



PREVALENCE AND SPATIAL DISTRIBUTION OF HELMINTH INFECTIONS IN CATTLE AND SHEEP IN SELECTED DISTRICTS OF SURKHANDARYA AND KASHKADARYA REGIONS, UZBEKISTAN

Ulukov Behzod Karamat ugli¹

Doctor of Philosophy (PhD) in Veterinary Sciences

Safarov Khurshid Abdurajabovich¹

Doctor of Philosophy (PhD) in Veterinary Sciences, Senior Researcher

Akramov Komiljon Shuhrat ugli¹

Doctor of Philosophy (PhD) in Veterinary Sciences

Abstract. Helminth infections remain one of the major constraints affecting livestock productivity worldwide by reducing animal health, growth performance, and the quality of meat and milk production. This study was conducted to determine the prevalence and species composition of helminth infections in cattle and sheep raised in household holdings and livestock farms in selected districts of Surkhandarya and Kashkadarya regions of Uzbekistan. Helminthological investigations were carried out in the Kumkurgan, Shurchi, Oltinsoy, and Denov districts of Surkhandarya Region, as well as the Kitab and Guzar districts of Kashkadarya Region. A total of 402 animals, including 182 cattle and 220 sheep, were examined using Fulleborn flotation, sequential sedimentation, and the modified Baermann–Orlov helminthocoprological methods.

The results showed that helminth infections were widespread in both cattle and sheep. Among the examined sheep, 169 of 220 animals were infected with one or more helminth species, resulting in an overall prevalence of 76.81%. In cattle, 131 of 182 examined animals were infected, corresponding to an overall prevalence of 71.97%. Gastrointestinal strongylates were the predominant helminths in both



animal species. In cattle, the most frequently detected infections were gastrointestinal strongylatoses, followed by fasciolosis, marshallagiosis, nematodirosis, monieziosis, and paramphistomosis. In sheep, gastrointestinal strongylatoses, marshallagiosis, fasciolosis, and nematodirosis were the most prevalent parasitic infections. The prevalence of helminth infections increased with animal age, indicating prolonged exposure to infective stages under local grazing conditions.

The findings demonstrate that helminth infections are highly prevalent among livestock in the surveyed regions and continue to represent an important veterinary and economic problem. The predominance of gastrointestinal strongylates and trematode infections highlights the need for regular epidemiological surveillance, strategic anthelmintic treatment, improved pasture management, and integrated parasite control programs. The obtained results provide valuable epidemiological data that can serve as a scientific basis for developing effective regional strategies for the prevention and control of helminth infections in cattle and sheep in Uzbekistan.

Keywords: *cattle; sheep; helminths; helminth infections; fasciolosis; monieziosis; gastrointestinal strongylatoses; marshallagiosis; nematodirosis; prevalence; Uzbekistan.*

Introduction. It is well recognized that the rapid development and transformation of the global economy, together with the continuous growth of the world's population, including that of Uzbekistan, has resulted in an increasing demand for livestock products. Livestock production is one of the most important branches of agriculture in the country, playing a crucial role in ensuring employment and providing a stable source of income for the rural population.

Moreover, the livestock sector is of great importance in meeting the domestic demand for environmentally safe and high-quality animal products, including meat,



milk, and their processed products. Therefore, the sustainable development of livestock production is essential not only for ensuring food security but also for improving the welfare of the population and strengthening the agricultural economy.

Considering the above, considerable attention is currently being paid in Uzbekistan to the further development of the livestock sector. Particular emphasis is placed on increasing livestock numbers, improving animal productivity, expanding the population of breeding animals, and enhancing the production of environmentally friendly and high-quality livestock products through the introduction of modern scientific achievements and innovative technologies into all branches of animal husbandry.

The State Program for the implementation of the Development Strategy of the Republic of Uzbekistan for 2022–2026 identifies scientifically based development of livestock production, improvement of veterinary services, and maintenance of a stable epizootic situation as priority objectives. Achieving these goals requires the effective prevention and control of infectious, non-infectious, and parasitic diseases affecting livestock.

Among these diseases, helminthiases remain one of the major constraints to livestock production, particularly in cattle and sheep. These parasitic infections reduce animal productivity, impair growth and reproductive performance, deteriorate product quality, and cause substantial economic losses. Therefore, investigating the prevalence and epizootological characteristics of helminth infections and developing effective prevention and control measures are among the priority tasks of modern veterinary science and livestock production.

Materials and Methods. The study was conducted in Kumkurgan, Shurchi, Oltinsoy, and Denov districts of the Surkhandarya Region, as well as Kitab and Guzar districts of the Kashkadarya Region of Uzbekistan. During the study, fecal samples collected from cattle and sheep were examined to determine the prevalence of helminth infections. Helminth eggs were detected using the Fülleborn flotation



method and the sequential sedimentation (washing) method, while helminth larvae were identified using the Baermann–Orlov larvoscopic technique modified by the Veterinary Research Institute (VRI) of Uzbekistan.

Results and Discussion. The results of the present study demonstrated that the prevalence of helminth infections in cattle and sheep varied among the selected districts of the Surkhandarya and Kashkadarya regions. The distribution of helminth infections in the examined animals is presented in Table 1. As shown in Table 1, the prevalence of helminthiases differed considerably between sheep and cattle. These variations may be attributed to several factors, including the age of the animals, seasonal changes, climatic conditions, grazing and management practices, as well as the effectiveness of preventive and anthelmintic treatment programs implemented in the study areas.

According to the results of the helminthological examination of cattle raised on livestock farms and in household holdings of Guzar District, Kashkadarya Region, a total of 35 cattle of different age groups (calves up to 6 months of age, young cattle aged 1–2 years, and adult cattle over 3 years old) were examined. The examination revealed that 5 animals (14.28%) were infected with *Marshallagia spp.*, 3 (8.57%) with *Nematodirus spp.*, 19 (54.28%) with other gastrointestinal strongylates, 6 (17.14%) with *Fasciola spp.*, and 3 (8.57%) with *Moniezia spp.*

Table 1.

Prevalence of Helminth Infections in Sheep and Cattle from Household and Livestock Farms in Guzar District, Kashkadarya Region

Helminth infections	Cattle (n = 35)		Sheep (n = 65)	
	No.	%	No.	%
Marshallagiosis	5	14,28	35	53,84
Nematodirosis	3	8,57	28	43,07



Other gastrointestinal strongylatoses	19	54,28	41	63,07
Fasciolosis	6	17,14	21	32,30
Monieziosis	3	8,57	3	4,61
Overall prevalence	22	62,85	48	73,84

The overall prevalence of helminth infections in cattle reached 62.85%, with gastrointestinal strongylatoses, particularly infections caused by *Ostertagia spp.*, *Trichostrongylus spp.*, and *Cooperia spp.*, representing the predominant parasitic diseases. In sheep, gastrointestinal strongylatoses were the most common helminth infections, affecting 63.07% of the examined animals, followed by marshallagiosis with a prevalence of 53.84%.

These findings highlight the necessity of developing effective prevention and treatment measures specifically targeting these helminth infections. Furthermore, they emphasize the importance of conducting further research to identify and develop effective locally produced anthelmintic agents for their sustainable control.

Table 2

Prevalence of Helminth Infections in Sheep and Cattle Raised in Household Holdings and Livestock Farms of Kitab District, Kashkadarya Region

Helminth infections	Cattle (n = 40)		Sheep (n = 45)	
	No.	%	No.	%
Marshallagiosis	3	7,5	20	44,44
Nematodirosis	-	-	12	26,66



Other gastrointestinal strongylatoses	32	80	28	62,22
Fasciolosis	3	7,5	6	13,33
Monieziosis	2	5	6	13,33
Overall prevalence	35	87,5	38	84,44

Table 2 presents the results of the helminthological examination of cattle and sheep raised on livestock farms and in household holdings of Kitab District, Kashkadarya Region.

Helminthological examination of 20 Simmental cattle from the “Charos Bogi” cattle farm in Kitab District showed that 1 animal (5.0%) was infected with *Marshallagia* spp., 17 animals (85.0%) with gastrointestinal strongylates, 3 animals (15.0%) with *Fasciola* spp., and 2 animals (10.0%) with *Moniezia* spp.

In the “Chirkay” farm of Kitab District, 20 indigenous cattle were examined. The helminthological examination revealed that 2 animals (10.0%) were infected with *Marshallagia* spp., while 15 animals (75.0%) were infected with gastrointestinal strongylates. Overall, of the 40 cattle examined in Kitab District, 35 animals were found to be infected with one or more helminth species, resulting in an overall prevalence (extensity of invasion) of 87.5%.

Among the sheep examined in Kitab District, *Marshallagia* spp. were detected in 20 animals (44.44%), *Nematodirus* spp. in 12 animals (26.66%), other gastrointestinal strongylates in 28 animals (62.22%), *Fasciola* spp. in 6 animals (13.33%), and *Moniezia* spp. in 6 animals (13.33%).

A total of 75 cattle and 110 sheep were examined in Kashkadarya Region. Helminthological examination revealed that 77.29% of the animals were infected with one or more helminth species, demonstrating a high overall prevalence (extensity of invasion) of helminth infections in the region.



Table 3

**Prevalence of Helminth Infections in Cattle and Sheep in Surkhandarya
Region Based on Coprological Examination**

Helminth infections	Cattle (n = 107)		Sheep (n = 110)	
	No.	%	No.	%
Marshallagiosis	15	14,01	32	29,09
Nematodirosis	11	10,28	28	25,45
Other gastrointestinal strongylatoses	27	25,23	30	27,27
Fasciolosis	18	16,82	56	50,90
Monieziosis	6	5,60	5	4,54
Paramphistomosis	7	6,54	-	-
Overall prevalence	74	69,15	83	75,45

In Surkhandarya Region, a total of 107 cattle and 110 sheep from the Kumkurgan, Shurchi, Oltinsoy, and Denov districts were examined using helminthocoprological methods. According to the obtained results (Table 3), 32 of the 110 examined sheep (29.09%) were infected with *Marshallagia* spp., 28 animals (25.45%) with *Nematodirus* spp., and 30 animals (27.27%) with other gastrointestinal strongylates. In addition, 56 sheep (50.90%) were infected with *Fasciola* spp., while *Moniezia* spp. infection was detected in 5 sheep (4.54%).

Helminthological examination of 107 cattle of different age groups (calves up to 6 months of age, young cattle aged 1–2 years, and adult cattle over 3 years old) in Surkhandarya Region revealed that 15 animals (14.01%) were infected with *Marshallagia* spp., 11 animals (10.28%) with *Nematodirus* spp., 27 animals (25.23%) with other gastrointestinal strongylates, 18 animals (16.82%) with *Fasciola* spp., 6 animals (5.60%) with *Moniezia* spp., and 7 animals (6.54%) with



Paramphistomum spp. Overall, the combined prevalence of helminth infections in the examined cattle and sheep in Surkhandarya Region was 72.35%.

Table 4

Overall Prevalence of Helminth Infections in Sheep and Cattle from Household Holdings and Livestock Farms in Selected Districts of Surkhandarya and Kashkadarya Regions

Helminth infections	Cattle (n = 182)		Sheep (n = 220)	
	No.	%	No.	%
Marshallagiosis	23	12,63	87	39,54
Nematodirosis	14	7,69	68	30,90
Other gastrointestinal strongylatoses	78	42,85	99	45
Fasciolosis	27	14,83	83	37,72
Monieziosis	11	6,04	14	6,36
Paramphistomosis	7	3,84	-	-
Overall prevalence	131	71,97	169	76,81

The overall analysis of the surveys conducted in the Kumkurgan, Shurchi, Oltinsoy, and Denov districts of Surkhandarya Region and the Kitab and Guzar districts of Kashkadarya Region showed that, of the 220 sheep examined using helmintho-ovoscopic techniques, 169 animals were infected with one or more helminth species, corresponding to an overall prevalence (extensity of invasion) of 76.81%.

Helminthological examination of 182 cattle revealed that 131 animals were infected with one or more helminth species, corresponding to an overall prevalence of 71.97%.



A total of 402 livestock animals, including cattle and sheep, were examined. Helminthological examination revealed that 300 animals were infected with one or more helminth species, resulting in an overall prevalence of 74.62%.

Conclusion.

1. Helmintho-ovoscopic examinations conducted in the selected districts of Surkhandarya and Kashkadarya regions demonstrated that the prevalence of helminth infections in sheep and cattle increased progressively with advancing age.
2. In Kashkadarya Region, the overall prevalence of helminth infections in cattle reached 76.0%, with gastrointestinal strongylatoses and fasciolosis representing the predominant parasitic diseases. In Surkhandarya Region, the corresponding prevalence of helminth infections in cattle was 69.15%.
3. In the selected districts of the Surkhandarya and Kashkadarya regions, helmintho-coprological examination demonstrated an overall prevalence of helminth infections of 76.81% in sheep (169/220) and 71.97% in cattle (131/182), indicating a high level of helminth infection among livestock in the study area.

List of used literature

1. Akramov K. S., Safarov X. A. RESPUBLIKAMIZNING JANUBIY VILOYATLARIDA CHORVA HAYVONLARINING ASOSIY GELMINTOZLARI VA ULARGA QARSHI KURASHISH //Interpretation and researches. – 2024. – T. 2. – №. 18. – С. 15-18.
2. Besier R.B., Kahn L.P., Sargison N.D., Van Wyk J.A. The pathophysiology, ecology and epidemiology of *Haemonchus contortus* infection in small ruminants. *Advances in Parasitology*. 2016. Vol. 93. P. 95–143.
3. Kaplan R.M., Vidyashankar A.N. An inconvenient truth: Global worming and anthelmintic resistance. *Veterinary Parasitology*. 2012. Vol. 186(1–2). P. 70–78.



4. Safarov X. A., Sh A. K. QASHQADARYO VA SURXONDARYO VILOYATLARIDA QO ‘YLARIDA GELMINTOZLARINING TARQALISHI //Yangi O ‘zbekiston ustozlari. – 2024. – T. 2. – №. 29. – С. 258-260.
5. Safarov K. A. Seasonal dynamics of helminthiasis in sheep in Uzbekistan. – 2023.
6. O‘G‘Li U. B. K., Abdumajidovich J. S. SAMARQAND VILOYATIDA QO ‘YLAR OSHQOZON-ICHAK STRANGILYATOZLARINING TARQALISHI //Research Focus. – 2025. – T. 4. – №. 11. – С. 397-401.
7. Азимов Д.А. Гельминты и гельминтозы овец юга Узбекистана. Автореф. канд. дисс., М., 1963.
8. Азимов Ш.А. Фасциолёзы и аноплоцефилитозы овец и крупного рогатого скота в Узбекистане. Изд-во ФАН, 1974.
9. Джаббаров Ш.А. Гельминтозларга қарши кураш чоратadbirlarining самарадорлиги ва уни ошириш йўллари. Докт. дисс. автореферати. Самарқанд, 2017. 52 б.
10. Иргашев И.Х. Гельминтозы мягкого рогатого скота в условиях Узбекистана (опыт эпизоотологической характеристики с последующей разработкой мер борьбы в зональном разрезе). Автореф. докт. дисс., М., ВИГИС, 1963.
11. Орипов А.О. Трихостронгилидоза овец в Узбекистане и меры борьбы с ними. Автореф. докт. дисс., М., 1983.