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MODERN ASPECTS OF VETERINARY AND SANITARY INSPECTION OF MUTTON IN THE SOUTH OF ODESSA REGION

Abstract

The article presents a literature review on the issue of veterinary and sanitary inspection of lamb in the southern Odessa region. Sheep breeding is considered a traditional livestock industry for this region. This is also due to the presence of favorable conditions for keeping and breeding sheep, which are unpretentious to the conditions of keeping, and are also characterized by early maturity and fertility. Mutton is characterized by good taste, high nutritional and dietary value, as well as low cholesterol content, compared to meat from other mammals. If properly organized, the sheep farming industry may require minimal investment. However, the sheep breeding industry poses a threat of introducing transboundary diseases into the territory of Ukraine, including bluetongue, plague of small ruminants, sheep and goat pox, and foot-and-mouth disease, which are registered in countries bordering the region (Moldova, Romania), and against which measures are being taken in bordering countries. Eliminating outbreaks of these diseases in European countries leads to huge economic losses associated with the lack of products, treatment, preventive measures, and vaccinations. The problem has become extremely urgent since the introduction of martial law in Ukraine, when southern border checkpoints began to be actively used. At the same time, literary sources prove the huge role played by wild fauna, whose numbers are currently not regulated due to the ban on hunting, in the spread of these diseases. Cross-border diseases can cause enormous losses to livestock, and consequently to the country's economy. Therefore, qualified veterinary and sanitary inspection of carcasses of sheep, mutton, and live animals should be given great attention, because the well-being of both the region and the country as a whole depends on it. The procedure of veterinary and sanitary inspection should be strictly carried out, in compliance with the norms of current legislation regulating the quality and safety of food products, food raw materials, at all levels. The leading place in preventing pathogens from entering the territory of our state also belongs to the conduct of qualified control of mutton and sheep products at the state border.

Keywords: *sheep farming, lamb, veterinary and sanitary inspection, quality, safety, regulatory framework, transboundary diseases, climate change.*

Introduction. The health of the country's population directly depends on the quality and safety of the products they consume. The current and undisputed priority of the national integration policy of Ukraine as an independent sovereign state has become the course towards European integration, its acquisition of associated, and over time, full membership in the EU [47].

In Ukraine, European integration processes are gradually taking place in all sectors, including the food industry. Measures are being actively implemented to transition to international requirements for the control of products of animal origin, taking into account sanitary and hygienic requirements at all stages of production and sale [15]. At the same time, livestock farming in the south of the Odessa region has its own characteristics, one of which is the popularity of such an industry as sheep breeding, which is traditional for Bessarabia [44-45]. The economically useful qualities of sheep (high reproductive capacity, precocity, good payback for the feed consumed, duration of use of reproductive livestock, fertility and multiplicity) provide their advantage compared to other types of farm animals [26]. In modern agriculture, the development of sheep breeding is becoming increasingly important. Sheep farming is an export-oriented meat industry. Odesa region is the national leader in the number of identified and registered sheep and goats in Ukraine. According to official data, as of January 1, 2024, 255.3 thousand heads of sheep and goats are kept in all categories of farms in the Odessa region, of which 23.1 thousand heads or 9.1% are in 39 agricultural enterprises and 232.2 thousand heads in households or 90.9% [40-41].

Today, the share of lamb in the meat balance of Ukraine is 5-6.5%, and in some regions of the country, where it is an essential product for preparing national dishes, it reaches 30% or more [17].

The majority of lamb is produced in small and medium-sized farms and sold in agri-food markets. Therefore, it is the state veterinary and sanitary examination laboratories in agri-food markets that bear the greatest responsibility for the sale of high-quality and safe raw materials to the population. In addition, the south of the Odessa region borders neighboring states (Romania, Moldova), and border checkpoints, under martial law, are actively operating, which creates a threat of introducing cross-border diseases into the territory of our state, including sheep diseases of infectious and invasive etiology.

Analysis of recent research and publications. The analysis of recent research and publications has proven the relevance of the problem.

Meat plays a leading role in human nutrition. It has been, is and will remain one of the important sources of food. The human body is biologically adapted to consume it. Due to its valuable nutrients, which are important for our body, meat should be present in the daily diets of the population on a permanent basis, and replacing it with vegetable proteins is inappropriate. Scientists have found that conjugated linoleic acid plays a major role and beneficial effect in human life, modulating inflammatory and immune reactions, improving and forming bone mass. Carnosine has a strong

antigenotoxic and antioxidant effect, slows down the aging process. Literature indicates that meat consumption is highest in countries where the population has high income. In Brazil and Australia, people are increasingly preferring meat in their diet [21].

Analysis of literary sources proves that sheep breeding is a significant source of meat raw material production [17]. This industry is climate-oriented farming. Sheep farming products have a relatively low carbon footprint. Sheep emit less methane compared to cattle, which reduces their climate impact. Sheep can use pastures, including those that are unsuitable for other types of farm animals. This allows the rational use of land resources and prevents their degradation. In addition, sheep can improve soil structure and prevent erosion through natural grazing. They destroy the topsoil less than cattle, which helps preserve soil cover and has a direct impact on the climate. Thus, the development of sheep breeding is not only an economically profitable, but also an environmentally and socially significant area of agriculture. According to experts, investments in sheep farming contribute to the sustainable development of rural areas, increasing food security, and strengthening the country's economy [40-41].

The southern region of Ukraine is the main one for the sheep breeding. This accounts for 49.7% of the total livestock population in Ukraine. The main breeds in southern Ukraine are the Ascanian fine-wool, the Ascanian meat-wool with crossbred wool, the Ascanian Karakul, and the Tsygai. According to scientists, the main direction of development of the sheep breeding industry in Ukraine should be the creation of meat sheep breeding, because the state has significant potential for the production of high-protein feed, which is absolutely necessary for the development of this direction [45].

However, despite the positive aspects, despite the rich natural resources, favorable climate and ancient traditions, the sheep breeding is in decline. This is due to changes in agrarian policy, the influence of global economic trends, labor migration, and the consequences of military operations [40].

In addition, the analysis of literary sources demonstrates that the current global epizootic situation is characterized by a pronounced increase in tension regarding a number of the particularly dangerous viral infections of livestock, including diseases of sheep and goats. The above diseases include plague of small ruminants, sheep and goat pox, and Rift Valley fever.

The analysis of literary sources proves that the sheep breeding industry is also one of the leading in the countries bordering Ukraine (Romania, Moldova), and plays a major role in maintaining the economic stability of these countries [12, 13, 18, 25, 42]. So, the production and trade of the lamb and goat meat can bring significant income to Romanian farmers. Although raising these animals is a traditional practice in Romania, the profitability of the sector depends on various contextual factors [25, 43]. Between 2003 and 2017, Romania became an important source of live sheep and goat exports [18]. Sheep breeding is a developed branch of livestock farming in a country like Serbia, which has a favorable climatic conditions [9].

However, the above-mentioned positive aspects are accompanied by a constant threat of cross-border infections entering the territory of our state, as there is constant transportation of animals, transportation of raw materials, and possible outbreaks in wild fauna, which is associated with similar climatic conditions of the regions, climate change, and the ban on hunting in Ukraine during martial law.

The Food and Agriculture Organization of the United Nations (FAO) and the World Organization for Animal Health (WOAH) determine that the most dangerous of the infectious animal diseases are those with transboundary potential. They spread rapidly across large areas of different countries and between them, easily crossing borders, creating social and economic impacts on society and animal health at the herd level. Transboundary animal diseases threaten food production due to shortages of raw materials, the risk of human diseases, and the zoonotic potential of the latter [20]. There are also significant socio-economic impacts from the cost of control or prevention measures, as well as from the trade restrictions that may arise from the outbreaks. Thus, there is a high probability that these diseases could exacerbate poverty and food insecurity. Unfortunately, transboundary diseases are predominantly found in low-income areas, which increases the significance of the consequences and the difficulty in obtaining funding for control or prevention measures [19].

In Ukraine, the main regulatory acts regulating the veterinary and sanitary inspection of meat raw materials, including lamb, and preventing outbreaks of transboundary diseases are the Law of Ukraine On the Basic Principles and Requirements for the Safety and Quality of Food Products, the Rules for Pre-slaughter Veterinary Inspection of Animals and Veterinary and Sanitary Examination of Meat and Meat Products, the Law of Ukraine On Veterinary Medicine and Animal Welfare, Veterinary and Sanitary Rules for Animals, Slaughter and Sanitary Points of Farms and Yard Animal Protection [23-24, 34-35]. In addition, the regulatory act regulating the conduct of veterinary and sanitary inspections in state laboratories of veterinary and sanitary examination in agri-food markets is the Regulation on the State Laboratory of Veterinary and Sanitary Examination in the Market [33].

The aim of the work was to analyze the available literature sources on the features of veterinary and sanitary inspection of lamb in the south of the Odessa region, which borders neighboring states, and to assess the existing risks of introducing transboundary diseases (sheep and goat pox, bluetongue, foot-and-mouth disease, etc.).

Presentation of the main research material. In order to study the current problem, domestic and foreign literary sources were analyzed (50 sources in total).

The main research methods were analytical, statistical, and comparative.

The south of Odessa region is characterized by favorable climatic conditions for the development of the sheep breeding industry. In addition, this livestock industry is traditional for the region, which is reflected in the culinary preferences of the local population, traditions [26]. Accordingly, in this area, the need to conduct veterinary and sanitary inspections of lamb by specialists of the State Food and Consumer Service arises frequently.

According to Lugovoi S. I. and co-authors, about 1.35 million heads of the total livestock remain in Ukraine. Of these, only about 180 thousand sheep are located in enterprises operating at an industrial level. Scientists note that the most important feature of domestic sheep is their great plasticity and significant potential for adaptability to various climatic and forage conditions. These animals can be bred on farms of various production sectors throughout Ukraine. Based on the practice of highly developed countries, a common form of sheep farming that has proven itself is farming with modern production technology. Scientists believe that the development of sheep farming could be an approach to solving the country's meat problem [26, 44]. In addition, sheep productivity is directly related to their feeding [37]. Also, the successful development of sheep farming largely depends on taking into account the biological characteristics of sheep, which, unlike other ruminants, are able to consume significantly more plant species [17]. Thus, modern approaches in sheep farming are aimed at integrating scientific achievements and innovative technologies to increase productivity, product quality and sustainability of the industry [41]. The provisions of the Program for the Development of the Sheep Breeding Industry of Ukraine for 2012-2025, developed by the Institute, provide for a 2.2-fold increase in the number of sheep in farms of all forms of ownership in the Southern region [45].

According to Stoyanova A. A., the restoration and development of sheep breeding in the Odessa region requires a comprehensive approach that will include modernization of production, increasing work efficiency and attracting investments. The introduction of innovations, the transition to environmentally friendly methods and organic farming can give impetus to the growth of this industry. In addition, the development of exports, especially to EU countries, will become an important factor, given the growing demand for organic products [40].

It should be noted that qualified veterinary and sanitary inspection of lamb plays a leading role in ensuring food security of the population, as well as in preventing the territory of our state from the introduction of transboundary diseases that occur in the states bordering the south of the Odessa region (Romania, Moldova), especially during martial law [12, 42].

Thus, there are studies that indicate that 8.33% of lamb sold in the agri-food markets of the Odessa region is questionably fresh, and some samples even show weak toxicity [15].

It should also be understood that the quality of lamb is directly related to the well-being of the area. Often, lamb in the south of the Odessa region is obtained from animals affected by parasitic diseases, the peak of the infestation of which falls on the summer months, so it is at this time that veterinary and sanitary inspection should be as professional and qualified as possible. Sheep in the south of the Odessa region are most often affected by invasive diseases such as moniesiosis and echinococcosis. According to scientists, the seasonal dynamics of these helminths are not stable due to rapid climate changes in the region in recent years [7, 11, 36]. Inspection should be based not only on the classical, generally accepted methods, but also on the results of the latest methods of the raw material identification [8].

Transboundary diseases that can occur among sheep include peste des petits ruminants, sheep and goat pox, bluetongue, foot-and-mouth disease, and Rift Valley fever. It was with the threat of the introduction of plague of small ruminants and foot-and-mouth disease into the territory of Ukraine that our country faced in 2025, as outbreaks were recorded in neighboring countries.

Peste des petits ruminants (PPR) is a highly contagious disease that affects domestic and wild small ruminants, causing significant economic losses [39]; affects productivity and international trade in animals worldwide [28]. Peste des petits ruminants was first described in West Africa, where it has probably been endemic in sheep and goats since the outbreak of the rinderpest pandemic and has always been misdiagnosed as rinderpest in sheep and goats. Since its discovery, PPR has had a significant impact on sheep and goat farmers in Africa [27]. PPR is spreading at an accelerated rate throughout the world and is of serious concern as it continues to wreak economic and social havoc. The spread and prevention of PPR in endemic countries must be contained through an effective vaccination program. Affected animals must be provided with the necessary treatment and care. Rapid and accurate diagnosis is of paramount importance, along with various diagnostic tools, to prevent further spread of the disease [2]. In addition, when diagnosing the disease, the seasonality of respiratory diseases in sheep should be taken into account [30].

Plague of small ruminants is manifested by fever, mucopurulent discharge from the nose and eyes, necrotic and erosive stomatitis, pneumonia and enteritis. [38]. This disease is prone to relapses [14]. The disease is widespread in a number of Asian countries, Tibet, Egypt, Pakistan, Africa, the Middle East, and India [46]. Thus, the overall cumulative prevalence of the disease among sheep and goats in Pakistan was 51%. Scientists have proven that the spread of the disease is influenced by animal husbandry methods, immunization and geographical factors [1, 49]. In Ethiopia, the prevalence of the disease among sheep is 71.2%. Following the successful eradication of rinderpest, the World Organization for Animal Health (WOAH) and the Food and Agriculture Organization of the United Nations (FAO) have committed to eradicating peste des petits ruminants by 2030. Scientists note that the fight against the disease in this region should be based on quarantining animals when they are imported into farms, vaccination, isolation, and identification of the pathogen using PCR [46].

PPR was confirmed in Sudan using ELISA in samples from infected and dead animals in outbreak areas. Approaches to eliminate the disease are generally accepted and similar to those used in other countries (quarantine, vaccination, isolation and monitoring of the pathogen) [3].

Literature data show that in India, peste des petits ruminants is among the ten most common diseases and ranks first among viral diseases, accounting for 36% of mortality in sheep and goats. Outbreaks of the disease are recorded throughout the year, but most often occur during the lean season, especially in winter (January-February) in various regions. Thanks to the implementation of a strategic mass vaccination program since 2011, the number of reported outbreaks has gradually decreased in most states in India [5-6].

Romania, as a supplier of live animals, is also valued for raising animals under extensive grazing systems [13, 18]. Favorable conditions for raising sheep and goats have placed Romania in 3rd place in the European Union in terms of their number. In 2019, the sheep population was 10,358,699 heads, and goats - 1,594,862 heads [12]. However, on 19.07.2024, the first outbreak of peste des petits ruminants in Romania was confirmed. In August 2024, 56 outbreaks of peste des petits ruminants were confirmed in Romania in Tulcea, Constanța and Timiș counties. As a result of the measures taken by the authorities, a total of 236,082 sheep and goats were killed. The first cases of the disease appeared on 07/11/2024, and deaths were observed in the following days. PPR also appeared in Greece among goats and sheep kept in the municipality of Kalambaka, which was confirmed on 11 July 2024. In 2018, among the countries located closer to Romania, the disease was registered in Turkey, Georgia and, more recently, in Bulgaria. Tens of thousands of animals were killed and large areas were quarantined. In January 2025, the first outbreak of peste des petits ruminants (PPR) was confirmed in Hungary at the National Food Chain Safety Authority (Nébih) laboratory in Szállás county, marking the first case of rinderpest in the country, and the sanitary and veterinary authorities declared an alert. Measures were also taken in Slovenia [29].

According to the legislation in force in Ukraine, in the event of detection of patients suspected of having PPR, after slaughter, carcasses, blood, skins and all other slaughter products are destroyed by burning. And when slaughtering animals that have been infected with PPR, the meat and offal are sent for industrial processing after microbiological examination [34].

Sheep and goat pox is an extremely devastating systemic viral disease of sheep and goats. This disease is manifested by skin and internal lesions, fever, conjunctivitis, oculonasal discharge, and excessive salivation. Sheep and goat pox viruses can survive in the environment for a long periods of time. This is an economically important disease because it causes high morbidity and mortality in sheep and goat farming. These diseases are widespread in the Middle East, Africa, Central Asia, and India. In Ethiopia, the disease is prevalent in all regions, and in an endemic areas it is of economic importance due to production losses due to reduced weight gain, milk yield, damage to wool and hides, causing abortions and increased susceptibility to other diseases, and is also a direct cause of death. The disease is more severe in young animals than in adults. According to the authors, treatment should be aimed at preventing secondary bacterial infection. The movement of animals and animal products should be restricted during a disease outbreak. Carcasses, hides, wool or fiber that may have been contaminated should be burned or buried. In addition, insects that are potential vectors of the virus should be controlled, and animals should be vaccinated - this is the main control measure in endemic regions [48]. Diagnosis of the disease relies largely on clinical symptoms, confirmed by laboratory tests using real-time PCR, electron microscopy, virus isolation, serology, and histology. Control and elimination of sheep and goat pox virus depend on timely recognition of disease outbreaks, vector control, and movement restrictions [50].

Literature sources report that sheeppox is traditionally endemic in Africa, the Middle East, and several countries in Southeast Asia, but is considered a transboundary disease capable of epidemically affecting countries that were previously free of it. This is a disease that must be immediately reported to the World Organization for Animal Health (WOAH) and the European Union (EU). On 19 September 2022, the disease re-emerged in Spain, which had been free of it since 1968, causing a total of 30 outbreaks until 17 May 2023, when the last outbreak was recorded. Disease control and eradication measures were implemented in EU legislation and were based on the complete destruction of positive herds, zoning and movement restrictions, as well as enhanced biosecurity and passive surveillance [16].

Based on the requirements of the legislation in force in Ukraine, carcasses and internal organs with a benign form of the disease and healing of pustules after removal (cleaning) of pathologically altered, swollen tissues are sent for industrial processing. Carcasses and slaughter products in cases of draining, hemorrhagic and gangrenous forms are disposed of, and the skins are disinfected [34].

Bluetongue is a viral disease of ruminants, especially sheep, transmitted by arthropodsBluetongue was previously thought to be limited to Africa and parts of the Middle East, but it has now become a problem in sheep-raising countries around the world. Over the past 10 years, Europe has experienced serious outbreaks with significant economic consequences. Immunization campaigns can be conducted to successfully control and limit the spread of the disease. As scientists note, the late use of vaccination led to the widespread spread of the disease, which subsequently caused significant livestock losses in the affected regions [22]. Bluetongue is diagnosed in almost all species of ruminants (wild or domestic), as well as in predators, rodents and reptiles. Apart from Antarctica, cases of bluetongue have been recorded in almost every corner of the Earth, either as an enzootic (Africa, North America) or as an epidemic disease of ruminants. The clinical form of bluetongue occurs primarily in sheep, causing a febrile disease characterized by hemorrhagic clinical signs and increased mortality. In recent years, strong evidence has emerged that wild ruminants may play an important role in the epidemiology of bluetongue. Prolonged viremia in subclinically infected wild ruminants makes them suitable for maintaining the virus in populations of susceptible animals. This can create serious problems in implementing disease control programs without continuous monitoring of the situation; the potential presence of virus serotypes in wild cervids different from those targeted by the intervention [4, 10]. In Europe, outbreaks of bluetongue virus were recorded in France in 2015. In addition, it has been scientifically proven that the bluetongue virus still circulates in some regions of southern and southeastern Europe, the Balkan countries (Italy, Spain, Turkey, Croatia, Bulgaria, Romania, Moldova, Albania, Serbia, Croatia, Montenegro, Macedonia, Bosnia and Herzegovina). According to the anvil, the restriction zones are regularly updated and they restrict the movement of live animals, but these zones will not be able to prevent the spread of vectors [32].

According to the regulations in force in Ukraine, if signs of bubonic plague are detected after slaughter, all animal slaughter products are destroyed, and the skins are disinfected [34].

Another transboundary disease whose outbreaks can be linked to the use of small cattle and raw materials from these animals is foot-and-mouth disease, a highly contagious and economically devastating disease endemic to the African and Asian continents that affects cloven-hoofed animals, causing fever, ulcers in the mouth, udder and hooves, leading to significant economic losses. Symptoms of the disease include drooling, lameness, feed refusal and reduced milk production, requiring immediate notification to veterinary professionals when suspected and strict adherence to biosecurity to prevent the spread of the virus. The main measures for the prevention of foot-and-mouth disease in small ruminants are ensuring quarantine for newly acquired animals; strict control over the movement of animals and compliance with sanitary standards; increasing the attention and vigilance of animal owners, especially during periods favorable for the virus (low temperature and high humidity) [31].

According to current legislation, the release of meat and other slaughter products in raw form is prohibited. Meat and other products obtained from the slaughter of sick animals in the absence of pathological and anatomical changes in the carcass or the detection of minor lesions, as well as from animals suspected of having the disease, who have had the disease, vaccinated with an inactivated vaccine (before the end of 21 days) in disadvantaged areas and a threatened zone, are used depending on the microbiological examination.

In the presence of single small, numerous or large necrotic foci in the muscles (pelvic and thoracic limbs, shoulder girdle, etc.), as well as in complicated forms of foot-and-mouth disease accompanied by gangrenous or purulent inflammation of the limbs, udder and other organs, the carcass and organs are sent for disposal.

If more than three months have passed since the quarantine was lifted from the farm, animals that have had foot-and-mouth disease, as well as animals vaccinated against foot-and-mouth disease 21 days after vaccination, are allowed to be sent to a slaughterhouse, and meat and other slaughter products in this case are sold within the country without restrictions [34].

Conclusions and prospects for further research. Food security is one of the top priorities of our state, because the health of the population and the competitiveness of domestic products on the world market depend on it. Under the conditions of European integration, today the regulatory framework regulating the quality and safety of food products is undergoing stages of adaptation to European legislation.

Mutton plays an important role in providing the population with meat, especially in the southern regions of the Odessa region, where sheep breeding is a traditional branch of livestock farming. With the beginning of the full-scale invasion, border crossings located in the south of the Odessa region began to be actively used, which daily creates risks of introducing cross-border diseases into Ukraine, among which sheep diseases (pest of petits ruminants, sheep and goat pox, bluetongue, foot-and-mouth disease) play an important role, especially since outbreaks of diseases have been

registered in neighboring countries (Romania, Moldova, Bulgaria, Greece) and taking into account that wild animals may participate in the spread of diseases. Therefore, special attention should be paid to conducting veterinary and sanitary inspections of sheep carcasses in this region. It is also advisable to conduct educational work among veterinary medicine specialists and raw material consumers regarding existing threats.

Further research is planned to be devoted to studying the quality and safety parameters of lamb sold in agri-food markets in various districts of the Odessa region, as well as to improving veterinary and sanitary inspection methods.

Reference

1. Abubakar M., Rasool M. H., Manzoor S., Saqalein M., Rizwan M., Munir M., Qurban A., Wensman J. J. Evaluation of risk factors for Peste des petits ruminants virus in sheep and goats at the Wildlife-Livestock Interface in Punjab Province, Pakistan. *BioMed Research International*. 2016. Vol.(1). 7826245. URL: https://onlinelibrary.wiley.com/doi/epdf/10.1155/2016/7826245
2. Adwitiya D. M., Choudhury F. A., Barua A., Talukdar M. J. Peste des petits ruminants: a comprehensive overview. *The Pharma Innovation Journal*. 2022. Vol. 11(9). P. 776-782.
3. Ali S. E., Ahmed Y. A., Osman A. A., Gamal Eldin O. A., Osman N. A. Prevalence of peste des petits ruminants virus antibodies in sheep and goats sera from Central-Western Sudan. *Onderstepoort Journal of Veterinary Research*. 2023. Vol. 90(1). P. e1-e8. DOI: 10.4102/ojvr.v90i1.
4. Ayuti S. R., Khairullah A. R., Lamid M., Warsito S. H., Arif M.A.A., Kim E.J., Moses I.B., Shin S., Wardhani B.W.K., Wasito W., Khalisa A.T., Ahmad R.Z. Bluetongue in ruminants: Global epidemiology, pathogenesis, and advances in diagnostic and control strategies within a One Health framework. *Vet World*. 2025. Vol. 18(10). P.3070-3093. doi: 10.14202/vetworld.2025.3070-3093.
5. Balamurugan V., Varghese B., Sowjanya Kumari S., Kumar K. V., Muthuchelvan D., Govindaraj G., Suresh K. P., Hemadri D., Roy P., Shome B. R. Assessment of post-vaccination immune response to peste des petits ruminants virus in small ruminants in the central and western regions of India. *VirusDisease*. 2022. Vol. 33(4). P. 413-421.
6. Balamurugan V., Vinod Kumar K., Dheeraj R., Kurli R., Suresh K. P., Govindaraj G., Shome B. R., Roy P. Temporal and spatial epidemiological analysis of Peste des petits ruminants outbreaks from the past 25 years in sheep and goats and its control in India. *Viruses*. 2021. Vol. 13(3). P. 480. DOI doi: 10.3390/v13030480
7. Bogach M., Piven O., Liulin P., Bohach D., Chornyi V., Bohach O. Dynamics of sheep monieziasis and oribatid mites population under hydrometeorological

conditions of Bessarabia, Ukraine. *Helminthologia*. 2025. Vol. 62. P. 185-196. DOI: 10.2478/helm-2025-0028

8. Bogatko N. M. Identification of meat from slaughtered animals using express methods. *Veterinary, animal husbandry and environmental management technologies.* 2020. № 5. P. 11-17.
9. Cekic B., Ruzic-Muslic D., Maksimovic N., Caro P. V., Zivkovic V., Marinkovic M., Cosic I. Productivity of local sheep and goat breeds in small farm households and their role in sustainability in Central Serbia. In *Zootehnie şi Biotehnologii agricole*. 2018.Vol. 52. P. 10-15.
10. Chatzopoulos D. C., Valiakos G., Giannakopoulos A., Birtsas P., Sokos C., Vasileiou N. G. C., Papaspyroulos K., Tsokana C., Spyrou V., Fthenakis G. S., Billinis C. Bluetongue Virus in wild ruminants in Europe: concerns and facts, with a brief reference to bluetongue in cervids in Greece during the 2014 outbreak. *Small Ruminant Research*. 2015. Vol. 128. P. 79-87. DOI: 10.1016/j.smallrumres.2015.03.009
11. Chihai O., Umhang G., Erhan D., Boue F., Tălămbuţă N., Rusu Ş., Zamornea M. Slaughterhouse survey of cystic echinococcosis in cattle and sheep from the Republic of Moldova. *Journal of helminthology*. 2016. Vol. 90(3). P. 279-283. DOI: 10.1017/S0022149X15000103
12. Chiurciu I. A., Cofas E. Technical-economic analysis of sheep and goat herds in Romania. *In Agrarian Economy and Rural Development-Realities and Perspectives for Romania. International Symposium. 11th Edition (pp. 110-117). Bucharest: The Research Institute for Agricultural Economy and Rural Development (ICEADR).* 2020. URL: https://www.econstor.eu/bitstream/10419/234378/1/ICEADR-2020-p110.pdf
13. Chiurciu I. A., Zaharia I., Fîntîneru G., Dinu T. A., Soar E. Sheep and goat breeding in Romania-between tradition and consumption. *Scientific Papers Series Management, Economic Engineering in Agriculture & Rural Development*. 2023. Vol. 23(2). URL: https://www.researchgate.net/publication/373137664_SHEEP_AND_GOAT_BREEDING_IN_ROMANIA_-BETWEEN_TRADITION_AND_CONSUMPTION
14. Dai R., Qi M., Xiong H., Yang X., He J., Zhang Z., Yang Y., Lin X., Xin Y., Yang Y., Li C., Li Z., Xu J., Wang Z., Li W., Wei B. Serological epidemiological investigation of Tibetan sheep (Ovis aries) plague in Qinghai, China. *Vector-Borne and Zoonotic Diseases*. 2019. Vol. 19(1). P. 3-7. DOI: 10.1089/vbz.2017.2257
15. Divenko N. Yu., Petrenko O. V., Dubenska A. A. Safety of beef and lamb sold at agri-food markets in the districts of Odessa region. *Solving modern problems in veterinary medicine: Materials of the III All-Ukrainian Scientific and Practical*

Internet Conference, February 15-16, 2018. Poltava: LLC "Ukrpromtorgservice", 2018. P. 17-20. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/1615/1/compressed.pdf#page=17

16. Germán C. G., Luis R. G., Sergio B. G., Fatima G. C., Manuel F. M., Jaime C. G., Jesús T. C. Description of sheep pox outbreak in Spain in 2022–2023: Challenges found and lessons learnt in relation with control and eradication of this disease. Viruses. 2024. Vol.16(7). 1164. DOI: 10.3390/v16071164
17. Golubenko T. L., Tkachenko T. Yu. Meat productivity of sheep depending on breed characteristics. *Bulletin of Sumy National Agrarian University (Animal Husbandry).* 2024. Iss. 4 (59). P. 22-29. DOI: https://doi. org/10.32782/bsnau. lvst. 2024.4. 3.
18. Grodea M. The sheep and goat farming sector in Romania-a new development perspective. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*. 2018. Vol. 18, Issue 3. P. 151-158. URL: https://managementjournal.usamv.ro/pdf/vol.18_3/Art20.pdf
19. Iovenko A. V. Transboundary animal infections: foot-and-mouth disease and bluetongue. *Innovative aspects and prospects for the development of technology for the production and processing of livestock products: materials of the international scientific and practical conference (Mykolaiv, October 24-25, 2025).* Mykolaiv: MNAU, 2025. P. 86-88.
20. Kornienko L. E., Ukhovsky V. V., Karpulenko M. S., Moroz O. A., Tsarenko T. M., Radzykhovsky M. L., Ruda M. E. Epizootic situation in the world regarding transboundary animal diseases.*One Health Journal*. 2024. Vol. 2, № 2. P. 41-58.
21. Kryvoruchko Yu., Babay V. Meat production in countries around the world. *Modern technologies for the production and processing of livestock products: materials of the III All-Ukrainian Scientific and Practical Student Conference of Applicants (Odesa, March 7, 2024).* Odesa, 2024. P. 50-54. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/4870/1/%D0%A1%D0%A3%D0%A7%D0%90%D0%A1%D0%9D%D0%86%20%D0%A2%D0%95%D0%A5%D0%9D%D0%9E%D0%9B%D0%9E%D0%93%D0%86%D0%87%20%D0%92%D0%98%D0%A0%D0%9E%D0%91%D0%9D%D0%98%D0%A6%D0%A2%D0%92%D0%90%20%282%29.pdf#page=50
22. Kyriakis C. S., Billinis C., Papadopoulos E., Vasileiou N. G. C., Athanasiou L. V., Fthenakis G. C. Bluetongue in small ruminants: An opinionated review, with a brief appraisal of the 2014 outbreak of the disease in Greece and the south-east Europe. *Veterinary microbiology*. 2015. Vol. 181(1-2). P. 66-74. DOI: 10.1016/j.vetmic.2015.08.004

23. Law of Ukraine On Basic Principles and Requirements for Food Safety and Quality (Document revision from 07.11.2025, basis - 3947-IX). URL: https://zakon.rada.gov.ua/laws/show/771/97-%D0%B2%D1%80#Text
24. Law of Ukraine On Veterinary Medicine (Document revision from 01.01.2026, basis - 3221-IX). URL: https://zakon.rada.gov.ua/laws/show/2498-12#Text
25. Liptac A. P., Stanciu S.The Sheep and Goat Sector in Romania: Economic Perspectives and Development Directions. *Annals of the University Dunarea de Jos of Galati: Fascicle: I, Economics & Applied Informatics*. 2024. Vol. 30(3). P. 484-490. URL: https://eia.feaa.ugal.ro/images/eia/2024_3/Liptac_Stanciu.pdf
26. Lugovyi S. I., Kramarenko S. S., Kramarenko O. S., Lykhach V. Ya., Atamanyuk I. P. Ensuring an optimal microclimate in lamb production complexes (production and practical recommendations). 2023. 23 p. URL: https://dspace.mnau.edu.ua/jspui/bitstream/123456789/17466/1/zabezpechennya-optimalnogo-mikroklimatu.pdf
27. Mantip S. E., Shamaki D., Farougou S. Peste des petits ruminants in Africa: meta-analysis of the virus isolation in molecular epidemiology studies. *Onderstepoort Journal of Veterinary Research*. 2019. Vol. 86(1). P. 1-15. DOI: 10.4102/ojvr.v86i1.1677
28. Mondal A., Auwul M., Hossen M., Islam M., Paudyal N., Islam M., Khalil K. Global prevalence and associated risk factors of Peste Des Petits Ruminants (PPR) virus in sheep and goats: a meta-analysis. *Vet. Sci. Res. Rev*. 2024. Vol. 10(1). P. 1-14. DOI: 10.17582/journal.vsrr/2024/10.1.1.14
29. Moţ D., Tîrziu E., Olariu-Jurca L. The Evolution of Peste des Petits Ruminants (PPR) in Romania and Neighbouring Countries. *Scientific Papers Animal Science and Biotechnologies*. 2025. Vol. 58(2). P. 301-308. URL: https://spasb.ro/index.php/public_html/article/view/2436/2314
30. Muheet Malik H. U., Parray O. R., Bhat R. A., Yatoo M. I. Seasonal and periodic rhythmicity of respiratory infections in small ruminants. *Biological Rhythm Research.* 2020. Vol. 51(7). P. 1066-1074. DOI: 10.1080/09291016.2019.1576283
31. Niedbalski W. Bluetongue in Europe and the role of wildlife in the epidemiology of disease. *Polish journal of veterinary sciences*. 2015. Vol. 18(2). P. 455-461. DOI: 10.1515/pjvs-2015-0060
32. Niedbalski W. Current status of bluetongue in Europe. *Med. Weter*. 2016. Vol. 72(8). P. 467-471. URL: https://scispace.com/pdf/current-status-of-bluetongue-in-europe-4qp8tnbh50.pdf
33. On approval of the Regulation on the State Laboratory for Veterinary and Sanitary Examination in the Market (Document revision from 16.06.2015, basis - z0621-15). URL: https://zakon.rada.gov.ua/laws/show/z0404-02#Text

34. On approval of the Rules for ante-mortem veterinary examination of animals and veterinary and sanitary examination of meat and meat products (Document revision from 09.08.2013, basis - z1261-13). URL: https://zakon.rada.gov.ua/laws/show/z0524-02#Text
35. On approval of the Veterinary and Sanitary Rules for animals, slaughterhouses and farm animal protection (Document revision from April 8 2025, basis - 317-2025-p). URL: https://zakon.rada.gov.ua/laws/show/en/z0121-04#Text
36. Piven O. T. Modern aspects of sanitary assessment of lamb in the south of Odessa region. *Current aspects of the development of veterinary medicine in the context of European integration: International scientific and practical conference (Odessa, October 17-18, 2024). Odesa*, 2024. P. 209-211. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/5212/1/%D0%9F%D1%96%D0%B2%D0%B5%D0%BD%D1%8C%20%D0%9E.%20%D0%A2.%20.pdf
37. Pokhil V. I., Pokhil O. M., Rozhkov V. V. Meat productivity of sheep and quality of mutton. 2021. P. 110-115. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/4870/1/%D0%A1%D0%A3%D0%A7%D0%90%D0%A1%D0%9D%D0%86%20%D0%A2%D0%95%D0%A5%D0%9D%D0%9E%D0%9B%D0%9E%D0%93%D0%86%D0%87%20%D0%92%D0%98%D0%A0%D0%9E%D0%91%D0%9D%D0%98%D0%A6%D0%A2%D0%92%D0%90%20%282%29.pdf#page=50
38. Ramesh V., Suresh K. P., Mambully S., Rani S., Ojha R., Kumar K. V., Balamurugan V. Dynamic evolution of peste des petits ruminants virus in sheep and goat hosts across India reveals the swift surge of F gene. VirusDisease. 2024. Vol. 35(3). P. 505-519. DOI: 10.1007/s13337-024-00890-x
39. Sobeih A. A., El-Bayoumi K. M., El-Tarabany M. S., Abuel-Atta A. A., Moawed, S. A. Multivariable binary logistic regression model to predict risk factors of peste des petits ruminants in goat and sheep. *Iraqi Journal of Veterinary Sciences.* 2022. Vol. 36(4). P. 1029-1034. DOI: 10.33899/ijvs.2022.132934.2151
40. Stoyanova A. A. The role of sheep farming in ensuring food security. *Climate change and its consequences for animal husbandry and veterinary medicine: scientific approaches and innovative solutions: Proceedings of the International Scientific and Practical Conference, October 10-11, 2024*. Odesa: IKOSG NAAS, 2024. P. 52-57.
41. Stoyanova A. The role of sheep breeding in the formation of climate-oriented farming in Ukraine. 2024. URL: https://agroperemoga.com.ua/rol-vivcharstva-u-formuvanni-klimatychno-oriyentovnoho-fermerstva-ukrayiny/

42. Stratan A., Ceban A., Lucaşenco E. Evolution of the livestock sector of the Republic of Moldova. *Scientific papers. Series "Management, Economic Engineering in Agriculture and Rural Development".* 2022. P. 671-678.
43. Udrea L., Teodorescu G., Morărita S. V., David I. Study on the diversity of products obtained from sheep in the current bioeconomy context. *Agrobiodiversity & Agroecology.* 2021. Vol. 126(134.249). P. 5-55. DOI: 10.33002/aa010105
44. Vdovichenko Y. V., Zharuk P. G., Zharuk L. V. Program principles for the creation of meat sheep breeding in Ukraine. *Sheep and goat farming*. 2019. Iss. 4. P. 6-17.
45. Vdovichenko Yu. V., Kudryk N. A., Zharuk P. G., Zharuk L. V. Scientific principles of sheep breeding development in the southern region of Ukraine. *Sheep and goat farming.* 2017. Iss. 2. P. 3-23.
46. Wendimu T. G., Dinbiso T. D., Lobago D. S., Marami L. M. Seroprevalence and associated risk factors of peste des petits ruminants in sheep and goats in three districts of the Central Oromia Region, Ethiopia. *Frontiers in Veterinary Science.* 2024. Vol. 11. P. 1402342. URL: https://www.frontiersin.org/journals/veterinary-science/articles/10.3389/fvets.2024.1402342/full
47. Yevtushenko O. O., Slyusarenko S. V. International legal regulation of meat product safety. *Theory and practice of accounting, analytical and legal support for the management of agricultural enterprises in the face of modern challenges: collection of abstracts of the II All-Ukrainian Student Scientific and Practical Internet Conference dedicated to the 70th anniversary of the Faculty of Economics of the National University of Life Resources and Environmental Sciences of Ukraine (April 15, 2021).* Kyiv: NUBRE of Ukraine, 2021. P. 81-85.
48. Yune N., Abdela N. Epidemiology and economic importance of sheep and goat pox: a review on past and current aspects. *Journal of Veterinary Science and Technology*. 2017. Vol. *8*(2). P. 1-6. DOI: 10.4172/2157-7579.1000430

49. Zafar S., Sarfraz M. S., Ali S., Saeed L., Mahmood M. S., Khan A. U., Anwar M. N. Recapitulation of Peste des Petits Ruminants (PPR) prevalence in small ruminant populations of Pakistan from 2004 to 2023: a systematic review and meta-analysis. *Veterinary Sciences*. 2024. Vol. 11(6). P. 280. DOI: 10.3390/vetsci11060280
50. Zewdie G., Derese G., Getachew B., Belay H., Akalu M. Review of sheep and goat pox disease: current updates on epidemiology, diagnosis, prevention and control measures in Ethiopia. *Animal diseases*. 2021. Vol. 1(1). P. 28. DOI: 10.1186/s44149-021-00028-2

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СУЧАСНІ АСПЕКТИ ВЕТЕРИНАРНО-САНІТАРНОГО ІНСПЕКТУВАННЯ БАРАНИНИ В УМОВАХ ПІВДНЯ ОДЕЩИНИ

Анотація

У статті представлено літературний огляд з питання ветеринарно-санітарного інспектування баранини в умовах півдня Одеської області. Вівчарство для даного регіону вважається традиційною галуззю тваринництва. Пов'язано це й з наявністю сприятливих умов для утримання і розведення овець, які є невибагливими до умов утримання, а також характеризуються скоростиглістю та плодючістю. Баранина харктеризується гарними смаковими властивостями, високою поживною та харчовою цінністю, а також низьким вмістом холестерину, у порівнянні з м'ясом інших ссавців. За умов правильної організації, галузь вівчарства може потребувати мінімальної кількості вкладень. Однак, галузь вівчарства створює загрозу занесення на територію України транскордонних хвороб, серед яких блютанг, чума дрібних жуйних, віспа овець та кіз, ящур, які реєструються у межуючих із регіоном країнах (Молдова, Румунія), та їз якими у прикордонних країнах проводяться заходи боротьби. Ліквідація спалахів цих захворювань у європейських країнах призводить до величезних економічних збитків, пов'язаних з недоотриманням продукції, проведенням лікування, профілактичних заходів, щеплень. Надзвичайно актуальною проблема стала з моменту введення в Україні військового стану, коли південні прикордонні пункти почали активно використовуватись. У той же час, літературні джерела доводять величезну роль у поширенні даних захворювань представників дикої фауни, чисельність яких на сьогоднішній день не регулюється через заборону мисливства. Транскордонні хвороби здатні завдавати

тваринництву, а відповійдно й економіці країни величезних збитків. Тому кваліфікованому ветеринарно-санітатному інспектуванню туш овець, баранини, живих тварин має приділятись велика увага, бо саме від нього залежить благополуччя як регіону, так і країни вцілому. Процедура ветеринарно-санітарного інспектування має чітко виконуватись, із дотриманням норм чинного законодавства, що регулює питання якості та безпечності продуктів харчування, продовольчої сировини, на усх рівнях. Провідне місце у недопущенні потрапляннння збудників на територію нашої держави належить також проведенню кваліфікованого контролю баранини та продукції вівчарства на державному кордоні.

Ключові слова: *вівчарство, баранина, ветеринарно-санітарне інспектування, якість, безпечність, нормативна база, транскордонні хвороби, кліматичні зміни.*

References

1. Abubakar, M., Rasool, M. H., Manzoor, S., Saqalein, M., Rizwan, M., Munir, M., ... & Wensman, J. J. (2016). Evaluation of risk factors for Peste des petits ruminants virus in sheep and goats at the Wildlife-Livestock Interface in Punjab Province, Pakistan. *BioMed Research International*, (1), 7826245. . URL: https://onlinelibrary.wiley.com/doi/epdf/10.1155/2016/7826245
2. Adwitiya, D. M., Choudhury, F. A., Barua, A., & Talukdar, M. J. (2022). Peste des petits ruminants: a comprehensive overview. *The Pharma Innovation Journal,* 11(9), 776-782.
3. Ali, S. E., Ahmed, Y. A., Osman, A. A., Gamal Eldin, O. A., & Osman, N. A. (2023). Prevalence of peste des petits ruminants virus antibodies in sheep and goats sera from Central-Western Sudan. *Onderstepoort Journal of Veterinary Research*, 90(1), e1-e8. DOI: 10.4102/ojvr.v90i1.
4. Ayuti, S. R., Khairullah, A. R., Lamid, M., Warsito, S. H., Arif, M.A.A., Kim, E. J., Moses, I. B., Shin, S., Wardhani, B. W. K., Wasito, W., Khalisa, A. T., Ahmad, R. Z. (2025). Bluetongue in ruminants: Global epidemiology, pathogenesis, and advances in diagnostic and control strategies within a One Health framework. *Vet World*, 18(10), 3070-3093. DOI: 10.14202/vetworld.2025.3070-3093.
5. Balamurugan, V., Varghese, B., SowjanyaKumari, S., Kumar, K. V., Muthuchelvan, D., Govindaraj, G., ... & Shome, B. R. (2022). Assessment of post-vaccination immune response to peste des petits ruminants virus in small ruminants in the central and western regions of India. *VirusDisease*, 33(4), 413-421.
6. Balamurugan, V., Vinod Kumar, K., Dheeraj, R., Kurli, R., Suresh, K. P., Govindaraj, G., ... & Roy, P. (2021). Temporal and spatial epidemiological analysis of Peste des petits ruminants outbreaks from the past 25 years in sheep and goats and its control in India. *Viruses*, 13(3), 480. DOI doi: 10.3390/v13030480
7. Bogach, M. & Piven, O. & Liulin, P. & Bohach, D. & Chornyi, V. & Bohach, O. (2025). Dynamics of sheep monieziasis and oribatid mites population under hydrometeorological conditions of Bessarabia, Ukraine. *Helminthologia*, 62, 185-196. DOI: 10.2478/helm-2025-0028
8. Bogatko, N. M. (2020) Identification of meat from slaughtered animals using express methods. *Veterinary, animal husbandry and environmental management technologies*, 5, 11-17.

9. Cekic, B., Ruzic-Muslic, D., Maksimovic, N., Caro, P. V., Zivkovic, V., Marinkovic, M., & Cosic, I. (2018). Productivity of local sheep and goat breeds in small farm households and their role in sustainability in Central Serbia. *In Zootehnie şi Biotehnologii agricole*, 52, 10-15.
10. Chatzopoulos, D. C., Valiakos, G., Giannakopoulos, A., Birtsas, P., Sokos, C., Vasileiou, N. G. C., ... & Billinis, C. (2015). Bluetongue Virus in wild ruminants in Europe: concerns and facts, with a brief reference to bluetongue in cervids in Greece during the 2014 outbreak. *Small Ruminant Research*, 128, 79-87. DOI: 10.1016/j.smallrumres.2015.03.009
11. Chihai, O., Umhang, G., Erhan, D., Boue, F., Tălămbuţă, N., Rusu, Ş., & Zamornea, M. (2016). Slaughterhouse survey of cystic echinococcosis in cattle and sheep from the Republic of Moldova. *Journal of Helminthology*, 90(3), 279-283. DOI: 10.1017/S0022149X15000103
12. Chiurciu, I. A., & Cofas, E. (2020). Technical-economic analysis of sheep and goat herds in Romania. *In Agrarian Economy and Rural Development-Realities and Perspectives for Romania. International Symposium. 11th Edition (pp. 110-117). Bucharest: The Research Institute for Agricultural Economy and Rural Development (ICEADR).* URL: https://www.econstor.eu/bitstream/10419/234378/1/ICEADR-2020-p110.pdf
13. Chiurciu, I. A., Zaharia, I., Fîntîneru, G., Dinu, T. A., & Soare, E. (2023). Sheep and goat breeding in Romania-between tradition and consumption. *Scientific Papers Series Management, Economic Engineering in Agriculture & Rural Development*, 23(2). URL: https://www.researchgate.net/publication/373137664_SHEEP_AND_GOAT_BREEDING_IN_ROMANIA_-BETWEEN_TRADITION_AND_CONSUMPTION
14. Dai, R., Qi, M., Xiong, H., Yang, X., He, J., Zhang, Z., ... & Wei, B. (2019). Serological epidemiological investigation of Tibetan sheep (Ovis aries) plague in Qinghai, China. *Vector-Borne and Zoonotic Diseases*, 19(1), 3-7. DOI: 10.1089/vbz.2017.2257
15. Divenko, N. Yu., Petrenko, O. V., Dubenska, A. A. (2018). Safety of beef and lamb sold at agri-food markets in the districts of Odessa region. *Solving modern problems in veterinary medicine: Materials of the III All-Ukrainian Scientific and Practical Internet Conference, February 15-16, 2018.* Poltava: LLC "Ukrpromtorgservice", 17-20. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/1615/1/compressed.pdf#page=17
16. Germán, C. G., Luis, R. G., Sergio, B. G., Fatima, G. C., Manuel, F. M., Jaime, C. G., & Jesús, T. C. (2024). Description of sheep pox outbreak in Spain in 2022–2023: Challenges found and lessons learnt in relation with control and eradication of this disease. *Viruses,* 16(7), 1164. DOI: 10.3390/v16071164
17. Golubenko, T. L., Tkachenko, T. Yu. (2024). Meat productivity of sheep depending on breed characteristics. *Bulletin of Sumy National Agrarian University (Animal Husbandry),* 4 (59), 22-29. DOI: https://doi. org/10.32782/bsnau. lvst. 2024.4. 3.

18. Grodea, M. (2018). The sheep and goat farming sector in Romania-a new development perspective. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, 18 (3), 151-158. URL: https://managementjournal.usamv.ro/pdf/vol.18_3/Art20.pdf
19. Iovenko, A. V. (2025). Transboundary animal infections: foot-and-mouth disease and bluetongue. *Innovative aspects and prospects for the development of technology for the production and processing of livestock products: materials of the international scientific and practical conference (Mykolaiv, October 24-25, 2025)*, 86-88.
20. Kornienko, L. E., Ukhovsky, V. V., Karpulenko, M. S., Moroz, O. A., Tsarenko, T. M., Radzykhovsky, M. L., Ruda, M. E. (2024). Epizootic situation in the world regarding transboundary animal diseases.*One Health Journal*, 2 (2), 41-58.
21. Kryvoruchko, Yu., Babay, V. (2024). Meat production in countries around the world. *Modern technologies for the production and processing of livestock products: materials of the III All-Ukrainian Scientific and Practical Student Conference of Applicants (Odesa, March 7, 2024),* 50-54. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/4870/1/%D0%A1%D0%A3%D0%A7%D0%90%D0%A1%D0%9D%D0%86%20%D0%A2%D0%95%D0%A5%D0%9D%D0%9E%D0%9B%D0%9E%D0%93%D0%86%D0%87%20%D0%92%D0%98%D0%A0%D0%9E%D0%91%D0%9D%D0%98%D0%A6%D0%A2%D0%92%D0%90%20%282%29.pdf#page=50
22. Kyriakis, C. S., Billinis, C., Papadopoulos, E., Vasileiou, N. G. C., Athanasiou, L. V., & Fthenakis, G. C. (2015). Bluetongue in small ruminants: An opinionated review, with a brief appraisal of the 2014 outbreak of the disease in Greece and the south-east Europe. *Veterinary microbiology*, 181(1-2), 66-74. DOI: 10.1016/j.vetmic.2015.08.004
23. Law of Ukraine On Basic Principles and Requirements for Food Safety and Quality (Document revision from 07.11.2025, basis - 3947-IX). URL: https://zakon.rada.gov.ua/laws/show/771/97-%D0%B2%D1%80#Text
24. Law of Ukraine On Veterinary Medicine (Document revision from 01.01.2026, basis - 3221-IX). URL: https://zakon.rada.gov.ua/laws/show/2498-12#Text
25. Liptac, A. P., & Stanciu, S. (2024). The Sheep and Goat Sector in Romania: Economic Perspectives and Development Directions. *Annals of the University Dunarea de Jos of Galati: Fascicle: I, Economics & Applied Informatics*, 30(3). URL: https://eia.feaa.ugal.ro/images/eia/2024_3/Liptac_Stanciu.pdf

26. Lugovyi, S. I., Kramarenko, S. S., Kramarenko, O. S., Lykhach, V. Ya., Atamanyuk, I. P. (2023). Ensuring an optimal microclimate in lamb production complexes (production and practical recommendations), 23. URL: https://dspace.mnau.edu.ua/jspui/bitstream/123456789/17466/1/zabezpechennya-optimalnogo-mikroklimatu.pdf
27. Mantip, S. E., Shamaki, D., & Farougou, S. (2019). Peste des petits ruminants in Africa: meta-analysis of the virus isolation in molecular epidemiology studies. *Onderstepoort Journal of Veterinary Research*, 86(1), 1-15. DOI: 10.4102/ojvr.v86i1.1677
28. Mondal, A., Auwul, M., Hossen, M., Islam, M., Paudyal, N., Islam, M., & Khalil, K. (2024). Global prevalence and associated risk factors of Peste Des Petits Ruminants (PPR) virus in sheep and goats: a meta-analysis. *Vet Sci Res Rev*, 10(1), 1-14. DOI: 10.17582/journal.vsrr/2024/10.1.1.14
29. Moţ, D., Tîrziu, E., & Olariu-Jurca, L. (2025). The Evolution of Peste des Petits Ruminants (PPR) in Romania and Neighbouring Countries. Scientific Papers Animal *Science and Biotechnologies*, 58(2), 301-308. URL: https://spasb.ro/index.php/public_html/article/view/2436/2314
30. Muheet, Malik, H. U., Parray, O. R., Bhat, R. A., & Yatoo, M. I. (2020). Seasonal and periodic rhythmicity of respiratory infections in small ruminants. Biological Rhythm Research, 51(7), 1066-1074. DOI: 10.1080/09291016.2019.1576283
31. Niedbalski, W. (2015). Bluetongue in Europe and the role of wildlife in the epidemiology of disease. *Polish journal of veterinary sciences*, 18(2), 455-461. DOI: 10.1515/pjvs-2015-0060
32. Niedbalski, W. (2016). Current status of bluetongue in Europe. *Med. Weter*, 72(8), 467-471. URL: https://scispace.com/pdf/current-status-of-bluetongue-in-europe-4qp8tnbh50.pdf
33. On approval of the Regulation on the State Laboratory for Veterinary and Sanitary Examination in the Market (Document revision from 16.06.2015, basis - z0621-15). URL: https://zakon.rada.gov.ua/laws/show/z0404-02#Text
34. On approval of the Rules for ante-mortem veterinary examination of animals and veterinary and sanitary examination of meat and meat products (Document revision from 09.08.2013, basis - z1261-13). URL: https://zakon.rada.gov.ua/laws/show/z0524-02#Text
35. On approval of the Veterinary and Sanitary Rules for animals, slaughterhouses and farm animal protection (Document revision from April 8 2025, basis - 317-2025-p). URL: https://zakon.rada.gov.ua/laws/show/en/z0121-04#Text
36. Piven, O. T. (2024). Modern aspects of sanitary assessment of lamb in the south of Odessa region. *Current aspects of the development of veterinary medicine in the context of European integration: International scientific and practical conference (Odessa, October 17-18, 2024),* 209-211. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/5212/1/%D0%9F%D1%96%D0%B2%D0%B5%D0%BD%D1%8C%20%D0%9E.%20%D0%A2.%20.pdf

37. Pokhil, V. I., Pokhil, O. M., Rozhkov, V. V. (2021). Meat productivity of sheep and quality of mutton, 110-115. URL: http://lib.osau.edu.ua/jspui/bitstream/123456789/4870/1/%D0%A1%D0%A3%D0%A7%D0%90%D0%A1%D0%9D%D0%86%20%D0%A2%D0%95%D0%A5%D0%9D%D0%9E%D0%9B%D0%9E%D0%93%D0%86%D0%87%20%D0%92%D0%98%D0%A0%D0%9E%D0%91%D0%9D%D0%98%D0%A6%D0%A2%D0%92%D0%90%20%282%29.pdf#page=50
38. Ramesh, V., Suresh, K. P., Mambully, S., Rani, S., Ojha, R., Kumar, K. V., & Balamurugan, V. (2024). Dynamic evolution of peste des petits ruminants virus in sheep and goat hosts across India reveals the swift surge of F gene. *VirusDisease*, 35(3), 505-519. DOI: 10.1007/s13337-024-00890-x
39. Sobeih, A. A., El-Bayoumi, K. M., El-Tarabany, M. S., Abuel-Atta, A. A., & Moawed, S. A. (2022). Multivariable binary logistic regression model to predict risk factors of peste des petits ruminants in goat and sheep. *Iraqi Journal of Veterinary Sciences,* 36(4), 1029-1034. DOI: 10.33899/ijvs.2022.132934.2151
40. Stoyanova, A. (2024). The role of sheep breeding in the formation of climate-oriented farming in Ukraine. 2024. URL: https://agroperemoga.com.ua/rol-vivcharstva-u-formuvanni-klimatychno-oriyentovnoho-fermerstva-ukrayiny/
41. Stoyanova, A. A. (2024). The role of sheep farming in ensuring food security. *Climate change and its consequences for animal husbandry and veterinary medicine: scientific approaches and innovative solutions: Proceedings of the International Scientific and Practical Conference, October 10-11, 2024*, 52-57.
42. Stratan, A., Ceban, A., & Lucaşenco, E. (2022). Evolution of the livestock sector of the Republic of Moldova. *Scientific papers. Series "Management, Economic Engineering in Agriculture and Rural Development",* 671-678.
43. Udrea, L., Teodorescu, G., Morărita, S. V., & David, I. (2021). Study on the diversity of products obtained from sheep in the current bioeconomy context. *Agrobiodiversity & Agroecology*, 126(134.249), 5-55. DOI: 10.33002/aa010105
44. Vdovichenko, Y. V., Zharuk, P. G., Zharuk, L. V. (2019). Program principles for the creation of meat sheep breeding in Ukraine. *Sheep and goat farming*, 4, 6-17.
45. Vdovichenko, Yu. V., Kudryk, N. A., Zharuk, P. G., Zharuk, L. V. (2017). Scientific principles of sheep breeding development in the southern region of Ukraine. *Sheep and goat farming*, 2, 3-23.
46. Wendimu, T. G., Dinbiso, T. D., Lobago, D. S., & Marami, L. M. (2024). Seroprevalence and associated risk factors of peste des petits ruminants in sheep and goats in three districts of the Central Oromia Region, Ethiopia. *Frontiers in Veterinary Science*, 11, 1402342. URL: https://www.frontiersin.org/journals/veterinary-science/articles/10.3389/fvets.2024.1402342/full

47. Yevtushenko, O. O., Slyusarenko, S. V. (2021). International legal regulation of meat product safety. *Theory and practice of accounting, analytical and legal support for the management of agricultural enterprises in the face of modern challenges: collection of abstracts of the II All-Ukrainian Student Scientific and Practical Internet Conference dedicated to the 70th anniversary of the Faculty of Economics of the National University of Life Resources and Environmental Sciences of Ukraine (April 15, 2021),* 81-85.
48. Yune, N., & Abdela, N. (2017). Epidemiology and economic importance of sheep and goat pox: a review on past and current aspects. *Journal of Veterinary Science and Technology*, 8(2), 1-6. DOI: 10.4172/2157-7579.1000430
49. Zafar, S., Sarfraz, M. S., Ali, S., Saeed, L., Mahmood, M. S., Khan, A. U., & Anwar, M. N. (2024). Recapitulation of Peste des Petits Ruminants (PPR) prevalence in small ruminant populations of Pakistan from 2004 to 2023: a systematic review and meta-analysis. *Veterinary Sciences*, 11(6), 280. DOI: 10.3390/vetsci11060280
50. Zewdie, G., Derese, G., Getachew, B., Belay, H., & Akalu, M. (2021). Review of sheep and goat pox disease: current updates on epidemiology, diagnosis, prevention and control measures in Ethiopia. Animal diseases, 1(1), 28. DOI: 10.1186/s44149-021-00028-2

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