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Study on Existing Husbandry Management Practices of Cattle Rearing in Selected Areas of Bangladesh

Md. Ruhul Amin[1, *], Md. Ahsanul Kabir[2], S. M. Jahangir Hossain[1, 2], Gautam Kumar Deb[2], Sardar Muhammad Amanullah[2], Farhana Afroz[2]

[1]Red Chittagong Cattle Improvement Project (Phase-2), Bangladesh Livestock Research Institute, Dhaka, Bangladesh

[2]Biotechnology Division, Bangladesh Livestock Research Institute, Dhaka, Bangladesh

Email address:

ruhulaminbau@yahoo.com (Md. R. Amin)

[*]Corresponding author

Abstracts: The study was executed to explore the present husbandry management practices of cattle rearing in selected areas of Bangladesh. A total 719 of samples were selected using simple random sampling technique from 14 selected upazilas of 9 districts. Data were collected through well-developed, pre-tested objective-based questionnaire and on-farm face to face direct interview. Data were analyzed using MS Excel and SPSS 20 software with descriptive statistics. From the study it was found that farmers were used half grazing (39.97%), full grazing (33.63%) and stall feeding (26.40%) cattle rearing systems. Most of the cattle sheds were found shabby type (47.89%). The average time of grazing and taking care of cattle were found 6.08 and 5.25 hours/day respectively. However, in intensive system straw and concentrate feed (8.04% and 14.94%) and in semi-intensive system grass and concentrate (5.67% and 7.47%) were provided. Most of the farmers (52.02%) used chopped roughage followed by balance ration (9.64%) of feeding technology. Moreover, most of the farmers irrespective of areas used wheat bran (65.07%) and rice police (49.92%) to feed their cattle. The scenarios of fodder cultivation of different study areas were found poor. Furthermore, the farmers had taken animal quarantine (24.19%), used cleaning farm premises (90.26%) and controlled rodents and external parasite (52.26%). Irrespective of areas regular cleaning, de-worming, vaccination, disinfect and did not take any kind of measure were 88.52%, 67.61%, 63.37%, 17.44% and 11.72% respectively. It may be concluded that there was a lack of knowledge found about scientific management practices in rearing cattle and scope for improvement of management practices of cattle for better milk and meat production in the context of Bangladesh.

Keywords: Management, Feeding, Housing, Hygienic, Feeding Technology, Bio-security, Disease

1. Introduction

The livestock sector is playing an important role in Bangladesh and contributed to GDP in FY 2018-2019 is 1.47% [1]. Among livestock, cattle playing an important role because of most of the farmers (about 80 to 85 households) rear cattle as a source of income along with financial support during the crisis [2]. Total 41.93% households were rearing cattle (BBS, 2019) and the total number of cattle in Bangladesh 28487415 (100%) and in rural and urban areas were 97.09% and 2.91% respectively [3]. The farming system in Bangladesh is mainly commercial and non-commercial or traditional. [4] found the major constrains in cattle rearing are choice of species, breeds, availability of animals, smart feeding management, improved breeding, reproduction, animal health care, management of manure, organized marketing system, marketing outlet, the capacity of investment. The up-gradation of breed and management system contributes to increase the milk production of cows [5]. There are some problems regarding feed and nutrition of cattle; crop residual, grass, tree leaves, cereal by-product and a very negligible amount of concentrate feeds were supplied to the

cattle [6]. It is recommended that fodder conservation and different feed technologies need to practice to supply feed to the cattle for year round [7]. The cattle farmers are lacking awareness about housing, feeding and nutrition, hygienic management, biosecurity and disease control [8]. Farmers did not vaccinate and use of deworming medication for their cattle due to lack of awareness, scarcity of vaccine, the high price of anthelmintic, poor economic condition, and ignorance of veterinary care after infection [9]. Considering these facts objectives of this study was to explore the present cattle management practices farmers along with identifying the intervention points of cattle rearing in selected areas of Bangladesh.

2. Methodology

2.1. Selection of Study Areas

The study was conducted following a logical research methodology. Problem was identified and review of documents was conducted to fulfill the scope of the study. Collection of information concerning the current status of management practices of cattle rearing 14 upazilas of 9 districts was selected.

2.2. Development of Questionnaires

The questionnaire was developed with a logical sequence, objective-based and rationally which was logically analyzable to present scientifically. Both quantitative and qualitative data were collected. However, open questions were effective in acquiring qualitative information and were particularly good for determining people's estimation and feelings.

2.3. Estimation of Sample Size for Household Survey

Considering budget, time and manpower the number of samples for household survey was fixed as 50 for each of the area. However, the the actual number of samples covered for collecting quantitative and qualitative data using simple random sampling technique was 719 from 14 selected upazilas.

2.4. Data Input, Processing and Analysis

Data from selected areas were collected through direct interview. After collecting the data started to input the data in MS Access as per output tables. After intensive processing and synthesizing data were analyzed using descriptive statistics with MS Excel and SPSS 20 software.

3. Results and Discussion

3.1. Cattle Rearing System

The cattle rearing system found in the study areas at different districts shown in theTable 1. From the table it was observed that irrespective of areas stall feeding, half grazing and full grazing system was found 26.40%, 39.97% and 33.63% respectively. Most of the farmers were practice half grazing cattle rearing system. In the previous study, it was found 80% of the farmers reared cattle by the semi-intensive system, 17% by intensive and only 3% of extensive or free-grazing system [8]. It was reported that the cattle feeding system is mostly intensive (77%) followed by semi-extensive (23%) in the surveyed areas [10].

Table 1. *Cattle rearing system.*

District	Stall feeding	Half grazing	Full grazing
Banderban	1.92%	17.31%	80.77%
Chattogram	56.03%	31.91%	12.06%
Jeshore	11.32%	88.68%	-
Kurigram	6.52%	50.00%	43.48%
Mymensingh	3.45%	37.93%	58.62%
Rajshahi	-	-	100.00%
Shariatpur	-	95.65%	4.35%
Sylhet	10.00%	6.00%	84.00%
Tangail	26.42%	66.04%	7.55%
Grand Total	26.40%	39.97%	33.63%

3.1.1. Types of Cattle House at Different Districts

A real picture of the housing conditions in the study areas at the different district for cattle has been shown in Table 2. It was observed that most of the houses were found shabby (47.89%), followed by full tin (31.01%), katcha (14.94%) and semi pakka (6.17%). It was observed that the highest number of semi pakka & katcha cattle sheds were at Rajshahi district (21.43% & 40.48%), the highest numbers of full tin cattle sheds were at Banderban district (60%) and the highest numbers of shabby cattle sheds were at Jeshore district (79.25%). In the previous study, it was reported that only 10% of the farmers had half building and rest 90% of the farmers used tin shed and straw shed to house their cattle [11].

Table 2. *Types of cattle house at the different district.*

District	Semi-pakka	Katcha	Full Tin	Shabby
Banderban	-	22.86%	60.00%	17.14%
Chattogram	2.48%	9.09%	48.76%	39.67%
Jeshore	13.21%	7.55%	-	79.25%
Kurigram	8.70%	23.91%	-	67.39%
Mymensingh	14.29%	17.86%	53.57%	14.29%
Rajshahi	21.43%	40.48%	-	38.10%
Shariatpur	-	10.87%	-	89.13%
Sylhet	-	8.16%	22.45%	69.39%
Tangail	8.51%	23.40%	23.40%	44.68%
Grand Total	6.17%	14.94%	31.01%	47.89%

3.1.2. Cleaning and Hygienic Management

To avoid disease spread in animals and humans good hygiene practices are necessary for animal housing. Cleaning and hygienic management of cow sheds in different study areas shown in the Table 3. The study revealed that, irrespective of areas about 85.71% farmers regularly cleaned their cowsheds followed by regular washing 62.50% and 21.66% used disinfect cowshed regularly. In Banderban and Kurigram district 100% farmer found that they were regularly cleaning cowshed. The highest regular washing and

use of disinfectant were found in Rajshahi (97.92%) and Mymensingh (41.82%) districts.

Table 3. *Cleaning and hygienic management.*

District	Regular cleaning	Regular Washing	Regular disinfection
Banderban	100.00%	76.74%	4.65%
Chattogram	91.14%	70.69%	23.81%
Jeshore	30.19%	15.09%	11.54%
Kurigram	100.00%	25.00%	4.35%
Mymensingh	98.18%	60.00%	41.82%
Rajshahi	95.83%	97.92%	40.43%
Shariatpur	97.83%	31.71%	23.26%
Sylhet	81.63%	72.00%	15.22%
Tangail	64.15%	80.00%	17.65%
Grand Total	85.71%	62.50%	21.66%

3.2. Cattle Grazing Hours and Time Spend for Taking Care of Cows

Table 4 delineated below shows that irrespective of areas farmers were used cattle grazing time minimum of 1 hour and maximum of 12 hours. Maximum cattle grazing hours were used by the people who lived in Rajshahi district where they used cattle grazing time every day minimum of 6 hours and maximum 12 hours. On the other hand, time spent for the care of cattle was the highest at Sylhet district where people take care of their cattle on an average 7.20 hours in a day.

Table 4. *Cattle grazing hours and time spent on taking care of cows.*

District	Grazing hours of cows			Time spend on taking care of cows (hours)		
	Min	Max	Average	Min	Max	Average
Banderban	4	10	6.12	3	7	4.88
Chattogram	1	12	5.39	1	10	4.17
Jeshore	1	3	3.94	4	8	6.33
Kurigram	4	10	5.98	4	9	5.93
Mymensingh	2	12	7.26	2	10	4.91
Rajshahi	6	12	7.58	3	7	5.36
Shariatpur	4	7	6.15	6	8	6.96
Sylhet	4	12	8.40	1	11	7.20
Tangail	1	8	4.40	2	12	5.42
All	1	12	6.08	1	12	5.25

3.3. Types of Feeds Supplied to Cows for Intensive Rearing System

It was found that feeds supplied to cows for intensive cattle management irrespective of areas 8.04% of farmer fed their cattle providing rice straw and concentrates 5.67%, grass and concentrate and 5.44% straw and grass. However, 0.71% and 0.47% cattle keeper fed their cattle providing only grass and straw (Table 5). The highest straw and grass was found in Mymensingh district (36.36%). Grass and concentrate and straw and concentrate were highest in Chattogram (11.48% and 13.40%). In the previous study, it was found that 96.3% of farmers feed both roughage and concentrate and 3.8% farmer gave only concentrate [2].

Table 5. *Types of feeds supplied to cows for intensive rearing system.*

District	Sole grass	Sole straw	Straw and grass	Grass and concentrate	Straw and concentrate	All types
Banderban	-	-	-	-	-	100.00%
Chattogram	-	0.48%	2.87%	11.48%	13.40%	71.77%
Jeshore	-	-	-	-	-	100.00%
Kurigram	-	-	-	-	9.09%	90.91%
Mymensingh	9.09%	-	36.36%	-	9.09%	45.45%
Shariatpur	-	-	-	-	-	100.00%
Sylhet	-	-	16.67%	-	-	83.33%
Tangail	-	2.08%	8.33%	-	2.08%	87.50%
Grand Total	0.71%	0.47%	5.44%	5.67%	8.04%	79.67%

3.3.1. Types of Feeds Supplied to Cows for Extensive and Semi-intensive Rearing System

Table 6 illustrates the types of feeds supplied to cattle for extensive and semi-intensive rearing system in different study areas. It was found that irrespective of areas 14.94% of household farmers used straw plus concentrate feeds, 7.47% of household farmers used cut & carry grass plus concentrate feeds, 6.61% of household farmers used cut & carry grass plus straw, 5.46% of household farmers used cut & carry grass and 2.01% of household farmers used straw only as feeds supplied to their cows for extensive and semi-intensive rearing system. The highest (80%) farmers of Sariatpur district supplied all items of feed to their cattle. Rice straw is the basal feed for ruminants with low nutritive value and low digestibility. Farmers use rice straw of traditional varieties, green grass, sugarcane tops, wheat and rice bran, molasses, pulse bran and locally available resources such as pumpkin, carrot, banana, vegetable by-products, rice gruel, boiled rice bran, oil cakes etc. for beef fattening [12].

Table 6. *Types of feeds supplied to cows for extensive and semi-intensive rearing system.*

District	Straw	Grass*	Grass* plus straw	Grass* plus concentrate	Straw plus concentrate	All items	Nothing
Banderban	-	2.44%	-	2.44%	12.20%	75.61%	7.32%
Chattogram	2.29%	9.92%	10.69%	7.63%	23.66%	44.27%	1.53%
Kurigram	-	-	-	4.17%	29.17%	12.50%	54.17%
Mymensingh	8.33%	10.42%	10.42%	10.42%	16.67%	37.50%	6.25%
Rajshahi	-	-	-	18.75%	-	-	81.25%
Shariatpur	-	-	-	-	-	80.00%	20.00%
Sylhet	-	-	6.67%	-	-	6.67%	86.67%

District	Straw	Grass*	Grass* plus straw	Grass* plus concentrate	Straw plus concentrate	All items	Nothing
Tangail	-	-	16.67%	-	16.67%	50.00%	16.67%
Grand Total	2.01%	5.46%	6.61%	7.47%	14.94%	34.48%	29.02%
* Cut and carry grass							

3.3.2. Types of Feed Technologies Used for Cows

The types of feeding technologies used by the farmers in different districts are shown in Table 7. It was observed that 52.02%, 9.64% and 9.33% used chopped roughage, balanced ration and ready feed respectively. Moreover, 1.24%, 1.24% and 0.31% farmers were used treated straw, hay and silage technology for cattle feeding. The highest balance ration was supplied to cattle by the farmers were found in Chattogram district (16.60%). Only 5% of farmers used Urea Molasses Straw (UMS) technology whereas 95% of them were not aware of any feeding technology for their cattle and 15% were fully depended on the purchasing feed from the local market [8]. Farmers are using rice straw of traditional varieties, green grass, sugarcane tops, wheat and rice bran, molasses, pulse bran and locally available resources such as vegetable by-products, rice gruel, boiled rice bran, oil cakes etc. for cattle fattening. Use of urea molasses straw treatment in beef cattle resulted in higher body weight, dressing percentage and also in better carcass quality than untreated straw [13]. The existing use of feeding technology still observed poor in the study areas.

Table 7. Types of feeding technologies used for cows.

District	Silage	Hay	Treated straw	Chopped roughage	Balance ration	Ready feed
Banderban	-	-	-	80.00%	2.04%	4.08%
Chattogram	0.40%	0.81%	0.81%	71.95%	16.60%	8.10%
Jeshore	-	-	-	81.13%	-	3.77%
Kurigram	-	2.27%	2.27%	11.36%	9.30%	54.55%
Mymensingh	-	3.51%	3.51%	52.63%	10.53%	3.57%
Rajshahi	-	-	-	-	-	-
Shariatpur	-	-	-	-	8.89%	-
Sylhet	-	4.00%	4.00%	18.00%	2.00%	-
Tangail	1.89%	1.89%	1.89%	58.49%	9.43%	18.87%
Grand Total	0.31%	1.24%	1.24%	52.02%	9.64%	9.33%

3.3.3. Types of Concentrate Feeds Supplied to Cows

The study envisaged that irrespective of areas about 65.07%, 49.92%, 33.33%, 27.91%, 17.57%, 4.50% and 2.49% farmers were used wheat bran, rice polish, oil cake, cooked rice, pulse husk, crushed maize and soybean meal for their cattle (Table 8). The highest concentrate feed supplied by the farmers were wheat bran (65.07%). Most of the crossbred animals concentrate fed were supplied twice/thrice daily in the morning and evening and composed of rice polish, wheat bran, bran of legumes and oil cakes. Among concentrates, wheat bran (29.6% for cow), oil cake (25.23% for cow), rice polish (18.38% for cow) are highly preferred. Rice straw was used as a bulk basal feed with some green grasses and concentrates [4].

Table 8. Types of concentrate feed supplied to cows.

District	Wheat bran	Rice polish	Pulse husk	Oil cake	Cooked rice	Crushed maize	Soybean meal
Banderban	87.76%	65.31%	4.08%	61.22%	28.57%	2.04%	-
Chattogram	87.15%	63.05%	14.11%	33.87%	38.96%	2.41%	4.84%
Jeshore	7.55%	43.40%	50.98%	35.85%	-	1.89%	-
Kurigram	50.00%	6.82%	18.18%	29.55%	-	4.55%	6.82%
Mymensingh	84.48%	67.24%	10.53%	51.72%	66.67%	5.26%	-
Rajshahi	19.57%	-	-	-	-	19.57%	-
Shariatpur	52.17%	58.70%	58.70%	40.00%	-	-	-
Sylhet	16.00%	18.00%	6.00%	8.16%	14.00%	8.00%	-
Tangail	86.54%	63.46%	11.54%	36.54%	46.15%	5.77%	1.96%
Grand Total	65.07%	49.92%	17.57%	33.70%	27.91%	4.50%	2.49%

3.4. Fodder Cultivation and Types of Fodder Cultivated by the Farmers

The result of the Table 9 indicates that at Jeshore district the highest number of households (39.62%) cultivated fodder and all of them cultivated the German fodder. At Sylhet district, 14.89% cultivated fodder among them 14.29% cultivated Napier grass. At Kurigram district 6.67% cultivated fodder among them, 33.33% cultivated German grass and 33.33% cultivated Napier grass. At Chittagong district, 6.02% cultivated fodder among them 53.33% cultivated German grass, 13.33% Napier, 26.67% Kali, and 6.67% cultivated Jumbo grass. At Mymensingh and Tangail districts 100% cultivated German grass. The scenarios of fodder cultivation of different study areas were found poor. Similarly, very few (5%) farmers' fed fresh fodder to their

crossbred cows and roadside grasses [4]. A total 38% farmer wanted to grow fodder and 62% farmer were reluctant to grow fodder due to lack of land [14]. A total of 74% of farmer fed triticale as green fodder to their cows and 19%

farmer made triticale hay, mixed it with rice straw and fed that to their cows [15]. Thus, the present situation of fodder cultivation was improving day by day.

Table 9. *Fodder cultivation and types of fodder cultivated by the farmers.*

District	Fodder Cultivated	German	Napier	Kalai	Maize	Jumbo
Banderban	-	-	-	-	-	-
Chattogram	6.02%	53.33%	13.33%	26.67%	-	6.67%
Jeshore	39.62%	100.00%	-	-	-	-
Kurigram	6.67%	33.33%	33.33%	-	33.33%	-
Mymensingh	3.45%	-	100.00%	-	-	-
Rajshahi	-	-	-	-	-	-
Shariatpur	-	-	-	-	-	-
Sylhet	14.89%	14.29%	85.71%	-	-	-
Tangail	3.85%	-	100.00%	-	-	-
Grand Total	100.00%	62.00%	26.00%	8.00%	2.00%	2.00%

3.5. Quantity of Feeds Supplied to Different Types and Genotypes of Cattle

Excess feed supply increases the cost of production and less feed supply causes loss of production. So, it is essential to feed the cows optimally. The amounts of feed supplied by the farmers to different types and genotypes of cattle are shown in Table 10. It was found that irrespective of areas concentrate feeds supplied to different types and genotypes of cattle were found poor.

Table 10. *Quantity of feeds supplied to different types and genotypes of cattle.*

Type of cow	Indigenous (kg/d/head)			RCC (kg/d/head)			Crossbred (kg/d/head)		
	Grass	Straw	Conc.	Grass	Straw	Conc.	Grass	Straw	Conc.
Milch cow	10.36	4.13	1.26	11.89	7.02	1.30	12.52	3.85	1.46
Pregnant cow	7.46	3.60	1.24	12.88	8.61	1.78	11.86	4.23	1.95
Dry cow	7.82	4.23	0.92	7.73	7.50	0.88	8.94	2.37	1.17
Weaned calf	6.53	2.93	0.63	4.82	3.60	0.50	7.56	3.88	1.63
Adult bull	13.0	4.54	1.63	14.5	7.67	1.38	8.33	2.54	1.33

3.6. Measures Taken for Controlling Bio-security

Table 11 illustrates the farmer in different study areas who used different measures for controlling bio-security. It was found that irrespective of areas 90.26%, 53.26% and 24.19% farmers were cleaned their farm premises, rodents & external parasite control and followed quarantine procedure when animal entered into their houses respectively.

Table 11. *Measures taken for controlling Bio-security.*

District	Animal Quarantine	Cleaning farm premises	Rodents & external parasite control
Banderban	-	98.08%	38.46%
Chattogram	8.76%	79.28%	60.00%
Jeshore	-	96.23%	14.00%
Kurigram	48.89%	97.83%	60.98%
Mymensingh	13.73%	100.00%	85.00%
Rajshahi	4.17%	100.00%	76.09%
Shariatpur	57.45%	100.00%	50.00%
Sylhet	74.00%	82.00%	36.96%
Tangail	76.92%	100.00%	43.14%
Grand Total	24.19%	90.26%	53.26%

3.7. Measures Taken for Prevention Against Diseases

Table 12 reflects the farmer's awareness and facility available in the survey area. Irrespective of different study areas it was observed that 11.72% were fully ignorant about taking the preventive measure. However, 63.37% and 67.61% of farmers vaccinated and de-worming their cattle regularly. Moreover, 17.44% and 88.52% used regular disinfection and cleaned regularly their cow sheds for preventive measure against diseases.

Table 12. Measures taken for prevention against disease.

District	No measures	Regular Vaccination	Regular De-worming	Regular Dis-infection	Regular cleaning
Banderban	15.69%	100.00%	46.51%	25.49%	100.00%
Chattogram	14.47%	51.75%	74.24%	22.27%	78.17%
Jeshore	0.00%	79.17%	66.67%	0.00%	96.23%
Kurigram	2.22%	75.56%	52.27%	9.09%	86.67%
Mymensingh	7.69%	87.04%	87.04%	39.62%	96.23%
Rajshahi	45.83%	63.33%	40.00%	10.00%	76.67%
Shariatpur	8.70%	46.67%	82.61%	0.00%	95.65%
Sylhet	0.00%	21.74%	23.91%	13.04%	100.00%
Tangail	0.00%	86.54%	90.38%	14.00%	98.08%
Grand Total	11.72%	63.37%	67.61%	17.44%	88.52%

4. Conclusion

Based on the study conducted in the field there was three systems of cattle rearing stall feeding, half grazing and full grazing system and most of the houses of cattle were found shabby type. Hygienic management of cattle sheds was found poor. The balance ration was supplied to cattle by the farmers were found 9.64% which was very poor. Most of the farmers used chopped roughage (52.02%) and wheat bran (65.07%) as concentrate feed for their cattle. However, most of the farmers (56.29%) were supplied concentrate feed to dairy cows. The scenarios of fodder cultivation of different study areas were found poor unless Mymensingh, Tangail and Jeshore. Quantities of feeds were needed more for crossbred cattle than indigenous cattle. Moderate actions were taken by the farmers to control the bio-security in the study areas. Moreover 63.37% and 67.61% farmers were found they vaccinated and de-wormed their cattle regularly. For the awareness about concentrate feed, balance ration and scarcity of fodder cultivation in the areas training facility and fodder cultivation assistance were needed. Making cost minimizing ration also needed for more return from cattle rearing. Government support should be increased and emphasis should be given more to improve the husbandry management practices for more production of meat and milk as well as the income of cattle rearing farmers in Bangladesh.

Acknowledgements

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