

A faecal survey of Gastro-intestinal Parasites in Sheep and goats in Madagali Local Government Area, Adamawa State, Nigeria

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Abstract: The number of species infected and at risk with gastrointestinal parasites has been increasing over some years resulting to loss of many ruminants, the study was conducted between January to December 2013 as it aimed at assessing the seasonal prevalence of gastroenteritis and to determine Prevalence and Counts of Adult Nematode in sheep and goats using saturated sodium chloride as floatation medium. During the study, a total of 249 sheep and goats were randomly sampled with 142 sheep and 107 goats examined across the selected districts. Data obtained were analysed using Mann-Whitney U-test at 5% level of significance. 126 sheep and goats were observed to be infected with at least one ova of Gastrointestinal Parasites. 15.9% were positive for adult strongyle with 9.5% sheep and 6.3% goats, and there was no statistical significance difference ($p>0.05$). 16.7% for strongyloides with 10.3% sheep and 6.3% goats no statistical significance difference ($p>0.05$), 7.1% were positive for trichuris with 3.2% sheep and 4.0% goats with no statistical significance difference ($p>0.05$), haemonchus had the lowest prevalence with 0.8% and no ova were observed in sheep. Faecal egg counts in relation to season show strongyle with highest prevalence in September and very low in December, strongyloides reached its peak October while trichuris build up in June and August.

Keywords: Gastrointestinal parasites, Goats, sheep, Madagali, Nigeria.

I. Introduction

Parasitic gastroenteritis has been noted as major constrain to ruminants productivities in terms of pathology and economic importance (Biu et al., 2006). Despite the large population of sheep and goats and their economic importance, up to the time of this work there is no documented work on prevalence and level of infestation of gastrointestinal parasites of small ruminants in the study area, and according to Yaro et al. (2015) the frequency of gastro-intestinal parasite has been increasing over the years resulting to loss of many species of ruminant animals in Madagali Local Government Area. The climate in a certain locality is one of the factors that determine the type and severity of parasitic infections in goats (Kamal et al., 1993). It has been estimated that goats and sheep provide up to 30% of the meat and 15% of the milk supplies in sub-Saharan Africa where thrive in the wide range of ecological regions which are too harsh for the beneficial, Bikila, et al. (2013). It has also been reported that, small ruminants survive better under drought conditions than cattle due to their low body mass and low metabolic requirements and maintenance needed in arid and semi-arid areas Bikila, et al. (2013).

II. Materials and Methods

Madagali Local Government Area is located between latitude $9^{\circ} 21'$ and $20^{\circ} 10'$ North and between longitude $13^{\circ} 11'$ and $13^{\circ} 14'$ East. Its Eastern side is bordered by Cameroun republic on the adjacent side of the Mandara mountain ranges and bordered Gwoza LGA to the South (Nwagboso and Uanga, 1999) with Michika LGA to North and Askira Uba East.

Faeces from each selected animals were collected at 6:00am and 11:30am every month in each targeted district from the shed/pen with index finger through the animal rectum and was placed into universal container for processing and proper laboratory analysis and examination of worm stages as described by Hansen and Prey (1990). The specimen was examined for the presence of adult worms and worm eggs. The processed sample was examined and Sheep/goats of different sexes and age groups that were for sample collection were randomly selected (simple random sampling) from each of the study sites. Faecal sample from sheep 142 goats 107 were examined from January to December 2013 a crossed the selected district (Shuwa, Gulak and Madagali).

About 5 grams of faecal samples were collected directly from the rectum of each animal in each of the selected study sites. The sample collected was placed in a container containing 10% formalin for preservation before taken to the laboratory for analysis. The samples were examined by floatation technique using saturated sodium chloride solution as the floatation medium. Faecal egg counts was done using the modify Mac Master Technique and parasite stage identification using standard parasitological criteria (Hansen and Pery 1990).

Mann-whitney U-test was used to determine the differences in the results obtained during the study at 5% level of significance.

III. Results

In the present study, a total of 249 faecal samples from small ruminants (142 sheep and 107 goats) were examined with species prevalence of 126 (50.6) in sheep/goats respectively. Table 1 shows that *Strongyloides* has the highest adult prevalence of 21(16.7) with 13(10.3) in sheep and 8(6.3) in goats, while *haemonchus* had the lowest 1(0.8) and it was not observed in sheep and there was statistical significance ($p < 0.05$). The table also shows that *Strongyle* had 9.5% and 6.3%, *trichuris* had 3.2% and 4.0% in sheep and goats with no ($p > 0.05$) significance differences.

Figure 1 present the seasonal variation in faecal egg counts of sheep and goats in the study area, this reveals that *Strongyle* egg count per gram of faeces reached peak in September and low occurrence in winter and spring, the lowest among the species observed is *Trichuris* which was not identified in January, September November and December respectively.

Table 2: Prevalence and Counts of Adult Nematode Parasites Recovered of Sheep and Goats Faeces in Madagali Local Government Area, Adamawa State, Nigeria.

Nematodes	Prevalence No. (%)			Worm count mean \pm S.D	Range
	All Animals	Sheep	Goats		
No. examine	249	142	107		
<i>Strongyle pss</i>	20(15.9)	12(9.5)	8(6.3)	134 \pm 151	6-200
<i>Strongyloides spp</i>	21(16.7)	13(10.3)	8(6.3)	112 \pm 90	5-250
<i>Trichuris spp</i>	9(7.1)	4(3.2)	5(4.0)	11 \pm 19	6-70
<i>Haemonchus spp</i>	1(0.8)	0(0.0)	1(0.8)	1 \pm 3	9
<i>Cooperia spp</i>	9(7.5)	6(4.8)	3(2.4)	14 \pm 25	6-50
<i>Oesophagostomum spp</i>	3(2.5)	2(1.6)	1(0.8)	3 \pm 8	8-20

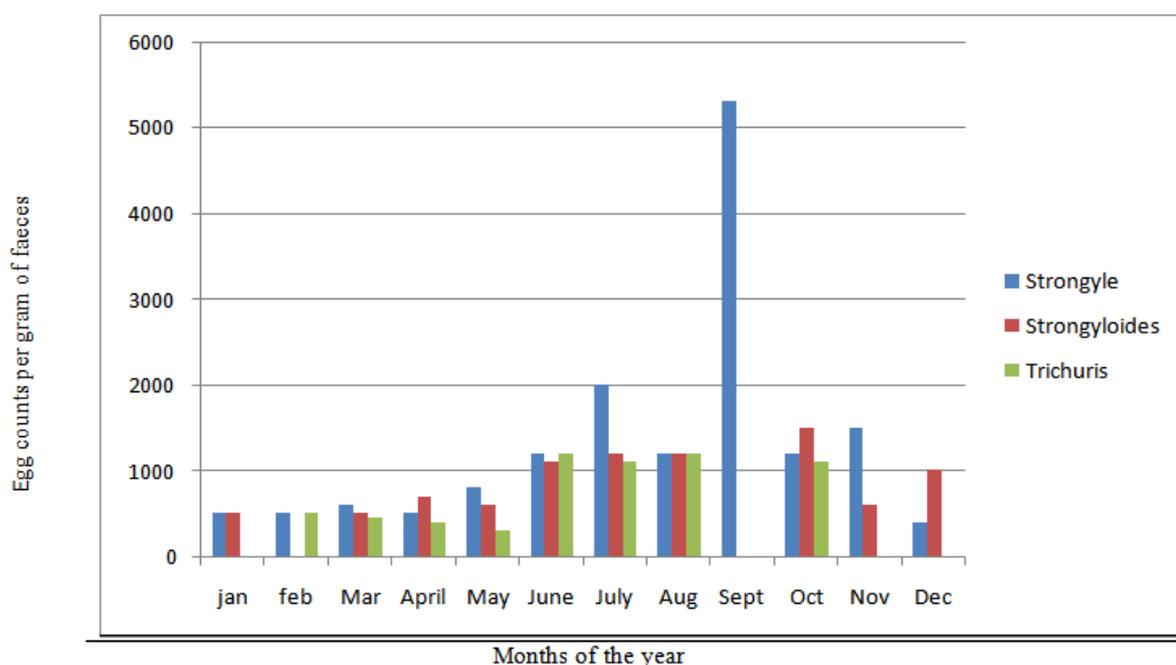


Figure 2: Seasonal Changes in Faecal Egg Counts of Sheep and Goats in Madagali Local Government Area, Adamawa State Nigeria

IV. Discussion

The faecal survey carried out reveals the existence of ova/adults with an overall prevalence of 126(50.6), 63(50.0) infected with at least one ova/adult in sheep/goats. The study recorded 37(29.4) and 26(20.6) of sheep and goats respectively are infected with one or more adult helminthes, this finding is lower than the result of other survey in sheep and goats carried out in eight local government areas of northern Nigeria by Okaiyoto, et al. (2008) who reported 90% prevalence rate occurred in all the local government areas except in Kankiya LGA, and the work of (Abebe and Essayasu, 2011), (Sisay et al., 2011), (Kumessa et al., 2011) and (Aminu, 2005). The decrease in this study compared to the other studies in the Northern region of the Country could be due to the husbandry system and number of animals managed by the farmers or environmental factors that could support prolong survival and development of infective larval stage of most helminthes (Rossanigo and Grunder, 1995, Adrew, 1999). Meanwhile, the present study recorded high prevalence in sheep and consistent in goats compared with the report by Dagnachew, et al. (2011) this discrepancy could be attributed to differences in management system. The high prevalence in sheep than goats agreed with a work of Bikil, et al. (2013) in Nigeria and elsewhere in the world (Waruiru et al., 2015, Asif et al., 2008) and this is assumed to be due to grazing habit of sheep, and disagreed with the results of (Fikru et al., 2006) who recorded high prevalence in goats than sheep, this could be as a result of environmental and feeding hygienic condition.

Figure1 shows relatively high prevalence from monsoon (June -July) to post monsoon (August) this is in coherence with a reports in the Country by Mahmuda, et al. (2014,) who observed high prevalence in rainy season than dry season, and contrary to the finding of Kamal, et al. (1993) who reported high cases of helminthes in spring and summer, this can be due to non seasonal rainfall in the area. High prevalence of Strongyle than other species recorded in this study is in conformity with the finding of Tesfaheywet,(2012).

V. Recommendation

It is strongly recommended that, farmers should embark on mass monsoon de-worming and maintaining hygiene environmental condition of their flock.

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Appendix

Rainfall Pattern in Madagali LGA during the study period



Rainfall Pattern

