

# Prevalence of Tick Infestation in Bovine in Gozamine Woreda North West, of Ethiopia

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## Abstract

A cross sectional study was conducted from April 2016 to June 2016 in Gozamin district to determine the prevalence of tick infestation in bovine. Ticks were identified by their features by stereomicroscope. In current study adult ticks were collected from 384 local and cross breed cattle and examined of which 274 (71.35%) animals were infested by with different genera of ticks. The major tick genera identified by this study were *Amblyomma*, *Hyalomma* and *Boophilus* with prevalence of 189(49.2%), 103(26.6%), 78(20.3%), and 58(15.1%) respectively. The prevalence of *Amblyomma* and *Boophilus* in young bovine were 61(43.9%) and 23(16.5%) respectively. The prevalence of *Amblyomma* and *Boophilus* in adult cattle were 128(52.2%) and 35 (14.3%) respectively. There was statistically significance ( $p < 0.05$ ) in age. Similarly the prevalence of *Amblyomma* in male and female was 134(57.8%) and 55(36.2%) respectively but prevalence of *Boophilus* was 40 (17.2%) and 18(11.8%) respectively there was statistically difference on sex ( $p < 0.05$ ). The prevalence of *Amblyomma* in extensive and semi intensive production system was 173(57.9%) and 16(18.8%) whereas the prevalence of *Boophilus* was 49(16.4%) and 9(10.6%). The prevalence of the same genera in poor medium and good body condition were 78 (61.7%) 39(29.3%) and 24(19%). The result of the present study reveal that there was high tick infestation in the study area. Therefore appropriate control measure should be implemented.

**Keyword:** bovine, Gozamin, prevalence, tick

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## Introduction

Ethiopia has approximately 47.57 million cattle and 52.3 million sheep and goat. Cattle play significant role in the socioeconomic life of the people of Ethiopia. In addition to the product of meat and milk cattle provide drought power for cultivation of crop. Skin and hide were also important components of livestock sector in generating foreign export earnings (CSA, 2008).

In Ethiopia ticks occupy the first place among external parasites and economic loss tick born disease are the major constraint in the genetic improvement of by cross breeding of local cattle with exotic breed (Fesha, 1983).

Ixodid ticks are one of the most important external parasites of livestock on the tropical and sub-tropical part of the world because of direct and indirect effect on their host ticks are considered to be not only a significant threat to successful livestock production, but also serious interfere with economy of the country especially in Africa (Decastro, 1997). Ticks occur worldwide there was about 852 species of tick in the world that parasitizing both animal and human (Walker et al., 2003). In Ethiopia 47 species of tick were identified and have effect on skin and hide (Kassa, 2005).

Tick can be directly cause illness, toxicities and tick paralysis (Brossard, 1998). The indirect pathogenic effect of tick were transmission of disease from infected animal to health animal such as babesiosis, east coast fever and cowdriosis (FAO, 1984).

The successful implementation of susceptible tick control program in grazing animal is depend on knowledge of the epidemiology of the parasites due to interaction with the host in the specific climate management and production. In some countries substantial ecological and epidemiological knowledge base has been established through extensive studies and field trials on contrary developing countries including Ethiopia lack such information due to insufficient human economic and infrastructure (FAO, 2004).

The objectives of this study was

- To determine the prevalence of tick and associated risk factor in Gozamine woreda.

## Material and methods

### Study area

The study was conducted in North West of Ethiopia in Gozamin woreda in east gojjam zone. It has 3 agro ecological zones high land, weynadega and lowland and the woreda has 111234 sheep and goat 123456 cattle, 31678 equine and 89789 poultry (GWAO, 2015).

### Study population

Cattle that found in the woreda were considered as study population.

### Study design

A cross-sectional study was implemented to determine the prevalence of tick genera in bovine from April 2016 to June 2016 in Gozamine woreda.

Sample size and sampling method

The sample size was determined by using thurs field (2001).

$$N = \frac{1.96^2 p(1-p)}{D^2}$$

Where n= sample size required

Z= taken from the level for 95%ci (1.96)

D=the level of precision (5%)

P=expected prevalence (50) since there is no previous study.

Based on this the sample size was 384 and the sampling method was random sampling.

### Tick collection

Ticks were collected from predilection site like neck ear perineum udder inguinal area tips of tail by using forceps. The sample were preserved and labeled and examine at Gozamine woreda veterinary clinic by stereomicroscope.

### Data analysis

All date recorded in this study were coded and entered in Microsoft spread sheet. Date analyzed by using verson19 satirical soft were.

### Results

During the study total of 384 cattle were examined of which 274(71.35%) animals were infested with different genera of tick.

Tabell1 the prevalence of tick based on age

Age	Total animal examined	Tick genera		
		Amblyomma	Boophilu	Hyaloma
Young	139	61(43.9%)	23(16.5%)	18(12.9%)
adult	245	128(52.2%)	35(14.3%)	60(24.5)
total	384	189(49.2%)	58(15.1%)	78(20.3%)
P value	0.005			

Similarly the prevalence of this different genus of tick between the different sexes of cattle was also recorded the highest prevalence was observed male than female for Amblyomma, Hyalomma and Boophilus respectively. The prevalence of sex in male and female was 32.4% and 21.2 respectively. The result showed significant difference observed (p<0.05)

Table2 the prevalence of tick in and around Gozamine woreda based on sex

sex	Total no of animal examined	Tick genera		
		Amblyomma	Hyalomma	Boophilus
male	232	134(57.8%)	61(26.3%)	40(17.2%)
female	152	55(36.2%)	17(11.2%)	18(11.8%)
total	384	189(49.2%)	78(20.3%)	58(15.1%)
P value	0.001			

Similarly the prevalence of age and sex, the prevalence of different genus of tick between breed of cattle were also record. The highest prevalence was observed in local than cross for Amblyomma, Hyalomma, and Boophilus. the result showed that significant different observed (p<0.05).

Table3 the prevalence of cattle tick in Gozamine based on breed

breed	Total no animal examind	Tick genera		
		Amblyomma	Hyalomma	Boophilus
local	251	139(55.4%)	45(17.9%)	33(13 %)
cross	133	50(37.6%)	33(24.8%)	25(18.8%)
total	384	189(49.2%)	78(20.3%)	58(15.1%)
P value	0.03			

In addition the prevalence of different genus of tick between management system of cattle were also record the highest prevalence was observed in extensive than intensive for Amblyomma, Hyalomma and Boophilus respectively. The prevalence of management in extensive and intensive 31.5% and 15.0% respectively. The result showed that significance difference observed (p<0.05).

Table 4 the prevalence of tick cattle in Gozamine based on management

Management system	Total no animals examined	Tick genera		
		Amblyomma	Hyalomma	Boophilus
extensive	299	173(57.9%)	66(22.1%)	49(16.4%)
semi intensive	85	16(18.8%)	12(14.21%)	9(10.6%)
total	384	189(49.2%)	78(20.3%)	58(15.1%)
P value	0.001			

Based on the body condition score of animal, the prevalence of the different genera of tick was identified with the highest prevalence of tick in poor, medium and good body condition respectively. The prevalence of body condition score in poor, medium and good was 13.9%, 31.8% and 18.4% respectively. The result showed that significance difference observed ( $p < 0.05$ ).

Table 5 the prevalence of cattle tick in Gozamine based in body condition

Body condition score	Total no of animal examind	Tick genra		
		Amblyomma	Hyalomma	Boophilus
good	133	39(29.3%)	16(12%)	15(11.3%)
medium	125	72(57.6%)	29(23.2%)	19(15.2%)
poor	126	78(61.9%)	33(26.2%)	24(19%)
total	384	189(49.2%)	78(20.3%)	58(15.1%)
P value	0.002			

## Discussion

The current study revealed that the overall prevalence of tick was 274(71.35%) in bovine examined in the study period. The tick was identified at genera level and was Amblyomma, Hyalomma and Boophilus, 189(49.2%), 103(26.6%) and 78(20.3%) respectively. The higher prevalence was recorded in Amblyomma which is comparable with Seyoum (2005) who reported 55.9%, 5.3 and 3.85 for Amblyomma, Hyalomma and Boophilus respectively in eastern Amara and second was Hyalomma which is comparable with Endale (2006) with prevalence of 31.4% in ambo region. This might be due to seasonal variation geographical location and time of collection. The prevalence of other genera was 20.3 for boophilus which is not comparable with Sebsebie (1998), Hilina (2010), Seyoum (2005) and Endale (2006) with rate of 2.6%, 5.4%, 5.3 and .14% in sedamo in and around mekele, eastern amhara and in abo area of Ethiopia respectively. This might be due geographical location.

The least genera was identified during the study period was boophilus which account for rates of 15.5% which is not comparable with study of Atakly (2007) and Endale (2006) with rate of 53.9% and 54.5% respectively.

Prevalence tick was 63.5% and 31.5% in extensive and semi intensive production system respectively which is agreed with the work of Heilina (2010) was reported 58.6% and 29.1 in in extensive and semi intensive production system. This due to the animal has not got chance to grazing area for cross breed where as extensive management animals have got chance to tick in grazing land.

Tick infestation has a great variation in sex in which females are more infected than male this due to females' immune system lowered during lactation and pregnancy. Higher prevalence was recorded in adult animal than young animal this due to young animal keep in the house which do not got the tick.

## Conclusion and recommendation

Gozamin woreda has large number of livestock which contribute for cash income, drought power, and milk and meat production. The present study revealed that different tick genera has been identified such Amblyomma, Hyalomma, and Boophilus which has a great effect on the production system of the woreda cattle which cause loss of body weight, decreased milk and meat production and hide and skin production. Based on the above conclusion the following recommendations are recommended.

- The woreda must be implemented appropriate control programme such regular spraying of cattle by using acaricides.
- Create awareness for the farmer for the control program of tick

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