



RESEARCH ARTICLE

SEASONAL PREVALENCE OF HAEMONCHOSIS IN BEETAL GOATS IN AN ORGANIZED FARM OF ASSAM

1*Bulbul KH, 2Baruah N. and 3Saleque A

Goat Research Station, Assam Agricultural University, Burnihat Assam-781022, India

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ABSTRACT

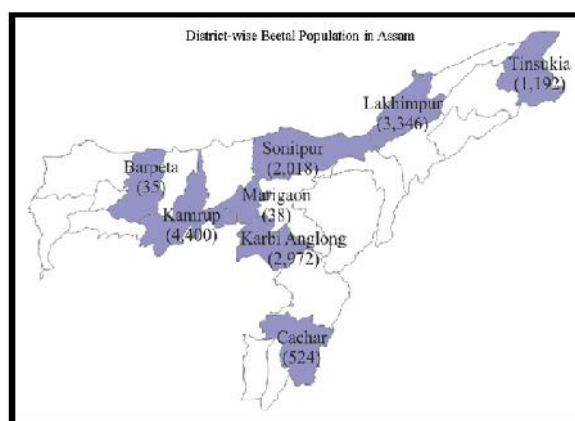
On the basis of 528 faecal sample examination it was perceived that the overall seasonal prevalence of haemonchosis were found to be highest in monsoon 111 (63.07%), Post monsoon 38 (43.19%), winter 32 (24.24%) and pre-monsoon 30 (22.73%) in Beetal goats of Goat Research Station Burnihat, Assam Agricultural University, Assam. The egg per gram (EPG) was estimated by the Modified Mc Master method and it was found to be significantly ($p < 0.01$) higher in monsoon season than other three seasons. The low level of haemonchosis was observed from December to March in declining intensity and then it gradually increased from the month of April onwards and reached highest peak in the month of August and for a second time decline from September onwards. The month wise assessment of prevalence of haemonchosis revealed that the highest prevalence was found to be in the month of August in adult 29 (85.29%), Kid 7 (70.00%) and both age group 36 (81.82%). The study also revealed that the highest faecal egg count was recorded during the month of August (overall mean EPG of 1545.45 ± 272.94) and lowest in the moth March (overall mean EPG 240.91 ± 98.88).

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INTRODUCTION

The Beetal goat is known not only for a good dairy breed, but also for its good quality meat and skin. There are about 304,223 Beetal goats scattered across the states of Punjab, Haryana, Jharkhand, Assam and Himachal Pradesh as per the 18th Livestock Census 2007 reports. Mostly Beetal breed of goat is predominantly found in the districts of Gurdaspur, Amritsar and Ferozpur in Punjab in its purest form, however, it has spread in other parts of Punjab and adjoining parts of Haryana (Tantia et al., 2001). The Beetal breed was brought to Assam to improve the Assam local goats for crossbreeding. Two varieties of goat were improved in Assam consists of (i) Beetal (50%) and Assam local goat (50%) and (ii) Beetal (75%) and Assam local goat (25%). In Assam, Beetal goat is distributed in some districts like Barpeta, Kamrup, Sonitpur, Morigaon, Karbi Anglong, Cachar, Lakhimpur and Tinsukia to up-grade the local goats and increase the rural economy. Due to variation in climatic condition various diseases viz. bacterial, viral, fungal, protozoan endo and ecto parasitic infection occurred in the Beetal goats which causes reduced the production and productivity. Among the parasitic diseases haemonchosis is one of the most important diseases of goat in terms of causing both morbidity and mortality which reflects anaemia, anorexia, diarrhoea, reduced body weight gain etc. (Bulbul et al., 2010) The climatic condition of Assam is very much congenial for propagation and dissemination of *Haemonchus* spp. throughout the year. So keeping the fact

above a meticulous study was conducted to assess the seasonal prevalence of *Haemonchus* spp. in Beetal goats of organized farm of Assam.



Map: Beetal goat in Assam

Photo Source: <http://www.icar.org.in/node/4246> and
<http://www.goatworld.com/breeds/beetal.shtml>

MATERIALS AND METHOD

Place of work: The careful study was carried out from December 2013 to November 2014 in Assam on Beetal breeds of goat in Goat Research Station (GRS) of Assam Agricultural University, Burnihat. The GRS is an organized goat farm in which goat being managed under permanent grazing systems.

*Corresponding author: **Bulbul KH**

Goat Research Station, Assam Agricultural University, Burnihat Assam-781022, India

Period of time: The one year study period from December 2013 to November 2014 was classified into four seasons viz. winter (December, January and February), Pre-monsoon (March, April and May), Monsoon (June, July, August and September) and Post-monsoon (October and November) in Assam to evaluate the seasonal prevalence of haemonchosis in Beetal goats of organized farm of Assam.

Sample collection: Randomly a total of 528 pelleted faecal samples were collected through per rectal and hand was washed thoroughly after each sampling to avoid contamination. Collected each sample was put into polythene bag bearing a number corresponding to tag number of the goat. The presence of eggs of *Haemonchus sp* was determined by the method of direct smear followed by floatation (saturated salt solution specific gravity 1.125) from 34 adults and 10 kids (below 1 year of age) in every month

To estimate the eggs per gram (EPG) from positive samples Modified Mc Master Method were performed as described by HMSO (1979).. The infective larvae (L₃) were recovered after ascertaining the positive freshly collected pelleted faecal sample of Beetal goats by the method of Roberts and O’Sullivan (1949) and stained with 2% Lugol’s solution to identify the egg on the basis of larval feature. Simple statistical analysis namely mean, percent, standard error and Student’s t-test were calculated to draw the inferences (Snedecor and Cochran, 1994).

RESULT AND DISCUSSION

The recovered infective larvae (L₃) were found to be narrow rounded head and medium offset tail sheath and 16 number intestinal cells which is the character of *Haemonchus spp*. The overall seasonal prevalence of haemonchosis were found to be highest in monsoon 111 (63.07%), Post monsoon 38 (43.19%), winter 32 (24.24%) and pre-monsoon 30 (22.73%) in Beetal goats of Goat Research Station Burnihat, Assam Agricultural University, Assam as reported by Bulbul et al. (2011).

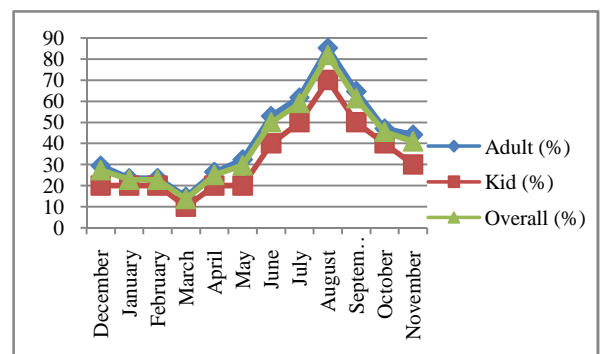
Table1 Prevalence of haemonchosis in Beetal goats in organized farm of Assam

Month	Age Group		Overall
	Adult	Kid	
December	10 (29.41)	2 (20.00)	12 (27.27)
January	8 (23.53)	2 (20.00)	10 (22.73)
February	8 (23.53)	2 (20.00)	10 (22.73)
March	5 (14.71)	1(10.00)	6 (13.64)
April	9(26.47)	2 (20.00)	11 (25.00)
May	11 (32.35)	2 (20.00)	13 (29.55)
June	18 (52.94)	4 (40.00)	22 (50.00)
July	21 (61.76)	5 (50.00)	26 (59.09)
August	29 (85.29)	7 (70.00)	36 (81.82)
September	22 (64.71)	5 (50.00)	27 (61.36)
October	16 (47.06)	4 (40.00)	20 (45.45)
November	15 (44.11)	3 (30.00)	18 (40.91)
Overall	172 (42.16)	39 (32.50)	211 (39.96)

Figures in the parenthesis indicates per cent prevalent, (p<0.01)

Similarly in adult 90 (66.18%), 31 (50.00%), 26 (25.49) and 25 (24.51%) and in Kids 21 (52.50%), 7(35.00%), 6 (20.00%) and 5 (25.00%) of haemonchosis were recorded in monsoon, post-monsoon, winter and pre-monsoon season. The egg per gram

(EPG) was found to be significantly (p<0.01) higher in monsoon season (1009.66 ± 181.33). In other three seasons i.e. in post monsoon, pre-monsoon and winter the EPG recorded were 950.00 ± 162.81, 357.58 ±89.99 and 281.06 ± 97.26 which do not differ with these three seasons. The climate of this reliable study area was found to be very much pleasant with an average minimum temperature 20.29°C and maximum 29.18°C, humidity 79.46 per cent and rainfall of 87.90mm. The average rainfall was found to be highest in the month of July (198.4 mm) and lowest in the month of January (21.7 mm). The high rainfall was said to provide suitable molarities of the salt in soil, which was an important factor for ecdysis (Soulsby, 1966). It also helped in larval dispersion on the herbage, which increases the chance of contact between host and larvae in monsoon. It was observed that haemonchosis was non-significantly higher in adults than the kids in all the season. The overall mean EPG of *Haemonchus spp*. was found to be gradually peaked from pre-monsoon season. This might be due to “spring rise phenomenon”, where the overwintered larvae became active for getting suitable environment. The low level of haemonchosis was observed from December to March in declining intensity and then it gradually increased from the month of April onwards and reached highest peak in the month of August and for a second time decline from September onwards. The month wise assessment of prevalence of haemonchosis revealed that the highest prevalence was found to be in the month of August in adult 29 (85.29%), Kid 7 (70.00%) and both age group 36 (81.82%). The lowest prevalence was found to be in the month of March in adult 5 (14.71%), Kid 1(10.00%) and both the age group 6 (13.64%). The overall prevalence of haemonchosis was observed 42.16, 32.50 and 39.96 per cent in adult, kid and both the age group of goats respectively (Table1). The highest prevalence was found to be in the month of August in adult 29 (85.29%), Kid 7 (70.00%) and both age group 36 (81.82%).



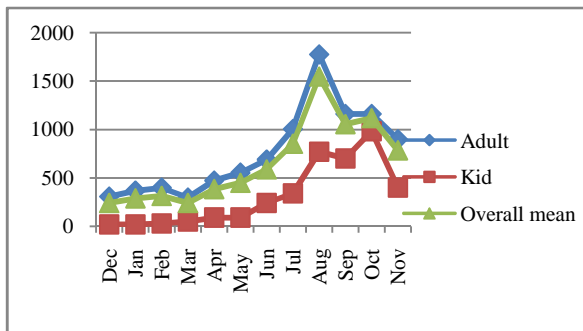
Graph1 Percent prevalence of haemonchosis in Beetal goat of an organized farm of Assam

Month wise assessment of faecal egg count of *Haemonchus spp*. in different age groups of Beetal was found to be highest in the month of August (table2) with the an overall mean EPG of 1545.45 ± 272.94 and lowest in the moth March with overall mean EPG 240.91 ± 98.88. In the present investigation it was also observed that adult goats harboured more *Haemonchus spp*. than the kids, which might be due to more exposure of all adult goats to herbage than that the kids that are usually kept intensively. This finding was in agreement with Maingi et al. (1993), Dorney et al.(1995), Talukder(1996) Bondopadyay (1999) and Kalwaghe (2003).

Table 2 Egg Per Gram (EPG) of *Haemonchus* spp. in Beetal goat of an organized farm of Assam

Age Group	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	't' Value
Adult	305.88 ± 98.74	367.65 ± 141.78	397.06 ± 145.61	297.06 ± 98.88	470.59 ± 131.33	552.94 ± 156.57	688.24 ± 187.76	1002.94 ± 257.63	1773.53 ± 335.57	1158.88 ± 271.17	1158.88 ± 271.14	897.06 ± 198.32	7.09**
Kid	20.00 ± 13.33	20.00 ± 13.33	30.00 ± 21.34	50.00 ± 34.16	90.00 ± 37.86	90.00 ± 40.69	240.00 ± 111.75	340.00 ± 149.96	770.00 ± 275.30	700.00 ± 242.21	980.00 ± 351.13	400.00 ± 175.75	
Overall mean	240.91 ± 78.74	288.64 ± 141.78	313.64 ± 145.61	240.91 ± 98.88	384.09 ± 104.91	447.73 ± 124.46	586.36 ± 149.40	852.27 ± 205.49	1545.45 ± 272.94	1054.55 ± 211.42	1115.91 ± 222.68	784.09 ± 160.63	

** , P<0.01



Graph 2 Egg Per Gram (EPG) of *Haemonchus* spp. in Beetal goat of an organized farm of Assam

Gupta *et al.* (1987) reported the highest and lowest incidence of *H. contortus* during July to October and from March to June, respectively, in the present investigation, it was observed that infection with *Haemonchus* spp. mostly recorded during the period of July, August, September and October and this higher EPG of *Haemonchus* spp. might be either due to favourable environmental condition during the period, which were conducive for the development of exogenous stage of parasites or due to pre-patent period and increased larval population. This finding also in conformity with that of Misra *et al.* (1974), Singla (1995) and Rajkhowa and Hazarika (2001).

CONCLUSION

Haemonchosis, parasitic disease occurred in Beetal goat through out the year, but mostly found to be highest in monsoon followed by Post monsoon, winter and pre-monsoon in organized Beetal goats farm of Goat Research Station Burnihat, Assam Agricultural University, Assam. The low level of haemonchosis was observed from December to March in declining intensity and then it gradually increased from the month of April onwards and reached highest peak in the month of August and for a second time decline from September onwards. The month wise assessment of prevalence of haemonchosis revealed that the highest prevalence was found to be in the month of August in both adult and kid. The study also revealed that the highest faecal egg count was recorded during the month of August and March. So the deworming is to be needed in the Pre-monsoon season and Post-Monsoon season to save the goats.

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