

A study on milk production and management practices of household and commercial dairy farms in Barura Upazilla, Cumilla



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Abstract

The present study was conducted to determine the present status including general information, feeding, rearing, housing, milking, health management, and milk production indifferent dairy farms. With this view, the empirical data were collected by using a predefined questionnaire. The study was conducted at Barura Upazilla in Cumilla district, and two months-long survey was carried out on 17 farms (smallholdings to commercial). The data was collected through direct contracts with farmers. Results show that 65% offarm owners rearcrossbred and 35% rear indigenous cattle. The average body weight was 175 ± 3.5 kg per animal in the study area. Daily milk yield/cow/farm was 5.5 ± 0.11 liter for a crossbred animal and 2.38 ± 0.09 liters for an indigenous dairy cow. The amount of average 1.92 ± 0.07 kg concentrate provided per cow. Here observed that the average roughage amount was 10.18 ± 0.14 kg for a per cow. Although the dairy cow owners face problems, the study observed that there were potentials, particularly for the small dairyfarmers.

Keywords: Crossbred, lactation, indigenous cow, milk production performance.

Chapter 1

Introduction

Bangladesh has 24 million cattle, out of which 6 million are dairy cattle of local and crossbred (DLS-2018). In rural areas, cattle are kept mainly for draught purposes. Only a limited number of farmers have a cow for milk production. Maximum cattle are nondescriptive types, which do not belong to any specific breed and termed as indigenous cattle. They are smaller in size and their milk production capacity is lower than that of exotic breeds. The number of crossbred cattle is increasing with the spread of artificial insemination practices throughout the country. The average milk production of the local cow is very low and it varies between 300 to 400 liters per lactation period of 180 to 240 days. Generally, crossbred cows yield from 600 to 800 liters per lactation of 210 to 240 days (Islam, 1992). Generally, higher milk productions are found in the third or fourth number of lactation. The most economic traits of the milk-producing animals are average body weight, milk yield, calving interval, etc. Now a day the demand for crossbred cows is very high because of the higher production of milk. The milk production of indigenous cattle is low as compared to an improved breed of cattle (Hossain *et al.*, 1982).

Bangladesh suffers from an acute shortage of livestock products like milk, meat and eggs. The domestic demand for milk has been rising faster than the domestic production of milk. The availability of milk only 33.95ml per head per day as the maximum requirement recommended per head per day is about 250ml milk (DLS- 1991). This is due to the poor genetic makeup of native stock's lack of adequate nutrients supplied in the diet. Hence the Bangladesh Government has given priority on the development of dairying at farmers' level to increase the supply of milk from small dairy farms.

Feeding practices of livestock in Bangladesh are very poor. There is no recognized standard feeding system. The farmers neither have scientific knowledge nor are following any feeding standard to satisfy the nutrient requirements of the cows. These animals are kept mainly in the stall with limited grazing on the roadside, embankment slope; fallow land and paddy straw are their staple food. Husbandry practices and health care of these animals are poor (Jabbar and Raha., 1984). Due to lack of available grazing lands, stall-feeding is practiced and sometimes cattle are tethered on

the roadsides and fallow land. Seasonal and fluctuating supply of rice straw and green grass creates a great problem in feeding dairy cattle (Rahman *et al.*, 1998).

Dairy probability is directly related to the level of milk production which is very frequently affected by the suboptimal reproductive performance of dairy cows (Rahman *et al.*; 1995). The better performance concerning the reproductive and productive efficiency of cow included age at 1st calving service, parturition at 1st service & conception interval, daily milk yield, stage of lactation, number of lactation. The reproductive performance of the crossed bred cows may differ from that of local indigenous cows with different geographical areas where harsh environmental conditions are exit (Garcia 1988, Jahan *et al.*, 1990). Several factors affect the milk production of householder cattle of which parity plays an important role in the production performance of lactating cows. In Bangladesh very small numbers of research works have been done by various scientists to increase the milk production under village management condition, we need to conduct more research work. For this reason, the present study was under taken to evaluate the production performance of smallholder's lactating cows on the basis of body weight, feeding strategy, rearing system health management with the following objectives:

- i. To describe the farming status, breed status, health management of the smallholder's lactatingcattles.
- ii. To determine milk production performance of indigenous & crossed breed lactating cows under village managementcondition.

Chapter 2

Materials and method

The study was conducted in dairy farms at Barura Upazilla in Cumilla district from October to November 2019 and the dataset used in this study was obtained from individual and commercial household cattle farms. The farmers keep records in the register book and some in memory and account of the operation of their animals, therefore, data for milk production and a number of lactation were obtained from the farmers by an interview with them. In this study, the information for individual lactating cows was collected like other survey work from the farmers. The following steps were taken in conducting the study.

2.1 Study area:

Farms were selected mainly near the unions Payalgacha, Adra, Galimpur, Bauksar, and nearby areas. The data of 30 indigenous cows and 55 crossed breeds were collected from these places.



2.2 Datacollection:

Data were collected using a predefined questionnaire. The questionnaire was developed in accordance with the objective of the study. The questionnaire was prepared to accrue the desired information from the farmers and identifying the characteristics of indigenous cows. The questionnaire contains the following economic traits of the indigenous cows, for example, BCS score, rearing system, feeding system, average milk yield/day (lit). The data collected through direct interviewing method farmers.

2.3. Data analysis:

All raw data were entered into the Microsoft office 2013 Excel worksheet. Descriptive statistics for different variables were analyzed using Analysis Toolpack from Excel. Other statistical analyses were performed using GraphPad Prism version 7.00 for Windows, GraphPad Software, La Jolla California USA, www.graphpad.com".

Chapter3

Results

3.1 Farmingstatus:

3.1.1 Rearing system

Cows are mostly of crossbred along with some indigenous and all animals reared in the semi-intensive system. Most of the farmers have no own fodder land. Cattle of separate ages are not being kept into the separate shed. In these farms, there is merely found calf shed, heifer shed and milch cow shed. Only 10% percent of the farmers provide half building and rest 90% of the farmers used tin shed and straw shed to house their cattle. On the basis of floor type, 60% of the farmhouse was found with pacca (with bricks) and the rest had the unpaved floor.

3.1.2 Population structure

The mean number of animals per farm in the study area was 5. The dairy farms under the study area consisted of different types of cattle, the percentage of which is present in Table 1. It was observed that the percentages of milch indigenous and crossbred cows were 35 and 65 respectively. The average body score was 4. The average body weight of an individual cow was 175 ± 3.5 kg.

Table 1: Different categories of dairy cattle in the small scale dairy farms

| Type of animal | Crossbred | | Indigenous | |
|----------------|-----------|---|------------|----|
| | No | % | No | % |
| Milch cow | 55 | | 30 | 35 |
| | 65 | | | |

3.1.3 Feeds and feedingsystem

The dairy cattle in the study area were indigenous and crossbreed, there were two systems of feeding, which are practiced by the dairy owners to feed their cattle. 40 % of farmers followed the pasture-based grazing system and 60% of farmers followed the cut and carry method. All calves were fed milk by suckling. No farmer was found using a bottle to provide milk to calves. It was noted that an average of 1.92 ± 0.07 kg concentrate provided per cow. The main livestock feed in the study area was rice straw. Most of the farmers (85%) used untreated straw. The average amount of Here we observed that the average roughage 10.18 ± 0.14 kg for the per cow.

3.2. Daily milkyield

The mean daily milk production of indigenous and crossbred was 2.38 ± 0.09 liters and 5.5 ± 0.11 liters respectively (Table 2). The differences between indigenous and crossbred daily milk yield were statistically significant ($p < 0.0001$). The mean value along with their standard error (SE) of actual milk yield of a cross and local breed is presented.

Table 2: Daily milk yield in crossbred and indigenous cattle

| | Breed/type | | |
|---|----------------|-----------------|------------|
| | Crossbred | Indigenous | P value |
| Daily Milk yield (Liter) (Mean \pm Standard error) | 5.5 ± 0.11 | 2.38 ± 0.09 | < 0.0001 |

3.3. Health monitoring and other management

Health problems are closely linked to the kind of environment in which cattle are reared, the management methods used, and genetic factors related to disease resistance in the animal population. It was revealed that provided the vaccine (HS, BQ, Anthrax, FMD, Cholera) in maximum household cattle. In the present study, regular deworming occurred. It was observed that 90% of farmers used artificial insemination and 10% both naturally and artificial insemination methods to inseminate their cows.

Chapter 4

Discussion

4.1. Farmingstatus

This study indicated that the semi-intensive system was the most suitable for the daily milk yield 2.38 ± 0.09 and 5.5 ± 0.11 liters respectively for indigenous and crossbred cows. Since the condition was performed at a particular point time, the current estimate may not be adequate to compare with other works. From the study, it has been observed that 90% of the farmers used tin shed and straw shed to house, and the rest of 10% percent of the farmers provide a half building for their cattle.

Unless supplemented with a protein concentrate, cattle grazing natural pasture lose body weight (Topps and Oliver 1993) with cyclic ovarian activity ceasing when cows lost 20-30 % of their mature weight due to under nutrition. Inadequate level of nutrition has been found to be the most important factor influencing the length of post partum oestrus in cows grazing tropical rangeland (Topps and Oliver 1993). From the present study, 40 percent of farmers followed pasture based grazing system and 60 percent of farmers followed the cut and carry method. Grazing systems offer only limited potential for the intensification of dairy production. In this study, farmers are not cultivated any fodder. Because of the most important constraints regarding fodder cultivation are scarcity of land, scarcity of seed/cutting, and lack of knowledge.

4.2. Daily milkyield

It was revealed that the highest milk production from crossbred and indigenous cows was 7.5 and 4.4 liters/day, respectively, and lowest milk production from crossbred and indigenous cows was 3.2 and 1.5 liters/day, respectively. The average daily milk yield/cow/farm was 5.5 ± 0.11 and 2.38 ± 0.09 liters for a crossbred and indigenous dairy cow, respectively. Saha *et al.*, (2008) found that the daily milk yield mean of L×SL were 8.90 ± 2.1 liters per day and 12.54 ± 3.50 liters for L×HF crossbreed cows. The milk yield was highly significantly ($P < 0.0001$) affected by the above feeding management. Ahmed (2006) observed that feeding

significantly ($P < 0.01$) increased the milk yield.

Finding of Alam *et al.* (2009) and Khan *et al.* (2012) were similar to the results of the study. The effects of parities on milk yield per day are varied in calculated value. Significantly the highest milk yields per day were found in 2nd lactation & have somewhat difference in third & fourth parities. The significant lowest milk yield per day in the first parity, Clark & Davis (1980), Peters & Riley (1982) observed similar findings.

4.3 Health monitoring and others

In our country, low-cost, effective vaccines are usually available to protect against rinderpest, contagious bovine pleuropneumonia and local strains of foot-and-mouth disease. Such sporadic or regional diseases as anthrax, blackleg and haemorrhagic septicaemia can also be prevented by regular immunisations, but vaccines for these diseases are not always of high quality or uniformly available. With some vaccines, the costs may exceed the expected benefits (McCauley, 1983). In the present study regular deworming occurred. Disease is an important constraint on all forms of livestock production and especially for calves (Perry *et al.*, 1984), which frequently suffer from respiratory and enteric diseases. In the study, there was observed that 30% calves were suffered from above diseases. Chronic diseases such as dermatophilosis greatly depress milk production (Oduye, 1975) and increase mortality in all age groups. In this study, observing results that 90% cows were inseminated artificially and 10% both naturally and artificially which is similar to the observation by Hossain *et al.*; (2004), who found that 93% cows were inseminated artificially.

Conclusion

Study on farming status and milk production of cow in smallholdings and commercial farms in Barura Upazilla(Cumilla) region, revealed that most of the small holder farmers are landless. Our findings indicate that there is lack of fodder field or pasture to rear cattle on pasture based method. Farmers prefer to rear crossbred cattle than indigenous because the milk production crossbred animals are higher than indigenous cattle as observed in our study and previous studies. Daily milk production is varied based on stage of lactation and parity. In case of small dairy farming, the farmer are facing a lot of problems such as scarcity of feeds and fodder, high price of concentrate and lack of technical knowledge.As small-scale farming comprises the most of the dairy production in Bangladesh, therefore, it is necessary to take proper initiative to improve production in small-scale cattle farming which will ultimately improve nationalproduction

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The Author August, 2020

Biography

This is Zahirul Islam, son of Jahangir Alam and Shahinur Akter. I am from Cumilla District. I completed S.S.C in 2011 from Sudra T.A High School, Barura and H.S.C in 2013 from Hajigonj Model University College. I got admitted into Doctor of Veterinary Medicine (DVM) degree under Chattogram Veterinary and Animal Sciences University in 2014-2015 session. As an upcoming Veterinarian, I would like to dedicate my rest of the life for the welfare of animals. I am keen to be a field veterinarian as well as a skilled practitioner.