

AN ECONOMIC ANALYSIS ON BLACK BENGAL GOAT FARMING SYSTEM IN MYMENSINGH DISTRICT



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ABSTRACT

The goal of this study was to determine the farm profitability, production and reproduction performances, identifying problems and policy recommendations for sustainable Black Bengal goats farming practices in 3 selected Upazillas (Mymensingh Sadar, Trishal, and Muktagacha upazilla) under the Mymensingh district. In total 45 goat rearers was selected to collect necessary information through a questionnaire directly by myself during my internship placement at ULDC. Primary information about goat owners was the total number of goats, birth information, the fate of male offspring, the weight of the offspring, the breeding system, the size of the litter, the kid mortality rate, and some management parameters on goat and goat rearing system under rural condition were all included in the questionnaire.

The average number of goats in the Mymensingh district was determined 90% of the goats being does and 10% being bucks. Due to unpleasant smells and challenging handling, the majority of farmers castrated the male children instead of keeping them. The majority of farmers rely on natural mating, whereby does are selected by traveling a considerable distance. There was no discernible variation in the goat's performance among the study areas. The mean body weights of 3 to 6 months age of female goats at 3.77 ± 0.30 and 8.8 ± 0.15 kg, respectively, were reported.

Depending on the amount of their land and number of reared goats the farmers were divided into three categories as landless, small, and marginal. However, the research found enterprising cost per farm accounted as BDT 50,875.00 for small farmers the highest total cost. Landless farmers came in second highest with BDT 37,900.00, and marginal farmers with BDT 34,500.00. It was found that average gross return landless farmers (BDT 18,100.00) and marginal farmers (BDT 20,500.00) had the lowest gross returns per farm, with small farmers receiving the most, BDT 33,125.00.

The study also revealed that, the net profit per goat, marginal farmers made the least amount (BDT 1464.28), landless farmers made the most (BDT 1645.45), and small farmers made the most (BDT 2695.31). Finally make policy recommendations for improving the Black Bengal goat rearing practices as a profitable agribusiness in the rural areas in Bangladesh. This investigation also made it clear that there is a severe lack of Black Bengal breeding bucks in rural areas, which may be indicative of the condition throughout the nation.

Keywords: Black Bengal goat, Breeding performance, Cost, Return and Profitability.

CHAPTER-I

1.1: Introduction

Goats are small livestock that provide a significant financial benefit to the impoverished and are referred to as "poor man's cow" in this context. Goats are grown on bushes, leaves, and twigs, which is a typical method in rural places. They require less feed than cattle. Because of their docile disposition, goats have often required additional care from women and children in addition to their regular jobs from the dawn of human society. There are 2–5 goats per farmer as part of a traditional scavenging system, and nearly 90% of the country's goat population—roughly 90% of women—live in rural regions (DLS, 2021). Black Bengal goats are prolific and productive goats that reach sexual maturity early and are very tolerant of hot, humid weather. There is a mass contribution of goats to the national economy: (i) Increasing the income of rural areas; (ii) Empowering women; (iii) Meat for human consumption; (iv) Reducing poverty for smallholders; (v) Increasing foreign exchange earnings, irrespective of the type of goat.

The skin of the Black Bengal goat is especially valuable worldwide (Banerjee 1980). The total revenue from exports of leather and leather goods in FY 2018–19 accounted for 2.52% of total revenue from exports (Rakib, 2020). About 29.4% of people in Bangladesh are estimated to be impoverished (BBS, 2020). The poor can make wonderful investments with goats. It is an important source of income for a large number of small farmers, particularly women, landless, and marginal farmers who live in remote areas with few other options (Choudhury et al., 2012). As per the Bangladesh Livestock Research Institute's (BLRI) "Goat rearing model for landless and small farmers" technology package, a single female goat farmer can make an extra BDT 1455 annually.

1.2: Objectives of the study

1. To describe the general profiles of Goat Rearing farm owners;
2. To examine the production and re-production performances of goats under the study;
3. To assess the cost, returns and profitability of goat farming practices;
4. To identify the problems and make policy recommendations for the improvement of goat farming system in the study area.

CHAPTER-II

Materials and Method

2.1: Study area and study Period

In the Mymensingh division's Sadar upazila, study was conducted. The Mymensingh division is located between 90°23' and 54.1824' east longitudes, and between latitudes 24°44' and 36.4128' north. An important step in conducting a farm management research project is choosing the study region. "The area in which a farm business survey is to be conducted relies on the particular purpose of the survey and possible cooperation from the farmers and other respondents," states Yang (1962). While most of the women in these villages work in goat husbandry, the majority of the villagers' residents are employed in agriculture.

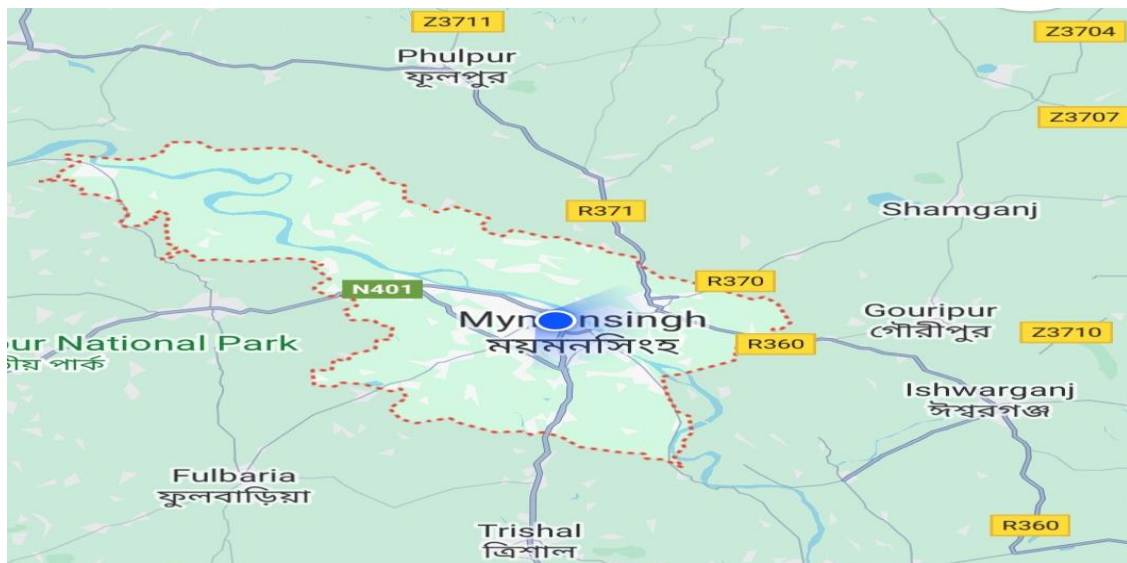


Figure 1: Map of my study area (Mymensingh Sadar).

2.2: Data Collection

During data collection used the following three strategies as soon as I started gathering data:

1. Conducting interviews with farmers;
2. Field observation conducted with farmers
3. Record keeping. In order to get the necessary data for this inquiry, all three procedures were employed.

Eye observation of the farm and the shed was used to collect some data, such as the state of the goat shed. The respondents were made fully aware of the study's goal before any data were collected.



Figure-2: Data collection from my Mymensingh district area



Figure-3: Data collection from my Mymensingh district area

2.3: Statistical Analysis

The gathered data was sorted, tallied, and assessed in line with the goals of the study in order to extract the pertinent findings. The data was largely analyzed and presented in tabular form since it was simple to generate, often used, and understood. The obtained data was entered in MS Excel 2010. The data was analyzed and the results expressed in percentages.

CHAPTER-III

Results and Discussions

3.1: General Profiles of the Goat Farmers:

3.1.1: Age and gender of respondents

Majority of goat farmers (55.56%) were middle -aged ,where the age range is from 30 to 50 years. And followed by young age (up to 30) and the old age (up to 50). Islam et al. (2018) reported that the majority of goat farmers were in the middle age group, followed by senior farmers and young farmers, which is partially consistent with my findings. In terms of the gender divide, in my study area 66.67% are females and 33.33% are males.

Table-1: General Profiles of the Goat Farmers by categories of respondents.

Parameter	Category	Respondents (N=45)	Percentage (%)
Age	young age (up to 30)	15	33.33
	Middle age (30 to 50)	25	55.56
	Old (>50)	5	11.11
Gender	male	15	33.33
	Female	30	66.67
Education level of	illiterate	30	66.67
Farm owner	primary	10	22.22
	Secondary	5	11.11
Farm size	landless	35	77.78
	Marginal	6	13.33
	Small	4	2.22

Source: Field Survey, 2024

3.1.2: Education level of farm owners

Education plays a vital role in determining the overall pattern of a better lifestyle, as it is one of the most essential socioeconomic factors. Illiteracy or limited literacy affected about 66.67% of farmers in the study area, preventing them from reading or writing. According to them, goat farming and other agricultural operations don't demand any formal education. In terms of primary, secondary education is 22.22% and 11.11%. Islam et al. (2018) and Tanwar et al. (2010) reached the same conclusion as the current study, stating that most goat farmers were illiterate. According to Rahman et al. (2017), 85.71% of goat farmers only have an elementary education.

3.1.3: Farm size

In my study I found that 77.78% had no land. marginal and small are 13.33% and 2.22% respectively. The results supported the findings of previous studies (Islam et al., 2018; Rahman et al., 2017; Kumar et al., 2018; Deshpande et al., 2010), which concluded that the majority of goat keepers were landless.

3.2: Production and Reproduction Performances of goat farming system

3.2.1: Body weight

The study found that, mean body weight of goats in study areas is shown in the table 3. The overall body weight (Mean $\pm$ SE) was (7.32 $\pm$ 0.29). Highest body weight found in Trishal upazilla (7.56 $\pm$ 0.29) and lowest in Mymensingh sadar (7.10 $\pm$ 0.33).

Table 2. Body weight of the goats in backyard goat farming.

Study areas 6 month age (kg)	body weight (Mean $\pm$ SE)
Mymensingh sadar	7.10 $\pm$ 0.33
Trishal upazilla	7.56 $\pm$ 0.29
Muktagacha upazilla	7.29 $\pm$ 0.25
Overall	7.32 $\pm$ 0.29

Source: Field Survey, 2024.

3.2.2: Litter size

Litter size of goats in my study area is given in the table 4. The overall litter size (Mean $\pm$ SE) was (1.72 $\pm$ 0.19) . Highest litter size found in trishal upazilla (1.83 $\pm$ 0.15) and lowest in muktagacha upazilla (1.65 $\pm$ 0.21).

Table-3: Litter size of goats in my study area.

Study areas	Litter size (Mean $\pm$ SE)
Mymensingh sadar	1.67 $\pm$ 0.20
Trishal upazilla	1.83 $\pm$ 0.15
Muktagacha upazilla	1.65 $\pm$ 0.21
Overall	1.72 $\pm$ 0.19

Source: Field Survey, 2024.

3.2.3: Kid mortality rate:

In Mymensingh district, the average infant mortality rate from birth to 3 months was 11.33%. the average mortality rate in trishal upazila is 14%. The average mortality rate is higher in trishal upazila. In muktagacha upazila the average mortality rate is 11% which is lowest in Mymensingh district.

Table -4. Breeding criteria of the goats in backyard goat farming

Criteria	Mymensingh Sadar	trishal upazilla	muktagacha upazilla	frequency (n)	percent (%)
Breeding Type	natural artificial	natural artificial	natural artificial	38	84.44%
Fate of Male kids	castration	castration	castration	7	15.55%

Source: Field Survey, 2024

The study conducted by Singh et al. (1991) supports this finding, indicating an average mortality rate is (13.04 $\pm$ 0.05%). According to Chowdhury et al. (2002), the child mortality rate was 70%, which is lower than the current study.

3.2.4: Breeding type

In the study areas, 38 respondents made up the total of 45 respondents. It was discovered that 38 (84.44%) were reliant on natural breeding for their does. Additionally, it was discovered that 7(15.55%) of the respondents were dependent on artificial breeding for their does.

Table-5. Time of castration of male kids in my study area

Upazilla	less than one month	less than two month	less than three month
Mymensingh sadar	68.88%	25.79%	5.33%
Trishal upazilla	62.56%	30.79%	6.65%
Muktagacha upazilla	53.00%	43.00%	4.00%

In the Mymensingh district, castration of male kids was performed at the ages of less than one month (68.88%), less than two months (25.79%), and less than three months (5.33%). At the upazillas of Trishal and Muktagacha, male children were castrated at the following ages: less than one month (62.56%, 53.00%), less than two months (30.79%, 43.00%), and fewer than three months (6.65%, 4.0%).

3.2.5: Distribution farm goat population:

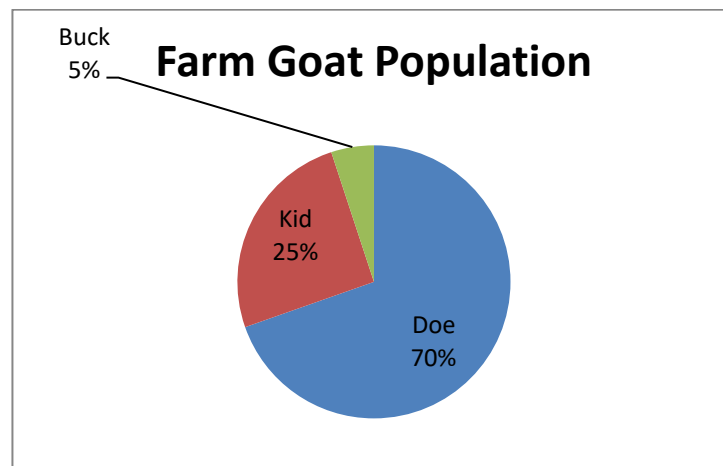


Figure-4: Distribution of Farm goats

3.3: Assessment of Cost, returns and profitability farms

Depending on the amount of their land, farmers can be divided into three categories. A landless one, a marginal one, and a little one make up the first three. However, the research field yielded no big findings. With BDT 50,875.00, small farmers faced the highest total

cost. Landless farmers came in second with BDT 37,900.00, and marginal farmers with BDT 34,500.00 total.

Table-6: Assessment of goat rearing cost, returns and profitability analysis of goat farming system in the study areas.

Particulars	Categories of Farm (N=45)			Average
	landless	marginal	small	
• Average no. of adult goat	7	9	10	8.67
• Average no. of castrated male	3	4	4	3.67
• Average no. of doe	4	5	6	5.00
• Average no. of kids	4	5	6	5.00
A. Investment cost (BDT/GOAT)				
• Purchase cost	25000.00	23000.00	30000.00	26000.00
• Housing cost	3000.00	4000.00	5000.00	4000.00
• Tools and equipment cost	2500.00	1800.00	2000.00	2100.00
Sub-Total (A)	30,500.00	28,800.00	37,000.00	32100.00
B. Maintenance cost				
• Depreciation of building	500.00	350.00	550.00	466.66
• Depreciation of equipment	200.00	300.00	275.00	258.33
Sub-Total (B)	700.00	650.00	825.00	725.00
C. Production cost				
• Feed cost	6200.00	4500.00	8000.00	6233.33
• Castration cost	100.00	100.00	400.00	200.00
• Medicine cost	250.00	300.00	500.00	350.00
• Breeding cost	150.00	150.00	150.00	150.00
• Labor cost	0.00	0.00	4000.00	1333.33
Sub-Total (C)	6,700.00	5050.00	13,050	8266.67
Gross Costs(BDT) (A+B+C)	37,900.00	34,500.00	50,875.00	41091.67
Returns:				
• Sale of castrated male	25000.00	18000.00	52000.00	31666.67
• Sale of kids	8000.00	7000.00	14000.00	9666.67
• Value of unsold doe	23000.00	30000.00	28000.00	27000.00
Gross Return	56,000.00	55,000.00	94,000.00	68,333.33
Net Profit per farm	18,100.00	20,500.00	43,125.00	27241.67
Net Profit per goat	1645.45	1464.28	2695.31	1992.81

Source: Field Survey, 2024

It was found that landless farmers (BDT 18,100.00) and marginal farmers (BDT 20,500.00) had the lowest gross returns per farm, with small farmers receiving the most, BDT. 33,125.00as for the net profit per goat, marginal farmers made the least amount (BDT 1464.28), landless farmers made the most (BDT 1645.45), and small farmers made the most (BDT 2695.31).

CHAPTER-IV

Farming Problems and Policy Recommendations

4.1: Problems for the improvement of goat farming

1. Diseases out break

Infections can result in reduced growth and body weight, abortion in female goats, emaciation, chronic anorexia, lameness, weakness, and death. Goats suffering from foot rot, mixed respiratory infections, diarrhea, enterotoxaemia, and Orf are among the diseases that cause high morbidity and mortality in goats. Antibiotic resistance, inappropriate drug use, and repeated use of antibiotics at doses too high or too low will all exacerbate the illness. Currently, a single antibiotic is ineffective against foot rot and respiratory infections. For goats, abortion storm is another serious health concern. Abortions will result in significant financial losses for goat farmers.

2. Nutritional disorders

Deficiency of various vitamins and minerals, poor plane of nutrition, malnutrition, poor feeding practices, weakness, chronic anorexia and death in extreme cases.

3. Lack of housing facilities

Due to a lack of space, small farmers care for their goats with fewer amenities in the house

4. Insufficiency of grazing land

The lack of enough grazing land is caused by a few different things. The largest problem in goat farming is grazing land for raising goats. Due to a scarcity of grazing pasture, farmers must pay exorbitant prices for the feed and hay they provide for their goats.

5. High mortality rate

High mortality rates are not uncommon in rural settings. There are a number of factors that contribute to the high death rate, including inadequate nutrition during pregnancy, worm infestations, and the prevalence of tick, mouse, fly, and tick infestations.

6. Shedding limitation

Goat farming will be limited by the initial large shed investment.

7. Uncertain Predator attack

Goats are placid creatures, they are readily attacked by wolves, hyenas, dogs, and other carnivorous animals.

8. Market with a lack of organization

Till today most of the rural markets goats will be sold based on number of heads not on body weight .Market instability is typically caused by dishonest middlemen. To selling, they would rather keep their expected goats.

9. Lack of treatment

Treatment will be essential to managing disease outbreaks in goat husbandry.Maintaining appropriate treatment is the primary step towards preventing the disease outbreak.

10. Lack of government initiative

governments have not developed policies that specifically address the needs of goat farmers. This neglect results in a lack of strategic planning, funding, and resources to support the growth and development of the sector.

4.2: Policy recommendations for the improvement of goatfarming

1. To solve the problems of marketing and transportation

Most local marketplaces lack basic amenities like enough room and sanitary facilities. Vehicles capable of transporting goats should be arranged appropriately.

2. To solve the problems of financial support of farmers

Many banks and non-governmental organizations need to provide financial support to farmers. Farmers should have access to both long-term and short-term financing for goat rearing, with the minimum terms and conditions required.

3. To ensure proper treatment facilities of goats

To improve goat production, there needs to be proper vaccination and regular health checkups of goats. For that, veterinary service must be ensured.

4. Government initiative

By giving financial assistance, the government ought to take the required actions to save the farmers.The lack of financial security prevents many impoverished farmers from beginning a goat farm.

5. To provide proper training of farmers

Numerous non-governmental organizations(NGOs) need to have started offering training courses aimed at improving rural farmers' abilities in goat husbandry. By providing information, tools, and assistance that are specifically suited to the requirements of farming communities, these organizations ought to be essential in closing the knowledge gap.

6. To prevent burglary of goat.

4.3: Summery Conclusion

Determining the production and re-production performance of goats, identifying the issues and profitability of goat farms, and formulating policy recommendations for the enhancement of goat farming systems in my region are the objectives of this research. The district of Mymensingh was my study area. It was regarded as the Muktagacha Upazilla, Trishal Upazilla, and Mymensingh Sadar. The majority of farmers are middle-aged, based on the study's findings. The majority of them lack land. The results of my study will improve the reproductive and productive abilities of goats in the area I study. The study unequivocally demonstrates that farmers who have a larger herd can make more money. Despite the fact that raising goats isn't their primary industry, these farmers nevertheless needed financing to get started. The farmers lacked knowledge about disease control and prevention. So if respective authority DLS, NGOs, professionals and model farmers be took goat farming as a farm business and give all sorts of financial and technical supports to the farmers then Goat farming be made as a sustainable agribusiness in the rural Bangladesh at near future.

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Biography

I am Topu kanti das, son of Shibu kanti das and shuely das. I completed my secondary school certificate from Gaforgoan Government School in 2014 and my higher secondary school certificate from Gaforgoan Government College in 2016. I am an intern veterinarian at Chattogram Veterinary and Animal Sciences University, Bangladesh, under the Faculty of Veterinary Medicine. I have a keen interest in veterinary medicine and field research and wish to contribute to the development of my country by making use of my skills and imagination. That way, we can overcome the difficulties this field is currently facing.