created.

- Climate change. In Uzbekistan, the impact of climate change on livestock has not been sufficiently studied, but it is expected to have negative consequences due to heat stress and a decrease in livestock productivity. According to the climate profile of Uzbekistan, as a result of global warming, the temperature in Central Asia may rise to a higher level than in other countries (an additional 4.5°C by 2099). Precipitation is expected to decrease, which will increase the burden on animal feed production and contribute to rangeland degradation if not managed at the community level. Due to the reduced availability of water, keeping animals becomes a difficult and unprofitable task. Therefore, it is important to obtain public investment to create intensive agriculture that relies on knowledge and uses small land areas.

Conclusions. Based on the experience of foreign countries, it is appropriate to implement the following measures in order to increase the productivity and profitability of the livestock sector:

- introduction of non-traditional annual forage crops such as sorghum, triticale, barley and oats, and perennial legume forage crops such as alfalfa and aspartame (supplemented with corn as feed);
- introduction of the concept of determining the types of fodder in summer and winter pastures, as well as their productivity, alternating grazing, planting and restoration of pastures;
- training of farmers and representatives of local non-governmental non-governmental organizations on sheep and goat keeping, feeding, medical services, fodder cultivation and storage methods;
- introduction of new methods (for food production) such as aquaponics and hydroponics, which should be developed and promoted throughout the country;
- Acceleration of artificial insemination of high-breed cattle with a high meat and milk conversion coefficient per feed unit and resistant to various diseases, in particular, climate change, by the State Committee for Veterinary and Animal Husbandry Development;
- attracting farmers to agroclusters in order to expand the market access opportunities, reduce risks and increase economic profit;
- development of a comprehensive market of agricultural insurance with state support to compensate farmers for losses caused by drought, disease and other types of disasters;
- in order to develop animal husbandry, to organize large livestock complexes of no less than 1000 heads in rural districts based on the cluster system, and to allocate 40-50 thousand hectares of land in these districts for the cultivation of animal feed, and to establish a "Model

Livestock Farm" in each district, to ensure food security in the country is of great importance in providing.

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For citation:

Faizullaev M.A. (2023), Economic geographical characteristics of the development of livestock in Uzbekistan in the context of ensuring the food security of the republic, *Central Asian journal of the geographical researches*, No 1-2, pp. 110-119.

Для цитирования:

Файзуллаев М.А. Экономико-географическая характеристика развития животноводства в Узбекистане в контексте обеспечения продовольственной безопасности республики // Центральноазиатский журнал географических исследований. 2023. № 1-2. С. 110-119. (На англ. яз.).