

Chapter I

Introduction

Bangladesh is a densely populated country. More than 156.7 million people are live in 1,47,570 kilometer area 47.5% people are related with agriculture. The contribution of agriculture in national GDP stands at 16.0%, where 6.5%. livestock contribute and 3% to national economy. (Bangladesh Bureau of Statistics., 2014). The livestock and agricultural products like milk, meat and crops fulfill the requirement of large population in Bangladesh. Among the other livestock products milk is considered as an important nutritional dietary source of all ages people of Bangladesh.

Considering the current demand and trends of milk production the cattle rearing is increasing simultaneously in Bangladesh. Intensive farming in urban area and small holdings backyard farming in rural area is contributing the production of milk in Bangladesh. Bangladesh has 24 million cattle, out of which 6 million are dairy cattle of local and crossbreds (Uddin et al., 2012). The total milk production is 2.95 million with an average 1.5 kg/day/cow (DLS, 2011).

Most of the cattle in Bangladesh are non-descriptive type without any specific breed or category (Kabir and Islam, 2009). The milk production of these indigenous cattle is much poorer in comparison to other exotic and crossbreed. The milk production may vary from 300- 400 liters per lactation period of 180 to 240 days (Vance et al., 2012). The crossbred cattle are comparatively better milk yielder than the local. The available crosses of different temperate breeds are Holstein Friesian and Jersey etc are also found in Bangladesh (Mondal et al., 2005). Therefore, progeny have been taken to improve the genetic potential as well as productivity of non-descript indigenous cow through cross breeding since 1970s (Bhuiyan, 2006). The number of crossbred cattle is increasing day by day with the spread of artificial insemination (AI) practices throughout the country (Rahman, et al, 1998).

The most economic trait of milk producing cattle are milk yield, calving interval, gestation length, conception rate, birth weight of calving rate etc. However, the production performance is not only depending on the genetic character but also the managerial activity of a farm.

The aim of my study was which types of breed are mostly used as dairy purpose in Chittagong area, as well as know about to their productivity. To achieve this aim the following objectives were undertaken in this current study.

Objectives:

1. To know the structure of current farms.
2. To know the production potentialities of the available cows of this farms.

CHAPTER-II

Materials & Methods

2.1. Study area and duration: The survey was conducted about 1365 cows from 36 dairy farms and for a period of three months i.e: July 07 to September 30, 2016 at Chittagong areas of Bangladesh. The areas were selected on the basis available localbreds and crossbreds which are artificially inseminated (AI) by DLS frozen semen, ACI frozen semen and BRAC frozen semen.

2.2 Animal Selection: The farmers under the study areas are reared different types of cattle. The available breeds are Holstein Friesian and the crossbred of Holstein Friesian, Sahiwal crossbred, Jersey crossbred and local indigenous.

2.3 Data collection: Data were collected from the farmers of selected farms by using the structured questionnaire. The questionnaire was developed in accordance with objectives of the study. It was designed in a simple manner to get accurate information from the dairy farmers. The questionnaire contained following information.

A. General identification and information of the selected dairy cow

Owners:

a) Name of the owner

b) Location of the owner

1) Hred Structure

a) Breed

b) Number of dry cows

c) Number of bulls

d) Number of calves

e) Number of yearling bulls

f) Number of milk yielding cows

B. Breed information of milking cow

a) Sire of the breed

- b) Dam of the breed
- c) Milk yield per day per litter
- d) Age of the breed
- e) Parity and lactation of the breed
- f) Body weight of the milking cow which is conducted by own in shefers method.

2.4 Statistical analysis: The collected data was compiled, tabulated and analyzed in accordance with the objectives of the study. The data were subjected to the Microsoft Excel (2010) to calculate Total, Average, Standard deviation (SD), Standard Error (SE) and percentage.

The data was also analyzed by using Statistical Analysis System (SAS 2008) to mean vale of parameters. The Duncan Multiple Range Test (DMRT) are used to compare the separation 5% ($p>0.05$) level of significance.

CHAPTER-III

RESULTS AND DISCUSSION

3.1. Herd structure:

Herd structure of dairy herds in the studied areas are present in the table.1 . Atotal 36 farms are selected from different place of chittagong area. Total 1365 cattle are available in studied farms. Table 1, indicated that milking cows number and percentage was higher than other types of animals. Both mature bulls and yearlings bulls were lowers. It can be found that the farmers were keeping cows for longer times for getting more milk from cows. So the table is displayed that the farmers are keeping cows for milk purpose and average milking cows are 24.88 ± 11.51 in number in each farm.

Table 1: Number of cattle in different farms

	Dry cows	Bulls	Calves	Yearling Bulls	Milking Cows	Grant total
Total	159	39	230	23	914	1365
Percentage of Total	11.65	2.86	16.85	1.68	66.96	100

The table 2 is demonstrated number of total milking cows according to their age. Farmers are keeping 4 years milking cow more than other olds cow. There were 363 milking cows are in 4 years out of 914 different age cows.

Table 2: Number of milking cow according to age

Milking cows								
	4 year	5 year	6 year	7 year	8 year	9 year	10 year	Grant total
Total number of cows	363	236	173	91	34	16	1	914
Percentage	39.72	25.82	18.93	9.96	3.72	1.75	.1	

The table 3 is exhibited the milk production of different cross breeds along with their Sire and Dam.

3.2: Breeds their daily milk yield and live weight

Table 3: Different breeds their daily milk yield and live weight

Traits	Breeds					
	Holstein Friesian Cross breed With BRAC Bull	Holstein Friesian Cross Breed with ACI Bull	Holstein Friesian Cross breed With DLS Bull	Jersey Cross breed with DLS Bull	Sahiwal Cross breed With DLS Bull	Local breed Unknown bull
Daily milk yield day/L	26.00 ^a ± 3.99	25.79 ^a ± 3.45	24.59 ^a ± 5.33	16.30 ^b ±3.98	10.80 ^c ±2.68	3.43 ^d ±1.05
Average morning Milk yield cow/day/L	15.11 ^a ± 2.42	15.14 ^a ± 2.22	14.29 ^a ± 3.08	9.87 ^b ± 2.33	6.80 ^c ± 1.30	2.69 ^d ± 1.24
Average evening milk yield cow/day/L	10.91 ^a ± 1.74	10.64 ^a ± 1.64	10.29 ^b ± 2.45	6.43 ^b ± 1.80	4.00 ^c ± 1.41	0.74 ^d ± 1.12
Average live weight/ cow	430.73 ±30.20	414.86 ±30.31	396.62 ±65.36	330.67 ±36.32	332.20 ±20.62	171.18 ±30.11

The different superscript a and vindicated the means are significantly at 5% level of significant.

Holstein Friesian (HF) cross breed which sire was HF BRAC bull and dam was HF cross breed. There yield was 26.02± 3.99 litter milk per day where in morning they produce 15.11± 2.42 litters daily and evening they produce 10.91± 1.74 litter daily and their average live weight is 430.73±30.20 kg.

Holstein Friesian (HF) cross breed which sire was HF ACI bull and dam was HF cross breed. Their yield was 25.79 ± 3.45 liter milk per day where in morning they produce 15.14 ± 2.22 liters daily and evening they produce 10.64 ± 1.64 liters daily and their average live weight is 414.86 ± 30.31 kg.

Holstein Friesian (HF) cross breed which sire was HF DLS bull and dam was HF cross breed. They yield 24.59 ± 5.33 liters of milk per day where in morning they produce 14.29 ± 3.08 liters daily and evening they produce 10.29 ± 2.45 liters daily and their average live weight is 396.62 ± 65.36 kg.

Jersey cross breed which sire was **Jersey** DLS bull and dam was **Jersey** cross breed. They yield 16.30 ± 3.98 liters milk per day where in morning they produce 9.87 ± 2.33 liters daily and evening they produce 6.43 ± 1.80 liters daily and their average live weight is 330.67 ± 36.32 kg.

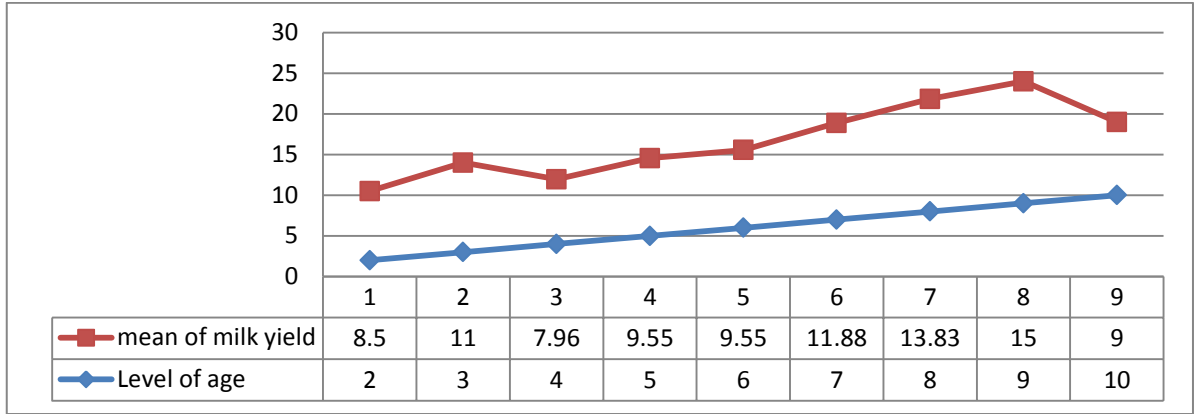
Sahiwal cross breed which sire was **Sahiwal** DLS bull and dam was **Sahiwal** cross breed. They yield 10.80 ± 2.68 liters milk per day where in morning they produce 6.80 ± 1.30 liters daily and evening they produce 4.00 ± 1.41 liters daily and their average live weight is 332.20 ± 20.62 kg.

Local breed which sire was **unknown** bull and dam was **Local** bred. They yield 3.43 ± 1.05 liter milk per day where in morning they produce 2.69 ± 1.24 liters daily and evening they produce 0.74 ± 1.12 liters daily and their average live weight is 171.18 ± 30.11 kg.

From the above discussion we can interpret that highest milk yielding breeds consequence are Holstein Friesian cross breed BRAC bull > Holstein Friesian cross breed ACI bull > Holstein Friesian cross breed DLS bull > Jersey cross breed DLS bull > Sahiwal cross breed DLS bull > Local breed and the average weight consequence is also same. So another interpretation is that milk yield is related with body weight when body weight increase milk production is also increase.

Crossbred cows in the milk pockets and urban areas produce 600-800 kg milk/lactation. Infertility or delayed fertility has also been observed low milk production of the local cows is primarily due to poor genetic makeup, inadequate feeding and nutrition, high incidence of diseases, parasites, and poor management (Bangladesh National conservation strategy, 2016).

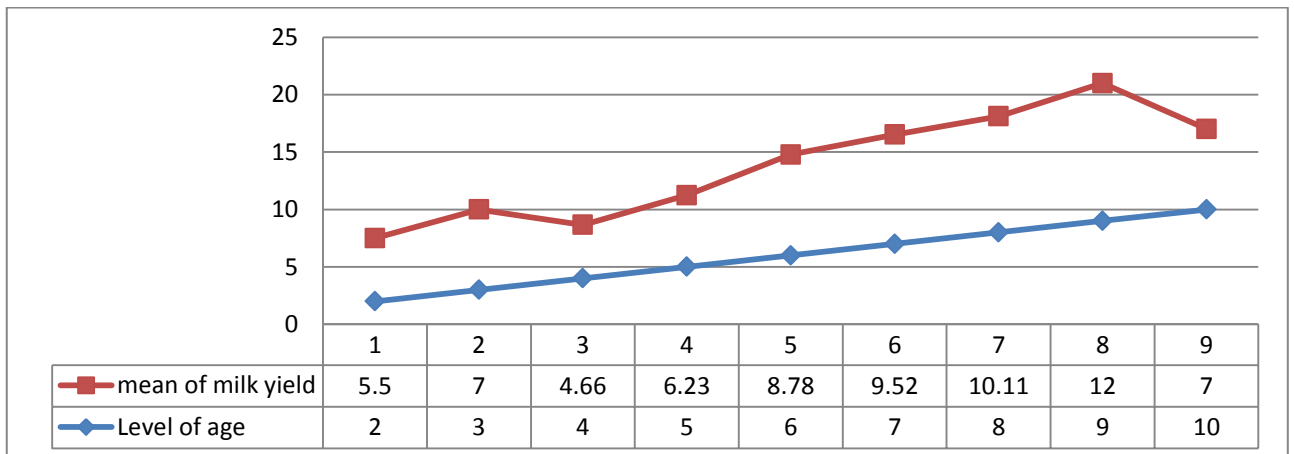
3.3. Morning milk yield according to age



Graph 1: Morning milk yield according to age

The above graph is presenting that average milk yield of cows in morning according to their age. Milk is up and down in different age but in the age of 9 cows are go in the pick production. On that time average milk yield in morning was 15 liters per day per cows of cross breed. Then in the 10 years old it decreasing so the curve is goes down. Average morning milk yields litter per day per cows are 2nd year, 3rd year, 4th year, 5th year, 6th year, 7th year, 8th year , 9th year and 10th year respectively 8.50 ± 0.70 , 11.00 ± 0.00 , 7.96 ± 5.77 , 9.55 ± 6.23 , 9.55 ± 6.23 , 11.88 ± 5.99 , 13.88 ± 4.37 , 15.00 ± 1.41 , 9.00 ± 0.00 .

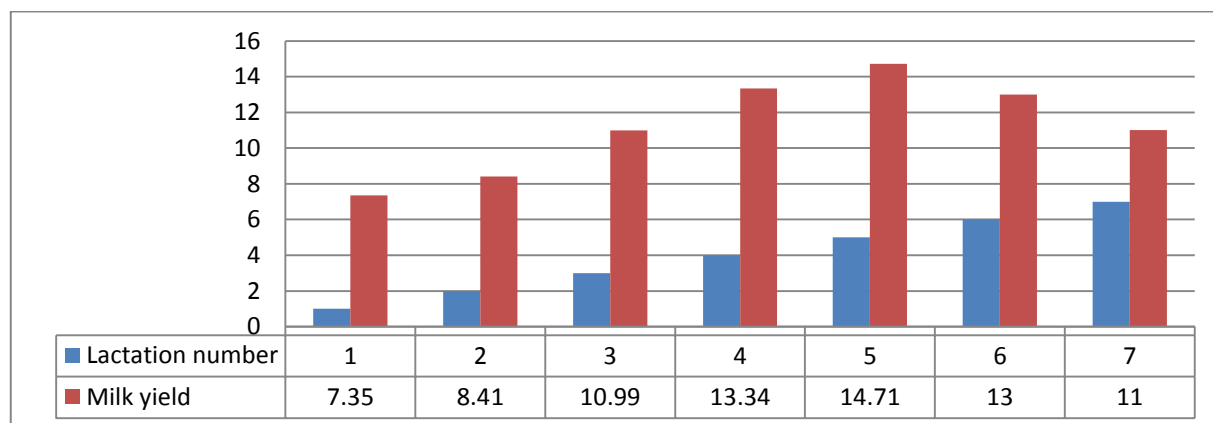
3.4. Evening milk yield according to age



Graph 2: Evening milk yield according to age

The graph 2 is present that average milk yield of cows in evening according to their age. Evening milk yield is different in different age. Pick production is occurred in evening at the age of 9 years and lowest is in the age of 2 years old. Average evening milk yields litter per day per cows are 2nd year, 3rd year, 4th year, 5th year, 6th year, 7th year, 8th year , 9th year and 10th year respectively 5.5 ± 0.70 , 7.00 ± 0.00 , 4.66 ± 4.7 , 6.23 ± 5.12 , 8.78 ± 4.28 , 9.52 ± 2.32 , 10.11 ± 3.21 , 12.00 ± 2.82 , 7.00 ± 0 .

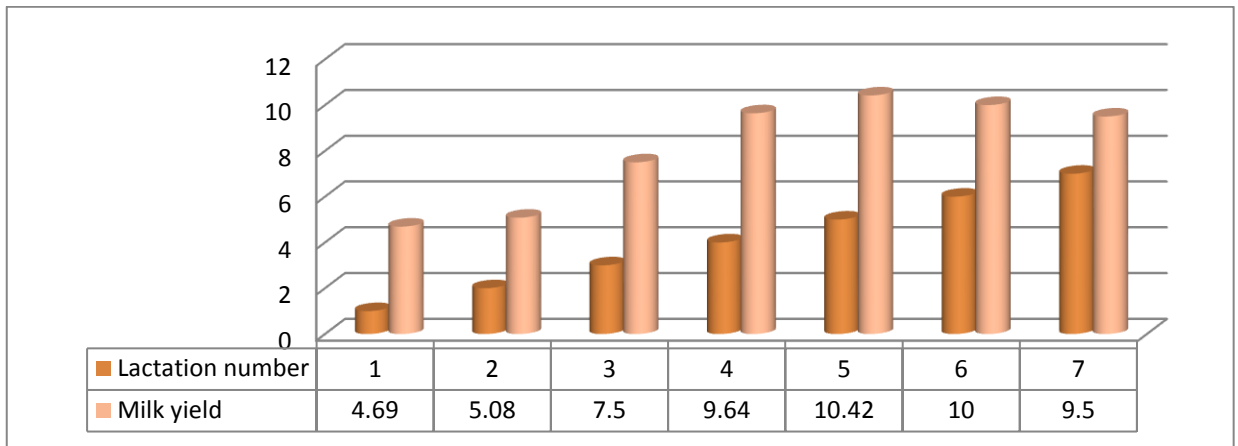
3.5. Morning milk yield according to lactation period



Graph 3: Morning milk yield according to lactation period

The above graph is illustrated that morning milk yield of cows according to their lactation period. Total length of day of giving milk for at a time is called one lactation period. In my study I calculated up to 7th lactation period of data. Pick production in morning of the cows occurred in 5th lactation period and lowest production occurred in 1st lactation period. Average milk production in morning of cows are 1st lactation period, 2nd lactation period, 3rd lactation period, 4th lactation period, 5th lactation period, 6th lactation period, 7th lactation period are respectively 7.35 ± 5.56 , 8.41 ± 5.65 , 10.99 ± 5.78 , 13.34 ± 4.88 , 14.71 ± 3.77 , 13 ± 0.00 , 11.00 ± 0 . Litters per day.

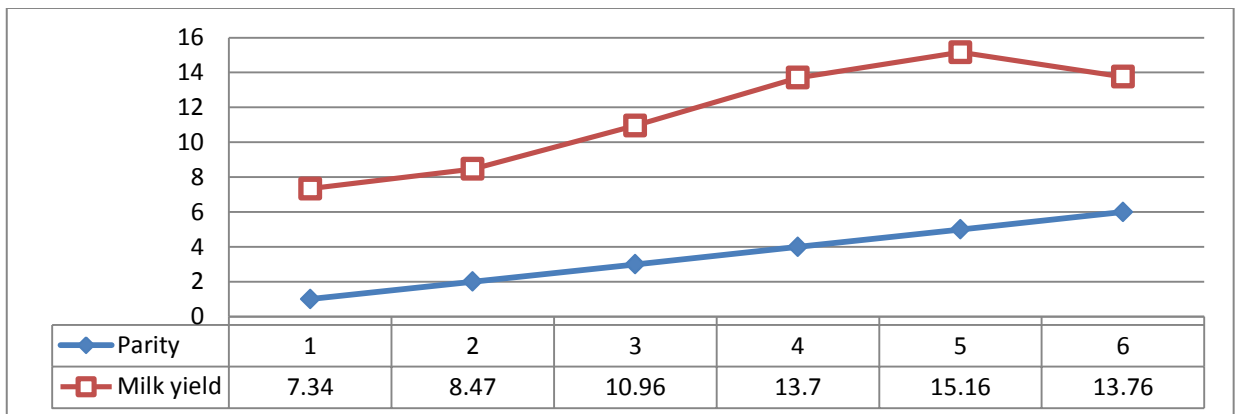
3.6. Evening milk yield according to lactation period



Graph 4: Evening milk yield according to lactation period

The above graph is also representing the evening milk yielding of cows according to their lactation period. Here I calculated up to 7th period of lactation also. Highest average milk yield in evening 5th in the 5th lactation period and the lowest is in the 1st lactation period. Average milk production in morning of cows are 1st lactation period, 2nd lactation period, 3rd lactation period, 4th lactation period, 5th lactation period, 6th lactation period, 7th lactation period are respectively 4.69±4.54, 5.08±4.83, 7.50±4.69, 9.64±2.99, 10.42±2.82, 10±00, 9.5±00 liters per day per cow.

3.7. Morning milk yield according to parity:

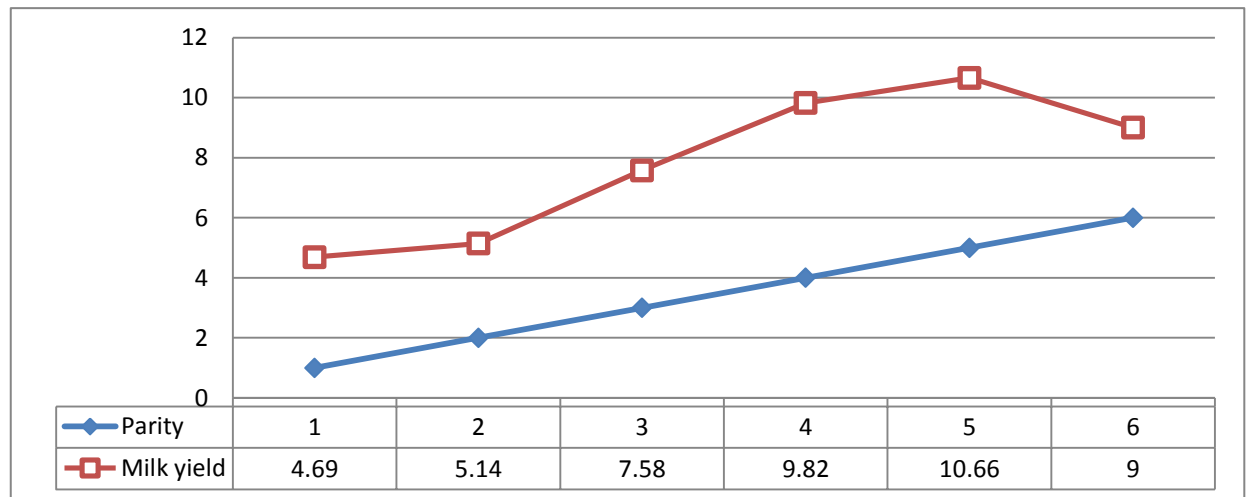


Graph 5: Morning milk yield according to parity

The above graph is representing milk yield in cross breed cows according with their parity. I calculated here up to 6th parity. Calving of a cow is called also parity. First calving of cow called 1st parity. The pick production in morning occurred in 5th parity that is average 15.16 liters of milk per cow per day and the lowest production in morning occurred in 1st parity that is 7.34 liters of milk per day per cow. Average milk production in morning of cows are 1st parity , 2nd parity, 3rd parity, 4th parity, 5th

parity and 6th parity are respectively 7.34 ± 5.56 , 8.47 ± 5.61 , 10.96 ± 5.87 , 13.7 ± 4.41 , 15.16 ± 3.92 , 13.76 ± 00 liters per day per cow.

3.8. Evening milk yield according to parity:



Graph 6: Evening milk yield according to parity

The above graph is also representing the evening milk yield of cows according to their parity. Here I also calculated up to 6th parity. The highest production in evening also occurred in 5th parity of cows and lowest production occur in 1st parity. Average milk production in evening of cows are 1st parity, 2nd parity, 3rd parity, 4th parity, 5th parity and 6th parity are respectively 4.69 ± 4.54 , 5.14 ± 4.82 , 7.58 ± 4.65 , 9.82 ± 2.81 , 10.66 ± 3.01 , 9 ± 00 liters per day per cow.

CHAPTER-IV

Limitations:

1. Time was too short to collect the data.
2. Sometimes farmers are annoyed to cooperate.
3. Body weight of cattle was taken by formula but it is more accurate to take by weighing machine.
4. Sometimes farmers were not given accurate result of milk yield when they suck twice in a day.
5. Sample was too short to precious result.

Conclusion

In this study an attempt was made to evaluate the actual figure of cattle in different dairy farms in Chittagong area and evaluate the breeds with their production potentials.

It was found that production of dairy cows depends on their age, parity lactation period and body weight. Milking cows pick production occur in nine years of age, highest milk yield occurred in 5th parity and as well as 5th lactation period.

The difference between morning yields of milk per day per litters and evening milk yields per day per litter. In morning cows are produce more rather than the evening.

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Appendix

Title: Study on cows farms structure and milk production of Chittagong area.

Owners Name:

Village :

Union:

Thana:

District:

TABLE: 1 Herd Schedule

Farm Name	Breed	No of dry Cows	No. of Bulls	No. of calves	No. of yearling bulls	No. of milk yielding cows					
						4 year	5 year	6 year	7 year	8 year	9 year
	Holestein Frisien										
	Jersy										
	Sahiwal										
	Local										

TABLE: 2

Cow ID	Breed	Sire	Dam	Milk Yield/day/L		Age	Parity	Day in Lactation	No. of Lactation period	Body weight
				Morning	Evening					

Acknowledgements

The author wishes to acknowledge the immeasurable grace and profound kindness of Almighty “Allah” the supreme authority and supreme ruler of universe, who empowers the author to complete the work successfully.

The author feels proud in expressing his deep sense of great gratitude and indebtedness to respected teacher and tutor Prof Dr. Kabirul Islam Khan, Department of Genetics and Animal breeding, Chittagong Veterinary and Animal Sciences University for his supervision and guidance for this study.

The author would like to thanks and appreciation to his benevolent teachers Prof. Dr. Md. Ahasanul Hoque, Dean, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University for his trustworthy and scholastic supervision.

The author would like to give special thanks to Dr. A K M Saifuddin, Director, External Affairs, CVASU for his valuable advice and constant inspiration.

The author like to express his heartfelt appreciation and thanks to the farm owners for cooperating during the study period.

The Author

Biography

This is Md. Mominul Islam, son of Late Nozir Hossain and Mohiron Nessa. I passed Secondary School Certificate examination in 2007 followed by Higher Secondary Certificate examination in 2009. Now I am an intern veterinarian under the Faculty of Veterinary Medicine in Chittagong Veterinary and Animal Sciences University. In future I would like to work as a veterinary practitioner and do research on animal production in Bangladesh.