

Pasture larval burden – an indirect method to count strongyle helminth larvae in grazing land of sheep

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ABSTRACT

An approximate amount of 250 g of fresh pasture samples were collected in the “W” shaped sampling method from five beneficiary villages of Network Project on Sheep Improvement (NWPSI) in and around of Kancheepurm District of Tamil Nadu at weekly interval before sunrise during winter and summer months. The samples were processed by Modified Baermann’s apparatus technique. The results revealed that non-parasitic soil larvae alone during the months of December 2013 to March 2014. It might be due to unfavourable environmental conditions like dearth of rainfall and high temperature during the period of pasture sample collection. Hence, it was inferred that ideal environmental condition was needed for development of strongly larval stage.

Key Words: Sheep, grazing area, pasture larval count

INTRODUCTION

Most of the sheep farmers rear their animals by grazing in the pasture land. Pasture contamination was found to be the major mode for strongly helminth infestation in sheep (Singh *et al.*, 1997). Modified Baermann’s apparatus technique was used to assess the level of pasture contamination with strongly helminth larvae.

MATERIALS AND METHODS

A. Pasture sampling technique

An approximate amount of 250 g of pasture sample was hand plucked and collected in separate polythene bags from the common grazing land of every beneficiary village under study, in the “W” shaped sampling method and also from near and far off areas of the dried faecal pats in the pasture, as per the methods followed by Sanyal and Gour (1988).

B. Modified Baermann technique

Baermann apparatus was made up of a large sized (20 cm diameter and capacity of 2 L) plastic funnel with its narrow end

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attached to a 15 cm long rubber tube. Free end of the tube was blocked using pinch cork. The setting was assembled on a funnel holder and a 60W bulb was hung above the funnel.



Figure 1. Modified Baermann's apparatus

An approximate amount of 250 g of grass sample collected from pasture were placed in the funnel and tap water was filled up to the brim of funnel and allowed to remain overnight. The next day, about 10 to 20 ml of filtrate was drained by opening the cork of the rubber tube. The filtrate was centrifuged at 2000 rpm for 3 minutes. The supernatant was siphoned off and saturated sodium chloride solution was added to the sediment till a positive convex meniscus was formed at the mouth of the tube. After 10 minutes, the top of the fluid was touched with a cover slip and placed on a drop of Lugol's iodine on a slide.

The parasitic nematode larvae were identified, counted and expressed as number of larvae per kg of pasture on dry matter basis using the formula,

$$= \frac{\text{No. of larvae} \times 1000}{250}$$

$$= \text{No. of larvae} \times 4$$

$$= \text{No. of larvae per kg of forage in DM basis.}$$

C. Estimation of dry matter per cent of pasture

Per cent dry matter of pasture grass was analyzed during summer and winter. One hundred gram of pasture grass (n=5) in each season were dried in hot air oven at $100 \pm 5^\circ\text{C}$ for 8 h and weight of ash was expressed in terms of per cent.

RESULT AND DISCUSSION

Non-parasitic soil larvae alone were identified by modified Baermann's technique during summer and winter.

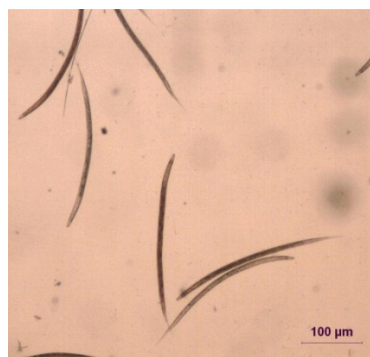


Figure 2. Non-parasitic soil larvae

In this study, pasture samples were collected during winter and summer and processed by *Modified Baermann's apparatus* technique and only soil nematode larvae could be identified in all the five villages.

The failure to detect pre-parasitic stages of strongly in pasture samples might be due to the dearth of rainfall during the monsoon and the high temperature prevalent

during sample collection. It was understood that ideal environmental conditions like temperature, humidity and rainfall are necessary essential for the development of larval stages.

Bukhari and Sanyal (1989) reported that the availability of infective larvae of *H. contortus* on pasture was more and for longer duration in rainy (June, July and August) and autumn (September, October and November) seasons, whereas, it was very poor in winter (December, January and February) and spring (March, April and May). The cooler winters probably prevented the development of the pre-infective stages of the strongly larvae and due to low rainfall during the summer resulting in the non-availability of moisture for their survival. It was very clear that rainy and autumn seasons are the most important seasons of pasture contamination.

Sanyal and Gour (1988) reported that in Tamil Nadu, during the month of September, October and November, pasture larval count was zero in four plots of sheep grazing land whereas during the month of December all the grazing plots showed zero pasture larval count due to harsh climate as a result of low temperature and sparse rainfall.

Singh et al. (1997) reported that from December 1994 until early March 1995, no infective larvae could be recorded. He attributed the results to the absence of warm and humid climate, which favors the

development and survival of pre-parasitic stages.

Kaur and Lakshmi Devi (2012) recorded that the total pasture larval count on dry matter basis with strongly was higher during the month of August and September 2010, whereas, total pasture larval count remained lower between the months of November 2010 and January 2011.

REFERENCE

- Bukhari, S and Sanyal, P. K. (2011). Epidemiological intelligence for grazing management in strategic control of parasitic gastroenteritis in small ruminants in India - A Review. *Veterinary World*, **4** (2):92-96.
- Kaur, H and Lakshmi Devi. (2012). Seasonal count and composition of nematode larvae of ruminant livestock on community in Patiala district of Punjab. *Journal of Veterinary Parasitology*, **26** (2):156-160.
- Sanyal, P. K and Gour, D. (1988). Studies on pasture sampling on the availability of ovine strongyle larvae in sub-temperature Tamil Nadu. *International Journal of Animal Sciences*, **4**:167-170.
- Singh, D., Swarnkar, C. P., Khan, F. A., Srivastava, C. P and Bhagwan, P. S. K. (1997). Epidemiology of ovine gastrointestinal nematodes at an organized farm in Rajasthan, India. *Small Ruminant Research*, **26**:31-37.