

Smallholder Dairy Farming Management in Netrakona District of Bangladesh



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List of abbreviations

Abbreviation	Elaboration
GDP	Gross Domestic Production
DLS	District Livestock service
AI	Artificial Insemination
LSD	Lumpy Skin Disease

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ABSTRACT

This study examined the management of dairy cattle systems at the smallholder village level in the Mohangonj Upazilla of Netrakona district of Bangladesh between April 2023 and July 2023. There are total 16 dairy farms in Mohangonj Upazilla. Six dairy farms were surveyed for individual and farm data, using preset questionnaire responses and close monitoring of the farming system. The majority of the cows in the study were 51 crossbred cows (Holstein-Friesian, Sahiwal) and 16 indigenous/ local cows. The average lactation periods were 271.67 and 155.83 days and the average milk productions per cows per day were 8.75 and 2.00 liters in crossbreed and indigenous cows of studied farms respectively. It was found that the milk yield and other expenditure were higher in the crossbred cows than the indigenous cows. However, the profitability of the indigenous cow was lower than the crossbreed cows. The study identified a number of challenges faced by farmers in the dairy cattle rearing sector, including inadequate veterinary care, inadequate feed and fodder provision, inadequate training, and the inability to fix the price of milk at a reasonable level.

***Keywords:* Dairy Farm, Management, Smallholder, Production, Mohangonj**

Chapter 1: Introduction

One of the fastest growing industries in the world is the dairy industry. Approximately, 20% of the people in the country are directly and 50% are partially engaged with the livestock sector in Bangladesh. [1] The livestock sector has been playing a crucial role in the socio-economic development of Bangladesh. Livestock is an integral component of the complex farming system that not only serves as a source of meat protein but also is a major source of farm power services as well as employment. Altogether fisheries and livestock sub-sector contribute 35–40% in the agriculture sector whose contribution is also 7–8% of the total GDP (Gross Domestic Production) and specifically 1.53% comes from animal husbandry. Almost 20% of the population of Bangladesh directly earns their livelihood through work associated with raising livestock production. About 1.60% of the national GDP is covered by the livestock sector in 2016–2017 fiscal years, and its annual rate of growth is 3.32%. [2] The livestock population in Bangladesh is currently estimated to comprise 23.935 million cattle, 1.478 million buffaloes, 25.931 million goats, 3.41 million sheep, 275.083 million chickens and 54.016 million ducks (DLS, 2019). [2] About 80% to 85% of the households in Bangladesh keep livestock in the countryside. The majority of the landless farmers, marginal farmers and small farmers keep indigenous livestock [3]. Most of the cattle in Bangladesh are non-descript types that do not belong to any particular breed and are referred to as indigenous breeds. The dairy farm in Bangladesh usually consists of indigenous breeds, various temperate & tropical breeds and their crossbreds such as Holstein - Friesian, Jersey, Sahiwal [4]. The indigenous cattle in Bangladesh are of smaller size and lack the milk production capacity of exotic breeds. Crossbred cattle, on the other hand, produce between 5 and 10 liters of milk per day [5, 6]. On the other hand, zebu-type cattle produce an average milk production of 0.5 to 2.5 liter per day [3]. The aim of dairy farming is to generate a profit from milk production; however, the profitability of the farm is dependent on the number of cattle to be kept, the genotype/breed to be used, the type and amount of supplementary feeding required, the cultivated area to be used for fodder, the number of feed reserves to be maintained during periods of feed shortage, and the methods of breeding the cattle effectively. Studies have demonstrated that small-holder dairy farming is a viable business in Bangladesh, and that the profitability is higher with crossbred cattle than local cattle [8].

The current economic climate presents a range of challenges and opportunities for Bangladesh to increase milk production through the use of large-scale breeding, feeding, and management of dairy cattle. Traditionally, dairy farming in Bangladesh has been a small-holder enterprise. However, with the increasing demand for dairy products, the shift in the production paradigm has been evident. As a result, milk producers are increasing their milk production capacity and adopting dairy farming on a commercial basis to take advantage of market opportunities. Small-scale dairy farms have been developed in cities and suburbs, where farmers tend to opt for crossbred cows to produce milk. Dairy is seen as a key contributor to poverty alleviation in Bangladesh, with young and old alike relying on milk for nourishment. Many NGOs, such as PROSHIKA, BRAC (Bangladesh rural Advancement



Figure 1. Workers work in his farm

Committee) and Grameen Bank, are actively supporting small livestock enterprises, including dairy cattle. As a result many commercial dairy farms have come up in the country.

The profitability of a dairy farm is a major determinant of the investment pattern. The cost of production and gross returns of mini dairy farms tended to be higher in larger farms compared to smaller and medium farms[10]. Cost of production is a fundamental factor that must be taken into account when considering any commercial venture. The firm's profit can be maximized either by maximizing returns or by minimizing costs. Individual producers have limited control over returns, as they are largely dependent on the external environment of the firm.[11] Therefore, cost minimization is an essential tool for entrepreneurs to maximize their profit. Studies on commercial dairy farms have indicated that feed cost is the primary cost component in total expenses.[12] There were significant inter-agricultural variations in the cost of dairy production and earnings.[13] The Study on Maintenance Cost per Milk Animal [2] revealed that the main components of maintenance included in the total cost were feed cost, human labour, interest, and working fixed capital. However, few studies have examined the present management system, to

determine cost and benefit, to identify constrains and to make recommendations for development of such small dairy farms in Mohangonj (hawor area) Upazilla of Netrakona District of Bangladesh .

Therefore, the present study was undertaken to know the present status regarding feeding, housing, breeding, milk production, marketing system of small scale dairy farms in hilly area as well as their profitability analysis.

Chapter 2: Materials and Methods

2.1. Study area

The present study was conducted in Mohangonj Upazilla of Netrakona District of Bangladesh during the period of April 2023 to July 2023. A total of 6 dairy farms were selected having at least 5 to 7 milking cows by random sampling method from the selected area. The study dairy herd consisted of 51 crossbreds (Holstein-Friesian, Sahiwal) and 16 indigenous/local cows. Data were collected from the dairy farms located in the sador upazilla of Mohangonj: Mylora, paleha, Dewtan also data were collected from the dairy farms located in the Barkashia Birumpur union, Somaj shohildew union, Suair union.

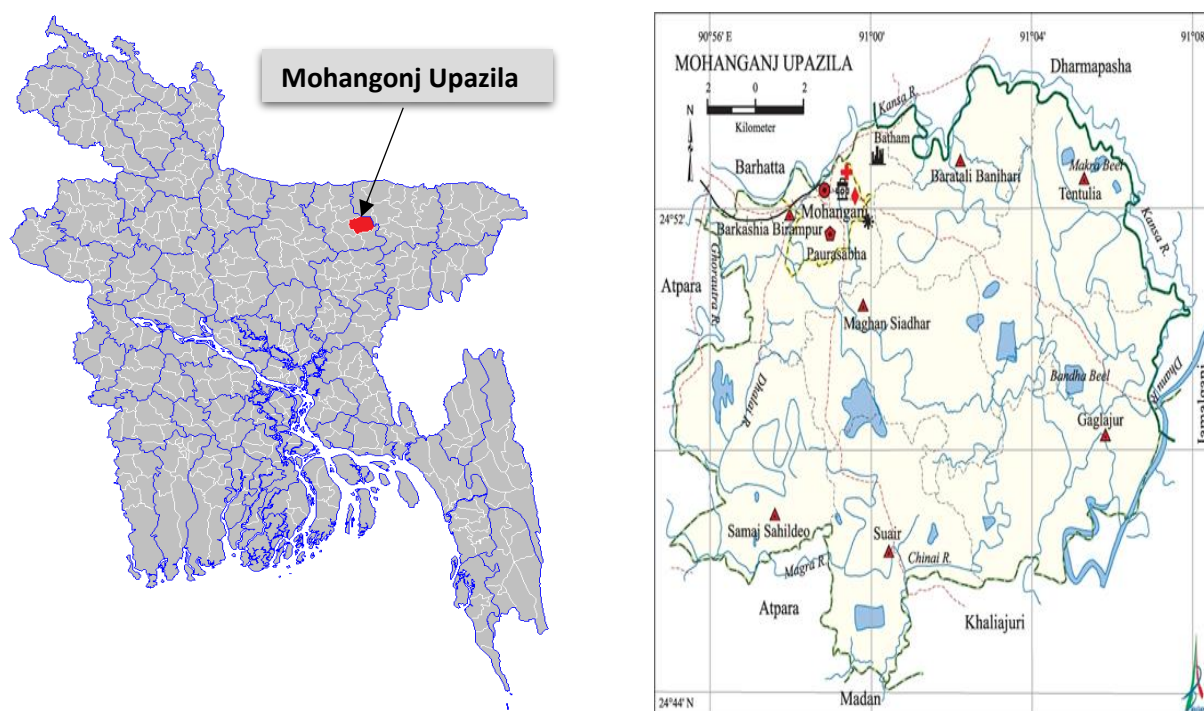


Figure 2. Study area of Mohangonj Upazila in Netrakona District

2.2. Data Collection

A structured questionnaire was created and used to collect the required information regarding the size of the farm, the types of animals, the types of housing, the length of the lactation period, the milk yield per cow per day, the types of feed used, the items and quality of the feed stuffs supplied, the selling price of the milk, the cost of the feed, the cost of labor and other costs to determine the net profit of the farms. Data was collected by face to face interviews with the farmers and by on-

the-spot visits to the small scale dairy farms selected. The average daily milk yield of each farm was calculated by dividing the total quantity of milk per day by the number of cows per farm for both the indigenous and crossbred cows. Total asset value includes mainly fixed cost including possession of land, land for housing, pasture land, farm building, equipments, current animal value, interest of bank loan, depreciation cost of building and farm equipment. Variable cost includes feed cost per month, labor cost, medication, vaccination, artificial insemination, treatment cost, transportation cost, electricity cost and maintenance cost. Income from farm output includes milk sale (total income per month), live animal sale (replacement stock sale, culled cow/bull) and animal by products sale. The farmers sell their milk directly to the consumers or middle man (Farias / ghosh).



Fig 3.1. Data Collection from Saimun Dairy Farm



Fig 3.2. Data collection from Brothers dairy farm



Fig 3.3. Data Collection From Jakaria Dairy Farm



Fig 3.4. Data collection From Mayor Dairy farm

Then middlemen sell their milk to the retailers or sweetmeat shops who sell it to the consumers. The farm profit was calculated by deducting all variable cost from gross returns. Deducting all costs from gross returns arrived at a net return from the farm [14]. The following equation used for estimating net return from the farm.

Where, TI=Total income and TC=Total cost

2.3. Housing Cost: In the area studied, dairy farmers usually used of half-building and tin shed housing. The housing cost was calculated by aggregating the depreciation, repairing and interest rates of the average cattle shed value. [22]

2.4. Variable Costs: These costs include feed cost, labor cost, veterinary cost and other miscellaneous costs. [21]

2.5. Feed cost: The cost of green feed, dry feed and concentrate used to feed the animals was called feed cost. The cost was calculated by multiplying the quantities of feed and fodder consumed by the animals by the prevailing prices in the area studied. All commercial farms used collective stall-feeding for their animals. To allocate the common costs of feeds and fodder, the standard animal units approach is used.

2.6. Veterinary Cost: It included the cost involving on natural service, artificial insemination (AI), vaccination, medicines and other charges/fees of veterinary doctors. [21]

2.7. Labor Cost: This includes both family members and paid hired labor. Hired labor was calculated by taking into account time spent in various dairy operations and wages paid. For family labor, imputed value was calculated based on the average wage rate for casual labor in the area studied.

2.8. Miscellaneous Costs: This group included costs associated with repairs, electricity usage, water usage, bucket usage, rope usage, etc. [21]

2.9. Net Cost: The net cost was calculated by deducting the imputed value of dung, from the gross cost, i.e. Net Cost = Gross Cost - Imputed value of dung [21]

2.10. Gross Cost: It was obtained by adding all the cost components included in the fixed and variable costs, i.e. Gross Cost = Total Fixed Cost + Total Variable Cost [21]

2.11. Cost per Liter of Milk Production: In order to estimate the cost per liter of milk, the average net maintenance cost per animal per day was divided by average milk production per animal per day

$$\text{Cost Per Liter (TK)} = \frac{\text{Net maintenance cost per animal per day}}{\text{Total milk produced per animal per day}} \quad [21]$$

2.12. Price of Milk: The price of milk differs according to type of milk and the season. The weighted average price of milk was calculated for each commercial farm as

$$\text{Weighted average price} = \frac{\sum P_i \cdot W_i}{\sum W_i}$$

Where,

P_i is the price per liter of ith type of milk, and W_i is the total quantity in volume of ith type of milk sold by the farm. [21]

2.13. Gross Returns: Gross returns were obtained by multiplying milk yield of an individual animal with respective prevailing price of milk in the study area

$$\text{Gross Returns} = \text{Quantity of milk} \times \text{Market price of milk} \quad [21]$$

2.14. Net Returns: Net returns were calculated by subtracting net cost from gross returns, i.e.

$$\text{Net Returns} = \text{Gross Returns} - \text{Net Cost} \quad [21]$$

2.15. Profitability: The profitability of each category of farm was worked out on the basis of milk supplied to various agencies, milk retained at home and net returns over cost per liter of milk produced. The price of milk per liter and the price of calf were estimated at 80 taka and 20000-25000 taka respectively. The labor cost was also estimated at 500-600 taka per labor per day.

Chapter 3: Results and Discussion

3.1. Production performance

It was found that the average daily milk yield of crossbred and indigenous cows were 8.75 and 2.00 liters respectively (Table 2). The crossbred cows produce more milk than indigenous cows in studied farm. Farms with crossbred cow are more profitable than indigenous reported by [10].

Table 1: Average per day milk yield and lactation length of the cows in the studied farms

Farm	Milk yield (liter per cow per day)		Lactation length(dav)	
	Crossbred	Indigenous	Crossbred	Indigenous breed
Farm -1	9.5	2	275	160
Farm -2	8	1.5	270	160
Farm -3	10	2.5	265	150
Farm -4	8.5	2.5	265	155
Farm -5	7.5	1.5	280	150
Farm -6	9	2	275	160
Mean (Average)	8.75	2	271.67	155.83

The average lactation period of the crossbred and indigenous dairy cows were 271.67 and 155.83 days respectively (Table 2) but this findings is contraindicated with the findings of [17] as they reported that average lactation period of the local dairy cows were 300.97 5.63 days.

3.2. Types of Dairy Cattle

The studied farm had indigenous/local cows and crossbred cows. It was found that, number of crossbred cows was more than indigenous cows in the farms (Table 1). Highest 90% crossbred cows were found in the study area and these findings agreed with the findings of [15] who reported that crossbred animals were more in mini dairy farms. The milk yield and different expenditure were higher in crossbreds than indigenous cows. The temperate breeds and their crossbreds

produce more milk were reported by [16]. For this reason farmers are interested in rearing more crossbred cows than indigenous.

Table 2: Types of dairy cattle in the studied farm

Farms	Crossbred (Freq. %)	Indigenous breed (Freq. %)	Total
Farm-1	7(77.78%)	2(22.22%)	9
Farm-2	9(69.23)	4(30.77%)	13
Farm-3	8(66.67%)	4(33.33%)	12
Farm-4	12(85.71%)	2(14.29%)	14
Farm-5	6(66.67%)	3(33.33%)	9
Farm-6	9(90%)	1(10%)	10
Total	51(76.12%)	16(23.88%)	67

3.3. Profitability assessment:

The annual net income of dairy farms varied in between farms as presented in Table 3. This variation might be due to variation in milk yield, the management practices of the farms and breed differences. Table 3 also indicated that the annual income from dairy farm was ranging from taka 70,000 to taka 237595 . The variable cost includes feed cost, labor cost, treatment cost, artificial insemination cost, electric cost, transportation cost and others. The fixed cost of the farm is more or less similar so that the fixed cost of the farm is not included in this table. Small amount of purchase green roughage was fed to cows and the amount of maximum green roughage comes from roadside, crop field, river side etc. The income from dairy farm includes annual milk sale, live animal sale (heifer /bull calf, culled cow) and selling of byproducts (dung). The profitability of each farm was calculated by dividing the total farm income with total number of animals of the farm. Farm-1 and farm-2, farm-3, were located in the same places. Their housing, feeding management and operational cost was similar but the profitability of the farms differs due to crossbred cattle. Temperate crossbred cattle show higher profitability than tropical crossbred cattle. Crossbred Sahiwal x Pabna and Holstein-Friesian x Local showed higher profitability than Sahiwal and Red-Sindhi cross [16]. In farm-4, farm-5 and farm-6 crossbred were similar in type but their profitability also varies. It might be due to variation in management practices and operational cost.

Table 3: Annual net income of selected dairy farms

Item	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6
Income						
Milk sale(tk)	914200	1423200	1145500	1643700	803500	1001500
Animal &by product(tk)	120500	130460	157500	185000	110550	125655
Total income (Tk)	1034700	1553660	1303000	1662200	914050	1127155
Cost						
Feed cost(tk)	657000	972725	763536	954605	600750	756738
Labor cost(tk)	180000	401500	365000	400500	180500	195650
Treatment +AI cost (tk)	30000	45500	31000	35000	32500	31460
Electricity cost	15000	17000	16550	19500	14500	13575
Transport cost+Others (tk)	10000	13600	12500	15000	15500	15832
Total variable cost(tk)	892000	1450325	1188586	1424605	843750	1013255
Net profit (tk/year)	142700	103335	114414	237595	70300	113900

At first difference of operational cost of different farm due to location. In Mohangonj sadar availability of feed like green grass, rice straw, rice polish, safe drinking water and land area, low transport cost than other unions. So, the farm located in Mohangonj sadar having lower operational cost and more profitable. Though, farm-1, farm-2 and farm-3 were in the same places the market value of all ingredients were similar. But the operational cost of the farm-2 was greater than two farms due to poor management. In farm-5 due to poor feeding and housing management operational costs were higher than the other three farms. So, the profitability of farm-2 and farm-5 were less than others. The profitability depends on the lower operational cost [8]. Farms with high production level will usually generate greater profit especially when cost control measures are the part of the total management [1]. Better management of and care for livestock can improve

productivity and food quality. Higher animal welfare standards are also seen to be a prerequisite to enhancing business efficiency and business profitability [18]

3.4. Management of Surveyed Dairy farm in Mohangonj Upazila

Managing is the process of combining concepts, equipment, techniques, resources, and personnel to create and promote a valuable product or service. Managing an entire dairy farm is an intricate process that encompasses aspects such as feeding, housing, Breeding system and farm record management.

3.5. Housing Management: The studied farmers employed tin and straw sheds with paved and concrete floors for housing, while bamboo and brick were used for boundary walls. The floor space for each animal varied from one farm to the next. Farm-1, Farm-3, Farm-4 farmers provided a floor space for a cow of approximately 20 to 30 square feet, while Farm-2, Farm-5, Farm-6 provided a floor space of 15 to 20 square feet for a cow. This is not satisfactory, as a cow in a closed area requires a floor space of between 20 and 30 square feet. Animal house should be kept clean and dry in order to promote better production. In the study of Farm-2 and Farm-5, animals were kept in an unhygienic condition, such as moist flooring and a floor full of dung and urine, and there was no drainage facility. Overall, the majority of farm housing management was of an average standard, either not very clean or not even dirt-free.



Fig 4. Unhygienic Condition of Brothers Dairy farm



Fig 5. Hygienic Condition of Saimun Dairy farm

3.6. Feeding Management

The farmers in the study adhered to a stall feeding system, rather than grazing. The cattle were fed according to the breed and stage of the cow. The milch cows were provided with both roughage and concentrate. The indigenous cows were provided with 3-4 kg of rice straw per day, while the crossbreds were given more concentrate than the indigenous cows due to their higher milk production. The farmers in Farm-5, Farm-6 were unable to provide green grass due to a lack of green grass and insufficient land area. In Farm-1, Farm-2, and Farm-3, rice straw was given ad libitum due to the lack of availability. The indigenous cows and crossbreds were also fed 8-10 kg of green grasses per day, and 8-20 kg of rice gruel per day. Finally, the cows were provided with normal drinking water, as well as pulse washed water.



Figure 6. Feeding System of dairy farm

3.7. Breeding system: The results of the study showed that 91% of cows were artificially inseminated and 7% were both naturally and artificially fertilized. This figure was similar with the results of Hossain et. al. (2004) which found that 93% of cows were artificial inseminated. The majority of farmers indicated that Friesian semen was preferred for artificial insemination

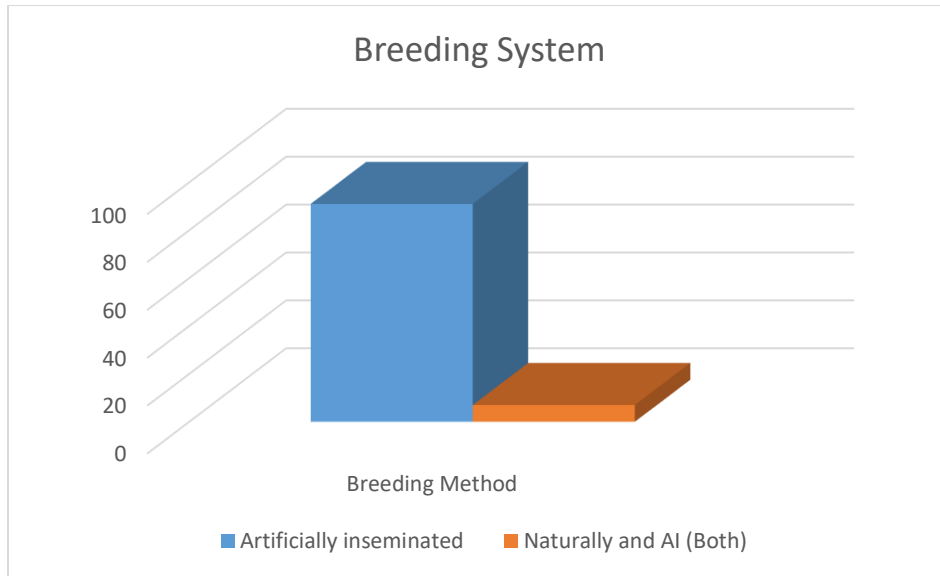


Figure 7. Breeding System Evaluation

3.8. Constraints to smallholder dairy production in Mohangonj Upazila

3.8.1. Breeds of cattle

Most of the available cattle breeds are native to the region. Work is being undertaken to enhance milk production through the breeding of exotic breeds.

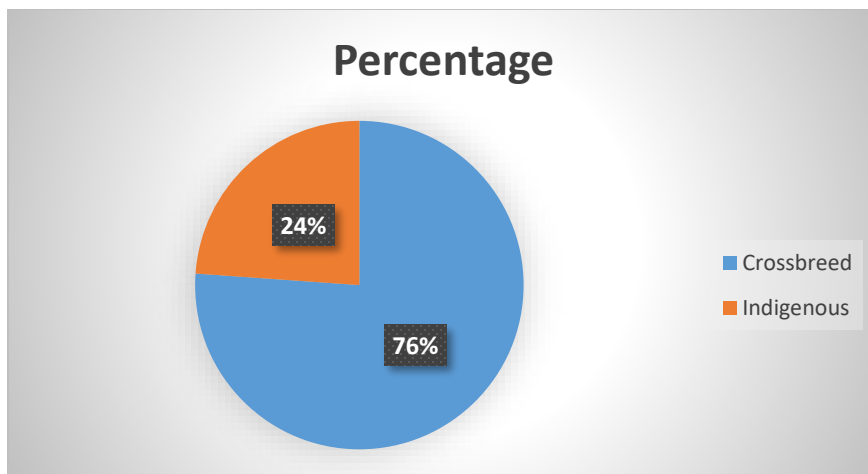


Figure 8. Percentage of breed in studied dairy farm

3.8.2. Feed resources

Dairy farmers are confronted with challenges in terms of the accessibility of feed and fodder. Issues of quality and quantity of fodder are present, as well as a lack of cost-effective technology for making the most of local feed sources.

3.8.3. Reproductive performance and Artificial insemination (AI)

Currently, the Bangladesh Livestock Services Department of the Government of Bangladesh (DLS) implements Artificial Intelligence (AI) activities from 22 Centers, 423 Sub Centers and 554 AI Points. The annual number of AIs implemented by the DLS is approximately 1.5 million [19]. To expand AI activities, a large-scale AI-based development project is being undertaken for the production of bovine animals for milk and meat. [21]



Figure 9. Artificial Insemination in Deshi Cattle

3.8.4. Diseases and Climate Condition

Cattle production in Bangladesh is severely affected by a variety of diseases, resulting in significant losses. The climate of the country, combined with the inadequate nutrition of the cattle has resulted in a high prevalence of cattle diseases, particularly in calves [20]. The most prevalent of these include anthrax, hemorrhagic septicemia (HS), foot and mouth disease [FMD], LSD, black quarter [BQ], liver fluke disease, and calf diarrhea.

Conclusion

Present study indicate that the average lactation periods were 271.67 and 155.83 days and the average milk productions per cows per day were 8.75 and 2.00 liters in crossbreed and indigenous cows of studied farms respectively. It was found that the milk yield and other expenditure were higher in the crossbred cows than the indigenous cows. It may be concluded that productive, reproductive performance (breeding system / AI) and management system (feeding management, housing management) of smallholder dairy farms was good.

Questionnaire

Demographic Information	Answers
Name:	
Address:	
Contact No:	
Gender:	Male <input type="checkbox"/> Female <input type="checkbox"/> Other <input type="checkbox"/>
Age:	< 20 <input type="checkbox"/> 20-30 <input type="checkbox"/> 30-40 <input type="checkbox"/> 40-50 <input type="checkbox"/> 50-60 <input type="checkbox"/> > 60 <input type="checkbox"/>
Education:	No schooling <input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Higher secondary <input type="checkbox"/> Diploma <input type="checkbox"/> Graduate <input type="checkbox"/> Post-graduate <input type="checkbox"/>
Household size:	1-3 <input type="checkbox"/> 4-6 <input type="checkbox"/> 7-9 <input type="checkbox"/> > 9 <input type="checkbox"/>
Farming experience:	< 5 years <input type="checkbox"/> 5-10 years <input type="checkbox"/> 10-15 years <input type="checkbox"/> 15-20 years <input type="checkbox"/> > 20 years <input type="checkbox"/>

Livestock Management	Response Options
1. What is the size of your dairy farm ?	Less than 1 acre <input type="checkbox"/> 1-2 acre <input type="checkbox"/> 3-4 acre <input type="checkbox"/> 5-10 acre <input type="checkbox"/>
2. How many dairy cows do you own?	1-5 <input type="checkbox"/> 6-10 <input type="checkbox"/> 11-20 <input type="checkbox"/> 21-30 <input type="checkbox"/> > 30 <input type="checkbox"/>
3. What type of breed found in your farm ?	Local <input type="checkbox"/> Crossbreed <input type="checkbox"/> Pure exotic breed <input type="checkbox"/>
4. How many people are involved in your farm ?	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> More than 5 <input type="checkbox"/>
5. How do you obtain veterinary care for your animals?	Purchased <input type="checkbox"/> Home remedies <input type="checkbox"/> Both <input type="checkbox"/>
6. Do you face any challenges in managing your livestock? If so, what are they?	No challenges <input type="checkbox"/> Financial constraints <input type="checkbox"/> Lack of knowledge/skills <input type="checkbox"/> Lack of access to veterinary care <input type="checkbox"/> Animal diseases/health problems <input type="checkbox"/> Poor-quality feed <input type="checkbox"/> Others <input type="checkbox"/>
7. What types of housing do you use for your livestock?	Open grazing <input type="checkbox"/> Semi-intensive <input type="checkbox"/> Intensive <input type="checkbox"/>

8. What type of feed you used in your dairy farm ?	Grazing <input type="checkbox"/> Silage <input type="checkbox"/> Hay <input type="checkbox"/> Concentrate <input type="checkbox"/> Other <input type="checkbox"/>
9. Do you sell any of your livestock or livestock products (e.g., milk, eggs)?	No <input type="checkbox"/> Yes <input type="checkbox"/>
10. If yes, where do you sell them?	Local markets <input type="checkbox"/> Middlemen <input type="checkbox"/> Directly to consumers <input type="checkbox"/> Others <input type="checkbox"/>
11. What are the challenges you face in selling your livestock products?	No challenges <input type="checkbox"/> Lack of market access <input type="checkbox"/> Low prices <input type="checkbox"/> Transportation costs <input type="checkbox"/> Others <input type="checkbox"/>
12. Have you received any training or support related to livestock farming?	No <input type="checkbox"/> Yes <input type="checkbox"/>
13. If yes, what kind of training or support have you received?	Animal health and disease management <input type="checkbox"/> Feeding and nutrition <input type="checkbox"/> Breeding and reproduction <input type="checkbox"/> Business and entrepreneurship <input type="checkbox"/> Others <input type="checkbox"/>
14. Was the training/support helpful for improving your livestock farming practices?	Not helpful at all <input type="checkbox"/> Slightly helpful <input type="checkbox"/> Moderately helpful <input type="checkbox"/> Very helpful <input type="checkbox"/> Extremely helpful <input type="checkbox"/>
15. What kind of additional training or support would you like to receive to improve your livestock farming practices?	Animal health and disease management <input type="checkbox"/> Feeding and nutrition <input type="checkbox"/> Breeding and reproduction <input type="checkbox"/> Business and entrepreneurship <input type="checkbox"/> Others <input type="checkbox"/>
16. Are you aware of any government programs or initiatives that support smallholder livestock farming?	No <input type="checkbox"/> Yes <input type="checkbox"/>
17. If yes, which programs/initiatives are you aware of?	Livestock vaccination programs <input type="checkbox"/> Livestock insurance schemes <input type="checkbox"/> Subsidies for animal feed and medicines <input type="checkbox"/> Access to credit or loans <input type="checkbox"/> Others <input type="checkbox"/>
18. What are your major expenses in running your dairy farming business?	Feed <input type="checkbox"/> labor <input type="checkbox"/> Veterinary service <input type="checkbox"/> Equipment <input type="checkbox"/> Transportation <input type="checkbox"/> others <input type="checkbox"/>
19. How do you manage the manure produced by your livestock?	Use as fertilizer <input type="checkbox"/> Sell as organic fertilizer <input type="checkbox"/> Sell as fuel <input type="checkbox"/> Dispose as waste <input type="checkbox"/> Others <input type="checkbox"/>

20. Have you faced any challenges in managing livestock waste?	No challenges [] Odor and flies [] Difficulty in disposal [] Contamination of water and soil [] Others []
21. What Type of breeding method generally are used ?	AI [] Naturally [] Both []
22. What are the most common health problems you have been faced in your farm ?	Mastitis [] LSD [] Reproductive problem [] FMD [] Calf problem []
23. What type of grass cultivated in your farm ?	German [] Para [] Napier [] Maize [] Jumbo [] Others []
24. What is the average milk yield per animal per day ?	Less than 1 lit [] 1-2 lit [] 3-4 lit [] 5-6 lit [] 7-8 lit [] 9-10 lit [] 11-12 lit [] more than 13 lit []
25. What is current market price of milk in your area ?	50-60 BDT [] 60-70 BDT [] 70-80 BDT [] 80- 90 BDT [] More than 90 BDT []
26. What is your average monthly income from your dairy farm ?	Less than 5000 BDT [] 5000-10000 BDT [] 10000-15000 BDT [] 15000-20000 BDT []

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Biography

I am Khan Shahoria Rifat , son of MD. Abdul Karim Khan and Farhana Tajnin . I passed my Secondary School Certificate (SSC) examination from Mohangonj Pilot Govt. High School, Mohangonj , Netrakona in 2014 and Higher Secondary Certificate (HSC) examination from Royal Media College , Mymensingh in 2016 . I enrolled for Doctor of Veterinary Medicine (DVM) degree in Chittagong Veterinary and Animal Sciences University (CVASU), Bangladesh. In the future I would like to work as a veterinary practitioner and do research on clinical animal diseases in Bangladesh.