



E-ISSN: 2320-7078

P-ISSN: 2349-6800

[www.entomoljournal.com](http://www.entomoljournal.com)

JEZS 2020; 8(4): 1729-1731

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Received: 25-05-2020

Accepted: 27-06-2020

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## Anthelmintic usage pattern and target selective anthelmintic treatment (TST) among the sheep farms of Tirunelveli district of Tamil Nadu

**A Serma Saravana Pandian, S Senthilkumar and M Raman**

### Abstract

A study was conducted among the sheep farmers of Tirunelveli district of Tamil Nadu regarding the awareness on anthelmintic usage and Target Selective Anthelmintic Treatment (TST). A sample of 240 sheep farmers belonging to NABARD farmers' clubs of Tirunelveli, Ambasamudram and Tenkasi division of the district were selected by multistage random sampling method. The data were collected by personal interview method with the help of a pre-tested well fabricated interview schedule. The data collected were analysed by conventional percentage analysis and Discriminant function analysis. The study revealed that 72 percent of the sample sheep farmers were aware of the importance of anthelmintic usage and its economic benefits. Among these farmers (92 per cent) used Albendazole, Levamisole and Oxytocanide as anthelmintic drugs. Only 34 per cent of the farmers were aware of the importance of Rotational anthelmintic administration. This practice was followed by the sheep farmers who have close association with the local veterinarian. Others were using the same drug throughout the year. None of the sample farmers in the study area were aware of the importance of target selective anthelmintic treatment and WORMCHECK chart. The socio-economic and demographic factors associated with the awareness of anthelmintic usage was analysed by discriminant function analysis. The results of the discriminant function analysis showed that among the eleven variables chosen for analysis, the variables age, education, farm size, proportion of income from sheep rearing and the extent of veterinarians contact were the statistically significant ( $p < 0.05$ ) variables which discriminated between the sheep farmers who were aware and non-aware of the anthelmintic usage pattern.

**Keywords:** Anthelmintic usage, awareness, discriminating factors, sheep farmers

### Introduction

Sheep farming play important role in the livelihood of a large percentage of small and marginal farmers and landless labourers in South India and it is considered as the backbone of rural economy. The contribution of livestock sector to the Gross State Domestic Product (GSDP) is 4.31% and that to the agriculture and allied activities is 41.84%. Apart from these, the estimated meat production is 4,919 lakh kgs. Policy note, 2016-17 <sup>[1]</sup>. The State contributes 7.45% of total meat production and ranked 6<sup>th</sup> in meat production in the country. Tamil Nadu ranks 4<sup>th</sup> in sheep population of the country. Tirunelveli district of the state of Tamil Nadu is endowed with the highest sheep population.

Gastro-intestinal parasitism severely affects the economy of sheep production Several practical field applicable methods have been developed by researchers to reduce the use of anthelmintic and to develop practical methods of integrated parasite management (IPM) with less usage of anthelmintics. Target Selective Treatment (TST) of helminthic infestation using WORMCHECK chart is one such technique. . By far the best known example of a TST indicator is FAMACHA – an acronym derived from the name of the originator of the idea, Dr. Faffa Malan (FAffa MALan CHArt) Van-Wyk and Bath <sup>[2]</sup>, a system developed in South Africa that uses anaemia, determined on the basis of the colour of the lower eyelid mucous membrane in small ruminants, as a morbidity marker for haemonchosis.

Though lot of technologies have been developed in the lab, the awareness among the farmers is the major impediment to the profit maximising efforts of the farmers. Having all the above said things in mind a study, a cross sectional survey by personal interview was conducted among the sheep farmers of Tirunelveli district of Tamil Nadu regarding the awareness on anthelmintic usage and Target Selective Anthelmintic Treatment (TST).

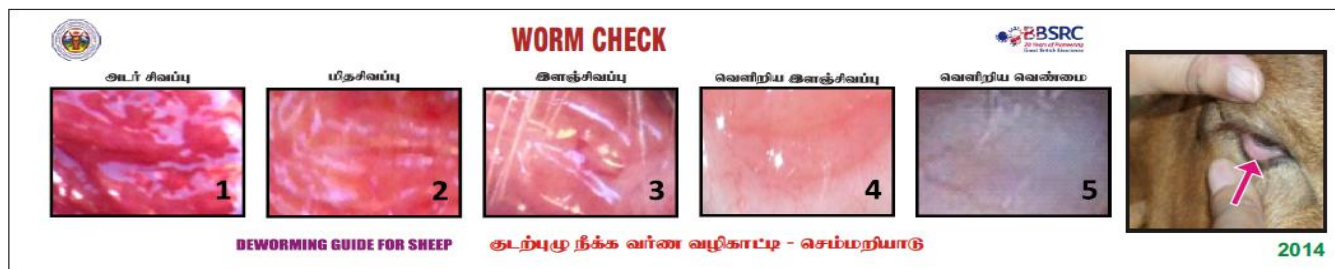


Chart: Worm check

**Data and Methodology**

**Sampling and Data Analysis**

A sample of 240 sheep farmers belonging to NABARD farmers’ clubs of Tirunelveli, Ambasamudram and Tenkasi division of Tirunelveli district of Tamil Nadu were selected by multistage random sampling method. The data were collected by personal interview method with the help of a pre-tested well fabricated interview schedule. The data collected were analysed by conventional percentage analysis and Discriminant function analysis.

**Factors Discriminating between the farmers who were aware and Non-aware of the Anthelmintic usage pattern**

The discriminant function analysis was used to determine which variables discriminate between the farmers who were Aware and Non-aware of the Anthelmintic usage pattern. The result has given b (and standardized beta) coefficients for each variable in each discriminant (now also called canonical) function, and they can be interpreted as; larger the standardized coefficient, the greater is the contribution of the respective variable to the discrimination between groups. Another assumption of discriminant function analysis is that the variables that are used to discriminate between groups are not completely redundant.

The linear discriminant function used for the study is of the following form Pandian *et al.* [3].

$$Z = b_1 X_1 + b_2 X_2 + \dots + b_i X_i \quad (i = 1, 2, 3, \dots, 11)$$

where

Z = Total discriminant score

X<sub>i</sub> = Demographic and farm related Variables

**Results and Discussion**

The results of the study revealed that among the 240 sample sheep farmers, 72 percent of the sample sheep farmers (173 farmers) were aware of the importance of anthelmintic usage and its economic benefits on their livelihood. Adoption of improved sheep management practices bears pivotal role to

improve the livelihood. Singh *et al.*, [4]: Among these farmers (92 per cent) used Albendazole, Levamisole and Oxytoclozanide as anthelmintic drugs. Only 34 per cent of the farmers were aware of the importance of Rotational anthelmintic administration. This practice was followed by the sheep farmers who have close association with the local veterinarian. Others were using the same drug throughout the year. None of the sample farmers in the study area were aware of the importance of target selective anthelmintic treatment and WORMCHECK / FAMACHA chart. Most of the farmers were eager to adopt the improved technologies, but the absence of any support system to provide quick access to the latest information and technologies and weak input delivery system resulted in poor adoption Shalendrakumar [5]. The results of the discriminant function analysis are depicted in Table 1, 2 and 3. The table 1. shows the test of discriminant function. The statistical significance of the linear discriminant function was tested by the Wilks’ Lambda value and the corresponding chi-square statistic which were significant ( $p < 0.01$ ) at 99 per cent level.

**Table 1:** Test of Discriminant function by Wilk’s Lambda

Test of Function	Wilks' Lambda	Chi-square	Df	Sig.
1	0.239**	158.517	43	.000

The results of the discriminant function analysis are given in table 2, which shows the discriminant function co-efficient for the 11 demographic and farm related variables of the sample sheep farmers. The socio-economic and demographic factors associated with the awareness of anthelmintic usage was analysed by discriminant function analysis. The results of the discriminant function analysis showed that among the eleven variables chosen for analysis, the variables age, education, flock size, proportion of income from sheep rearing and the extent of veterinarians’ contact were the statistically significant ( $p < 0.05$ ) variables which discriminated between the sheep farmers who were aware and non-aware of the anthelmintic usage pattern.

**Table 2:** Results of Discriminant Function Analysis

Xi’s	Demographic Variables	Discriminant function co-efficient
X <sub>1</sub>	Age	-0.654*
X <sub>2</sub>	Education	0.608*
X <sub>3</sub>	Experience	0.410
X <sub>4</sub>	Family Size	-0.328
X <sub>5</sub>	Flock size	0.316*
X <sub>6</sub>	Land Holding	-0.132
X <sub>7</sub>	Extent of exposure to multimedia and information resources	0.198
X <sub>8</sub>	Extent of veterinarians’ contact	0.459*
X <sub>9</sub>	Extent of Participation in Farmers’ group	-0.152
X <sub>10</sub>	Proportion of income from rearing	0.512*
X <sub>11</sub>	Total family Income	0.211

\* -Statistically significant ( $p < 0.05$ )

As the age of the farmers increases their awareness about the newer and modern technologies in farming was lesser, i.e., the young farmers were aware of the anthelmintic usage pattern that the old farmers. Hence, the co-efficient of the variable, age was negative. The educational pattern of the farmers would be truly reflected on their awareness on recent developments in farming. The variable educational level was positive and significantly associated with the awareness about the anthelmintic usage. The variable, flock size is positively related to the awareness Sathyanarayan and Jagadeeswary [6]: which indicated that the large farmers pay much attention to their flock related to the latest disease prevention measures than the small flock sized farmers Verma and Sharma [7]. The farmers who had close association with the veterinarians had

more awareness, which was indicated by the positive and significant association of this variable with the awareness. As the proportion of income from sheep farming increased, the farmers' awareness on the anthelmintic usage also increased which was indicated by the positive and significant co-efficient value for this variable.

Based on the results of the discriminant function analysis and the discriminant score for each respondent, the sheep were post-stratified into aware and non-aware of anthelmintic usage pattern, to know the effectiveness of discriminant function analysis. The classification results are given in table 3. From table no.3, it could be inferred that 90.0% of original grouped cases correctly classified by this discriminant function model.

**Table 3:** Classification Results

Farmers' Awareness on Anthelmintic techniques		Predicted Group Membership		Total	
		Aware	Non- Aware		
Original	Count	Aware	158	15	173
		Non-aware	9	58	67
	%	Aware	91.3	8.7	100.0
		Non-aware	13.5	86.5	100.0
90.0% of original grouped cases correctly classified.					

### Conclusion

From the results of the study it could be observed that 72 percent of the sample sheep farmers were aware of the importance of anthelmintic usage and its economic benefits. Only 34 per cent of the farmers were aware of the importance of Rotational anthelmintic administration. This practice was followed by the sheep farmers who have close association with the local veterinarian. None of the sample farmers in the study area were aware of the importance of target selective anthelmintic treatment and WORMCHECK chart. The awareness about the anthelmintic usage pattern and the economic importance of anthelmintic resistance was very low among sample farmers in the study area. Hence the extension efforts may be intensified to create awareness among the sheep farmers of Tirunelveli district.

### Acknowledgement

This research paper is a part of the research scheme funded by NABARD, Tirunelveli. The financial support provided by NABARD for conducting the study is gratefully acknowledged

### References

1. Policy note on Animal Husbandry Govt. of Tamil Nadu, 2016-17.
2. Van-Wyk JA, Bath GF. The FAMACHA system for managing hemochosis in sheep and goats by clinically identifying individual animals for treatment, Veterinary Research. 2002; 5:509-529.
3. Pandian ASS, Selvakumar KN, Prabu M. Segmenting the milk production in the districts of Tamil Nadu into homogenous milk zones – A Multidimensional scaling Approach, Indian Journal of Science and Technology. 2008; 1(6):1-4.
4. Singh B, Meena GS, Meena KC, Navab Singh. Feeding and Healthcare Management Practices Adopted by Sheep Farmers in Karauli District of Eastern Rajasthan, India, International Journal of Current Microbiology and Applied sciences. 2018,7(2):309-316.
5. Shalendrakumar. Commercial Goat Farming in India: An

Emerging Agri-Business Opportunity, Agricultural Economics Research Review. 2007; 20:503-520.

6. Satyanarayana K, Jagadeeswary V. A study on knowledge and adoption behaviour of livestock farmers, Indian Journal of Animal. Research. 2010; 44(2):100-106.
7. Verma RK, Sharma NK. knowledge of sheep farmers about improved sheep production Technologies, Indian Journal of Animal Research. 2009; 43(4):275-278.