**CHAPTER-1**

**INTRODUCTION**

Bangladesh is a densely populated developing country lies in the Northeastern part of South Asia where most of the rural people are dependant for their livelihood mainly on cropping and non-cropping agricultural sector like livestock which plays a vital role in nutrition, income generation, survivality and creates self-employment opportunities in Bangladesh. The crop sector showed an annual growth rate of 1.2% while fisheries, livestock and forestry sub-sectors experienced 5.3, 5.6 and 4.0% growth rates respectively (Mondal, 1999). Livestock sub-sector plays a crucial role in the traditional farming and contribute in national economy. According to Bangladesh Economic Review (2006), the per annum growth rate of 7.23% in GDP (Gross Domestic product) in 2004-2005 for livestock was the highest in all sub-sectors (Uddin, 2010) The livestock sub-sector is contributed 13% of total foreign exchange earnings and generated 20% of full time employment in Bangladesh (BBS, 2004). **Table-1: Contribution of Livestock to the Economy of Bangladesh**

|  |  |
| --- | --- |
| Particular | Contribution (%) |
| Employment (Full time) |  25 |
| Employment(Part time) |  53 |
| Export earnings (Only in livestock) |  13 |
| Animal draft power in agriculture |  95 |
| Rural transport |  7.0 |
| GDP |  13 |
| Organic manure production |  10  |

 **Source: FAO, 2005**

Livestock plays an important role in the national economy of Bangladesh where Cattle population is 24.7 million (BBS, 2013) including 7 million milking cows(DLS, 2013) of which 92% are indigenous and 8% are crossbred cows (BBS, 2013) and yearly milk production is about 50.67 lakh metric tons (DLS, 2012-13) .The numbers of dairy farms are 1.4 million with an average small herd size of 1-3 cows (Hemme, 2008) which is an integral part of the mixed farming systems in Bangladesh (Saadullah, 2001) and a predominant source of income and nutrition (Haque, 2009).The county has cattle population about 1.79% of the world and 5.47% of Asia (FAO, 2010). The supply of the domestically produced livestock products (Meat, Milk, Eggs) are increased by amount 1.2% annually (DLS, 2013).

 **Table-2: Requirements, Production and Shortage of Livestock Products.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Items | Requirements per day | Availability per day | Annual total requirements | Total production | Total annual shortage |
| Milk | 250 ml | 70 ml | 10114mt. | 2254mt. (22.4%) | 7860mt. (77.6%) |
| Meat(Beef,Cheavon,Mutton,Chicken) | 120 gm | 60 gm | 990mt. | 446mt. (45%) | 544mt. (55%) |
| Egg(Chicken and Duck) | 0.28(no.) | 0.17(no.) | 22000 (million no.) | 18000 (million no.) (81%) | 4000(million no.) (19%) |

 **Source: FAO, 2005**

In Bangladesh, the highest cattle densities of 145 large ruminants per square kilometer compared with 90 for India, 30 for Ethiopia, and 20 for Brazil (Karim, 1997). In Bangladesh the best local cattle are available in some selected areas like Pabna, Sirajgonj, Chittagong and Munshigonj areas. The Government of Bangladesh therefore applied special emphasis on development of livestock sectors. In fact, about 90% of the cattle population in Bangladesh in zebu type termed as low producing indigenous cattle. Among them some improved varieties such as Red Chittagong cattle (RCC), Pabna cattle, Munsiganj cattle, Manikganj cattle and North Bengal Grey (NBG) cattle are potential producers of milk, meat and are found in different localities of the country. In Chittagong, beautiful Red cattle with some distinct characteristics are seen known as Red Chittagong Cattle (RCC) (Khan *et al*. 2000). RCC rearing was a profitable farming in Chittagong district and it is one of the improved and promising domestic animal genetic resource found all over the Chittagong district at varying concentrations. The Red Chittagong Cattle have distinct phenotypic characteristics. They are small in size with red coat color, distinct reddish color of muzzle, horn, hoof, ears, eyeball, eyebrow, vulva and tail switch (Hussein, 2005). The Red Chittagong are well adopted to adverse climatic condition and developed in disease resistance power, service per conception lactation length, one calf per year production etc ( Akhter *et al.,*2002). Others breed is well developed to meat and milk production (Deb *et al.,* 2005). Thus, the present study is the modest effort whether the RCC farming practices has any positive impact for improving livelihood for rural poor in Bangladesh.

There are three major dairy production systems in the country .These are-extensive, intensive and traditional (Uddin et al 2009a).Most of the cattle in Bangladesh are non-descriptive and low yielding and few crossbred with Shahiwal, Red Chittagong and pabna cattle. High yielding crossbred like Jersey and Holstein-Friesian are found in commercial level. The local cattle yields 300 to 400 Liters of milk per lactation period of 180 to 240 days and the crossbred yields 600 to 800 Liters of milk per lactation of period of 210 to 240 days (Islam, 1992). About 64% milk in Bangladesh comes from cattle (FAO, 2004). But it can fulfill only 13.6% of the total requirement in Bangladesh (BLRI, 2001). The consumption rate also increase 4% per year (Hemme, 2008). Daily requirements of a person (92 kg/person/year) as indicated by the World Health Organization (WHO). Smallholder livestock owners who represent 70-80% of the total milk produced in the country (Jabbar et al 2005).The dairy farming in this country is dependent on crop residues, natural resources and open grazing system as a source of feeds. A good number of small and medium sized dairy farms with the main objectives to produce milk have been develop mostly in urban and semi-urban milk pocket areas like Pabna, Sirajganj, Manikganj, Munshiganj, Faridpur, Madaripur, Kishorganj, Rangpur and kushtia district (Amin, 1994). The profitability of a dairy farm depends on productive and reproductive performance of the animals. Milk production of both local and exotic breed depends not only on the genetics, but also its interaction with the environment, manage mental factors. Good animal health is vital for maximum production since cattle must be healthy to reach their performance potential (The Merck Veterinary Manual, 2005). In Bangladesh, the government, cooperatives, the private sectors and a few non-governmental organizations (NGOs) provide veterinary services and artificial insemination facilities to the dairy farmers.

**Ashrafuzzaman (1995)** conducted a study to investigate the socio-economic characteristics of indigenous and cross breed dairy cows owners to analyze the relative profitability. The per day total cost of raising a cross breed cow (tk. 35.05) was a little higher over an indigenous cow 6.65 liters for a cross-bred cow which was about double the average milk yield per day of 3.62 liters tk.15.64 and tk. 45.83 for indigenous and cross-bred dairy cow respectively .

**Kabir (1995)** conducted a study to analyze the economic performance where net return per farm was found Tk.14463, tk. 21773 and tk. 58173 annually and investments per taka return were tk. 1.19, tk. 1.27 and tk. 1.37 respectively for local, and cross and cross-bred farms.

**Karim and Begum (1988)** reported that, women’s involvement in cattle rearing occurs in Bangladesh and 42% of cattle owned by households were milch cow of which only 14% was of improved type. Average quantity of milk yield per cow was 2.77 litters. The average annual cost of feed, treatment and AI per cows Tk. 3972 of which feed cost constitutes about 98%.

**Rahman and Akteruzzaman (1994)** showed that the milk yield per animal per day in small, medium and large herd size were 3.87, 3.37 and 2.38 liters respectively while the cost of production per liter amount to tk. 8.70, 9.22, and 12.33 respectively and net returns per cow per day were tk. 8.07 and tk 4.65 respectively .

**Rahman and Raman (1991)** conducted a study on economic analysis of dairy enterprise that feed cost was higher in the urban and milk pocket areas than in the rural and semi-urban areas.

**Sanchez et al., (2004)** reported that an increase of milk production between 0.35 and 0.46 kg/cow/day might be expected after anthelmentic treatment in lactating dairy cattle.

**Khan *et al*.( 2000)** reported that, Red Chittagong cattle has some distinct characteristics and produced 2.0 ± 0.65 kg milk in farm condition and 1.80 ± 0.87 kg in rural condition per day .

**Bajaw *et al*. (2004)** stated that season of calving is significantly (P<0.01) affected milk yield and lactation length. Winter calves produced more milk (1546 kg) as compared to summer calves (1362kg).

**Aktürk *et al*. (2010)** reported that, Supply of abundant green fodder in winter as compared to summer season was given a plausible cause. Maize silage is the most economic and common forage and is used very commonly in the dairy cattle breeding by enriching it with protein in USA, Netherlands, Germany and France and it has an important effect on the milk yield .

A study on household RC dairy cattle rearing is therefore, urgently needed to acquire the relevant information on profitability at household level dairying practices at some selected areas of Chandanaish Upazila with a view to fulfillment of production report **by setting the following specific objectives:**

1. To describe the socio-economic profiles of the RCC farm owners and their families.
2. To estimate per lactation cost and return of rearing of RCC cow.
3. To identify some reasons for preference of rearing RCC cows and give suggestions for improving and expansion of rearing Red Chittagong Cattle throughout the country like as Chittagong areas in Bangladesh.

**CHAPTER-2 MATERIALS AND METHODS**

The socio economic research study was conducted on the basis of field data which was collected from individual RCC rearing household. There are various methods of data collection for agricultural economics research. The choice of methods of data collection depends on availability and location of farm families and transport facilities. Farm business survey (FBS) method is one of the recognized methods which are widely used in such study. The present study was performed by the collection of data by a questionnaire, because it was considered to have some advantages over other methods.

**2.1:Selection of study area:**

Selection of a study area is an important step for the study to achieve the objectives .One upazila of Chittagong district Chandanaish selected randomly to conduct the study because density of Red Chittagong Cattle in that particular areas were high. Both convenient and random sampling techniques were applied for sample selection for conducting the field survey. **2.2**: **Duration of study:** The study on economic analysis of Milk production of different type of farming in different areas of Chittagong district was conducted actually from September 2015 to October 2015.

**2.3: Sampling Techniques:**  The survey was conducted taking 30 RCC farm owners from each selected Upazilla. Thus, a total of 30 sample farmers were surveyed during September, 2015 by direct face-to-face interview in a single visit using a simple questionnaire to achieve the objectives of the study.

**2.4: Selection of sample and sampling procedure:** Selection of representative sample was one of the crucial aspects for the study. Purposive sampling technique was used for selecting the sample. In total 30 farms were visited for collecting data on the basis of backyard, semi-commercial and commercial farming. The economic analysis was done on the basis of different farming conditions. The types of farming were categorized according to the following conditions:

**2.5: Backyard Farming:** This farming system is more common in rural areas. The average herd size ranges 1 to 4 Farmers practise a cut and carry feeding system and give scanty amount of concentrates only during the peak lactation period.

**2.6: Semi-commercial Farming:** This farming system comprises farms with 5-15 dairy cows of which 70% are cross-bred. Farm grown crop residues (i.e. rice straw) and purchased concentrates feeds are used for feeding. The milk production per cow per year is higher.

**2.7: Commercial Farming:** This system uses the highest proportion of graded cows. They enjoy the benefit of a higher milk prices. More concentrates and supplementary feeds such as vitamins, minerals and other feed additives etc are used for this reason production cost is higher. The provision of veterinary health care, artificial insemination and other support services are available at lower costs.

**2.8: Preparation of questionnaire:** The questions of the study schedule included the following information: a) General information of the dairy owner such as, family composition, literacy level, occupational status etc. b) Information on socio-economic profiles, average milk yield per lactation, lactation period and frequency of disease incidence regarding breeds and farming problems.

**2.9: Methods of data collection:** Data were collected by personal interview with the individual farm owners through farm to farm visit. Data collection the objectives of the study were clearly explained to the respondents and Question was asked systematically. Farmers usually did not keep records so, very difficult to collect actual data. Data on daily milk yield (lit), lactation length (days), lactation yield (lit), daily costs returns and faced problems of dairying were recorded. **2.10: Analytical technique:** All the collected data were processed and analyzed in accordance with the objectives of the study. In the progress of analysis of collected data various statistical tools like averages, percentages, tables, graphs and diagrams were applied in order to make the study worthy, informative and useful for the purposes. Benefit-Cost Analysis also estimated to find out the profitability of the farm owner.

**Weaknesses of the study:**  The major weaknesses of the study were shortage of time and reliable field data because the rural households not maintained their farm record related to costs and returns.

**CHAPTER-3**

**RESULTS AND DISCUSSIONS**

**3.1: Socio Economic Profiles of RCC Farmers:**

**3.1.1: Age**

Members of the whole family were classified into 4 age groups of 0-10 years, 11-30 years, 31-50 years and 50 years and above. Considering all the age groups in Table-3 showed that, maximum male and female members were 11-30 years age groups and the lowest number of farm family members lies in 50 and above year’s age group.

**Table-3: Distribution and Socio Economic Profiles of RCC farm Families:**

|  |  |  |  |
| --- | --- | --- | --- |
| **General Characteristics** | **Categories** |  **Number** | **Percent** |
| Age | 0-10 years | Male |  20 | 11.24 |
| Female |  23  | 12.92 |
| 11-30 years | Male |  35 | 19.66 |
| Female |  30 | 16.85 |
| 31-50 years | Male |  24 | 13.48 |
| Female |  24 | 13.48 |
| 50 and above | Male |  10  | 5.62 |
| Female |  12 | 6.74 |
| **ALL** |  **178** | **100.00** |
| Literacy level of farm family members | Illiterate |  32 | 17.98 |
| Primary |  75 | 42.13 |
| Secondary |  45 | 25.28 |
| Higher Secondary |  20  | 11.24 |
| Honors and Above |  6 | 3.37 |
| **ALL** |  **178** | **100.00** |
| Occupation of farm family members | RCC farming with crop agriculture |  23 | 34.85 |
| RCC farming with service |  15 | 22.72 |
| RCC farming with business |  20 | 30.30 |
| RCC farming and others |  8 | 12.12 |
| **ALL** |  **66** | **100.00** |
| **General Characteristics** | **Categories** |  **Number** | **Percent** |
| Land Ownership of Farm owners | Land less farmers (0- 0.50 acres) |  6 | 20 |
| Small and marginal (0.51- 1.50 acres) |  12 | 40 |
| Medium sized (1.51-2.5acres) |  7 | 23.33 |
| Large farmers (above 2.50 acres) |  5 | 16.67 |
| **ALL** |  **30** | **100.00** |
| Yearly Income Level of Farm owners | Below Tk. 50,000 |  5 | 16.67 |
| Tk. 50,001- Tk.1,00000 |  7 | 23.33 |
| Tk. 1,00001- Tk.1,50000 |  10  | 33.33 |
| Above Tk. 150,000 |  8  |  26.67 |
| **ALL** |  **30**  | **100.00** |

 **Source: Field Survey, 2015**

**3.1.2: Literacy level** **of farm family members:**

Table-3 also showed the literacy level of the family members of the RCC farm owners. Literacy level were classified into Illiterate, Primary, Secondary, Higher secondary, Honors and above respectively. Maximum 42.13 percent of the family member lies in primary level and lowest 3.37percent of the family member lies in Honors and above level.

**3.1.3: Occupation** **of farm family members:**

Occupation of the RCC farm family members was classified into four categories, which was also showed in the Table-3. It was showed that, highest 34.85% farmers involved in RCC farming with crop agriculture and lowest 12.12% farmers involved in RCC farming and others actives.

**3.1.4: Land ownership:**

According to the size of land holdings, the RCC farm owners were classified into 4 groups.Table-3 shows that highest 40 % of the farm owners were small farmer and the lowest 16.67 % farm owners were large farm sized.

**3.1.5: Yearly income level of the farm owner:**

Yearly income level of RCC farm owner’s is shown in the Table-3. It revealed that, maximum 33.33% of the farmer’s income Tk.150, 000 and the lowest 16.67% of the farmer’s income Below TK. 50,000.

 **Graph- 1: Land ownership of farm owner Graph- 2: Yearly income of farm owner**

**3.2: Productive, Reproductive and Management Performance of RCC Cows:**

Graph-3: Bar diagram of different categorical variables

The chance of milk production of age of first calving (>36 m) was 4.58 times higher than that age of first calving (≤ 36 m).The probability of milk production (> 2 liters) of lactation period (>8 m) was 20.65 times higher than that lactation period of (≤ 8 m).

The bar diagram shows the frequency percent distribution of each variable where 36(34.3%) and 34(32.4%) cows where in third and second parities respectively. The maximum frequency of milking daily once was found 87(82.9%), and 29(27.6%) owner collect milk by Gowala and remaining 76(72.4%) by himself. The proportion of vitamin used during lactation period was only 29(27.6%). It was observed that 98(93.3%) owner used regular anthelmentics whereas anthrax and FMD vaccine were used 20(19%) and 23(21.9%) respectively and the remaining 62(59%) was not use vaccine.

**3.3: Cost of Rearing RCC Cows:**

The cost of rearing RCC cows were classified as cash cost where direct cash expenditure incurred were calculated from daily records and non- cash costs were fixed and family supplied input costs. The cost and return were estimated from the collected data from Chandanaish Upazilla under Chittagong district. Table-4 shows that, yearly estimated total cost of RCC farm owners. Total estimated full cost of rearing RCC per year at Chandanaish in Backyard ,Semi-Commercial ,Commercial farming in 40691tk,43540tkand 54490tk respectively which indicate that costs of rearing RCC at higher in Commercial farming because of lack of fodders and high prices of concentrate feeds. Table-4 also indicate that the average cash cost was the major expenditure incurred by concentrate feed which was 62.40% and out of non-cash cost the maximum cost incurred by labour cost which was 10.14% of total cost.

 **Table-4: Rearing cost of Red Chittagong Cattle in Bangladesh**

|  |  |
| --- | --- |
| **Particulars** | **Per Month Per Cow recurrent Cost** |
| **Backyard Farm****n=20** | **Semi-commercial Farm n=8** | **Commercial Farm****n= 2** | **All average (N=30)** |
| **In taka** | **%** | **In taka** | **%** | **In taka** | **%** | **In taka** | **%** |
| **Cash cost:** |  |
| **Straw** | 3240.0 | 7.96 | 3420 | 7.85 | 3500.0 | 6.42 | 3386.67 | 7.41 |
| **Concentrate** | 27000 | 66.35 | 29250 | 67.18 | 29250 | 53.68 | 28500 | 62.40 |
| **Vet. Care** | 960.25 | 2.36 | 1000 | 2.30 | 1000 | 1.84 | 986.75 | 2.17 |
| **A.I Cost** | 150.25 | 0.37 | 155 | 0.36 | 160 | 0.29 | 155.08 | 0.34 |
| **Others** | 550.5 | 1.35 | 560 | 1.29 | 560 | 1.03 | 1670.5 | 1.22 |
| **Total (cash cost)** | 31901 | 78.40 | 34385 | 78.97 | 34470 | 63.26 | 34699 | 73.54 |
| **Non-cash cost:** |
| **Straw** | **4200** | **10.32** | **4200** | **9.65** | **4210** | **7.73** | **4203.33** | **8.88** |
| **Green Grass** | **3240** | **7.96** | **3250** | **7.46** | **3250** | **5.96** | **3246.67** | **6.86** |
| **Labor cost** | **1200** | **2.95** | **1200** | **2.76** | **12000** | **22.02** | **4800** | **10.14** |
| **Depreciation on housing** | **300** | **0.74** | **350** | **0.80** | **400** | **0.73** | **350** | **0.74** |
| **Dairy equipment cost** | **150** | **0.37** | **155** | **0.36** | **160** | **0.29** | **155** | **0.38** |
| **Total (Non cash cost)** | **8790** | **21.60** | **9155** | **21.03** | **20020** | **36.74** | **12655** | **26.72** |
| **Total Cost** | **40691** | **100** | **43540** | **100** | **54490** | **100** | **47354** | **100** |

 **Source: Field survey, 2015**

**3.4: Returns of rearing of Red Chittagong Dairy Cows:**

Total estimated return of rearing cows per month in backyard, semi-commercial and commercial farming and all average were **Tk.** **44000, Tk. 53100, Tk. 62750 and Tk. 53283.33** respectively.

**Backyard Farm:** Out of return the major portion of the income from milk was 81.82%, followed by 14.09% and 4.09% income from calf and cow dung and sac respectively.

 **Semi-commercial Farm:** Out of return the major portion of the income from milk was 84.75%, followed by 11.86% and 3.39% income from calf and cow dung and sac respectively.

**Commercial Farm:** Out of return the major portion of the income from milk was 86.77 %, followed by 10.36% and 2.89% income from calf and cow dung and sac respectively.

**All** (**average**)**:** Out of return the major portion of the income from milk was 84.74% followed by 11.89% and 3.38% income from calf and cow dung respectively.

 **Table- 5: Returns of rearing Red Chittagong Cattle in Bangladesh.**

|  |  |
| --- | --- |
| **Particulars****of Return** | **Per cow Returns per lactation** |
| **Backyard Farm (N=20)** | **Semi-commercial Farm (N=8)** | **Commercial Farm (N=2)** | **All average (N=30)** |
| **In taka** | **%** | **In taka** | **%** | **In taka** | **%** | **In taka** | **%** |
| Income from milk | 36000.00 | 81.82 | 45000.00 | 84.75 | 54450.00 | 86.77 | 45150.00 | 84.74 |
| Income from calf | 6200.00 | 14.09 | 6300.00 | 11.86 | 6500.00 | 10.36 | 6333.33 | 11.89 |
| Income from cow dung and feed sacs | 1800 | 4.09 | 1800 | 3.39 | 1800 | 2.89 | 1800 | 3.38 |
| **Total Return** | **44000.00** | **100** | **53100.00** | **100** | **62750.00** | **100** | **53283.33** | **100** |
| Return over cash cost | **12099** | **-** | **18715** | **-** | **28280** | **-** | **19698** | **-** |
| Return over full cost | **3309** | **-** | **9560** | **-** | **8260** | **-** | **7043** | **-** |
| BCR over Cash Cost | **1.38** | **-** | **1.54** | **-** | **1.82** | **-** | **1.58** | **-** |
| BCR over Full Cost | **1.08** | **-** | **1.22** | **-** | **1.15** | **-** | **1.15** | **-** |

 **Source: Field survey, 2015**

**Graph-4: Returns of rearing of Red Chittagong Cattle**

Estimated **BCR** on the basis of cash cost for backyard, semi-commercial and commercial farming and all average were **1.38, 1.54, 1.82 and 1.58,** respectively. **BCR** on the basis of total recurrent cost for back yard, semi-commercial and commercial farming and all average were **1.08, 1.22, 1.15 and 1.15** respectively.

**3.5: Reasons for preference of rearing RCC farming practices:**

The Red Chittagong cattle (RCC) are one of the improved and promising varieties of domestic animal and full of genetic resource found in greater Chittagong district of Bangladesh.

**Table-6: Reasons for Preference of Rearing RCC Farming Practices.**

|  |  |  |
| --- | --- | --- |
| **Particulars of Preference** | **Number of farmers responds (N=30)**  | **Percent** |
| Looking very nice |  28 |  93.33  |
|  Less Disease incidence |  25 |  83.33 |
| Cost saving farming |  20 | 66.67 |
| Delicious of Milk  |  26 | 86.67 |
| High fat % of milk |  29 | 96.67 |
| Low death rate of calf |  22 | 73.33 |
| Calving every year |  24 | 80.00 |
| High lactation period |  26 | 86.67 |
| High conception rate |  22 | 73.33 |
| High Market Price of Cattle |  27 | 90.00 |
| High Milk Price |  22 | 73.33 |
| High adoption on local environment |  29 | 96.67 |
| High Demand Beef cattle |  28  | 93.33 |

 **Source: Field Survey, 2015**

It is very nice looking variety of cattle and good yielder. RCC produce milk and beef of high quality. The farmers in the study area have been rearing RCC since many years. Data in the table-4 showed that the highest (95%) farmers preferring of rearing RCC for high fat percentage of milk. The next important reasons for preferring RCC are calving every year, high milk price, looking very nice, high adoptability in environment, low death of calf, high market price of cattle and less disease incidence.

**3.6: Disease Incidence of RCC:**

Red Chittagong Cattle affected some diseases like FMD, BQ, Foot Rot, Brucellosis, HS, Mastitis and different parasitic infestation.M0st of the farmers reported that, their farm animals are affected in FMD in last year.

**CHAPTER-4**

 **PROBLEMS RELATED TO REARING DAIRY COWS**

The purposes of this section of the study is to identify the problems of raising dairy cows in the selected areas of Chittagong district and to make suggestion with a view to solving these problems for expanding rearing of dairy cow to alleviation of poverty under back yard, semi-commercial and commercial farming system in Bangladesh. The problems are as follows-

* **High prices of feed**: This is the most important problem of rearing dairy cows. About 100% farm owners complained about this problem.
* **Scarcity of quality feeds and fodder**: It is also an important constraint of rearing dairy cows. This problem faced about 60% of the farm owners.
* **Low prices of milk:** The prices of milk in the study areas were low. The average price of milk per liter in the study areas was estimated at taka 46-50, which was lower than the prices prevailed in many other areas of Bangladesh.
* **Inadequate veterinary care and service**: It was the important problem of rising rearing dairy cows in the study area. About 40% of the farm owners mention this problem.
* **Distance of AI centre**: AI is one of the most important methods used for the improvement of breeds. It was found that 45% of dairy farm owners faced the problems of distance of AI centre.
* **Lack of credit**: It is one of the important constraints for improvement of dairy enterprises. About 70% farm owners could not developed their dairy farm due to the lack of credit.
* **Lack of technology**: This is also an important point for development of dairy farming. If proper technological knowledge spread among farmer the farming system will developed rapidly. About 60% farmer faced this problem.

 **CHAPTER- 5**

 **CONCLUSION AND RECOMMENDATIONS**

**5.1: Conclusions:**

From this study it may be concluded that breed, body weight, age of first calving, lactation period, , parity, calving interval, types of food, vitamin use, type of floor and milking person were significantly associated with milk production. The study revealed that **BCR** on the basis of cash cost in Chandanaish upazilla were1.38, 1.54 and 1.82 in backyard, semi-commercial and commercial respectively, which shows that the RCC farming is profitable. On the other hand, **BCR** on the basis of full cost at Chandanaish upazilla were 1.08, 1.22, and 1.15 in backyard, semi-commercial, commercial respectively. BCR in full cost basis are higher than 1, which indicate that the RCC farming is profitable .We may conclude the RCC farming will be a profitable enterprise and subsistence farm business at rural condition under Chittagong District.

**5.2: Recommendations:**

Some important recommendations were suggested for making RCC dairy rearing enterprises at farmer’s level especially eastern part of Bangladesh are mentioned as under:

* The Directorate of Livestock Services should expand their veterinary services and other facilities. Veterinary treatment facilities should be extended up to union level and more veterinarians should be placed in this Upazilla.
* The shortage of feeds and fodder may partially overcome by introducing high yielding variety fodder cultivation. The government and non-government organizations should play a vital role in disseminating HYV fodder cultivation.
* The price of milk should increase and legal payment system should be established by estimating milk fat percentage in the root level.
* The training programmed concerning livestock management, health care and sanitation, artificial insemination and marketing techniques etc. should be initiated by the Directorate of Livestock Services in collaboration with the non-government organizations.
* The government should extend credit facilities to the farm owners at the low interest rate.

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# Appendix-1

**Questionnaire for data collection**

1. a. Name of the farm..................................................

 b. Name of the owner....................

 c. Father’s name...........................................................

 d. Address: .....................………

**2. Husbandry Practices:**

A. Housing: a. Open house b. Stanchion Burn (Face-in) c. Stanchion Burn (Face-out)

B. Feeding:

* Collection of feed...........................................
* Storage of feed …..........................................
* Types of feed...................................................
* How many times feed supplied daily.............

C. Watering:

* Source of water: a. Deep tube well b. Pond
* System of water storage: a. Water tank b. Water house
* Frequency of water supply: a. Adlibitum b. Insufficient

D. Feed materials................................................................

E. Anthelmentics....................................................................

F. Vaccination: a. Yes, b. No

G. Bio-security....................................................................

3. Number of sheds:

4. Drainage facility: a. sufficient b. insufficient.

5. Have electric fan? a. Yes b .No

6. Most common diseases prevalence in the farm:

7. Management of disease condition:

 a. Self management b. Quack c. Veterinary doctor

8. Feature of Veterinary doctor calling:

 a. Actively b. occasional c. In critical situation d. Not at all.

9. The farm is profitable or not......................................................

Name of the interviewee............... Name of the interviewer...........

Date.......... Date: ……………

Signature............. Signature ……………………

 **BIOGRAPHY**



I am Afroja Salehin Shiblee. My father’s name is Md. Khorshed Alam and my mother’s name is Shetara Begum. I completed my S.S.C. in the school of Mirpur Girls Ideal Laboratory Institute, Dhaka and H.S.C. in the College of BCIC College, Dhaka .Now, I am an intern student of Chittagong Veterinary and Animal Sciences University (CVASU) .I also interested in research work. I want to be a veterinarian in future.

E