A study on the productive and reproductive phenotypes of crossbred dairy cattle on commercial farms in Patiya upazilla, Chattogram

Submitted by

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Roll No: 18/14

Reg No: 02072

Intern ID: 13

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BIOGRAPHY

I am Labannya Dutta Tithi, daughter of Debidas Dutta and Lucky Dutta. I passed my Secondary School Certificate examination from St. Scholastica Girls' High School, Chattogram in the year 2014 obtaining G.P.A-5.00. In 2016, I passed my Higher Secondary Certificate examination from Govt. Hazi Mohammad Mohsin College, Chattogram obtaining G.P.A-5.00. Now I am currently working as an intern veterinarian under Faculty of Veterinary Medicine at Chattogram Veterinary and Animal Sciences University, Bangladesh.

I am very much interested in the veterinary medicine research sector. I want to learn more and more about this profession and serve the nation with my knowledge by my inventions to face the challenges in this field.

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Abbreviations

HF	Holstein Frisian
DMY	Daily milk yield
SE	Standard error

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ABSTRACT

The study aimed to determine how well Holstein-Friesian (HF), Jersey, and Mundi crossbred cows performed in terms of production and reproduction on a commercial farm. Seven dairy farms in Patiya upazilla provided the data, and 107 cows were used as the study population. To gather data on the reproductive and productive performance of cows, pre-tested structured questionnaires were used. The result of body weight in different farms shows that body weight measurements are comparatively accurate on Maa Dairy Farm than they are on Kutub Dairy Farm, which has a similar percentage of crossbred cows but a higher standard error. With crossbreds of both the HF and Jersey breeds, Kuddus Dairy Farm's standard error shows significant measurement variability and a moderate mean body weight. For daily milk yield (DMY) Maa Dairy Farm has the highest milk yield with the mean value of 21.13 Liter. DMY was the highest in case of HF crossbreds. Lactation number was comparatively higher in Kazi Mustafa Dairy Farm. For reproductive phenotypes, days open and service per conception are measured on the basis of farm and breed composition. Average days open was found as 80 days and average service per conception was between 2.7 to 3.8. From overall data evaluation, it is seen that for improving the productivity of a farm, a good farming system with adequate management approaches is needed.

Key words: Dairy cows, Live weight, Daily Milk yield, days open and service per conception

Chapter 1
INTRODUCTION

Bangladesh is an agriculture-based country. Livestock, particularly dairy, is an income source for the rural people and an essential component of the country's economy. A total of 1.66 percent of the GDP is contributed by the livestock subsector, which also employs 20 percent of the rural population full-time and contributes 13 percent of the overall foreign exchange profits of the nation [BOS, 2016]. According to information from the Department of Livestock Services, the country produced 11.9 million tons of fresh milk in fiscal year 2020–21, whereas 15.4 million tons were needed. Despite the enormous demand, there are several obstacles the Dairy Industry in Bangladesh faces. Due to the low productivity of the native animals, dairy cattle breeders in tropical milk-producing regions can upgrade native stock to European breeds [Amin et al, 1986]. Exotic breeds are employed to boost milk production in commercial herds. The Holstein Frisian (HF) is the most exotic dairy cattle breed that farmers prefer. Through artificial insemination, the government is actively pushing the Holstein Frisian breed. Crossbred Holstein Frisian cows produce more than five times as much milk as the native breed when given better food, medical care, and management. Besides HF, Jersey, Sahiwal, and Sindhi crossbreds are also used in dairy farming for better milk production. Important elements affecting the profitability of dairy production include productive and reproductive qualities [Lobago et al, 2007]. Some significant qualities include reproductive traits such as service per conception, age at first calving, gestation duration, calving interval, and days open, as well as productive traits such as milk yield per day. These characteristics play a crucial role in the profit-loss formula of a dairy farm. Herds' ability to reproduce effectively determines the milk production profits gained [Ahmed et al., 2000]. Due to the economic significance, various researchers have examined the number of services per conception, the days open related to fertility, and the effectiveness of reproduction in dairy cows. They are crucial for determining milk production factors [Ali et al., 2003; Riecka and Candrak, 2011]. Numerous attempts have been made in the past to crossbreed native cattle with various exotic breeds, including the Friesian, Jersey, and Sahiwal, in order to increase their capacity for reproduction and output. However, no significant improvement has been made due to the indiscriminate approach to breeding practices. By evaluating the productive and reproductive performance under the current management system, the success of dairy production in general and

crossbreeding programs in particular needs to be routinely assessed [Lobago et al, 2007]. Additionally, recent modifications to dairy cows' genetics, productivity, and management have resulted in a fall in reproductive effectiveness. By evaluating the productive and reproductive performance under the current management system, the success of dairy production in general and crossbreeding programs, in particular, needs to be routinely assessed [Lobago et al, 2007]. Smallholder crossbred dairy farms are currently prevalent in Patiya upazilla. Notably, a sizable number of landless and marginal farmers have discovered crossbreed cows to be a successful venture under improved feeding, better disease control, and better management. The country has not yet produced a specialist breed necessary to increase milk output [S. C. Mondal, 2005]. In order to develop the dairy industry, detailed information on dairy breeds has to be known. The following goals guided the undertaking of the current study:

i) To understand how well the various dairy breeds and crossbreeds perform in terms of productivity and reproduction in Patiya upazilla.

ii) To advise farmers on the management and rearing techniques to be used at dairy farms.

iii) To advise farmers on the breed and type of animals most suited to the current socioeconomic and ecological conditions of Bangladesh.

Chapter 2

LITERATURE REVIEW

In an agricultural nation like Bangladesh, the dairy industry is acknowledged as being a crucial part of the livestock that contributes significantly to the national economy. One development initiative the Bangladeshi government put out to boost milk production is dairy cattle farming. According to Ali & Ali (2003), the livestock industry plays a significant part in the economy of the country, generating more than 6.5% of the GDP. In contrast to the global increase of 0.4% over the past decade, the country's total head count of cattle (24.5 million) has increased by 0.3% (FAO, 2004). *Bos taurus* and *Bos indicus* are the two cattle species found in our nation. They are both members of the Bovidae family, Subfamily-Bovinae. Only 8% of dairy cattle are reportedly crossbred, with over 92 percent being nondescriptive indigenous in this country (BBS, 2006).

The native cattle of Bangladesh do not have uniform traits common to all breeds. They produce little milk and have slow growth rates and late maturity. However, they frequently display exceptional heat tolerance, the capacity to keep their bodies in good shape despite eating poor-quality feed and, to some extent, local disease resistance [Ali et al, 1965].

Clearly, our nation must increase the intensity of dairy development. According to reports, expanding dairy cattle and milk production through cooperative efforts in many Southeast Asian nations, including India, Pakistan, Sri Lanka, Thailand, and the Philippines, has dramatically improved economic development. Typically, European nations are where exotic breeds were established. Due to their inability to adapt to our hot and humid climate, it is impossible to expect good performance from these imported breeds. Some breeds, including Friesian, Sahiwal, Jersey, and Sindhi, and their crosses with Local, are discovered to be ideal for the climatic conditions of Bangladesh.

In Bangladesh, Friesian cattle are a well-liked breed. Their bodies are either mixed white and black or white, red, and black. Their udder is quite large. This variety's production is sourced from Holland. This type is being used as a milk breed worldwide, including Bangladesh.
The Montgomery District in Pakistan, now known as Sahiwal, is where the Sahiwal breed is bred. Comparatively speaking, it is a heavier breed than Red Sindhi, which it closely resembles, with a symmetrical body and loose skin. The body colour is reddish or pale red with white patches. India also maintains this breed.

The country from which Jersey evolved is Australia. Their body structure is huge. Their colouring resembles deer, and the area surrounding their eyes is blackish. It is considered one of the best dairy breeds in the Indian subcontinent.

Milk production improvement is the primary goal of dairy cow breeding. One key element in increasing a dairy business's profitability is reproductive efficiency. The cost of herd depreciation and annual milk production are impacted. Age at puberty, age at first service, calving-to-conception interval, number of services per conception, and reproductive abnormalities are

economically significant features in dairy cows and are crucial to profitability. So, these all have to be checked if the demanded development in the commercial dairy farms is to be attained.

Chapter 3

MATERIALS AND METHODS

3.1) Study area and duration

The study was conducted in Patiya upazilla in Chattogram district of Bangladesh. The area is rich in dairy population. For this, the area is chosen for the study. The data were collected between mid-May and mid-June 2023. At that time, the temperature fluctuated between 30°C to 33°C, and humidity was 60-70%.

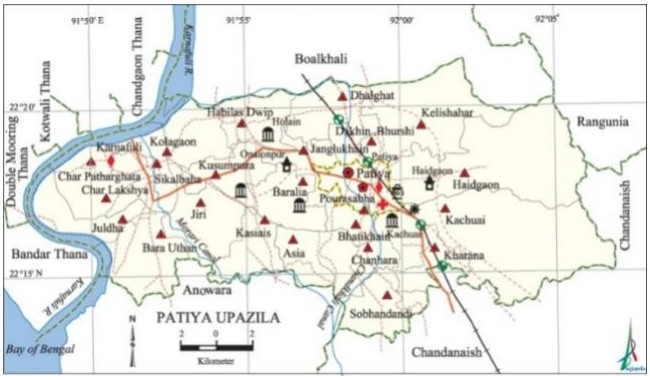

Figure 1: Map of Patiya upazilla, Chattogram

3.2) Study design and data collection

The farms were chosen randomly, consisting of at least five dairy cattle, and a cross-sectional study was done. A questionnaire was made with specific questions, and the farm owners gave the needed information based on the questions. There were both open-ended and close-ended

questions, and the data were collected by face-to-face interview. A total of 107 cows from 7 different dairy farms are included in this study.

3.3) Farm location and population in the studied area

Table 1: Farms visited during the study

Name of the farms	Location	Total population	Study population	Years of experience
Shahagodi Dairy Farm	Jangalkhain, Patiya	50	20	8
Mannan Dairy Farm	Jangalkhain, Patiya	30	20	8
Kazi Mustafa Dairy Farm	Amjurhaat, Patiya	11	7	4
Maa Dairy Farm	Barua para, Patiya	45	31	4
Kuddus Dairy Farm	Amjurhaat, Patiya	25	16	7
Kutub Dairy Farm	Amjurhaat, Patiya	8	5	4
Zakir Dairy Farm	Shantirhaat, Patiya	18	10	4

Figure 2: Different farms in Patiya, Chattogram

3.4) Data Management

As variables for this study, some particular standards were chosen. For evaluating productive characteristics, factors such as birth weight (breed wise), body weight (farm wise and breed wise),

lactation number, lactation length, dry period (farm wise) and milk yield per day (farm and breed wise) are measured and for focusing on reproductive traits, days open and service per conception for both farm wise and breed wise are taken into account.

3.5) Data Analysis:

After collecting data by asking questions of the farm owners, the data were edited and processed in MS Excel 2007. Then, the data were analyzed with the help of STATA 13. The means, standard deviations, and standard error were calculated to explain the data scientifically.

Chapter 4

RESULTS AND DISCUSSIONS

4.1) Demography of study population

4.1.1) Herd Size

Average herd size was 27±6 ranges from 8 to 50. The herd sizes of different farms are included with the crosses of various dairy breeds of cattle. Farm wise composition of breed types ranges from 70% to 87.5%.

Table 2: Demographic statistics of study population

Farm	Total No. of cattle	Pregnant no.	Lactating cow	Dry cow	Heifer	Bull
Shahagodi Dairy Farm	50	10	25	5	5	5
Mannan Dairy Farm	30	15	20	5	2	3
Kazi Mustafa Dairy Farm	11	0	7	2	2	0
Maa Dairy Farm	45	1	31	7	7	0
Kuddus Dairy Farm	25	0	16	6	3	0
Kutub Dairy Farm	8	1	5	1	2	0
Zakir Dairy Farm	18	2	10	4	4	0
Total	**187**	**29**	**114**	**30**	**25**	**8**

From Table 2, the data can be described as there are a lot of lactating cows at Shahagodi Dairy Farm, which suggests that milk production is the primary goal. Bulls and heifers present suggest the possibility for future growth. The abundance of pregnant cows at Mannan Dairy Farm implies that breeding is a priority. The farm also has a moderate amount of lactating cows, indicating a balanced concentration on milk production and potential herd increase. Kazi Mustafa Dairy Farm has a smaller herd and no bull or pregnant cows. It puts much emphasis on the milk that lactating cows produce. Maa Dairy Farm strives for milk production and future expansion through breeding because of the large number of lactating cows and significant heifers on the farm. With a sizable proportion of lactating cows, Kuddus Dairy Farm primarily concentrates on milk production. The presence of heifers signals the possibility of herd expansion. Kutub Dairy Farm emphasizes a healthy blend of milk production and heifer breeding for future herd expansion. Finally, Zakir Dairy Farm has a small herd focused on milk production and future heifer growth.

4.1.2) Breed composition

Table 3: Farm wise composition of breeds in the study population

Farm	Cross breed composition
Shahagodi Dairy Farm	70% (HF)
Mannan Dairy Farm	75% (Mundi, Jersey)
Kazi Mustafa Dairy Farm	87.5% (HF)
Maa Dairy Farm	80% (HF)
Kuddus Dairy Farm	86% (HF, Jersey, Mundi)
Kutub Dairy Farm	80% (HF)
Zakir Dairy Farm	75% (Mundi, HF)

HF: Holstein Frisian

Table 3 shows that the cattle at Shahagodi Dairy Farm are crossbred of HF cattle and local breeds where HF was used as 70%. Due to HF cattle's renowned high milk yield, the farm may target high milk production. Because of their effective feed conversion and high milk output, HF cattle are frequently chosen for commercial milk production. In the case of Mannan Dairy Farm, the Mundi and Jersey crossbreds are kept. While Mundi (a local breed) may have an edge in adjusting to the environment, Jerseys are recognized for providing milk with a high butterfat level. This shows a calculated strategy for meeting various market demands. With 87.5% crossbreeding of the Holstein Friesian (HF) breed, Kazi Mustafa Dairy Farm strongly favours this breed. This decision can indicate a keen interest in milk production volume. Like the preceding farms, Maa and Kutub Dairy Farms both focus on milk production using 80% HF cross animals. Kuddus Dairy Farm maintained 86% cross HF, Jersey, with Mundi keeping high milk production in mind to fulfill the market demand for milk. Last but not least, Zakir Dairy Farm used 75% HF with Mundi to maintain the balance with the climate.

In conclusion, the dairy farms' crossbreed compositions show various techniques. While some farms pursue a varied strategy to meet varying market demands and milk quality requirements, others concentrate primarily on a single high-production breed (HF). The combination of regional breeds (Mundi) and foreign breeds (HF, Jersey) shows a deep awareness of production efficiency and milk attributes.

4.1.3) Housing

Table 4: Farm wise housing of the study population

Farm	All animal in one shed	Calf shed	Pregnant animal shed	Dry animal shed	Lactating animal shed	Heifer shed
Shahagodi Dairy Farm						
Mannan Dairy Farm						
Kazi Mustafa Dairy Farm						
Maa Dairy Farm						
Kuddus Dairy Farm						
Kutub Dairy Farm						
Zakir Dairy Farm						

Green: Present; Red: Absent

All the farm owners in the study area maintain an intensive rearing system. Table 4 denotes that, in the case of Shahagodi Dairy Farm, the owner maintained different sheds for different ages of cattle. The farm owner knows about managing a dairy farm by providing different sheds to the animals. Mannan Dairy Farm, Kazi Mustafa Dairy Farm, and Kutub Dairy Farm maintained only one shed for all animals. Though they do farming, they need to gain more knowledge based on sheds of different ages of animals. Maa Dairy Farm has a calf and pregnant shed beside all animal sheds. The owner is trying to update his knowledge of farming. Kuddus and Zakir Dairy Farm included a calf shed in the farming system. They emphasized decreasing calf mortality by having a different shed of calves.

4.2) Production phenotypes

4.2.1) Body Weight

Table 5: Farm wise body weight in the study population

Farm	Body weight in kg (Mean ± SE)
Shahagodi Dairy Farm	303.68 ± 10.38
Mannan Dairy Farm	259.50 ± 5.34
Kazi Mustafa Dairy Farm	242.86 ± 13.04
Maa Dairy Farm	308.73 ± 4.29
Kuddus Dairy Farm	284.00 ± 4.66
Kutub Dairy Farm	314.00 ± 9.80
Zakir Dairy Farm	307.80 ± 6.76

SE: Standard Error

Table 6: Breed wise body weight in the study population

Breed composition	Body weight in kg (Mean ± SE)
70%(HF)	303.68 ± 10.38
75%(Mundi, Jersey)	259.50 ± 5.34
75%(Mundi, HF)	307.80 ± 6.76
87.5%((HF)	242.86 ± 13.04
80%(HF)(Maa Dairy Farm)	308.73 ± 4.29
80%(HF)(Kutub Dairy Farm)	314.00 ± 9.80
86%(HF, Jersey, Mundi)	284.00 ± 4.66

From Tables 5 and 6, we can see that the mean body weight of Shahagodi Dairy Farm, Having 70% HF crossbreds, is relatively high, and the standard error suggests that there is only little variability. In the case of Mannan Dairy Farm with the crossbreds of Mundi and 75% Jersy, this one has a lower mean body weight and a lower standard error, which suggests that the weight measurements are more reliable on this farm than other farms. The mean body weight at Kazi Mustafa Dairy Farm is higher than that of the preceding farm's crossbreds having crossbreds of HF. The standard error, however, points to broader variability. Body weight measurements are more reliable because of the lower standard error and greater mean body weight on Maa Dairy Farm, which has 80% HF.

In contrast, Kutub Dairy Farm, having the same percentage of crossbreds, shows some body weight fluctuation due to a more significant standard error. In Kuddus Dairy Farm, the standard error reveals considerable measurement variability and moderate mean body weight for this farm having crossbreds of HF and Jersy breeds. In contrast, in the case of Zakir Dairy Farm, the standard error

indicates moderate variability and a greater mean body weight. From the overall analysis, it is seen that the mean body weights of the farms "Maa Dairy Farm" and "Zakir Dairy Farm" appear to be the highest, while "Kazi Mustafa Dairy Farm" has the lowest mean body weights. The standard errors give information about the measurement variability on these farms.

4.2.2) Lactation Number

Table 7: Farm wise average lactation number of lactating animals in the study population

Farm	Lactation no.(Mean ± SE)
Shahagodi Dairy Farm	5.26±0.23
Mannan Dairy Farm	5.14±0.20
Kazi Mustafa Dairy Farm	6.00±0.38
Maa Dairy Farm	5.50±0.20
Kuddus Dairy Farm	5.33±0.23
Kutub Dairy Farm	5.20±0.20
Zakir Dairy Farm	5.70±0.21

Table 7 above shows that with more significant fluctuation than the other farms, "Kazi Mustafa Dairy Farm" has the highest average lactation number. With reduced standard deviations, the average lactation rates on farms like "Mannan Dairy Farm," "Maa Dairy Farm," and "Kutub Dairy Farm" are reasonably constant.

Table 8: Farm wise milk production phenotypes in the study population

Farm	Milk yield per day(L)(Mean ± SE)	Lactation Length(months) (Mean ± SE)	Dry period (days) (Mean ± SE)
Shahagodi Dairy Farm	20.1±0.97	7.63±0.14	38.95±0.72
Mannan Dairy Farm	17.76±0.53	8.00±0.00	44.76±0.24
Kazi Mustafa Dairy Farm	13.29±1.22	7.00±0.00	40.00±0.00
Maa Dairy Farm	21.13±0.38	8.00±0.00	45.00±0.00
Kuddus Dairy Farm	18.33±0.39	8.00±0.00	40.00±0.00
Kutub Dairy Farm	20.00±0.00	8.00±0.00	40.00±0.00
Zakir Dairy Farm	19.20±0.53	8.00±0.00	60.00±0.00

If we check through the data of Table 8, which are based on different farms, it is evident that the milk production, durations of lactations, and dry periods fluctuate between farms. The milk yield at "Maa Dairy Farm" is the highest; the milk output at "Kazi Mustafa Dairy Farm" is the lowest. Comparatively speaking, "Zakir Dairy Farm" has a longer dry period. According to Hadge et al. (2012), the dry period must be longer to produce one calf per year for good dairy management practices. The lactation length of the current findings of Jersey crossbreds is quite similar to that

of Hasan (1995). The lactation length of HF crossbreds is supported by the article of Toure et al. (2019).

Table 9: Breed wise milk production phenotypes in the study population

Breed composition	Milk yield (Mean ± SE)
70% HF	20.1±0.97
75% Mundi, Jersey	17.76±0.53
75%(Mundi, HF)	19.20±0.53
87.5%((HF)	13.29±1.22
80%(HF)(Maa Dairy Farm)	21.13±0.38
80%(HF)(Kutub Dairy Farm)	20.00±0.00
86%(HF, Jersey, Mundi)	18.33±0.39

If we do some comparative analysis of Table 9, it is obvious to be found that the milk output is substantially impacted by breed composition. While compositions with more significant percentages of HF typically have higher milk yields, the 80% (HF) composition at Maa Dairy Farm stands out with the highest milk output. Though Kutub Dairy Farm has the same percentage of breed composition, it resembles the milk production of 70%HF from the Shahagodi farm. It means there are some management issues in the farm, causing the difference between the two farms despite having the same breed composition. The composition with the lowest milk output is 87.5% (HF). Though HF is a dairy breed and 87.5% of the breed composition of HF should have the highest milk yield, from the data record, the scenario is just the opposite. From this, we can conclude that the farm, having 87.5% HF breed composition, has a poor management system. Sardar et al. (1997) found that the average milk yield per day of HF crossbreds and Jersy crossbreds are 7.2± 2.6, 6.9 ±2.7, respectively, which is not similar to the abovementioned findings.

4.2.3) Birth weight

Table 10: Breed wise birth weight in the study population

Breed composition	Birth weight (Mean ± SE)
70% HF	52.7 ± 1.472735
75% Mundi, Jersey	33.5 ± 0.61345
75% (Mundi, HF)	45± 0
87.5% (HF)	24.7143 ± 1.4094
80% (HF) (Maa Dairy Farm)	43.826 ± 0.66635
80% (HF) (Kutub Dairy Farm)	45 ± 0.31623
86% (HF, Jersey, Mundi)	24.8 ±1.39455

In this table, highest birth weight is found in 70% of HF breed composition and lowest birth weight is seen in 87.5% HF breed composition and 86% breed composition of HF, Jersey and Mundi. So,

it is evident that birth weight is greatly influenced by breed makeup, with HF-dominant compositions typically having greater birth weights and compositions with higher percentages of other breeds typically having lower birth weights. Here birth weight of 86% breed composition of Jersy is supported by Vijayakumar (2019).

4.3) Reproductive phenotypes

4.3.1) Days Open

Table 11: Farm wise days open in the study population

Farm	Days open (Mean ± SE)
Shahagodi Dairy Farm	80.5 ± 0.34412
Mannan Dairy Farm	80 ± 0
Kazi Mustafa Dairy Farm	85 ± 0
Maa Dairy Farm	80 ± 0
Kuddus Dairy Farm	70± 0
Kutub Dairy Farm	80 ± 0
Zakir Dairy Farm	78.1 ± 1.31191

Table 12: Breed wise days open in the study population

Breed	Days open (Mean ± SE)
70% (HF)	80.5 ±0.34412
75% (Mundi and Jersy)	80 ± 0
75% (Mundi and HF)	78.1 ± 1.31191
87.5% (HF)	85 ± 0
80% (HF) (Maa Dairy)	80 ± 0
80% (HF) (Kutub Dairy)	80± 0
86% (HF, Jersy, Mundi)	70 ± 0

From Table 11 and 12, that are made according to farms and breed composition respectively, it is evident that highest days open is seen in Kazi Mustafa Dairy Farm having 87.5% breed composition of HF. While other farms have average values of about 80 days, it shows that the "Kuddus Dairy Farm" has the lowest average days open with 86% of HF, Jersey and Mundi breed composition. The average figure for "Zakir Dairy Farm" is slightly lower with considerable variability. Farms with names like "Mannan Dairy Farm", "Maa Dairy Farm" and "Kutub Dairy

Farm" have uniform measurements and no known variations in the number of days they are open. M Famous et al. (2021) found that the days open of crossbreds of HF is 135 days, where our findings are less than these.

4.3.2) Service per conception

Table 13: Farm wise service per conception in the study population

Farm	Service per conception (Mean ± SE)
Shahagodi Dairy Farm	2.7 ± 0.10513
Mannan Dairy Farm	2 ± 0
Kazi Mustafa Dairy Farm	3.57143 ± 0.20203
Maa Dairy Farm	3.76667 ± 0.1143
Kuddus Dairy Farm	2.73333 ± 0.24817
Kutub Dairy Farm	3 ± 0.44721
Zakir Dairy Farm	3.8 ± 0.13333

Table 14: Breed wise service per conception in the study population

Breed	Service per conception (Mean ± SE)
70% (HF)	2.7 ± 0.10513
75% (Mundi and Jersy)	2 ± 0
75% (HF, Mundi)	3.8 ± 0.13333
87.5% (HF)	3.57143 ± 0.20203
80% (HF) (Maa Dairy)	3.76667 ± 0.1143
80% (HF) (Kutub Dairy)	3 ± 0.44721
86% (HF, Jersy and Mundi)	2.73333 ±0.24817

When we arranged the data farm wise in table 13, we saw that in contrast to "Mannan Dairy Farm" and "Kuddus Dairy Farm," it appears that "Zakir Dairy Farm" has the highest average service per conception. The range of services per conception for the other farms, with varied degrees of variability, is roughly between 2.7 and 3.8. When we arranged the data breed wise in table 14, it is seen that highest service per conception is found in 75% HF, Mundi breed composition with which 80% HF composition is nearly similar. But in case of other dairy farm having 80% of breed composition of HF has moderate value. The lowest of all is the 75% Mundi and Jersy breed composition. These data are contradictory with the data of the article of Wangdi et al. (2014).

Chapter 5

CONCLUSION

Small-scale dairy farming is crucial because it helps to preserve the significant gap between the supply and demand of milk in urban areas. It is concluded that the outcomes for reproductive features like days open and service per conception are above average. Again, with regard to productive qualities, such as daily milk yield, it appears that the standard data are reversed, but body weight and birth weight are reasonably comparable to the standards. The primary barrier preventing crossbreed cattle in the study locations from performing as productively and reproductively is the management differences (proper feeding, housing, breeding, and health care). For the betterment of the condition, better health management, crossbreeding genetic improvement, timely AI, supplementation of high-quality feed is required. For this, training facilities are needed to be available for the farm owners of Patiya upazilla to provide them with knowledge on breed wise farming.

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