



Livestock production and utilization systems of different farm category farmers at Sirajgonj district of Bangladesh

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ABSTRACT

The study was aimed to identify and evaluate present livestock production and utilization system of selected areas of Sirajgonj district during January 2017 to December 2017. The study revealed that the small, medium and large farmers reared the large number of sheep, goats and cattle. Large farmers maintained dairy and beef farm with upgraded cattle and their average milk production was 8.50 liter per day and beef production was 120-150 kg per beef cattle. Average milk production of all categories was 5.85 liter per day of selected areas. The small and large farmers sold the highest portion of products and the medium farmers directly consumed the most portions of their products. The farmers used to feed their livestock from different sources of roughage and concentrate. Most of the farmers cultivate fodder like Napier, maize, jumbo and Para grass in the studied area. There were many farmers who had cash money to purchase feed but they had no skill and knowledge on appropriate technology for farming. May to August was the crisis time for green grasses and September to October was the lean period for straw in the studied area. Farmers were adapted to modern variety of fodder cultivation. The livestock were mostly affected by diseases like, diarrhoea (12.0%), foot and mouth disease (FMD) (25.7%), black quarter (15.45%), hemorrhagic septicemia (20.6%) and anthrax disease (5.0%). Due to availability of gas small farmers used cow dung and dried leaves of trees as fuel and large farmers used cow dung as manure in the crop field respectively in the studied areas. There is a vast scope of producing high yielding fodder, dairy and beef fattening farms to enhance the development of farmer in the studied areas.

INTRODUCTION

According to World Health Organization (WHO), per capita annual demand for meat is about 80kg in the world, while per capita meat consumption in Bangladesh is only 7.3kg a year (The Independence, 2017; Hossain et al., 2018). Statistics from the WHO also shows per capita annual consumption of meat is 19, 50, 100, 100, and 70 kg in Pakistan, China, Germany, United States and Argentina. However, per hectare density of cattle head in Bangladesh was higher than any other country in the world. The number of cattle head per hectare is 2.49, 1.12, 0.70, 0.38, 0.81 and 0.34 in Bangladesh, India, Pakistan, the United States, Denmark and Kenya, respectively. On the other hand, annual production of meat is currently 36 lakh tones, a large portion of which is

covered by poultry sector. Ministry of Fisheries and Livestock and Bangladesh Raw Hide Merchants Association and Tanners Association of Bangladesh sources say that around 1.4 crore of cattle are being slaughtered every year in Bangladesh during Eid ul- Azha (The Independence, 28 September, 2015; Hossain et al., 2018). Many household farmers also rear cattle, goats and sheep targeting Eid-ul-Azha, and this number would be double than that of supplied by the cattle farmers, According to Livestock Department estimates, there are about five lakh cattle farmers across the country. Farmers were used to buy emaciated male or infertile cows or heifers considering their body conformation, size and having them treated with de-wormer better diets are fed a period for at least 120 days to market fattened animals (Huq and Amanullah

(2009). Feed sources for livestock are mainly derived from crop residues, cereal by-products and road side grasses (Begum et al., 2007; Hossain et al., 2018). Farmers were mainly depended on green grasses and tree leaves of their availability. Sarkar et al., (2013) used Durba, Helencha and Noll and Dhal grass for buffalo rearing. Few farmers used fodders and most of farmers reported that feeds are not available in selected areas (Hossain et al., 2018). The economics of Bangladesh is mainly depending on agricultural section. About 84% of total populations live in rural areas are directly or indirectly engaged in wide range of agricultural activities (Haque et al., 2011). The agricultural sector as the single largest contributor to income and employment generator is a vital element or sector in the countries challenge to achieve food security, reduce poverty, and foster sustainable poverty alleviation. Livestock is one of the crucial components of agriculture playing a very emergent role in the agricultural economy of Bangladesh (DLS, 2019). The contribution of livestock sub-sector to the GDP is 1.47%. It share in agriculture (current price) 13.46% and GDP volume (Current prices) 43212 crore BDT and provides fulltime employment directly to about 20% and partial employment to about 50% of the rural population (DLS, 2019). It is playing an important role in the employment generation and poverty reduction in rural area. In Bangladesh, about 80 to 85% of the households keep livestock in the rural area (Haque et al., (2011). The livestock sub-sector provides full time employment for 20% of the total population and part-time employment for another 50% of the total population (Begum et al., 2011). The poultry meat alone contributes a substantial 37% of the total meat production in Bangladesh (Begum et al, 2011). The landless, marginal and small farmers keep more livestock (Huque, 1987, BAU, 1985) although the indigenous livestock are low producers of either egg or meat or milk. But it has great economic importance in Bangladesh. On the investment side livestock often serve as a depository of savings to hedge against future needs or possible calamities (Wennergren et al., 1984). The livestock production in Bangladesh is not adequate which is manifested in the low supply and high price of livestock and its products in the market. This indicates a huge gap in the present status of livestock production in Bangladesh

(Islam and Shahidullah, 1989). Thus before taking any comprehensive program for the improvement of livestock production and utilization, the production disposal pattern, mortality, marketing and utilization pattern of sale proceeds of livestock and its products should be immediately analyzed and studied very carefully (Hussain et al., 1988). At the digital ages, the farmers have been growing interest in rearing of livestock for commercial purpose. There was a great scope to explore livestock resources for its further improvement. Hence, the present study was conducted to identify the existing livestock resources, to describe the interrelationship between crop and livestock enterprises and to identify the constraints and potentialities of livestock systems.

MATERIALS AND METHODS

Study area and selection of farmers

The study was conducted at the district of Sirajgonj. Data were collected from 50 farmers belonging to farm categories of small 20, medium 20 and large 10 with the direct help of a pre- tested survey schedule. The study was conducted during January 2017 to December 2017.

Preparation of interview schedule

The interview schedule was carefully prepared based on 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 of the study. The schedule was developed so simple manner to avoid misunderstanding and to get accurate information from respondents of research areas. Then it was finalized according to the experience gathered in primarily field level survey.

Data collection

The researchers collected all information through personal interview from individual respondent in their own house. An introductory visit was made to study area when the aims and objects of study were explained to the most of the respondents. This helped to create a friendly atmosphere of respondents. The researcher also established

desired rapport building systematically and explained whenever it was felt necessary. The information supplied by respondents was recorded directly on the interview schedule. The information was cross checked carefully before leaving study area to avoid errors. Data was collected in local unit. These were subsequently converted into desirable standard level unit. Excellent cordial cooperation was received from all respondents during the whole data collection period. The data generated from this experiment were entered into Microsoft Excel worksheet, organized and processed for further analysis.

Statistical analysis

Data were tabulated and analyzed with descriptive statistical method by fulfilling the objectives of the study. Tabular technique was applied for the analysis of data using descriptive statistical tools like frequency, average and percentages, standard deviation etc. through SPSS- v-20 version computer software.

RESULTS AND DISCUSSION

Livestock rearing pattern

Most of the livestock of the survey areas were cattle, sheep/ goats, ducks and buffaloes. The number of bull or bullock was very insignificant and reared 4- 5 months before Eid-ul-Azha for sacrificing animals of Muslim traditional system. The buffaloes are in very few numbers especially in undated areas.

From Table 1, it is revealed that the average number of bull per farm for small, medium and large farm categories was 2.5, 4.56 and 5.6, respectively, cattle were 3.75, 5.25 and 8.56, respectively, goats were 4.85, 15.56 and 5.5, respectively, and sheep were 2.0, 5.75 and 5.8 respectively. It indicated that poultry were maintained in all farm categories. It was the main income source of rural women. These findings were higher of bull and goats but lower of cattle according to the findings of Haque et al. (2011).

Table 1: Average farm size of livestock

Type of animals	Average number of / farm category					
	Small		Medium		Large	
	No.	% of farmers own	No.	% of farmer own	No.	% of farmers own
Bull/ Bullock	2.5	20.40	4.56	30.15	5.60	50.0
Cattle (other)	3.75	64.20	5.25	80.60	8.56	80.5
Goat	4.85	12.50	15.56	60.50	5.5	70.52
Sheep	2.0	4.6	5.75	6.50	5.80	6.10
Chicken	8.80	15.90	20.0	42.25	21.0	54.40
Duck	2.55	6.75	8.30	10.54	8.90	12.32
Pigeon	0.86	5.75	6.60	15.56	10.55	25.70

Table 2: Milk production by farm category

Farm category	Ave. no. cow/HH	Av. milk production (liter/day)	Av. lactation period (days)	% HH having milking cow	Av. beef production kg/ beef cattle
Small	0.75	2.8	265	42.30	-
Medium	2.25	6.25	275	55.50	-
Large	2.6	8.50	290	65.30	120-150
Average	1.87	5.85	276.66	54.36	120-150

Milk production by farm category

The average number of milking cows per farm was 1.87 and it was the highest (2.25) in large families and lowest (0.75) in small families. About 54.36 per cent families were rearing milking cows. The average lactation period was 276.66 days and average milk production per day cow was 5.85 liter (Table 2). These findings were almost similar to Haque et al. (2011).

Disposal system of milk by farm categories

Table 3 showed that about 49.46 per cent of the total production of milk was consumed, 49.3 per cent sold and only 3.33 per cent distributed to their relatives. The medium farmers consumed more milk than small and large farmers in the studied area (Table 3). Average milk production was 6.28 liter per day which was lower than Haque et al. (2011).

Table 3: Disposal system of milk by farm categories

Farm category	Disposal percentage of total products		
	Consumed	Sold	Distributed
Small	40.2 (40.5)	54.00 (52.5)	5 (7)
Medium	62.6 (53.3)	41.5 (37.70)	3 (9)
Large	45.6 (52.0)	52.40 (45.00)	2 (3)
Average	49.46	49.3	3.33

Marketing of milk in the studied areas

Table 4 shows that average 6.28 liter milk was produced and 5.00 liter was sold to the local market and home supply by all categories of farmers. The price rate of per kg liter milk was 48 BDT in the studied areas. These findings were not in accordance with the findings of Haque et al. (2008). Lowest amount selling of milk for large farmers was 45 and 55% to local market and home supply in the studied areas. Average milk sold was 5.0 liter per day/ family in the survey area. About 25.25 per cent milk was sold at farmer's house and rest 74.75 per cent of the milk was sold at the local market on an average at BDT 48 per liter.

Table 4: Marketing of milk by all farm categories

Farm category	Av. milk produced (liter/day)	Av. quantity sold/day (liter/day)	Av. sold price (BDT/liter)	Selling place (%)	
				Local market	Home supply
Small	3.5	2.5	48	88.5	11.5
Medium	6.45	5.6	48	90.75	9.25
Large	8.9	6.9	48	45	55
Average	6.28	5.00	48	74.75	25.25

Table 5: Average feed supplied per day for livestock of all farms

Source	Roughage (kg)			Concentrate (kg)		
	Straw	Green grass	Rice bran	Wheat bran	Oil cake	Molasses
Own	4.5	8.5	0.40	0.30	0.10	0.15
Purchased	-	5.2	0.20	0.25	0.15	0.13

Feed and fodder crisis period of livestock

The farmers at this area used straw, green grass, tree leaves, bran, molasses and oilcake as cattle. Own feeds were the main sources for livestock. Few of them purchased feed like wheat bran, rice polish, oilcake and molasses for their cattle. Table 5 showed that on an average, the farmers of the survey area of feed supplied 4.5 kg straw, 13.7 kg

green grass, 0.6 kg rice polish and 0.55 kg wheat bran, 0.25 kg oil cake and molasses 0.28 kg daily for their livestock. The respondents stated the month from May to August is the crisis period for green grass and September to October is the lean period for straw in the area. Some of the farmers purchased wheat bran, molasses (total) and rice polish, sesame oilcake (partial) from the local market. Straw and green grass was supplied from

their own sources. Hossain et al. (2018) showed that more than 90% farmers used fodder and tree leaves and 100% farmers reported that feeds are available in the selected area.

Cash flow of income

Table 6 represented the cash flow of income generated through selling of milk, poultry or livestock by the farmers. The large portion of the farmers spent their income to meet the daily

expenses (33.33%) and then they gave priority on agricultural production cost (25.33%). The small farmers spent most of money to family expenses (45%) and lastly on health and medical expenses. The medium farmers were given more priority on meeting agricultural production costs (38.50) and less priority to repairing of household (4.25%). The large farmers spent 27% income to meet their family expenses and 29.5% spent to agricultural input. This finding was not in accordance with the result of Haque et al. (2011).

Table 6: Cash flow of income by selling livestock and its products by farm categories

Utilization pattern	Percentage of respondents*			Average
	Small	Medium	Large	
Daily family expenses	45.0	38.0	27.0	33.33
Agricultural input	8	38.5	29.5	25.33
Food	11.2	8.8	8	9.33
Cloth	5.5	12.35	8.65	8.83
Treatment	1.0	5.8	4.2	6.67
Repayment of loan	12.0	10.8	15.2	12.67
Education	12.0	30.0	10.0	17.33
Repairing of houses	6.25	4.25	3.5	4.7

* Same respondent used money in several areas

Table 7: Major diseases of cattle and treatment of all farms

Type	Farmers (%) facing problem of diseases					Av. no. of farmers practiced by treatment		Av. Expenditure (BDT/head)
	Diarrhea	BQ	HS	FMD	Anthrax	ULO	No treatment	
Cattle	12.0	15.45	20.6	25.7	5.0	88.25	11.75	75.50

Table 8: Utilization pattern of cow dung by different farms categories

Farm category	Percent of respondent		
	Manure	Fuel	Others
Small	75.0	25.0	-
Medium	76.0	10.0	14.0
Large	79.5	2.5	18

Disease and treatment of livestock

Health and veterinary care of animals was better in the study areas. The cattle were attacked of diarrhea (12%), BQ (15.45%), HS (20.6%), anthrax (5.0%) and foot and mouth disease (25.70%) (Table7). The result of the present study was not agreed with the findings of Hossain et al. (2018). For the protection of diseases the farmers (88.25%) go to the ULO office and about 11.75% farmers did not treat their cattle. The farmers spent

for treatment on an average about BDT 75.50 for each cattle per year.

Utilization pattern of livestock by products

Cow dung is a vital source of manure to the farmers. They used cow dung in the crop field as better production. They also used cow dung as fuel and others. Seventy five per cent small farmers used cow dung as manure and 25% is fuel, medium farmers 76 and 10% and large farmers

79.5 and 2.5% used as manure and fuel, respectively (Table 8). Medium and large farmers used cow dung as plastering of threshing floor, vermicompost and earthen oven 14 and 18%, respectively. The present study was not similar to the findings of Haque et al. (2011).

Crop livestock interaction

Crop and livestock is an integral part of relationship. Crop get organic manure and draft power from livestock and livestock get feed, fodder, and crop by-product and oxygen from crops. The interaction between crop and livestock could be an ample opportunity of supplementary or competitive. By breathing poisonous grass from leaf, livestock became sick; side by side they damaged the field crops and vegetables.

CONCLUSIONS

It is revealed from the study that there is huge scope of livestock farming for small, medium and large farmers in the studied areas. Dairy and beef fattening farms may be established with cross breed and indigenous cattle. If there is year round fodder production facilities for dairy farms may be established to improve livelihood and income generation in the studied areas. Regular vaccination and medication activities must be performed to prevent diseases of cattle. Cow dung is an important by-product which is used as fuel. It is more efficiently used as organic manure maintaining soil health condition and increasing crop production. Large farmers used cow dung for biogas production in their premises for supply energy and fuel in own and neighbor houses. It would be helpful to establish livestock farming by utilizing digital technology on new species of fodder and improved cattle introducing in the studied areas. As a result, creation of employment especially women and promptly income generation was possible of the rural people in the studied areas.

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