

A study on backyard goat farming of Black Bengal Goat in Daulatpur Upazilla, Manikganj, Bangladesh



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List of abbreviations

Abbreviation	Elaboration
BBG	Black Bengal goat
Kg	Kilogram
BBS	Bangladesh Bureau of Statistics
DLS	Department of Livestock Services
Tk	Taka

Abstract

The study was undertaken to investigate the performance of Black Bengal goats and livelihood generated through backyard goat rearing at six different villages namely Ramchandrapur, Chormastul, Abudanga, Daulatpur and Niloa under Daulatpur Upazila in Manikganj district, Bangladesh from October to November 2019. Data were collected based on a pre-structured questionnaire including the information about livestock, breed, age, sex, age of sexual maturity, litter size, body weight, gestation period, breeding type, housing pattern, grazing, purpose of rearing, vaccination and de-worming history, diseases, treatment and production performance of goats. The average body weight of male and female were 7.61kg and 11.24kg respectively. The litter size of Black Bengal goat ranged between 1 to 4 and the range of lactation period was between 2 to 3 months. The average milk yield of black Bengal goats was 33.9 kg per lactation per doe in which the average milk yield per day per doe was 1.02 kg. A few numbers of farmers (20%) used vaccination and practiced de-worming (60%) their goats. All goats were reared by the semi-intensive system and 75% of goats stay at the cow's house at night. In winter season they provided bedding materials at night. Farmers used green grass (100%) and supplied water by using deep tube well. Most of the farmers (65%) provided only wheat bran to goat as concentrate feed. The housing, feeding and breeding were maintain in most of the farms, but the healthcare was not up to the mark.

Keywords: Black Bengal goat, Backyard goat farm, Body weight, Rearing system, Reproductive performance

Chapter 1: Introduction

Bangladesh is mainly an agriculture-based country. All kind of farmers (small, marginal and landless) are depending on livestock for their way of life. Livestock is an integral sector of the agricultural economy of Bangladesh performing multidimensional functions such as the provision of food, nutrition, income, savings, draft power, manure, transport, social and cultural functions (Tareque *et al.*, 2010). The livestock resources of Bangladesh are mainly based on cattle, goat, sheep, buffalo, and poultry (DLS, 2018). Among livestock, goat is a very important species in Bangladesh. At present, there are a total of 26.1 million goats (DLS, 2019). Goat as a multi-functional animal, is essential in rural economy and nutrition. It has short generation intervals, higher rates of prolificacy and high market demand (Islam *et al.*, 2016). Goat also has a great role in poverty reduction in Bangladesh particularly for women, small scale farmers and farmers from geographically isolated area (Ershaduzzaman *et al.*, 2007). About 45% population in Bangladesh lives under the poverty line, and among total farm household, 36% of people are involved with goat rearing (BBS, 2014). Meat from goat is most preferred and is widely accepted throughout the country. Goat meat is consumed by all without any religious and social taboos (Senthil *et al.*, 2018).

Both commercial and backyard farming are practiced in Bangladesh. Mostly commercial farming is popular in urban and suburban region. Backyard farming is an integral part of landless, small and marginal agricultural farmers (Senthil *et al.*, 2018). Backyard farming is a movement where regular people who live in typical houses in typical neighborhood turn part of their property into mini or micro farms. Backyard goat farming is largely practiced by the poor households for family support purposes because of their low initial investment (Raja *et al.*, 2018). Goats can be reared even without a specific arrangement of housing. Goat grazes on infertile and road-side land with grass and least homemade supplies such as rice gruel, boiled rice, vegetable peels etc. In addition, goats fed on jackfruit leaves, which often are available in most of the rearing areas (Hassan *et al.*, 2007).

Black Bengal goats are the common goat breed and also found all over the country. Some other goat breeds such as the Sirohi, Beetal and Jamnapari, and crossbreds between the Black Bengal goat and exotics also found in our county. It is estimated that more than 90% of the goat population in Bangladesh comprised the Black Bengal, the remainder being Jamunapari and their crosses (Jalil *et al.*, 2018). The Black Bengal goat is mostly black in

color. However, white stripe on black (13%), brown (5%), solid white (4%), black with white patches or brown with white or brown with black (9%) also found (Chowdhury, 2002). The higher demands for meat and especially for skin in the local as well as foreign markets focused the goat enterprise extremely prominent to the vulnerable groups of people and the existing socio-economic condition of the country (Hassan *et al.*, 2011).

Goats are contributing huge in the economy of native villagers among the poor family. To collect update information from this study, need to read about feeds and feeding of goats, housing, breeding system and health care management of BBG in the native area.

Chapter 2: Methodology

The study was conducted in six villages, namely Ramchandrapur, Chormastul, Abudanga, Daulatpur and Niloa under Daulatpur Upazila in Manikganj district (Figure 01). Data were collected through direct randomly interviewing method using a pre-structured questionnaire. This questionnaire survey was conducted from October to November 2019. The questionnaire contained the information about the total goat population, rearing system, feeding system, feed type, watering system were collected. Data about disease management such as de-worming, vaccination, occurrence of common diseases were collected. Different productive and reproductive data including the sources of buck, mating system, grazing, age, sex, breed, goat number, body weight, lactation period, milk yield, sex preference, production performance was collected by using the questionnaire. Some additional information about family member participation in goat rearing, purpose of goat raising were also collected. Collected information were compiled in Microsoft Excel (2013) and analyzed by using R Studio.

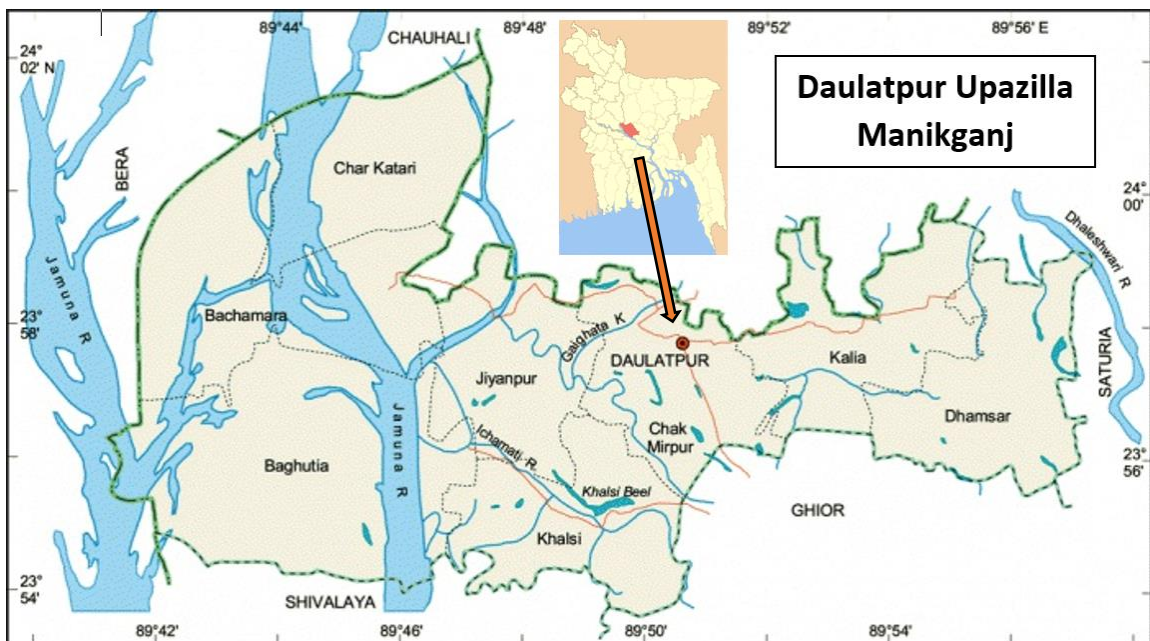


Figure 01: The location of the study area

Chapter 3: Result and Discussion

3.1. Bodyweight:

The average body weights of male and female goats are presented in Table 1. The average body weight from 15 days to 6 months of age were 6.17kg in male and 7.5kg in female (Figure 02). The average body weights of male and female at 7 months to 12 months of age were 9.2kg and 9.75kg (Table 01). The average body weight was 7.61kg and average body weight of female 11.24kg respectively. This result is almost similar to the result of (Jalil, 2014) who reported that average live weight was 9.63kg. But the result is lower than the result observed by (Chowdhury *et al.*, 2002) who reported the Average adult body weight of male and female goats as 29.9 ± 1.76 and 23.6 ± 0.81 kg, respectively, may be the lack of management of rearing. The body weight of male is lower than female which is because most of them are sold for meat purpose after a certain age whereas the females are kept for breeding purpose for a long time.

The body weight (kg) of the goat was significantly related with the age (months) ($P < 0.001$). There was a positive relationship between them ($R = 0.59$).

Table 1: Average body weight of male and female goat

Age (month)	Average bodyweight of male (kg)	Average bodyweight of female (kg)
0-6	6.17	7.5
7-12	9.2	9.75
13-24	9	12.2
above 25	-	12.67
Average	7.61	11.24

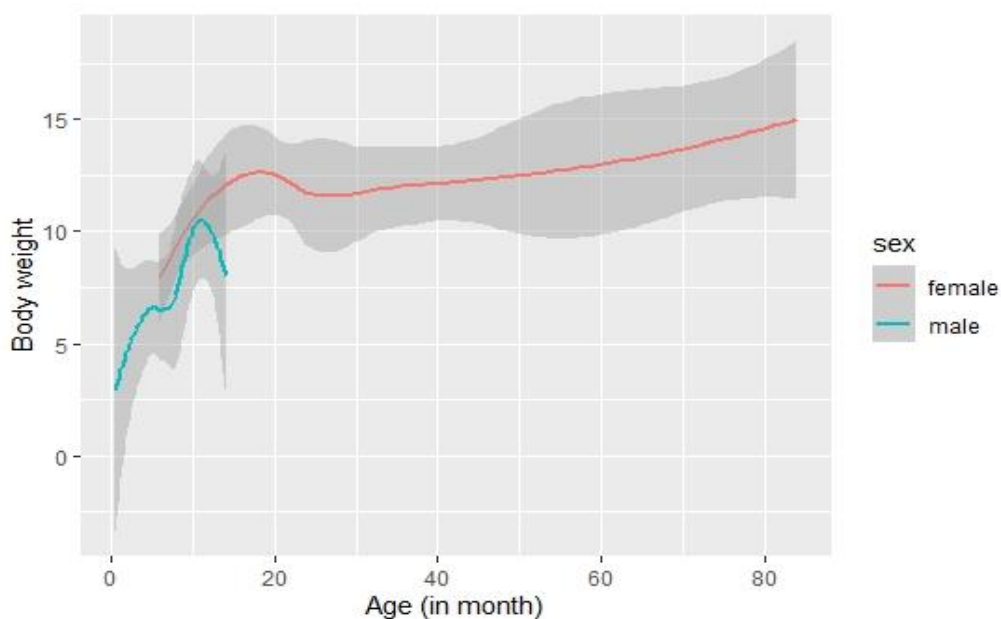


Figure 02: Relationship between age and bodyweight

3.2. Housing System of the goat:

Farmers at study sites reared their goat in the semi-intensive system (Table 02), 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 at cow's house. However, maximum farmers (95%) provided bedding material to their goats during the winter season. Most of the farmer took the bath of their goat during summer while maximum farmers did not take a bath of their goats in the winter season.

Table 02: Housing of Black Bengal goats

Parameter	Category	Number of Goats	Percentage
Rearing system	Confinement	0	0
	Semi-intensive	40	100
Night shelter	Goat's House	0	0
	Cow's House	30	75
	Farmer's living room	10	25
Provide bedding material during the winter season	Yes	38	95
	No	2	5

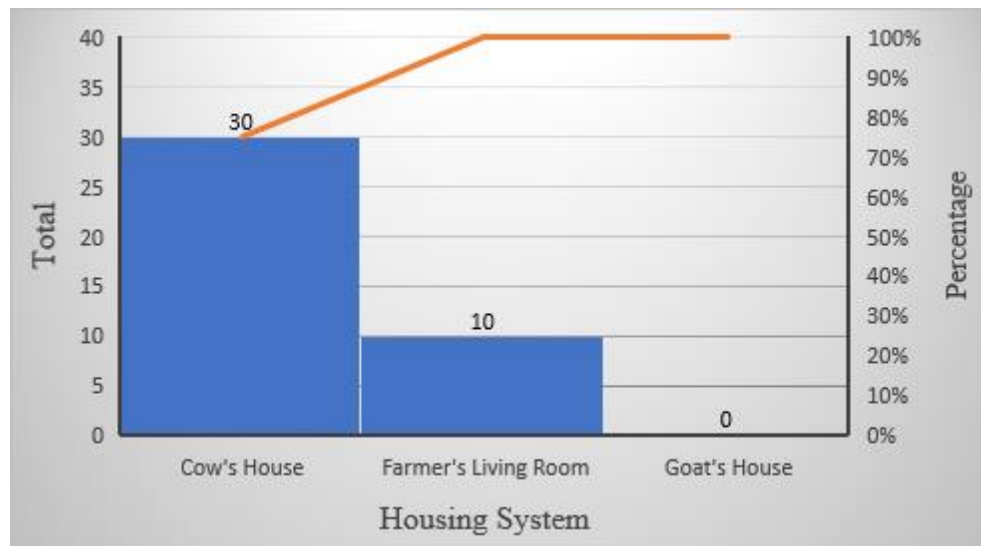


Figure 03: Night Shelter of Goats

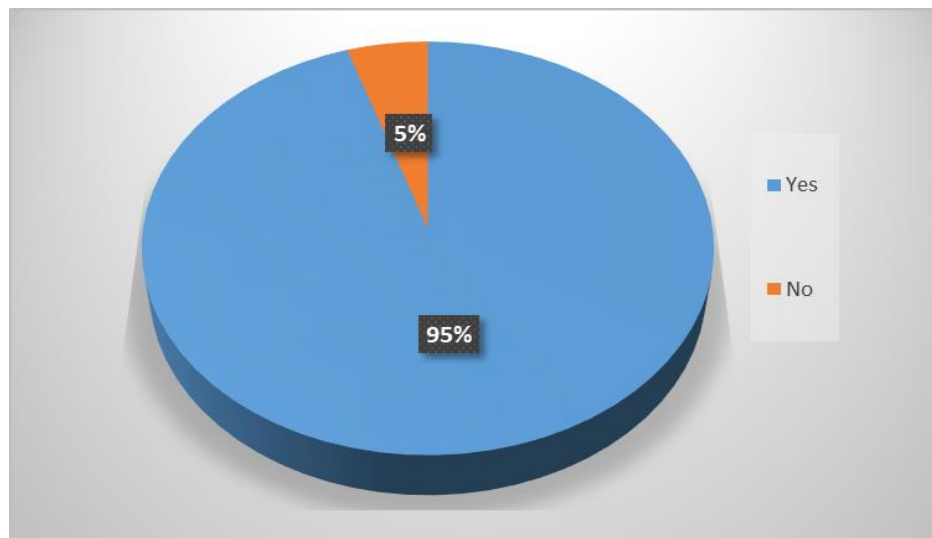


Figure 04: Provide bedding materials during winter season.

3.3. Litter size

The average litter size in Black Bengal does were 2.36. (Amin, 2000) reported litter size of selected BBG goat as 1.96 and those of random population goat as 1.68, while in Generation 1 (G1) and in Generation 2 (G2) those were 2.15 and 2.18, respectively, it is also almost similar with the study. (Jalil, 2014) reported that litter size of Black Bengal goats was 1.75 ± 0.03 ; it is also lower than this study. The usual number of kids at one time in Black Bengal goats vary from single to quadruplet. The litter size of Black Bengal goat

ranged from 1 to 4. Litter size of BBG goat ranged between 1 to 3 was reported by (Chowdhury *et al.*, 2001), it is also almost similar to the study.

3.4. Feeding Management

Feeding management is one of the most important factors in goat farming. Feed cost is the highest cost among all other production costs. On the other hand, normal physiology depends on proper feeding management. The main feeds of goats are green grass. Most of the farmers (65%) provided only wheat bran to goat as concentrate feed thinking that it's enough for goat. Some goat farmers (10%) collected various feed supplement (vitamin, minerals). Sources of drinking water was deep tube well. This result agreed with the results of the study by (Islam *et al.*, 2018).

3.5. Age at puberty

The average age at the first sign of heat of Black Bengal goats were 193.2 ± 7.5 days. This result agreed with the result of (Hassan *et al.*, 2007).

3.6. Lactation period

The average lactation period of Black Bengal goats was 77.7 ± 7.5 days. The range of lactation period between 2 to 3 months. This result is similar to the result of (Shill *et al.*, 2003).

3.7. Milk production

Average milk yield of black Bengal goats was 33.9 kg per lactation per doe. The average milk yield per day per doe was 1.02 kg. The milk yield for single, twin and triplet kidding were 1.43, 1.77 and 2.24 Kg in the 4th weeks of lactation, whereas, the respective estimate was 0.23, 0.26 and 0.26 Kg in 9th weeks of lactation. The overall milk production of goats was within the range of 0.240 to 1.73 kg reported by (Dhara *et al.*, 2012).

3.8. Vaccination and de-worming

A few numbers of farmers (20%) used vaccination and practised de-worming (60%) their goats in the study area and this result higher than the result found by (Islam *et al.*, 2016) due to more awareness of farmers.

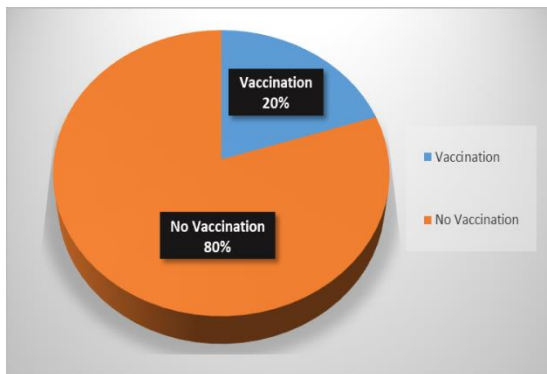


Figure 05: Vaccination of goats

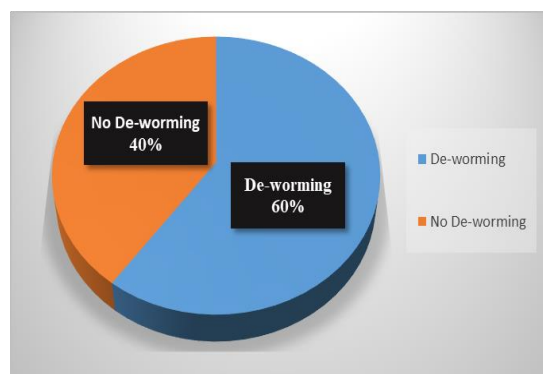


Figure 06: De-worming of goats

3.9. Profit from goat rearing

Average rearing cost per goat in the experimental area for 12 months was Tk. 425. The main return from a goat of the experimental area was from the kid, and a yearly income of the farmers from kids of one goat was Tk. 5987. The value varied from Tk. 4000-6000. The average net income from one goat per year was Tk.5567.

Conclusion

The performance of Black Bengal goats in income generation for the rural people leading to better livelihood is appreciable. Women employment was dramatically increased because they were involved in their goat rearing. The rural women who were unemployed before and then coming into the job of livestock rearing as their profession was a good sign of the country's development. It is clearly found that the farmers who would rear goats have had rapid changes in their livelihood pattern. By providing veterinary services and improved management guides, the significance of Black Bengal goats in rural as well as urban husbandry can be increased few folds.

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Biography

I am **Md Imrul Kayes Sujan**, son of **Md Mosharof Hossain** and **Sheuly Yesmin**. I passed Secondary School Certificate examination in 2012 (G.PA 5.00) followed by Higher Secondary Certificate examination in 2014 (G.PA 5.00). Now I am an intern veterinarian under the Faculty of Veterinary Medicine in Chittagong Veterinary and Animal Sciences University. In the future I would like to work as a veterinary practitioner and do research on clinical animal diseases in Bangladesh.