# A Survey of Tick Infestation on Cattle within Fulani Settlements of the University of Abuja Main Campus, F.C.T., Abuja

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## ABSTRACT

Ticks have been noted as the main ectoparasites which reduces the cattle productivity in the tropics. The study investigated ticks of cattle among Fulani herds residents at the fringes of the Main Campus of the University of Abuja. All the cattle examined in this study were free-ranged. A total of 148 cattle were examined for tick infestation of which *Amblyomma* species was the most recorded 313(54.34%), other species that were found to occur in the study area were *Hyalomma* species, *Boophilus* species, and *Rhipicephalus* species with (25.35%, 13.72%, and 6.60%) respectively. All ticks species recorded were all from the family Ixodidae. The level of infestation of the tick in relation to sex and age showed significant difference ($P<0.05$). The study also showed male ticks smaller than the female in all species recorded. This investigation was necessary to give baseline information on the level of tick infestation and occurrence in the study area to increase public awareness especially to the herd men to avoid tick-borne diseases and also help in vector control formulations.

**Keywords:** Tick Infestation, Cattle, Fulani Settlement, University of Abuja

## 1. INTRODUCTION

Ticks are small arachnids in the order Parasitiform (Klompen *et al.*, 1996; Anderson, 2002). Along with mites, they constitute the subclass Acarina. Ticks are ectoparasites living on blood of mammals, birds, and sometimes reptiles and amphibians (Klompen *et al.*, 1996), and they transmit a certain pathogen (Loomis, 1986). Iwuala and Okpala (1978a) stated that the productivity of livestock in the tropics is limited because of their relationship with obligate blood sucking arthropods.

About 850 species of ticks have been reported worldwide (Hoogstraal, 1956), they are severe and notorious ectoparasites with irritation, allergy, toxiosis (Niyonzema and Kilzt, 1986), babesiosis, theileriosis, anaplasmosis (Solomon and Mathew, 2001). Certain factors have been observed to affect the distribution of ectoparasites in their host. Among some are the season (James-Rugu and Iwuala, 2002) and mode of livestock rearing or system (James-Rugu and Iwuala, 1995).

## 2. MATERIALS AND METHODS

### 2.1 Study Area

The University of Abuja main campus is located along the Nnamdi Azikiwe Airport road, Abuja, latitude $9^{o}$/32N and longitude $50^{o}$/10E with a land mass of about 11,800 hectares in Gwagwalada Area Council of Abuja. The Main Campus is characterized with a temperature of $30^{o}$C-$35^{o}$C, basement complex mainly occupied with staff and students, small scale farmers and nomadic Fulani who rear cattle in the inhabitant part of the Campus.

### 2.2 Sample Collection and Processing

The ticks were search on the hosts' body with the help of the herd men and forcefully detached using a forcep (James-Rugu and Iwuala, 1995) and the point of detachment was smeared with

ethanol. Ticks collected were preserved in a well labeled glass bottle containing 70% ethanol and thereafter transferred to the Biology Laboratory of the University of Abuja for identification.

### 2.3 Identification of Ticks

All ticks collected in this study were identified and thereafter classified into their different genera using the key and description by Wall and Shearer (1997).

### 2.4 Statistical Analysis

The ticks collected were analyzed using the one way Analysis of Variance (ANOVA) at ($P<0.05$) level of significance.

## 3. RESULTS

Table 1 showed that of all the 576 ticks collected in the study, the *Amblyomma* species had the highest occurrence of 313(54.34%), *Hyalomma* species 146(25.35%), the *Boophilus* species 79(13.72%) and the lowest of all the occurrence was *Rhipicephalus* species 38(06.60%).

**Table 1: Total Number of Ticks collected during the study in three settlements of Fulani herds men.**

| Species of Ticks collected | Number of ticks collected | Number of ticks collected by species | Prevalence Rate by species (%) |
|---|---|---|---|
| *Amblyomma species* | 576 | 313 | 54.34 |
| *Hyalomma species* | 576 | 146 | 25.34 |
| *Boophilus species* | 576 | 79 | 13.72 |
| *Rhipicephalus species* | 576 | 38 | 06.60 |
| **Total** | **576** | **576** | **100** |

Table 2 showed that of all the cattle examined with respect to sex, only the *Amblyomma* species and the *Rhipicephalus* were found to occur more on the female (80.22% and 14.29% respectively) than the male (75.44% and 12.28% respectively) while other species like *Hyalomma* (45.61% in male and 29.67% in female) and *Boophilus* (22.81% in male and 13.19% in female), occur most in male than the female. But it is worth to note that all species examined occurred in both sexes of the cattle.

**Table 2: Ticks Infestation on Cattle in Sample Area in Sex-related Incidence in three settlements of Fulani herd men**

| Sex of Cattle | Species of Ticks | Cattle examined in three farms | Cattle infested in three farms | Prevalence Rate (%) |
|---|---|---|---|---|
| Bull | *Amblyomma species* | 57 | 43 | 75.44[a] |
| | *Hyalomma species* | 57 | 26 | 45.61 |
| | *Boophilus species* | 57 | 13 | 22.81 |
| | *Rhipicephalus Species* | 57 | 7 | 12.28 |
| Cow | *Amblyomma species* | 91 | 73 | 80.22[b] |
| | *Hyalomma species* | 91 | 27 | 29.67 |
| | *Boophilus species* | 91 | 12 | 13.19 |
| | *Rhipicephalus Species* | 91 | 13 | 14.29 |

Significant difference at ($P<0.05$), as it is indicated with the lettering (a and b).

**Table 3: Tick Infestation in Age-related incidence in three settlements of Fulani herd men**

| Age of Cattle (yrs) | Species of Ticks | Cattle examined in three farms | Cattle infested in three farms | Prevalence Rate (%) |
|---|---|---|---|---|
| <1-2 | *Amblyomma species* | 42 | 34 | 80.95[a] |
| | *Hyalomma species* | 42 | 25 | 58.52[b] |
| | *Boophilus species* | 42 | 09 | 21.43 |
| | *Rhipicephalus Species* | 42 | 03 | 07.14 |
| 2 and above | *Amblyomma species* | 106 | 82 | 77.36[c] |
| | *Hyalomma species* | 106 | 38 | 35.85 |
| | *Boophilus species* | 106 | 16 | 15.09 |
| | *Rhipicephalus Species* | 106 | 15 | 14.15 |

Significant difference at ($P<0.05$), as it is indicated with the lettering (a, b and c).

## 4. DISCUSSION

Ticks have been found to cause great economic looses to the livestock farmer in the world because of the adverse effect on livestock host in several ways (Snelson, 1975) and parasitize a wide range of vertebrate host (Olivier, 1989).

The study identified four genera of ticks namely, *Amblyomma* (54.34%), *Hyalomma* (25.35%), *Boophilus* (13.72%) and *Rhipicephalus* (06.60%) on cattle within the Fulani settlement of University of Abuja Main Campus which they have all been reported to be parasites of cattle and other domestic animals (Agbede, 1981; Ikpeze *et al.*, 2011). The *Rhipicephalus* species (06.60%) recorded the lowest number of ticks in this study and this so because it could be an accidental

infestation as Fulani cattle associate with dogs who have been reported to be the host preference of this tick species (Hoogstraal, 1956; Ouhelli and Pandey, 1982). The *Amblyomma* species (54.34%) was found to have high infestation rate in the study which is consistent with the report of Ilembode (1977) who recorded that *Amblyomma* species of ticks is a tick of cattle and other domestic animals in West, East and South Africa but contrast with Solomon *et al. (*2001) and Fantahun and Mohamed (2012) who recorded *Boophilus* species as the dominant tick species.

The study revealed that the prevalence of ticks in cattle sex-related incidence was significantly different ($P<0.05$), and also in age-related incidence, there was significant difference ($P<0.05$) in the older cattle of 2years and above when compared with the younger age of <1-2years.

The study has added up to the information available on tick infestation which will help in more awareness of tick-borne diseases and vector control strategy to combat the effect of this ectoparasite.

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