

# Prevalence and seasonal occurrence of gastrointestinal parasites in small ruminants of coastal areas of TamilNadu.

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**Abstract-** The study was carried out from October 2013 to September 2014 in both organised and small sheep and goat farms of coastal areas viz. Cuddalore, Nagapattinam of Tamil Nadu, India. The objective of the present study is to determine the prevalence and seasonal variation of gastrointestinal parasites in small ruminants. A total of 1356 faecal samples (63 from goat and 50 from sheep per month) were collected and subjected for analysis. Among the analysed samples 61.50% were positive for endoparasites. The prevalence of gastrointestinal parasites was higher in sheep (66.33%) than in goats (57.67%). The endoparasites found in small ruminants were nematodes, cestodes and trematodes. The nematode *Haemonchus sp* was found to be predominant in both sheep and goat. The results of season wise analysis indicates that the overall infection percentage was higher in rainy season (68.36%) followed by winter (60.84%) than in summer (55.30%).

**Index Terms-** prevalence, seasonal variation, gastrointestinal parasites, small ruminants, Tamil Nadu

## I. INTRODUCTION

Small ruminants are widely distributed and are of great importance as a major source of income for small and the landless farmers in rural areas. Sheep & goat with large genetic diversity accounts for about 0.5 to 5% of total output of livestock sector in India [1]. Helminthiasis, especially parasitic gastroenteritis, pose a serious health threat and a limitation to the productivity of small ruminants due to the associated morbidity, mortality, cost of treatment and control measures [2]. In addition to these threats, infestation with helminthes lowers the animal's immunity and renders it more susceptible to other pathogenic infections; finally this may result in heavy economic losses [3]. The problem is however much more severe in tropical countries due to very favourable environmental conditions for helminth transmission [4].

Three classes of helminthes are distinguished, namely nematodes (roundworms), cestodes (tapeworms) and trematodes (flukes). Several authors [5-11] have explored various aspects of helminth infestation in small ruminants at different localities of Tamil Nadu and other states of India with a range of 25 - 92%. No report is available on prevalence of gastrointestinal helminthes in south coastal region of Tamil Nadu viz., Cuddalore and Nagapattinam districts where goat farming is the primordial occupation of the small farmers. Hence, the present study was

undertaken to analyse the helminth infestation in small ruminants with appropriate design and effective control measures.

## II. MATERIALS AND METHODS

### 2.1 Study Population

The sheep and goats maintained along the coastal areas of Tamil Nadu viz. Cuddalore and Nagapattinam districts by the organized farms, small and marginal farmers were selected for the study. Four flocks of goat, five flocks of sheep, each flock with 15 – 20 animals, 45 goats reared under semi-intensive system and goats maintained at division of Animal Husbandry, Faculty of Agriculture, Annamalai University were selected for the study. Depending on the climatic condition the animals were allowed for grazing of 5-8 hrs per day.

### 2.2 Collection and examination of Faecal Sample

From October 2013 to September 2014, a total of 1356 fresh faecal samples were collected from the selected sheep and goat flocks. The faecal samples were examined for helminth eggs using Direct, Sedimentation, Floatation techniques [12, 13].

## III. RESULTS AND DISCUSSION

The analysis of faecal samples revealed that among the 1356 samples examined, 834 were found positive for helminth infection with an overall prevalence of 61.5 percent (Table. 1 and Figure. 1). The flock wise analysis of helminth infection was given in Fig. 1 which showed sheep flock was most affected than the goat flock. The results of species wise analysis of faecal samples are shown in Table. 2 and Figure.2. From the table it was noted that both sheep and goat flocks were affected by nematodes (*Haemonchus sp*, *Trichuris sp* and *Strongyloides sp*), cestodes (*Monizia sp*) and trematodes (*Amphistomes* and *Fasciola sp*). It was found evident that *Haemonchus sp* was the dominant species affecting both sheep and goat flocks. Next to it, the animals were affected with the trematode *Amphistomes*. The results of season wise infection of helminthes in both sheep and goat flocks are summarized in Table. 3 and figure.3. Out of three seasons, higher percentage of infection was detected during rainy season (68.36%) followed by winter (60.84%). However, during summer infection was moderate in both goat and sheep flocks (55.30%). The season wise infection percentage for different seasons was displayed in Fig. 3. As shown in figure, sheep flock has witnessed highest infection percentage than goat for all the three seasons.

The present study indicated that the infection with gastrointestinal helminthes is a frequent phenomenon among the small ruminants of coastal districts of Tamil Nadu, India. The higher incidence of parasites in different study areas of Tamil Nadu were reported by many researchers [7, 8, 14, and 15]. The observed results were also in agreement with the findings of various authors from other parts of India [9, 10, 11, 16, 17].

The various species of parasites recorded in the present study coincided with the findings of various authors [18, 19, 15].

The seasonal occurrence of parasitic infection in small ruminants depicted higher infection of helminthes in rainy season followed by winter than in summer. This is in accordance with findings of other researchers [5, 20]. Heavy rainfall and high relative humidity predisposed to heavy parasitic infection [21]. Climatic factors also influenced dispersion of larvae in the herbage which increased the chance of contact between host and larvae [22, 23]. Higher infection during rainy season may also be attributed to suitable molarity of salt present in soil, an important factor for ecdysis [24].

#### IV. CONCLUSION

From the above findings it was observed that the infections of gastrointestinal parasites among small ruminants were most prevalent throughout the year in organized and small holding flocks in varying intensity. Hence, appropriate strategic treatment with broad spectrum anthelmintic should be practised during the start and end of rainy season. Such treatment regime is strategic to get rid of the parasitic burden in the small ruminants and also minimize the pasture contamination by reducing faecal egg counts.

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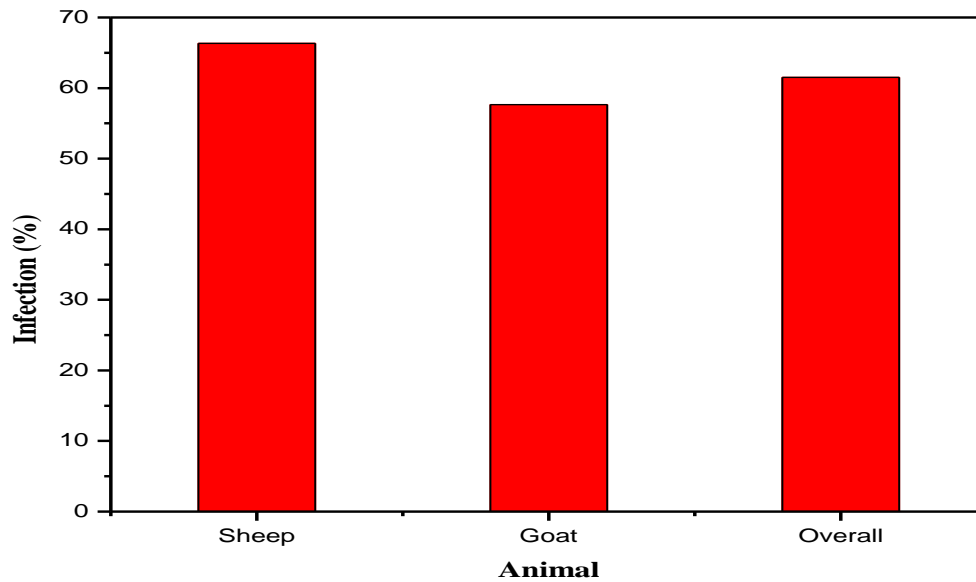
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**Table. 1 The flock wise analysis of helminth infection**

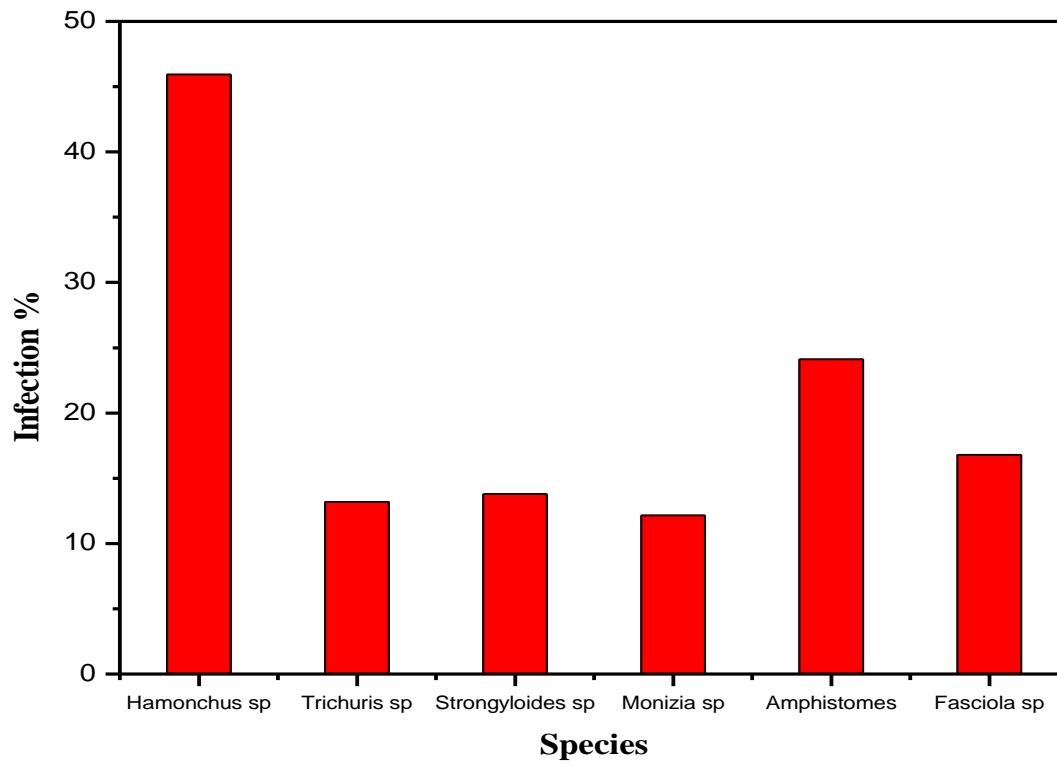
Animal	No.of samples collected	No.found positive	Infection (%)
Sheep	600	398	66.33
Goat	756	436	57.67
Overall	1356	834	61.50



**Fig. 1 The flock wise analysis of helminth infection**

**Table.2. Species wise prevalence of gastrointestinal helminthes in sheep and goats**

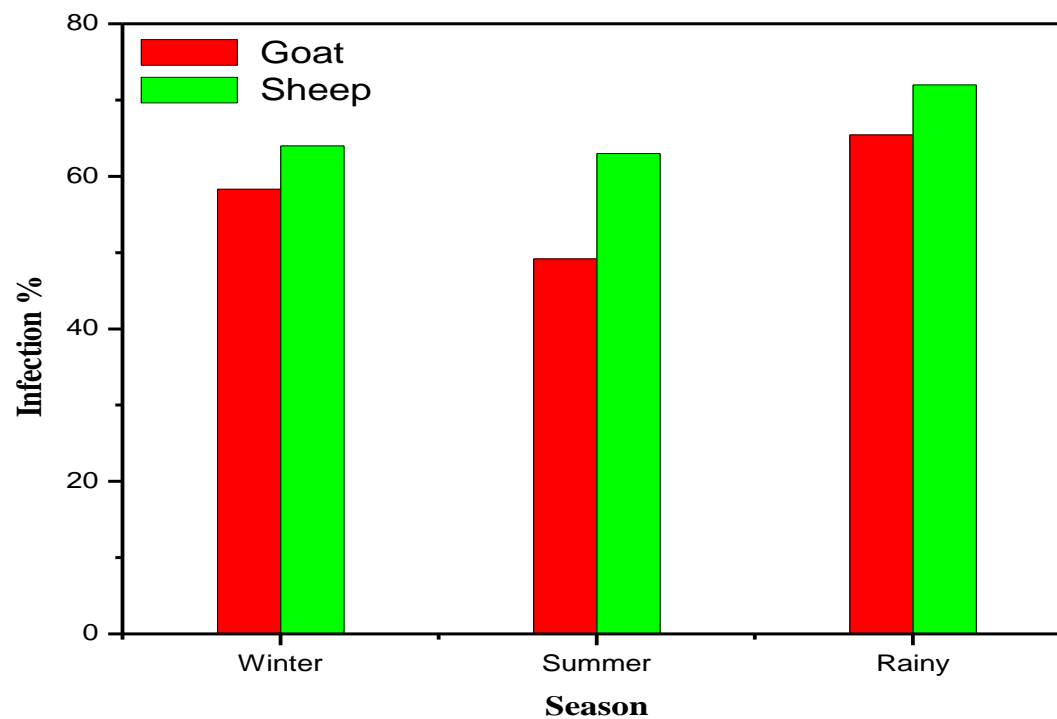
Sl.No.	Species	No.of animals examined	Total positive	Infection percentage
1	<i>Haemonchus sp</i>	1356	623	45.94
2	<i>Trichuris sp</i>	1356	179	13.20
3	<i>Strongyloides sp</i>	1356	187	13.79
4	<i>Monizia sp</i>	1356	165	12.16
5	Amphistomes	1356	327	24.11
6	<i>Fasciola sp</i>	1356	228	16.80



**Fig. 2 Species wise prevalence of gastrointestinal helminthes in sheep and goats**

**Table. 3 Season wise occurrence of helminth infection in small ruminants**

Season	Goat			Sheep			Both		
	No.of samples collected	No.found positive	Infection (%)	No.of samples collected	No.found positive	Infection (%)	No.of samples collected	No.found positive	Infection (%)
Winter	252	147	58.33	200	128	64.00	452	275	60.84
Summer	252	124	49.20	200	126	63.00	452	250	55.30
Rainy	252	165	65.47	200	144	72.00	452	309	68.36



**Fig. 3 Season wise occurrence of helminth infection in small ruminants**

