Impact of COVID-19 on Dairy Farming Sector of Mirsharai, Bangladesh

A production report submitted in partial satisfaction of the requirement for the Degree of Doctor of Veterinary Medicine (DVM)

By:

Sharmin Akter

Roll No: 17/22

Reg No: 01844

Intern ID: 16

Session: 2016-17

Faculty of Veterinary Medicine

Chattogram Veterinary and Animal Sciences University

Khulshi, Chattogram – 4225, Bangladesh

Impact of COVID-19 on Dairy Farming Sector of Mirsharai, Bangladesh

Approved by:

(Goutam Kumar Debnath)

Professor

Department of Dairy and Poultry Science

Faculty of Veterinary Medicine

Faculty of Veterinary Medicine

Chattogram Veterinary and Animal Sciences University

Khulshi, Chattogram – 4225, Bangladesh

Table of contents

Contents **Page**

List of Tables

List of Figures

Abstract

The COVID-19 epidemic has created a serious negative impact not only on the health sector in the country but also on all aspects of living conditions. The government has restricted people's movement since the COVID-19 epidemic in Bangladesh started in early March in order to stop the disease's spread. This study was conducted to understand the impact of COVID-19 on the dairy farming sector of Mirsharai Upazila, Chattogram. A total of 5 dairy farms were chosen using the random sample technique from the Khoiyachora, Barotakia, Jorargonj, Mayani and Korerhat regions within the Mirsharai Upazila of Bangladesh based on the information that was available. It is found that the farmers encountered numerous challenges, their farms were underperforming, and they suffered losses ranging from very little to very much. The number of dairy cows in these 5 farms was 31 before COVID-19, 27 during COVID-19, and 42 after COVID-19, respectively. Feed prices were 31tk/kg before the pandemic, but they rose to 33.5taka during the pandemic and 46 takas after COVID-19 ended. Milk production also decreased to 63 L from 67L. The amount of unsold milk increased to 42 L per day. The average cost of medicine (monthly) was 9167, 9833, 12233 Tk (BDT) at before, during, and after the end of Covid-19 respectively. Other costs like labor, electricity, and water also increased in the same way as there was a lack of supply, transport, and labor. Therefore, to reduce such a scenario in the future, the government might create long-term projects and sustainable plans encompassing several sectors to ensure continued capacity building of farmers and assure the development of the farmers' skills by setting up training programs.

Keywords: Covid-19; Economy; Dairy sector; Price; Milk

Chapter 1: Introduction

The COVID-19 pandemic has emerged as a global concern due to the virus's widespread impact and unforeseen speed at which it is infecting people (Dr. Mohammad Mohi Uddin,2020). It is a member of the Betacoronavirus genus, and a species related to the severe acute respiratory syndrome (SARS-CoV). People who contact with the virus suffer from mild to severe respiratory illnesses, including severe pneumonia. The likelihood of developing a serious illness that can cause death is higher among older persons and people with comorbid conditions such as high blood pressure, cardiovascular disease, diabetes, chronic respiratory disease, and cancer (WHO).

In December 2019, Wuhan, China, reported the discovery of the first case. Following the initial outbreak in Wuhan City in China, this pneumonia-like illness spread to other nations and evolved into a pandemic that has touched 212 countries and territories worldwide. It was declared a global pandemic on 11th March 2020. Till July 2022, more than 560 million cases are recorded and 6.3 million deaths have been confirmed (Worldometers,2022).

The first case in Bangladesh was recorded on July 9, 2022, and as of November 19, 2020, there have been claimed to be 1.99M confirmed cases and 29195 fatalities (Worldometers,2022). Increasing bodily immunity is necessary to combat COVID-19, and diets high in fiber and animal protein are key in this process. Most people on earth rely on livestock as a significant source of high-quality animal protein. In humans' upper respiratory systems, especially the oropharynx, milk continues to have the beneficial effect of boosting immunological homeostasis. Dairy is one of the most promising sectors of Bangladesh (Express,2021).

Agriculture is the main sector of the economy of Bangladesh. 13.45 percent of Bangladesh's agricultural GDP comes from the livestock subsector. This sector contributes 20% to direct employment and 50% to indirect employment, which has a substantial impact on Bangladesh's overall economy (DLS.2021). More than 70% of rural residents are involved in raising large animals, which significantly improves the livelihoods of smallholders and landless households (The World Bank,2018).

In Bangladesh, cows are the primary milk producer. Most of the milk produced in the nation about 90% comes from cows (DLS,2013). Smallholder farmers in Bangladesh make up most of the dairy

industry. Smallholder dairy farmers account for more than 70% of all dairy farmers in the country, and they generate between 70% and 80% of the nation's milk (Uddin et al.,2012).

After the outbreak of COVID-19, the government of Bangladesh has imposed a lockdown nationwide from March 26, 2020. Like other sectors, COVID-19 hampered the livestock sector too. According to Bangladesh Dairy Farmers' Association, marginal dairy farmers lost Tk 570 million as a result of 12 to 15 million liters of milk per day going unsold due to the nationwide lockdown. Restriction of movement and social distancing had led to a shortage of labor. The prohibition on transportation results in a lack of feed and a reduction in veterinary services. As a result, the price of goods and animal feed unexpectedly jumped. Lack of supply chains, middlemen, and transportation infrastructure have restricted distribution, causing farm products to deteriorate (Rahman and Das,2021). As a result, Covid-19 has become a great threat to the country's food security and led to an economic crisis.

In these circumstances, several studies have been conducted to ascertain the consequences of the pandemic on dairy farmers. This study was carried out to determine the effects of COVID-19 on the dairy farming industry in Mirsharai, Bangladesh.

The following objectives were considered for the study:

- To understand how COVID-19 affected the dairy industry.
- To determine the changes and financial losses resulting from the Covid-19 scenario for the dairy farmers in Mirsharai Upazila, Chattogram.
- To get an idea about what precautions should be taken to minimize the negative impact of COVID-19 on the dairy industry.
- To gather information about the livestock market to aid in better planning of livestock activities and to aid policymakers and other stakeholders in understanding the industry’s current state.

Chapter 2: Materials and Methods

2.1 Study area:

This study covered the Khoiyachora, Barotakia, Jorargonj, Mayani, and Korerhat regions of Mirsharai, Chattogram.

2.2 Study population:

About 5 dairy farms were selected which have minimum of 7 cows for the study.

2.3 Study period:

The study period was from March 2022 to April 2022.

2.4 Data collection:

A questionnaire was created for the study to gather information from farmers and to ease the procedure of data collection. Farm visits had been done to collect the essential data from dairy farm owners. Through direct interviews, a variety of information was gathered from the farmers, including personal details, livestock assets, feed costs, housing costs, treatment costs, labor costs, and key issues encountered throughout the COVID period and recorded in a preformed questionnaire.

Figure 1: Dairy Farm Visit

Figure 2: Data Collection

2.5 Data analysis:

Following data collection, farms were categorized into large, medium, and small-scale operations based on the number of dairy cows they possessed for easy analysis. The information was then entered into Microsoft Excel and the necessary analysis was done. Percent analysis and comparative studies were done in tabular form to have a better idea about the condition of dairy farms before, after, and during COVID-19.

Chapter 3: Results and Discussions

3.1 Categories of the farms:

Farms that were chosen for the study were divided into three categories for better result-40% were large-scale farms having more than 20 dairy cows,20% were medium-scale farms having 10- 20 dairy cows, 40% were small-scale farms having less than 10 dairy cows. (Table-1)

Table 1: Categories of the farms according to the No. of dairy cows

Types of farms.	No. of dairy cow	No. of farms	Percentage
Large scale Farms:	20 or more than 20 dairy cows	2	40%
Medium scale Farms:	10-19 dairy cows	1	20%
Small scale farms:	less than 10 dairy cows	2	40%

3.2 Analysis of feed cost:

Ups and downs in feed cost was noticed in different time period of COVID-19.

Table 2: Cost of feed and percent analysis

Parameters	Before COVID-19(2018-2019)	During COVID -19 (2020-2021)	After COVID – 19 (2022)
The average cost of feed (Tk/kg)	31	33.5	46
Increased/decreased during lockdown (%)	-	8.10% Increased	-
Increased/decreased after lockdown (%)	-	-	37.31% Increased

From Table-2, before COVID-19 the average cost of feed (Taka/kg) was 31taka (BDT) which had increased up to 33.5takas during COVID-19. The cost of feed had increased 8.10% during the COVID period. After the end of COVID-19, the cost of feed became 46taka. That means the cost of feed increased 37.31% after COVID-19.

There are several reasons responsible for the increase in feed cost. Due to the government's ban on transportation during the lockdown caused by the COVID epidemic, the supply chain was severely disrupted. Consequently, there was a reduction in the supply of feed and other logistics, which raised the price of feed. The farmers complained that the price of feed was increased from 2020 and still has not gone down though COVID-19 is almost over now.

3.3 Overview of milk production:

Changes in milk production were observed due to COVID-19. Before COVID-19, the average milk production was 67 liter per day which decreased to 63L during COVID-19. Average 6.01% of milk production decreased due to COVID-19. But it is observed that after the end of COVID-19 the production of milk increased up to 93L which is an average of 42.83% in percentage.

Table 3: Percent analysis of Average milk production and milk price

Parameters	**Before COVID-19(2018-2019)**	**During COVID - 19 (2020-2021)**	**After COVID – 19 (2022)**
The average amount of milk production (Liter/farm)	67	63	93
Change in milk production during & After lockdown (%)	-	6.01% decreased	42.85% increased
The average Selling price of milk (Tk / kg)	55	60	65
Change in the selling price of milk (%)	-	9.10% increased	8.33% increased

Though the selling price of milk had decreased in many places of Bangladesh during COVID-19 but in the Mirsharai region it increased. The average selling price of milk was 55, 60, and 65 Tk (BDT), which represents a 9.10 percent rise in price during COVID-19 and a further 8.33 percent increase following the expiration of COVID-19. (Table-3)

Some farms had milk that hadn't been sold during the lockdown. Others sold the milk to surrounding tea businesses, sweet stores, and neighborhood residents. There were 60% unsold milk in 40% farms,65% in 40% farms and 75% in 20% farms. It is estimated that an average of 42L of milk was unsold per day including all the active farms. (Table-4)

Table 4: Data of unsold milk in a different time period of COVID-19

Time	Amount of unsold milk (% of production)	Average	Unsold milk in several farms (n)	Percentages
Before COVID-19(2018-2019)	**None**		**None**	
During COVID - 19 (2020-2021)	60%		2	40%
	65%	66.66%	2	40%
	75%		1	20%
After COVID – 19 (2022)	**None**		**None**	

Table 5: Average production of the farms

Average milk production in total 5 farms	Average unsold milk/day	Average milk loss
63 L/ day	66.66% of production	42 L/ day

There were several reasons of decreasing milk production. During COVID-19, farmers struggled to distribute their goods since there were no transportation options, which led to the degradation of farm products. However, because milk is a perishable good, the issue with milk marketing was discovered quite early in this instance. Additionally, due to the lockdown, demand for farm products declined as a result of the closure of all hotels, restaurants, and confectionery shops, as well as the Bangladeshi government's prohibition of several social initiatives. Most of the farms suffered enormous losses as a result of the decline in demand. So, the production of milk in farm levels decreased. It was also revealed from some reports that, farmers threw their milk on the street as a sign of protest because there was no alternative way to sell milk. According to the Bangladesh dairy Farmers' Association, between 12 and 15 million liters of milk went unsold every day, costing an estimated 570 million Bangladeshi Taka (BDT) (6.7 million USD) in daily losses (The Financial Express, 2020).

3.4 Overview of recurrent cost of all the farms:

From table 5, it is observed that most of the costs of the farms in the study area involved feed costs, medicine costs, labor costs, water, and electricity cost. There were many changes were observed in the recurrent cost of all farms throughout the COVID-19 pandemic. Before COVID-19 the average feed cost was 41000,30000 and 12000 taka (BDT) per month in the case of large, medium, and small-scale farms respectively. During the COVID-19 period, the price increased to 45000,35500 and 14500 takas in large, medium, and small-scale farms respectively. After COVID-19 the feed cost again increased to 52500.40000,17500 in large, medium, and small-scale farms respectively. This increment of the cost was also observed in medicinal. labor and other costs of a farm. Before COVID-19 the average cost of medicine per month was 15000.8000 and 4500 which increased to 16000,8000 and 5500 during COVID-19. After the end of COVID-19, the cost further increased to 21000,10000 and 5700 takas in the case of large, medium, and small-scale farms respectively. Prior to the epidemic, the average labor cost (in taka/month) at large, medium, and small-scale farms was 12000, 8000, and 4000 takas (BDT), during COVID-19 it was 13000, 5000, 10000 takas, and following COVID-19 it was 15000, 5000, 10000taka. Average cost of electricity, water (taka/month) was 4500,2000,1000 taka (BDT) before pandemic, 4700,2500,1200 taka (BDT) during pandemic and 5300,3000,1500 taka (BDT) after the end of pandemic (Table 6).

Table 6: Recurrent costs of all the farms throughout the COVID-19 pandemic

Parameters	Before COVID-19(2018-2019)			During COVID - 19 (2020-2021)			After COVID – 19 (2022)		
	Large scale farms	Medium scale farms	Small scale farms	Large scale farms	Medium scale farms	Small scale farms	Large scale farms	Medium scale farms	Small scale farms
The average cost of feed (Taka/ month)	41000	30000	12000	45000	35500	14500	52500	40000	17500
The average cost of medicine (Taka/month)	15000	8000	4500	16000	8000	5500	21000	10000	5700
Average labor cost (Taka/month)	12000	8000	4000	13000	5000	10000	15000	5000	10000
The average cost of electricity, and water (Taka/month)	4500	2000	1000	4700	2500	1200	5300	3000	1500

From table 6, comparing the pre-COVID time to the COVID situation, the average cost of feed increased by up to 14,45percent. After the end of COVID-19, it is increase to 15.80 percent. The cost of medications per month was 9167 takas before the pandemic began, and 9833 takas during the lockdown, which resulted in a 7.27 percent increase in treatment costs compared to the pre-COVID period, and it is currently 24.40 percent more expensive than the lockdown period. Labor costs increased up to 16.66 percent before COVID and further increased to 7.14 percent after the end of COVID-19. Similarly, water and electricity costs also increased up to 12 percent during the COVID situation than before.

Table 7: Percent analysis of the Changes of recurrent cost

Parameter	Before COVID-19(2018-2019)	During COVID - 19 (2020-2021)	Percent increased/ decreased in cost during COVID-19	After COVID – 19 (2022)	Percent increased /decreased in cost after COVID-19
Average Cost of feed (Taka Per month)	27667	31666	14.45% increased	36670	15.80% increased
Cost of medicine (TK/ month)	9167	9833	7.27% increased	12233	24.40% increased
Labor cost (TK/ month)	8000	9333	16.66% increased	10000	7.14% increased
Electricity, water (TK/ month)	2500	2800	12% increased	3267	16.68% increased

From Tables 6 & 7, during the pandemic, the recurrent cost of farming drastically changed for the farms that were open. Everything became expensive due to the pandemic.

Feed costs increased 14.45 percent during COVID-19. It resulted from the government's restrictions on movement implemented to stop the spread of COVID-19. During the pandemic, feed distribution became nearly impossible since people were unable to move. Because of this, the cost of feeding transportation increased, which in turn raised the price of feeding supplies and feeding costs, (Rahman and Das,2021). Another reason for the increasing cost was that fed that are imported from overseas was occasionally unavailable since it was unable to import them due to border crossing restrictions at the time.

Medication costs increased by 7.27 percent during the pandemic than the before. It was due to an increase in infections on farms brought on by a lack of veterinary facilities and the usage of more medication by farmers to keep their animals alive.

According to Yamano, et al. (2020), Covid-19 had little to no impact on Punjab's labor market. This contradicts the study's conclusions. According to the study, there was a decrease in labor

availability since workers during the pandemic condition demanded higher wages than usual. The average fees of the employees increased up to 16.66 percent during the pandemic than before. The price was once more raised when the pandemic ended. The other costs also grew both during and after the pandemic to a considerable degree.

3.5 Overview of animal population:

Throughout the study period, there were changes in the total number of animals and animal-related data at 5 operational farms.

There were 10 dairy cows on 2 major farms before COVID-19, 9 during the COVID phase, which is 10% less than the prior time, and 12 after the COVID period, which is 33.33% more than the lockdown phase. The average number of dairy cows in the medium-sized farm was 5 before the pandemic began, 4 during the lockdown period, which represents a 20% decline in number, and 6 following the lockdown period, which likewise demonstrated a 50% increase in number. Like this, on 2 small-scale farms, the average number of dairy cows was 4 before the pandemic, dropped to 3 during the lockdown, a 20% fall in the number of animals, and then rise to 4 following the lockdown (Table 8).

Table 8: Changes in the number of dairy cows in large, medium and small scale farms at different period of COVID-19 pandemic

Parameter	**Large scale Farms (N=2)**			**Medium scale Farms (N=1)**			**Small scale Farms (N=2)**		
Time period	Before covid-19	During COVID-19	After COVID-19	Before covid-19	During COVID-19	After COVID-19	Before covid-19	During COVID-19	After COVID-19
Number of dairy cows per farm	10	9	12	5	4	6	4	3	4
Percentage changes in number of dairy cows	-	10% decreased	33.33% increased	-	20% decreased	50% increased	-	20% decreased	33.33% increased

From table 7, it is visible that the number of cows decreased in large, medium, and small-scale farms during the pandemic. This resulted from farmers selling their livestock in specific quantities to lower feed costs and make up for farms' losses. Additionally, rumors on many unreliable social networks that SARS-CoV-2 could be transmitted from domestic animals to people also contributed to a decline in the demand for dairy products. It is known from some earlier investigations that SARS-CoV-2 can replicate poorly in dogs, chickens, and ducks, but more readily in cats, ferrets, mink, cattle, and sheep (Enserink and Kupferschmidt, 2020; Manes et al., 2020; Oreshkova, 2020; Molenaar, 2020; Schlottau, 2020; Gaudreault, 2020; Teodoro, 2020; Shi, 2020). All these unpredictable circumstances made farmers less likely to continue farming, which reduced animal production and farm profits...But after the pandemic, everything is becoming normal and also the number of animals is increasing again.

3.6 Impact on veterinary, vaccination, and medication facilities:

During COVID-19 due to strict lockdown, the transport facility was not available. It was difficult to maintain the continuous supply of medicine and vaccines in Upazila. It was challenging to get from farm to farm in time for vaccinations during the pandemic, and occasionally a shortage issue caused the vaccine schedule to be delayed. But it was reported that veterinarian was available during the pandemic. (Table 9)

Table 9: Availability of Veterinarian, Vaccination, and Medication

Parameters	Before COVID-19(2018-2019)	During COVID - 19 (2020-2021)	After COVID – 19 (2022)
Availability of Veterinarian	Available	Available	Available
Availability of Vaccines	Available	Difficult to manage	Available

3.7 Overall impact of COVID-19 on dairy farms:

Most farmers mention that the epidemic had some negative effects on their business.2 farmers describe how seriously destructive the COVID pandemic was for them. 3 farmers reported that it was moderately harmful to them (Table 10).

Table 10: Rate of damage due to Covid-19 to the dairy farm

Damaging effects of Covid-19 pandemic on the farms			
Highly damaging	Moderately damaging	Less damaging	Not damaging
2	3	None	None

From table 10, it can be understood that COVID-19 was more or less devastating for every farmer. But situation is changing slowly after pandemic. Things are getting normal day by day and farmers are trying hard to recover their loss.

Conclusion

The study was carried out to determine an overall picture of the difficulties faced by commercial dairy producers in operating their farms under the unfavorable corona pandemic environment. The study detected some major impacts like-the pandemic increased feed cost, labor cost, medicines and treatment cost, etc. Besides the increased amount of unsold milk, farmers faced huge economic losses during the pandemic. These issues were specifically developed for the government-imposed lockdown regime to prevent COVID-19 infection. There were also some reasons which can be found in the study. The research could aid in the development of new agricultural regulations that would assist farmers to avoid such losses in the future and in the discovery of new, more stable farming methods under such challenging circumstances. From the study, future scholars will learn the fundamental concepts that will enable them to conduct more accurate analyses of the agricultural sector.

Limitations

In Mirsharai Upazila, there are numerous dairy farms, but only 5 dairy farms were used in the study. The sample size was small so the actual scenario of the farms may differ from the present findings. Although the study covered only the farms containing less than 30 cows which means it covered the marginal farmers, the large-scale farm containing more than 30 cows had not come in the study. All the farms that were temporarily or permanently shuttered couldn't be included in the study. In addition, the farmers weren't appropriately sharing all the data, which was another study's weakness. The exact result might be discovered if all farms of the upazilla could added in the study.

References

1. Bangladesh COVID -Coronavirus Statistics-Worldometer, https://www.worldometers.info/coronavirus/country/bangladesh/
2. COVID Live-Coronavirus Statistics-Worldometer, https://www.worldometers.info/coronavirus/
3. DLS (Department of Livestock Services) (2021). Livestock economy at a glance (2018-19).); www.dls.gov.bd
4. DLS (Department of Livestock Service) (2013). An Overview. Ministry of Fisheries and Livestock, Government of the People Republic of Bangladesh, Dhaka. Dong, F., Hennessy, D.A. www.dls.gov.bd
5. Dr Mohammad Mohi Uddin,2020. **"The impact of COVID-19 on the dairy industry of Bangladesh"**. https://www.tbsnews.net/thoughts/impact-covid-19-dairy-industry-bangladesh-68569
6. Enserink, M., &Kupferschmidt, K. (2020). With COVID-19, modeling takes on life and death importance. DOI: 10.1126/science.367.6485.1414-b
7. Express, T., 2021. Dairy farmers in trouble, seek govt support. [online] The Financial Express. Available at:<https://thefinancialexpress.com.bd/trade/dairy-farmers-in-trouble-seek-govt-support-1585369478> [Accessed 24 October 2021]
8. Gaudreault, N. N., Trujillo, J. D., Carossino, M., Meekins, D. A., Morozov, I., Madden, D. W., ... &Richt, J. A. (2020). SARS-CoV-2 infection, disease and transmission in domestic cats. Emerging microbes & infections, 9(1), 2322-2332. https://doi.org/10.1080/22221751.2020.1833687
9. Rahman, M. and Chandra Das, G., 2021. **Effect of COVID-19 on the livestock sector in Bangladesh and recommendations.** Journal of Agriculture and Food Research, 4, p.100128.
10. Rahman, M. S., & Das, G. C. (2021). Effect of COVID-19 on the livestock sector in Bangladesh and recommendations. Journal of Agriculture and Food Research, 4, 100128. https://doi.org/10.1016/j.jafr.2021.100128
11. The Financial Express (2020). Dairy Farmers in Trouble, Seek Govt Support. (Accessed 5 February 2020). https://thefinancialexpress.com.bd

12. WHO, WHO Coronavirus Disease (COVID-19) Dashboard j WHO Coronavirus Disease (COVID-19) Dashboard, 2020. https://covid19.who.int/ (accessed Oct. 30, 2020).
13. Yamano, T., N. Sato, and B. Wasim Arif. 2020. COVID-*19* ***Impact on Farm Households in Punjab, Pakistan: Analysis of Data from a Cross-Sectional Survey.*** ADB Series No. 146. ADB Briefs No. 149. Asian Development Bank. https://dx.doi.org/10.22617/BRF200225-2

Acknowledgements

All praises are due to the Almighty Allah, whose blessings have been enabled the author to accomplish this word.

The author expresses her sincere gratitude, heartful respect to her supervisor **Prof. Goutam Kumar Debnath** sir, Department of Dairy and Poultry Science, Chittagong Veterinary and Animal Sciences University for his valuable advice, suggestion, and guidance at the completion of the production report.

The author would also like to thank her ULO **Dr. Shamol Chandra Poddar** sir, Upazila Livestock office, Mirsharai, Chattogram to provide help, inspiration, and guidance to make the report.

The author would like to express her special gratitude to her friend Shariful Islam Saikat .intern student of DVM 22nd batch to provide information of different farms and to find their locations.

The author is immensely grateful to the dairy farmers who helped her by sharing valuable information about the farm's condition.

Appendix

QUESTIONNAIRE

Impact of COVID-19 on Dairy Farms in Mirsharai Region of Chattogram

1. Identity:

Name		Cell no.	
Age		Education	
Village		Family size	
Experience of farming		Occupation	
Breeding Method		Income/ Month (Approx.)	
Distribution		Number of cattle	

2. Livestock Assets

Livestock	**Number And Selling price/unit (BDT)**				**Purchase price/unit (BDT)**
	2018	**2019**	**2020**	**2021**	
Dairy cows					
Local breeds					
Cross Breeds					
Dry cows					
Pregnant cows					
Heifer(s)					
Bull/ox					
Calf					
Total					

3. Daily Milk Yield/Production

Date or Month	Morning	Afternoon	Total

4. Feeding History:

	Collection of feed	Frequency of feed supply/day	Storage of feed	Pr;ice	Types
Roughage					
Concentrate					

5. Common Diseases faced

- LSD/ FMD/ BVD/ Bacterial Diarrhea/ BQ/ HS/ Mastitis/ Myiasis/ Hump sore/ Pneumonia
- Management of disease condition: Self-management/ Quack/ Veterinary doctor (Phone/Visit)
- Vaccination History: FMD/ BQ/ HS/ Rabies/ Tetanus/ Pox
- Anthelminthic History: Yes/ No (If Boostering: 6 months/ 1 year)

6. Farm Costing:

Category	Tk/ Month & Year (2018)	Tk/ Month & Year (2019)	Tk/ Month & Year (2020)	Tk/ Month & Year (2021)	Tk/ Month & Year (2022)
Roughage					
Concentrate					
Medication					
Labour					
Milk selling cost					
Transportation					
Management					

7. Gross Income:

Category	From milk	From heifer	From culled cow	From ox	From calf	From cow dung
Monthly income in 2018						
Monthly income in 2029						
Monthly income in 2020						
Monthly income in 2021						
Monthly income in 2021						

Biography of Author

I am Sharmin Akter, daughter of Muhammod Alauddin Bhuiyan and Amaten Nur Begum. I passed my Secondary School Certificate (SSC) examination from Khaja Ajmeri High School, Chattogram in 2014 and my Higher Secondary Certificate (HSC) examination from Chattogram Government Women College, Chattogram in 2016. Now I am an intern student in the Faculty of Veterinary Medicine at Chattogram Veterinary and Animal Sciences University. In the future, I would like to work as a veterinary practitioner and do research on clinical animal diseases in Bangladesh.