Original Research

Factors Affecting Mortality in Assam Hill Goat under Field Condition

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Abstract

The data utilized in the present study were from the mortality record of goat maintained at the AICRP on goat improvement, AAU, Goat Research Station, Burnihat during the period from April, 2009 to March, 2015. The overall mortality was found to be 9.09%. The highest mortality was recorded in the age group between 3 to 6 months (12.45%), which decreased with the advancement of age and the adult mortality was found to be 5.84%. The mortality rate was higher in male (10.66%) than female (7.89%). The mortality was the highest (10.33%) in winter followed by south west monsoon (9.64%), summer monsoon (8.74%) and post monsoon seasons (7.59%). Among the diseases, mortality due to pneumonia (22.06%) was found to be the highest, followed by Haemonchosis (16.29%). Predators were found to be one of the important causes of mortality (14.04%) in Assam hill goats in the adopted villages under the present study.

Key words: Assam Hill Goats, Haemonchosis, Mortality, Pneumonia

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Introduction

Goat rearing has been the integral part of life in the rural villages of Assam. Goats are considered as the fixed deposits for the poorest of the poor supplying cash as and when necessary by virtue of their ready market demand (Sahoo *et al.,* 2004). The Assam Hill Goats are known for their small body size with high adaptability in the geo-climatic condition of the region which make them successful component of the traditional agricultural system. However, mortality due to various factors limits the productivity and

profitability of goat in field condition (Kumar *et al.*, 2003). Several studies on disease dynamics on goat under field condition had been reported by various workers (Dohare *et al.*, 2013, Tudu and Goswami 2015). Some of the important factors are age, seasons, sex, locations among many others. Knowledge on effect of mortality of these factors will help to formulate strategic preventive measures and reduce the economic loss to the farmers. However, paucity of data on the factors affecting the mortality in Assam hill goat under field condition limits development of managemental strategies, thus inflicting heavy losses to the farmers. Hence, the present study was conducted to investigate the various factors affecting the mortality in Assam hill goat under field condition.

Materials and Methods

Data utilized in the present study were from the mortality record maintained under All India Coordinated Research project on goat improvement (Assam Hill Goat Field Unit) from April, 2009 to March, 2015. Under the project there are 4 adopted villages in three districts. All the animals of different villages under study practiced uniform pattern of feeding and management. The animals were housed in raised platform floored houses (*Chang ghar*). The adult animals were freed to graze in the fields from 8 am in the morning to 5 pm in the evening. Along with grazing, however, they were also given formulated concentrated mixture @ of 100 to 200 gm /head/day depending upon the sex, age, other physiological condition of the body and also on the availability of grass in the grazing areas. The kids were allowed for suckling twice a day in the morning and evening till they were weaned at the age of 3 months. All the animals under the study were vaccinated for enterotoxaemia and peste des petits ruminant (PPR) and deworming was done at regular interval. During the period of investigation, a total of 8830 animals were reared, which also included the animals born during the period. Out of these, a total of 713 animals died due to various reasons. The factors affecting the mortality under the study was in relation to the age, sex, season of birth, various diseases and location of maintenance of the animals. The records were directly collected from the farmer's house and were maintained in the mortality register. Post mortem of the dead animals were done within 24 hours of death.

The age of the animals were divided into four groups, viz. 0-3 months, 3-6 months, 6-12 months and adult; the sex of the animals being male and female. The calendar months were divided into four seasons based on climatic reports, viz. summer monsoon (March to May); south west monsoon (June to September); post monsoon (October and November) and winter (December to February). The location of maintenance was the four adopted villages under the project, viz. Batabari under Mongoldoi district, Tetelia under Kamrup (Metro), Nahira under Kamrup (Rural) and Tepesia under Kamrup (Metro) districts of Assam. The calculation of percentage of mortality was considered on the basis of total kids born during the period under study. The significance of various factors was tested by chi-square test (Amble, 1995).

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Results and Discussion

The overall mortality rate was found to be 9.09 per cent (Table 1), kid and adult mortality per cent being 10.99 and 6.51 respectively.

Dohare *et al.* (2013) recorded an overall mortality rate of 10.20 % in goats reared under village conditions of Madhya Pradesh. The age of the goat had significant affect ($P < 0.01$) on the mortality and it was observed to be the highest in the age group of 3 to 6 months (12.45%) followed by the age of 0 to 3 (10.66%) and 6 to 12 months (8.05%) respectively. Das *et al.*, 1997 also reported similar observation of high mortality at the age group of 3 to 6 months of age in Assam local goat. The probable reason for high mortality in this particular group may be due to change of diet from milk to roughage feeding. The effect of sex of the animal had highly significant ($P<0.01$) effect on mortality on Assam hill goats and the mortality rate was 10.66% in male and 7.89% in female. Malik *et al.* (1990) also observed similar mortality rates in male and female kids in Beetal and Black Bengal goats. Das *et al.* (1997) however, found mortality in female to be higher than the male. Sawargaonkar *et al.* (1996) observed higher mortality in indigenous and crossbred caprine females and males. Kaul *et al.* (1991) reported the sex differences over two farms and also within one farm were significant at one per cent level in Rambouillet rams. In the present study it was observed that the season had no significant effect on the mortality of the animals. However, the animals in the winter season showed the highest mortality (10.33 %) which was followed by the mortality of the animals in the south west monsoon (9.64%), summer monsoon (8.74%) and the lowest being in the post monsoon season (7.59%). Similar observation was also recorded by Tudo and Goswami (2015) in Black Bengal goats under village conditions of Nadia district of West Bengal. However, in contrast to the present finding Bhagat and Kumar (2016) found highest mortality in summer (4.66%) followed by spring (4.24%), autumn (3.21%) and winter (2.52%). Seasonal variation in the mortality rate may be due to stress of weather which predisposes the animals to various infectious diseases. Moreover, winter is the lean season in Assam with severe shortage of green fodders and majority of the animals under open grazing system suffers from negative energy balance. The location of rearing the animals also had significant effect on the animals. The mortality rate of animals of Nahira of Kamrup (Rural) had the highest rate (11.45%), followed by the animals of Tetelia of Kamrup (Metro) (10.53%). Difference in the mortality rate showed by the different locations might be due to the differences in implementing the managemental and rearing practices, as there is a difference in literacy rate among the beneficiaries of various locations.

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Table 1: Factors affecting the mortality in Assam hill goat under field condition

Causes	Age (months)				Sex		Season				Location				
	0-3	03-Jun	06-Dec	>12	Male	Female	Summer Monsoon	South West Monsoon	Post Monsoon	Winter	Batabari	Tetelia	Tepesia	Nahira	Total
Colibacillosis	17.27 (38)	6.9 (4)	6.679 (3)	7.89 (6)	18.32 (37)	7.11 (14)	11.34 (11)	17.65 (18)	15.85 (13)	7.63 (9)	13.25 (11)	13.14 (18)	12.26 (13)	12.33 (9)	12.78 (51)
Pneumonia	28.18 (62)	8.62 (5)	20 (9)	15.79 (12)	18.32 (37)	25.89 (51)	13.49 (13)	20.59 (21)	18.29 (15)	33.05 (39)	20.48 (17)	22.63 (31)	23.58 (25)	20.54 (15)	22.06 (88)
Gen. Weakness	5 (11)	15.52 (9)	13.33 (6)	14.47 (11)	7.92 (16)	10.66 (21)	9.28 (9)	7.84 (8)	8.54 (7)	11.02 (13)	14.46 (12)	8.03 (11)	7.55 (8)	8.22 (6)	9.27 (37)
Septicemia	1.36 (3)	10.34 (6)	4.44 (2)	2.63 (2)	4.46 (9)	2.03 (4)	6.19 (6)	3.92 (4)	2.44 (2)	0.85 (1)	8.43 (7)	2.19 (3)	0.94 (1)	2.74 (2)	3.26 (13)
Cold Stroke	14.09 (31)	8.62 (5)	6.67 (3)	6.58 (5)	9.41 (19)	12.69 (25)	8.25 (8)	7.84 (8)	13.41	14.41 (17)	9.64 (8)	10.22 (14)	8.49 (9)	17.81 (13)	11.03 (44)
Haemonchosis	10 (22)	1.72 (16)	20 (9)	23.68 (18)	14.36 (29)	18.27 (36)	21.65 (21)	16.67 (17)	15.85 (13)	11.86 (14)	15.67 (13)	19.71 (27)	16.98 (18)	9.59 (7)	16.29 (65)
N.A.D.	3.18 (7)	5.17 (3)	4.44 (2)	7.89 (6)	5.45 (11)	3.55 (7)	7.22 (7)	4.9 (7)	3.66 (3)	2.54 (3)	8.43 (7)	4.38 (6)	1.89 (2)	4.11 (3)	4.51 (18)
Predation	15 (33)	13.79 (8)	17.18 (8)	9.21 (7)	13.37 (27)	14.72 (29)	19.59 (19)	11.76 (12)	8.54 (7)	15.25 (18)	6.02 (5)	13.14 (18)	17.92 (19)	19.18 (14)	14.04 (56)
Others	5.91 (13)	3.45 (2)	6.67 (3)	11.84 (9)	8.42 (17)	5.08 (10)	3.09 (3)	8.82 (9)	13.41 (11)	3.39 (4)	3.61 (3)	6.57 (9)	10.38 (11)	5.48 (4)	6.77 (27)
Total Died	220	58	45	76	202	197	97	102	82	118	83	137	106	73	399
Total animals present	2063	466	559	1301	1895	2494	1109	1058	1080	1142	1326	1301	926	836	4389
Percentage (%)	10.66	12.45	8.05	5.84	10.66	7.89	8.74	9.64	7.59	10.33	6.25	10.53	11.45	8.73	9.09
p-value	0				0		0.16				0				
Chi-square value	27.16**				9.03**		5.10^{NS}				20.43**				

*Figure in parenthesis are number of observations, NS= Non significant, *Significant at 1% level of significance*

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Pneumonia (22.06 %) emerged as the major causes of mortality in Assam hill goats followed by Haemonchosis (16.29%). The age, sex and season has the significant effect (P<0.01) on the occurrence of pneumonia highest (28.18 %) being found in the age group of 0 -3 months, female goats (25.89 %) and in winter season (33.05 %). Similar findings were also reported by Poonia and Malik (2012) in Beetal goats. Higher mortality in goats due to pneumonia was also reported by Mittal (1976), Sawargaonkar et al (1996) and Emikpe *et al*. (2013). The present finding reveals that young kids are highly susceptible for pneumonia specially when born at winter season. The susceptibility in young animals may be attributed to absence of maternally derived antibodies or stress associated with early weaning (Emikpe and Akpavie, 2011). Sufficient colostrums feeding, adequate warming in the kid pens with proper ventilation may reduce the mortality to a substantial level. Predation (14.04%) was found to be another important cause of mortality in the animals of the adopted villages. Similar cases of predation (9.1 %) were also reported by Ershaduzzaman *et al*. (2007) at Madhupur tract of Bangladesh.

The present study revealed that overall mortality averaged at 9.09 per cent. Kids between the age group of 3 to 6 months are highly susceptible and the mortality decreases with the advancement of age. Mortality was highest in winter season and pneumonia followed by haemonchosis emerged to be the highest contributors of mortality in the present study. Plan to boost immunity of the kids after birth followed by strict hygienic conditions with warming system in the kid pen and adopting integrated parasitic control measures will help farmers to reduce mortality in the field condition.

Conclusion

Please add

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