Bangladesh Journal of Extension Education *ISSN 1011-3916*
Volume 20, No. 1&2, 2008:41-48 *Research Article*

Improvement of Livelihood and Food Security through Goat Production in Bangladesh*

M. Akteruzzaman[1], M.M. Hossain[2], S.M.A. Rahman[3] and A. Nahar[4]

Abstract

The study was carried out in six divisions of Bangladesh taking one district from each division covering 100 credit recipient goat farmer and 25 non-beneficiaries. Thus, about 600 beneficiaries and 150 non-beneficiaries were surveyed during July 2007 to June 2008. Evidence showed that only 3.63% beneficiaries were women headed households. The program covers a lesser number of illiterate beneficiaries (only 23.67%) and was dominated by primary and secondary level of education. The average farm size of beneficiaries was estimated 90.58 decimal and the annual income was Tk.78,946 only. On an average, a borrower received Tk. 5,807 as credit where only 18.57% utilized exclusively for goat rearing and 14.96% in business. The cost of rearing goat per farm was Tk 6,722 and Tk. 11,275, in pre-project and post-project situation, respectively. About 73% borrowers thought that the scope of employment increased and 60% of them mentioned that moderate level of employment generation was created due to goat rearing. The gross return from goat rearing was Tk. 9,195 and Tk. 17,010 per farm, respectively in pre-project and post- project situation and the net return was found Tk. 2,473 and Tk. 5,735, respectively which was about 8% of their annual household income. A lower level of changes in livelihood status was observed in terms of family and livestock assets, household income, access to housing and sanitation and safe drinking water and consumption and food security. Finally, a set of recommendations were made for policy guidelines.

***Keywords**: Livelihood, food security, goat, Bangladesh.*

Introduction

About 32% of the total farm households in Bangladesh are involved in rearing goat under scavenging condition (BBS, 2006). Goat production increased at the rate of 3% per annum during the late eighties and 7.89% per annum during the early nineties, which is faster than that of other species of livestock (Alam, 1995). The most important reason for the higher growth rate of goat is its prolificacy in producing two or three kids at a time.

* This paper is a part of the findings of a collaborative project between BLRI and BAU on "Evaluation of the Beneficiaries under National Program on Poverty Alleviation through Goat Production in Bangladesh" funded by BLRI, Savar, Dhaka.
[1&2] Professors, Bangladesh Agricultural University, Mymensingh-2202, [3] PSO, Bangladesh Livestock Research Institute, Savar, Dhaka, and [4]Ex-Graduate Student, Bangladesh Agricultural University, Mymensingh-2202.

Goat is economically suited for the poorer section of people, especially the marginal and landless farmers due to its low risk, less capital investment and best utilization of unemployed family labour. Goat requires less feed than cattle. They are usually maintained on tree leaves, shrubs and bushes in the countryside. No extra labour is required for raising goat. Especially women, children and old people who are generally sitting idle, can spare their time to look after goats. As a result, goat raising becomes the best alternative to utilize family labour.

Considering the contribution of goats in rural as well as in national economy of Bangladesh, government has emphasized on expansion of goat production at farmers' level. During the nineties, Department of Livestock Services (DLS) established 5 goat farms in Bangladesh with a view to improve the productive and genetic performances of goat. Under this project a package programme was initiated for alleviation of poverty through goat production and initially a loan of BDT 26.211 million was disbursed among 9,283 distressed families. Considering the success of the programme the activities of project has been expanded up to 2005. Presently there are 65 thousand small-scale goat farms in Bangladesh (Razzaque, 2002).

The expansion of goat rearing activities depends on the profitability of goat rearing at farmers' and farms' level under different management system of rearing i.e. scavenging, semi-intensive and intensive. There is no study that dealt with the impact of goat rearing on generation of income and employment, pattern of utilization and repayment of loans. Some studies have however, been conducted on socio-economic aspects of goat rearing (Alam, 1995; Huq *et al.*, 1990; Husain 1993; Sayeed *et al.*, 2002). Nevertheless, those studies lack diversity of information. Keeping these views in consideration, the "Annual Research Review Workshop" held at BLRI on 13-14 June 2007 recommended to initiate a study on the impact of goat loan distributed by different Nationalized Commercial Banks, Bangladesh Krishi Bank and Rajshahi Krishi Unnayan Bank. The present study was undertaken to determine the profitability of goat rearing, and their impact of improvement of livelihood and food security in Bangladesh.

Methodology

The present study was an *ex-post* evaluation of impact generated through goat rearing in conducting the *ex-post* evaluation there are two approaches that can be adopted namely:

i) Comparing the present situation for project beneficiaries with the before-project situation for the same beneficiaries (called the 'before-after' approach) and
ii) Comparing present situation of project beneficiaries with a similar group of non-beneficiaries (called the 'with and without' approach).

Stratified random sampling was applied for selection of the sample in this study. The survey was conducted taking 100 beneficiaries and 25 non- beneficiaries from each selected district from each of the division. Thus, a total of 600 project beneficiaries and 150 non-beneficiaries were surveyed during October 2007 to March 2008 by direct face-to-face interview using a pre-designed questionnaire for comparing between beneficiaries and non- beneficiaries. All the collected data were processed and

analysed in accordance with the objectives of the study. The farm business analytical techniques were used in this study. Data were also analysed using descriptive statistics like mean, percentage, ratios, and ranking.

Findings and Discussions

Socio-economic profile

Age is an important factor in any income generating activities. Table 1 revealed that more than 80% of the beneficiaries and non-beneficiaries were productive age group. In beneficiary and non-beneficiary goat farmers, female-headed households were 3.67 and 6.67%, respectively.

Table 1. Socioeconomic profiles of the goat raising farmers

Socioeconomic profiles	Beneficiaries (N= 600)	Non beneficiaries (N=150)
% belongs to productive age group (19-57 years)	87.67	81.67
Women as head of household	3.67	6.67
Literacy level up to secondary education (%)	69.00	67.87
Annual household income (Taka)	78,946.00	88,563.00
Average farm size (decimal)	90.58	102.58

Education was defined as the ability of an individual aged above 6 years to read and write or formal education received up-to certain standard. It was found that about 70% of the beneficiaries and non-beneficiaries were up to primary and secondary level education. The illiteracy rate was more or less similar for beneficiary and non-beneficiary goat farmers. The National Program on Poverty Reduction through Goat Production covers a lesser number of illiterate beneficiaries (23.67%) and dominancy of primary and secondary level of education, which indicated that pro-poor interventions were not properly considered. The average annual income of loan recipient goat farmers was Taka 78,946.00 in the study areas while the non-beneficiaries were Taka 88,563.00. It was also observed that the average farm sizes of beneficiaries' households were estimated to 90.58 decimals, which indicated that pro-poor (landless and destitute women) interventions were not properly considered.

Credit should be utilized for the purposes for which it was borrowed. The tendency of mis-utilization was common with all type of borrowers. The borrowers generally diverted their borrowed fund mostly for consumption purposes. Delay in delivery of livestock credit also attributed to some extent to improper use. The success of credit institution, therefore, depended mostly on the extent of proper utilization of credit. Table 2 showed that the average amount of credit disbursed was Taka 5807.38. The average time required for sanctioning credit was 7.82 days. Table 2 also showed the utilization of goat credit. Of the credit money, only 18.34% spent for purchasing of goats, 14.96% was invested in business and 10.47% spent for purchasing of cattle by the credit recipient goat farmers.

Table 2. Utilization pattern of goat credit by the goat farmers

Heads of Expenditure	Amount Spent (Tk.)	% of total loan
Purchase of land	126.59	2.18
Purchase of goat, goat shed, feeds & fodder	1,065.00	18.34
Purchase of cattle	607.99	10.47
Purchase of poultry	192.21	3.31
Release of mortgaged-out-land	462.82	7.97
Land preparation cost	295.00	5.08
Purchase of seed/seedlings	101.62	1.75
Purchase of manure & fertilizer	245.06	4.22
Charge for irrigation water	105.69	1.82
Hire charge for human labour	216.02	3.72
Purchase of insecticides	176.50	3.04
Purchase of food	266.54	4.59
Purchase of clothes	101.04	1.74
Educational expenses	282.80	4.87
Medical treatment	199.12	3.43
Repayment of old debt	243.80	4.20
Litigation	251.44	4.33
Investment in Business	868.15	14.96
Total loan	5,807.38	100.00

Profitability of goat rearing

The number of goat reared in each farm, on an average, was 3.40 and 4.60 heads, respectively in pre-project and post-project situation. Thus, the cost of goat rearing for each of the farm was estimated considering the existing the number of goats in pre-project and post-project situation. Table 3 shows the return from goat rearing in the study area. It can be seen from the table that the gross output of goat rearing farmers per year in pre-and post project situation were Tk 9,195 and Tk 17,010, respectively. Gross margin, net return per farm and net return per goat were increased by 49.89%, 56.88% and 41.66% respectively in post-project situation compared to pre-project situation. All these positive changes were attributed to goat credit facilities which were provided to them.

Table 3. Profitability of goat rearing in the study areas (Taka per farm/year)

Particulars	Pre-project (No. of goat =3.40)	Post-project (No. of goat =4.60)	% change
Gross return	9195.00	17010.00	45.94
Total variable cost	4632.50	7905.00	41.40
Gross margin	4562.50	9105.00	49.89
Total cost	6722.00	11275.00	40.38
Net return per farm	2473.00	5735.00	56.88
Net return per goat	727.35	1246.74	41.66

Labour employment

Employment generated from grazing, feeding, glooming, milking, milk marketing, supervising and other activities. Table 4 shows the impact of employment for overall socio-economic changes. About 73% farmers expressed that their socio-economic conditions was improved while 26.67% beneficiaries replied that their socio-economic conditions was not changed. The impact of labour employment on the level of socio-economic changes was found to be lower (36.82%) where 59.55% (Table 4) of beneficiaries reported that the socioeconomic changes were medium level.

Table 4. Impact of employment on socio-economic improvement of goat farmers

Types of changes	Beneficiaries	
	No. (N=600)	%
Improved	440	73.33
Not Improved	160	26.67
Level of improvement		
Low	162	36.82
Medium	262	59.55
High	6	1.36
No change	10	2.27
Total	600	100.00

Measurement of livelihood changes through goat rearing

Livelihood approaches are based on holistic multi-disciplinary analyses of poor people's livelihoods. A livelihood is environmentally sustainable when it maintains or enhances the local and global assets in which livelihoods depend, and has net beneficial effects on other livelihoods. A livelihood is socially sustainable which can cope with and recover from stress and shocks, and provide for future generations. This section deals with the livelihoods of the goat farmers that have gradually been changed.

Impact on family assets

Family assets are presented in Table 5. The table reveals that family assets like jewellery, furniture, sewing machine and radio/TV were increased by 20.62%, 17.15%, 11.76% and 1.90%, respectively in beneficiary farmers in post-project situation. On the other hand, shallow engine, radio/TV, jewellery and boat/ bi-cycle of the non-beneficiary goat farmers were increased by 100%, 13.04%, 8.44% and 2.91%, respectively after project situation. All these higher positive changes were occurred to the project beneficiaries compared to non-beneficiaries due to goat credit facilities provided to the goat farmers.

Changes in livestock assets

Livestock assets at pre- and post-project are shown in Table 6. Livestock assets like dairy cows, goat, sheep, chicken and duck and pigeon were increased by 12.88%, 25.93%, 16.62% and 77.66%, respectively while cattle, sheep and goose decreased by 14.21%, 111.11% and 216.50%, respectively in post-intervention period. This decrease in cattle, sheep and goose may be explained by the fact that goat credit encouraged the farmers to rear more goats which might reduce other species of livestock in the study areas.

Table 5. Family assets of beneficiaries and non-beneficiaries goat farmers

Particulars	Beneficiaries (N=600)		% Change	Non-Beneficiaries (N=150)		% Change
	Pre-project	Post-project		Before	After	
Rickshaw, van	1.00	1.00	0.00	1.00	1.00	0.00
Boat/ bi-cycle	1.03	1.04	0.96	1.00	1.03	2.91
Radio/ TV	1.03	1.05	1.90	1.00	1.15	13.04
Shallow engine	1.12	1.10	-1.82	0.00	1.00	100.00
Furniture	4.59	5.54	17.15	9.25	7.90	-17.09
Sewing machine	1.05	1.19	11.76	1.00	1.00	0.00
Jewellery	5.62	7.08	20.62	9.33	10.19	8.44
Others	1.10	1.08	-1.85	0.00	0.00	0.00

Table 6. Livestock assets of beneficiaries and non-beneficiaries goat farmers

Assets	Beneficiaries		% Change	Non-Beneficiaries		% Change
	Pre-project	Post-project		Before	After	
No. of cattle	2.09	1.83	-14.21	1.67	1.61	-3.73
No. of dairy cows	1.15	1.32	12.88	1.33	1.25	-6.4
No. of buffalo	1.00	1.00	0.00	0.00	0.00	0.00
No. of goat	3.40	4.59	25.93	4.93	3.45	-42.90
No. of sheep	9.50	4.50	-111.11	0.00	0.00	0.00
No. of chicken & duck	13.80	16.55	16.62	18.33	16.17	-13.36
No of goose	6.33	2.00	-216.50	0.00	0.00	0.00
No of pigeon	3.67	16.43	77.66	0.00	13.8	100

Table 7. Changes in dwelling houses condition

Types of dwelling houses	Beneficiaries' dwelling houses (No.)		% Change	Non-beneficiaries' dwelling houses (No.)		% Change
	Pre-project	Post-project		Before	After	
Housing status						
Katcha	278	225	-19.06	120	110	-8.33
Tin-shed	290	350	20.69	125	145	16.00
Semi-pacca	60	70	16.67	50	60	20.00
Sanitation condition						
Katcha	200	140	-30.00	55	40	-27.3
Semi-pacca	250	295	18.00	75	88	17.3
Pacca larine	150	165	10.00	20	22	10.0
Status of drinking water						
Own tube-well	364	404	46.15	63	82	30.16
Shared tube-well	236	196	-16.95	87	68	-21.84

Impact on housing and sanitation

Table 7 showed the changes in dwelling houses of the goat farmers. It is seen from the table katcha houses were decreased by 19.06%, while tin-sheds and semi-pacca houses were increased by 20.69% and 16.67% in post-project compared to pre-project in the study areas. This improvement in dwelling houses of the farmers was related to the availability of goat credit to them. Table 7 also showed the changes in sanitation system of the goat credit farmers. It is seen from the table that katcha latrines were decreased by 30%, while semi-pacca and pacca latrines were increased by 18% and 10% in post-project compared to pre-project in the study areas. This was due to the fact that goat credit created direct impact on the well being of the farmers. It is seen from the table that sources of drinking water from own-tube-well was increased by 9.90%, while the sources of drinking water from shared-tube-well was decreased by 20.41% in post-project situation compared to pre-project in the study areas. This was due to the fact that goat credit created direct impact on the well being of the farmers and similar results also supported by an earlier study (Akteruzzaman, *et al.*, 2006).

Impact on food consumption

Frequencies of food consumption are presented in Table 8. The table showed that frequencies of food consumption like rice, *atta*, poultry-meat, meat (beef, mutton), fish, eggs, milk, fruits and vegetables of the goat farmers were increased by 1.83%, 1.31%, 4.12%, 8.10%, 7.66%, 6.96% and 2.79% in post-project compared to pre-project in the study areas. This was due to the effect of goat credit on the income of the goat farmers.

Table 8. Frequencies of food consumption of goat farmers

Food items	Pre-project Food intake (time/month)	Post-project Food intake (time/month)	% Change
Rice	79.82	81.31	1.83
Atta	16.62	16.84	1.31
Poultry meat	3.26	3.40	4.12
Meat (beef, mutton)	2.17	2.17	0.00
Fish	14.86	16.17	8.10
Egg	10.58	11.51	8.08
Milk	11.70	12.67	7.66
Fruits	6.82	7.33	6.96
Vegetables	37.93	39.02	2.79
Others	34.55	36.90	6.37

Source: Field survey, 2007

Impact on household food security

Food security expresses the number of months in which it was deficit. It was found that the number of month in food deficit was decreased by 15.15% in post-project compared to pre-project in the study areas. In normal situation, farmers can have 3 meals per day was increased by 1.93% while in crisis it was decreased by 5.51%. The goat credit farmers opined that the quantity of food intake was increased by 53.50% and the quality of food intake was improved by 46.50%. Thus, goat credit has direct impact on improved food quantity and quality and these results also supported by an earlier study (Akteruzzaman *et al.*, 2006).

Conclusion

Rearing of Black Bengal Goat could go a long way to reduce poverty of the pro-poor women. It contributed significantly to household income without interfering with the main occupations of the women. Government of Bangladesh gave emphasis on poverty alleviation through goat production. Goat rearing is a profitable business; so, any investment in goat rearing will be helpful for poverty alleviation. The annual income and savings increased with the increase in farm sizes, thus, the expansion of such program is encouraged in Bangladesh. Goat farmers having more goats could earn more profits. The recovery rate of goat credit was 77.79% which was much higher than any other financial institutions. Thus, the increase in the goat number in the farms will help for improved livelihood of the farmers. The female labour was largely engaged in goat rearing activities and spending capacity was increased due to adoption of modern practices of goat rearing. Thus, the program is gender neutral which could help for women participation in economic activities.

References

Akteruzzaman, M., M. A. Salam, M. Jahangir Alam and Laila Jasmin Banu. 2006. Impact Study of Pro-poor Initiatives through greater Noakhali Aquaculture Extension Project (GNAEP), Final Consultancy Report, GNAEP, Maijdee, Noakhali.

Alam, J. 1995. *Livestock Resources in Bangladesh: Present Status and Future Potential.* The University Press Limited, Dhaka.

BBS. 2006. Bangladesh Bureau of Statistics, *Statistical Yearbook of Bangladesh*, GOB, Dhaka.

Huq, M. E., M. M. Rahman, and M. A. M. Miah. 1990. A Study on the Relationship between Management Practices Followed by the Goat Raisers with Some of Their Selected Characteristics in a Selected Area of Satkhira Upazila. *Bangladesh Journal of Animal Scienc*e, 19 (1-2): 21-31.

Husain, S. S. 1993. A Study on the Productive Performance and Genetic Potentials of Black Bengal Goats. Ph. *D. Dissertation*, Department of Animal Breeding and Genetics, BAU, Mymensingh.

Sayeed, M. A, S. M. A. Rahman, M. J. F. A. Taimur, S. Farook and F. Yasmin 2003. Economics of Goat Rearing in Some Selected Areas of Bangladesh. *Final Report*, Socio-economic Research Division, Bangladesh Livestock Research Institute, Savar, Dhaka.

Razzake M. A. 2002. Goat for Poverty Reduction. Proceedings of the Workshop on Poverty Alleviation through Goat Production: National Program (27 April - 03 May, 2002). Bangladesh Livestock Research Institute, Savar, Dhaka.