

Status of Ticks Infestation in Ruminant Animals in Ogbomoso Area of Oyo State, Nigeria

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ABSTRACT

*A survey is conducted on the status of ticks infestation in ruminants animals in Ogbomoso area of Oyo state. Collection and identification of ticks is carried out from February 2012 to August 2012. All the visible individual ticks were collected from the body of 317 cattles, 210 goats and 104 sheep. The status of ticks infestation in cattles, goats and sheep was found to be 96.2%, 80.3%, 67.3%, respectively. In this study 6 species of ticks were identified. The most abundant species found in this study were *Rhipicephalus evertsi evertsi*, *Boophilus decoloratus*, *Boophilus annulatus*, *Amblyomma variegatum*, *Rhipicephalus appendiculatus* and *Haemophysalis leachi*. *Haemophysalis leachi* is the minor species of tick observed in sheep in the study area. This parasitological investigation will enable the farmers and veterinarians to have effective prophylactic, therapeutic and control measure of ticks in the study area.*

Keywords: *Status, Tick infestation, Ruminants, Ogbomoso, Oyo state.*

INTRODUCTION

Ticks are blood sucking ectoparasites of mammals and birds with about 850 species been described worldwide (Venededoe, 2002). Two main families of ticks include the Ixodid (hard) ticks and Argasid (soft) ticks known to transmit the widest variety of pathogens of any blood sucking arthropods such as bacteria, rickettsiae, protozoa and viruses (El-Kammah, Oyoun, El-Kady and Shafy, 2001). They are also reported to transmit pathogens that causes some human diseases such as lyme diseases, ehrlichiosis, babesiosis, rocky mountain spotted fever, tularemia and tick borne relapsing fever (Solomon and Mallew, 2001, Parola *et al.*, 2001). Campel and Lasley (1985) observe that ticks were capable of causing tick paralysis in children. Iwuala and Okpala (1978) report higher tick infestation on (ruminants) cattle, followed by sheep and goats in eastern Nigeria. Ruminants are major source of meat, skin and farmyard manure of more than 60% indigenous population

of Ogbomoso area. Owing to the high fertility, Short generation interval and adaptation even in harsh environments, they are considered as investments and insurance to provide income to purchase food during season of crop failure and to meet seasonal purchases such as improved seed, fertilizer and medicine for rural households. In Nigeria, ticks are the most important ectoparasites of farm livestock because of their heavy rate of infestation causing significant damage to hide and skin as well as transmitting diseases to their host. Amuta, Houmsou and Ogubiela (2010) report high prevalence of *Sanguineus rhipicephalus* (80.5%), *Boophilus annulatus* (14.6%), *Hyloma truncatus* (4.7%) infesting dogs in Wurukum, Makurdi, Nigeria.

Stachurski and Lancelot (2006) picked up 90% of adult *Ablyomma variegatum* in cattle when the animals returned from pasture in the evening. El-Kammah, Oyoum, El-Kady and Shafy (2001) report that an average daily infestation of about 50 engorged *Boophilus* tick is capable of causing substantial loss in diary product and beef. Knipling and Steelman (2000) state that *Boophilus annulatus* can spread cattle tick fever and Texas fever from one cattle to another. The large number of ticks seen on cattle, sheep, goat, horses and camels have been attributed to their methods of grazing (Iwuala and Okpala, 1978; James-Rugu and Iwuala, 2002). In an area where cohabitation between animals and humans are common, the potential of human infection by some of the tick borne pathogens are high (Soulsby, 1986). Despite these grave consequences to animals and man, the magnitude and epidemiology of ticks infestation in cattle sheep and goats has not been assessed in Ogbomoso area of Oyo state. The objective of the present study is to determine the status and magnitude of ticks infestation of ruminant animals in Ogbomoso area of Oyo State.

METHOD

This survey is carried out in Kara, Saja and Ladoke Akintola Teaching and Research Farm in Ogbomoso area of Oyo State. Ogbomoso is one of the major towns in Oyo State and it lies in longitudes 4°152 East of Greenwich meridian and latitude 8°152 North East wound from Ibadan capital of Oyo State. The altitude between 800 – 600mm above sea level and the reported 1175mm annual rainfall and the vegetation of the study area is derived savannah (Oguntoyinbo, 1978). A total of 631 ruminant animals (317 Cattles, 210 goats, and 104 sheep) were examined during the study. The selected animals were examined from head to tail including legs for the presence of ticks on the body of the animals. During sampling, animals were physically inspected and completely detached using a pair of hand forceps. Care was taken to remove the tick intact without destroying their mouthparts. Ticks thus collected were preserved in 70% Alcohol and 5% glycerol. Identification of all tick stages were done according to key as in Hoogstrall (1956) in the entomology laboratory of the Faculty of Veterinary Medicine, University of Ibadan in Oyo State. Descriptive statistics is used to analyze the data. Simple percentage and tables are used to describe the results. Duncan multiple test is used by using the Statistical Package for Social Sciences (SPSS version 18.0). In all the analyses, confidence level was held at 95% level of significance.

RESULTS AND DISCUSSION

Six hundreds and thirty one (631) ruminants were examined and out of which 86.37% were infested by one or more tick species. The respective corresponding percentage of infestation in cattle sheep and goats were 96.2 %, 67.3% and 80.3% (Table 1). The differences in prevalence of tick infestation were found statistically insignificant ($p > 0.05$) between sex groups but significant ($p < 0.05$) between the three species of the animal (cattle, sheep and goats). Upon identification, the ticks were classified into 4 (four) general and 6 (six) species and examined animal were considered to be positive for a given tick when at least one tick was collected from them (Table 2). The most prevalent and the most abundant encountered with highest burden ticks were *Rhipicephalus evertsi-evertsi* followed by *Boophilus decoloratus*, *Boophilus annulatus*, *Amblyomma variegatum*, *Rhipicephalus appendiculatus* and *Haemophysalis leachi* was the minor species observed on sheep. In all cases female dominates male except *Boophilus annulatus* and *Rhipicephalus appendiculatus* (Table 2 and 3).

Ticks and tick-borne diseases affect animals and human health worldwide and are the cause of significant economic losses in livestock. Animal ticks have been reported from all over the world and the various species in domestic ruminants have been identified to include: *Amblyomma variegatum*, *Boophilus decoloratus*, *Rhipicephalus sanguineus*, and *Hyalomma* sp and *Dermaginatius marginatumas*. In Nigeria, James and Jidayi (2004) investigate ecto-parasites of livestock from Maiduguri Metropolis and its environs and Nangere in Yobe State. They examined 1,600 camels, 2,200 cattle, 500 sheep, 400 goats, 230 dogs and 250 pigs for ectoparasites. The results show that the species of ticks found were all from the Family Ixodidae.

In addition, in cattle, infestation with *Boophilus decoloratus*, *Hyalomma tuncatum*, *Rhipicephalus sanguineus*, *Haemaphysalis leachii* and *Amblyomma lepidum* are predominant in that order. This study reveals that cattle, sheep and goats were highly infested with different genera of ticks namely, *Rhipicephalus*, *Boophilus*, *Amblyomma*, and *Haemophysalis spp*. This result is in agreement with James and Jidayi, (2004). These are indications that the bionomic situation of the study area is favorable for the successive perpetuation of the pathogens transmitted by ticks and for their subsequent transmission to susceptible host that necessitate regular parasitological investigation and application of effective prophylactic and control measure.

The overall prevalence found in this study in cattle is 96.2%, this is in agreement with Obadiah and Shekaro (2012) who reported variable prevalence of tick infestation in different breeds of cattle in Zaria abattoir in Nigerian, goats (80.3%) and in sheep (67.3%) is in disagreement with the study conducted by Abunna *et al.* (2009) who report respectively 87.5% in goats and 89.9% in sheep at Miesso district of Oromia Regional State. However, it is higher than the previous works conducted by Sertse and Wossene (2007) in North East Ethiopia (3.4%) and (22.2%) for goats and sheep respectively. Moreover, this study indicates that ticks infestation was more serious in cattle followed by goats and lastly by sheep and this is in total disagreement with Tongjura *et al* (2012) who report more infestation

in sheep than goats in three local government in Nassarawa State, Nigeria. Tongjura *et al* (2012) claim that goats are known to graze less and graze just within the home compared to sheep and cattle that graze far into the bush hence come in contact with more vegetation and subsequently more ectoparasites. James-Rugu and Iwuala (2002) record infestation rate of 63.2% on adult animals and attributed this to contact due to their large body size and feeding on vegetation on which the ticks were attached. They also believe that adults and adolescents cattle, sheep and goat were always the preferred host for ticks' infestation than the young animals without any consideration of breeds or species. The difference in the prevalence might be due to the geographical difference, breed difference of the study animals and season of the study period.

Table 1: Prevalence of Tick Infestation in Ruminant Animal in Ogbomoso Area of Oyo State

Variable	Category	Number of Examined Animals	Number of Infested Animals (%)	Significance
Species	Cattles	317	305 (96.2)	P < 0.05
	Goats	210	170 (80.3)	P < 0.05
	Sheep	104	70 (67.3)	P < 0.05
Sex	Male	428	382 (77.2)	P > 0.05
	Female	203	163 (80.3)	P > 0.05

Source: Fieldwork, 2012

Table 2: Animal Level Prevalence of Tick Infestation in Ruminant Animals

Tick Species	Cattle No. (317) Positive (%)	Goats No. (210) Positive (%)	Sheep No. (104) Positive (%)	Overall Prevalence Positive (%)
<i>Rhipicephalus evertsi evertsi</i>	119 (37.6)	70 (33.3)	30 (28.8)	219 (34.7)
<i>Boophilus decoloratus</i>	70 (22.1)	52 (24.8)	19 (18.3)	141 (22.3)
<i>Boophilus annulatus</i>	56 (17.8)	38 (18.1)	12 (11.5)	106 (16.8)
<i>Amblyomma variegatum</i>	50 (15.8)	25 (11.9)	10 (9.6)	85 (13.5)
<i>Rhipicephalus appendi culatus</i>	34 (10.7)	13 (6.2)	9 (8.7)	56 (8.9)
<i>Heamopysalis leachi</i>	18 (5.7)	6 (2.9)	5 (4.8)	29 (4.6)

Source: Fieldwork, 2012

Table 3: Total and Average Ticks Burden in Ruminant Animals

Tick Species	Female Tick Count	Male Tick Count	Female Male Ratio	Total (%)
<i>Rhipicephalus evertsi evertsi</i>	605	540	1.12	1145 (45.80)
<i>Boophilus decoloratus</i>	288	280	1.02	568 (22.72)
<i>Boophilous annulatus</i>	155	160	0.96	315 (12.60)
<i>Amblyomma veriegatum</i>	107	90	1.19	197 (7.88)
<i>Rhipicephalus appendiculatus</i>	80	85	0.94	165 (6.60)
<i>Heamopysalis leachi</i>	65	43	1.44	110 (4.4)
Total	1300	1200		

Source: Fieldwork, 2012

CONCLUDING REMARKS

The problem of ticks infestation of ruminant in the study area seems to be very important as they are widely distributed. Poor management and poor level of awareness of the animal owners regarding the effect of ectoparasites in general and ticks in particular are believed to have contributed to wide spread occurrence of infestation. This survey was primarily conducted on ruminant because the ticks found on them are more likely to be representative of the species feeding on ruminants in Ogbomoso. This attempt was made to identify tick species found in Ogbomoso area of Oyo State and their prevalence rate on ruminant animals was determined. Considering the importance of meat, skin and hide as a source of income for the farmers in Ogbomoso area, the high prevalence of tick infestation that is observed in the study area deserves serious attention at all levels in order to minimize the spread of infestation and improve the living standard of the farmers which are dependent on their animals. Moreover, poor veterinary infrastructures in the study area and lack of appropriate knowledge by animal owners as well as control strategy on ticks of cattles, sheep and goats have a great contribution to the persistence of ticks. Consequently, livestock farmers should be encouraged through proper awareness and sensitization programme on the use of modern anti-parasite in treating their livestock.

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