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A faecal survey of gastro intestinal parasites of ruminants on the University of Maiduguri Research Farm

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ABSTRACT: Faecal survey of ova/oocysts of gastrointestinal parasites of ruminants on the University of Maiduguri research farm was conducted between January and November 2006 using saturated sodium chloride floatation and formol ether sedimentation techniques. A prevalence rate of 47.0%, 54.0% and 58.0% was obtained for cattle, sheep and goats respectively (p>0.05).The younger ruminants were more infected (cattle: 50.0%; sheep: 54.7%.; and goats: 58.1%) compared to the older ruminants (cattle: 44.0%, sheep: 52.8% and goats: 57.9%) (p>0.05). Female ruminants were also more infected (cattle: 52.0%; sheep: 60.4%, and goats: 62.7%) compared to the males (cattle: 52.0%; sheep: 46.8% and goats: 51.2%) (p>0.05). Among cattle breeds, the Wadara had 46.9% infection while the Simmental had 50.0% (p>0.05). Among sheep breeds the Yankasa, Ouda and Sudanese had 53.8%, 43.8% and 100.0% infection rates respectively   (p>0.05). Goats breeds of Borno white and Sokoto red had 54.2% and 59.6% infection rates respectively (p>.0.05).
   The veterinary importance of these finding is discussed.

Keywords: Faecal, Survey, Gastrointestinal, Parasites, Ruminants.

Introduction

Parasitic gastro enteritis has been noted as major constraint to ruminants productivity in terms of pathology and economic importance (,Biu, *et al*, 2006) on a clinical and subclinical level (Martinez-Gonzalez *et al*.,1998). Although losses due to parasitic gastro enteritis have been estimated and reported in some parts of Nigeria (Akerejola *et al*,1979), very few studies had been conducted in Borno State (Ahmed *et al*.,1993) a major livestock producing area with an estimated ruminant population put at 40% of the 70,590,000 national count (Bourn *et al* 1994). This study was motivated by the need to isolate and identify the gastro intestinal parasites of sheep goats and cattle of the research farm in the objective of determining their prevalence.

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Materials and Methods

Description of study site: The University of Maiduguri Research Farm lies between the Sudan and Sahel vegetation zones characterized by a short rainy season from June to September, a prolonged dry period between November and May (Udoh, 1981).

Sample collection: Faecal samples were obtained from the rectum of a hundred (100) each of randomly sampled cattle, sheep and goats kept under the traditional husbandry system of semi intensive management of the University Research farm.

Faecal examination: Faecal samples obtained were examined using saturated sodium chloride floatation and formol ether sedimentation techniques and eggs or oocysts identified using the light microscope at x40 objective and the eggs or oocysts per gram of faeces determined using the modified Mc Master technique (Hansen and Perry, 1990).

Statistical analysis: Data obtained based on age, sex and breed of the ruminants examined were analyzed using the students "t" test with p values equal to or less than 0.05 regarded as significant (Graph pad Instat, 2000).

Results

The prevalence of parasitic gastro intestinal ova /oocysts identified on the research farm as shown in Table 1 indicated an overall rate of 51.3% representing 154 infested cases out of the 300 ruminants examined. Single infection by *Eimeria* oocysts and Strongyle ova had the highest prevalence of 53 (34.4%), followed by *Strongyle* ova with 48(31.2%), *Strongyloides* ova 17 (11.0%) while *Taenia* and Trichuriid ova had the lowest with 4 (2.6%) each (p<0.05).

Mixed infections by *Eimeria* oocysts + Strongyle ova had the highest prevalence of 13 (8.4%), while the lowest was by Strongyle + *Eimeria* + *Strongyloides* and *Taenia* + *Eimeria* with 2(1.3%) each (p<0.05).

Table 2 shows the prevalence of gastro-intestinal parasites of cattle examined based on breed sex, and age. Of the 100 cattle examined 47 (47.0%) were infected. No significant difference (p>0.05) occurred amongst sex, age and breeds.

Table 3 shows the prevalence of gastro-intestinal parasites of sheep examined based on breed sex, and age. An overall prevalence of 54.0% was observed with no significant difference (p>0.05) amongst sex, age and breeds.

Table 4 shows the prevalence of gastro intestinal parasites of goats examined based on breed, sex and age. An overall prevalence of 58.0% was observed with no significant difference among age, breed and sex (p>0.05).

Table 1: Prevalence of ova/oocysts isolated from ruminants examined in University of Maiduguri Teaching and Research Farm

Ova/Oocysts	No. (%) infected
Overall	154 (51.3)
Eimerine oocysts	53 (34.4)
Strongyline ova	48 (31.2)
Strongyloides ova	17 (11.0)
Taeniid ova	4 (2.6)
Trichuriid ova	4 (2.6)
Strongyline + Eimerine	13 (8.4)
Strongyline + Eimerine + Strongyloides	2 (1.3)
Taeniid + Eimerine	2 (1.3)

Table 2: Prevalence of gastrointestinal parasites of cattle examined based on breed, sex and age.

	No. of cattle examined	No. (%) infested	Mean ± SD EPG
Sex			
Male	50	21 (42.0)	5,100 ± 6,929.6
Female	50	26 (52.0)	6,200 ± 8,626.7
Age (Years)			
1 – 3.5	46	23 (50.0)	5,950 ± 7,566.0
4 – 12	54	24 (44.4)	5,500 ± 7,071.1
Breed			
Wadara	96	45 (46.9)	6,250 ± 8,556.0
Simmental	4	2 (50.0)	3,500 ± 4,808.3
Overall	100	47 (47.0)	6,200 ± 8,626.7

Table 3: Prevalence of gastrointestinal parasites of sheep examined based on breed, sex and age.

	No. of sheep examined	No. (%) infested	Mean ± SD EPG
Sex			
Male	47	22 (46.8)	5,700 ± 7,636.8
Female	53	32 (60.4)	6,500 ± 8,909.5
Age (Years)			
1 – 2.5	64	35 (54.7)	6,500 ± 8,909.5
3 – 4	36	19 (52.8)	2,150 ± 2,757.1
Breed			
Yankassa	80	43 (53.8)	6,500 ± 8,909.5
Uda	16	7 (43.8)	3,950 ± 5,161.9
Sudanese	4	4 (100.0)	7,000 ± 5,798.3
Overall	100	54 (54.0)	6,500 ± 8,909.5

Table 4: Prevalence of gastrointestinal parasites of goats examined based on breed, sex and age.

	No. of sheep examined	No. (%) infested	Mean ± SD EPG
Sex			
Male	41	21 (51.2)	5,550 ± 7,566.0
Female	59	37 (62.7)	6,650 ± 9,263.1
Age (Years)			
1 – 2.5	62	35 (56.5)	6,650 ± 9,263.1
3 – 4	38	22 (57.9)	4,150 ± 5,586.1
Breed			
Borno White	48	26 (54.2)	6,650 ± 9,263.1
Sokoto Red	52	31 (59.6)	4,100 ± 5,656.9
Overall	100	58 (58.0)	6,650 ± 9,263.1

Discussion

The results of this study show that ruminants of the University of Maiduguri research farm are commonly infested with a variety of gastro intestinal parasite species with a high prevalence of 51.3% and generally very high egg/oocyst count. This finding agrees with the reports by Adejinmi and Harrison, (1997) that the incidence of parasitic gastro-enteritis of ruminants is usually high especially those kept under traditional methods of husbandry, with insidious effects that undermine host health particularly when compounded by additional stress such as malnutrition, (Pal and Qayyum, 1993), a common penalty in this semi arid region of northeastern Nigeria (Biu *et al,* 2006).

This study also revealed *Eimeria* and strongyle species as the most common parasites of the research farm ruminants, and are reported as the most incriminated gastro- intestinal parasites of domestic ruminants (Eysker and Ogunsusi,1980) especially from other parts of Maiduguri Municipal (Biu and Eteng 2001).

Though, this study has not revealed any significant difference in infestation and egg output among age, sex and breed of the ruminants investigated, it has been reported, (Pal and Qayyum 1993), that prevalence of parasitic gastro-enteritis is related to the agro- climatic conditions like quantity and quality of pasture, temperature, humidity and grazing behaviour of the host and that susceptibility to infestation is influence by factor of age (Richard *et al* 1990); breed (Prolamkarn *et al* 1997);species (Vlassoff *et al* 1997); health status and physiological factors of pregnancy and previous exposure to parasites (Bekele *et al* 1987).

In conclusion, the egg output by gastrointestinal parasites; which is an important index to determine the degree of pasture contamination with parasitic ova/oocysts suggest periods of strategic treatment for the research farm ruminants and although effective chemotherapy is available for most gastrointestinal parasites, because of their complex epizootiology it is paradoxically simple to treat the individual but almost impossible to control the disease (Allonby 1980) under the semi intensive management system of the research farm.

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