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*Original Article*

# Livelihood Improvement of Poor Farmers through Goat Rearing

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**A B S T R A C T**

The present research was carried out to investigate the feeding and management practices of goat as well as income and livelihood improvement of farmers through goat rearing. For this experiment, a total of 45 respondents were randomly selected from three unions (Gazir Bhita, Kaichapur and Narail) of Haluaghat Upazila in Mymensingh district where 15 respondents from each union were randomly chosen. The data were collected through personal interviewing with pre-tested questionnaires. The study revealed that of the farmers were found either primary (46.7%) or below SSC (35.6%) level of education. Majority of them were engaged in agricultural operation (57.8%) and others were involved in service and business. The farmers mainly depend on green grasses (33.3%) and tree leaves (31.1%) to feed their goats. Wheat bran was also given by 35.6% farmers for economic rearing of goats in the experimental areas. The major diseases of goats in the studied areas were found skin disease (73.3%) and PPR (26.7%), respectively. The annual total cost of production per goat was 2154.00 BDT, while gross return and net return from goat rearing per household were 4296.00 BDT and 2142.00 BDT, respectively. Annual food purchasing capacity changes from 50 to 55 percent. The social status of the farmer's family increases where educational status, employment for men, employment for women, social dignity and social acceptance were increased by 35, 24, 58, 26 and 23% after 12 months through goat rearing in the selected areas. The results clearly indicate that goat rearing in Haluaghat upazila was very much profitable. Considering all these parameters, it is clearly found that the families which reared goat have the most rapid changes in terms of livelihood improvement.



## Introduction

Goats (*Capra hircus*) are popular for their adaptability in hot and humid environment, high prolificacy, delicious meat and skin softness. It has immense contribution towards meeting the daily protein (meat, milk, etc.) requirements. The goats significantly contribute to the GDP and ranked second in terms of meat, milk and skin production representing about 27.0, 23.0 and 28.0% among the total contribution of livestock sector, respectively in Bangladesh (FAO, 2009; Husain *et al.*, 1998). They found throughout Bangladesh are also considered as an economically promising genetic resource for poverty alleviation (Amin, 2000) and a source of income generation for the rural peoples where crops and dairy farming are not economical (Hassan *et al.*, 2007). Bangladesh has 26.604 million goats, representing 47.23% of the total livestock population, of which more than 90% comprise Black Bengal goats (DLS, 2021).

In Bangladesh about 48% of the people live below the poverty line (BBS, 2005). About 36% of the total farm households of Bangladesh are involved in rearing goat under scavenging condition (BBS, 2007). In Bangladesh goat rearing has been an important issue for poverty reduction (Lassen and Dolberg, 1984) for the poor peoples. It has an important role as national income also important for creating employment opportunities (Huq *et al.*, 1990), savings and income generation of the poor people. Government and Non-Government Organizations (NGOs) are providing micro credit and necessary training to the rural farmers to increase

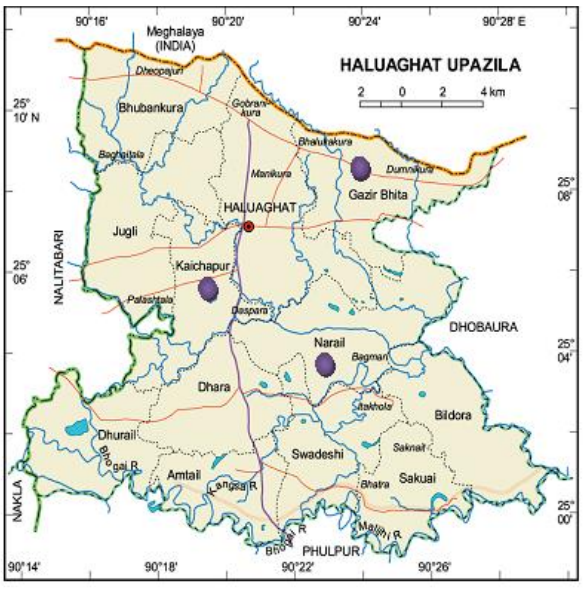
the production of goat in Bangladesh (Islam and Islam, 2018). The government of Bangladesh has started a national program in 2002 (Islam and Huque, 2002) on poverty alleviation, self-employment, food supply and increase of skin exportation through goat rearing. The farmers raise goats mostly by tethering and free grazing system of feeding but stall feeding is practically very rare in Bangladesh (Huq *et al.*, 1991), although in adverse climatic conditions goats are housed and provided stall feeding with tree leaves, natural grasses and kitchen wastes (Husain, 1993). To meet up the additional animal protein requirements of the extended population, goat farming has gained rapid popularity in Bangladesh. Since goat farming need less initial investment and low maintenance, women and children can also contribute in earning. Attaining slaughter age quicker, goat rearing facilitates faster output than that of other livestock. Having no kind of religious taboo, goat farming products (milk, meat, skin, etc.) provide increased changes in socio-economic conditions of farmers.

In Bangladesh, goat has significant importance on livelihoods improvement. Considering the above facts and circumstances, the experiment was carried out to investigate the socio economic conditions of goat farmers, management practices of goats and to measure the livelihood changes of goat farmers in the selected areas of Haluaghat upazila in Mymensingh district of Bangladesh.

## 2. Methodology

### 2.1 Selection of study sites and respondents

The experimental site is located to the adjacent to Indian border with Meghalaya (Figure 1) where plenty of pasture land is available which is very much suitable for goat rearing. The study was conducted from April to June, 2011 at three unions of Haluaghat upazila in Mymensingh district of Bangladesh where each union contained 3 villages. Fifteen respondents were randomly chosen from each union. Therefore, in total 45 respondents were chosen from three unions for collection of data to satisfy the objectives. Distributions of respondent are shown in Table 1.




Selected areas of the study site

**Figure 1. Map of Haluaghat upazila showing different unions of data collection**

### 2.2 Preparation of the interview schedule

The interview schedule was carefully prepared based on the objectives of the study. A draft schedule was developed before preparing the final schedule. The draft schedule was then pre-tested with selected farmers in the study area and then it was rearranged and modified as required.

**Table 1. Name of the district, upazila, unions, villages and number of farmers in experimental areas.**

| District | Upazila | Union | Village | Number of farmers |
|---|---|---|---|---|
| Mymensingh | Haluaghat | Gazir Bhita | Dumnikura<br>Nolkura<br>Bhalkakura | 15 |
| | | Kaichapur | Palashtala<br>Chotodaspara<br>Borodaspara | 15 |
| | | Narail | Bagmara<br>Itakhola<br>Khorma | 15 |
| **01** | **01** | **03** | **09** | **45** |

### 2.3 Procedure of data collection

The information was collected on pre-tested questionnaires through personal interviewing from the individual respondent present in their own house. The information supplied by the respondents was recorded directly on the interview schedule. The information was checked carefully before leaving the study area in order to minimize errors. Data were collected in local unit. These were subsequently converted into appropriate standard unit.

### 2.4 Variables and their measurements

The selection of variables and their measurements constitute an important task in research. The selected variables in this study are as follows educational status, occupational status, socio-economic status, livestock status, breeding condition, feeding management, housing condition, diseases and health care practices of goats, daily routine activities of farmers for goat rearing, annual cost of production and income from one goat, use of goat income for livelihood (food, cloth, house, education, health care, social status, etc.), problems of goat rearing and farmers suggestion to increase the goat production in the selected areas.

### 2.6 Tabulation and statistical analysis

All the collected data were checked and cross checked before transferring to the master sheets. The data were coded, compiled, tabulated and analyzed to accomplish the objectives of the study. Qualitative data were converted into quantitative by means of suitable scoring technique wherever applicable. Data were presented mostly in the tabular form widely used and easy to understand. Various statistical measures like number, average, percentage distribution, Chi-square test etc. were done in describing the variables with the help of SPSS-v-2016 computer package program.

## 3. Results and Discussion

### 3.1 Socio-economic information of the farmers in Haluaghat upazila

Most of the farmers lived in tin shed and kutcha house and also reared poultry with goats. The average age of the farmers ranged from 32 to 50 years and they had a minimum or no land for cultivation. The educational and occupational status of the farmers are presented in Table 2. The findings

revealed that the maximum goat farmers were either Primary (46.7%) or below S.S.C. (35.6%) level. Few farmers had completed their graduation (13.3%). Praveena et al. (2014) and Tudu and Roy (2015) stated that majority of the goat keepers were illiterate in pastoral conditions but in the present study, it was found that the educational level of farmers was gradually increased day by day.

The selected farmer families were engaged with various types of occupation. Agriculture was obviously the main occupation in the study areas. The respondents who had agriculture as main occupation were found 57.8% in the experimental areas . The remaining were involved in business (26.7%) and services (15.6%) which is represented in Table 2. Rawat *et al.* (2015) stated that most of the respondents taken goat rearing as a secondary or side occupation for generating additional income for the family. Similar findings were revealed by these findings are close to Hossain *et al.* (2017) reported that the farmer's families were poorest of the poor and illiterate and they had a minimum or no land for cultivation.

**Table 2. Educational and occupational status in the experimental areas.**

| Parameters | Category | Frequency | Percentage of respondents |
|---|---|---|---|
| Education | Illiterate | 2 | 4.4 |
| | Primary | 21 | 46.7 |
| | Below S.S.C | 16 | 35.6 |
| | Degree pass | 6 | 13.3 |
| | **Total** | **45** | **100.0** |
| Occupation | Agriculture | 26 | 57.8 |
| | Service | 7 | 15.6 |
| | Business | 12 | 26.7 |
| | **Total** | **45** | **100.0** |

### 3.2 Feeds and feeding management of goats in the studied areas

Various types of feed ingredients were used in the study areas for goat rearing are presented in Table 3. It was found that green grass was given by 33.3% farmers, wheat bran was given by 35.6% farmers and tree leaves were given by 31.1% farmers in the experimental areas for rearing of goats in semi-extensively. The major sources of feed ingredients they provide to goats are own sources (35.6%). This is mainly tree leaves or green grasses. Besides this, they have another sources of feeds are roadside grasses (33.3%). But during the rainy season the availability of green grasses and roadside grasses become lower. At that time farmers have to purchase feed from other side and during this time feed cost were increased for goat rearing. Rainy season was one of the main problems among the whole season and feed cost was also another problem for goat rearing. They also addressed the other constraints for feeds and feed management including scarcity of land for fodder production, seasonal fluctuations in supply of feeds and fodders, low quality feed, and poor Husbandry practices. The findings closely similar to the Islam and Islam (2018) reported that more than 80.0% farmers fed their goats with locally available roughages and tree leaves in Munshiganj district. These results also supported by the findings of Akbar *et al.* (1995) and Rahman (2001) where they observed goats are reared in the villages solely on grasses which contains higher percentage of crude fibre.

**Table 3. Availability of major sources of feeds and feeding of goats in the studied areas.**

| Parameters | Category | Frequency | Percentage of respondents |
|---|---|---|---|
| Types of Feeds | Grass | 15 | 33.3 |
| | Wheat Bran | 16 | 35.6 |
| | Tree leaves | 14 | 31.1 |
| | **Total** | **45** | **100.0** |
| Major Sources of Feed | Roadside | 15 | 33.3 |
| | Own | 16 | 35.6 |
| | Purchase | 14 | 31.1 |
| | **Total** | **45** | **100.0** |

### 3.3 Diseases and health care of goats

The diseases and health care practices followed by goat farmers in the experimental areas are presented in Table 4. It was reported by the farmers that the major diseases of goat were skin disease (73.3%) and peste des petits ruminant (PPR) (26.7%). Moreover, all the respondents reported that the prevalence of skin disease was found highest both for male and female goat. Occurrence of various infectious diseases was higher in rainy season followed by winter season and summer season. This causes economic loss to the farmers. Because of the farmers have little or no knowledge on the causes and preventive measures of skin diseases. This is due to lack of proper training of farmers on goat rearing. The present findings supported by the Hossain *et al.* (2017) and Islam and Islam (2018) reported that two major diseases of goat in experimental areas were skin disease (73.3% and 61.0%) and PPR (26.7% and 20.0%) in Mymensingh and Munshiganj district, respectively.

The major sources of vaccine for goat in experimental areas were from local market (91.1%) and rest from livestock office or veterinary clinic. This is clearly indicates that there is a lack of extension program of livestock office about vaccination program. On the other hand, the major sources of used medicine for goat in experimental areas was medicine shop (66.7%). Some people can get medicine directly from veterinary hospital (33.3%).

**Table 4. Health management of goats in the experimental sites.**

| Parameters | Category | Frequency | Percentage of respondents |
|---|---|---|---|
| Major diseases of goats | Skin disease | 33 | 73.3 |
| | PPR | 12 | 26.7 |
| | **Total** | **45** | **100.0** |
| Source of vaccines | Bazar | 41 | 91.1 |
| | Livestock office | 4 | 8.9 |
| | **Total** | **45** | **100.0** |
| Sources of medicine | Medicine Shop | 30 | 66.7 |
| | Hospital | 15 | 33.3 |
| | **Total** | **45** | **100.0** |

### 3.4 Daily routine activities of farmers for goat rearing

Daily routine activities of farmers in goat rearing are shown in Table 5. Usually farmers cleaned their house in the morning at 6.00 am when goats were taken out. Grazing was normally done at 7.00 am to 12.00 pm and 1.00 to 5.00 pm. Night shelter was normally arranged at 6.00 pm.

**Table 5. Daily routine activities of farmers in goat rearing.**

| Time | Activities |
|---|---|
| 6.00 am - 6.30 am | Goats were taken outside the house, cleaning the house |
| 6.30 am -7.00 am | Supply drinking water & sometimes some supplements |
| 7.00 am -12.00 pm | Goats were taken in the field or roadside for grazing |
| 12.00 pm -1.00 pm | Given rest under the tree in the yard or outside and supply drinking water |
| 1.00 pm-5.00 pm | Goats were taken in the field or roadside for grazing |
| 5.00 pm-6.00 pm | Returned the goat from grazing, Supply drinking water & sometimes some supplements |
| 6.00 pm - | Goats were sheltered in house |

### 3.5 Cost-benefit of goat rearing

#### 3.5.1 Management and rearing cost of goat

The average rearing and healthcare cost per goat per year are shown in Table 6.

The average feed cost was 486.00 BDT, breeding cost was 86.00 BDT and average cost of housing & equipment was 1144.00 BDT. Farmers generally bred their goat from the neighbor's buck and they do not do any artificial insemination in goat rearing. For this reason the breeding cost was lower than the other costs. On the other hand they purchase feed only in the scarcity period.

The major costs of healthcare were medicinal cost (390.00 BDT) and vaccine cost (48.00 BDT). Goats are very much susceptible to various contagious diseases. During the rainy season, the occurrence of disease was spread-out and at that time the healthcare cost was increased.

Total management and rearing cost per goat per year was 2154.00 BDT in the studied areas. Cost of housing & equipment was the maximum among the average rearing cost. The second highest cost was feed cost.

**Table 6. Management and rearing cost for one goat per year in the experimental areas.**

| Category | Expenditure (BDT) |
|---|---|
| **Average rearing cost per goat** | |
| Average Feed cost (year) | 486 |
| Average Breeding cost (year) | 86 |
| Average Cost of housing & equipment (year) | 1144 |
| **Total rearing cost** | **1716.00** |
| **Average healthcare cost per goat** | |
| Average Cost of medicine (year) | 390 |
| Average Cost of vaccine (year) | 48 |
| **Total healthcare cost** | **438.00** |
| **Total management and rearing cost per goat (year)** | **2154.00** |

#### 3.5.2 Cost of farmers family member

The average expenditures of family per year per head in the studied areas are shown in Table 7. Food cost was the maximum among the total expenditure varies from 500.00 BDT to 2000.00 BDT. The second highest expenditure was social status from 100.00 BDT to 2000.00 BDT.

**Table 7. Average expenditure (BDT) of family per year per head in the studied areas.**

| Category | Average expenditure (BDT) | Minimum (BDT) | Maximum (BDT) |
|---|---|---|---|
| Food | 1368.00 | 500.00 | 2000.00 |
| Cloth | 588.00 | 50.00 | 1200.00 |
| House | 274.00 | 10.00 | 500.00 |
| Education | 392.00 | 100.00 | 2000.00 |
| Health Care | 690.00 | 50.00 | 1200.00 |
| Social status | 934.00 | 100.00 | 2000.00 |
| **Total** | **4246.00** | **810.00** | **8900.00** |

#### 3.5.3 Return from kid or goat

The main return from goat in the experimental areas was from kid. All newly born kids (whether male or female) were sold at the age of six month to one year and these benefits were added to the yearly income of the farmers. The value of kid varies from 1500.00 BDT to 5450.00 BDT (shown in Table 8).

Generally, Black Bengal goat is a poor milk producer and short lactation period. All farmers not sell the total milk in the markets, some farmers consumed milk by the family and in most cases the available quantity of goat milk was consumed by its kids.

**Table 8. Total Income from goat rearing (one year).**

| Category | Frequency (BDT) | Minimum (BDT) | Maximum (BDT) |
|---|---|---|---|
| Income from 1 goat (year) | 4296 | 1500.00 | 5450.00 |

#### 3.5.4 Net income from one goat per year

Considering total income and total expenditure per year per goat the net income was found which is represented in the Table 9. The net income was 2142.00 BDT. It indicates that rearing of goat in the experimental area was profitable. Das (1996) also observed that per household annual total cost of production of Black Bengal goat was BDT 242.20, while gross return and net return per household were BDT 880.00 and BDT 633.80 respectively in Mymensingh district of Bangladesh which supports the present findings.

**Table 9. Total and Net income from one goat per year in the studied areas.**

| Category | Frequency (BDT) |
|---|---|
| Total Income per year per goat | 4296.00 |
| Total Expenditure | 2154.00 |
| **Net Income** | **2142.00** |

### 3.6 Livelihood improvement

Livelihood improvement of farmers in the experimental area in relation to purchasing capacity, social status and increase in employment through rearing of goat in the studied areas are presented in Table 10.

#### 3.6.1 Impact on purchasing capacity

Purchasing capacity of the selected farmers was increased where food purchasing capacity was increased by 55 percent before the study period. Similarly, cloths purchasing capacity was increased by 21 percent. Also the family assets such as ornaments were increased by 23 percent on an average of the farmer's family after 12 months.

**Table 10. Impact of goat rearing on livelihood activities in the studied areas.**

| Category | Initial Value (BDT) | Final Value (BDT) | Frequency (%) | Rank order |
|---|---|---|---|---|
| Food | 585 | 1300 | 55 | 1 |
| Social status | 700 | 934 | 25 | 2 |
| Health care | 530 | 690 | 23 | 3 |
| Cloths | 470 | 588 | 21 | 4 |
| Education | 340 | 392 | 13 | 5 |
| House | 260 | 274 | 5 | 6 |

### 3.6.2 Impact on social status

The educational status was increased by 13 percent and social dignity was increased by 25 percent after 12 months which is shown in Table 10. Farmers stated that the increase in employment by 24 and 58 percent for men and women respectively and social acceptance 23 percent increased after 12 months. So, it was clearly found that the income, social and livelihood status was increased in the experimental areas by goat rearing. Akter (2004) found the same impact of goat farming on women development in some selected areas of Mymensingh district. Nasrin (2004) also examined similar results of the profitability and potentiality of goat rearing for poverty reduction in an upland area like Naogaon district of Bangladesh and observed that small livestock rearing was profitable in the context of livelihood improvement.

## 4. Conclusion

Considering all the parameters related to livelihood, it was clearly found that the socio-economic status of goat farmers was improved through goat rearing. Goat farming has become a profitable business because it requires low investment as well as it's an effective instrument for poverty alleviation and also women empowerment for the rural poor people. On the other hand, the management practices need to be improved through improvement of farmers toward goat Husbandry for gear up production in the current community.

## Conflict of interest

The authors declare that there is no conflict of interest with publishing of this article.

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