

## Population Dynamics of Ectoparasites in Cattle

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**Abstract:** Skin diseases are one of the major causes of considerable economic loss from defective skin and hide export. Skin diseases caused by ticks and mange mites, are among the major diseases of cattle causing serious economic loss to the farmer, the tanning industry and the country as a whole. This study was carried out from January to December 2006 to determine ectoparasites infestation pattern in Mubi area of Adamawa State. A total of 833 cattle with both tick and Mange infestation cases were recorded. Tick cases was 304 and Mange 529 cases. Seasonal infestation of ticks was higher in the month of July and through August. The largest number of mange infestation was recorded in the month of January to April. The widespread ectoparasites in this region requires attention in order to minimize the spread of infestation which cause skin and hide quality degradation and disease transmission, which is an economic lost. The objective of the current study was to compare tick and Mange prevalence in cattle in the study area.

**Key words:** Ticks • Mange • Infestation • Mubi • Nigeria

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### INTRODUCTION

Ticks and tick-borne diseases are ranked as the most important cattle health constraints by farmers in the communal areas of South Africa [1]. Several studies have been conducted on the ticks of cattle in South Africa and many of these have concentrated on the commercial production system [1]. Tick control programmes in the commercial farming sector differ considerably to those in the communal farming areas [2] Commercial farmers rely on intensive tick control using acaricides while resource poor farmers cannot afford commercial acaricides and resort to using traditional medicines to control ticks [3]. There is a need to identify common ticks and determine their prevalence and loads in cattle on communal rangelands in South Africa to formulate and implement appropriate tick control strategies. Some studies have compared tick loads in indigenous and exotic beef breeds on controlled onfarm conditions [4]. No studies, however, have been carried out to compare the tick loads of the Nguni breed and indigenous-exotic crosses (nondescript cattle), raised under communal grazing management. It is important to identify and recommend breeds that are resistant to ticks and can be used by

farmers on communal rangelands. Information on the tick loads of cattle can be used to estimate and compare the level of resistance of different cattle breeds to ticks [5]. Tick occurrence and tick loads vary with seasons, geographic location, vegetation type, breed and age of the animal [6]. Ellery [7] Reported that there are little, if any efforts that have been made to compare seasonal dynamics of ticks in different cattle breeds on sweet and sour rangelands, which are likely to vary due to differences in rainfall distribution and vegetation densities. Comparing the prevalence and loads of ticks in different rangeland types assists policy makers to design appropriate control programmes for each rangeland type.

Skin diseases caused by lice, ticks and mange mites, are among the major diseases of cattle causing serious economic loss to the farmer, the tanning industry and the country as a whole. Skin diseases cause mortality, decreased production and reproduction and downgrading and rejection of skins. However, the status of cattle ectoparasites in Mubi zone, Adamawa State Nigeria is not known. Therefore, the present study was conducted to determine the dynamics of ectoparasites of cattle in Mubi region.

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**MATERIALS AND METHODS**

**Location of the Study:** Mubi area lie within Northern Guinea Savannah zone of Nigeria and located at latitude 10° 00 north, longitude 13°30 east and about 305 meters above sea level, with an area of 961.39 km<sup>2</sup>. The dry season in this area commences early October and last up to April. The wet season begins from May and attains its peak between July and August and declines in September; the mean annual rainfall is 1050 mm. The relative humidity is extremely low 20-30% between January and March and start increasing as from April and reaches a peak of about 80% in August and September, the relative humidity starts to decline from October following the cessation of rains. The maximum temperature can reach 40°C particularly in April while minimum temperature is about 18°C between December and January, [8].

The data was obtained through daily records of cattle infested with ticks and Mange cases in cattle in the Mubi South Local Government Area Veterinary Services Division.

**Study Animals and Study Design:** A total of 833 cattle of different breed and sex were inspected for the presence of ticks and Mange (Kirchi) in different months of the season. The Ectoparasites cases were recorded from Cattle presented to the Mubi South Veterinary clinics in Mubi area.

**Data Analysis:** SAS [9] was used to analyze the data.

**RESULTS AND DISCUSSION**

Tick loads were higher ( $P < 0.05$ ) in the hot-wet and post rainy season than in the cool-dry season. Tick occurrence and tick loads vary with seasons, geographic location, vegetation type, breed and age of the animal [6]. There are little, if any efforts that have been made to compare seasonal dynamics of ticks and Mange in this region. The result this study has determined the variation due to differences in rainfall distribution and vegetation densities as obtained in other studies by [7]. Comparing the prevalence of ticks and Mange in different areas of this region assists policy makers to design appropriate control programmes for each rangeland type.

Table 1 shows the seasonal changes in the overall tick and Mange as obtained in the data collected. season, which obviously determines the rainfall distribution had significantly ( $P < 0.05$ ) affected the overall tick and Mange

Table 1: Seasonal Changes in the Overall Ticks and Mange Infestation in Mubi in the year 2006

Months	Ticks	Mange
January	16	80
February	17	82
March	25	80
April	15	80
May	25	30
June	30	17
July	50	30
August	41	18
September	32	49
October	16	28
November	22	15
December	15	21
Total	304	529

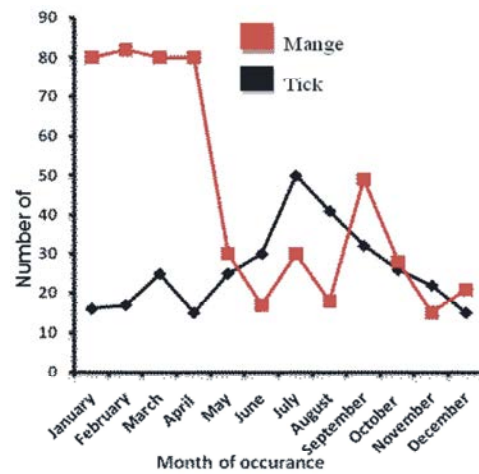


Fig. 1: Tick and Mange infestation (graphical pattern)

occurrence, ticks had higher rate of invasion that is around the months of June, July and August with number of occurrence as 30, 50, 41 and 32 respectively in the hot humid raining season and lower rate during April and December as 15 and 15 respectively that is the dry season which is significantly lower ( $P < 0.05$ ). The highest infestation of Mange were observed between the months of January, February, March and April with number of occurrences as 80, 82, 80 and 80 respectively.

The higher tick prevalence observed in the hot-wet season than in the cool-dry season could be attributed to the more conducive conditions for tick proliferation and survival during this season. Accelerated tick proliferation occurs when environmental temperatures and humidity are high [10].

High tick infestation in this study was recorded during the hot wet months which agree with the work of Wesonga *et al.* [11] and Muchenje *et al.* [4] who observed high tick incidence during the hot-wet season.

The climatic determinants of the study areas are very important in the prevalence of ticks in domestic animals. Humidity and prolonged sunlight favor the survival and reproduction of ticks. Muchenje *et al.* [4] reported that tick infestation of cattle increased during the wet season of the year, unlike in the dry seasons. This variation between the current and previous studies can most probably be attributed to differences in agro-ecology of study sites, a condition observed by Wesonga *et al.* and munyaradzi [11,12].

The difference in infestation rates of mange and Ticks could be due to different control measures in place. Considering the importance of skin and hides as a main source of foreign currency to the country, the prevailing ectoparasites requires attention in order to minimize the spread of infestation and increase income earnings of farmers and small scale holders whose livelihood is dependent on these animals.

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