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Socio-economic status of buffalo farmers and the management practices of buffaloes in selected areas of Bagerhat District of Bangladesh

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Abstract

The study was conducted to investigate the socio-economic status of the buffalo farmers and the management practices of buffaloes at different villages of Boraikhali, Hoglabunia and Khawlia union of Morrelgonj upazilla in Bagerhat district of Bangladesh. A total of 60 respondents (20 from each union) were randomly selected from three unions. The data was collected through personal interviewing with pre-tested questioner. The investigation revealed that buffalo rearing was practiced by the middle (30-40 years) and old (>40 years) aged farmers than the young (<30 years). Majority (82%) of the buffalo farmers are educated but only 12% are illiterate. The major occupation of the selected farmers are buffalo rearing (50%) followed by crop production, dairying and poultry rearing. The buffalo farmers basically have no training skills but practiced buffalo rearing as their family profession and 30% of them are influenced by the neighboring buffalo farmers. The buffalo farmers purchased usually one pair of buffalo and reared at least for 2 years. The farmers fed their buffalos with locally available roughages and tree leaves but they did not practice concentrate feeding. The CP contents of the available feedstuffs are comparable and even higher and the CF content was found lower compared to other unconventional feedstuffs indicated the availability of good quality feeds for buffaloes in the studied areas. Semi-intensive feeding system was practiced for rearing buffaloes followed by extensive feeding system. Majority of the buffalo farmers allowed wallowing buffaloes for once or twice in a day for at least 1-2 hours. The major diseases of buffaloes found in the studied areas were foot and mouth followed by black quarter, anthrax and hemorrhagic septicemia. Most of the buffalo farmers practiced vaccination and de-worming regularly. The average cost of one pair of buffalo was 60000-200000 BDT. The annual total cost of production was Tk 5,070, while a gross return was Tk 15,630 per buffalo. The annual food and cloth purchasing capacity of the buffalo farmers were found to be increased to 62.85 and 58.33%, respectively. Similarly, the ability to maintain social status, health care, education and housing of the buffalo farmers were also increased through buffalo rearing. Considering all this parameters related to livelihood, it was clearly found that the socio-economic status of the buffalo farmers was improved through buffalo rearing although the management practices need to be improved with scientific approaches.

Key words: Socio-economic status, buffalo farmers, livelihood, buffaloes, management practices.

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Introduction

Buffaloes hold strategic place in overall livestock economy of Bangladesh and serve three important purposes such as milk, meat and drought power supply (Cockrill, 1974). Farmers prefer to use buffaloes for draught purpose because of larger body size than the native cattle, higher draught power ability, long working life and docile temperament. Most of them are kept by medium and rich farmers for draught purpose. Ninety six percent of the world buffalo population is found in Asia (FAO, 2010), where only 0.6 percent buffaloes are found in the particular agro-ecological zones in Bangladesh (Faruque *et al.* 1990). In fact, buffaloes have better capacity of converting coarse feed stuffs into quality milk and meat. Though they can utilize roughage in the same ability as the cattle, their ability to process and communicate forages appears to be associated with relief of protein deficiencies rather than to extract energy (Kennedy, 1988). Buffaloes have a number of advantages over cattle in utilization of low quality roughages to produce more protein and to gain more body weight, more disease resistance power and outstanding draught capacity and

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longer life span. Buffalo have significant contribution to GDP through production of meat, milk and skin representing about 27.0, 23.0 and 28.0%, respectively to the total production from livestock sector in Bangladesh (FAO, 2010). They are usually maintained on tree leaves, shrubs and bushes in the rural condition. Buffalo rearing increase livelihood status of the farmers especially for the farm women and development of this sector is the potential path to rural prosperity (Kalash *et al*., 2009). In Bangladesh, very little work has been done so far on the socio-economic status of the buffalo farmers and the management practices of buffalos. Therefore, the present study was conducted to investigate the socio-economic status, income and the livelihood changes of the buffalo farmers and the management practices of buffalos in some selected villages of Morrelgonj Upazila in Bagerhat district.

Materials and Methods

Selection of study site and respondents

The study was conducted at nine villages of three unions of Morrelgonj upazila in Bagerhat district of Bangladesh (Table 1). Morelgonj upazilla is located at 42 km north of Bagerhat district town but adjacent to Pirojpur district of Bangladesh where plenty of pasture land is available. Twenty respondents were randomly selected from each union. Therefore, in total 60 respondents were chosen from three unions for collection of data for this investigation.

Table 1. District, Upazila, Union, Village and number of respondents in the experimental areas

District	Upazila	Unions	Villages	n
Bagerhat	Morrelgonj	Hoglabunia	Hoglabunia Kalibari Baharbunia	20
		Boraikhali	Boraikhali Shutanori Tonupara	20
		Khawlia	Shonnashi Bimalikatha Kathaltala	20
01	01	03	09	60

n, number of respondent

Data and measurement of variables

Data was collected from March to May, 2012. The data was collected through personal interviewing. Interview schedule was carefully prepared based on the objectives of the study and pre-tested with selected farmers in the study areas to avoid misunderstanding of the respondents and to understand the interview schedule easily. The information gathered by the respondents was recorded directly on the interview card. The information was checked carefully before leaving the study areas in order to minimize errors. The selected variables in this study are as follows: educational status, occupational status, socio-economic status, livestock status, breeding, feeding and housing condition, disease and health care, daily routine activities of farmers for buffalo rearing, annual cost of production and income from buffaloes and impact of income for livelihood improvement.

Chemical analysis of feeds and fodders

Proximate composition of some locally available feeds and fodders fed to buffaloes were done to investigate there nutritional contents as crude protein, crude fiber, ether extract, nitrogen free extract and ash. The analysis was done in the Laboratory of Animal Science, BAU. Representative samples of feeds and fodder were collected from the selected areas, mixed thoroughly, sun dried, ground (CYCLOTEC 1093 Sample mill Tecator, Sweden) at the size of 0.5 mm for chemical analysis according to the methods of AOAC (2004).

Statistical analysis

All the collected data were checked and cross checked before transferring to master sheets. The data was analyzed with the help of SPSS-v-16 computer package program.

Results and discussion

Socio-economic condition of buffalo farmers

The socio-economic condition of the buffalo farmers in Morrelgonj Upazila, included: age, educational status, occupation, training skill, source of capital, purchasing ability of the farmers and rearing duration of buffalos.

Status of buffalo farmers

The age, education and occupational status of the buffalo farmers are presented in Table 2. The buffalo rearing was practiced by the middle and old aged (88%) farmers than the farmers less than 30 years of age. More than 80% buffalo

farmers are educated but only 18% farmers are illiterate and there was no farmer who completed graduation. In the study areas, 50% of the selected farmers were engaged only with buffalo rearing followed by agricultural crop farming, dairying and poultry rearing.

Training skill and source of capital of buffalo farmers

The training skill and source of capital of buffalo farmers are presented in Table 2. There were no farmers who got training on buffalo husbandry. They have practiced buffalo rearing as their family profession and less than one third of the farmers are influenced by the neighboring buffalo farmers. Majority of the farmers took bank loan to purchase their buffaloes and rest of them are used their own capital to rear buffaloes.

Purchasing ability of buffalo farmers and the duration of rearing buffaloes

The purchasing ability of buffalo farmers and the duration of rearing buffaloes are presented in Table 2. As most of the farmers used buffaloes as draught purpose, so it was observed that majority of the farmers purchased one pair of buffaloes at a time but single or more than double purchase of buffaloes are also observed. Most of the farmers kept buffaloes for 2 years followed by 1 year, 6 months and more than 2 years.

Availability of feeds and fodders in the selected locations

The availability of feeds and fodders and their usages are presented in Table 3. In the studied areas, buffalo farmers did not use any concentrates. They are fully dependent on grazzing and more than 20% farmers used cultivated fodders and tree leaves. More than 90% farmers reported that feeds are available in the selected areas.

Feeding system

The feeding system of buffaloes in the selected areas is presented in Table 3. Semi-intensive feeding system was practiced in the studied areas followed by extensive system. Intensive feeding system was not practiced in the studied areas. The main advantages of buffalo over cattle are that the dry or growing buffaloes may utilize coarse feeds more efficiently than Zebu cattle (Singh et al. 1973).

Table 2. Status of buffalo farmers and duration of rearing buffaloes in the studied areas

Parameters	Category	Frequency	Percent (%)
Age	Young aged (<30)	7	11.7
	Middle aged (30-40)	27	45.0
	Old aged (>40)	26	43.3
	Total	60	100.0
Education	Illiterate	11	18.3
	Primary	32	53.3
	Below SSC	17	28.3
	Degree	0	0
	Total	60	100.0
Occupation	Only Buffalo rearing	30	50.0
	Crop farming	18	30.0
	Dairying (only buffalo)	8	13.3
	Chicken or duck rearing	4	6.7
	Total	60	100.0
Training skill	Without training	43	71.67
	With training	00	00
	Raising buffalos influenced by neighboring buffalo farmers	17	28.33
	Total	60	100.0
Source of capital	Own Capital	21	35.0
	Loan from Bank and NGOs	39	65.0
	Total	60	100.0
Purchasing ability	1 buffalo	14	23.3
	2 buffaloes	33	55.0
	>2 buffaloes	13	21.7
	Total	60	100.0
Duration of rearing	6 Months	9	15.0
	1 year	13	21.7
	2 years	34	56.7
	>2 years	4	6.7
	Total	60	100.0

Chemical composition of feedstuffs

Chemical compositions of the feedstuffs fed to buffaloes are presented in Table 4. The CP content of Mander leaves, Helencha, Buchai lata, Heli grass and Durba grasses were found higher compaired to other unconventional grasses. The CP content of the feedstuffs in the studied areas are comparable and even higher than those of other unconventional fodder leaves and higher than the minimum range of NRC for mature beef

cattle (70 g/kg) and high producing dairy cows (190 g/kg). The CF content of the feedstuffs was lower indicated a good quality feeds for buffaloes. The presence of high CF in feeds is reported to decrease dry matter digestibility in animals and therefore provides a good indication of the nutritional value of the feeds. The highest EE content was recorded in Helencha and the lowest was found in Dal grass.

Table 3. Availability of feeds and fodders and feeding system in the studied areas

Types of Feeds	Frequency	Percent
RG	31	51.7
CF	13	21.7
TL	16	26.7
Cocentrates	0	0
Total	60	100.0
Availability of feeds		
Available	56	93.33
Not so available	4	6.67
Total	60	100.0
Feeding system		
Extensive	27	45
Semi-intensive	33	55.0
Intensive	0	0
Total	60	100.0

RG, roadside grass (Durba, Buchai lata, Helencha and Noll); CF, cultivated fodders (Dhal grass and Heli); TL. tree leaves (Mander and Hogla)

Frequency and duration of wallowing

The frequency and duration of wallowing is presented in Table 5. Wallowing is an important activity for the buffaloes to keep its physiothermic regulation. In the studied areas most of the buffaloes performed wallowing (Photograph 1) once or twice in a day. The buffaloes are interested to wallow but farmers didn't allow too much time to wallow. Most of the farmers allowed wallowing for at least 2 hours followed by 1 and more than 2 hours.

***Photograph 1**. Wallowing of buffaloes*

Major diseases of buffaloes

Major diseases of buffaloes in the studied areas are presented in Table 6. Four major diseases of buffaloes were found where the occurrences of FMD was found more than 50%, followed by Black quarter, Anthrax and Hemorrhagic septicemia but no buffalo farmers claimed for mastitis.

Vaccination, deworming and sources

The vaccination practice and the source of vaccines are presented in Table 6. Almost 90% and more than 80% farmers performed vaccination (Anthrax, FMD, BQ and HS) and de-worming (Endex or Antiworm) to their buffaloes collected from the local market and rest from livestock office.

Table 4. Chemical composition of feedstuffs fed to buffaloes in the studied areas

Name of the feedstuff	Chemical composition (% DM basis)				
	CP	CF	EE	NFE	Ash
Mander leaves (*Exythrina indica*)	20.8	27.6	8.8	36.2	6.6
Dhal grass (*Hymenachne amplexicaulis*)	7.5	29.3	1.3	40.0	21.9
Durba grass (*Cynodon dactylon*)	15.7	22.7	4.6	46.3	10.7
Hogla leaves (*Typha elephantina*)	11.4	21.2	5.0	50.9	11.4
Noll grass (*Xanthium indicum*)	9.8	16.3	3.8	57.4	12.7
Helencha (*Enhydra fluctuans*)	20.4	16.6	14.0	43.6	6.3
Buchai lata (*Scirpus alvadaliatris*)	19.3	17.6	10.0	47.2	5.8
Heli grass (*Dactylis glomerata*)	17.2	21.0	8.0	43.9	9.8

Table 5. Frequency and duration of wallowing of buffalos in the studied areas

Wallowing	Frequency	Percent
Once a Day	37	61.7
Twice a Day	23	38.3
Total	60	100.0
Duration of wallowing		
At least 1 hour	22	36.7
At least 2 hour	26	43.3
>2 hours	12	20.0
Total	60	100.0

Table 6. Health care practices of buffaloes in the studied areas

Name of disease	Frequency	Percent
Anthrax	10	16.7
Foot and mouth (FMD)	34	56.7
Mastites	0	0
Hemorrhagic septicemia (HS)	5	8.3
Black quarter (BQ)	11	18.3
Total	60	100.0
Vaccination and Deworming		
Yes	53	88.3
No	7	11.7
Total	60	100.0
Deworming	49	81.7
Source of vaccines and anthelmentics		
Local market	53	88.33
Livestock office	7	11.66
Total	60	100.0

Cost of the buffaloes

The cost of buffaloes is presented in Table 7. The price of the buffaloes varies according to the size and utility. The price of 2 buffaloes for draught purpose ranged from 60000-200000 BDT in the studied areas.

The cost of feeding, breeding, housing and equipment and healthcare of buffaloes are presented in Table 8. To analyze the cost-return, it is necessary to describe the feed cost, breeding cost and cost of housing and equipment for buffalo rearing. The cost (per year) of housing and equipment was almost similar with feed cost. Farmers generally bred their buffaloes from the neighbor's buffalo bull and they sometimes artificially inseminate their buffaloes. For this reason, the breeding cost was low. On the other hand they never purchase feed for buffalo rearing. The major cost of healthcare is medicinal cost followed by vaccination. Some NGO's of this area had several programs on vaccination, deworming and treatment. It was very much helpful to the buffalo farmers of this region. The average rearing cost of one buffalo was 5070 BDT.

Table 7. Cost of one pair of buffaloes

Cost/pair (cow)	Frequency	Percent
60000-75000	15	25.0
75000-100000	17	28.3
100000-125000	6	10.0
125000-150000	9	15.0
150000-200000	13	21.7
Total	60	100.0

Table 8. Different cost for per buffalo in the studied areas

Category	Expenditure (BDT)
Average feed cost (year)	2070
Average breeding cost (year)	250
Average cost of housing & equipment (year)	2000
Total	4320
Medicine and vaccine cost	
Average cost of medicine (year)	600
Average cost of vaccine (year)	150
Total healthcare cost	750
Total rearing cost	5070

Cost of farmers family members

The average expenditure of farmers/year/head is presented in Table 9. Food cost was found highest among the total expenditure. The second highest expenditure was to maintain social status followed by the cost for clothing, health care, education and housing.

Table 9. Average expenditure (BDT) per year per head in the studied areas

Category	Average expenditure	Minimum	Maximum
Food	1478.66	1000.00	2000.00
Cloth	691.66	100.00	1200.00
House	294.66	10.00	500.00
Education	402.33	100.00	2000.00
Health Care	671.33	50.00	1000.00
MSS	1101.66	200.00	2000.00

MSS, Maintaining social status (decoration, gift, furniture etc.)

Total and net income from buffalo rearing

The total (Draught + milk) and net income per year per buffalo is presented in Table 10. The average income per year per buffalo through draught was 11000 BDT followed by BDT 9700 in milk. In India, net annual income from rearing one cross breed cow and one buffalo was Rs. 30784.00 per year (Kalash et al. 2009). The income was found better in the study areas. The net income from one buffalo per year was 15630 BDT indicated that rearing buffaloes in the studied areas was profitable.

Table 10. Total and net income from buffalo rearing in the studied areas

Category	Purpose	Income	Minimum (BDT)	Maximum (BDT)
Income/buffalo/year	Draught	11000	5000	20000
	Milk	9700	5000	18000
	Total	20700	10000	38000
Total expenditure			5070	
Net income			15630	

Livelihood improvement of buffalo farmers

Buffalo rearing increased the livelihood status of the farmers especially for the farm women and the development of this sector is the potential path to rural prosperity (Kalash et al. 2009). Buffaloes hold strategic place in overall livestock economy of Bangladesh and serve three important purposes such as milk, meat and drought power supply (Ghaffar et al. 1991).

Impact on purchasing capacity

The food and clothes purchasing capacity of the buffalo farmers are presented in Table 11. Before rearing buffaloes, the farmers spent only 780 BDT for purchasing food but they were able to spent 2100 BDT after they have started rearing buffaloes, which was 62.85% more than the previous state. On the other hand, the farmers spent only 500 BDT for purchasing cloths but they were able to spent 1200 BDT after they have started rearing buffaloes, which was 58.33% more than the previous state.

Impact on social status, education and health care

The Impact on social status, education and health care are presented in Table 11. Before rearing buffaloes, the farmers were able to spent only 1000, 420 and 670 BDT to keep their social status, education and health care but they were able to spent 2200, 600 and 1020 BDT for maintaining their social status, education and health care after they have started rearing buffaloes, which was 54.5, 30 and 34.3%, respectively more than the previous state.

Table 11. Impact of buffalo rearing on livelihood activities in the studied areas

Category	Initial value (BDT)	Final Value (BDT)	Percent	Rank order
Food purchasing	780	2100	62.85	1
Cloth purchasing	500	1200	58.33	2
Social status	1000	2200	54.5	3
Health care	670	1020	34.3	4
Education	420	600	30	5
Housing	220	244	9.8	6

Impact on housing

The Impact on housing is presented in Table 11. Before rearing buffaloes, the farmers spent only 220 BDT for their housing but they were able to spent 244 BDT for their housing after they have started rearing buffaloes, which was 9.8% more than the previous state indicated that buffalo farmers are less interested to spend money for housing rather than other purposes.

The result clearly indicated that livelihood increased dramatically through buffalo rearing in the in the studied areas. Considering all this parameters studied, buffalo rearing is a profitable practices in the selected areas and improved the socio-economic status and livelihood of buffalo farmers although the management practices need to be improved with scientific approaches.

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