

Production System of Assam Hill Goats and their Performance Under Field Condition

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Abstract

An investigation was undertaken to study the farming system of Assam Hill Goats (AHG) under field condition. A total of 3745 goats maintained by 311 number of beneficiaries during 2009 to 2019 in five clusters (18 villages) of different districts, viz., Kamrup (Metro), Kamrup (Rural), Darrang, and Morigaon of Assam, India adopted under "ICAR - All India Coordinated Research Project on Goat Improvement", Goat Research Station, Assam Agricultural University, Burnihat were utilized for the study. The percentage of marginal (land holding of <2 acres), small (2 to 5 acres) and medium (5 to 10 acres) farmers was 53.47, 26.07 and 20.46 respectively. Majority (61.41%) of the goat farmers were from other backward class (OBC), followed by schedule tribes (ST) (22.83 %) general (12.54 %) and schedule caste (SC) (3.22 %). The average flock size was 4.03 with a range of 2 to 19. The management system followed for rearing of the goats was found to be semi-intensive system. The average body weight of AHG was recorded to be 1.24±0.01, 5.29±0.02, 8.03±0.04, 10.73 ±0.06 and 13.94±0.09 kg at birth, 3, 6, 9 and 12 months of age respectively. The weaning age of goat was at the age of 75 to 87 days. The age at first mating (days), weight at first mating (kg), age at first kidding (days), weight at first kidding (kg), first kidding Interval (days), service period (days) and gestation period (days) were 256.76±7.01, 10.55±0.07, 405.07±0.07, 14.06±0.09, 225.99±7.03, 79.91±7.86 and 147.31±1.01 respectively. The daily milk yield (gm) of AHG was recorded to be 114.33±1.50 with a range of 82.05-181.17 gm. Assam Hill Goats are small in body size and are mainly reared for meat purpose.

Keywords: Assam Hill Goat, Production System, Performances, Reproduction, Socio-economic Condition

Introduction

Goat has been an integral part of all sections of the people of Assam since ancient time. The Assam Hill Goat (AHG) has a close association with religious, cultural and folk tradition in Assam. North-Eastern India is known for its diversity in the field of agriculture and animal husbandry with different genetic groups of livestock and poultry. Assam Hill Goat, locally known as Assam Local is the predominant species of goat found in the state. They are primarily white and white with black back line in colour. The animals are highly prolific, twinning is common and triplets are also not uncommon. The breed is mainly maintained for meat purpose and the meat is of high quality with good flavor. As per the 20th Livestock Census, the population of goat in the state of Assam was 43.17 lakhs. The animal is small in size, docile in nature, easily manageable by children or women. For a marginal farmer, goat act as economic buffer and provide economic security during crisis.

The present study examines the performances of AHG in respect to the socio-economic conditions of the farmers, husbandry and feeding practices, production performance, reproduction performances, incidence of diseases, mortality pattern, health protection programmes and income from the flocks under field conditions in the adopted villages of the project.

Material and Methods

Survey Procedure

The survey was conducted in five adopted clusters with 18 villages of four districts under the project entitled “ICAR-All India Coordinated Research Project on Goat Improvement” implemented at Goat Research Station, Assam Agricultural University, Burnihat, Assam during 2009 to 2019.

The required information was collected from a total of 311 farmers through standard questionnaires provided by the Indian Council of Agricultural Research-Central Institute for Research on Goats (ICAR-CIRG), Makhdoom, Uttar Pradesh, India. Personal interview with the owner were also done. The data in respect to body weights, reproductive traits, incidence of diseases and mortality were collected and recorded from those fields during 2009 to 2019 and then compiled, computed and tabulated by using standard procedures. The data were analysed using MS-Excel and descriptive statistics was used.

Results and Discussion

Socio-Economic Status of the beneficiaries

Of the 311 respondents in the survey, the percentage of marginal (land holding of <2 acres), small (2 to 5 acres) and medium (5 to 10 acres) farmers was recorded to be 53.47, 26.07 and 20.46 respectively. Majority (61.41%) of the goat farmers were from OBC, followed by ST (22.83%), general (12.54%) and SC (3.22%). During the study, it was observed that goat farming or rearing among the farmers is a secondary source of income. The main occupation of the farmers is agriculture and some of them are daily wage labourers. In addition to goats, the villagers also rear cattle, buffalo, pigs, poultry, etc. The study also revealed that two third of the farmers were illiterate and the others were educated up to a minimum of primary school standard.

Husbandry Practice

Flock Size and Sex Ratio for Breeding

The farmers in the adopted villages under the study maintains a flock which varies from small (2-5 numbers), medium (6-15 numbers) and large (>15 numbers). The overall average flock size was recorded to be 4.03 with a range of 2 to 19. The sex ratio of breeding male to females maintained in the clusters for breeding was found to be 1:20. The breeding system followed in the field condition is natural service under controlled breeding system.

Rearing System

Semi intensive system of management was followed for rearing of the goats in the adopted villages. The goats were

allowed for grazing in the open field for around 7-8 hours. When the animals return from grazing, they were provided with *ad libitum* clean water. They were also fed with locally available tree leaves during scarcity whenever there is shortage of greens in pasture lands. Occasionally some farmers feed their goat small amount (around 100 to 150 gm) of concentrate feeds which consist of maize, wheat bran, rice polish, ground nut cake, mineral mixture and salt along with kitchen waste (vegetable cuts) in the evening. It was found that the AHG are usually taken care by the women folk or children. This finding was in congruence with the finding of Zeshmarani *et al.* (2007), who in their study on Assam local goats, observed that the animals were kept in semi-intensive condition and allowed to graze from 9.00 am to 4.00 pm, with supplementation of concentrate in the morning at 8.00 am and *ad libitum* drinking water at all times. In another study, Dhanda (2003) found that in India, the most common system for managing goats is extensive grazing of flocks on natural lands with or without nutritional supplements.

In the areas under the study, goats were housed in raised platform type of shed made up of locally available building materials like bamboos, wood and hays. In the sheds dual form of ladder cum door were used to minimize the cost of construction.

Performance

Growth

The average body weight of AHG in the present study was recorded to be 1.24 ± 0.01 , 5.29 ± 0.02 , 8.03 ± 0.04 , 10.73 ± 0.06 and 13.94 ± 0.09 kg at birth, 3, 6, 9 and 12 months of age respectively and the weaning age of goat was recorded as 75 to 87 days. The daily weight gain (gm/day) of the goats were observed to be 45, 30, 30 and 36 gm per day respectively at birth to 3 months, 3 to 6 months, 6 to 9 months and 9 to 12 months of age in the goats under the study. Nahardeka *et al.* (2001) and Doley *et al.* (2018) reported similar finding to the present study. Nahardeka *et al.* (2001) reported that the body weight of Assam local goats at the age of 6, 9 and 12 months of age was 7.5 ± 0.2 , 9.4 ± 0.3 and 11.8 ± 0.3 kg respectively whereas Doley *et al.* (2018) reported that the weight of Assam local at birth, at the age of 3, 6, 9 and 12 months was 1.46 ± 0.05 , 4.68 ± 0.12 , 8.75 ± 0.15 , 11.97 ± 0.32 and 15.32 ± 0.11 kg respectively. Zeshmarani *et al.* (2007), also observed a similar weaning age (3 months) Assam local goats. Dhanda (2003), reported that the rate of growth in goats can vary from around 50 g/day for the small tropical breeds (e.g., Indian Barbari, Indonesian Kambing) to over 200 g/day for large European dairy breeds (e.g., Saanen, Alpine).

Reproduction

During the study period, twinning and triplet was recorded to be very common. The age at first mating (days), weight at first mating (kg), age at first kidding (days), weight at first kidding (kg), first kidding Interval (days), service period (days) and gestation period (days) were observed as 256.76 ± 7.01 , 10.55 ± 0.07 , 405.07 ± 0.07 , 14.06 ± 0.09 , 225.99 ± 7.03 , 79.91 ± 7.86 and 147.31 ± 1.01 respectively. The lifetime number of kidding and the conception rate were recorded to be 8.56 ± 1.44 and 72% respectively. The litter size in the AHG was found to be 1.58. Zeshmarani *et al.* (2007) observed that the age at puberty, age at conception, age at first kidding and gestation period in Black Bengal, Assam hill and Manipuri non-descript goats were 190 ± 1.89 , 264 ± 1.68 and 317 ± 1.7 ; 220 ± 2.43 , 291 ± 1.92 and 344 ± 2.27 , 366 ± 2.41 , 441 ± 2.28 and 496 ± 2.43 and 145 ± 0.41 , 148 ± 0.37 and 152 ± 0.49 respectively. The present findings regarding the age at puberty and age at first kidding was in agreement with Mayenuddin and Waheb (1989) and Ahamed (1992) in Black Bengal goats while age at first conception and gestation period was similar to the finding of Mia *et al.* (1996). However, Nahardeka *et al.* (1995) observed a higher value for age at conception and age at first kidding than the present findings and Das and Goswami (1992) reported a lower length for gestation period in Assam Hills breed. The findings of Doley *et al.* (2018) in respect to age at first service (298.17 ± 3.87 days), age at first kidding (488 ± 2.46 days), kidding interval (241.52 ± 3.09 days) was more but the gestation period (147.47 ± 0.47 days) was, however, is in agreement of the present study.

Health Maintenance Programmes

Prophylactic Measures

During the study, it was recorded that the major constraints faced by the farmers in rearing of AHG were infestation by both ecto and endo-parasites. The animals are dewormed starting at the age of three months. Animals in the area under study were vaccinated against Goat Pox (GP), Foot and Mouth Disease (FMD) and Enterotoxiemia (ET) twice

a year starting at the age of six months, however, vaccination against Peste des Petits Ruminants (PPR) was done once in three years. Present recordings were in accordance to that of the findings of Zeshmarani *et al.* (2007) who observed that routine deworming was done on the basis of faecal examination and all the animals were vaccinated against PPR, GP, FMD and ET.

Mortality Pattern

During the study period, the major causes of mortality among AHG were recorded to be pneumonia (24.2%), followed by predation (16.37%), colibacillosis (14.95%), cold stroke (11.03%), general weakness (9.61%), pneumo-enteritis (7.47%) and others. The average percentage of mortality in kids (0-6 months), young (6-12 months) and adult (more than 12 months) in AHG were observed as 4.70, 1.23 and 1.58 percentage respectively. The overall mortality among those animals was observed to be 7.50%. However, Sarmah *et al.* (2018), reported pneumonia (22.06%) to be major causes of mortality followed by Haemonchosis (16.29%) in AHG. They further recorded highest mortality in the age group of 3-6 months (12.45%) followed by adult mortality (5.84%), with an overall mortality of 9.09% in the breed.

In the present study, mortality was recorded as 32.38%, 31.32%, 24.20% and 12.10% respectively during south west monsoon (June – September), winter (December – February), post monsoon (October- November) and summer monsoon (March-May). Sarmah *et al.* (2018), however, recorded that the mortality was highest in winter (10.33%) followed by south-west monsoon (9.64%), summer monsoon (8.74%) and post- monsoon season (7.59%).

Conclusion

Assam Hill Goats are small breed of goat found in the North-Eastern region of the country and are mainly reared for meat purpose. Multiple birth is very common in this breed of goat. Majority of the goat farmers are marginal farmers with land holding of <2 acres (53.47%) followed by small (26.07%). 61.41% of the goat farmers were recorded to be from OBC. Semi intensive management system is followed for rearing of the goats.

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Conflict of Interests

There is no conflict of interest.

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