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FMD under control: enhanced FMD surveillance in the Russian Federation results in the WOAH Official Recognition of Zone Western Siberia – Urals as FMD-free

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ABSTRACT

Introduction. Foot-and-mouth disease is one of the key threats to global animal welfare and international economic relations. Like any other transboundary animal disease, it shall be notified to the World Organisation for Animal Health (WOAH) in accordance with the relevant international standards. By 2016, the largest part of the territory of the Russian Federation (i.e. 50 subjects and 2 federal cities) had been recognized by the WOAH as an FMD-free zone without vaccination. From 2021 to 2023, 4 more zones of the country were granted the status of freedom from foot-and-mouth disease with vaccination. At the end of 2024, only 10 subjects of the Russian Federation, all located within zone Western Siberia – Urals, lacked official recognition.

Objective. Descriptive analysis of the animal health situation in the Russian Federation from 2021 to 2024: substantiating success of the Rosselkhoznadzor's systematic approach to regionalization in accordance with the WOAH Terrestrial Animal Health Code.

Materials and methods. Various information sources were used to collect and analyze materials on the animal health situation in Russia, including the USSR archives, veterinary reports, and the WOAH statistics.

Results. FMD situation was analyzed in 10 subjects of the Russian Federation bordering on the Republic of Kazakhstan, with an emphasis on FMD control measures, regionalization and zoning. This section focuses on distribution of statuses across Russia's administrative subjects and the historical records on the disease outbreaks. It also outlines regulatory and surveillance measures implemented by the Federal Service for Veterinary and Phytosanitary Surveillance (the Rosselkhoznadzor) to manage the FMD status in various regions, taking into account the prophylactic measures implemented in place. The paper describes these measures and their results step-by-step, showing a dynamic improvement of the FMD surveillance system.

Conclusion. On 29 May 2025, at the 92nd WOAH General Session of the World Assembly of Delegates, Zone Western Siberia – Urals was officially recognized as a foot-and-mouth disease-free zone with vaccination. This decision completes the process of structuring the territory of the Russian Federation into 6 zones. The WOAH-granted disease-freedom statuses confirm efficacy of the preventive and surveillance measures, which is crucial to ensure global epizootic stability. These accomplishments result from the efforts jointly taken by the Rosselkhoznadzor and its subordinate institution the Federal Centre for Animal Health.

Keywords: foot-and-mouth disease, surveillance, regionalization, zoning, WOAH, analysis, FMD-free status

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Ящур под контролем: официальное признание ВОЗЖ статуса благополучия зоны «Западная Сибирь – Урал» как итог совершенствования мер по надзору за заболеванием на всей территории Российской Федерации

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РЕЗЮМЕ

Введение. К числу основополагающих угроз, оказывающих влияние на состояние мировой эпизоотической обстановки и на межгосударственные экономические взаимоотношения, относится ящур – заболевание, подлежащее обязательной нотификации во Всемирную организацию здравоохранения животных (ВОЗЖ).

Большая часть территории Российской Федерации (50 субъектов и 2 города федерального значения) в 2016 г. была признана ВОЗЖ зоной, свободной от ящура без вакцинации. Еще 4 зонам нашей страны в период с 2021 по 2023 г. присвоен статус свободы от ящура с вакцинацией. На конец 2024 г. официальное признание данного статуса отсутствовало лишь для 10 субъектов Российской Федерации, входящих в зону «Западная Сибирь – Урал».

Цель исследования. Описательный анализ эпизоотической обстановки по ящуру в Российской Федерации в период с 2021 по 2024 г.; аргументация успешности системного подхода Россельхознадзора к регионализации в соответствии с положениями Кодекса здоровья наземных животных ВОЗЖ.

Материалы и методы. Для сбора и последующего анализа информационных материалов по эпизоотической ситуации по ящуру в России использованы различные источники, в том числе архивные материалы СССР, ветеринарная отчетность и статистические данные ВОЗЖ.

Результаты. Проведен анализ эпизоотической ситуации по ящуру в 10 субъектах Российской Федерации, граничащих с Республикой Казахстан, с акцентом на меры контроля, регионализации и зонирования по ящуру. Рассматривается статусное распределение административных субъектов Российской Федерации и исторические данные о вспышках заболевания. Описаны нормативные действия и регламентирующие меры, реализуемые Федеральной службой по ветеринарному и фитосанитарному надзору (Россельхознадзор) в отношении регулирования зоосанитарного статуса по ящуру в регионах с учетом проводимых профилактических мероприятий. Изучена последовательность этих мероприятий и их результаты в динамике совершенствования надзорных мер по ящуру.

Заключение. 29 мая 2025 г. на 92-й Генеральной сессии Всемирной ассамблеи делегатов ВОЗЖ зона «Западная Сибирь – Урал» официально признана зоной, свободной от ящура с вакцинацией. Это решение завершает структурирование регионов Российской Федерации на шесть зон. Статусы благополучия ВОЗЖ подтверждают эффективность профилактических и надзорных мер, что важно для глобальной эпизоотической стабильности. Эти достижения – результат совместной работы Россельхознадзора и подведомственного Федерального центра охраны здоровья животных.

Ключевые слова: ящур, надзор, регионализация, зонирование, ВОЗЖ, анализ, статус благополучия

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INTRODUCTION

In view of the recent world events, the Russian Federation is actively building new foreign economic ties. Recently, there has been a significant increase in import and export of meat and dairy products with many countries, including, inter alia, China, Kazakhstan and Mongolia [1, 2]. International trade dynamics is boosting the variety and volumes of the traded animal products, however, simultaneously is elevating the risk of introducing highly dangerous animal diseases [3, 4, 5]. Foot-and-mouth disease (FMD) is considered to be one of the essential threats to global epizootic stability and international economic relations. As a transboundary animal disease, it shall be notified to the World Organisation for Animal Health (WOAH) in accordance with the international standards [6, 7, 8].

In addition to the risks associated with import of live animals and livestock products, wild ungulates in Mongolia, Kazakhstan, and Turkey pose an extra risk [9, 10, 11, 12], because they are a natural reservoir of FMD virus (FMDV) in the wild, able of complicating the FMD situation in these regions [13].

As the WOAH data suggest, the FMD epizooty is still of great concern [14]. Consequently, enhanced control measures taken by the veterinary services are a crucial preventive component aimed at minimizing the risk of FMD introduction [15, 16, 17, 18].

By 2016, the greater part of the Russian Federation territory, i.e. 50 zone and 2 Federal Cities (Moscow and Saint Petersburg) had been recognized by the WOAH as an FMD-free zone without vaccination [19].

Between 2020 and 2024, the Russian Federation kept submitting dossier materials to the WOAH for reviewing FMD statuses in the zones recognized as FMD-free with vaccination.

Coordinated efforts of the Rosselkhoznadzor and the Federal Centre for Animal Health succeeded in getting the official WOAH FMD-free status with vaccination for the following zones:

– Zone I South, which includes 13 zone of the Southern and North Caucasian Federal Districts (2021);

– Zone III Eastern Siberia, which includes the Republics of Buryatia, Tyva and Kosh-Agachsky Raion of the Altai Krai (2022);

– Zone IV Sakhalin, which includes the Sakhalin Oblast and the Kuril Islands (2021);

– Zone V Far East, which includes the Amur Oblast, the Jewish Autonomous Oblast, the Zabaikalsky, Primorsky and Khabarovsk Krais (2023).

At the end of 2024, only 10 zone of the Russian Federation lacked the officially recognised status of FMD freedom. This territory included the Russian Federation zone bordering on the Republic of Kazakhstan and belonging to zone II Western Siberia – Urals with vaccination (Fig.).

MATERIALS AND METHODS

Various information sources were used to assess the FMD situation in the RF. In particular, the USSR archives – documents of the established Form No. 3-Vet "Logbook for Documenting District (City) Epizootic Status"; official veterinary records – information on registered FMD cases in certain regions of the RF, as well as information on the FMD-vaccination campaigns. The country's FMD statistics, collected and verified through the official reports published on the WOAH platform, were accordingly analysed.

Data on the infection sources in the Russian Federation zone included into zone II Western Siberia – Urals were collected as a follow-up to the analysis of the archives and official reports. Changes in the administrative statuses of the Russian Federation zone in zone II Western Siberia – Urals were reviewed pursuant to the decisions made by the Rosselkhoznadzor; effectiveness of pathogen monitoring and control measures were accordingly analyzed.

The WOAH Terrestrial Animal Health Code, 2019 and 2024 editions (hereinafter referred to as the WOAH Code), was used as a basic reference to define the criteria for the disease-freedom status and to assess compliance with the veterinary regulatory framework.

RESULTS AND DISCUSSION

As the USSR archives and official veterinary records of the Russian Federation show, the last FMD outbreaks in zone II Western Siberia – Urals were registered in the following subjects:

the Tyumen Oblast – in 1949;

the Altai Republic (Ust-Kansky, Ust-Koksinsky, Shebalinsky, Ongudaysky, Chemalsky, Maiminsky, Choysky, Ulagan and Turochak Raions) – in 1966;

the Samara Oblast – in 1970;

the Omsk Oblast – in 1972;

the Chelyabinsk and Novosibirsk Oblasts – in 1973;

the Kurgan Oblast – in 1974;

the Altai Krai – in 1974;

the Saratov Oblast – in 1984;

the Orenburg Oblast – in 2021.

The principal approach used in the USSR to eradicate FMD included regular preventive measures, i.e. vaccination, and stamping-out of FMD-susceptible animals in the outbreak.

Concurrently, ring vaccination was implemented together with stringent restrictions on movement of animals and animal products, thus, mitigating the risk of the disease spread.

The measures were taken in accordance with the "Instruction on FMD prevention and eradication", developed on the basis of a detailed analysis of epizootological data, as well as on the practical experience, which provided a scientific substantiation for the measures and techniques used.

To minimize the risk of FMD introduction into the RF, some Russian Federation subjects – namely, the Chelyabinsk, Kurgan, Tyumen, Omsk, and Novosibirsk Oblasts, the Altai Krai, and the Altai Republic – were designated as part of the zone with annual FMD vaccination. This

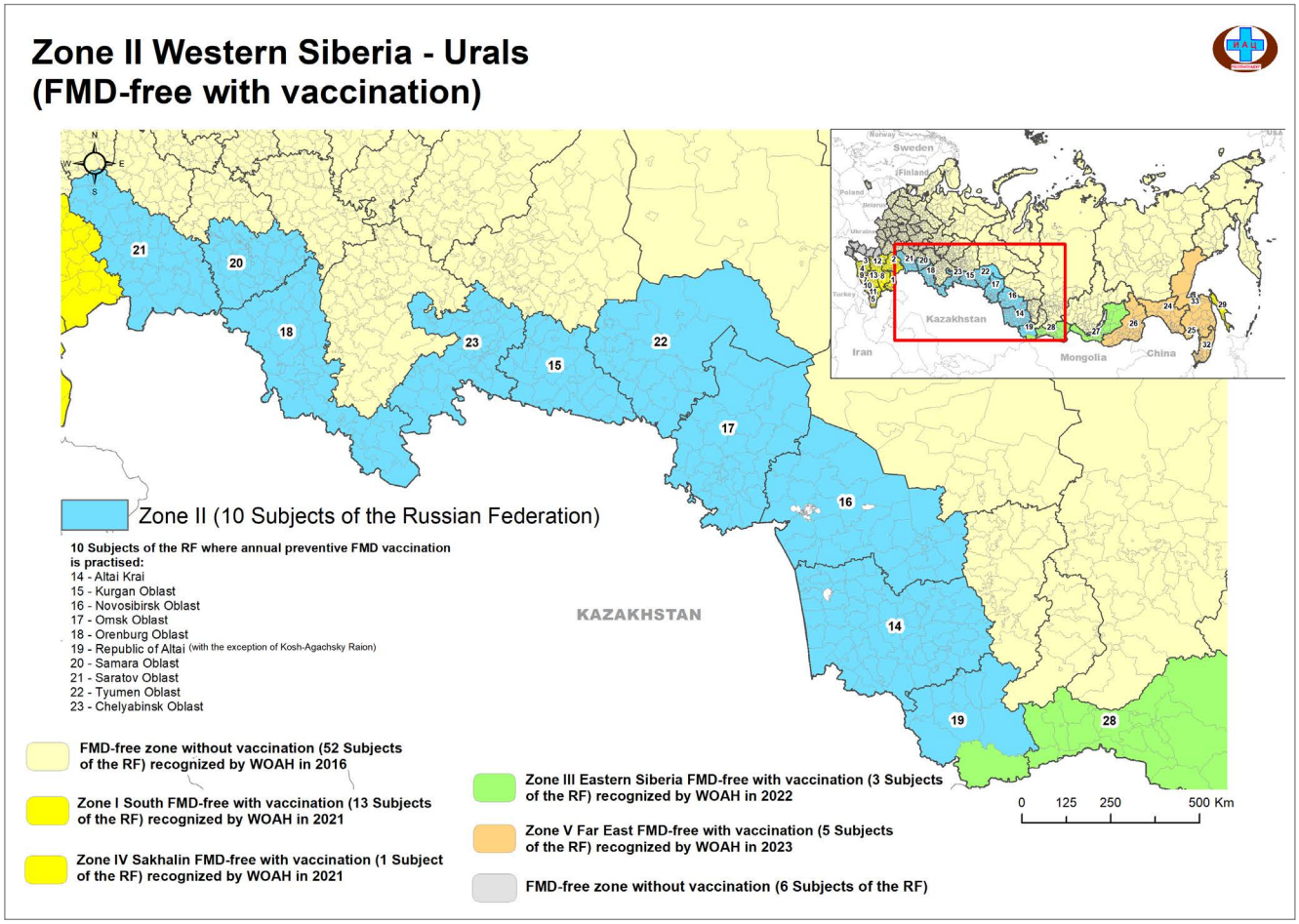

Fig. Map of zone II Western Siberia – Urals administrative devision (provided by the Federal Centre for Animal Health Information and Analysis Center)

decision enabled to timely implement required preventive measures, thereby reducing the likelihood of outbreaks by establishing a framework for rapid response and control of FMD. Thus, this comprehensive approach based on preventive measures and strict sanitary control, has become a cornerstone for ensuring safety of the livestock industry and maintaining epizootic stability in the region.

FMD vaccination campaigns in these areas were implemented up to and including 2019. In 2019, in compliance with the Order of the Minister of Agriculture of the Russian Federation and as part of implementation of the national project "International Cooperation and Export", anti-FMD vaccination of susceptible animals was officially ceased and this decision aligned with the changes in the veterinary control regulations.

From 2017 to 2021, the aforementioned 10 Russian Federation subjects shared borders with the WOAH-officially recognized zones of the Republic of Kazakhstan that were FMD-free without vaccination.

Therefore, in 2020, those 10 Russian Federation zone were incorporated into the FMD-free zone where, according to article 8.8.2 of the WOAH Code: "no FMD-specific vaccination had been practiced during the preceding 12 months; no outbreaks or evidence of infection had been detected during the preceding 12 months; no vaccinated livestock had been introduced since cessation of vaccination; disease and infection surveillance complied with the WOAH Code provisions; a regulatory framework was in place for FMD early detection, prevention, and control".

In August 2021, the "Dossier on FMD Control and Surveillance in the Russian Federation" (hereinafter, the Dossier) was submitted to the WOAH for zone II Urals – Western Siberia, considered as FMD-free without vaccination, with the objective to be officially recognized by the WOAH. However, in December 2021, this Dossier was withdrawn due to an outbreak caused by FMDV type O in the Orenburg Oblast. Following the FMD outbreak on 29 December 2021, restrictive measures were imposed by a Decree of the Governor of the Orenburg Oblast in the Karagachsky Selsoviet of the Belyaevsky Raion, the Orenburg Oblast [20]. The susceptible animals kept in the risk and protection zones were vaccinated with inactivated adsorbed monovalent FMD vaccine against type O.

Pursuant to Decree of the Governor of the Orenburg Oblast, the FMD-related restrictive measures were lifted on 14 February 2022.

Pursuant to the official letter from the Rosselkhoznadzor as of 28 December 2021, FMD vaccination for cattle and small ruminants was resumed in January 2022 in the 10 zone of the Russian Federation bordering on the Republic of Kazakhstan. This measure was implemented to mitigate the risk of FMD introduction into these regions and, in the event of an outbreak, to contain further FMD spread.

Field efficacy of the FMD vaccination is assessed, according to the WOAH recommendations, with the help of monitoring tests that show antibody titres in the vaccinated herds. According to the WOAH guidelines, the immunity response in cattle and small ruminants shall account for at least 80%.

The post-vaccination monitoring program involves a series of tests in the vaccinated animals aimed at objectively assessing their FMD immunity status, as well as at detecting hidden circulation of this pathogen in the susceptible livestock. These measures are implemented pursuant to the official Order of the Rosselkhoznadzor, which is annually updated and approved. Standardized laboratory methods are used by the Federal Centre for Animal Health for the research purposes and the enzyme-linked immunosorbent assay is the main tool, which is distinguished by its capacity to quantitatively assess post-vaccination immune response and antibody titres in animals.

In response to the FMD outbreak in the Orenburg Oblast and due to the initiation of the vaccination campaign in zone II Urals – Western Siberia, on 29 December 2021, the Rosselkhoznadzor issued a decision changing the status of the 10 zone within the zone to FMD-infected with vaccination.

In January and June 2022, the WOAH suspended the official status of FMD freedom without vaccination for the relevant zones in Kazakhstan (including those ones that border on the regions of the RF), following an FMD outbreak in the Karaganda Oblast and the subsequent vaccination [20]. Considering these circumstances and pursuant to the Rosselkhoznadzor's Decision of 22 December 2022 "On granting statuses to the Russian Federation regions for contagious animal diseases and specifying movement conditions for commodities subject to the state veterinary surveillance", 10 Russian regions bordering on Kazakhstan were grouped into three isolated zones based on the established regionalization requirements:

– Zone II Saratov – Samara: an FMD-free zone with vaccination, comprising 2 zone of the RF;

– Zone VI Urals – Western Siberia, which has the status of an FMD-free zone with vaccination and comprises 7 zone of the RF;

– Zone without the WOAH FMD-free status with vaccination, comprising 1 Russian Federation Subject (the Orenburg Oblast) established in accordance with Article 8.8.5 of the WOAH Code.

The isolated zone II Saratov – Samara and zone VI Urals – Western Siberia were established due to:

– the absence of recorded FMD outbreaks or evidence of FMDV for not less than the preceding 24 months;

– the absence of FMDV transmission events over the preceding 12-month period;

– the FMD surveillance conducted in accordance with Articles 8.8.40–8.8.42 of the WOAH Code;

– the routine anti-FMD vaccination of all susceptible livestock (cattle and small ruminants), using a vaccine compliant with the requirements of Chapter 3.1.8 of the Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, since January 2022;

– compliance with the WOAH import requirements and adherence to regulations governing the movement of live animals and livestock products;

– the specific operational characteristics of livestock establishments in these districts (specifically, their self-sufficient and independent functioning in terms of both feed supply and processing).

In August 2023, two dossiers documenting FMD control and surveillance results in the Russian Federation were submitted to the WOAH for zone II Saratov – Samara and zone VI Ural – Western Siberia – both recognized as FMD-free with vaccination – with the aim of obtaining an official WOAH status.

After the dossier review, the Scientific Commission concluded that the application does not fully comply with the provisions outlined in Chapter 8.8 of the WOAH Code.

Before resubmitting the application, it was necessary to implement a number of recommendations put forward by the Scientific Commission:

– provide updates on the adopted and implemented national legislation aimed at expanding the FMD case definition;

– submit data, including quantitative indicators, to objectively assess effectiveness of the implemented legislative framework;

– ensure continuous monitoring of the herd immunity status across all the vaccinated animal species. Special attention shall be paid to the territories with livestock immunity levels below 80%, as well as to regions characterized by a high risk of FMD introduction. In this context, it is recommended that systematic data collection and analysis be conducted to evaluate trends in immunity indicators, thereby enabling development of corrective measures, if required;

– include the 6–12-month-old group into post-vaccination monitoring tests. This age group is characterized by a lower number of prior immunizations, making it a key indicator for assessing effectiveness of the implemented vaccination strategy. The data obtained shall be stratified by age group. This will help to get reliable and detailed immune response indicators and will help to identify those groups that require additional protection from the standpoint of adequate immunity;

– review the existing scheme of serological tests. Specifically, it is essential to ensure that test parameters, including sensitivity and specificity, are based on detection of antibodies to non-structural proteins (NSPs) in the vaccinated animals. This methodological adjustment is crucial for securing diagnostic reliability and population-wide sample representativeness, ultimately improving precision of the epizootic situation surveillance [21];

– conduct an investigation into detection of animals showing a serological response to FMD NSPs. As part of this investigation, sample collection for serological analysis shall be conducted to enable subsequent animal monitoring, as stipulated in Article 8.8.42 of the WOAH Code;

– pay attention to segregation of livestock and control movement of both animals and products across the zones with differing sanitary and vaccination statuses. Such a measure will reduce the risk of FMD spread and ensure country's biosafety.

In 2024, following implementation of the recommendations from the WOAH Scientific Commission for Animal Diseases regarding FMD surveillance criteria, and based on the analysis of data submitted by 10 zone of the Russian Federation, on 6 May 2024, the Rosselkhoznadzor issued Decision "On granting statuses to the Russian Federation regions for contagious animal diseases and specifying movement conditions for commodities subject to state veterinary surveillance", which established a unified zone II Western Siberia – Urals with an FMD-free status with vaccination. The zone comprised 10 Russian zone bordering on Kazakhstan: the Saratov, Samara, Orenburg, Chelyabinsk, Kurgan, Novosibirsk, Omsk, Tyumen Oblasts, the Altai Krai, and the Altai Republic (with the exception for the Kosh-Agach Raion).

This decision was made pursuant to Article 8.8.4 of the WOAH Code and was based on several preliminary criteria:

– no recorded FMD outbreaks or evidence of FMDV infection for a minimum of the preceding 24 months;

– no FMDV transmission events over the preceding 24-month period;

– FMD surveillance conducted in compliance with Articles 8.8.43–8.8.45 of the WOAH Code over the preceding 24 months;

– mandatory systematic anti-FMD immunization in the target animal population since January 2022 to achieve adequate immunization rate and herd immunity;

– compliance with the WOAH Code import requirements and adherence to regulations governing movement of live animals and livestock products into the country or zone;

– compliance with the relevant provisions of paragraph 2 of Article 1.4.6 of the WOAH Code.

Consequently, these measures regulating the status modification demonstrate a systematic approach to control over contagious animal diseases in the Russian Federation. The decisions taken by the Rosselkhoznadzor in 2022–2024 on regionalization are based on the WOAH Code criteria, thus, ensuring compliance with the international standards on the veterinary surveillance and disease control, as well as contributing to preventive measures at both national and regional levels.

CONCLUSION

On 29 May 2025, during the 92nd WOAH General Session of the World Assembly of Delegates, a decision was made to grant the Russian Federation's zone II Western Siberia – Ural the official status of an FMD-free zone with vaccination.

This decision was made within the overall classification of the Russian Federation's regions into six separate zones. Five of the aforementioned zones had already been granted official WOAH FMD-free statuses.

The official FMD-free status granted to zone II Western Siberia – Urals, stretching along the border with Kazakhstan, is considered as an international recognition of the fact that the Russian Federation's territory is safe and disease-free, which fully complies with the standards of the WOAH Code. This decision confirms adherence to the most rigorous disease control protocols, which in turn demonstrate effectiveness of both preventive measures and well-organized surveillance within the country.

From 2013 to 2025, the Rosselkhoznadzor kept taking all the required measures for the whole country to be officially recognized as FMD-free. This result was achieved due to comprehensive prevention, coupled with the consistent activities mandated by the Rosselkhoznadzor's Decision "On granting statuses to the Russian Federation regions for contagious animal diseases and specifying movement conditions for commodities subject to the state veterinary surveillance". Collectively, these efforts ensured a high degree of disease control, as formally confirmed by the official statuses, which reflect successful implementation of the preventive strategies.

The granted FMD-free statuses objectively demonstrate that significant progress has been achieved in control of the infectious disease. Furthermore, they demonstrate efficacy of the preventive and organizational measures that facilitate safe trade in livestock products.

These outcomes are critical for maintaining global animal health stability and for mitigating the risk of new disease outbreaks at both regional and international levels.

The WOAH-recognized FMD-free zones in the Russian Federation significantly enhance export potential of the business operators located within them. Therefore,

relevant measures have been implemented both to achieve regulatory statuses and to enhance competitiveness of the national commodities worldwide.

Official recognition from the WOAH for FMD-free zones, both with and without vaccination, is the result of a long-term and intensive collaboration between the Rosselkhoznadzor and the Federal Centre for Animal Health. The implemented measures have enabled to annually reconfirm the WOAH FMD-free status for the entire territory of the Russian Federation, which is substantiated by statistical reviews and findings from epizootiological monitoring.

Consistent measures implemented to enhance infection control have significantly improved animal health situation.

The WOAH status granted to zone II Western Siberia – Urals points to both efficacy of the applied preventive measures and to a high degree of international recognition for the properly organized veterinary services and research activities.

Consequently, the measures taken to obtain the WOAH status bolster Russia's epizootic stability and help Russia to effectively compete on the global livestock markets.

This experience can be a good example to follow in order to further enhance preventive programs ensuring high-level protection against infectious diseases that aligns with the international standards and the WOAH recommendations.

REFERENCES

1. Federal Center for Development of Agricultural Exports under the Ministry of Agriculture of the Russian Federation (Agroexport). Statistics. Export of the agro-industrial complex of the Russian Federation in 2021. https://aemcx.ru/services-and-statistics/statistics/stat2021 (in Russ.)

2. Federal Customs Service. Reference and analytical materials. Customs statistics on the foreign trade of the Russian Federation, broken down by commodities, countries, and time periods. https://customs.gov.ru/statistic (in Russ.)

3. Singh C. P., Verma A. K., Pal B. C. Prevalence of protected animals against foot and mouth disease in Uttar Pradesh. *The Haryana Veterinarian*. 2008; 47: 107–109. https://www.luvas.edu.in/haryana-veterinarian/archive-2008.php?AM4

4. Singh R., Pandey A. B., Chandra D. K., Singh K. P., Mehrotra M. L. Epidemiology of malignant form of foot-and-mouth disease in susceptible cattle and buffalo population of Punjab and Uttar Pradesh. *The Indian Journal of Animal Sciences*. 2008; 78 (1): 3–7. https://epubs.icar.org.in/index.php/IJAnS/article/view/3315

5. Wang J., Chen J., Zhang S., Ding Y., Wang M., Zhang H., et al. Risk assessment and integrated surveillance of foot-and-mouth disease outbreaks in Russia based on Monte Carlo simulation. *BMC Veterinary Research*. 2021; 17:268. https://doi.org/10.1186/s12917-021-02967-x

6. Burova O. A., Zakharova O. I., Iashin I. V., Khaibrakhmanova S. Sh., Zhuchkova O. V., Grebnev N. A., Blokhin A. A. Foot and mouth disease: risk factors and control measures (review). *Agricultural Science Euro-North-East*. 2023; 24 (3): 346–358. https://doi.org/10.30766/2072-9081.2023.24.3.346-358 (in Russ.)

7. The control of economically significant animal diseases. *Agrarian Science*. 2020; (7–8): 12–13. https://elibrary.ru/enbxuf (in Russ.)

8. Jamal S. M., Belsham G. J. Foot-and-mouth disease: past, present and future. *Veterinary Research*. 2013; 44:116. https://doi.org/10.1186/1297-9716-44-116

9. Rahman A. U., Dhama K., Ali Q., Raza M. A., Chaudhry U., Shabbir M. Z. Foot and mouth disease in a wide range of wild hosts: a potential constraint in disease control efforts worldwide particularly in disease-endemic settings. *Acta Tropica*. 2020; 210:105567. https://doi.org/10.1016/j.actatropica.2020.105567

10. Fukai K., Kawaguchi R., Nishi T., Ikezawa M., Yamada M., Seeyo K. B., Morioka K. Risk of transmission of foot-and-mouth disease by wild animals: infection dynamics in Japanese wild boar following direct inoculation or contact exposure. *Veterinary Research*. 2022; 53:86. https://doi.org/10.1186/s13567-022-01106-0

11. Nikiforov V. V., Mayorova T. K., Karaulov A. K., Spiridonov A. N., Savvin A. V. Susceptibility to foot and mouth disease and role of wild animals. *Veterinary Science Today*. 2014; (1): 35–40. https://elibrary.ru/tzlmpr

12. Bolortsetseg S., Enkhtuvshin S., Nyamsuren D., Weisman W., Fine A., Yang A., Joly D. O. Serosurveillance for foot-and-mouth disease in Mongolian gazelles (*Procapra gutturosa*) and livestock on the Eastern Steppe of Mongolia. *Journal of Wildlife Diseases*. 2012; 48 (1): 33–38. https://doi.org/10.7589/0090-3558-48.1.33

13. World Organisation for Animal Health. Terrestrial Animal Health Code. https://sont.woah.org/portal/tool/?tab=0&panel=content-navigation&le=en

14. The Spread of Pathogens through International Trade. *OIE Scientific and Technical Review*. *Ed. by S. C. MacDiarmid.* 2011; 30 (1): 1–370. http://dx.doi.org/10.20506/rst.issue.30.1.46

15. Chen R. T., Orenstein W. A. Epidemiologic methods in immunization programs. *Epidemiologic Reviews*. 1996; 18 (2): 99–117. https://doi.org/10.1093/oxfordjournals.epirev.a017931

16. The Progressive Control Pathway for FMD control (PCP-FMD). Principles, Stage Descriptions and Standards. 2012. https://www.fao.org/fileadmin/user_upload/eufmd/docs/PCP/PCP_en.pdf

17. Sumption K., Domenech J., Ferrari G. Progressive control of FMD on a global scale. *Veterinary Record*. 2012; 170 (25): 637–639. https://doi.org/10.1136/vr.e4180

18. The Global Foot and Mouth Disease Control Strategy. Strengthening animal health systems through improved control of major diseases. 2012. https://www.fao.org/4/an390e/an390e.pdf

19. Nikiforov V. V., Noskov S. A., Sprygin A. V., Alhussen M. A., Krylova A. S., Erofeeva T. V., et al. The presence of two distinct lineages of the foot-and-mouth disease virus type A in Russia in 2013–2014 has significant implications for the epidemiology of the virus in the region. *Viruses*. 2025; 17 (1):8. https://doi.org/10.3390/v17010008

20. Nikiforov V., Shcherbakov A., Chvala I., Kremenchugskaya S., Korennoy F., Mayorova T., et al. Insights into the molecular epidemiology of foot-and-mouth disease virus in Russia, Kazakhstan, and Mongolia in terms of O/ME-SA/Ind-2001e sublineage expansion. *Viruses*. 2023; 15 (3):598. https://doi.org/10.3390/v15030598

21. Yakovleva A. S., Scherbakov A. V. Detection of antibodies to non-structural proteins of foot-and-mouth disease virus (review). *Veterinary Science Today*. 2023; 12 (3): 190–196. https://doi.org/10.29326/2304-196X-2023-12-3-190-196

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