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**RA Shahardar**

Professor & Head, Division of Veterinary Parasitology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, Alusteng, Srinagar, Jammu and Kashmir, India

**KH Bulbul**

Assistant professor, Division of Veterinary Parasitology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, Alusteng, Srinagar, Jammu and Kashmir, India

**IM Allaie**

Assistant professor, Division of Veterinary Parasitology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, Alusteng, Srinagar, Jammu and Kashmir, India

**ZA Wani**

Assistant professor, Division of Veterinary Parasitology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, Alusteng, Srinagar, Jammu and Kashmir, India

**Aiman Ashraf**

Contractual lecturer, Division of Veterinary Parasitology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, Alusteng, Srinagar, Jammu and Kashmir, India

**SR Trambo**

Contractual lecturer, Division of Veterinary Parasitology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, Alusteng, Srinagar, Jammu and Kashmir, India

**Corresponding Author:**

**KH Bulbul**

Assistant professor, Division of Veterinary Parasitology, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-Kashmir, Shuhama, Alusteng, Srinagar, Jammu and Kashmir, India

## Programme for control of parasitic diseases of livestock in Kashmir valley

**RA Shahardar, KH Bulbul, IM Allaie, ZA Wani, Aiman Ashraf and SR Trambo**

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### Abstract

The Valley of Kashmir has a vast exposure of natural meadows and highland pastures which provide a conducive environment for many pathogenic parasites to grow and pose the greatest challenge to the economic rearing of livestock. Parasites affect the health condition of animals in a variety of ways, some being hidden and some apparent. Their occurrence depends on the epidemiological risk factors and management practices adopted, one among them is the use of antiparasitic drugs. The indiscriminate use of these antiparasitic drugs has led to development of resistance. Therefore, a proper deworming and ectoparasitocidal schedule should be followed to delay the spread and development of resistance against commonly available antiparasitic drugs. On the basis of epidemiological studies carried out over a period of more than a decade for various parasitic diseases of livestock in Kashmir valley, a prophylactic treatment schedule has been devised to prevent outbreaks of such diseases.

**Keywords:** Parasitic infections, deworming, ectoparasitocidal schedule, livestock, Kashmir valley

### Introduction

Parasitic diseases which occur in clinical or sub clinical form impose a severe economic burden on livestock industry in the form of morbidity, mortality, inefficiency of feed conversion ratio and by way of costs incurred on treatment and control [1]. Despite the availability of some good and effective anti parasitic drugs for treatment and control of important parasitic diseases of livestock, there is pressing need for adaptation of alternative control measures including the development of successful anti parasitic vaccines. The most important reasons for this are development of resistance by parasites against many of the previously as well as newly developed drugs; associated problem of drug residues in milk, meat and increased concern for environmental pollution especially that caused by use of ectoparasiticides [2]. Despite these associated problems chemotherapy and chemoprophylaxis is still the most effective weapon for fighting the menace of parasites [3] and the situation will remain similar in the near future. Since the occurrence of parasitic diseases is greatly influenced by varying climatological and ecology factors, it therefore implies that the parasitic fauna of different species of livestock mapped out accurately in different seasons of the year forms fundamental information on which further prophylactic measures can be based up on. This necessity has been adequately recognized by parasitologists all over the world and extensive epidemiological surveys have been carried out on parasitic fauna of different species of livestock in different seasons of the year not only in many parts of the world but also in India including Jammu and Kashmir. The deworming & ectoparasitocidal schedule for parasitic diseases of livestock including their epidemiological evidence is briefly described as under:

**Deworming & ectoparasiticidal schedule for livestock of Kashmir Valley**

S. No.	Diseases	Dosing schedule	Remarks
1.	Deworming against fasciolosis in sheep in endemic areas	Late winter/early spring (15 <sup>th</sup> Feb. to 14 <sup>th</sup> March) Early summer/Mid summer (15 <sup>th</sup> June to 14 <sup>th</sup> July) Mid autumn/late autumn (15 <sup>th</sup> Oct. to 14 <sup>th</sup> Nov)	Very important in marshy and low lying areas and where sheep are fed mainly on paddy hay during winter but can be followed in all parts of Kashmir valley, if needed.
02.	Deworming against fasciolosis in cattle in endemic areas	Late spring (1 <sup>st</sup> to 31 <sup>st</sup> May) Late autumn (1 <sup>st</sup> to 30 <sup>th</sup> Nov)	Very important in marshy and low lying areas and where cattle are fed mainly on paddy hay during winter but can be followed in all parts of Kashmir valley, if needed.
03.	Deworming against tapeworms in calves, lambs, kids & foals	Late autumn (1 <sup>st</sup> to 30 <sup>th</sup> Nov.)	In all areas of Kashmir valley
04.	Deworming against round worms in sheep, cattle and horses	Late spring (1 <sup>st</sup> to 31 <sup>st</sup> May) Late autumn (1 <sup>st</sup> to 30 <sup>th</sup> Nov.)	In all areas of Kashmir valley
05.	Prophylactic measures against ecto-parasites like ticks & mange	Late spring (1 <sup>st</sup> to 30 <sup>th</sup> May) Late autumn (1 <sup>st</sup> to 30 <sup>th</sup> Nov.)	In all areas of Kashmir valley
06.	Preventive medication against coccidiosis in sheep goat & cattle	Late spring/ Early summer (15 <sup>th</sup> May - 14 <sup>th</sup> June)	Mainly to be followed in lambs, kids and calves.

**Note:**

- A broad spectrum anthelmintic or a drug combination containing flukicide, anti-nematodal and anti-cestodal drugs can be used for common dosing against trematodes, nematodes and cestodes.
- Similarly some drugs which are effective against both nematodes and ectoparasites can be used for common prophylaxis against these parasites.
- However, target selective treatment of heavily infected animals in a herd should be adopted after assessing parasitic load as and when needed. This is very important because by adopting this strategy morbidity and mortality due to parasitic infections and infestations can be reduced to a greater extent.

**Epidemiological evidence for important parasitic diseases of livestock in Kashmir valley**

**1. Fasciolosis:** Lymnaeid snails especially *Lymnaea auricularia* act as intermediate hosts of these parasites and the definitive hosts become infected by ingestion of metacercariae along with herbage in swamp areas. This snail is highly prevalent in autumn followed by spring and summer<sup>[4]</sup>. Most of these snails undergo hibernation during the winter season. Snails which do not undergo hibernation do not release cercariae during winter, which indicates that no development of larval stages of trematodes occurs in snails during winter because the temperature above 10 °C is necessary before the snails will breed or before the *Fasciola* spp. can develop within the snails<sup>[5]</sup>. Metacercariae also do not survive under extreme/severe winter conditions. In spring, the eggs that have accumulated over winter hatch, the miracidia infect snails and the cercariae emerge some 5-8 weeks later depending on the temperature. The infection passes on to the herbage in late spring (May) and early summer (June). Ingestion of these metacercariae by animals on herbage gives rise to fasciolosis in early summer (June) and mid-summer (July). This is known as spring cycle of infection. Miracidia hatching from eggs deposited in grazing areas during summer and autumn infect the snails and the infection passes on to the herbage in late summer and autumn. Ingestion of these metacercariae by definitive hosts results in fasciolosis from mid autumn (October) onwards. This is known as summer cycle and is the most important source of infection. In general the availability of metacercariae is greatest in late summer and autumn. Animals housed during winter may become infected if fed insufficiently dried hay prepared from infected grasses because metacercariae can survive in moist hay for up to eight months. Some infections may also occur in early spring from overwintering metacercariae. Therefore, prophylactic dosing of the sheep in late winter/early spring (15 Feb. to 14 March) is

especially useful to reduce the contamination of the grazing areas. Similarly the prophylactic dosing in early summer/mid-summer (15 June to 14 July) is useful in preventing losses from spring cycle of infection and the prophylactic dosing in mid autumn/late autumn is useful to prevent losses from summer cycle of infection. Since cattle do not suffer from acute fasciolosis, hence the deworming against fasciolosis in cattle should be carried out on two occasions (Late spring 1<sup>st</sup> to 31<sup>st</sup> May); late autumn (1<sup>st</sup> to 30<sup>th</sup> Nov).

- 2. Cestodes:** The important species of tapeworms found in ruminants especially lambs, kids, calves and foals include *Moneizia* spp., *Avitillina* spp. and *Silesia* spp.<sup>[6, 7, 8, 9, 10]</sup> and *Anoplocephala* spp. Orbitid mites and psocids (bark lice, dust lice and book lice) act as intermediate hosts of these parasites<sup>[11]</sup>. In livestock of Kashmir valley, the infection has been found to be highest in late autumn and winter months which indicates that animals mainly pick up the infection by ingestion of these mites along with herbage in mid and late autumn and reach to maturity after prepatent period of 37-40 days, therefore, deworming against tape worms is recommended in late autumn.
- 3. Gastrointestinal nematodes:** Different gastrointestinal nematodes like *Haemonchus*, *Ostertagia*, *Mecistocirrus*, *Marshallagia*, *Trichostrongylus*, *Cooperia*, *Nematodirus*, *Strongylus* spp., *Cyathostomes*, *Strongyloides* spp., have been reported from Kashmir valley<sup>[8, 10, 12, 13, 14, 15, 16, 17]</sup> and their larval stages ingested by the ruminants and equines in late autumn is delayed until spring in a process called hypobiosis. Thus, fewer eggs are shed into the environment at a time when the chances of their survival are reduced. Resumption of development of arrested larvae occurs at a time when environmental conditions are suitable for the survival of the free-living stages and is associated with a seasonal stimulus<sup>[11]</sup>. Larvae resume development usually in the month of March/April resulting in the spring rise in faecal egg counts because of

which grazing places become contaminated with infective larvae in about two weeks, if the temperature is between 10-15 °C. However, in the summer infective larvae are produced in only one week under optimum conditions at 27 °C. The most rapid development occurs in summer with peak larval burdens in grazing places being reached in 6-8 weeks resulting in heavy infection in young animals from September onwards. The eggs passed in the faeces of the infected animals in late autumn/early winter when the temperature is below 9 °C undergo little or no development. However, the eggs which have reached the 'pre hatch' stage are most resistant to adverse climatic conditions and can survive freezing and desiccation more readily than other stages, therefore, prophylactic dosing of the animals in late spring (1-31<sup>st</sup> May) is recommended to prevent contamination of the grazing areas and keep the parasitic burden at minimum level during summer. Similarly prophylactic dosing in late autumn (1<sup>st</sup> to 30<sup>th</sup> Nov.) is meant to remove the maximum parasites acquired during summer and autumn. However, target selective treatment of heavily infected animals assessed after quantitative faecal examination is also recommended as and when needed.

4. **Ecto parasites like ticks and mange:** The different ticks reported from Kashmir valley include *Haemaphysalis* spp., *Rhipicephalus* spp. and *Ornithodoros* spp. [18]. In Kashmir valley it has been found that tick infestation starts appearing in mid spring (April) and remains prevalent up to October. The developmental cycle of ticks is greatly influenced by prevailing temperature. The low temperature causes marked prolongation of different developmental stages especially hatching of the eggs and pre-oviposition of the engorged females. Therefore, prophylactic medication of the livestock against ticks in late spring will result in death of most of the engorged females which shall keep the tick population under control during summer and early autumn. Optimum conditions for the development of scab include moistness and cool temperature that is why the disease is most common in autumn and winter months. During adverse conditions (summer) mites survive in the protected parts in the perineum, inguinal and inter digital regions, the infra orbital fossae, inside the ear and on the scrotum [11]. Therefore, prophylactic medication against the scab in late autumn shall be very useful in preventing outbreaks of the disease during winter months, however, target selective treatment of infected animals showing the signs of itching and scratching during winter should also be undertaken to prevent spread of the disease due to close confinement of animals in winter.
5. **Coccidiosis:** Lambing and Kidding in Kashmir valley usually starts from 15<sup>th</sup> of Feb., and continues upto ending March and because of post parturient rise in faecal oocyst count the animal shelters and grazing areas become heavily contaminated with oocysts. Since the conditions for sporulation of these oocysts are very favourable in this season, and animals are allowed to graze in open areas after prolonged winter, therefore lambs, kids and calves which move with their mothers in grazing fields pick up this infection hence, these young animals suffer from clinical coccidiosis. Thus, higher infection of *Eimeria* occurs in summer followed by spring, autumn and winter in lambs, kids & calves [19]. Therefore, prophylactic treatment against coccidiosis in

these younger animals should be carried out in late spring/early summer (15<sup>th</sup> May to 14<sup>th</sup> June) to prevent losses due to morbidity and mortality. However, in heavily infected animals the target selective treatment may be carried out in mid-spring (April) and if again required it should be carried out in mid-summer (July).

## References

1. Shahardar RA. A hand book of common parasitic diseases of the livestock for field veterinarians. (First Edition), IBDC publishers, Lucknow, India; c2013.
2. Shahardar RA. Immunity, treatment and control of parasitic diseases of livestock. (First Edition), Jaya publishing house, Delhi, India; c2021.
3. Shahardar RA. Scientific Evidence for Existing Deworming & Dipping calendar for Small Ruminants of Kashmir valley. In the book: Raising Sheep in Kashmir. Published by Alfajar Publishers Bhat Commercial Complex, Maisuma Srinagar (J&K); c2021.
4. Wani ZA. Studies on fresh water snails and their cercarial fauna of veterinary importance in central zone of Kashmir Valley. Thesis submitted to Shere-Kashmir University of Agricultural Sciences and Technology of Kashmir; c2020.
5. Wani ZA. Disease prediction based on snail ecology in Kashmir. In the book: Raising Sheep in Kashmir. Published by Alfajar Publishers Bhat Commercial Complex, Maisuma Srinagar (J&K); c2021.
6. Shahnawaz M, Shahardar RA, Wani ZA, Shah SA. Prevalence of ovine platyhelminth parasite infections in Ganderbal area of Kashmir valley. Indian Journal of Animal Sciences. 2011;81:245-48.
7. Maria A, Shahardar RA, Bushra MS. Prevalence of gastrointestinal helminth parasites of equines in central zone of Kashmir Valley. The Indian Journal of Animal Sciences. 2012;82(11):1276-1280.
8. Trambo SR, Shahardar RA, Allaie IM, Wani ZA, Bushra MS. Prevalence of Gastrointestinal helminth infections in ovine population of Kashmir valley. Veterinary World. 2015;5:667-671.
9. Shah MM, Shahardar RA, Maqbool I, Allaie IM, Wani ZA. Prevalence of GI helminths of cattle in low lying and marshy areas of Kashmir valley. Indian Journal of Animal Sciences. 2019;89(4):359-364.
10. Trambo SR. Studies on parasites of equines in Kashmir valley. Thesis submitted to Shere-Kashmir University of Agricultural Sciences and Technology of Kashmir; c2020.
11. Soulsby E JL. Helminths, Arthropods and Protozoa of Domesticated Animals. 7<sup>th</sup> Edition ELBS and Baillere Tindal, London; c1982.
12. Wani ZA, Shahardar RA, Shahnawaz M. Prevalence of nemathelminth parasites in sheep of Ganderbal district of Kashmir valley. Journal of Veterinary Parasitology. 2011;25:26-29.
13. Wani ZA, Shahardar RA, Shahnawaz M. Prevalence of nemathelminth parasites in locally reared sheep of Ganderbal district of Kashmir valley based on necropsy examination. International Journal for Agro Veterinary and Medical Sciences. 2013;7(5):142-148.
14. Bihaqi SJ, Allaie IM, Banday MAA, Wani ZA, Shahardar RA. Prevalence of caprine GI helminths in temperate areas of Jammu & Kashmir. Journal of Parasitic Diseases. 2017;41(3):843-849.

15. Maqbool I, Shahardar RA, Wani ZA, Allaie IM, Shah MM. Prevalence of gastrointestinal helminths of cattle in south Kashmir. *Indian Journal of Animal Sciences*. 2018;88:910-914.
16. Allaie IM, Shahardar RA, Trambo SR, Bulbul KH, Wani ZA, Khan AA. Prevalence of gastrointestinal nematodes in small ruminants of Kashmir valley. *Journal of Entomology & Zoology Studies*. 2018;(2):2554-2539.
17. Allaie IM, Shahardar RA, Trambo SR, Prasad A, Wani ZA, Bulbul KH. Prevalence of Trichostrongylids in small ruminants of Kashmir Valley. *Indian Journal of Animal Sciences*. 2021;91(10):814-818.
18. Trambo SR, Shahrardar RA, Allaie IM, Wani ZA. Prevalence of ticks infesting livestock of Kashmir valley. *Journal of Entomology & Zoology Studies*. 2018;6:877-879.
19. Aiman A. Studies on coccidiosis in small ruminants of central Kashmir. Thesis submitted to Shere-Kashmir University of Agricultural Sciences and Technology of Kashmir; c2021.