

Browsing habit of goat in three different areas of Bangladesh

M.M. Hossain, M. Khan and S. Akhter

Department of Animal Science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh.

Abstract: The aim of the present study was to investigate the existing rearing pattern of goat and to study the extent of browsing of indigenous tree leaves and shrubs by goat. This study was conducted in three different locations of Bangladesh namely, Ghanna of Jhenaidah, Boraid of Mymensingh and Balapara of Rangpur district. Thirty five farmers from each of the study area were interviewed and collected data were statistically analyzed. In Ghanna of Jhenaidah, the average number of goat reared by the farmer was 8.85 and they have been rearing goat from 9.6 years. About 77.15% of the farmers provided housing facility to their goats. Of all the farmers, 25.7% let their goat for browsing for 7.8 hours; while 9% of the farmers vaccinated their animal regularly. In Boraid of Mymensingh, the average number of goat reared by the farmer was 3.74 and they have been reared goat from 9.48 years. 20.0% of the farmers were provided housing facility to their goats. 22.8% of the respondent farmers were let their goat for browsing for 7.14 hours, 18% of the farmers vaccinated their animal regularly. In Balapara of Rangpur district, the average number of goat reared by the farmer was 2.88 and they have been reared goat from 8.45 years. 48.58% of the farmers were provided housing facility to their goats. 85.0% of the respondent farmers were let their goat for browsing for 6.45 hours, 57% of the farmers vaccinated their animal regularly. The results of this study will be helpful for the farmers and researchers to know the existing rearing pattern and extent of browsing of goat in different areas of Bangladesh.

Key words: Goat, Browsing habit, Tree leaves.

Introduction

Goat is an important and promising animal genetic resource in the developing world, especially in Asia and Africa. Goat occupies a very significant position as an animal genetic resource in the predominantly agro-based farming system of Bangladesh. Goats in Bangladesh are valued for their contribution for meat and skin. In Bangladesh goat is the most important species to be reared by the farmers. In Bangladesh goat population is 34.5 million and goat meat production is 0.13 million MT, goat milk production is 1.31 million MT and fresh skin production is 42000 MT (FAO, 2003). Goats are not evenly distributed all over the Bangladesh. Its concentration in different area varied according to the land type, availability of browsing area, climatic condition and diseases incidence of the areas etc.

Goats play a vital role in the subsistence economy of small holders in Bangladesh. The contribution of goats in the national economy as sources of meat and skin are well recognized. In our rural context, goats are primarily reared by farm families to provide with meat and milk for consumption and high quality skin for export. 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. The government of Bangladesh has started a national programme in 2002 (Islam and Huque, 2002) on poverty alleviation, self employment, food supply and increase of skin export through goat rearing.

Goat is the small ruminant species very popular to the poorer section of people in the country. According to the census of Agriculture 1996, more than 76% of the goat is reared by the landless and small farmers. Goats usually browse on shrubs, tree pods, leaves and fruits. These forages are mainly available on the harvested or fallow land, roadsides, crop field ridges and canal sides. Their availability depends on the total communal grazing fields to be shared with other ruminants and the season. The integration of forestry with tree leaves and fruits is a potential browsing areas of goat.

Tree leaves, which are available in abundance in Bangladesh, are fed to goats. Numerous works suggested that various tree leaves usually used as a scarcity feed or

supplement feed for goat (Saadullah, 1989; Islam *et al.*, 1991; Alam and Akbar, 1989). Goats utilize tree leaves and shrubs efficiently and if fed adequately, it may accelerate their potential productivity (Amin and Alam, 1990). Now it is need to investigate in what extent farmers provide tree leaves to their goat. At the same time commonly used tree leaves and their availability in different areas of Bangladesh need careful attention for research. Under these circumstances, observation on the extent of browsing of indigenous tree leaves in different areas of Bangladesh is urgently needed. The present study was, therefore, undertaken to study the existing rearing pattern of goat in three selected area of Bangladesh, and to obtain information on available feed resources used for goat browsing.

Materials and Methods

Study area and period of study: The field survey was conducted to fulfill the objectives of feeding strategies of goats. Three districts of Bangladesh were chosen considering the high concentration of goats. Ghanna village of Jhenaidah Sadar upazila under Jhenaidah district, Boraid village of Bhaluka upazila under Mymensingh district and Balapara of Rangpur Sadar upazila under Rangpur district were selected for survey. The survey of the study covered one year period from July 2004 to June 2005.

Selection of Sample: A total 105 goat rearing farmers taking 35 from each location were selected randomly for data collection with interview schedule. Three group discussions with goat rearing farmers were also made in these three locations in presence of Upazila Livestock Officer (ULO) and local NGOs representatives for collecting information regarding goat rearing.

Design of interview schedule: Following the objective of the study, a draft interview schedule was prepared at first. The draft interview schedules were pre tested in the survey area. Then some parts of the draft schedule were modified in the light of actual and practical experiences gathered from pre-testing. After making necessary adjustment a final interview schedule was developed in logical sequences which include the following information:

(i) identification of the respondent and family information
(ii) Family size, education and occupation of the farmer
(iii) Land utilization pattern (iv) Information about goat
(v) Goat keeping trend (vi) Housing management (vii) List of tree leaves/pods usually browsed by goat and their availability throughout the year (viii) Browsing time (ix) Daily routine activities of farmers for rearing goat (x) Participation of family members in different activities of goat rearing (xi) Health care (xii) Marketing of goat and goat products (xiii) Training on goat rearing (xiv) Problems related to goat rearing.

Data collection and processing: Primary data were collected from the farmers who were involved in goat rearing. Before starting the interview the objectives and nature of study were focused to farmer. Then interview were completed by questioning and answering method. The collected data were coded, summarized and processed for the analysis. Data were confirmed to eliminate all possible errors and inconsistencies. Then the processed data were inserted in computer using the concerned software Microsoft Excel.

Statistical analysis: Data were compiled, tabulated and analyzed with simple statistical method to fulfill the objectives of the study. Tabular technique was applied for the analysis of data using simple statistical tools like mean, standard deviation and percentages. Data were analyzed with the help of computer package Microsoft Excel.

Results and Discussion

Socio-economic background of the farmers: The average age of the goat rearing farmers in Ghanna of Jhenaidah, Boraid of Mymensingh and Balapara of Rangpur were 39.14, 38.86 and 34.34 years respectively. The average family member of Ghanna of Jhenaidah,

Boraid of Mymensingh and Balapara of Rangpur were 6.94, 6 and 6.2 respectively. Land utilization pattern of the respondent goat rearing farmers of three study area is presented in Table 1. It reveals that among the three locations, the farmers of Ghanna of Jhenaidah had largest farm size and the farmers of Balapara of Rangpur had smallest farm size. The respondent farmers of the study area were classified into four categories on the basis of their level of education. In Ghanna of Jhenaidah 71.4% farmers were illiterate followed by 14.3% had primary level, 11.5% had secondary level and 2.8% had above secondary level education. In Boraid of Mymensingh 74.2% farmers were illiterate followed by 16.2% had primary level, 5.9% had secondary level and 3.7% had above secondary level education. In Balapara of Rangpur 65.7% farmers were illiterate followed by 23% had primary level, 8.5% had secondary level and 2.8% had above secondary level education. The average literacy rate of farmers of the study area was 29.6% which seemed lower than the national average literacy rate. According to BBS, 1999 the national average literacy rate was 48.7%. From the study area it was observed that 94.2, 85.7 and 88.5 % of farmers of Ghanna, Boraid and Balapara respectively considered agriculture as main occupation. Saadullah and Hossain, (2002), conducted a survey in 7 different agro-ecological zones covering 1050 livestock households and reported that more than 70% of the goats belong to the landless and small farmers. Alam *et al.* (1991) observed that large farmers possessed highest number of cattle and poultry compared to goat and duck. Landless and marginal farmers do not require much management skills and can easily manage their goat by women and children (Acharya and Bhattacharyya, 1992).

Table 1. Socio-economic background of goat rearing farmers of three study area

Parameters	Jhenaidah (n=35)		Mymensingh (n=35)		Rangpur (n=35)	
	Mean	SD	Mean	SD	Mean	SD
Age of the farmer (year)	39.14	12.03	38.85	13.17	34.34	8.70
Family size (number)	6.94	2.36	6.00	1.43	6.42	1.77
Home area (decimal)	32.8	30.7	26.8	23.3	12.7	9.7
Cultivable area (decimal)	182.6	175.7	88.5	79.3	55.0	47.2
Fallow land (decimal)	1.88	11.1	2.74	16.2	5.71	19.2
Area rent in (decimal)	91.4	89.8	44.5	43.3	43.0	41.3
Pond (decimal)	1.1	6.7	1.0	2.6	1.1	2.9

Goat distribution in survey areas: Highest numbers of goats (8.85) were reared in Jhenaidah district is southern district while few number of goats (2.88) were reared by farmers in Rangpur district is northern region of Bangladesh. Number of castrated goats were lower than

number of doe since farmers reared goats for reproduction. Most of the household reared their goat since about 10 years. May be goats were reared generation to generation but the women start their rearing after their marriage (Table 2).

Table 2. Number of goat, period of goat rearing of three survey areas of Bangladesh

Parameters	Ghanna of Jhenaidah		Boraid of Mymensingh		Balapara of Rangpur	
	Mean	SD	Mean	SD	Mean	SD
Total goat (number)	8.85	5.0	3.74	1.97	2.88	1.60
Doe (number)	3.77	2.63	2.02	0.94	2.0	1.23
Castrated male (number)	3.28	2.20	0.85	0.74	0.22	0.12
Goatling (number)	1.42	1.20	0.62	0.37	0.37	0.28
Buckling (number)	0.37	0.24	0.22	0.14	0.28	0.12
Period of goat rearing (years)	9.60	5.56	9.48	5.47	8.45	5.82

Availability of tree pods/leaves and shrubs in survey areas: Most of the farmer of Boraid of Mymensingh use

jackfruit leaves for their goat because it is available and a preferable feed. Ipil Ipil, Guava and Mehgoni leaves were

mainly used by the farmers of Ghanna of Jhenaidah. Overall, the farmers of Ghanna of Jhenaidah owned more trees than the farmers of other two locations (Table 3).

Saadullah and Hossain, (2000), observed the number of trees owned by the farmer involved in livestock rearing in different district of Bangladesh.

Table 3. Number of trees owned by goat rearing farmers in three survey areas of Bangladesh

Name of trees	Ghanna of Jhenaidah		Boraid of Mymensingh		Balapara of Rangpur	
	Mean	SD	Mean	SD	Mean	SD
Jackfruit (<i>Artocarpus heterophyllus</i>)	7.88	5.97	25.22	17.83	4.00	3.28
Mango (<i>Mangifera indica</i>)	6.40	6.39	11.54	10.91	2.91	1.52
Guava (<i>Psidium gujava</i>)	39.02	33.71	2.80	2.44	1.62	0.94
Banana (<i>Musa sapientum</i>)	62.65	51.48	25.11	15.54	32.31	30.27
Kul (<i>Ziziphus mauritiana</i>)	15.11	14.38	3.33	3.25	5.61	4.38
Neem (<i>Azadirachta indica</i>)	3.11	2.28	2.08	1.90	4.38	3.30
Mehgoni (<i>Switenia macrophylla</i>)	25.14	22.55	8.51	4.35	1.85	1.11
Ipil Ipil (<i>Leucaena leucocephala</i>)	52.17	17.17	0	0	0	0

Type of goat keepers in survey areas: Mainly small farmers (land <250 decimal) were kept goat. However, most of their land was used for cultivating crops while a very small portion of total land area (2%) was fallow which is suitable for goat browsing. The farmers rented land (30%) for crop production but not for fodder

cultivation. Among these small farmers, major portion covered by poor and very poor people who kept goat in small number of goats. According to Bangladesh Census of Agriculture (1996), more than 76% of the goat is reared by the landless and small farmers.

Table 4. Average farm size of goat keepers in three selected survey areas (Jhenaidah, Mymensingh and Rangpur)

Land type	Area (decimal)	% of total
Homestead area	24	12
Cultivable area	109	55
Fallow land	3	2
Area rented for cultivation	60	30
Pond	1	1
Total farm size	197	100

Browsing in the community area: In Ghanna of Jhenaidah, 25.7% farmers permit their goat to browse in the community area. In Boraid of Mymensingh, 22.8%

farmers and in Balapara of Rangpur 85% farmers let their goat to browse in the community area. It reveals that most

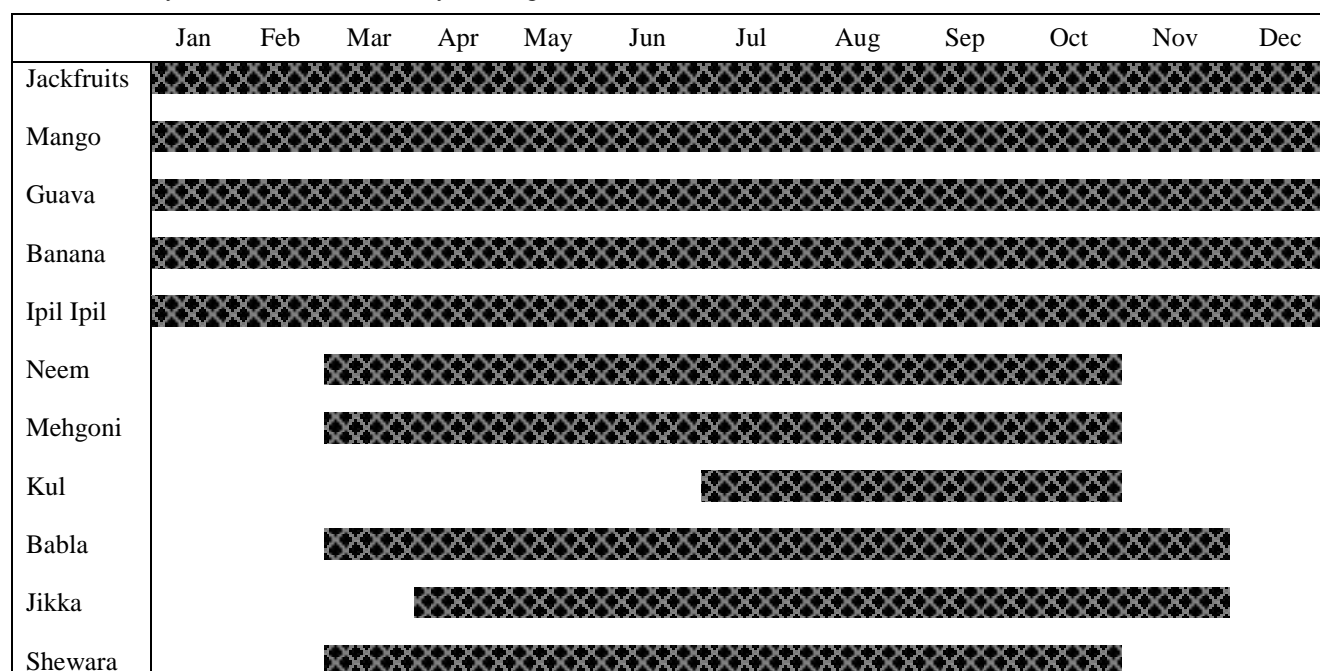


Fig. 1. Availability of different tree leaves and shrubs round the year

of the farmers of Ghanna and Boraid didn't allow their goat to browse in the community. But most of the farmers, of Balapara allowed their goat to browse in the community area. Ouedraogo *et al.* (2005) studied the behaviour of goats, i.e. grazing, browsing, walking, resting, ruminating

and other activities during dry season and cool season. He found that goat spent 34.3% of their time for browsing.

Availability of tree pods/fruits around the year: The availability of different tree leaves and shrubs round the year in three selected survey areas (Jhenaidah,

Mymensingh and Rangpur) are shown in Figure 1. Keir *et al.* (1997) found that the fresh leaves of jackfruit trees are valuable feed resources for goat.

Demand and supply of goat meat: There is a high demand of goat meat throughout the year. However, its demand increased slightly during Eid-ul-Azha. The demand of castrated goat (Khashi) about 1.5-2.0 years old remains higher because these goats are sacrificed in Eid-ul-Azha. The price of goat meat increases over the period. Price spread of goat meat in Bangladesh is Taka 140-160/Kg (1US\$= Taka 65). Goat production increases with increase of the demand of goat meat and goat keepers gain higher profit by goat rearing. The average size at maturing for sale in the market is 15-18 kg for a price of Taka 2000 to 2500 per male goat.

Marketing chain of live goat and goat meat: Marketing chain are alternative routes of products flows from producers to consumers (Kohls and Uhl, 1980). The marketing chain of goat and goat meat is analyzed together because of the strong connection between the two channels and presented in Fig. 2.

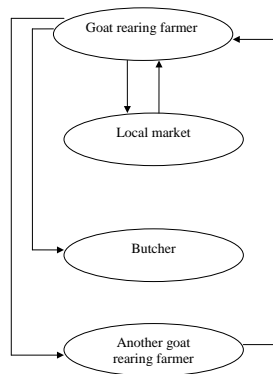


Fig. 2. Marketing chain of live goat and goat meat in Bangladesh

Goat is marketed in Bangladesh in a specific place owned by local government. Goat marketing place is a part of a market. The market is leased to local person for a year by giving a fixed amount of money to government. The place is maintained by the market authority.

Problems in goat marketing: Following major problem are involved in goat marketing: (i) Lack of capital (ii) Price fluctuation (iii) High transportation cost (iv) Sometimes it takes long time to sell (v) Illegal collection of money in the market place and transportation (vi) Losses of death, snatching and accident (vii) Lack of drainage and shelter in goat market.

Suggested measures of goat marketing: Goats can be marketed in many ways. Methods of marketing will vary in sales costs and effort of the producer. Following measures could be taken to improve goat marketing:

(i) Timely supply of credit on easy terms (ii) Action against illegal collection of money (iii) Improvement of market facilities (iv) Easy and available market information to reduce risks.

Problems related to goat browsing: Goat rearing farmers of the three study area expressed different problems. Those problems are given below: (i) Shortage of feed in

dry season (ii) Browsing is not possible in rainy season (iv) Lack of capital (v) Lack of government loan (vi) Disease prevalence is a great problem (vii) Lack of veterinary service (viii) Lack of vaccination program (ix) Lack of training facility (x) Lack of breeding station in the locality

From the study it may be concluded that most of the farmers reared their goat in traditional scavenging rearing system. Goats are mainly live on browsing of tree leaves. Provision of concentrate feed other than tree leaves were scanty.

References

- Acharya, R. M. and N. K. Bhattachariyya. 1992. Status of small ruminant production. FAO round table on International Co-operation on Small Ruminant Research and development, Ashok. Hotel, New Delhi, India. pp. 1-43.
- Alam, N. and M.A. Akbar. 1989. A study on the effect of supplementation of mango (*Mangifera indica*) and shaora (*Streblus asper*) leaves to the diet of indigenous goat. M. Sc. Thesis. Department of Animal Nutrition. Bangladesh Agricultural University.
- Alam, S. M., M. F. Haque, D. C. Paul and M. S. Hussain. 1991. ownership pattern and feeding practices of livestock at the jessore farming system research site (Bangladesh). *Bang. J. Anim. Sci.* 20(1-2): 75-82.
- Amin, S.M. and M.R. Alam. 1990. Utilization of native grass by goat. M. Sc. Dissertation. Department of Animal Science. Bangladesh Agricultural University.
- Bangladesh Agricultural Census. 1996. Bangladesh Bureau of Statistics, Ministry of Planning, Dhaka, Bangladesh.
- BBS (Bangladesh Bureau of Statistics). 1999. Statistical Year Book of Bangladesh, Ministry of Planning, Government of the People's Republic of Bangladesh.
- FAO (Food and Agricultural Organization). 2003. Production Year Book. Rome, Italy.
- Islam, M., M.R. Islam and M.M. Rahman. 1991. Potential shrubs and tree fodder for small holder livestock production in Bangladesh, *Asian Livestock*, 16 (2).
- Islam, M.R. and Q.M.E. Huque. 2002. Proceedings of the workshop on poverty alleviation through goat production: national program (27 April-23 May, 2002), Bangladesh Livestock Research Institute, Savar, Dhaka.
- Keir, B., V. B. Dinh, T. R. Preston and E. R. Orskov. 1997. Nutritive value of leaves from tropical trees and shrubs: Intake, growth and digestibility studies with goats. *Livestock Research for Rural Development*, 9 (4).
- Kohls, R.L and J.N. Uhl. 1980. *Marketing of Agricultural Products (5th Ed)*, Macmillan Publishing Co. Inc., New York.
- Ouedraogo, S., C. Y. Zoungrana- Kabore and I. Ledin. 2005. The browsing activities of goats, sheep and cattle on natural pasture in the sub-humid zone of west Africa. http://www.vcn.vnn.vn/sp_paper_2005/sp_5_11_2005_7.htm.
- Saadullah M. and M. M. Hossain. 2000. Quantification of locally available feed resources and feeding systems of animal in different regions of Bangladesh, Bangladesh Agricultural Research Council, Farmgate. Dhaka and Bangladesh Agricultural University, Mymensingh, pp-32.
- Saadullah, M. 1989. Availability and use of shrubs and tree fodder in Bangladesh, Proceedings of a workshop on shrubs and tree fodder for farm animals in Deupasar, Indonesia, 24-29 July, 1989, Editor, C. Devendra. 221-236.