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Article

Seasonal Dynamics of Sheep Infestation with Chewing Lice

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Abstract: This article analyzes the seasonal dynamics of sheep infestation with chewing lice, the clinical manifestations of ectoparasitoses, their adverse effects on the physiological condition and productivity of animals, and the main factors influencing the spread of ectoparasites. Particular attention is paid to the infestation patterns of animals kept on commercial farms and in household holdings. The research findings indicate that the prevalence and intensity of ectoparasite infestation in sheep kept in household holdings are higher than those observed in animals raised on commercial farms. The results highlight the importance of regular veterinary monitoring, improvements in animal housing conditions, and the implementation of seasonal preventive measures to control and prevent ectoparasitoses.

Keywords: Sheep, Chewing Lice, Bovicola Ovis, Ectoparasites, Ectoparasitoses, Seasonal Dynamics, Prevalence of Infestation, Intensity of Infestation, Veterinary Prevention

Introduction

The development of livestock farming and the provision of high-quality meat, milk, and wool products to the population depend largely on maintaining the health of agricultural animals. Among the factors that negatively affect animal productivity, parasitic diseases, particularly ectoparasites inhabiting the skin and wool coat, occupy an important place. Ectoparasites live on the external body surface or on the skin of animals and may feed on wool, skin debris, and, in some cases, blood. Depending on their biological characteristics and feeding habits, they can cause pathological changes of varying severity in the animal's body.[1][2]

Chewing lice and other lice found in sheep inhabit the skin and among wool fibres, causing irritation, itching, damage to the wool coat, and reduced productivity. [3] Other ectoparasites, such as ticks, pose additional risks by damaging the skin, sucking blood, and transmitting the pathogens of certain infectious diseases.[4] Therefore, identifying ectoparasite species, studying their biology, and determining their seasonal distribution patterns are important tasks in veterinary parasitology.[5][6]

The level of ectoparasite infestation depends on several factors, including the age of the animals, their physiological condition, the characteristics of the wool coat, nutritional status, housing conditions, stocking density, and the timely implementation of veterinary preventive measures. In particular, overcrowding, failure to comply with sanitary requirements, and the lack of separation of infested animals from healthy ones create favourable conditions for parasite transmission.[7] According to the

research data presented, the prevalence and intensity of ectoparasite infestation in sheep kept in household holdings were higher than those in sheep raised on livestock farms. This difference may be associated with variations in animal husbandry practices, housing conditions, and preventive treatment systems.[8] However, detailed epidemiological and parasitological investigations at the farm level are required to establish the precise causes of these differences.[9]

The seasonal activity of ectoparasites is also an important factor influencing the spread of infestations. Infestation with certain insects, including chewing lice, may be more pronounced during winter and the early spring months. The activity of other ectoparasites, such as ticks, varies depending on ambient temperature and humidity, pasture conditions, and their biological developmental stages. The research materials indicate that tick activity begins in the second half of March and in April, while infestation levels reach their peak in July and August.[10][11]

The aim of this study is to investigate the seasonal patterns of sheep infestation with chewing lice and to develop recommendations for improving preventive measures.[12]

Materials and Methods

The scientific research was conducted on 120 sheep kept at the "Qoniratbay-Mexri" farm in Nukus District, Republic of Karakalpakstan, and 232 sheep kept in private household holdings in the "Qo'ybaq" mahalla of Qorao'zak District and the "Samanbay" mahalla of Nukus District.[13]

The study investigated the seasonal dynamics of sheep infestation with chewing lice, the clinical course of ectoparasitoses, and the relevant research findings. Observations concerning animal housing conditions, infestation levels, seasonal ectoparasite activity, and clinical manifestations were taken into account during the analysis.

Two main indicators were used to assess ectoparasite infestation. The prevalence of infestation (extensity of infestation) represents the percentage of examined animals in which ectoparasites were detected. The intensity of infestation is assessed by the number of parasites found on an infested animal or by other appropriate quantitative indicators characterizing the degree of infestation.

The investigation of seasonal dynamics requires animals to be examined at different times of the year using the same or comparable methods. For each examination, the date, number of animals examined, proportion of infested animals, and number of parasites detected should be recorded.[14]

Results and Discussion

Based on the analysis of our research into the seasonal dynamics of ectoparasite infestation in sheep kept at the "Qoniratbay-Mexri" farm in Nukus District, as well as in private household holdings in the "Qo'ybaq" mahalla of Qorao'zak District and the "Samanbay" mahalla of Nukus District, it was established that the level of ectoparasite infestation in sheep was moderate during winter, reached its maximum in spring, and decreased to its minimum during summer and autumn.

During winter (December–February), the average prevalence of infestation with Bovicola ectoparasites among the 120 sheep examined at the "Qoniratbay-Mexri" farm was 67.5%, while the reported infestation intensity ranged from 10,000 to 30,000 parasites. In spring, primarily in March, the average prevalence increased to 77.5%, and the reported infestation intensity ranged from 45,000 to 65,000 parasites. During summer (June–August), the prevalence of infestation decreased to an average of 1.2%, with an infestation intensity ranging from 1,000 to 1,500 parasites. In autumn (September–November), the prevalence was 9.1%, while the infestation intensity ranged from 3,000 to 6,000 parasites.[15]

Similar observations were conducted on sheep kept in private household holdings. During winter (December–February), the average prevalence of infestation with Bovicola ectoparasites among

the 40 sheep examined was 75.6%, and the reported infestation intensity ranged from 15,000 to 32,000 parasites. In spring, primarily in March, the average prevalence increased to 84.9%, with an infestation intensity ranging from 45,000 to 70,000 parasites. During summer (June–August), the prevalence decreased to an average of 2.2%, while the infestation intensity ranged from 2,000 to 2,500 parasites. In autumn (September–November), the prevalence was 12.1%, and the infestation intensity ranged from 8,000 to 10,000 parasites.

The data presented indicate that infestation with certain groups of ectoparasites was more frequently observed during winter and the early months of spring. In particular, when the wool coat becomes thicker, favourable microenvironmental conditions may develop for the persistence of chewing lice and other lice on the animals' bodies. Keeping animals at high densities in enclosed or inadequately ventilated buildings, insufficient sanitation, and allowing infested and healthy animals to remain together may contribute to the spread of parasites.

Chewing lice live in association with the wool coat and skin of animals. Their activity may cause itching, irritation, biting or rubbing of the wool, skin redness, and damage to wool fibres in sheep. In cases of severe infestation, wool quality deteriorates, wool fibres may become tangled, and localized thinning of the fleece may occur.

The observations presented also indicate that tick activity begins to increase in the second half of March and in April, with infestation levels reaching higher values during the summer, particularly in July and August. This seasonal pattern should not be considered identical to the dynamics established for chewing lice. These findings demonstrate that seasonal variations differ among ectoparasite groups.

According to the results of the scientific investigation, the prevalence and intensity of ectoparasite infestation were higher in sheep kept in private household holdings than in sheep raised on commercial farms. This observation suggests that animal housing and husbandry conditions may play an important role in the distribution of ectoparasitoses.

A high prevalence of infestation indicates that a larger proportion of the examined sheep are affected by ectoparasites. A high intensity of infestation, in turn, is characterized by a greater number of parasites on infested animals. Assessing these two indicators together provides a more comprehensive description of the status of ectoparasitoses at the farm level.

Keeping sheep together with other animal species in household holdings, limited opportunities for regularly cleaning animal housing areas, introducing newly purchased animals into the flock without prior veterinary examination, and the absence of systematic antiparasitic treatments may increase the risk of infestation. However, because these factors were not measured separately in the materials presented, they should be regarded as potential factors requiring further investigation rather than as confirmed causes of the observed differences.

Commercial farms may have greater opportunities to keep animals in separate groups, organize veterinary examinations, and implement antiparasitic treatments. Nevertheless, the size of a farm alone does not guarantee freedom from ectoparasites. If preventive measures are not carried out in a timely manner or infested animals remain undetected, ectoparasites may also spread widely within commercial farming operations.

Therefore, when comparing infestation levels across different types of livestock holdings, it is necessary to consider factors such as the number of animals, their age and breed, housing conditions, nutritional status, and history of veterinary treatments.

Conclusion

Infestation of sheep with chewing lice may adversely affect animal health, the condition of the skin and wool coat, and overall productivity. The clinical signs of infestation depend on the parasite species, the level of infestation, and the physiological condition of the animal.

The research findings presented indicate that the prevalence and intensity of ectoparasite infestation in sheep kept in private household holdings were higher than those in sheep raised on commercial farms.

The seasonal activity of ectoparasites varies depending on their biological group. The data presented indicate that certain entomoses are more prevalent during winter and early spring, whereas tick activity increases in spring and reaches higher levels in July and August.

To prevent ectoparasitoses, it is necessary to examine animals regularly, maintain sanitary and hygienic conditions in animal housing facilities, conduct veterinary examinations of newly introduced animals, and implement timely antiparasitic treatments.

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