

# ASSESSMENT OF GASTROINTESTINAL PARASITIC INFECTION OF CATTLE AND GOAT SLAUGHTERED AT AKWANGA ABATTOIR NASARAWA STATE, NIGERIA

## ABSTRACT

Gastrointestinal parasitic disease remain an obstacle in cattle and goat industry in Nigeria and worldwide. An abattoir survey was carried out to determine the prevalence of gastrointestinal parasitic helminths in slaughtered cattle and goat in Akwanga abattoir located in Nasarawa State Nigeria. A total of 120 fecal samples of the ruminants were examined made up of 60 cattle and 60 goats. Formol ether concentration techniques was used for sample analyses and examined microscopically. The data obtained were statistically analysed using simple percentages to determine the prevalence rate in both the cattle and goat. The result showed that 31 (25.83%) cattle and 28(23.33%) of goats were infected with gastrointestinal parasites. The parasites was slightly higher in cattle than the goats though the difference was not statistically significant ( $P>0.05$ ). Among the cattle, the parasites identified were *Faciolal gigantica*, *Schistosoma bovis*, *Taenia saginata*, *Hymenolepis diminuta*, *Haemonchus spp*, *Toxocara spp*, *Trichuris spp* and *Ascaris spp*. The most prevalent organism was *Faciola gigantica* (19.35%), followed by *Taenia saginata* (16.12%) while *Dicrociliium*, *Toxocara spp*, *Ascaris spp*, *Trichuris spp* and *Strongyloides spp* (3.22%) respectively were the least prevalent. The organism identified from the goat on the other hand are: *Entamoeba spp*, *Schistosoma spp*, *Monezia spp*, *Hemenolepis spp*, *Trichuris spp*, *Strongyloides spp* and *Toxocara spp*. The most prevalent organism was *Trichuris spp* and *Faciola spp* with (17.85%) each, followed by *Taenia spp*, and *Ascris spp* with (14.28%) each while *Toxocar spp*, *Schistosoma spp*, *monezia* and *Schistosoma spp* with (3.57%) each respectively was the least dominant. The result showed a moderately high prevalence of gastrointestinal during the study. In determining the prevalence of ruminant parasitic disease, the abattoir survey is the best way of controlling the disease, through regular deworming proper feeding and good sanitation.

Keyword: Lafia, Abattoir, Prevalence, Gastrointestinal Cattle and Goat

## INTRODUCTION

Livestock farming is among the major sectors representing a valuable asset in both traditional and modern agriculture in Sub- Saharan Africa, as well as in other tropical and sub-tropical regions of the world providing animal protein, milk, and beef during festivities around the world, flexible income for family units, employment, farm energy and manure (Yahava, A. Tyav, Y.B. 2014). However, this sector is hampered by the presence of several diseases including helminthes infections causing not only high mortality, frequently causing losses of animal, but also decrease of meat and milk production, this situation discourages investment in livestock industry (Lebel S.H.B *et al.*, 1996).

39 In Nigeria, the livestock sector contributes 5.2% of the gross domestic products (GDP) while  
40 cattle production solely contributes 50% of the total meat Adedipe, N. O. *et al.* (1996). Meat is  
41 one of the most important livestock products, although there could be losses due to various  
42 diseases including helminth infections. The quantity of meat and revenue obtained from  
43 domestic livestock is far below the national demand due to factors such as death and ill health  
44 with associated reduced productivity and increased cost of treatment Hossain, M. M., (2011).

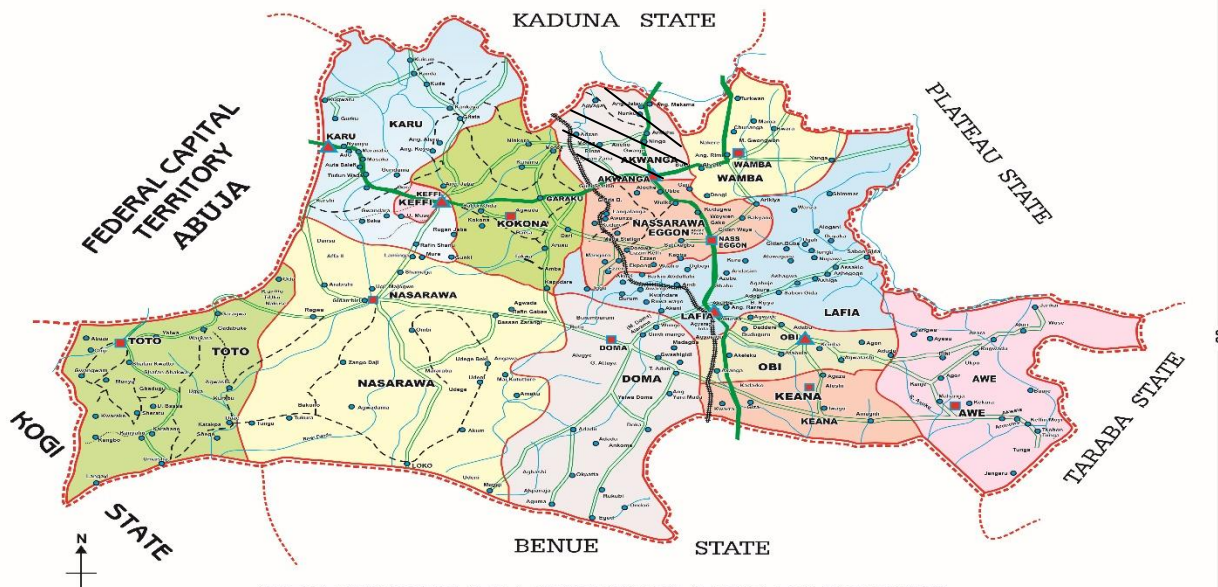
45 The numbers of gastrointestinal tract (GIT) parasite species are known to infect cattle and goats  
46 worldwide. The most important ones include nematodes like *Strongyleiodes* species  
47 (*Haemonchus*, *Ostartagia*, *Trichostrongylus*, *Cooperia*) and trematodes of economic importance  
48 *Fasciola* species (*Fasciola hepatica* and *Fasciola gigantica*) and *Paramphistomum* species  
49 (*Paramphistomum cervi*), while cestodes like *Monezia* species (*Monezia benideni* and *Monezia*  
50 *expanza*) could also be important constraints in animal production Rafiullah, T.A. *et al.* (2011).

51 There are many associated risk factors influencing the prevalence and severity of GI helminths.  
52 These include age, sex, and weather condition and husbandry or management practices Ijaz, M.  
53 (2009).

54 Helminths are known to be a major constraint to ruminant's well-being and productive  
55 performance Hesterberg, U.W. (2008). Infections with helminthes parasites especially those of  
56 gastrointestinal tract (GIT) can and in some circumstance do cause substantial losses to cattle and  
57 goat owners. The disease causes a gradual deterioration of animal performance and has been  
58 known to be major economic losses in the tropics and in Nigeria Maina, J.A. (1986) and Kudi,  
59 A.C, *et al.* (2009). The present study was undertaken to investigate the gastrointestinal parasites  
60 among the frequently slaughtered animal-cattle and goat in Akwanga abattoir in Nasarawa State.

## 61 MATERIAL AND METHODS

62 This study was carried out in Akwanga of Nasarawa State, Nigeria. It is located in the North  
63 Central of Nigeria. The climate of the area is tropical and the vegetation is predominantly guinea  
64 savannah with an annual rainfall of 1,090mm. There are two distinct seasons the rainy season  
65 and the dry season; the former last from April to October and latter from November to March.  
66 The minimum temperature range of 27°C – 28°C and maximum of 32°C – 36°C. The population  
67 of Akwanga is estimated to be 250, 683 Akwanga, being in the guinea savanna is typified by  
68 very high temperature and low rainfall. The inhabitants are predominantly Mada, Eggon and  
69 Hausa/Fulani groups. These groups are engaged business, farming, rearing animals and a few  
70 civil servants.



**Fig 1. Map of Nasarawa State showing the selected study town**

71

72

### 73 Data Analysis

74 Simple percentages were used to explain frequencies and chi-squared test for homogeneity

75 across sample parameters, significances difference considered at (p-value of 0.05).

## 76 **Parasitological Examination**

77 The faecal samples examined macroscopically for their (water content) as watery, loose and soft  
78 or fumed. Collected faecal materials were subjected to form of ether concentrated techniques  
79 (Cheesbrough (1999) and Bailweber (2001)).

### 80 **Formal ether concentration technique**

81 A gram of stool sample was emulsified with 4ml of 10% formal saline in a test tube. The mixture  
82 was filtered into a test tube using a wire quaze and 3-4ml of diethyether was added, shake  
83 thoroughly and allowed to stand for two minutes. The mixture was then centrifuged at 100  
84 revolutions per minutes (1000 rpm) for 3 minutes. Using a glass rod the feacal debris from the  
85 scale of the tube was worsened and the tube inverted to pour off the supernatants. The tube was  
86 returned to its original upring at position and the fluid from the side of tube allowed drain to the  
87 bottom. The deposit was mixed by tapping the tub with the finger and using a pasture pipette. A  
88 drop of sediment was applied on microscope slide, cover with a cover slip and examined under  
89 the microscope using x10 and x40 objective (Cheesbrough 1999) and Ballweber (2001).

### 90 **Identification Egg**

91 Parasite eggs were identified based on morphological features, while the data obtained from the  
92 microscopic examination of the samples were recorded on a sheet for both cattle and goat for  
93 easy interpretation.

94 **Table 1: Prevalence of *gastrio* intestinal parasites in cattle and goats in Akwanga abattoir**

<b>Animals</b>	<b>No. Exam</b>	<b>No. Infected</b>	<b>% Infected</b>
Cattle	60	31	25.83
Goat	60	28	23.33
<b>Total</b>	<b>120</b>	<b>59</b>	<b>49.15</b>

95

96 **Table 2: Prevalence of gastro intestinal parasites in cattle at Akwanga Abattoir**

<b>Gastro intestinal parasites</b>	<b>No of cattle infected</b>	<b>% infected</b>
<b>Trematode</b>		
<i>Faciola gigantica</i>	5	9.35
<i>Schistosoma bovis</i>	4	13
<i>Dicorocilium</i>	1	3.22
<b>Cestodes</b>		
<i>Taenia saginata</i>	5	16.12
<i>Monezia expansa</i>	2	6.45
<i>Hymenolepis diminuta</i>	3	9.67
<b>Nematodes</b>		
<i>Haemonchus spp</i>	4	13
<i>Nematodions spp</i>	2	6.45
<i>Toxocara spp</i>	1	3.22
<i>Ascaris spp</i>	1	3.22
<i>Trichuris spp</i>	1	3.22
<i>Strongylobides spp</i>	1	3.22
<b>Total</b>	<b>31</b>	<b>95.32</b>

97 60 samples were examined

98 **Table 3: Prevalence of Gastronintestinal parasite in Goat at Akwanga abattoir**

<b>Gastronintestinal parasite</b>	<b>No of Goat Infected</b>	<b>% Infected</b>
<b>Trematode</b>		
<i>Faciola spp</i>	5	17.85
<i>Schistosoma spp</i>	1	3.57
<i>Entomeoba spp</i>	2	7.14
<b>Cestode</b>		
<i>Monezias spp</i>	1	3.57
<i>Taenia spp</i>	4	14.28
<i>Hymenalepis spp</i>	2	7.14
<b>Nematode</b>		
<i>Trichuris spp</i>	5	17.85
<i>Ascaris spp</i>	4	14.28
<i>Strongyloides spp</i>	3	10.21
<i>Toxocara spp</i>	1	3.57
<b>Total</b>	<b>28</b>	<b>59.05</b>

99 60 samples were examined

100 **Statistical Analysis**

101 The prevalence was calculated as percentage of number of animals infected in the total number  
102 of animals examined. The significant differences analysis was using the chi-square ( $\chi^2$ ) test at  
103  $P < 0.05$ ).

## 104 **RESULT**

105 Out of the total of one hundred and twenty ruminants comprising 60 cattle and 60 goats  
106 examined, the result showed that 31(5.83%) of cattle and 28(23.33%) of the goat were infected  
107 with gastrointestinal parasites. The infections as slightly higher in cattle than the goat though the  
108 difference was no statistically significant ( $P > 0.05$ ) (Table 1). In the cattle, some of the organisms  
109 identified were *Faciola gigantica*, *Schistosoma bovie*, *Taenia saginala*, *Hymenalepis diminuta*,  
110 *Haemonchus spp*, *Toxocara spp*, *Trichuris spp* and *Ascaris spp*. The most prevalent organism  
111 was *Faciola gigantica* (19.35%) followed by *Taenia saginata* (16.12%) while *Dicrociliun*,  
112 *Toxocara spp*, *Ascaris spp*, *Trichuris spp* and *Strongyloides spp* (3.22%) respectively were the  
113 least prevalent (Table 2) some of the organisms identified from the goat in the other hand  
114 include; *Entamoeba spp*, *Schistosoma spp*, *Monezias spp*, *Hymenolopia spp*, *Trichnis spp*,  
115 *Strongyloida spp* and *Toxocara spp*. The most prevalent organism was *Trichuris spp* and *Faciola*  
116 *spp* with (17.85%) each, followed by *Taenia spp* and *Ascaris spp* with (14.28%) each, while  
117 *Toxocana spp*, *Monezias* and *Schistosoma spp* with (3.57%) each respectively was the least  
118 dominant (Table 3).

## 119 **DISCUSSION**

120 This study disclosed that cattle and goat slaughtered at Akwanga abattoir were infected with  
121 different gastrointestinal parasites, with an overall prevalence of 49.15%. From this study it was  
122 observed that more gastrointestinal parasites were found to have infected more cattle than goat.

123 This result is similar to that conducted by Edosomwan and Shoyemi (2012) in Benincity. This  
124 could be due to the fact that the cattle are mostly raised under extensive agricultural system,  
125 where they undergo free range grazing where small dropping from the animal degenerates  
126 rapidly, thus releasing worm larval which inturns increases the rate of pasture contamination  
127 bringing about a prevalence rate when compared to that of the goat which are mostly raised  
128 under intensive system. Another reason for the differences recorded in the prevalence of the  
129 gastrointestinal helminth parasites observed in this study and that recorded by other researchers  
130 may be because of the differences in location and management practices (Regassa *et al*, 2006)  
131 and period of investigation. The study was carried out during rainy season which is known to be  
132 the period with high infectivity rate due to high humidity and other optimal environmental  
133 conditions which enhances transmission in the tropics. This is similar to a work conducted by  
134 Belem *et al.* (2001) who recorded a high incidence of parasite in the season. This might be  
135 because of an increase in humidity content that favours the developments of eggs of these  
136 parasites. Also in this season, there is high rate of pastoral growth, which brings about an  
137 increase in contact rate between the parasite and the host.

138 Parasites discovered in this research work include; *Trichuris species*, *Moniezia spp Strongyloides*  
139 *spp*, *Faciola* and *Taenia species*. It is similar to that identified by Rehbein *et al.* (2013); Biu and  
140 Eteng (2001). Organism parasites discovered in the present work belong to the group of parasites  
141 known to cause production disease. Unfortunately, majority of the parasites were found in both  
142 cattle and goat for instance, *Haemonchus contortus* which is a blood sucking nematode have  
143 been found to result in production looses and even death in untreated animals (Marshall *et al.*,  
144 2012). Their presence confirms the fact that they are the most important pathogen of cattle and  
145 goats in the tropical and subtropical environment. Co-infection of many of these parasites have

146 been reported with *Haemonchus contortus* and *Trichostrongylus spp* most prevalent and highly  
147 pathogenic in livestock (Tan *et al.*, 2014). Those parasites constitute a main source of health  
148 issue related to livestock. The presence of these parasites in the animal may cause anaemia,  
149 retarded growth. Heavy infestation can result in weight loss, reduced productivity restlessness  
150 and even death. The control of disease caused by these parasites is some what difficult because  
151 its epidemiology is complex and the prevalence rate changes drastically with environmental  
152 factors.

153 In Nigeria, little or no attention is given to the livestock sector and is therefore faced with many  
154 problems such as parasitic disease infestation. This study showed a moderately high rate of  
155 gastro intestinal parasite in both cattle and goat studied which posed health risks to human and  
156 therefore the need for regular de-worming of the animals, health education and proper sanitary  
157 measures including the use of personal protective equipment should be encouraged in the  
158 abattoir.

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