

Prevalence of Gastro-Intestinal Parasites on Weaned Dohne Merino Lambs in Mixed Veld of the Eastern Cape, South Africa

MS Jansen*, N Nyangiwe, J Welgemoed and LM Nobumba

The epidemiology of gastro-intestinal parasites on Dohne merino lambs reared under Bhisho Thornveld, Eastern Cape, South Africa

***Corresponding Author:** MS Jansen, The epidemiology of gastro-intestinal parasites on Dohne merino lambs reared under Bhisho Thornveld, Eastern Cape, South Africa.

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Abstract

The aim of the study were to investigate the effects of weather patterns on the monthly occurrence of gastro-intestinal parasites on recently weaned Dohne merino lambs on mixed veld in the Eastern Cape during 2010.

Significantly higher infections of roundworms and *Coccidia* were observed during warm wet months of January (Roundworm 2309.1 ± 1064.64 and *Coccidia* 3937.7 ± 1137.22), February (Roundworm 2136.9 ± 995.74 and *Coccidia* 2225.3 ± 932.19), and March (Roundworm 4105.4 ± 819.13 and *Coccidia* 2890.8 ± 874.98) and April (Roundworm 3014.4 ± 723.53 and *Coccidia* 1424.6 ± 772.86). Roundworm (769.1 ± 623.14) and *Coccidia* (771.7 ± 665.62) had very low counts during cold and dry month (June) of the same year. The helminth infections were seen to start picking up after the begging of early rains during hot wet months. The current study reveals that gastrointestinal parasites larvae develop and survive best under warm, wet environments. Therefore, knowledge concerning monthly occurrence of gastro-intestinal helminth is essential in order to develop appropriate control strategies according to specific geographic area.

Keywords: *Gastro-Intestinal Infections; Weather Patterns; Lambs; Roundworms; Coccidia*

Introduction

Worldwide parasite problem is of paramount importance in many different climatic environments and still pose a serious threat to the livestock economy [1]. In Africa gastro-intestinal infections cause great economic loss in animals and can be categorized as either direct or indirect losses [2].

The prevalence of gastrointestinal infections is closely associated with varied geo-climatic conditions like quality and quantity of pastures, temperatures, humidity and grazing behaviour of the host [3]. The blood-feeding nematode *Haemonchus contortus* is one of the most pathogenic parasites in sheep [4]. Coccidiosis is also one the most important disease affecting animals who are pre-weaned and recently weaned [5]. The gastrointestinal internal problems of livestock is more severe in warm, humid environments [5,6]. Young animals usually carry heavier worm burdens due to weaker immune system than adult age and therefore, resulting in morbidity and occasional death [7-9].

Aims and Objectives

The aim of the study were to investigate the effects of the weather patterns on the monthly occurrence of gastro-intestinal parasites on recently weaned Dohne merino lambs in mixed veld of the Eastern Cape, South Africa.

Materials and Methods

Study site

The study was conducted at Campagna (32° 29'S, 27° 29' E) farm in Stutterheim. The vegetation is characterised by an open, treed savanna with a moderate shrub and grass cover and is classified as Bhisho Thornveld. The dominant grass species are *Eragrostis curvula*, *Eragrostis plana*, *Andropogon appendiculatus* and *Heteropogon contortus* [10].

Data collection method and type of data collected

Experimental animals of Dohne merino lambs were randomly selected immediately after weaning and a group of 20 animals were selected. At the beginning of the trial animals were dewormed with Levicon (diluted) in order to start at zero level of gastro-intestinal parasites. Faecal specimens for parasitology were collected monthly directly from the rectum of sheep on the last week of the month and dispatched to Grahamstown Provincial Veterinary Laboratory (P.V.L) for analysis. The faecal specimen of 1 gram per animal were collected and placed in an empty plastic container tightly closed. Samples were dispatched on a cooler box with ice packs to avoid hatching. The animals were dosed when the eggs per gram counts (EPGs) of roundworms level is above the average of 500 (EPGs).

Statistical analysis

The data for parasites counts was transformed using the formula $y = \log_{10}(x+1)$ to check for normality. The data for of gastrointestinal parasites and months was analysed using Statistical Analysis System version 9.1 (SAS, 2003).

Results and Discussion

A total of 238 faecal samples for parasitology analysis were collected from January to December during 2010 (Table 1).

	Roundworm	Coccidia	Tapeworm	Trichuris
January	2309.1 ± 1064.64	3937.7 ± 1137.22	-0.3 ± 0.23	2.9 ± 4.34
February	2225.3 ± 932.19	2136.9 ± 995.74	-0.3 ± 0.20	2.6 ± 3.80
March	4105.4 ± 819.13	2890.8 ± 874.98	0.1 ± 0.18	2.4 ± 3.34
April	3014.4 ± 723.53	1424.6 ± 772.86	-0.2 ± 0.155	2.1 ± 2.95
May	1737.6 ± 655.18	513.07 ± 699.85	0.1 ± 0.14	1.9 ± 2.67
June	769.1 ± 623.14	771.7 ± 665.62	0.3 ± 0.13	1.6 ± 2.54
July	899.8 ± 636.80	687.8 ± 680.22	0.2 ± 0.14	1.3 ± 2.60
August	683.9 ± 697.47	956.5 ± 745.03	0.2 ± 0.15	1.0 ± 2.84
September	358.0 ± 794.11	497.6 ± 848.26	0.2 ± 0.17	1.9 ± 3.24
October	-67.0 ± 915.40	480.3 ± 977.82	0.2 ± 0.20	-4.4 ± 3.73
November	709.00 ± 1052.85	555.1 ± 1124.64	0.2 ± 0.23	-4.7 ± 4.29
December	442.3 ± 200.93	252.6 ± 1282.81	0.2 ± 0.26	-5.0 ± 4.89

Table 1: Monthly least square means (\pm standard error) of gastrointestinal parasites loads.

Significantly higher infections of roundworm and *Coccidia* were observed during warm, wet months of January (Roundworm 2309.1 ± 1064.64 and *Coccidia* 3937.7 ± 1137.22), February (Roundworm 2136.9 ± 995.74 and *Coccidia* 2225.3 ± 932.19) and March (Roundworm 4105.4 ± 819.13 and *Coccidia* 2890.8 ± 874.98) and April (Roundworm 3014.4 ± 723.53 and *Coccidia* 1424.6 ± 772.86). These results are in agreement with the findings of [11,12], who observed the same seasonal pattern, with high eggs per gram counts (EPGs) of parasites during the warmer, wet month and low EPGs during colder months. Autumn and winter months had significantly higher EPGs of worms

than summer. These results are in line with the finds of [13], who reported that the prevalence of gastrointestinal helminths infections during autumn and winter was significantly higher than summer.

Significantly higher EPGs of gastro-intestinal parasites were observed on rainfall >75 mm and on average temperature exceeding 20°C (Figure 1). The findings of the study are in disagreement with the results of [14], who reported that when the mean temperatures exceed 20°C pastures were safe, sheep acquiring < 1000 worms in 4 weeks. According to [13], temperature differ for the survival of each worm type, best favourable weather for most of worms is about 15 mm of rain over a few days to provide sufficient moisture for development. The current study reveals that there is positive correlation between the level of gastrointestinal parasite with temperatures and rainfall [15].

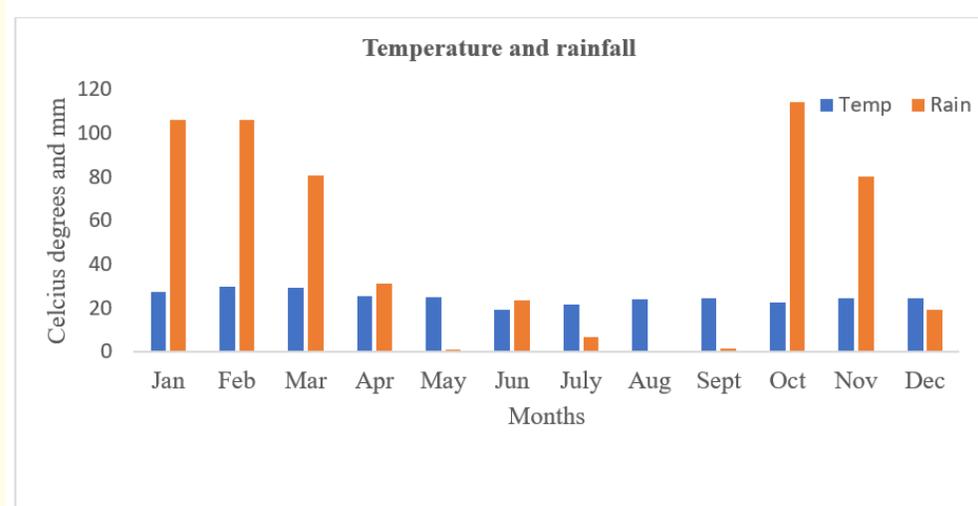


Figure 1: Monthly temperatures (°C) and rainfall (mm).

Conclusion

The faecal examination for diagnosis of parasitic infections is probably the most important tool to determine the worm burden on your animals. Younger animals should be given more attention due to their weaker immune system than adult animals. Pasture management is a low-cost tool that can be implemented immediately in a parasite-management approach. It is necessary to deworm animals during the warm, wet months of the year as these condition are more favourable for the development and survival of the gastro-intestinal parasites larvae.

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