

Research Article

Prevalence of Tick Infestation of Sheep in Gwagwalada Area Council, Federal Capital Territory (FCT), Nigeria

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Abstract

Globally, ticks serve as vectors of both animal and human pathogens, and their infestations are a major constraint to efficient and profitable sheep production in Nigeria. This study investigated the prevalence of tick infestation on sheep in Gwagwalada Area Council, Federal Capital Territory, Abuja. In a cross-sectional survey, 200 sheep were sampled for ticks from randomly selected homes and sheep markets within the study area. The ticks were identified morphologically using standard keys under a stereomicroscope. The results showed an overall prevalence of 14% tick infestation. Three tick species were encountered-*Boophilus*, *Amblyomma*, and *Hyalomma*-with prevalence rates of 66.67%, 26.98%, and 6.35%, respectively. Female ticks (66.7%) were more prevalent than males (33.3%). Tick infestation was unevenly distributed, with the Veterinary Teaching Hospital farm (47.62%) and Hajj camp (39.68%) recording the highest infestation rates, while Kutunku, Gwagwalada abattoir, and SDP sheep market recorded none. The relatively low prevalence of tick infestation and variations across locations suggest that environmental and management factors play crucial roles in tick infestation rates.

Keywords: Sheep, Tick Infestation, *Boophilus*, Gwagwalada, Prevalence, Nigeria.

Introduction

Sheep (*Ovis aries*) are domesticated ruminant mammals that serve as important livestock worldwide. The term “sheep” usually refers to the domesticated species within the genus *Ovis*. They belong to the order *Artiodactyla*, which includes all even-toed ungulates and ruminants. Common classifications include lamb (juvenile), ewe (adult female), ram or tup (intact male), and wether (castrated male) (Smith *et al.*, 2022). Sheep rearing is a vital agricultural practice globally, contributing significantly to economic growth and development (Sertse and Wossene, 2007; Adang *et al.*, 2015). In Nigeria, sheep are integral to the ruminant industry, with an estimated population of 22.1 million (Lawal *et al.*, 2012; Ola *et al.*, 2017). Small ruminants represent about one-third of the nation’s agricultural gross domestic product (Lawal *et al.*, 2012; Obi *et al.*, 2014). Sheep provide protein (meat), manure, skin, and income, and also hold socio-cultural value (Okorafor *et al.*, 2015; Ola *et al.*, 2017). Despite their importance, limited research has been done on tick infestation of sheep in Gwagwalada Area Council. Previous tick ecology studies focused primarily on northern Nigeria (Sannar and Ilsey, 1956), leaving gaps in understanding regional infestation patterns and associated risk factors. Livestock farming plays a crucial role in Nigeria’s economy, employing over 80% of the population. Gwagwalada, a key agricultural hub in the Federal Capital Territory, relies heavily on small ruminant farming. However, data on tick species infesting sheep in the region remain scarce. This study seeks to provide comprehensive data on tick prevalence and species composition, supporting evidence-based control strategies to improve sheep health, productivity, and farm sustainability.

Materials and Methods

The research was conducted in Gwagwalada Area Council, located about 55 km southwest of Abuja between latitudes 8°55’N–9°00’N and longitudes 7°00’E–7°05’E. The area has Guinea Savannah vegetation and a tropical climate, with a wet season (April–October) and a dry season (November–March). Average temperatures range from 30°C to 37°C, conditions favourable for tick proliferation (Adamu *et al.*, 2014). A cross-sectional study design was adopted, encompassing sample collection and laboratory identification. Between June and September 2024, ticks were collected from 200 sheep randomly selected from households

and markets. Preferred tick attachment site-ears, neck, perineum, and inguinal areas-were examined. Ticks were removed using fine-tipped forceps and preserved in 10% formaldehyde for identification (Walker, 2003). Ticks were identified morphologically based on features such as the capitulum shape, eye presence, festoons, and adanal plates (Walker, 2003). The species identified included *Rhipicephalus (Boophilus) decoloratus*, *Amblyomma variegatum*, and *Hyalomma rufipes* (Ogo *et al.*, 2012).

Data Analysis

Data were analysed using Microsoft Excel 2015 and SPSS version 26. Descriptive statistics were used to calculate prevalence and percentage distributions, displayed using tables and charts.

Results

Out of 200 sheep examined, 28 were infested with ticks, yielding an overall prevalence of 14%. Three tick genera were identified: *Boophilus*, *Amblyomma*, and *Hyalomma*, with *Boophilus* being the most prevalent (66.67%). Female ticks constituted 66.7% of all collected specimens.

Table 1. Tick infestation on sheep by sex.

Sex	Number of sheep sampled	Number infested	Prevalence (%)
Female	33	18	9.0
Male	167	10	5.0
Total	200	28	14.0

Table 2. Tick species identified.

Tick species	Number identified	Percentage (%)
<i>Boophilus sp.</i>	42	66.67
<i>Amblyomma sp.</i>	17	26.98
<i>Hyalomma sp.</i>	4	6.35

Table 3. Tick prevalence by location.

Location	Number of sheep sampled	Number of ticks	% of ticks
Veterinary teaching hospital farm	10	30	47.62
Hajj camp	42	25	39.68
Anagada livestock market	50	8	12.70
Kutunku	46	0	0
Gwagwalada abattoir	2	0	0
SDP sheep market	50	0	0

Discussion

The 14% tick prevalence recorded in this study is higher than that reported among small ruminants in Makurdi (8.1%) (Ofukwu *et al.*, 2008), but comparable to findings in Uli, southeast Nigeria (14.85%) (Obi *et al.*, 2014). The differences may relate to climatic variations, sampling season, and management practices such as acaricide use and hygiene (Pegram *et al.*, 1993).

Three tick species were identified, with *Boophilus* being dominant, consistent with previous studies (Gaga *et al.*, 1992; Tiki and Addis, 2011; Hador, 2015). The predominance of *Boophilus* aligns with its role as a vector for bovine babesiosis and anaplasmosis (de la Fuente *et al.*, 2008). The presence of *Amblyomma* and *Hyalomma*-known vectors of *Ehrlichia ruminantium*, *Theileria*, and Crimean-Congo haemorrhagic fever virus-poses zoonotic risks (Walker, 2003; Zhao *et al.*, 2020).

Female ticks were more prevalent (66.7%) than males (33.3%), corroborating findings by Kabir *et al.*, (2011) and Sonenshine and Roe (2014), who attributed this to longer feeding duration and visibility of females. Spatially, tick infestations were concentrated at the Veterinary Teaching Hospital farm and Hajj camp, possibly due to microclimatic factors and less rigorous tick control.

Conclusion

This study revealed a 14% tick infestation prevalence among sheep in Gwagwalada Area Council. The dominant tick species was *Boophilus*, followed by *Amblyomma* and *Hyalomma*. The high female-to-male tick ratio and non-uniform distribution suggest that management and environmental conditions play key roles in infestation dynamics.

Declarations

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