



Socio-economic condition, cattle production and management system at Narail sadar upazilla

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ABSTRACT

This study was aimed to explore the socio-economic conditions and present status of the farmers engaged in cattle production and management practices in different unions at Narail Sadar Upazila in Narail district in Bangladesh. Data were randomly collected from 195 local cattle farmers with a pre-structured questionnaire within 1 year study period. The study revealed that most of the farmers were male (88.2%) and middle-aged (53.84%), most of them with small-sized families (2-4 members). The respondents had primary education (31.8%) and 15.9% had no formal education, whereas 23.07% got training in farming. Maximum numbers of farmers belong to small landholders (average 113.84 decimal of land) with 1.93 lakhs annual income. The main primary occupation of the respondents was agriculture (40.51%). The main farming was dairy farming, where most of the farmers (38.2%) reared indigenous cattle followed by crossbred (34%) and Holstein Friesian (27.02%).by intensive rearing system. Most of them (58.5%) spent less than 5 hours in farming. Animal were mostly fed with straw, grass and concentrate. The floor type was chiefly made of cement for easy maintaining hygienic conditions. The farm type was dairy (72.30%), fattening (8.72%), and combined (18.98%). The lactation period and milk production were significantly ($p < 0.01$) different among the three breeds. The mortality rate was 8.77, and lockdown during Covid-19 situation had a negative impact on cattle farming. Considering all these parameters related to livelihood, it was clearly found that the socio-economic status of the cattle farmers was improved through cattle rearing although the management practices need to be improved scientifically.

Introduction

Bangladesh is an agricultural country where more than 70% of farmers engaged in Agriculture and livestock are playing a vital role in maintaining human health, national economy, and socio-economic development of the country. The literacy percentage of people is 72.8 % and the average life expectancy is 72.6 years with a 1.1% population growth rate. The per capita income of people is 2227 US dollars. According to an IMF report, Bangladesh is one of the three countries of the world that has achieved highest economic growth in 2020 (BER, 2021).

In Livestock, cattle play an important role because most of the farmers (about 80 to 85 households) rear cattle as a source of income along with financial support during the crisis (Kamal et al., 2019). Although the growth of livestock production is the second-highest among all other sub-sector of agriculture in Bangladesh (BER, 2021). The cattle are the largest livestock population in the country (DLS, 2021). The total value of the current output of the Livestock sector is estimated at taka 50,301 crores, which is about 1.44% of Bangladesh's GDP (BBS, 2021). It is estimated that a total of 422.80 million Livestock animals in Bangladesh, including 45.55 million cattle, 1.5 million buffalo, 26.61 million goats, 3.68 million sheep, and 1.5 million buffalo Where the

chicken population is about 365.85 million. Total milk, meat production is 119.85 Lakh, 84.40 lakh Metric Ton respectively. Egg production is 2057.64 crores number (BBS, 2021).

Meat production is one of the most important targets to rear livestock and poultry as well as fulfilling the requirement of animal protein and livelihood improvement of poor farmers (Hossain et al., 2021). Dairy farming and Cattle fattening are effective tools for poverty alleviation for the rural poor people. Beef cattle fattening has become a profitable business of the small farmers in Bangladesh and security for building a meritorious nation (Hossain et al., 2021). Breed, Good nutrition, and Management play a vital role in cattle and other ruminant's production (Sarker et al., 2008, Rahman et al., 2013). Like breed, many other factors that are correlated with farmer's economic conditions have not been addressed properly. Livestock production depends on feeding and nutrition, hygienic housing facilities, animal health care, and management along with marketing facilities (Hasan et al., 2021). Besides, being a Muslim country, there is seasonal demand for beef cattle during Eid Ul Adha.

The present study was undertaken to know the socio-economic conditions of cattle farmers for sustainable earning options. Therefore, the objectives of the study

were: to investigate the socio-economic condition of rural people with cattle production and management during Covid -19 periods; to explore the problems and suggestions to improve the existing conditions of cattle farming.

MATERIALS AND METHODS

Study area

The study was conducted at Narail Sadar upazila in Narail district, Bangladesh. The study area is geographically located at 23° 10 North latitude and 89°30 East longitudes. The area is close to 381.75 square kilometers which are bounded by its borders Magura District to the north, Lohagara Upazila to the north and east, Kalia Upazila to the southeast, and Jashore district to the south and west.



Figure 1: Geographical location of study area at Narail Sadar Upazilla

The study was conducted at different unions at Narail Sadar upazila. The main occupations of the people of the studied upazila were agriculture. Cattle and goats are the principal domesticated animal of the farmer. Most of the farmers are directly or indirectly related to livestock.

Data collection and organization

The study was carried out during the period of December 2020 to December 2021. The questionnaire was developed according to the objectives of the study. Information on socioeconomic status of

farmers, cattle production and management related data were collected by interviewing the farmers and recorded in the pre-structured questionnaire. A total of 195 farmers were selected randomly having at least one cattle. The questionnaire was prepared with a view to extracting information regarding management.

Analytical technique

After collection, data were recorded into spreadsheets (Excel 2016; Microsoft office professionals) then cleaned, coded and recoded as necessary by using statistics software SPSS (Statistical Package for the Social Sciences, version: 1.0.0.1406). Finally, the data were forwarded as frequency, percentages, mean, SE. Simple statistical tools such as mean, ratio, percentage, are used to analyze the data.

RESULTS

Social status of the respondents

Most of the respondents were middle age (53.84%), and 88.2% were male. The family members were ranged from 2-15 members. Most of the respondents have small family (65.13%) with mean value of 4.79. Concerning the educational status, most of the respondents representing 31.8% have primary education whereas 15.9% do not have any formal education. Among them only 23.07% respondents had got training on farming. The average farming experience of the respondents was 12.76 years and higher (39.48%) in categories 11-16 years (Table 1).

Table 1: Categorize of respondents according different parameter

	Parameter	Frequency (n)	Percentage (%)
Age (Years)	Young (<30)	42	21.54
	Middle (30-50)	105	53.84
	Old (>50)	48	21.62
Sex	Male	172	88.2
	Female	23	11.8
Family member	Small(<4)	127	65.13
	Medium(4-8)	52	26.67
	Large(>8)	16	8.20
Education	No formal education	31	15.9
	Primary	62	31.8
	Secondary	57	29.2
	Higher	28	14.2

		secondary	
Training Received	Yes	45	23.1
	No	150	76.9
Farming experience (Year)	<5	28	14.4
	5-10	64	32.82
	11-16	77	39.48
	17-22	12	11-16
	>22	14	7.2

It is observed that agriculture was the most common primary occupation (40.51%) of the respondents followed by business (16.41%), labour (13.33%) (Figure 2).

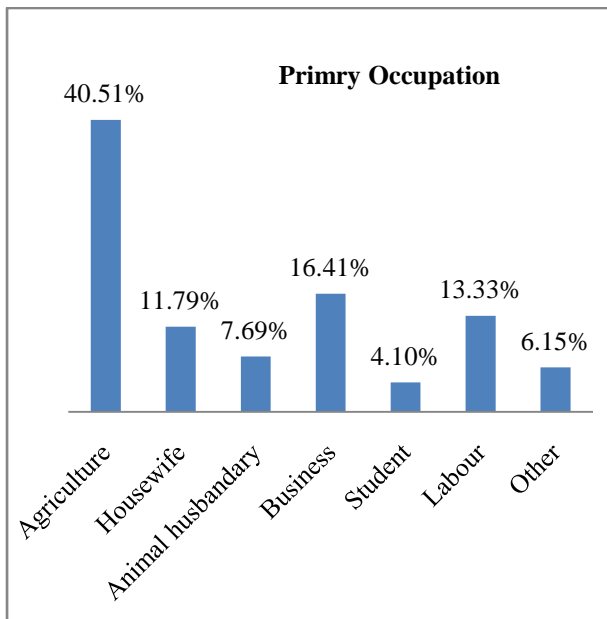


Figure 2: Primary occupation of the respondents

Economic status of the respondents

The respondents had homestead land 10.77 decimals, crop land 113.84 decimals and grass land 6.35 decimals. The average annual income of the farmers was 1.93 lakhs but most of the farmers (74.3%) had the annual income less than 1 lakh from (Table 2).

Table 2: Economic status of respondents

Variable	Mean± SE
Homestead land (decimal)	10.77±0.58
Grass land (decimal)	6.35±1.095
Cultivated land (decimal)	113.84±3.878
Annual income (Lakh)	1.93±0.078

Farm Management system

The study found that most of the farmers had dairy farm (72.30%) than fattening. Reared by intensive (69.7%) and semi-intensive (30.3%) and the most of the floor was cemented (31.3 %). The working time in most of the farms (58.5%) was less than 5 hours. In case of feeding, 100% rice straw feeding along with 83.59% grass and 86.67% concentrate (oil cake, wheat bran, cattle feed etc, feeding (Table 3).

Table 3: Farm management system

	Parameter	Frequency (n)	Percentage (%)
Farming purpose	Dairy	141	72.30
	Fattening	17	8.72
	Dairy+ fattening	37	18.98
Rearing system	Intensive	136	69.7
	Semi-intensive	59	30.3
Floor Type	Muddy	39	20
	Cemented	139	71.3
	Brick	17	8.7
Hygienic condition	Good	80	41
	Satisfactory	67	34.4
	Poor	31	15.9
Working time(hour)	<5	114	58.5
	6-10	56	28.7
	11-15	25	12.8
Feeding	Straw	195	100
	Grass	163	83.59
	Concentrate	169	86.67

Total cattle Production

In the study 1403 cattle was found, in which 38.2% Indigenous, 27.02% Holstein Friesian and 34% was other crossbred (Table 4).

Milk production

The peak day milk production of Indigenous cattle breed was 2.13 liters followed by 8.68 liters in Holstein Friesian and 6.36 liters in other crossbreds. The lactation period is 5.40 months in Indigenous breed followed by 7.45 months in Holstein Friesian and 8.27 months in others crossbred. Number of service per conception was 1.29, 1.34 and 1.55 for Indigenous, Holstein Friesian and crossbred respectively (Table 5).

Table 4: Breed wise cattle production

Parameter	Indigenous		Holstein Friesian		Crossbred	
	n	%	n	%	n	%
Farm type						
Dairy	262	18.67	274	19.53	71	5.06
Fattening	88	6.27	67	4.78	246	17.53
Dairy+ fattening	196	13.97	39	2.78	160	11.40
Total	546	38.92	380	27.08	477	34

Table 5: Productive and reproductive efficiency in different breeds

Parameter	Indigenous (68)	Holstein Friesian (62)	Other crossbred (11)	P value
	Mean± SE	Mean± SE	Mean± SE	
Lactation Period (Month)	5.40±0.173	7.45±0.179	8.27±0.469	0.000
Peak day milk production (Liter)	2.13±0.129	8.68±0.471	6.36±0.067	0.000
Service for last pregnancy (no.)	1.29±0.066	1.34±0.760	1.55±0.207	0.516

The lactation period is significantly ($p=0.000$) higher in other crossbred cow compared to Holstein Friesian and Indigenous cow. Peak day milk production was significantly ($p=0.000$) higher in Holstein Friesian. Whereas, there was no significant difference of service for last pregnancy among the breeds (Table 5).

Total Livestock Production

Total livestock production in the study area was 20% cattle followed by 3% goat, 23% chicken, 21% duck, 10% pigeon, 21% egg and 2% others (Figure 3).

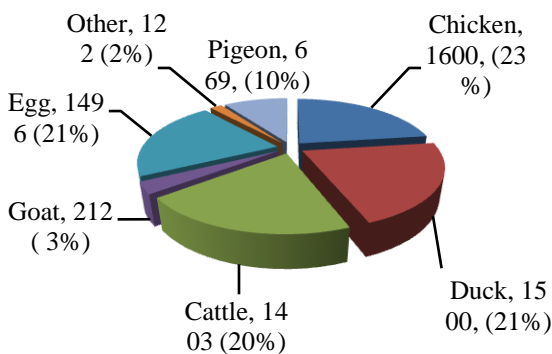


Figure 3 Total livestock production

Mortality rate of cattle

The mortality of cattle in the study areas was 8.77 ± 2.85 on an average. And the major cause was viral infection (39.2%) (Table 6).

Table 6: Major causes of mortality

Diseases	Frequency(n)	Percentage (%)
Viral	38	39.2
Bacterial	9	9.3
Parasitic	12	12.4
Nutritional	9	9.3
Others	29	29.9

DISCUSSION

The study represents that most of the respondents were middle aged (53.84%) which is in accordance with the result observed by Hossain et al. (2021). Because, middle-aged farmer was more energetic and experienced. Most of the respondents in this study were male (88.2%), family size was 4.79 of the respondents in the study area was slightly higher than that of the national average of 4.7 (BBS, 2021). Concerning the educational status, most of the respondents (31.8%) have primary education whereas only 23.07% of respondents got training on farming in the study area which is slightly higher than 20.5% reported by Ahmed et al., (2012). All these information indicate that the involvement of educated people in cattle farming was very low and had a lack of knowledge about modern farming. Agriculture was the most common primary occupation (40.51%) of the respondents where Siddiki et al., (2016) reported that 60% of farmers were engaged in agriculture with livestock rearing. The respondents had 10.77 decimals, 113.84 decimals, 6.35 decimals for homestead land, cropland and grass land respectively, and which

were lower than the results observed by Talukder et al., (2017). The above studies showed that the homestead and cropland is decreasing day by day due to increasing number of population.

The average income of the farmers was 1.93 lakhs but most (74.3%) of the farmer income was below 1 lakh. The Covid -19 lockdown situation had a significant effect on family income. Thus the economic condition of the farmers drastically fall and they lead a measurable life which also effects on farming.

The rearing system was mostly intensive (feeding at home) (69.7%) and also fed in home at night. Due to lack of grazing land, intensive rearing system is increasing. In case of feeding 100% rice straw feeding along with 83.59% grass and 86.67% concentrate (oil cake, wheat bran, cattle feed, etc.) feeding. Similar results were observed by Baset et al., (2003), where he showed that 100 % of rice straw feeding as roughages or treated with UMS (urea molasses straw), as most of the farmers were related with agriculture. After collecting the crops, the residues can be used as roughage. In the fattening farm, most of the respondents used cattle feed and other concentrates than dairy farms for the aim of faster growth rate.

The study represented that the Holstein Friesians were mostly (19.53%) reared in dairy farms due to high-yielding milk. In the case of fattening, crossbred was higher (17.53%) than any other breeds, as they were adopted easily with the environment and higher body weight gain. The peak day milk production and lactation period was significantly difference among 3 genotypes, where Indigenous cattle breed was 2.13 liters was higher than 1.86 liters in Talukder et al., (2017), followed by 8.68 liters in Holstein Friesian also higher than 7.43 liters in Talukder et al., (2017). The production performance of Holstein Friesian was significantly higher ($p < 0.01$) than indigenous and cross breeds. The milk production was increased due to cross-breeding, and providing additional concentrate feed along with calcium. The lactation period was 223 days (7.45 months) in Holstein Friesian was higher than 217.14 days were observed by Talukder et al., (2017). That showed that the production performance is increasing day by day and high-yielding dairy breed was milking for a long time than the indigenous breeds. Some local cow was not milking at all, they only fed their calf. The number of services per conception was low in indigenous breed (1.29) than Holstein Friesian

(1.34) and crossbred (1.55). The environmental factor affects reproduction efficiency in different breed. Which was higher than 1.21 by Mamun et al., (2016). That indicated that reproduction performance also decreasing day by day.

The mortality rate in the study was 8.77 on an average. And the major cause was viral infection (39.2%). The outbreaks of LSD (Lumpy Skin Disease), FMD (Foot and Mouth Disease) were the most dominant cause of mortality in the area. The 72% of the respondents gave their statement that they faced loss in farming due to effect of Covid-19. In lockdown they could not sell their milk and cattle in market. The beef cattle also not be sold in Eid Ul Adha, also the butcher shop was closed. The feeding and transportation cost was rising day by day. Even after lockdown the livestock market was fallen, that is why most of the respondents were discouraged on cattle farming.

CONCLUSION

Cattle farming play a significant role in improving the livelihoods of small farmers. It also helps to meet national meat and milk requirements. The study keeps records of the socio-economic characteristics of cattle farmers at Narail Sadar Upazila in Narail district. It can be decided that the majority of the cattle rearing farmers were middle-aged, low-educated, with smaller family sizes, and had a small land size. Almost all households have been keeping indigenous cattle for meat, milk, and calf production despite lack of improved breed, the high price of feed, lack of credit facilities. It is recommended to organize management-related training by government and non-government organizations and the loan facilities.

LIMITATIONS

There are some limitations of this study. As the study was performed in Lockdown during Covid-19, it was so difficult to collect data from the farms as well as from UVH. The local farmers did not keeping any record on farming. The farmers were not agreed to provide the necessary information which was very important for this study. The farmers were very conservative, so it was very difficult to make them easy.

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