Housing profile and feeding management of Goats in Banskhali Upazila of Chattogram, Bangladesh

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Abstract

This study provided information on housing, feed and feeding management, mating system and healthcare management of goats at rural villages of Banskhali Upazila under Chattogram district in Bangladesh. Black Bengal goat (56%) is the most preferred breed in this area. Most of the farmers (84%) reared goats in semi-intensive systems, and few of them had goat houses (16%), providing bedding materials during the winter season. Most of the farmers used roadside grass (28%), and few of them provided concentrate to the goats. Most of the farmers grazed their goats. One-fourth of the farmers vaccinated their goats. Most of the farmers (92.79%) used anthelmintics regularly. Farmers breed their goats by breeding bucks, and they did not use artificial insemination (AI) for their does. Village veterinary doctors were the main source of technical support. The above discussions might be indicative that farmers should be more careful about housing, feeding as well as about health care and breeding buck keeping issues.

Chapter I: Introduction

Goats are known as the poor man cow because of their significant economic contribution to landless and marginal farmers. Milk is easily digested, and it provides an extra source of revenue. Excessive equipment and hard labour are not required for goat care. The majority of Bangladeshi rural families supplement their income by raising goats (Amin, 2000). The goat is the most promising form of income through which women can readily contribute to the family income. Many of the landless and marginal farmers own 1-5 goats and contribute economically to the subsistence farmers in mixed farming systems (Husain, 1993). Goat breeding is the most efficient way for women to earn money. The status of women and the socioeconomic development of any country are inextricably linked. for ensuring a socio-economic equilibrium. Goat rearing being the main means of survival for many women in remote villages, there is a need to develop a scientific method of goat rearing without causing an adverse impact on the environment (Choudhury et al., 2012). Interestingly, 20 % of the population is directly and 50 % is partly dependent on the livestock sector in Bangladesh (Draft Sixth Five Year Plan,2010). In order to boost a country's economy, women must participate in development initiatives. Goats supply 20 million square feet of top-quality skins, which are derived from Black Bengal goats. In 2012, total leather and leather goods export revenues accounted for 4.31 per cent of overall export earnings (BBS, 2021). Contribution to employment and food and nutrition security. Goat farming can help with income generation and poverty alleviation. The goat is a suitable animal for farming in rainfed areas where crop production is unpredictable and large ruminant rearing is difficult due to acute feed and fodder scarcity. Because of its lower initial investment, low input requirements, higher prolificacy, early sexual maturity, and ease of sale, goat farming provides distinct economic and management benefits over other livestock species Goats are generally reared as scavengers by the rural farmer in Bangladesh (Huq, 1990) In an undesirable area, goats can survive by eating accessible shrubs and trees. Goats are kept as a source of supplementary revenue and as insurance against crop failure in pastoral civilizations in the south Asian region. Furthermore, the rural poor who cannot afford to keep a cow or a buffalo find goats to be the finest alternative source of additional socioeconomic importance. Despite the fact that goat farming has the potential for high economic rewards, goat farmers' income is poor. The main reason is that the goat's potential in South Asian countries has never been effectively acknowledged by policymakers and scientists, despite the fact that South Asia has about one-third of the

world's goat population. Because of feed scarcity and a lack of adoption of modern technologies and management practices, goat productivity is low under the current traditional production system. In many tropical countries, the productivity of goats is often poor and has been related to disease, nutrition, genotypes and management (Devendra and Burns,1983). However, in order to realize this potential, the current goat production system's productivity and profitability must be significantly enhanced. In underdeveloped countries, particularly in Asia and Africa, goats are a valuable and potential animal genetic resource (Afroz, 2007). The world's goat population was 767.93 million. Asia had the most goats (63.66 per cent of the global population), with China, India, Pakistan, and Bangladesh accounting for 35.36%, 25.46%, 10.79%, and 7.05%, respectively. These countries accounted for roughly 71.61% of Asia's goat population. Among Asiatic countries, Bangladesh has the fourth greatest goat population (FAOSTAT, 2020). Goats are the second most common ruminant species in Bangladesh. In Bangladesh, goats are owned by 55, 91,493 households, or 31.36 percent of the population. The average number of goats per family is 2.31, with the majority of goats being raised by landless, small, and medium farmers. Goats play a unique role in Bangladesh's poorest communities, and they have the potential to raise them out of poverty and into wealth (Amin et al, 2001). The two most significant management strategies for exploring the production potentialities of livestock, particularly goats, are feeding and breeding. Goats are multi-purpose animals that can provide meat, milk, hide, fiber, and manure, as well as being very adaptable in nature and able to survive in a variety of environments. Furthermore, because of their tiny size, goats do not require a large amount of space for housing, and the risk of goat farming is reduced because they are resistant to most infectious diseases (Aziz, 2010). Traditional (53.75 percent) and commercial (60 percent) goat farming systems piqued the curiosity of middle-aged persons. Males (100%) dominated the commercial system, whereas females (63.75%) dominated the traditional farming system. The majority of traditional farming farmer dwellings (76.25 percent) had clay walls and no paved floors (71.25 percent). In the commercial farming system built their farms separate from their homes, while traditional farming farmers; houses (77.25 percent) were tied to their own homes without sufficient direction and ventilation.85 percent of traditional farmers used a tethered feeding method to offer roadside and fallow land grasses, while all commercial farmers grew fodder and fed it using a cut and carry feeding technique after processing (Bhikya et al., 2021). Many traditional farming producers (85%) did not feed their goats any form of concentrate mixture. All goats were fed concentrate feed either homemade or market-purchased

prepared feed under commercial farming methods. Tube well (48%) and pond (49.25%) drinking water sources were interchangeable in traditional farming, whereas tube well water was the primary source in commercial agricultural practices (Hossain et al., 2017). As the goat makes a significant economic contribution to rural people, particularly to poor families, this study was undertaken to acquire updated information. A few major objectives of this study were

- ❖ To learn about the present status of goat housing at Banskhali Upazila.
- ❖ To collect information about feeds and feeding of goats at Banskhali Upazila.
- ❖ To know about health care status and to update information about the mating system of Black Bengal goats in rural areas.

Chapter II: Materials and Methods

2.1. Study area

The study was conducted in Upazila veterinary hospital of Banskhali which is located at Jaldi Upazila of Chattogram district in the south-eastern part of Bangladesh. Chattogram division is located between 22.3569° north latitudes and 91.7832°east longitudes. The study area was selected based on the intensity of goat farmers in the division.

2.2. Process of data collection

The study was conducted to find the information with the help of a pre-designed structured questionnaire, which is attached in the appendix. A total of 25 farmers were interviewed using a simple random sampling technique. Detailed information about the goat farmers was taken from the Upazila agriculture office. For data collection, a well-structured questionnaire was prepared. Information was collected through personal interviews with respondents. Prior to collection, the objective of the study was clearly explained to the respondents.

2.3. Selection of farms

The goat farms were selected randomly based on a number of criteria say breed, availability, farm size, number of a goat on each farm, litter size, communication facility, transport facility, rearing length, and others. A total of 25 farmers are taken into consideration in this study.

2.4. Data collection

Data were taken on the farm size, social status, management cost, land, and household size as well as some data associated with goat rearing such as breed, the source of funds, feeding and nutrition, the source of feed, deworming veterinary treatment, disease prevalence etc. Some data were also collected from secondary sources like government documents, related literature, books, journals, newspaper, articles, theses, and websites. The information was collected from January- April 2022.

2.5. Husbandry practices

Information about different types of husbandry practices such as housing, feeding, disease incidence, vaccination and deworming, stocking density and litter materials were collected through the questionnaire, and those details were discussed briefly in this section below.

2.6. Housing

After the review of the literature number of options were included such as a proper goat house, farmer's living room, and porch/veranda that was mainly observed in different studies on goats in Bangladesh previously. All the respondents were familiar with those housing systems and their responses matched the listed option which was discussed in detail later in the result section.

2.7. Feeding

Three recognized feeding systems were categorized and included in the questionnaire (stall feeding, tethering and grazing groups). Initial few most commonly used feed items such as grass, leaves and concentrate were mentioned in the questionnaire. But the farmers used a vast range of feeding items with a combination of those, thus the questionnaire was modified according to their responses regarding the feeding materials.

2.8. Diseases incidence

Both the number of infectious and non-infectious diseases in the study. Peste Des petis in ruminants were the most commonly diagnosed disease in the hospital along with different parasitic diseases. The data were collected from the Upazila hospital register based on the responses provided by the farmers.

2.9. Vaccination and deworming

Whether the farmers are concerned about the vaccination and deworming or not and the types of vaccine and anti-worms they provided, information regarding those things was collected. The source of the vaccine and anti-worm tablets (Livestock office or local market) was noted down based on their response.

2.10. Stocking density

According to the literature backyard farming in rural areas was mostly small in size, but in our study, we included a few categories such as small (1-3), medium (3-8) and large (>8). The responses were sorted according to those categories during the analysis.

2.11. Litter materials

This option was included in the questionnaire to get a clear notion of the hygienic husbandry practices of goats in rural areas. Though most of the farmers were reluctant to use any bedding material, a few of them used rubber mats which were very unusual in the rural scenario. However, most of the respondents were reluctant about the use of the bedding materials that's why this section was not further described in detail in the result section.

2.12. Data Analysis

Data was scrutinised, checked, and carefully edited to get the appropriate and related information after collection. Collected data was classified, tabulated, and analysed regarding the objectives set for the study to derive the relevant findings. The data was analysed and presented mostly in tabular form because it was simple to calculate, widely used and easy to understand. The tabular analysis was mainly based on some statistical measures like averages, percentages etc. with the help of MS-Excel-2021.

Chapter III: Results

The farmers who participated in this study were from different villages of Banskhalai Upazila. The highest number of participants were from Jaldi where the Veterinary hospital is situated. The distribution of the respondent goat farmers in Banskhali Upazila was shown in a QGIS map below.
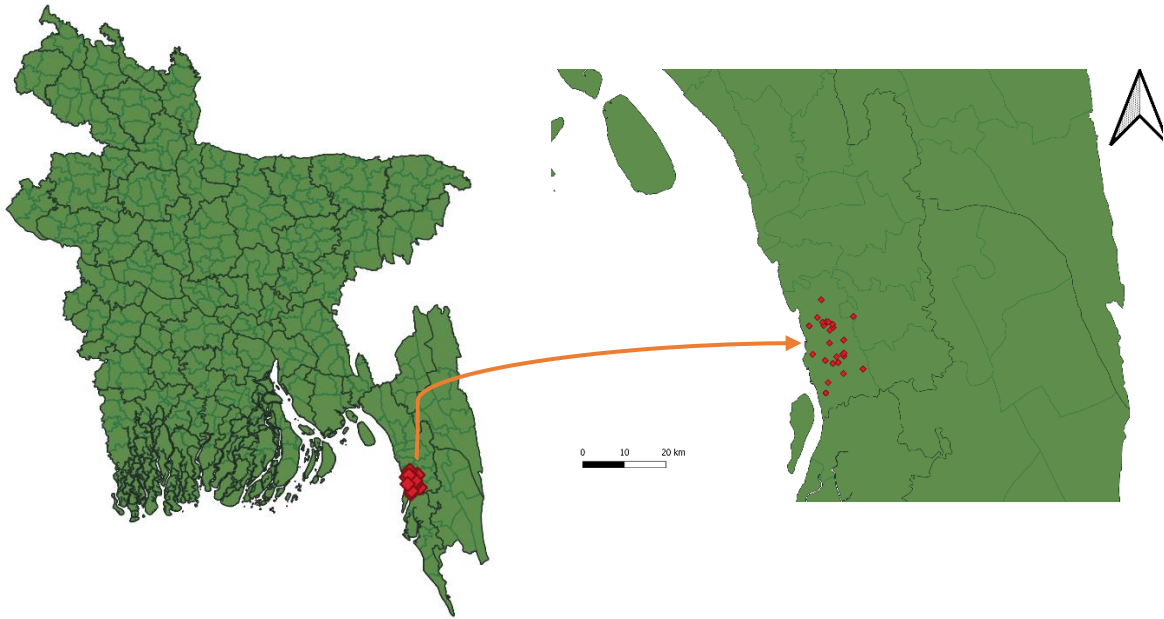
Figure 1: Distribution of the goat farmers at Banskhali Upazila

Among the 25 respondents, 56% of them kept black Bengal goats whereas only 32% and 12% kept Jamnapari and crossbreed goats in their farms/households. For breeding purpose, all the farmer depends on natural insemination by the bucks (Table 1).

Table1: General information about the goat farming

Parameter	Category	No of Respondents	% Of Respondents
Breed	Black-Bengal	14	56
	Jamnapari	08	32
	Crossbreed	03	12
Breeding Technique	Natural	25	100
	A. I	00	0

Eighty-four per cent of farmers rear goats under a semi-intensive system and 64% of them use their veranda/porch to keep the goats. Only 16% of farmers kept their goats in a properly

built dedicated goat house. Sixty-eight per cent of farmers use different bedding materials for goats (Table 2).

Table 2: Housing management in goat farming

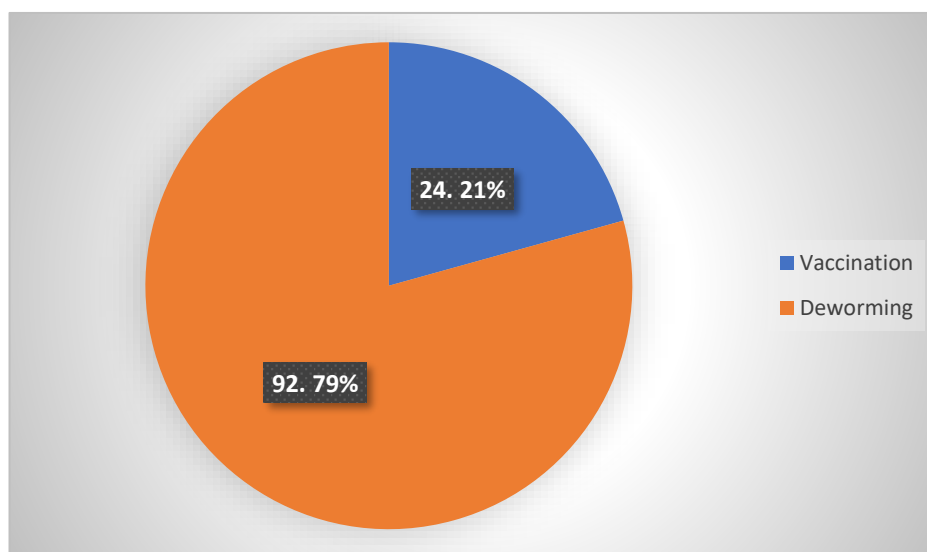| Parameter	Category	No of Respondents	% Of Respondents
Rearing Type	Intensive	4	16
	Semi-Intensive	21	84
Housing Type	Proper Goat House	4	16
	Farmer's Living Room	5	20
	Farmer's Porch	16	64
Bedding Material	Yes	17	68
	No	8	32

Seventy-six per cent of the farmers use tethering systems for feeding management whereas only 20% and 28% were managed by stall feeding and grazing groups respectively. Field or roadside grass was fed by 28% of the farmers to their goats whereas 24%, 20%, 16% and 12% of farmers were used to fed field/ roadside grass and tree leaves, tree leaves, cultivated fodder and Tree leaves, Cultivated fodder to their goats consecutively. Only 20% of farmers used vitamin and mineral additives with the main feed (Table 3).

Table 3: Feeds and feeding management

Parameter	Category	No of Respondents	% Of Respondents
Feeding System	Stall feeding	5	20
	Tethering	13	76
	Grazing groups	7	28
Types of roughage	Field/ Roadside grass	7	28
	Cultivated fodder	3	12
	Tree leaves	5	20
	Field/ Roadside grass and Tree leaves	6	24
	Cultivated fodder and Tree leaves	4	16

Concentrate	Yes	9	36
	No	16	64
Vitamin and Mineral Supplement	Yes	5	20
	No	20	80

About 92% of the farmers practice deworming, and 80% of them do it with the help of Upazila veterinary hospital. Whereas 24% of farmers provide vaccines to their goats and they manage it from both the veterinary hospital and local market (Table 4 and Figure 2).

Figure 2. Vaccination and de-worming practised by the goat farmers

Table 4: Source of Vaccine and Anti-worm tablets for their goats

Parameter	Category	No of Respondents	% Of Respondents
Source of vaccination	Veterinary Hospital	2	40
	Local market	3	60
Source of Deworming	Veterinary Hospital	17	80
	Local market	4	20

Chapter IV: Discussion

The majority of the goat breeds in this region were native varieties. Black Bengal goats made up most of the animals discovered (56.0%), followed by Jamnapari goats (32.0%) and crossbreed goats (12.0%). Most farmers utilise goats as a secondary activity in the rural home or as a crucial source of modest income for the poor, therefore roughly half of the farmers kept their goats for at least a year or two primarily for meat purposes. These results are corroborated by research conducted by Hossain et al., 2017 in the Mymensingh district, while Wadkar et al., 2009 also found that rural backward farmers kept a higher proportion of Black Bengal goats. All the respondents reported that their goats were mated by using a buck of their own or belonging to other farmers; the cost was Tk. 20-30 per mating which is supported by the findings of Jaitner et al. (2001). However, artificial insemination was not practised by the farmers (Table 01)

Farmers (Table 02) at study sites reared their goats in semi-intensive system (84%), though Hossain et al. (2015) reported few goat farmers reared their goats in a free range and intensive system. Most of the farmers kept their goats in their porches/varanda, which was in accordance with Pattamarakha et al. (1997) found most of the farmers did not have shelters for their goats. Moreover, the farmers who used proper goat houses mainly rared them in Macha which is one kind of good management practice for goat rearing that holds floor level up to the earth; these findings were similar to Islam et al. (2018). However, a maximum of farmers (68%) provided bedding material to their goats during the winter season.

One of the most crucial elements in goat husbandry is the regulation of feeding. Out of all the production costs, the cost of the feed is the greatest. On the other hand, effective food control is necessary for appropriate physiology. Farmers used three different kinds of feeding systems (Table 3) among which tethering (76%) was the most common compared to the other two systems. They mainly used roadside grass, cultivated fodder, tree leaves and a combination of these three ingredients. Among those feed ingredients roadside grasses (28%) were most commonly used by the farmers. It was found that farmers were not well aware of the concentrate feeding management practices. Only a few farmers (36%) supplied concentrate feed with the green grass for their goats while very few farmers supplied green grass alone to their goats unlikely Islam et al. (2016) observed that few farmers (82%) supplied concentrates with green grass to their goats.

The only way to prevent disease on a farm is through vaccination, as treatment is never better than prevention. In Bangladesh, the only widely used vaccination for goats is Peste des Pestis Ruminant, which is made by the Livestock Research Institute. Furthermore, although it is a lethal disease for goats, only 24.21%% of farmers who rear goats adhered to a suitable immunisation schedule. Only a few farmers had a thorough understanding of routine immunisation. The only provider of veterinary facilities is the Livestock Research Institute, yet 60% of farmers bought their vaccine from the local market. Bangladesh has a high prevalence of parasitic infestation, which affects livestock in various ways and reduces their productivity. Different parasite illnesses result in financial losses due to mortality, stunted growth, and reduced milk output. The decline in skin quality is also brought on by some parasites (Nooruddin et al. 1987). Most of the farmers (92.79%) who raise goats employ anthelmintics or any other preventative steps to manage the parasite infestation. However, farmers had the misconception that anthelmintics should only be used during a goat's lifespan.

Chapter IV: Conclusion

It can be summarised from the present study that due to lack of technical knowledge their housing management was not well established, also they still followed the traditional feeding system depending on natural forage and wheat bran as a concentrate feed. There were also misconceptions about disease prevention amongst the farmers; they were not using the vaccine and anthelmintics regularly and taking technical support from the village doctor. The above discussions might be indicative that farmers were more careful about housing and feeding but less careful about health care and breeding buck-keeping issues.

Acknowledgements

Biography

Myself, Priyanka Das, daughter of Nepal Kanti Das and Ranjita Das. I was born on 30 th Novemberr 1996. My home district is Banskhali, Chattogram. I passed my Secondary School Certificate examination in 2013 and gained GPA 5.00. I have completed my Higher Secondary Certificate in 2015 from Govt. Haji Muhammad Mohsin College, Chattogram, where I achieved GPA 5.00. I keep interest in volunteering, blood donation, painting, recitation, anchoring, photography etc. other than my academic. In future I would like to work for the wellbeing of animals and peruse my dream career as a practitioner and researcher.

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Appendix

QUESTIONNAIRE

Farm No: ---------   **Date: ------------**

Data from the Goat Farm in the Banskhali Upazila, Chattogram, Bangladesh

1. Farmer's name: _____

2. Address:

3. Location: _____

4. Type of Farm :Farming size:

_____

5 Type/breed of local chickens , /Goat/ cattle and numbers:

_____

6. Price of adult goat, animal _____

7 Adult body weight goat/animal and market price: _____

8 Meat Milk production number/year and market price:

_____

9. Supplied feed to animals/ day_____

10. Vaccine given or not, if so, give details:

_____

11. Any vitamin supplement supplied the animal-- a. Yes b. No

12. If supply, which types of vitamin are supplies?

13 Disease incidences: a. Yes b. No

14. If yes, what type of diseases are found?:-------------------

15. Diagnosis of disease done?--by a. Clinical signs and symptoms b. Post mortem findings

16. Treatment given by farmer_____

17. Amount of feed intake during selling (Kg):_____

18 .Housing type/system: (Direction)_____

19' Presence of any farm beside this farm: a. Yes b. No

20. If yes, how distance from this farm? _____

21. Disposal system of dead bird/waste product: a. Burying b. Burning method d. pit e) Others

22. Any bio-security measures taken: _____

23. Any disinfectant used: a. Yes b. No

24. If used, what types of disinfectant are used?

25. Length of rearing animals_____

26. Rearing system----floor/slat/cage/ scavenging/ free-range/night shelter_____?

27. Floor space given animal_____sq.ft

28. Type of housing _____open/close/others?

29. Yearly income from selling animal or egg or meat s: