

## DRY SEASON SURVEY ON ABUNDANCE AND DISTRIBUTION OF IXODID TICKS IN CATTLE IN AUYO LOCAL GOVERNMENT AREA OF JIGAWA STATE, NIGERIA

\*<sup>1</sup>GUMEL, M.A., <sup>1</sup>INUWA, S., <sup>2</sup>QADEER, M.A. AND <sup>3</sup>ABDURRAHMAN, S.L.

<sup>1</sup>Department of Animal Health and Production, Binyaminu Usman College of Agriculture, Hadejia, Jigawa State. <sup>2</sup>Department of Biological Science, Modibbo Adama University of Technology, Yola, Adamawa State.

<sup>3</sup>Department of Animals Science, Federal University Dutse, Jigawa State.

\* Corresponding Author: Email, [Mag370245@gmail.com](mailto:Mag370245@gmail.com) Tel: - 08035950120

### ABSTRACT

Dry season survey on ticks was conducted to determine the genera, prevalence and distribution in various breeds of cattle in Auyo Local Government Area of Jigawa State, Nigeria. A total of 258 cattle were examined, out of which 51(19.8%) were males and 207(80.2%) females. An overall prevalence of 58.9% was recorded in all cattle examined. One hundred and seventy three ticks of three genera belonging to the family ixodidae were collected and identified of which Red Bororo recorded 65(37.6%), crossbreeds had 41(23.7%), White Fulani had 40(37.6%) while Sokoto gudali had 27(15.6%). Of the tick genera identified, their prevalence showed, *Amblyomma spp* 87(50.3%) as the commonest, followed by *Boophilus spp* 69(39.9%) and *Hyalomma spp* 17(9.8%). Distribution of ticks infestation by sex was significantly higher ( $P<0.05$ ) in males 38(74.5%) than in females 114(55.1%). Tick infestation was significantly ( $P<0.05$ ) higher in adults 115(65.3%) than in calves 37(57.2%). Dunkan Fulani recorded highest prevalence 89(70.6%) of tick infestation by location.

**Key words:** *Amblyomma*, *Boophilus*, *Hyalomma*. Prevalence, Tick infestation

### INTRODUCTION

Cattle in Nigeria serve as a source of meat, milk and animal by products (hides, skin and manure). Furthermore it is used as a cash reserve and a form of savings for rural people as well as protection against crop failure (Itty *et al.*, 1997). The importance of cattle for traction and ploughing to the rural farmers can not be overemphasized. Ticks are blood sucking ectoparasites of mammals and birds amongst which ixodid (hard) ticks are known to transmit the widest variety of pathogens of any blood sucking arthropods such as bacteria, rickettsia, protozoa and viruses (El-Kammah *et al.*, 2001). Ticks and tick borne disease (Babesiosis, Heartwater, Dermatophilosis etc) in cattle constitute a formidable animals health problem which act as impediment to cattle industry in Nigeria (James – Rugu and Iwuala, 2002). Preliminary information about the tick infesting cattle attributed to its dynamics is critical for planning, implementation and evaluation of an effective tick and tick borne disease control strategy. This study aimed at identifying genus of ticks infesting different breeds of cattle and to evaluate their prevalence and distribution by sex, age and location to guide cattle rearers in control of ticks and tick borne disease in the study area.

### MATERIALS AND METHODS

#### Study Area

The study was conducted in Auyo Local Government Area which is located in eastern part of Jigawa state in north western Nigeria between February and April, 2013. It borders Hadejia and Kaugama Local Government Areas in the North-east while Miga and Kafin Hausa Local Government Areas borders to the south-west. It is situated between 12° 28" and 12° 26" N latitude and 9° 32" and 10° 00" E longitude. The vegetation zone is within savannah (grassland with scattered trees) characterized by intensive and extensive growth with a few dispersed mesospheric trees and shrubs. The climate is that of Sudan savannah characterized with short rainy season (about 5 – 6 months). Annual rainfall received is 20 – 30 cm with considerable variation from year to year (Mikail, 2001). Four villages were purposely selected from the Local Government Area for the study. The selected villages are known to accommodate reasonable number of cattle herds. A total of 258 cattle were used during the sampling and their age, sex and breed were recorded. Cattle under 1 – 2 years were regarded as calves while two years and above were regarded as adults. Age was determined from their rostral dentition (Gyang, 1987). Ticks seen on cattle body were gently removed and transferred into labeled transparent universal bottles containing 70%

ethanol into which 5% glycerine was added. All ticks collected were carefully identified using taxonomic keys (Urquhart *et al.*, 1996; Anderson (2004) after examining the characteristic feature with the help of hand lens and microscope at Veterinary Clinic Diagnostic Laboratory of Binyaminu Usman College of Agriculture, Hadejia.

## RESULTS AND DISCUSSION

A total of 258 cattle (Table 1) were examined for ticks infestation in three selected villages of the study area. Out of which 51(19.8%) were males and 207(80.2%) females. An aggregate of 173 ticks (Table 2) of the family ixodidae were collected from the cattle giving overall prevalence of 58.9%. The observed high prevalence is similar to the reports of Iwuala and Okpala (1978) and Tongjura *et al.* (2012). High tick infestation in cattle is associated with detrimental damages to the integrity of skin and capable of destroying dairy, beef and hide and skin industries. Distribution of ixodids ticks by breed of cattle indicated that Red Bororo had the highest collection, 65(37.6%) followed by Crossbreds, 41(23.7%) while White Fulani had 40(23.1%) and the least collection was from Sokoto gudali 27(15.6%) (Table 2). This finding could be due to the fact that Red Bororo generally grazes in areas like lake borders, lying marshy areas in dry season which provide greener pastures but favour the infective stages of ticks (Amuta *et al.*, 2010). This observation is not in conformity with the report of Obadiah and Shekero (2012) who recorded higher tick on White fulani. There was statistical significance difference in breed of cattle ( $P<0.05$ ). In order of abundance, *Amblyomma spp* was the most prevalent 87(50.3%), followed by *Boophilus spp* 69(39.9%) and the least was *Hyalomma spp* 17(9.8%) (Table 2). Obadiah and Shekero (2012) and Tongyura *et al.* (2012) reported that *Amblyomma spp* had highest infestation. Distribution of ticks infestation by sex was significantly higher ( $P<0.05$ ) in males 38(74.5%) than females 114(55.1%) (Table 3). This could be due to the fact that traditional tick control methods (manual removal) in cattle are easily and frequently conducted in females during milking. Obadiah and Shekero (2012) reported highest infestation in males than in females. Ticks infestation in relation to cattle age showed that adults were more infested 115(65.3%) than calves

37(51.2%) (Table 4). There was statistically significantly difference in age ( $P<0.05$ ). This could be due to less exposure of calves to infective ticks, in that, calves are not allowed to graze out with cows. Ticks infestation by location indicated highest prevalence of 89(70.6%) at Dulkan Fulani, followed by Hago 52(30.0%) and Ganuwar Kuka 32(18.5%) (Table 5). Chi-square statistical analysis showed no significant difference ( $P>0.05$ ) in the distribution of ticks in the three locations.

## CONCLUSION

From the results obtained, it can be concluded that cattle in the study area were infested by the tick genus (*Amblyomma*, *Boophilus* and *Hyalomma*) and that the prevalence rate was high. Due to the health and economic implications of ticks on livestock, it will not be out of place for government and non – governmental organization to create awareness for cattle rearers on the significance of ticks and ticks control to improve livestock production.

## REFERENCES

- Amuta, E.U. and Houmson, R.S. and Ogubiela, M. (2010). Tick Infestation of Dogs in Makurdi Metropolis, Benue State, Nigeria. *The International Journal of Veterinary Medicine*, 7(2): 12 – 17.
- Anderson, R.N. (2004). *A Textbook of Parasitology* Edited by FEG Cox, Second edition.
- El-Kammah, K.M., Oyoum, L.M., El-Kady, G.A., Shafy, S.A. (2001). Investigation on Blood Parasites in Livestock Infested with Argasid and Ixodids Ticks. *Egypt Journal of Parasitology*, 31(2): 104 – 150.
- Gyang, E.O. (1987). *Introduction to Large Animal Surgery*, 1<sup>st</sup> edition: ABU Press. Pp. 192 – 195.
- Itty, P., Ankeers, P, Zinnstag, J., Trawally, S. and Pfister, K. (1997). Productivity and Profitability of Sheep Production in Gambia: Implications for Livestock Development in West Africa, *Journal of International Agriculture* 36: 153 – 172.
- Iwuala, M.O.E., Okpala, J. (1998). Studies on the Ectoparasitic Fauna of Nigerian Livestock II: Seasonal Infestation Rates. *Bulletin of Health and Production in Africa* XXVI(4): 351 – 358.
- James – Rugu, N.N. and Iwuala, M.O.E. (2002). Ectoparasites of some Domestic Animals in

- Jos, Plateau State, Nigeria. *Science Forum* 5(1): 149 – 156.
- Mikail, B.A. (2001). Deforestation and Afforestation Policy Aimed at Sustaining the Land Resources of Jigawa State. An invited paper at the Senior Executive Seminar on Policy and Strategies. March 14, 2001.
- Tongyura, J.D.C., Amuga, G.A., Ombugadu, R.J., Azamu, Y. and Mafuiya, H.B. (2012). Ectoparasites Infesting Livestock in Three Local Government Areas of Nassarawa State, Nigeria, *Science World Journal*. Vol. 7 (No. 1). 15 – 17.
- Urquhart, G.N., Amour, J., Duncan, J.I. and Zennings, F.W. (1996). *Veterinary Parasitology*. Second ed. Blackwell Publishing, 284, Pg. 181 – 188.
- Walker, A.R., Bondttour, A. (Amicas, J.L., Estradapena, A., Horak, I.G., Latif, A.A., Pegram, R.G. and Preston, P.M. (2003). *Ticks of Domestic Animals in Africa. A Guide to Identification of Sciences*. The University of Edinburgh.

Table 1: Dry season distribution of cattle breeds amongst age group and sex studied in Auyo Local Government Area, Jigawa State, Nigeria

| Breed         | No. examined (%) | Age (%)  |           | Sex (%)  |           |
|---------------|------------------|----------|-----------|----------|-----------|
|               |                  | Calves   | Adult     | Male     | Female    |
| Red Bororo    | 145(52.2)        | 42(51.2) | 102(60.0) | 21(41.2) | 124(59.9) |
| Sokoto gudali | 39(15.1)         | 14(17.1) | 25(14.2)  | 10(19.6) | 29(14.0)  |
| White Fulani  | 52(20.2)         | 16(19.5) | 36(20.2)  | 15(29.4) | 37(17.9)  |
| Crossbreed    | 2(8.5)           | 9(11.0)  | 13(7.4)   | 5(9.8)   | 17(8.2)   |
| Total         | 258              | 82(31.9) | 176(68.2) | 51(19.8) | 207(80.2) |

Table 2: Dry season distribution of ixodids ticks amongst cattle breeds in Auyo Local Government Area, Jigawa State, Nigeria

| Ticks                | No. of Ticks Collected (%) | Breed (%)  |               |              |            |
|----------------------|----------------------------|------------|---------------|--------------|------------|
|                      |                            | Red Bororo | Sokoto gudali | White Fulani | Crossbreed |
| <i>Amblyomma spp</i> | 87(50.3)                   | 47(72.3)   | 15(55.6)      | 18(45.0)     | 7(17.1)    |
| <i>Boophilus spp</i> | 69(39.9)                   | 12(18.5)   | 9(33.3)       | 19(47.5)     | 29(70.7)   |
| <i>Hyalomma spp</i>  | 17(9.8)                    | 6(9.2)     | 3(11.1)       | 3(7.5)       | 5(12.2)    |
| Total                | 173                        | 65(37.6)   | 27(15.6)      | 40(23.1)     | 41(23.7)   |

Table 3: Dry season prevalence of ixodids ticks amongst cattle sex in Auyo Local Government Area, Jigawa State, Nigeria

| Sex     | No. Examined (%) | No. infested (%) |
|---------|------------------|------------------|
| Males   | 51(19.8)         | 38(74.5)         |
| Females | 207(80.2)        | 114(55.1)        |
| Total   | 258              | 152(58.9)        |

Table 4: Dry season prevalence of ixodid ticks on cattle by age group in Auyo Local Government Area, Jigawa State, Nigeria

| Age group(%) | No. Examined (%) | No. infested (%) |
|--------------|------------------|------------------|
| Calves       | 82(31.8)         | 37(57.2)         |
| Adults       | 176(68.2)        | 115(65.3)        |
| Total        | 258              | 152(58.9)        |

Table 5: Dry season distribution of ixodids ticks on cattle in three villages under study of Auyo Local Government Area, Jigawa State, Nigeria

| Village       | No. of Cattle Examined (%) | Total No. of Ticks Collected (%) | No. of Cattle Infested (%) |
|---------------|----------------------------|----------------------------------|----------------------------|
| Hago          | 97(37.6)                   | 52(30.0)                         | 42(43.3)                   |
| Ganuwar Kuka  | 35(13.6)                   | 32(18.5)                         | 21(60.0)                   |
| Dunkun Fulani | 126(48.8)                  | 89(51.4)                         | 89(70.6)                   |
| Total         | 258                        | 173                              | 152(58.9)                  |