



STUDIES ON IXODID TICKS OF RUMINANTS IN GWAGWALADA AREA COUNCIL, ABUJA, NIGERIA

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Abstract

*Ticks are obligate blood-feeding ectoparasites of vertebrates and play significant roles as vectors of zoonotic pathogens. This study investigated the prevalence and distribution of ixodid ticks infesting ruminants in Gwagwalada Area Council, Abuja Nigeria. A total of 700 ruminants comprising 500 cattle, 150 sheep, and 50 goats were examined between December 2022 and January 2023 across seven locations. Ticks were collected from predilection sites, preserved in 10% formalin, and identified morphologically using standard taxonomic keys. A total of 754 ticks were recovered: 613 (81.3%) from cattle and 141 (18.7%) from sheep and goats. Three genera of ixodid ticks were identified—*Boophilus* (45.63%), *Amblyomma* (37.14%), and *Hyalomma* (17.23%). Adult ticks constituted 71% of total collections, with more males (42.1%) than females (28.9%). The highest prevalence was observed in cattle, followed by sheep and goats. The study highlights the predominance of *Boophilus* spp. in small ruminants and *Amblyomma* spp. in cattle. These findings emphasize the need for improved tick control strategies and routine surveillance to mitigate the risk of tick-borne diseases in livestock production within the Federal Capital Territory.*

Keywords: Ixodid ticks, Ruminants, Gwagwalada, Prevalence, *Amblyomma*, *Boophilus*, *Hyalomma*

INTRODUCTION

Ticks are hematophagous ectoparasites of vertebrates, belonging to the class *Arachnida* and Order *Acari* [1,2]. Of the three tick families—*Ixodidae*, *Argasidae*, and *Nuttalliellidae*—the *Ixodidae* (hard ticks) are of greatest veterinary and medical importance due to their rigid chitinous scutum and role in transmitting a wide range of bacterial, viral, and protozoan pathogens [3–5].

The family *Ixodidae* includes six major genera: *Ixodes*, *Dermacentor*, *Rhipicephalus*, *Hyalomma*, *Amblyomma*, and *Haemaphysalis* which comprise over 700 species worldwide [6]. These ticks pose serious economic and public health challenges by reducing animal productivity and transmitting zoonotic diseases. Despite their significance, there is limited published data on ixodid ticks of ruminants in Gwagwalada Area Council, Federal Capital Territory (FCT), Abuja Nigeria [7,8]. Understanding the prevalence and distribution of ixodid ticks in this area is essential for targeted tick control strategies, reducing productivity losses, and improving ruminant health. This study was therefore designed to identify and determine the prevalence of ixodid ticks of ruminants in Gwagwalada Area Council, Abuja, Nigeria.

Materials and Methods

Study Area: The study was conducted in Gwagwalada Area Council, Abuja, Nigeria, between December, 2022 and January, 2023. Seven locations were surveyed: three Fulani settlements (*Ruga*), Anagada Livestock Market, Rumfar Doya Livestock Market, Veterinary Teaching Hospital Farm, and Kutunku. A total of 700 ruminants (500 cattle, 150 sheep, and 50 goats) were randomly examined. Ticks were collected from predilection sites including the ears, dewlap, withers, udder/testes, perineum, tail, brisket, and interdigital spaces [9]. They were removed with blunt steel forceps, preserved in 10% formalin, and stored in labeled bottles. Ticks were identified morphologically using taxonomic keys based on size, mouthparts, scutum, eyes, anal groove, and coxal spur patterns [10].

Data Analysis

Data were analyzed using Microsoft Excel (2015) and SPSS (Version 26) and Duncan post hoc test. Mean differences at $p < 0.05$ were considered significant. Results were expressed as frequencies and percentages and presented in tables and figures.

Results

Prevalence

A total of 754 ixodid ticks were collected from 700 ruminants. Cattle harbored 613 ticks (81.3%), while sheep and goats were found to harbor 141 ticks (18.7%).

Genera Distribution of Ixodid Ticks on Ruminant hosts

Boophilus species detected were 45.63%, *Amblyomma* spp. were 37.14 while *Hyalomma* spp. seen were 17.23% (Table 1)

Table 1: Genera distribution of Ixodid Ticks of Ruminants in Gwagwalada Area Council, Abuja Nigeria

Tick Species	Percentage (%)
<i>Boophilus</i> spp.	45.63
<i>Amblyomma</i> spp.	37.14
<i>Hyalomma</i> spp.	17.23

Host Distribution of Ixodid Ticks on Ruminant hosts

The cattle were infested with *Amblyomma* spp. (43.2%), *Boophilus* spp. (37.8%) and *Hyalomma* spp. (18.9%) while sheep and goats were found with *Amblyomma* spp. (10.6%), *Boophilus* spp. (80.1%) and *Hyalomma* spp. (9.9%) (Table 2).

Table 2: Host Distribution of Ixodid Ticks of Ruminants in Gwagwalada Area Council, Abuja Nigeria

Host Animal	<i>Amblyomma</i> spp. (%)	<i>Boophilus</i> spp. (%)	<i>Hyalomma</i> spp. (%)
Cattle	43.2	37.8	18.9
Sheep and Goats	10.6	80.1	9.9

Developmental Stage Distribution of Ixodid Ticks on Ruminant hosts

A total of 435 (71%) of the ticks found were adults, 134 (21.9%) were Nymphs, 44 (7.2%) were larvae making a total number of 754 (100%) of the ticks (Table 3).

Table 3: Developmental Stage Distribution of Ixodid Ticks on Ruminant hosts

Developmental Stage	Number (n)	Percentage (%)
Adults	435	71.0
Nymphs	134	21.9
Larvae	44	7.2
Total	754	100.0

Discussion

This study confirmed the presence of three genera of ixodid ticks (*Amblyomma*, *Boophilus*, and *Hyalomma*) in ruminants in Gwagwalada Area Council. The predominance of *Boophilus* spp. in small ruminants aligned with previous findings in Nigeria [11,12]. *Amblyomma* spp. were the most prevalent in cattle, consistent with reports that cattle reared under extensive systems are more prone to heavy *Amblyomma* infestations [13]. The higher prevalence of ticks in cattle compared to small ruminants corroborates the results of earlier studies in Nigeria and East Africa, although variations across regions (Makurdi, Uli, Pakistan, Ethiopia) highlight the influence of ecological and seasonal factors. The predominance of adult ticks suggests established breeding populations in the area, indicating inadequate tick control measures. This raises concerns about the transmission of tick-borne diseases such as babesiosis, theileriosis, and anaplasmosis, which may reduce livestock productivity.

Conclusion

This study identified *Amblyomma*, *Boophilus*, and *Hyalomma* as the predominant ixodid ticks of ruminants in Gwagwalada Area Council of FCT, Abuja Nigeria. Tick prevalence was highest in cattle, highlighting their significant role as reservoirs of tick-borne pathogens in the area.

Recommendations

- Regular tick surveillance and species-level identification should be conducted in Gwagwalada and neighboring Councils.
- Farmers should adopt integrated tick control strategies, including judicious acaricide use, rotational grazing, and pasture management.
- Extension programs should sensitize livestock owners on tick-borne disease risks and prevention.
- Further molecular studies are recommended to detect tick-borne pathogens circulating in the area.

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