



THE PREVALENCE AND DISTRIBUTION OF CAPRINE FASCIOLIASIS IN THE CONDITIONS OF SURKHANDARYA REGION

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Abstract. The spread of fasciolosis among goats, the extent and intensity of the invasion have been determined in the conditions of Surkhandarya region.

Key words: *Fasciola hepatica*, *Fasciola gigantica* L. *auricularia*, *L. bactriana*, trematode, helminth, macrohelminthoscopy.

Relevance of the Topic. Fascioliasis is a widespread trematode zoonosis affecting livestock across the globe, including Uzbekistan. The disease is highly prevalent throughout the irrigated plains, sub-mountainous, and mountainous zones of the Republic.

Sheep and goat husbandry enterprises incur particularly severe economic losses due to fascioliasis. During the second half of the twentieth century, mass mortality events among sheep populations due to acute fascioliasis were documented in southern Uzbekistan. In certain districts, the extensive distribution and catastrophic economic damage wrought by this helminthiasis forced producers to completely abandon sheep farming [1,2].

Fascioliasis manifests as a chronic, acute, or subacute trematode infection affecting all types of domestic livestock and several species of wild mammals. Worldwide, eight species of the genus *Fasciola* have been identified as causative agents; however, only two species are prevalent within the territory of Uzbekistan: *Fasciola hepatica* (Linnaeus, 1758) and *Fasciola gigantica* (Cobbold, 1856). Among these, *F. hepatica* is ubiquitously distributed across the Republic, whereas *F. gigantica* occurs predominantly in the northwestern regions. Similar to other ruminants, goats are susceptible to infection by both species, though *F. hepatica* exhibits a significantly higher prevalence in caprine hosts [3,4].

Both *F. hepatica* and *F. gigantica* exhibit complex heteroxenous life cycles requiring two hosts. The intermediate host of *F. hepatica* is the freshwater snail *Galba truncatula* (syn. *Lymnaea truncatula*), which typically inhabits smaller water bodies such as irrigation ditches and spring heads; consequently, this parasite is widely distributed across rural ecosystems, foothills, and mountainous terrains. Within the snail intermediate host, the infective larval stage—the adolescaria (metacercaria)—develops following cercarial emergence.



Conversely, the intermediate hosts for *F. gigantica* are larger freshwater gastropods, primarily *Lymnaea auricularia* and *Lymnaea bactriana*. These vectors are commonly found in lakes, natural springs, and flooded rice paddies. Consequently, the rate of *F. gigantica* infection in livestock is somewhat lower compared to that of *F. hepatica* [3,5].

It is imperative to emphasize that fascioliasis represents an exceptionally hazardous pathology for multiple livestock species. Therefore, monitoring the epidemiological distribution of fascioliasis and developing robust preventative and control strategies remain urgent imperatives for contemporary veterinary science.

Diagnostic Techniques. Epidemiological, clinical, and helminth-coprological diagnostic methods were utilized during the investigation. Specifically, fecal samples were processed and analyzed using the macrohelminthoscopy technique via the sequential washing (sedimentation) method.

Study Sites and Sample Size . The scientific research work was carried out in the Pulhokim neighborhood of the Boysun district, the Navroz neighborhood of the Termiz district, the Poshkhurt neighborhood of the Sherobod district, and the Yakkatol neighborhood of the Muzrabot district within the Surxondaryo region, as well as at the parasitology laboratory of the Surkhandarya Region State Center for Animal Disease Diagnosis and Food Safety.

In the study, fecal samples were collected from a total of 80 head of goats, including 20 head from the "Tog'aymurodov Burxon" private farm in the Pulhokim neighborhood of the Boysun district, 20 head from privately-owned livestock in the Navroz neighborhood of the Termiz district, 20 head from privately-owned livestock in the Poshkhurt neighborhood of the Sherobod district, and 20 head from privately-owned livestock in the Yakka tol neighborhood of the Muzrabot district, and were examined using the macrohelminthoscopy technique via the sequential washing method.

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Research Results and Their Analysis

The results regarding the prevalence and distribution of fascioliasis among goats are presented in Table 1.

Table 1

Results of the examination of caprine fecal samples.

No.	Districts Regions and	Number of Animals Sampled for Fecal Collection	Helminth Eggs Detected			
			<i>F. hepatica</i>		<i>F.gigantica</i>	
			coun t	%	coun t	%
1.	Boysun district, Pulhokim neighborhood,	20 head of goats		35,0	3	15,0



	"Tog'aymurodov Burxon" private farm		7			
2.	Termiz district, Navroz neighborhood	20 head of goats	4	20,0	9	45,0
3.	Sherobod district, Poshkhurt neighborhood	20 head of goats	6	30,0	5	25,0
4.	Muzrabot district, Yakkatol neighborhood	20 head of goats	3	15,0	7	35,0
	Total:	80	20	25,0	24	30,0

As can be seen from the table, when fecal samples from 20 head of goats from the "Tog'aymurodov Burxon" private farm in the Pulhokim neighborhood of the Boysun district were examined, the presence of *F. hepatica* eggs was detected in 7 head, representing an infection rate of 35 percent, and the presence of *F. gigantica* eggs was detected in 3 head, representing an infection rate of 15 percent; in 20 head of privately-owned goats from the Navroz neighborhood of the Termiz district, the presence of *F. hepatica* eggs was detected in 4 head, representing an infection rate of 20 percent, and the presence of *F. gigantica* eggs was detected in 9 head, representing an infection rate of 45 percent; in 20 head of privately-owned goats from the Poshkhurt neighborhood of the Sherobod district, the presence of *F. hepatica* eggs was detected in 6 head, representing an infection rate of 30 percent, and the presence of *F. gigantica* eggs was detected in 5 head, representing an infection rate of 25 percent; and in 20 head of privately-owned goats from the Yakkatol neighborhood of the Muzrabot district, the presence of *F. hepatica* eggs was detected in 3 head, representing an infection rate of 15 percent, while the presence of *F. gigantica* eggs was detected in 7 head, representing an infection rate of 35 percent.

Out of a grand total of 80 caprine fecal samples examined, the presence of *F. hepatica* eggs was recorded in 20 fecal samples, yielding an overall infection rate of 25 percent, whereas the presence of *F. gigantica* eggs was recorded in 24 fecal samples, accounting for an overall infection rate of 30 percent.

Conclusions:

1. It was determined that *Fasciola hepatica* is highly prevalent in sub-mountainous and mountainous regions. *Fasciola hepatica* is primarily adapted to temperate climates and is resilient to lower temperatures. The cool climate of sub-mountainous and mountainous terrains, along with the surrounding small freshwater bodies and natural springs found there, provides a highly favorable habitat for the reproduction of its intermediate host—the dwarf pond snail (*Lymnaea truncatula*). Consequently, *F. hepatica* exhibits a higher prevalence specifically among livestock grazed on mountainous pastures.

2. In irrigated (lowland) regions: It was determined that *Fasciola gigantica* is highly prevalent. *Fasciola gigantica* primarily prefers tropical and subtropical climates. It is adapted to high temperatures and permanently warm water bodies. In irrigated lowland zones, canals, irrigation ditches, rice paddies, and waterlogged plains, its intermediate hosts—the ear-shaped pond



snails (*Lymnaea auricularia* and *Lymnaea bactriana*)—proliferate abundantly. In these warm and water-abundant irrigated regions, *F. gigantica* remains predominant.

3. The results of the conducted scientific research indicate that under the environmental conditions of the Surkhandarya region, the infection rate of *F. hepatica* among goats stands at 25 percent, while that of *F. gigantica* stands at 30 percent. The aforementioned data established that among the causative agents of fascioliasis in goats, *Fasciola gigantica* is predominant and exhibits a higher prevalence.

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