



Short Communication

Exploring the Management Practices of Black Bengal Goat Husbandry in Jhenaidah District of Bangladesh

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Abstract | The Black Bengal goat is only indigenous goat breed in Bangladesh, renowned for its premium-quality meat and leather. The study aimed to gather information on the existing management systems of Black Bengal goat rearing in the Jhenaidah district of Bangladesh. A survey was conducted among 90 goat owners, with data collected on their management practices, treatments, and breeding methods. The majority of respondents (77.8%) identified agriculture as their primary occupation. Most farmers provided green grass, tree leaves, and a minimum amount of concentrate feed such as maize, gram, and wheat bran. Goats were allowed to graze on fallow land and around households during the day and were housed at night. Semi-intensive rearing was the predominant system. Around 73.3% of owners did not vaccinate their goats. Peste des Petits Ruminants (PPR) was reported as the major disease, affecting approximately 72.2% of the population. Natural service at buck stations was the common breeding practice in the study area. The findings highlight a significant need for improved vaccine availability and vaccination practices to combat PPR. Additionally, enhanced husbandry practices and the development of a breeding policy are essential to optimize the production of quality meat and skin.

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Introduction

Bangladesh, one of the world's densely populated countries, has a population of approximately 169 million people within just 144,750 square kilometers. With an annual per capita income of USD 2,973, the

nation's demographics include about 49.47% females (Prank *et al.*, 2023). Agriculture is a cornerstone of Bangladesh's economy, with goat production playing a critical role. The country ranks fourth among Asiatic nations in goat population, boasting an estimated 23.27 million goats, which has now increased to

around 26.26 million (Sobur *et al.*, 2024; Rakib *et al.*, 2022; Ali *et al.*, 2020).

A significant portion of Bangladesh's population resides in rural areas. To achieve self-sufficiency, many rural inhabitants have turned to goat husbandry, especially women. Through goat rearing, rural women have become self-reliant, significantly contributing to their families' financial needs (Rakib *et al.*, 2022).

The Black Bengal Goat is the most renowned heritage goat breed in Bangladesh, is predominantly black in color, though variations in brown, white, and gray are also commonly observed (Hossain, 2021). It is globally recognized for its importance in the country's agro-based farming system, representing over 90% of the nation's goat population (Hossain *et al.*, 2015). These goats significantly contribute to household nutrition, capital, employment, and income in rural areas. However, the rapid population growth and rural-to-urban migration have heightened the demand for animal protein, surpassing current production levels. Therefore, improving breeding, technologies, nutrition, and husbandry practices is essential to maximizing rural goat production (Islam, 2023).

Black Bengal goat is one of the most economically viable breeds for goat husbandry in the country in terms of reproductive performances, meat and skin quality (Hossain, 2021). Government's efforts to promote Black Bengal goats through development farms and subsidized prices, initiatives to encourage goat rearing, reduce poverty, and improve the economic status of rural women. Although some training and extension programs have been introduced, they remain insufficient to meet the needs of rural farmers (Rahman *et al.*, 2017).

Goats used for commerce and human consumption, are naturally adaptable to different environments. Their resilience to heat stress and ability to thrive on subpar feed make them well-suited for marginal farming, especially in some of the world's most inhospitable regions (Moni and Samad, 2019). The Black Bengal goat is highly valued for its high-quality meat, milk, fiber, and superior skin, making it a crucial livestock species in Bangladesh's rural economy. Often referred to as the poor man's cow, the Black Bengal goat plays a vital role in poverty alleviation and economic development in rural areas. Goats are generally raised with minimal capital

investment by impoverished women and smallholder farmers (Rahman *et al.*, 2020). Given its versatility, early sexual maturation, fertility, prolificacy, flavorful meat, quick generation time, strong market demand, and superior skin quality, the Black Bengal goat is a promising livestock species for commercial meat production. This breed is essential for Bangladesh's rural economies and nutrition, with most farmers and landless people owning one to five goats (Mondal *et al.*, 2024; Islam, 2023).

Despite the economic importance of Black Bengal goats in Jhenaidah district, there is a lack of comprehensive research on their management systems, challenges, and prospects. This study aims to evaluate the current management practices, including feeding, housing, and grazing methods, identify challenges such as disease management and vaccination gaps, and assess breeding practices among goat farmers.

Materials and Methods

Study area

The study was conducted in three selected upazila (Jhenaidah Sadar, Harinakunda and Kotchadpur) of Jhenaidah district in Bangladesh (Figure 1). As an agricultural based region most of the farmers are directly or indirectly involved with livestock production. This area was selected for the recognition of goat inhabitants. Most of the households rear goats in this area. The study was conducted between the periods of August 2023 to April 2024.

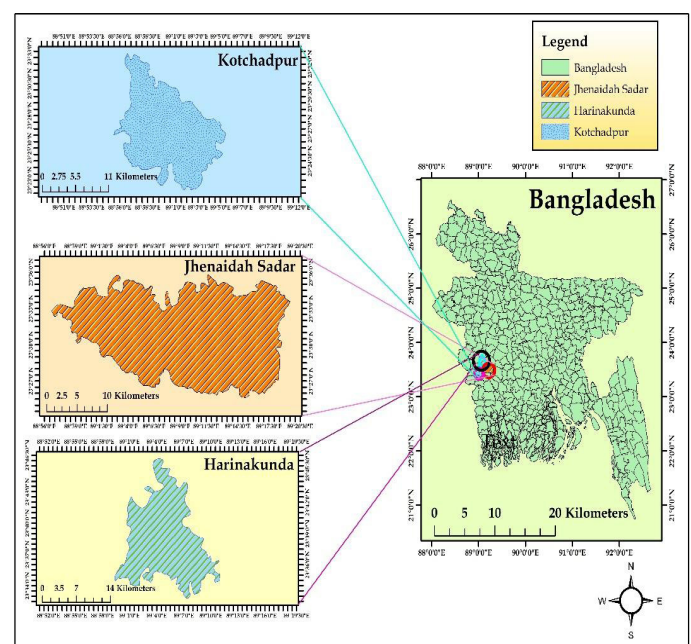


Figure 1: Map of the study area.

Data collection

A baseline survey was conducted and the data were collected from the 90 farmers. Data were collected on the basis of simple random sampling of farms and households which have at least one Black Bengal goat. Farm information was collected from district livestock office, Jhenaidah. A well-structured questionnaire was made to take out information about farmers, farm demography, farm characteristics and farm management in direct interview.

Statistical analysis

Data was sorted and entered into Microsoft Excel spreadsheet 2013. Then import to STATA/MP 14.0. Different variables were filed to facilitate analysis as categorical variables. 95% confidence interval and p-value was calculated in RStudio version 4.2.3.

Result and Discussion

Farmer's information

This study exhibits that, among the 90 observations, most of the goat owners were farmers (77.8%) and the rest (3.3%) were housewives (Figure 2).

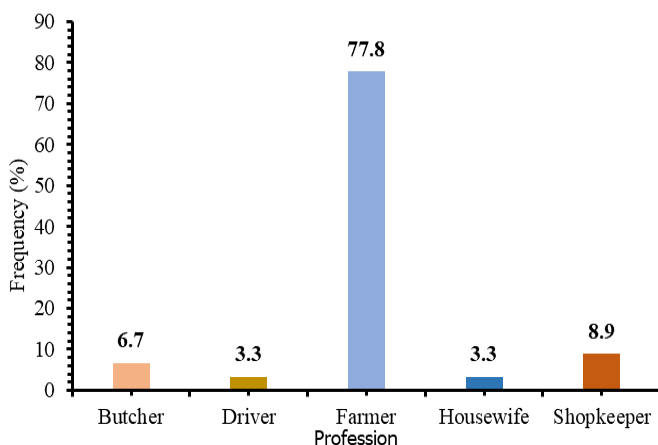


Figure 2: Owners characters in relation to Black Bengal goat rearing.

Management practices

This study shows that about 100% goat house was semi-intensive in where 54.4% bedding was mud followed by 23.3% wood slat, 22.2% bamboo slat. Most of the owners (97.8%) allowed grazing of their goats whereas a few (2.2%) practiced stall feeding. Major feeding for the goats was green grass (96.7%). Among 90 observations, the total number of goats was 367 in which 45.2% was male followed by 30.5% female and 24.3% kid (Table 1).

Concentrate feed supply per day one time (61.1%)

is maximum whereas zero time (3.3%) is minimum. Some owners irregularly (26.7%) vaccinated their goats and the rest (73.3%) did not vaccinate their goats. About 14.4% owner regularly and 38.9% owner irregularly dewormed their goat. On the other hand 46.7% owners did not deworm their goats. The study results show that heat status was regular and they breed their goats by natural service. Almost all owners reported PPR (72.2%) as a major disease.

Only a few owners (25.6%) cultivate fodder for their livestock. Eid based goat seller 55.6% whereas 44.4% owner sold their goat all the year round. Maximum (96.7%) owners reported that they didn't get any support for goat rearing whereas a few (3.3%) owners got support. Their major challenge for goat rearing was disease (94.4%) (Table 1).

This study provides insights into the reproductive system, housing, and feeding management of Black Bengal goats. Semi-intensive rearing is prevalent among small and marginal farms, where goats graze during the day and are housed in simple shelters at night. During dry seasons, herdsmen often relocate in search of pasture and water. Women and children are primarily responsible for managing the goats (Mostari et al., 2021).

Goats graze on available pasture or are tethered by the road. In the rainy season, they are fed tree leaves or chopped grass, with some farmers cultivating Napier, German, and maize crops for feed. The floor space allocated is around 1.85 square meters per doe and 2.3 square meters per kid. Most goats are sold for meat between six and eighteen months old, with their body condition varying from emaciated to plump, influencing their market price.

Landless farmers often sell goats at a low conformation rate to meet immediate needs, while medium-sized farmers, who keep goats longer (about 15.5 months) and with better body weight (17.10 kg), sell them for higher prices. Hossain (2021) reported, medium body size with grown-up weight 25–30 kg. Pregnancy care is prioritized, with goats drinking from tube wells and grazing during the wet season. Pregnant goats receive concentrated feed, and lactating does get additional grass and tree leaves.

Farmers have ceased using artificial insemination (AI) and have moved to natural mating, with inadequate

Table 1: Different management information of Black Bengal goat farms/households.

Variables	Category	Frequency n (%)	95% confidence interval (CI)	P value
Housing system	Semi-intensive	90 (100)	100.0–100.0	1.61
	Mud	49 (54.4)	44.2–64.7	0.46*
Bedding material	Wood slat	21 (23.3)	14.6–32.1	3.88
	Bamboo slat	20 (22.2)	13.6–30.8	1.13
Feeding system	Grazing	88 (97.8)	94.7–100.0	6.61
	Stall feeding	2 (2.2)	0.0–5.3	6.61
Major feeding	Green grass	87 (96.7)	93.0–100.0	1.96
	Tree leaves	3 (3.3)	0.0–7.0	1.96
Concentrate supply (per day)	0	0 (3.3)	0.0–7.0	N/A
	1	55 (61.1)	51.0–71.2	0.04
	2	19 (21.1)	12.7–29.5	3.12
	3	8 (8.9)	3.0–14.8	1.38
	4	5 (5.6)	0.8–10.3	7.53
Vaccination status	No	66 (73.3)	64.2–82.5	1.09
	Irregular	24 (26.7)	17.5–35.8	1.09
Deworming	Regular	13 (14.4)	7.2–21.7	3.17
	Irregular	35 (38.9)	28.8–49.0	0.04*
	No	42 (46.7)	36.4–57.0	0.59
Litter size per birth	2	40 (59.7)	34.2–54.7	0.34*
	3	27 (40.3)	20.5–39.5	0.00
Estrus	Regular	71 (100)	70.5–87.3	3.12
Breeding	Natural service	71(100)	70.5–87.3	3.12
Major diseases	PPR	65 (72.2)	63.0–81.5	2.96
	Skin disease, PPR	20 (22.2)	13.6–30.8	1.13
	Tetanus, PPR	5 (5.6)	0.8–10.3	7.53
Fodder cultivation	No	67 (74.4)	65.4–83.5	3.79
	Yes	23 (25.6)	16.5–34.6	3.79
Marketing	All the year round	40 (44.4)	34.2–54.7	0.34*
	Eid based	50 (55.6)	45.3–65.8	0.34*
Any support for goat farming	No	87 (96.7)	93.0–100.0	1.96
	Yes	3 (3.3)	0.0–7.0	1.96
Major challenges	Disease	85 (94.4)	89.7–99.2	7.53
	Kid mortality	5 (5.6)	0.8–10.3	7.53

n= Number of farms/ Households.

biosecurity measures leading to higher disease incidence. Common ailments include PPR, fever, cough, skin conditions, diarrhea, and naval infections. Vaccination and deworming are infrequent, with treatment often occurring only after diseases have progressed. This indicates a greater focus on housing and feeding rather than health care and breeding management (Amy, 2020). The findings emphasize on improved vaccine availability and practices to combat PPR, along with enhanced husbandry and a breeding policy to optimize quality meat and skin production.

Conclusions and Recommendations

In conclusion, this study highlights the key aspects of managing Black Bengal goats in Bangladesh, focusing on reproductive practices, housing, and feeding management. The semi-intensive rearing system, characterized by day grazing and night housing in basic shelters, is widely used among smallholder farmers, predominantly women and children. Despite the low-cost nature of this system, the varying quality of goats sold for meat and the reliance on traditional practices reflect both strengths and challenges in goat husbandry.

The findings underscore the importance of improving goat management practices to enhance productivity and address existing issues. Enhancing biosecurity measures, increasing the use of artificial insemination, and providing better veterinary care are crucial for reducing disease incidence and improving overall herd quality. Moreover, adopting more advanced feeding strategies and extending training programs for farmers can help maximize the potential of Black Bengal goats in contributing to household nutrition and economic stability. As Black Bengal goats continue to play a vital role in rural economies and poverty alleviation, efforts to optimize their production through better husbandry practices, technological advancements, and targeted support for farmers will be essential for sustaining and expanding their benefits to communities across Bangladesh.

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Novelty Statement

This study uniquely examines the management practices of Black Bengal goat husbandry in Jhenaidah, Bangladesh. It highlights research gaps in vaccination, breeding, and husbandry, providing crucial insights to enhance productivity and health management of this economically significant indigenous breed.

Author's Contribution

Kazi Abdus Sobur: Conceptualization, contributed in data curation, formal analysis, methodology, writing original draft, and validation.

Shabuj Kumar Pal: Contributed to data analysis, formal analysis visualization, writing, review, and editing.

Md. Abdur Rahim: Helped in data curation, software, and validation.

Palash Bose: Conducted data analysis, interpretation of result and revised the final manuscript.

Conflict of interest

The authors have declared no conflict of interest.

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