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PUBLIC SUPPORT OF VETERINARY SYSTEM OF THE REPUBLIC OF KAZAKHSTAN

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ ВЕТЕРИНАРИЯ ЖҮЙЕСІН МЕМЛЕКЕТТІК ҚОЛДАУ

ГОСУДАРСТВЕННАЯ ПОДДЕРЖКА СИСТЕМЫ ВЕТЕРИНАРИИ РЕСПУБЛИКИ КАЗАХСТАН

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Abstract. Public support measures in the veterinary system of Kazakhstan play an important role in ensuring animal health in the country, which affect domestic and international trade, the movement of animal products. Currently, the economy of the republic is aimed at expanding the export potential in the livestock sector, therefore, public support in veterinary medicine deserves special attention. The purpose of this study is to analyze the dynamics of veterinary measures funded by the State, as well as to study the relationship between measures of State assistance to the veterinary sphere and the dynamics of animal diseases in Kazakhstan. The results of the study revealed that public support measures for the public veterinary system are growing along with the number of outbreaks of livestock diseases, in particular, the most common chronic disease - animal brucellosis. Registration of the site of this disease increases annually along with an increase in the cost of laboratory tests for the diagnosis of this disease. This situation indicates a low efficiency of the implemented veterinary measures, which do not have a positive effect on the health status of livestock and veterinary safety in the country. Based on this, it is necessary that the government should take operational measures aimed at reducing the number of outbreaks, improving the state of animal health and strengthening veterinary safety in the republic. According to the results of the study, a number of recommendations were developed that take into account new approaches to measures of veterinary protection for preventive purposes.

Аңдатпа. Қазақстанның ветеринариялық жүйесінде мемлекеттік қолдау шаралары елдің аумағында малдардың денсаулығын қамтамасыз етуде маңызды рөл атқарады, олар ішкі және халықаралық саудаға, малдан алынатын өнімдердің орын ауыстыруына әсер етеді. Қазіргі уақытта республика экономикасы мал шаруашылығы саласындағы экспорттық әлеуетті кеңейтуге бағытталған, сондықтан ветеринариядағы мемлекеттік көмек ерекше назар аударуға тұрарлық. Осы зерттеудің мақсаты мемлекет қаржыландыратын ветерина-

риялық шаралардың динамикасын талдау, сондай-ақ ветеринарлық саладағы мемлекеттік жәрдем шаралары мен Қазақстандағы мал басы ауруларының динамикасы арасындағы өзара байланысты зерттеу болып табылады. Зерттеу нәтижелері көрсеткендей, мемлекеттің ветеринариялық жүйесін мемлекеттік қолдау шаралары мал ауруларының өршу санымен, атап айтқанда, аса таралған созылмалы ауру – жануарлардың бруцеллезімен бірге өсуде. Осы аурудың ошақтарын тіркеу жыл сайын осы аурудың диагностикасы бойынша зертханалық зерттеулерге жұмсалатын шығындардың өсуімен бірге ұлғаяды. Мұндай жағдай мал басының денсаулығына және елдегі ветеринариялық қауіпсіздікке оң әсер етпейтін іске асырылатын ветеринариялық шаралардың тиімділігінің төмендігін көрсетеді. Осыны негізге ала отырып, мемлекет тарапынан мал ауруларының өршу санын азайтуға, денсаулық жағдайын жақсартуға және республикада ветеринариялық қауіпсіздікті күшейтуге бағытталған жедел шаралар қабылдау қажет. Зерттеу нәтижелері бойынша алдын алу мақсатында ветеринарлық қорғау шараларына жаңа тәсілдерді ескеретін бірқатар ұсыныстар әзірленді.

Аннотация. Меры государственной поддержки в ветеринарной системе Казахстана играют важную роль в обеспечении здоровья животных на территории страны, которые влияют на внутреннюю и международную торговлю, перемещение продуктов животного происхождения. В настоящее время экономика республики нацелена на расширение экспортного потенциала в животноводческой отрасли, поэтому государственная помощь в ветеринарии заслуживает особого внимания. Целью данного исследования является анализ динамики ветеринарных мер, финансируемых государством, а также изучение взаимосвязи между мерами государственного содействия ветеринарной сфере и динамикой болезней поголовья животных в Казахстане. Результаты исследования выявили, что меры господдержки ветеринарной системы государства растут вместе с числом вспышек заболеваний скота, в частности, наиболее распространенная хроническая болезнь – бруцеллез животных. Регистрация очагов данной болезни ежегодно увеличивается вместе с ростом расходов на лабораторные исследования по диагностике этого заболевания. Такая ситуация указывает на низкую эффективность реализуемых ветеринарных мер, которые не оказывают положительного влияния на состояние здоровья поголовья скота и ветеринарную безопасность в стране. Исходя из этого, необходимо принятие оперативных мер со стороны государства, направленных на уменьшение количества вспышек, улучшение состояния здоровья животных и усиления ветеринарной безопасности в республике. По результатам исследования разработан ряд рекомендаций, учитывающих новые подходы к мерам ветеринарной защиты в превентивных целях.

Keywords: veterinary system, animal health, chronic diseases, brucellosis, diagnostics, State regulation, livestock industry, export potential.

Түйінді сөздер: ветеринария жүйесі, малдардың денсаулығы, созылмалы аурулар, бруцеллез, диагностика, мемлекеттік реттеу, мал шаруашылығы саласы, экспорттық әлеует.

Ключевые слова: система ветеринарии, здоровье животных, хронические болезни, бруцеллез, диагностика, государственное регулирование, животноводческая отрасль, экспортный потенциал.

Introduction. Since 1991 Kazakhstan has undergone through the major social, economic and political transformations over the last quarter century. The agricultural sector has experienced difficult times in this period including the livestock production. The share of GDP in agriculture dramatically fell down by five times [1]. The labor force in agriculture, including forestry and fishery, was declined by two and half times. The share of labor force at ages 15-28 also decreased by one-forth. The farm animal population decreased, in particular small ruminants by two times, cattle and poultry by one third [2].

Along with the membership to the Eurasian Economic Union (2014) and the World Trade Organization (2015), the development of world trade and integration processes poses a serious threat to international trade with the livestock products including live animals [3]. Therefore according to the WTO rules the state support measures aimed at protection of animal health and food safety are considered as “Green box” subsidies and allowed without limits.

In this light, the effectiveness of veterinary measures funded by governments plays an essential role in development of livestock production and expanding its trade capacity. Especially the important ones are preventive veterinary measures that include vaccination campaign and laboratory tests in live animals. These veterinary measures help to prevent

from animal disease outbreaks that consequently allow avoiding the undesirable economic losses.

The veterinary system of Kazakhstan is responsible for animal health and food safety issues. Within the last twenty years there were institutional changes in the veterinary system of Kazakhstan that affected the livestock development. The Government annually provides funding of the veterinary measures in order to prevent introduction and spread the animal diseases throughout the territory. However, despite these state support measures in veterinary, there are still challenges related to unfavourable epizootic situation in the country.

The objective of this study is to analyse the public expenditures on veterinary measures and propose recommendations on the new approaches to the development of preventive veterinary measures.

Material and methods of research. In the study there were used peer-reviewed publications, legal regulations, official reports and state funding programmes in relation to veterinary system of Kazakhstan, financial support of government in agriculture and animal health fiends. The study analysed the expenditures for certain veterinary measures from the state budget in the period from 2002 to 2019 in order to have larger confidence. However some data analysed are in the period to 2014, due to difficulties the gain such statistics from the veterinary authority. Therefore all data used in this article mainly derived from the state programs and other available resources.

The content-analysis method was used for the reviewing the texts of the state policies in the veterinary system of Kazakhstan. In addition, the quantitative and methods were used to analyse the dynamics of the state expenditure on veterinary measures.

State financial support of agriculture includes both direct and indirect investments [4]. Direct governmental financial support in foreign countries includes direct government compensation payments; payments for damages caused by natural disasters [5] and by production restructuring (payment for acreage reduction, forced livestock slaughter, etc.); subsidies per livestock (animal head) or population; funding for procurement of production resources (subsidies for purchase of fertilizers, pesticides and animal feed).

Results and their discussion. Agricultural support is significant for developed and developing countries. Particularly countries with a high value added of agriculture is the most interested in supporting of their agricultural sector. For example, state support of agricultural producers in the European Union is around 39%, in the United States - 36% and in Japan - 15%. The share of public support in the EU total production made 36%, in the United States – 39% and in Japan - 37% [6].

A number of OECD countries started to reduce their overall support of agricultural producers in order to shift agricultural policies from its distorting effects to focusing on more targeted measures in the 2000 s. However, these efforts were stalled since 2010. These conclusions were made by the OECD experts based on the results of agricultural policy studies in 53 countries and highlighted in the last annual report on «Agricultural Policy: Monitoring and Evaluation» [7]. There are three major indicators outlined in the OECD report: producers support, consumers support and general services support. Around 70% of all transfers in agriculture are taken by the support to producers that have strong market distorting effects. This creates a gap between internal and international market prices. General support measures have less distorting effects on the world market however they are often much lower than support to producers in many countries. It is suggested that an increase of investments in general support might enable sustainable development and productivity in agriculture.

Food security of any country is characterized by two main aspects – the share of imported food products and (quite often) by low quality of these products. States not only support production by administrative price regulation and subsidized payments, but also by increasing competitiveness of their agricultural sector. They actively provide general services for national agricultural producers, which include introduction of innovative technologies, support of marketing, financial and transport infrastructure, insurance costs, development of consulting in rural areas, upgrade of rural infrastructure and veterinary services.

Several articles about the current state of agro-industrial complex of Kazakhstan has shown that agriculture as a branch of economic activity and its role and importance in the socio-economic development is explored in publications of numerous Kazakhstani researchers [8]. They examined the development of market relations in the agrarian sector of the economy and modern aspects of agricultural production management in the risk conditions, taking into account the management decisions optimizations.

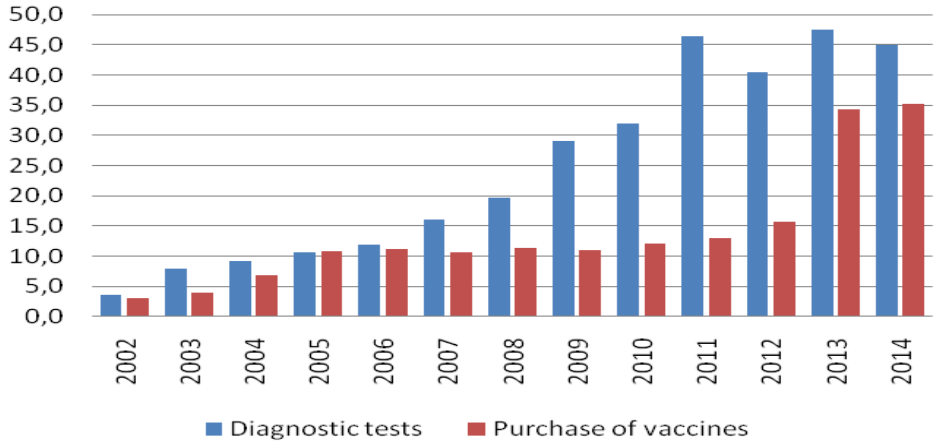
Some researchers have been studying the branches of agriculture from the standpoint of the strategic objectives implementation analyzing the methods of the competitiveness of local producers [9].

However, above mentioned studies are about the development of agriculture and general state support measures in this sector. There is no concrete study on analysis of public expenditures of the state support measures in the veterinary system.

The veterinary measures in Kazakhstan mainly aimed at prevention of the animal diseases from introduction and spread throughout the territory, and monitoring of animal diseases in order to maintain the existing risks that are present in the country. There are a number of veterinary measures funded by the central budget. They include vaccination against certain highly contagious animal diseases, blood samples, and labo-ratory tests, eradication measures on acute and chronic animal diseases, transportation and storage of veterinary medicines, animal identification procedures, and food safety measures and maintain of veterinary laboratories and state veterinary divisions. For the purpose of this study there were selected two main preventive veterinary measures, where spent almost half of the total public expen-ditures allocated to the veterinary system: vaccination against certain animal diseases and laboratory tests for monitoring purpose.

There is important to note that vaccination campaign include state purchase of the veterinary medicines (vaccines), transportation (delivery to rayons and villages), storage and administering the vaccines (injections) to live farm animals. All these manipulations are funded from the state budget. The study analysed the public expenditures on purchase of vaccines against certain animal diseases. In terms of laboratory tests of blood samples collected from the live farm animals there were analysed the budget expenses on monitoring of animal diseases.

Public expenditures on veterinary measures had annual stable growth in the period from 2002 to 2019 (figure 1). This growth mainly related to the annual increase in the number of farm animals subject to vaccination and blood samplings. Such dynamics possibly directly linked with regular changes and updates in animal disease control programmes based on epizootic situation in the previous years. The funding of the laboratory tests was always more than public expenditures on purchase of vaccines. The highest differences in public expenditures between two major veterinary measures were recorded in 2007-2012. Probably this was a result of implementation of a new strategy on brucellosis in farm animals introduced in 2007 by the veterinary authority.



Source: Committee of veterinary control and surveillance

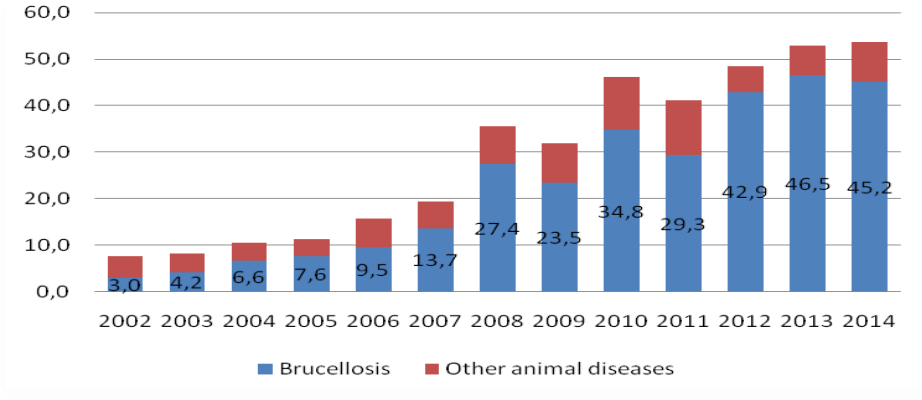
Figure 1 - The public expenditures on veterinary measures in Kazakhstan in 2002-2014 ($ mln)

There was analysed the structure of public expenditures on monitoring of animal diseases through the laboratory tests (figure 2). The share of expenses on laboratory tests on brucellosis in 2002 was equal to around 40%. Since then its share largely increased in the last years by two times and reached by 84% of the total budget for laboratory tests in 2014.

The dynamics of the laboratory tests on brucellosis have a stable annual growth since 2002 (figure 3). The number of laboratory tests of bovines increased by one third, small ruminants and other animals by more than four times in 2014. Other animals include equids, suids, camelids and deer (called marals).

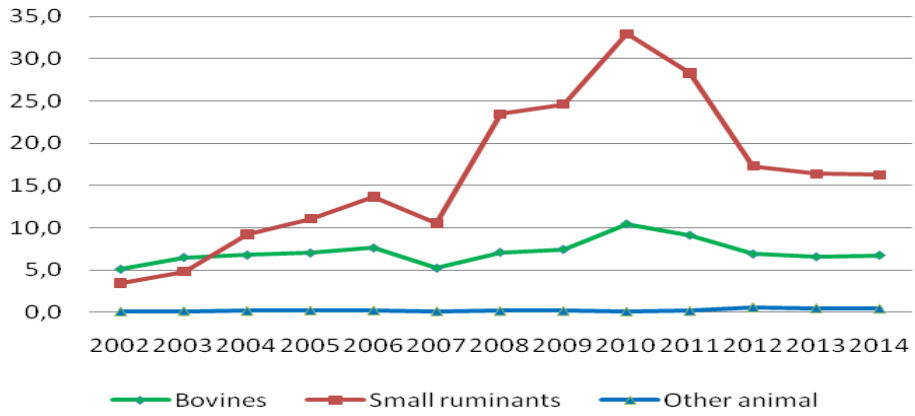
At the same time the number of registered outbreaks on Brucellosis in Kazakh-stan surged by 4 times in bovines and by 5 times in small ruminants (figure 4). There was a sharp rise in the registered outbreaks of this disease in small ruminants in 2006 from 40 to 178 outbreaks. The dynamics of brucellosis out-

breaks demonstrated unfavourable epizootic situation in Kazakhstan and has a negative tendency to grow if the effective intervention measures will be not applied in the next future.



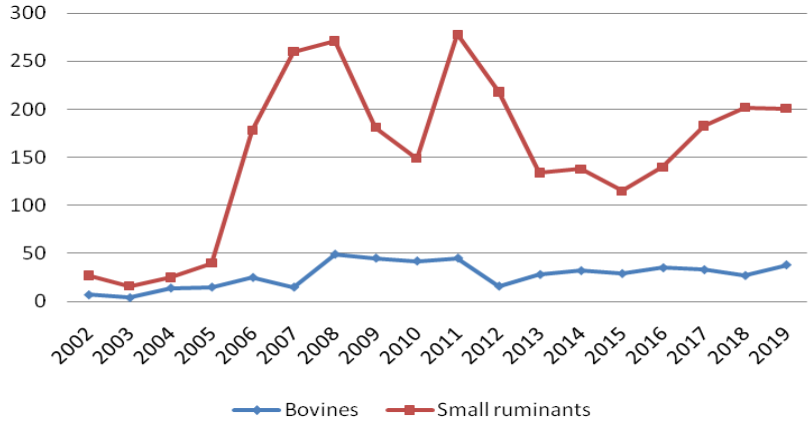
Source: Ministry of agriculture of Kazakhstan

Figure 2 - Dynamic and structure of the public expenditures on laboratory tests in Kazakhstan in 2002-2014 ($ mln)



Source: Ministry of agriculture of Kazakhstan

Figure 3 - Dynamics of the laboratory tests on Brucellosis in Kazakhstan by animals in 2002-2014 (mln)



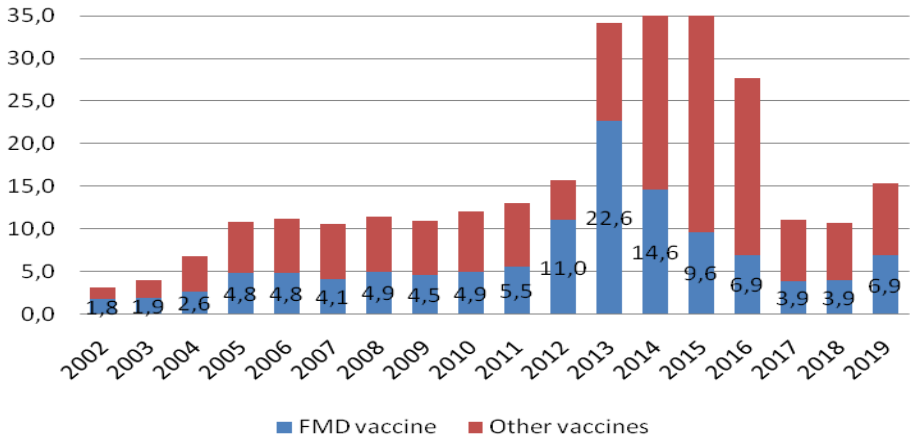
Sourse: Committee of veterinary control and surveillance

Figure 4 - Dynamics of the outbreaks on brucellosis in animals in 2002-2019

The dynamics and structure of the public expenditures on purchase of vaccines shown in the figure 5. There was a stable increase in funding; especially in the period of from 2013 to 2016 the budget was doubled.

Expenditures on vaccine against Food and Mouth Disease (FMD) were highest in the structure of the total budget compare to other vaccines against animal diseases. More than half (56%) of the total budget for vaccines was spent to purchase the FMD vaccine for

bovines and small ruminants. The share of expenses on this vaccine was fluctuating during the period from 2002 to 2019 however its share was within the 40%-70%. In 2014 its planned share in the beginning of year was around 62%, however its actual share after the government procurement was around 40% due to price proposals less than it was planned. In the last five years the share of expenses on FMD vaccine took more than one third of all expenditures. It is evidence that country draws significant attention in this disease, which can pose a transboundary thread to international trade.



Sourse: Ministry of agriculture of Kazakhstan

Figure 5 - Dynamic and structure of the state procurement on vaccines against animal diseases in 2002-2019 ($ mln)

FMD is a highly contagious and transboundary disease. This animal disease has presistent presence in the Eurasian continent including Kazakhstan. During this period, in spite of massive vaccination campaign against FMD since 2001, there was registered a number of outbreaks in central and east Kazakhstan. For example last outbreaks of FMD were officially recorded in the preiod of 2001-2015. Unfortunately there is no exact number of outbreaks. However the evidence of circulation of some FMD virus sero-types in the country is beased on the laboratory test results on identification of non-structural proteins relevant to FMD in live animals.

The results of this study revealed the state support measures of the veterinary system of Kazakhstan are growing along with the number of animal diseases outbreaks. Parti-cularly, the most common chronic animal disease brucellosis is increasing annually along with an increase of the expenses for laboratory tests. This indicates that the veterinary measures have almost no positive effects on animal health situation, and therefore requires immediate intervention measures aimed at de-creasing the number of outbreaks and improving the animal health situation in the country.

Regarding the budget classification of public expenditures for agricultural sector, there were changes in the approach of categorization of the budget allocations in 2016. The public expenditures designated for veterinary measures were included into the category on livestock. This meant that the veterinary safety measures are one of the important elements of livestock development and should be considered in an aggregated way.

The main purpose of any veterinary measures is not only animal health standing alone, it is more important to contribute to the livestock development through the minimizing the negative consequences from animal diseases and poor health conditions. That is a significant step towards to understanding the role of the veterinary system.

The annual growth of allocated public expenditures on veterinary measures in Kazakhstan indicates the importance of this field to agriculture of Kazakhstan. Of course one of the causes of the increase is inflation rate and surge of prices. However, there is also an increase in the number of manipulations related to the number of animals covered by the veterinary measures. Another reason is the strategy applied for animal diseases control that affects the types of veterinary measures and the budget.

It is evidence that the veterinary measures on monitoring of animal diseases through the blood samplings had higher budget than specific preventive measures via vaccination in the analysed period. The growth of public expenditures on laboratory tests was higher than an increase of vaccination expenses. This situation also can be proved by an extensive network of veterinary laboratories located through the whole

country. The central laboratory responsible for all screening tests is the Republican veterinary laboratory that has 18 regional and more than 200 branches at district levels.

In the structure of budget allocated for laboratory tests in the analyzed period, the greatest proportion of the public expenditures was spent to *Brucellosis*. This is the generic name used for the animal and human infections caused by several species of the genus *Brucella*, mainly *B.abortus*, *B.melitensis* and *B.suis*. The growing proportion of expenses on this disease indicates its great importance for the Government.

In spite of the actions taken by the state veterinary service, the presence of Brucellosis is growing. This is evidenced by the increased number of registered outbreaks by more than four times since 2002. This situation also indicates that there is a negative trend in eradication of the disease. The sharp rise of the number of outbreaks in bovines was recorded since 2006. In 2007 there was introduced the new strategy on controlling of Brucellosis. According to that, the vaccination against brucellosis was replaced by massive blood samplings. There was started to conduct laboratory tests using the method of Enzyme-Linked Immunosorbent Assays (ELISA) preliminarily in bovines then later on in young farm animals. This method differs with a high level of specificity therefore it requires larger expenses. This might be the main reason for increasing the number of outbreaks.

Another important veterinary measure is vaccination against diseases. This is still practiced in Kazakhstan since Soviet Union, where the Government provided almost all veterinary medicines. Today the Government provides certain types of vaccines against around twenty highly contagious animal diseases to farmers on a free basis since 2002. The budget for purchase of vaccines also has a growing tendency. This might indicate that the country's animal diseases control strategies largely rely on specific prevention measures (vaccination) rather than application of general non-specific veterinary-sanitary measures.

The largest proportion of the budget allocated for purchase of vaccines was taken by the FMD vaccines since 2002. Approximately on average half of the public expenses were spent to this one type of vaccine in the analysed period. This situation provides evidence that the country has a serious concern regarding this disease. Unfortunately there was not found sufficient information on FMD outbreaks in Kazakhstan in the last twenty years. Therefore, it can be suggested that the epizootic situation on FMD in the country is unfavourable. Moreover, FMD being a transboundary disease also poses certain risk from the neighbouring countries where this disease is present, such as Russia, Kyrgyzstan and China.

According to the official veterinary service, there were a sharp increase in expotic animal diseases in the last few years. For example, african swine fever, lumphy skin disease in bovines and re-emergence of FMD in farm animals. The situation with chronic diseases such as Brucellosis also has an unfavourable scenery and negatively influences the animal health situation of the country. There might be also other factors that affect the animal health, however the strategy on animal disease control is one of the key elements. This signalizes that the strategies against above mentioned animal diseases need to reconsider with introduction of new control programmes.

Conclusion

1. Based on the results of analyses of the state support measures of the veterinary system of Kazakhstan, it is clear that the strategies and approaches to the animal disease control need to reconsider. Particularly, the most common chronic animal disease brucellosis is increasing annually along with growing the expenses for laboratory tests. This indicates that this veterinary measure has no positive effect on animal health situation, and therefore requires immediate intervention measures aimed at decreasing the number of outbreaks and improving the animal health situation in the country.

2. Based on the results of this study the following recommendations were developed:

- to provide risk assessment for the main diseases registered in Kazakhstan in last 3 years, where the dynamics in increasing;
- to develop new animal disease control programmes in accordance with best international practices;
- to optimize the content of the veterinary measures with the aim make the more targeted to the existing problems;
- to enhance the structure of the veterinary system;
- to eliminate the conflict of interests between veterinary service and livestock development priorities.

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СПЕЦИАЛИЗАЦИЯ В СЕЛЬСКОМ ХОЗЯЙСТВЕ КАЗАХСТАНА

ҚАЗАҚСТАННЫҢ АУЫЛ ШАРУАШЫЛЫҒЫНДАҒЫ МАМАНДАНУ

SPECIALIZATION IN AGRICULTURE OF KAZAKHSTAN

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Аннотация. Проведено исследование по специализации агроформирований в Жамбылской области, по результатам которого обосновано размещение сельхозкультур и поголовья животных, с учетом территориально-отраслевых особенностей региона и природных зон. Дан всесторонний анализ природно-климатических условий в области, влияющих на проведение технологических процессов, приемы борьбы с вредителями и болезнями, исполь-