

DIGITALIZATION OF VETERINARY SERVICES IN LIVESTOCK FARMING SYSTEM IN THE REPUBLIC OF TAJIKISTAN: PROBLEMS AND WAYS OF SOLUTION

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Annotation. In this article considered problems in the field of livestock farming in the agricultural sector of the Republic of Tajikistan. Also, one of the issues related to this area is the timely provision and implementation of veterinary services and problems are considered and ways of its development are proposed. Another important problem is the introduction of digital technologies in livestock farming, especially in veterinary services, where existing problems and development paths are presented.

Key words: agricultural sector, livestock farming, veterinary services, public programs, digital technology, industry digitalization, industry development.

Аннотация. В данной статье рассматриваются проблемы в сфере животноводства в аграрном секторе Республики Таджикистан. Также, одним из вопросов, связанных с этой сферой, является своевременное предоставление и реализация ветеринарных услуг. Рассматриваются проблемы и предлагаются пути их развития. Другой важной проблемой является внедрение цифровых технологий в животноводство, особенно в ветеринарные услуги, где представлены существующие проблемы и пути развития.

Ключевые слова: аграрный сектор, животноводство, ветеринарные услуги, государственные программы, цифровые технологии, цифровизация отрасли, развитие отрасли.

Annotatsiya. Ushbu maqolada Tojikiston Respublikasi qishloq xo'jaligi sohasida chorcachilik duch kelayotgan muammolarni ko'rib chiqiladi. Shuningdek, tegishli masalalardan biri veterinariya xizmatlarini o'z vaqtida ko'rsatish va amalga oshirishdir. Ushbu muammolar muhokama qilinib, ularni takomillashtirish yo'llari taklif qilinadi. Yana bir muhim masala - chorcachilikka, xususan, veterinariya xizmatlariga raqamli texnologiyalarni joriy etish. Qolaversa maqolada mavjud muammolar va ularning echimlari yoritib berilgan.

Kalit so'zlar: qishloq xo'jaligi sektori, chorcachilik, veterinariya xizmatlari, davlat dasturlari, raqamli texnologiyalar, sanoatni raqamlashtirish, sanoatni rivojlantirish.

Introduction. Livestock farming is one of the components of the agricultural sector of the economy of Tajikistan, which, in terms of total agricultural production in the country, ranks second after crop production. Along with this, this industry occupies an important place in the national economy, providing the country's

population with food products (meat and dairy products) and raw materials (wool and leather).

Literature review. Recent studies emphasize that the sustainable development of livestock farming largely depends on the efficiency and accessibility of veterinary services. Scholars note that timely veterinary care, disease prevention, and proper monitoring systems play a crucial role in increasing productivity and ensuring food security in developing countries. In this context, researchers highlight that insufficient infrastructure, lack of qualified personnel, and limited access to services in rural areas remain key constraints, which require systematic reforms supported by state programs and institutional development.

Research methodology. This study is based on a combination of qualitative and quantitative research methods. The research uses statistical data from national and international sources, legal and regulatory documents, and analytical reports related to livestock farming and veterinary services. Methods of comparative analysis, system analysis, and logical generalization were applied to assess existing problems and identify the role of digital technologies in improving veterinary services. In addition, descriptive analysis was used to evaluate current trends and to propose practical recommendations for the development of digital veterinary systems.

Analysis and results: Consequently, it ensures food security, rural employment, and is a source of income for numerous family farms. Despite this, the sector faces a number of challenges, from limited access to services (veterinary care, feed supplies, pasture management) to inadequate technological equipment.

Table 1.

Livestock production in all categories of farms, tons

Livestock products	Years									2023 to 2020, in %
	1991	2000	2005	2010	2015	2020	2021	2022	2023	
Meat and poultry, thousand tons	150,7	59,3	107,4	143,2	217,7	300,2	327,7	349,1	398,0	132,6
Milk, thousand tons	587,2	317,8	533,0	660,8	888,9	1020,9	1042,6	1064,2	1118,5	109,6
Eggs, million pieces	454,3	32,9	98,7	231,9	357,3	983,1	1053,5	1212,2	1223,7	124,5
Wool	4432	2059	4353	5771	7033	8017	8152	8376	8755	109,2
Cocoons	4519	1955	3246	1080	835	388	451	393	223	57,5
Honey	593	185	1520	2969	3853	4221	4390	4565	4697	111,3

Source: Regions of Tajikistan 2024. Statistical collection: Agency on Statistics under the President of the Republic of Tajikistan, Page. 249-266

It's particularly noteworthy that livestock production in 2023 will be twice as high as in 1991, and honey production will be eight times higher. However, despite these positive results, cocoon production is declining by nearly eightfold. The

reasons are high costs, labor intensity of the work, the dismantling of cocoon production farms and the migration of highly specialized specialists and the working population.

It should be noted that the Government of the Republic of Tajikistan has undertaken a number of regulatory documents to develop the livestock industry in the field of veterinary services, and one of them is the Law of the Republic of Tajikistan "About Veterinary" (from December 29, 2010, №674).

This Law defines the legal, social, organizational, financial and economic foundations of activity in the field of veterinary and is aimed at ensuring veterinary-sanitary welfare, protecting the population from diseases common to animals and humans, the safety of products and raw materials of animal and plant origin, feed and feed additives for animals [2].

In this context, the following necessary measures can be taken to improve and develop veterinary services in the livestock sector:

- ✓ it is necessary to strengthen the infrastructure of veterinary services. This requires the creation of modern veterinary clinics and laboratories in rural areas, especially in regions with low population density or in remote areas;

- ✓ to improve the qualifications of veterinary specialists, i.e. it is necessary to organize regular special courses, seminars and trainings, as well as the introduction of international standards and best practices in the veterinary service;

- ✓ development and implementation of special courses on vaccination and disease prevention for industrial livestock and poultry at the national level. This requires veterinarians to organize mandatory specialized courses on vaccination against common diseases and ensure vaccine accessibility for farmers in sparsely populated regions and remote areas;

- ✓ support and encourage the introduction of modern digital technologies in the country's agricultural livestock sector by implementing a system for electronic recording of industrial animals and monitoring their health, as well as the use of mobile applications for timely information to farmers and veterinarians;

- ✓ on the part of the state, the creation of a financing system, the provision of subsidies and grants for rural farmers for the purchase of veterinary drugs and equipment, as well as the development of lending programs for the development of veterinary centers;

- ✓ develop cooperation and interaction with international organizations (WHO, UN) and foundations to obtain technical and financial support for farmers, as well as the implementation of advanced experiences and best global practices in the country's livestock industry;

- ✓ organizing educational initiatives to inform farmers about the importance of veterinary measures and the prevention of common diseases, as well as conducting educational campaigns on hygiene and care of industrial animals;

- ✓ improve animal disease surveillance and control. Therefore, the state must develop and implement the "Unified Health of Industrial Animals" program to improve surveillance of common diseases occurring in livestock systems;

✓ it is necessary to develop cooperation to ensure transparent reporting for early warning of cross-border disease spread and emerging zoonoses;

✓ development and support the systems of science and scientific research in the field of veterinary and animal science, as well as the creation of scientific centers and laboratories for the development of new methods of diagnosis and treatment of diseases of industrial animals;

✓ improve legislation in the field of veterinary with the introduction of digital technology;

✓ training qualified personnel in the development and use of software products in the field of veterinary and the implementation of innovative projects.

The proposed measures can significantly improve the quality of veterinary services, reduce animal disease rates, thereby contributing to increased agricultural productivity and ensuring the country's food security.

Despite the measures taken, in our opinion, a number of problems can be identified in the field of veterinary services in livestock farming: insufficient availability of services in regions with low density population or in remote areas; lack of training and information for farmers and the public on animal health and care issues, which can lead to incorrect diagnosis and treatment, as well as lack of access to necessary veterinary drugs due to limited supply or high prices; high costs of provided services, which can be a deterrent to obtaining the necessary medical care for animals; lack of coordination and integration between the various organizations and agencies providing veterinary services, which may result in duplication of efforts or insufficient coverage of certain areas; lack of regional consultation centers for veterinary services, which causes their low quality; lack of specialized points for the distribution and storage of medicines for animals and birds, as well as specialized centers for the study and prevention of various diseases of animals and birds.

In this regard, it is necessary to create appropriate conditions for the formation and organization of the above-mentioned problems in the field of veterinary services.

It should be noted that, the current development of information technology and the focus on digitalization of the economic space are driving growing demand for digital services across all sectors of the economy. Based on this, the Government of the Republic of Tajikistan has taken a number of measures to implement and develop digitalization of the economy for the future.

In the latest Address by the President of the Republic of Tajikistan, Emomali Rahmon, to the Majlisi Oli, "On the Main Directions of the Domestic and Foreign Policy of the Republic of Tajikistan," 2025-2030 was declared the "Years of Development Digital Economy and Innovation." This initiative reflects the strategic importance of integrating digital technologies into all aspects of the country's socio-economic life [1].

Based on the above, the ways to solve problems in the field of veterinary services in livestock farming, in our opinion, are following:

1. Development of personnel resources – organization of ongoing advanced training courses for veterinarians, introduction of professional retraining programs for young specialists, creation of veterinary educational and practical centers at agricultural universities and colleges;

2. Modernization of veterinary infrastructure – equipping veterinary laboratories with modern equipment for diagnosing infections, organizing mobile veterinary clinics for remote areas, and providing all clinics with refrigeration units for storing vaccines;

3. Expanding farmers' access to services – developing public-private partnerships in veterinary: creating joint service centers, introducing a system of preferential loans and subsidies for animal vaccinations;

4. Digitalization of the veterinary system – development of a national electronic database of animals, introduction of electronic veterinary passports;

5. Support for the private sector and entrepreneurship – simplification of registration procedures for private veterinarians, introduction of tax incentives and grants for the development of veterinary start-ups, development of veterinary cooperatives uniting farmers and specialists to jointly provide services;

6. International cooperation – active participation in FAO, IFAD, GIZ and EU programs for the development of veterinary services, attracting investments for the creation of regional centers for the diagnostics and certification of livestock products, as well as using the experience of neighboring countries (Kyrgyzstan, Kazakhstan, Uzbekistan) in digital recording and control of animals.

In conclusion, it should be noted that innovative approaches to the development of services in the livestock system of Tajikistan open up significant opportunities for improving the efficiency, sustainability and quality of the above-mentioned branch. The reform of veterinary service is a strategic direction for the development of agrarian sector of Tajikistan. Solution to existing problems is possible only through by complex innovative approaches such as human resource development, digitalization, infrastructure modernization and strengthening public-private partnerships.

Literature

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