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Provision of veterinary services in livestock holdings in the Russian Federation

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ABSTRACT

Being the primary link in the disease notification system, specialists of the veterinary service in livestock holdings ensure continuous monitoring and control of animal health. This analysis includes assessment of the actual availability of veterinary services in the absolute majority of animal holdings in 85 Subjects of the Russian Federation. In total, the study covered 6,226,368 holdings for major livestock species, such as cattle and small ruminants, pigs, poultry, horses and fur animals. Small-scale holdings have been shown to account for the largest proportion (99.7%) of the total number of livestock farms, while the proportion of holdings where animal health control is daily organized has varied from 0.03% in fur farms to 3% in poultry farms. The significant role of animal owners in small-scale holdings within the implementation of epizootological surveillance has been determined. It was revealed that the main populations of pigs, poultry and fur animals are concentrated in large-scale livestock farms. The study results indicate a relatively favorable situation in pig and poultry holdings, where only single cases of lack of veterinary service were reported. On the contrary there are multiple cases of lack of veterinary care in the farms for rearing cattle, small ruminants, fur animals. The paper highlights the mechanisms for the implementation of tasks assigned to the state veterinary service in terms of the organization of planned preventive and diagnostic veterinary measures in large pig breeding establishments. Proposals were made to introduce a legally fixed obligation for animal owners in large-scale livestock holdings to establish and maintain the production veterinary service, as well as a proposal to establish divisions of the state veterinary service in large-scale livestock establishments.

Keywords: veterinary service, livestock holdings, animal health control, biosafety, epizootological surveillance

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Организация ветеринарного обслуживания животноводческих хозяйств в Российской Федерации

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РЕЗЮМЕ

Специалисты ветеринарной службы животноводческих хозяйств обеспечивают постоянное наблюдение и контроль за здоровьем животных, являясь первичным звеном в системе нотификации болезней. В рамках настоящей аналитической работы проведена оценка фактического наличия ветеринарного обслуживания в абсолютном большинстве хозяйств по содержанию животных 85 субъектов Российской Федерации. В общей сложности исследованием было охвачено 6 226 368 хозяйств по содержанию основных видов сельскохозяйственных животных, таких как крупный и мелкий рогатый скот, свиньи, птица, лошади, а также пушные звери. Показано, что мелкие хозяйства составляют основную долю (99,7%) от общего числа животноводческих хозяйств, при этом удельный вес хозяйств, где организован ежедневный ветеринарный контроль за здоровьем животных, варьирует от 0,03% в пушном звероводстве до 3% в птицеводческих хозяйствах. Определена важная роль владельцев животных мелких хозяйств в осуществлении эпизоотологического надзора. Выявили, что основная популяция свиней, птицы и пушных зверей сконцентрирована в животноводческих хозяйствах категории «крупные». Результаты исследования свидетельствуют об относительно благоприятной обстановке в хозяйствах по содержанию свиней и птицы, где зафиксированы лишь единичные случаи отсутствия ветеринарного обслуживания. В хозяйствах по содержанию крупного и мелкого рогатого скота, пушных животных, напротив, отмечаются множественные случаи отсутствия ветеринарного обслуживания. В работе освещается вопрос механизмов реализации возложенных на государственную ветеринарную службу задач, связанных с организацией плановых профилактических и диагностических ветеринарных мероприятий

на крупных свиноводческих предприятиях. Высказаны предложения о введении законодательно закрепленной обязанности для владельцев животных крупных животноводческих хозяйств создавать и содержать производственную ветеринарную службу, а также предложение о создании подразделений государственной ветеринарной службы на крупных животноводческих предприятиях.

Ключевые слова: ветеринарная служба, животноводческие хозяйства, ветеринарный контроль, биологическая безопасность, эпизоотологический надзор

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INTRODUCTION

It has become especially noticeable in recent decades that in the process of evolution of the Veterinary Service's objectives the emphasis has shifted to production of global public goods, that is, the formation of an environment favorable for human and animal life, economy and national development [1, 2].

The global political situation in recent years indicates strengthening of anti-Russian policy in some foreign countries. Particular concern is induced by the evidence of military biological activity of biolaboratories located in neighboring states, which does not exclude the possibility of natural and artificial animal infection outbreaks on the territory of our country as a result of intentional or unintentional actions of concerned parties.

In this regard, increased attention should be addressed to ensuring biological and food safety. In particular, the latter cannot be fully implemented without maintaining stable indicators of animal disease freedom and livestock productivity, which is extremely problematic without taking into account the data on the prevalence of infectious animal diseases (primarily highly dangerous and economically significant ones) in the Russian Federation, as well as neighbouring states and trading partner countries.

The implementation of measures for prevention and eradication of infectious animal diseases is the main task of the veterinary medicine in the Russian Federation [3]. At the same time, early detection and timely measures in response to infection outbreaks in susceptible animal population play the major role in disease prevention.

In this case, it is difficult to overestimate the role of livestock holding veterinary service (in-house veterinary service), whose specialists ensure constant animal health monitoring and control, being the primary link in the disease notification system.

The Veterinary Service controls the product manufacture, as the veterinary measures are inextricably linked with the livestock production, especially in commercial livestock facilities.

In this regard, the aim of this study was to investigate the peculiarities of animal health control measures to be implemented in livestock holdings of the Russian Federation.

MATERIALS AND METHODS

The theoretical basis of the study was the analysis of the regulatory and legislative framework governing the organization of livestock farms' veterinary services in the Russian Federation.

The practical basis for the analysis of the situation on the implementation of veterinary services in the livestock farms of the country was the official information posted by the executive authorities of the Subjects of the Russian Federation in the veterinary field in the FGIS "VetIS" (Assol.Express component) as part of the annual data collection by the Federal Service for Veterinary and Phytosanitary Surveillance on the functional status and activities of the authorized veterinary executive authorities of the Subjects of the Russian Federation and their subordinate institutions.

The assessment of the actual availability of qualified veterinary services in the absolute majority of livestock holdings in 85 Subjects of the Russian Federation was carried out. In total, the study covered 6,226,368 farms for keeping major livestock species, such as cattle and small ruminants, pigs, poultry, horses and fur animals.

For this study, farms with the following livestock population were classified as "small-scale": pig farms and farms for keeping up to 1,000 cattle, farms for keeping up to 500 cattle and horses, small-scale fur farms where the number of females in the main herd does not exceed 100–200 animals, and outdoor poultry holdings (poultry farms). Farms where the number of animals exceeded these values were categorized as "large-scale", and poultry farms were considered indoor establishments [4, 5, 6, 7].

The processing of quantitative (numerical) data was carried out using Microsoft Office Excel software.

Such methods of data analysis as generalization and formalization of information, comparative analysis, descriptive statistics, expert opinions were used in the study.

RESULTS AND DISCUSSION

Emergency situations, regardless of their nature, require an immediate professional response in order to reduce the socio-economic consequences. In relation to animal diseases, the veterinary service shall be able to detect and respond promptly to emerging epizootic

situations, and perform early detection, since any delays lead to the spread of the disease to vast areas, which makes infection control more difficult and expensive, and in certain cases almost impossible. The effectiveness of early detection of the disease directly depends on the ability of the veterinary service to conduct epizootological surveillance (ES). A number of domestic and foreign researchers and expert international organizations (WOAH, FAO, WHO) propose definitions of epizootological/epidemiological surveillance, which can be summarized in terms of essence and content as follows: ES is the continuous collection of zoosanitary (that is, related to animal health) information, its analysis and prompt communication to interested parties in order to take appropriate measures and ensure intervention during the epizootic process [8, 9, 10, 11, 12, 13].

Veterinary specialists of livestock farms are the primary and integral part of the ES, and primarily passive ES. The advantage of passive ES consists in the fact that it has a relatively high sensitivity with a relatively low specificity, since it does not require any targeted actions on the part of the veterinary service for a specific infectious disease, but is implemented by means of general constant monitoring of animal health by veterinary specialists directly in the susceptible animal population [14]. It is also implemented through the initiative and the obligation of animal owners to immediately notify veterinary specialists of all cases of sudden death or mass morbidity of animals and their unusual behavior [3].

The aim of passive ES is to identify all changes in animal health with their subsequent identification and differentiation. At the same time, the probability of detecting animals with health and behavior disorders (lethargy, anorexia, constrained postures, visible clinical signs) increases with intensification of this surveillance. The effectiveness of surveillance is directly dependent on the qualifications of the person carrying it out, and to a lesser extent it will be affected by an increase in the duration or frequency of observation of animals and the technical equipment of the specialist.

An analysis of the situation with veterinary services provided in farms in our country has shown that the absolute majority of farms under study belong to the category of "small-scale" holdings whose livestock population includes several animals (Fig. 1). It is such holdings (backyards, family-operated farms) that make up the main share (99.7%) of the total number of livestock farms.

Small-scale holdings. Due to the significant predominance of small-scale farms, it is quite problematic for veterinary specialists to organize daily animal health control and examination of animals in such sites. As a rule, a significant number of such farms have a low biosecurity level, which indicates the importance of ES implementation aimed at population health control of the animals contained in them.

The study results show that the proportion of small-scale holdings where animal health control is daily organized varies from 0.03% in fur industry to 3% in poultry farms (Fig. 2).

Veterinary services in small-scale holdings are generally provided by specialists of authorities and organizations included in the system of the State Veterinary Service of the Russian Federation (hereinafter referred to as specialists of the State Veterinary Service), not on a daily basis, but following the animal owners' requests to the State Veterinary Service institutions or during implementation of mandatory veterinary measures (planned and emergency) as specified by the Russian Federation legislation.

Direct visual monitoring of the animals' condition is carried out by their owners or handling personnel. That basically means that the most important role in the implementation of passive ES is assigned/delegated to the animal owners. Despite the fact that the animal owners have the legal obligation to immediately notify the specialists of the State Veterinary Service about all cases of sudden death or mass mortality in animals and their unusual behavior, the effectiveness and objectivity of the ES primary stage is directly dependent on the owners' competence in terms of animal health and normal behavior [3].

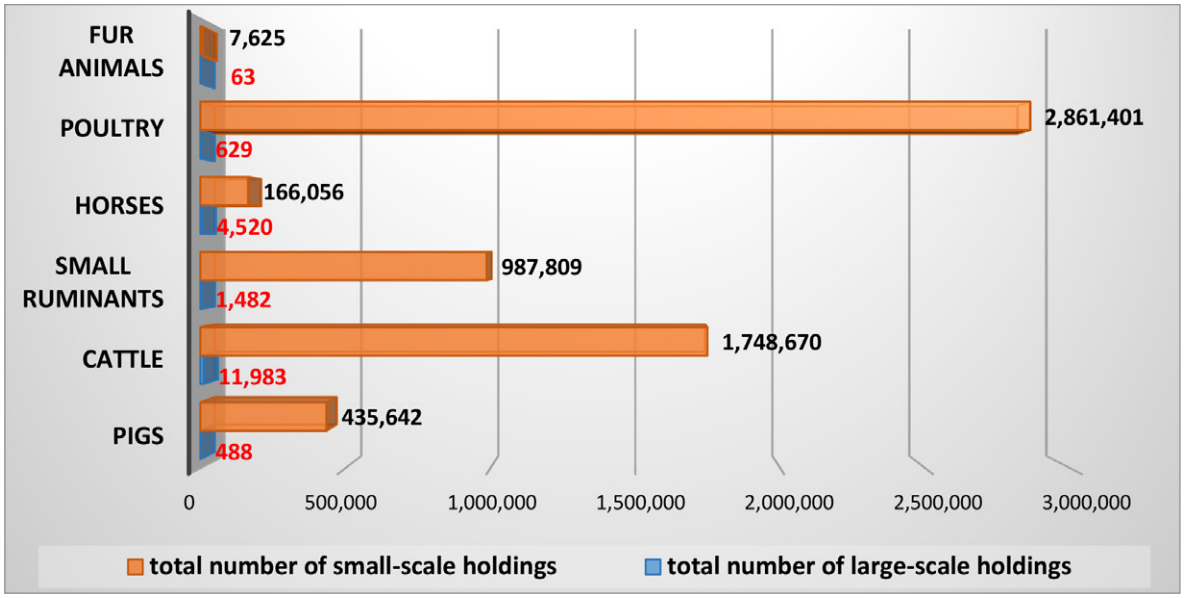

Fig. 1. Distribution of large-scale and small-scale livestock holdings

It is an obvious fact that livestock animals and products thereof can be, under certain circumstances, a source of pathogens and other biological factors posing hazard to animal and human health [15]. Intentional or unintentional actions of the animal owners in the form of non-compliance or formalized implementation of the Russian Federation veterinary legislation, including incompliance with the rules for keeping animals, hiding animal disease cases, lack of awareness of the threats of a particular animal disease, ignoring animal disease signs, etc. can contribute to the occurrence of such circumstances. Therefore, in order to reduce the likelihood of dangerous biological factors and increase the objectivity of passive ES, the institutions of the State Veterinary Service and national livestock associations need to pay increased attention to raising awareness of animal owners in the veterinary field, involving them in active participation in the implementation of effective animal health surveillance. Taking into account the fact that today there are new ways of communication that are more familiar to citizens and are regularly used by them, the most popular of which are social networks, the generally accepted approaches to awareness-raising activities (leaflets, posters, meetings, etc.) can be supplemented with training seminars, including online (webinars), by participation in groups and communities in social networks, as well as by sending information notices and newsletters. Besides, for the above purposes, we consider it possible and feasible to introduce, especially for potential animal owners and support personnel at the initial stage of their work, the so-called veterinary minimum – a set of minimum necessary knowledge that allows them to ensure their own biological safety and the safety of surrounding people and animals, as well as compliance with the veterinary legislation of the Russian Federation. It is advisable to introduce a duty for animal owners and handling personnel with work experience to periodically improve their skills and update existing knowledge, since current legislation, including that in the veterinary field, regularly undergoes significant amendments. Such an initiative can be implemented both at the federal and regional levels. Similar practices exist in the field of handling weapons, as well as nature management and hunting [16, 17, 18].

Large-scale holdings. Despite the fact that small-scale farms numerically prevail over large ones, most pig, poultry and fur animal populations are concentrated in large-scale holdings accounting for ten times higher than the livestock in small-scale farms (Fig. 3).

On the contrary, the population of small ruminants and horses is mostly concentrated in small-scale farms, and as for cattle, with the development of industrial animal husbandry the prevail of small-scale farms is actually mitigating by now.

Large-scale holdings are also characterized by such a concentration of production, that results in a high livestock density in a relatively small area, strengthening and expanding functional ties with other farms and standardization of veterinary services, which, on the one hand, predisposes to improving the quality of services (planning, supply and implementation of preventive/antiepizootic treatment plans, research), and on the other hand, it increases the globalization level of threats associated with both veterinary services and the introduction and spread of infections, especially in the pre-epizootic period.

In addition, large-scale holdings are more involved in the process of providing the population with food and raw materials for its production, that is, ensuring food safety and food independence of our country. In this regard, there should be no doubt about the need for daily veterinary control of animals, which consists in the activities of a veterinary specialist for the primary registration

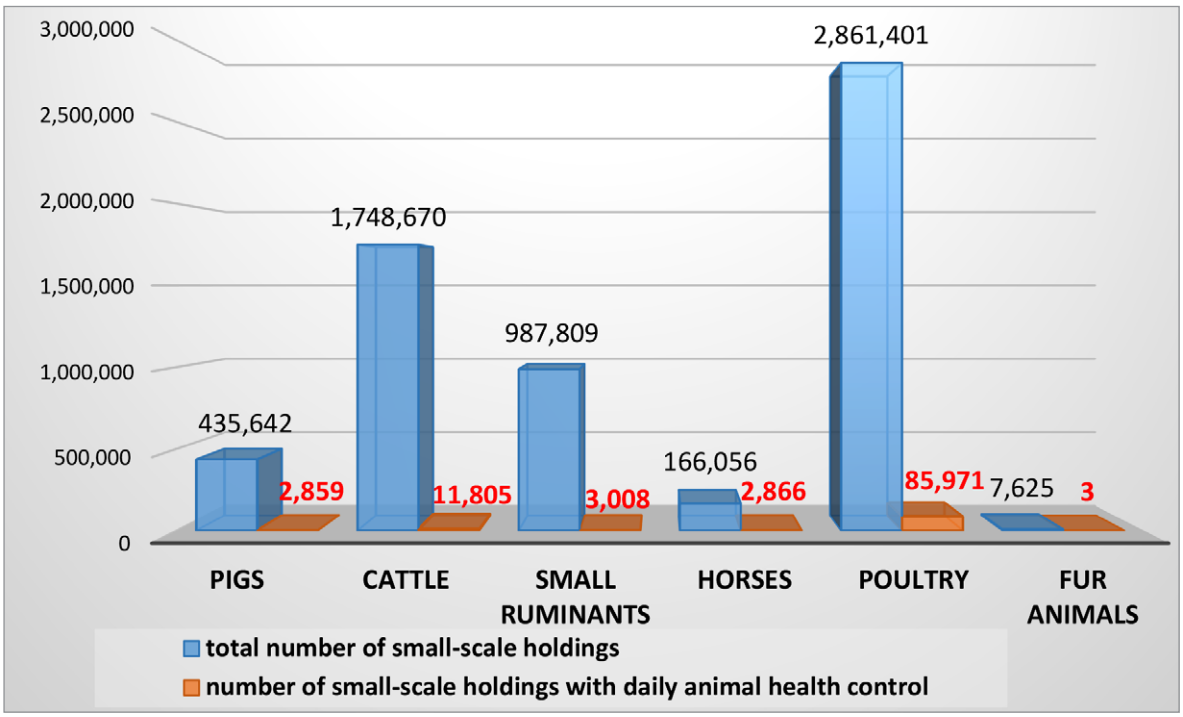

Fig. 2. Provision of veterinary services in small-scale livestock holdings

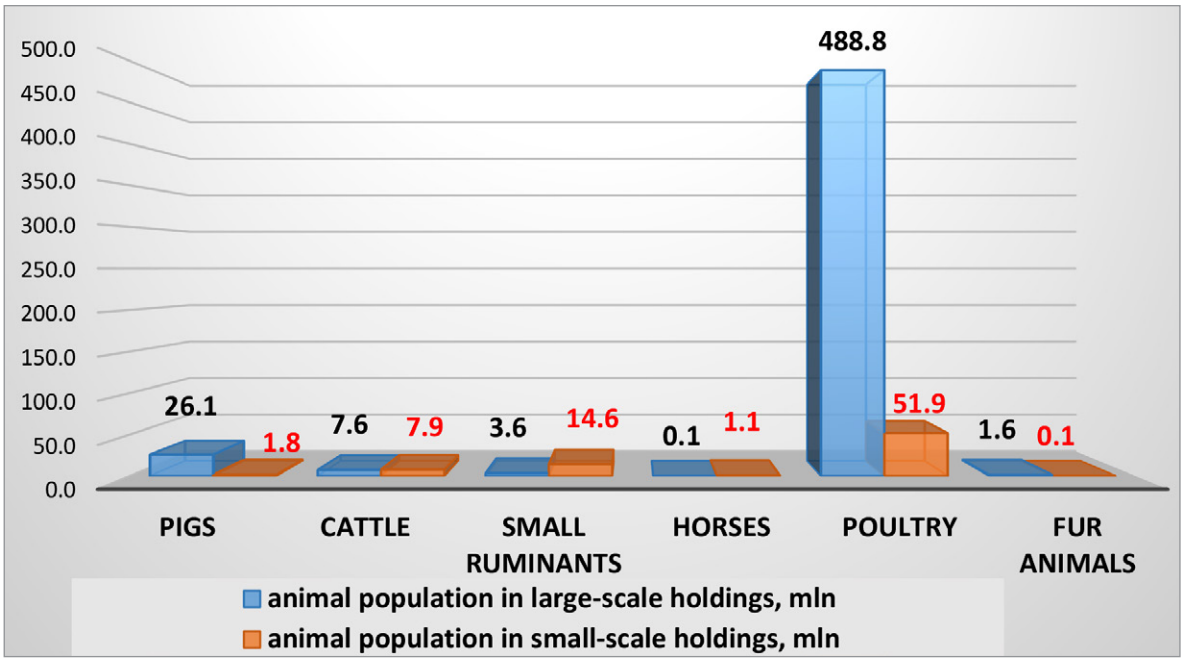

Fig. 3. Distribution of livestock population in large-scale and small-scale holdings

of diseases and deaths of animals, as well as in conducting diagnostic tests, preventive, therapeutic, veterinary and sanitary measures and meat inspection carried out by veterinary specialists directly in livestock farms, and also in training staff on the effective assessment of changes in the animals' condition. Otherwise, lack of daily veterinary control in livestock holdings may lead to an inappropriate assessment of the animal condition by the handling personnel, delaying the diagnosis date, including intentional actions due to the financial dependence of personnel on productivity indicators, which, in turn, leads to the activation (spread) of the epizootic process and the formation of infection outbreaks. That is, the pathogen invasion into a susceptible animal population in large-scale farms is expected to result in the "epizootic scenario" in most cases.

The study results showed that the situation with the veterinary services at large-scale livestock establishments is quite heterogeneous.

As the data presented in Figure 4 show, a relatively favorable situation is observed in pig and poultry farms, where lack of veterinary service provision is only reported in single cases. On the contrary, an extremely unfavorable situation is detected in the holdings for other livestock species. In particular, the situation with large-scale cattle and small ruminant holdings where only 30 and 14%, respectively, are subjected to daily animal health monitoring is of certain concern. The situation is complicated by the fact that livestock industry is an important element in providing the country's population with irreplaceable food, as well as with meat and dairy source materials for food production.

It is also worth focusing on veterinary service provision in pig holdings. Only specialists of the State Veterinary Service are responsible for implementing measures to prevent porcine diseases in farms pursuant to the current legislation of the Russian Federation. First of all, this includes such measures as vaccination against classical swine fever, Aujeszky's disease, anthrax and brucellosis, as well as conducting routine allergic tests for tuberculosis and animal sampling in order to prove the absence of FMD and ASF virus circulation in a certain area. That is, it is legally established that persons who are not specialists of the State Veterinary Service are not entitled to carry out these activities. It is unequivocal that the above-mentioned preventive, diagnostic and other veterinary measures should be preceded by the veterinary examination of animals for compliance with the standard health requirements (for example, a clinical examination of animals before vaccination), which is impossible if there is lack of specialists of the State Veterinary Service directly in the site where animals are kept. The specialists of the State Veterinary Service generally implement these measures almost simultaneously in all pig farms located in the area under their responsibility in accordance with the Plan of diagnostic tests, veterinary-preventive and anti-epizootic measures in holdings of all forms of ownership in the Subject of the Russian Federation. At the same time, the holdings are classified based on the animal health status (Compartments I–IV) [19].

At the same time, the provisions of the "Rules for establishing the animal health status of pig facilities, as well as organizations engaged in pig slaughter, processing and storage of porcine products" (hereinafter referred to as the Rules) specify a requirement that a higher level of the compartment can be assigned if this farm was not technologically connected with the lower compartment, including links via visits of veterinary specialists. The farms applying for Compartment II–IV status should not be visited by veterinary specialists or officials of competent control (surveillance) authorities who were in contact with domestic or wild pigs during the previous two weeks and participated in anti-epizootic measures aimed at eradication of porcine infectious diseases [19]. In our opinion, taking into account these Rules and the fact that over the past few years there has been a decrease in the staff/

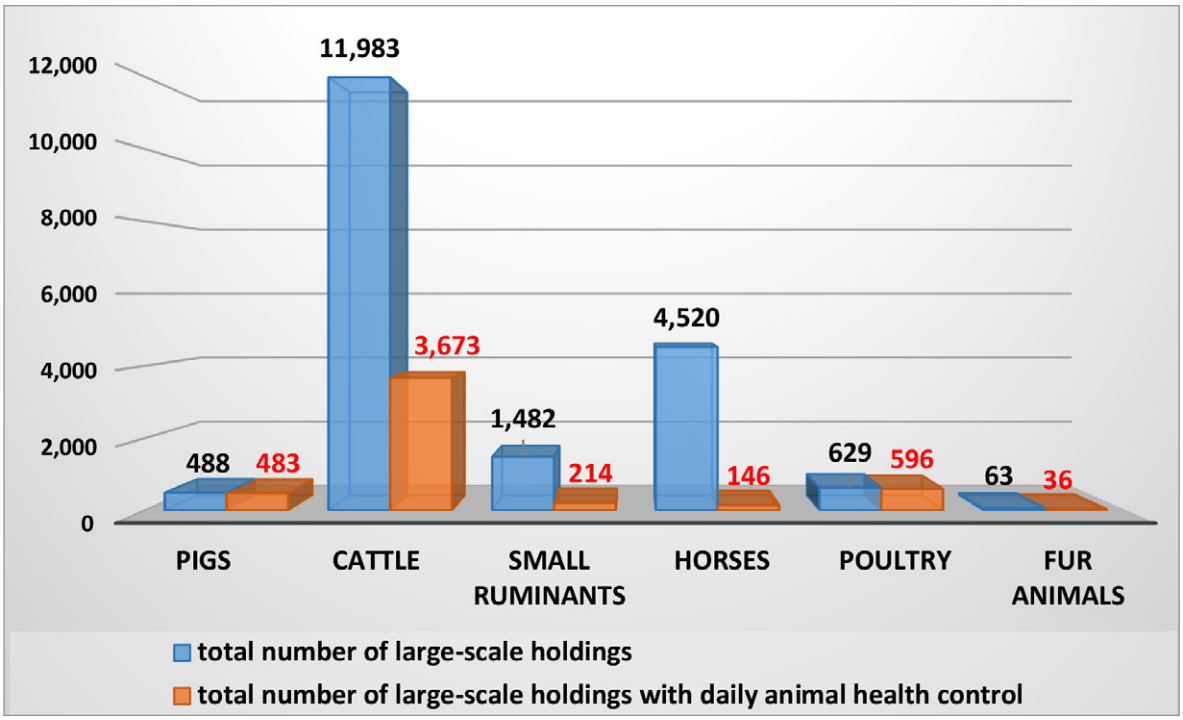

Fig. 4. Provision of veterinary services in large-scale holdings

actual number of veterinary specialists of the State Veterinary Service, especially in therapeutic and preventive institutions at the raion level (animal disease control stations, veterinary clinics, etc.), it is becoming increasingly difficult for the State Veterinary Service to organize legally required and mandatory measures aimed at preventing porcine infectious diseases and ensuring animal disease (including highly dangerous disease) freedom in the area under their responsibility.

In terms of assessing the probability of iatrogenic agent entry into pig breeding establishments, it can be unequivocally concluded that the provisions of these Rules are feasible and necessary for reducing the risks indicated above. Ignoring the Rules and non-compliance with its requirements is an obstacle to improving the biosecurity and safety of a pig breeding establishment, and consequently, obtaining a higher animal health status by the farm. However, the mechanism for implementing veterinary rules with regard to animal diseases taking into account the limited staff of the State Veterinary Service in the area under responsibility should be quite flexible when implemented in practice. This depends both on the biosecurity system of establishments and on the level of guarantees provided by the establishment's veterinary service to government officials. Therefore, the organization of effective interaction between public and private veterinary services is becoming increasingly important in current conditions.

The studies conducted under the auspices of the World Organization for Animal Health on the possibilities of public-private partnership to establish effective veterinary services and animal health systems in more than 100 countries around the world, it was shown that the interaction of the public and private veterinary sector is a means of optimizing animal health systems. Interactions between public and private veterinary services were typologically categorized into transactional, joint and transformational, but in all countries the animal health control function of the State Veterinary Service was preserved [20].

Summarizing examples of interaction between the public and private veterinary sectors and the organization of surveillance in Europe [21] and the Middle East [20], we note a general trend: with the consolidation of farms, as well as transition to commercial livestock husbandry and establishment of megaholdings, these establishments begin to play a leading role in ensuring animal disease freedom in the area of their location helping to improve animal health status of small-scale farms. However, the issue of the effectiveness of epizootological surveillance for animal population in such holdings by the official service is debatable and ambiguous due to the differences in legislation and the agricultural policy of the countries.

In recent years, there has been a tendency in the Russian Federation to switch to industrial production of agricultural products at large-scale establishments. A small traditional farm (a backyard) is becoming less significant in egg, meat and milk production and in providing employment for the population. The major part of the livestock population is concentrated in large-scale farms. Turning the focus of veterinary surveillance to large-scale farms and the transformation of interaction between public and private veterinary services is a natural process caused by global trends in the development of agriculture [1, 2]. Considering the increasing role of large-scale holdings in the Russian Federation, as well as the need to maintain control by the State Veterinary Service, the constant presence of specialists of the State Veterinary Service at establishments today seems to be the most reliable solution to the problem of improving the effectiveness of the state policy implementation in the veterinary field.

CONCLUSION

The unfavourable situation evolved with the organization of veterinary services in large-scale livestock holdings. In particular, the situation in farms for keeping cattle and small ruminants, horses and fur-bearing animals is of concern, since the vast majority of farms do not arrange animal health control on a daily basis.

The current situation is possibly caused by a legal gap, since the animal owners of large-scale livestock establishments are not obligated to organize animal health control on a daily basis according to the Russian Federation legislation. A possible way out of this situation may be the legal obligation for animal owners of large-scale livestock holdings to establish and maintain an in-house veterinary service, that is, to hire veterinary specialists carrying out work on a permanent basis with the restriction on simultaneous servicing of other farms, the staff number of which can be determined based on the production capacity and specifics of the livestock establishment, and also taking into account the provisions of the "Methodological guidelines on labour standardization of veterinary specialists" [22].

In order to arrange optimal conditions for implementing preventive measures in pig rearing holdings, it is proposed to establish the State Veterinary Service divisions at large-scale livestock establishments. It is assumed that the specified division should be included in the system of the Subject's State Veterinary Service institutions, it will be independent in its activities from the livestock establishment owner and financed within the government subsidies for the state task only for these purposes. For many years such State Veterinary Service divisions established in facilities for slaughter of livestock (poultry), as well as for processing and storage of livestock products have shown their high importance and efficiency [23].

In our view, the presence of a specialist of the State Veterinary Service at a livestock establishment on a permanent basis will contribute to improving the effectiveness of planned preventive veterinary measures, the objectivity of assessing changes in animal condition by farm personnel, increasing the level of awareness of the State Veterinary Service as regards the epizootic situation in the territory under its responsibility and possible threats of the situation's deterioration, which will ultimately be reflected in the achievement and maintenance of disease freedom in the Subjects of the Russian Federation, as well as in ensuring the veterinary safety of animal products.

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