**Study on Economic Profitability of Small Scale Commercial Dairy Enterprises in Some Selected Areas in Dhaka Division of** Bangladesh

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**Chittagong Veterinary and Animal Sciences University, Khulshi, Chittagong- 4225.**

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**ABSTRACT**

The study was carried out to assess the farm profitability of the small scale dairy enterprises in some selected areas in Bangladesh. To describe and examine the current socioeconomic profiles of the dairy farm owners, farming practices on production & management system, farm profitability, overall marketing channels and identified few problems of dairying are the specific objectives of the study. The research was conducted in five upazilas, namely Belabo, Monohordi, Shibpur, Raypura, Bajitpur and Kapasia under Narsindi and Gazipur District in Dhaka Division. Data were collected primarily by using a structured questionnaire from a total of 50 small sizes, 75 medium sizes and 35 large sizes commercial dairy farms. Finally, the collected data in total 40 small sizes, 75 medium sizes and 35 large sizes commercial dairy farms were analysed and took as a sample farms for the study.

In this study evaluated the current socio economic profiles, production and management systems with disease occurrences of small scale dairy farms under different categories of farms. The study was also examined the costs, returns, farm profitability and marketing channels of different categories of farms. The Gross margin per cow per lactation year over cash were estimated at Tk.68,475, Tk.62,248, Tk.75,374 and net return over total costs were also estimated in Tk.44,525, Tk.34,287, Tk.48,389, respectively for small, medium and large farms. The Benefit Cost Ratio (BCR) were accounted for **1.65:1, 1.44:1 and 1.69:1,** respectively for small, medium and large scale commercial dairy farms.

Finally, the study identified some crucial problems of rearing of small scale commercial dairy cows adjacent Upazila head quarter’s areas. These were high prices of feeds & fodder, low and irregular prices of milk, scarcity of quality feeds & fodders, conception failure, variation in market demand of produced milk and inputs, insufficient Vet. Care & services, occurrences of diseases distance of A.I. point, lack of training & extension work, fraudulent practice by milk traders and daily labours, non availability of good bull/semen, lack of credit facilities and feed poising and mineral deficiency were the main problems for small scale dairy farm owners. If those problems could be reduced justifiably the small scale dairy farm owners and youth group of people would be interested in dairying practices commercially.

**ACKNOWLEDGEMENT**

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***The Author***

**CHAPTER-I**

**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. 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 in 2004-2005 for livestock was the highest in all sub-sectors (S. Uddin, 2010). The supply of the domestically produced livestock products (Meat, Milk, Eggs) are increased by amount 1.2% annually (DLS, 2000). The livestock sub-sector is contributed 13% of total foreign exchange earnings and generated 20% of full time employment in Bangladesh (BBS, 2004).

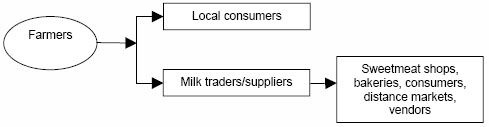
The total population in Bangladesh is estimated about 24.4 million Cattle, 34.4 million Goats, 0.83 million Buffalos and 1.14 million Sheep (DLS, 2002). The country has one of the highest cattle densities of 145 large ruminants/square Kilo meter (Sq.km) compared with 90 for India, 30 for Ethiopia and 20 for Brazil (Karim, 1997). Among these population 6 million are dairy cattle (DLS, 2008) of which 92% are indigenous and 8% are crossbred cows (BBS, 2006). The estimated numbers of dairy farm in Bangladesh is 1.4 million with an average herd size of 1.3 cows (Hemme, 2008). The county has cattle population about 1.79% of the world and 5.47% of Asia (FAO, 2004a) and dairy cattle ranks 12th in the world and 3rd in Asian countries (Alam et al., 1994). There have 79.9% of the households are small-scale farmers holding 0.05-2.49 acres of land whilst 10.2% of households have no land (BBS, 1999).

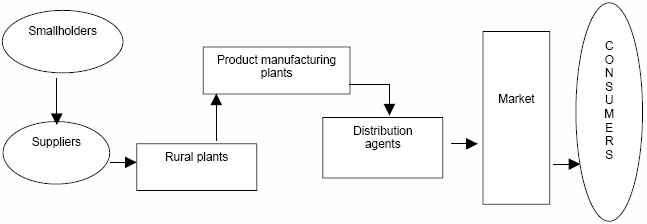
Bangladesh has a population of 160 million people; more than 80 percent of them, or approximately 15 million households, are located in rural areas. An estimated two-thirds of those households own livestock. More than half the population owns less than 0.5 acres; the bottom 40 percent possesses just 3 percent of the total land area; 48 percent live below the poverty line; and 30 percent consume less than 1 900 calories per day (the minimum desired level is 2 300 calories) **(*S.A.M.* *A.* *Haque- FAO)*.**

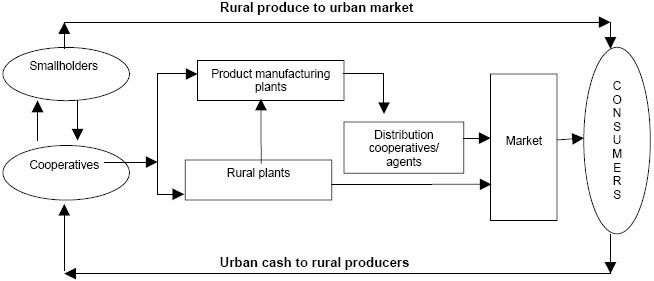
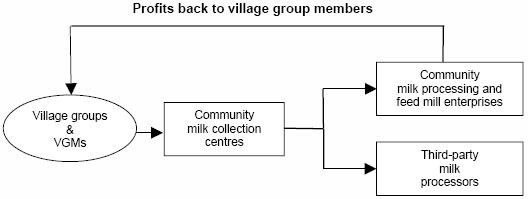
Agriculture generates two-thirds of total employment, contributes a quarter of total export earnings and provides food security to the increasing population.In 2006, the livestock sector contributed 3 percent of gross domestic product (GDP), or about 18 percent of agricultural GDP. When the indirect benefits of draught power and manure for fuel and fertilizer are added to the direct economic output of meat, milk and hides, the value added of the livestock subsector almost doubles, to about 6 percent of GDP.Milk production was 2.27 million tonnes in 2006, mainly produced by cows yielding, on average, 200–300 litres per 160/180-day lactation (DLS, Bangladesh-2006).In the few specialized areas where cross-breeding has taken place, yields range from 1000 to3000 litres over a 210/300-day lactation.Per capita milk availability currently ranges from 40 to 50 g per day (14–18 kg per year). The gap between supply and demand is largely met by milk powder imports of about 20 000 tonnes annually, valued at some US$70 million **(BB, Annual Report, 2006).** Imports represent 0.16 million tonnes of liquid milk equivalent annually, feeding some 6–7 percent of total consumption and accounting for an estimated 55 percent of the formal dairy market. Although there is no specific nutritional target in the country for milk consumption, the figure of 250 g per day (90 kg per year) often appears in national plans, implying an annual milk requirement of 12.8 million tonnes–more than five times current production (Altaf H.-2003).

The Government’s National Strategy of Accelerated Poverty Reduction (NSAPR, 2005) sets out ways and means for achieving two of the Millennium Development Goals (MDGs): halving poverty and halving under-nutrition by 2015.The strategy targets local milk production to replace imports, which currently range between 10 and 20 percent of annual consumption. The strategy promotes community-based organizations of production, processing and marketing to overcome the constraints. Smallholder milk producers play a key role in dairy markets in Bangladesh. They supply all the domestic milk for the informal traditional market and three quarters of the formal processed market Milk Vita and Grameen–CLDDP institutionally promote the empowerment of smallholder dairy farmers, both men and women.

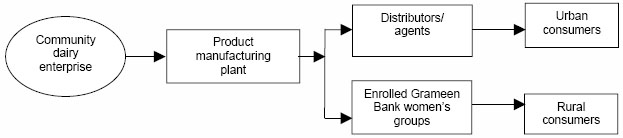
**Informal traditional markets model**

Smallholder milk producers sell milk directly to consumers or milk supplier/middlemen at local markets. The middlemen cater to the demand of sweetmeat shops, bakeries, consumers, more distant markets and vendors. They pay producers up to 50 percent less for their milk than other models, such as those described in the following sections. In many cases, the middlemen provide loans to smallholders with interest rates of up to 20 percent per month. 

**Private entrepreneur model:** Private dairies, some owned by non-government organizations (NGOs), such as the Bangladesh Rural Advancement Committee (BRAC), usually operate through milk supplier/middlemen (known as *ghoshes* or *dudhwalas*) in place of rural groups or cooperatives (Figure 3). They collect milk for a specific dairy, however, smallholders involved in the system do not receive any value-added benefit only the basic price for their milk. ***Milk Vita Cooperative model:***

The Milk Vita Cooperative model was adapted from the world-renowned Anand Model in India. It modestly started in the mid 1970s by providing 4 300 very poor, often landless, households in remote rural areas with a complete package of milk production-enhancing technologies, organizational skills and a milk collection-processing-marketing system. It has since grown into a successful commercial dairy enterprise, collecting from more than 100 000 smallholder members of some 1 200 primary village cooperatives and then processing and distributing the milk to all major cities in the country. In 2006, smallholder milk producers sold 75 million litres of milk surplus. They also earned patronage dividends from Milk Vita’s profits.A novel aspect of the Milk Vita operation is its urban distributor cooperatives. These use locally fabricated “ milkshaws” – an insulated box mounted on a traditional three-wheeled-cycle rickshaw chassis – to deliver affordable pasteurized milk and dairy products to urban shops and consumers.The Milk Vita model created jobs, reduced collection and distribution costs and improved milk quality by cutting delivery times, especially in congested city areas. One off-farm job was created for every 35 litres of milk collected, processed and marketed, and more than half those jobs are in rural areas. Democratically elected milk producer and distributor cooperative members are now in the majority on Milk Vita’s board of directors. Since the late 1990s, Milk Vita has invested more than $10 million to expand its milk collection, processing and marketing network and now delivers safe and affordable milk and dairy products to some 5 million low-income urban dwellers. Milk Vita continues to be a flourishing venture and has many recent imitators that have set up similar enterprises to process and market 70 million litres of milk annually. ***Grameen–CLDDP model:*** This is a profitable, integrated, community-owned crops-livestock-fish farming system that operates in one of the three poorest areas of the country and includes a dairy chain module. Established in 2000, the model was pioneered under the Grameen Bank/UNDP/FAO CLDDP project. Very poor landless families are organized into groups of five people. These village group members (VGMs) can access commercial loans for raising livestock and other income-generating activities. Some 80 percent of them have opted for dairy cows. The loans include compulsory animal feed and insurance components. VGMs have access, at full cost, to all the inputs needed to produce and market milk. They supply their milk surplus to community-owned milk collection centres for primary processing at community-owned dairy enterprises. The pre-processed milk is then sold to established dairies like Milk Vita, Bikrampur Dairy and Grameen Danone Foods for further processing and marketing. Some processed milk is also marked locally. The VGMs own 70 percent of the community feed mill and dairy enterprises and thus share in the profitsThe feed mill enterprises provide quality dairy rations, compounded from locally available agriculture by-products, for the VGMs who either have insufficient land or no land at all to grow their own feed and fodder. 

.***Grameen* *Danone model:*** Grameen Danone Foods was created in 2006 as an innovative joint social venture between the Grameen Bank and Groupe Danone , a large French multinational dairy corporation renowned for its bio-yogurt. Danone recently established a new division called Danone Communities and gained approval from its shareholders to set up a 50 million Euro ($70 million) mutual fund to channel investment into not-for-profit social ventures in developing countries. Ninety percent of the fund is invested in low-risk securities, the remaining 10 percent in higher-risk social ventures. The first social venture is Grameen Danone Foods, which produces low-cost, fortified yogurt for sale in rural communities. A pilot dairy enterprise was set up in Bogra about 50 km away.



However it is well known that the quality of the veterinary services provided by public sector institution is poor and those institutions providing these services are highly insufficient. Therefore, there is a need to restructure and reorient the livestock health and breeding services and extension services providing institutions.

The present study has therefore been undertaken with the objectives to evaluate and categorize farms on current level of farm profitability, describe and compare the socio-economic and existing farm management practices in relation to farm profitability with a view to study on **“Economic Profitability of Small Scale Commercial Dairy Enterprises in Some Selected Areas in Dhaka Division of Bangladesh**” in partial for the fulfillment of the degree Doctor of Veterinary Medicine (DVM).

**CHAPTER-II**

**Objectives of the study**

The overall objective of the study is to analyses the economics profitability of small scale commercial dairy farms under Upazila level in the study areas in Bangladesh. **The specific of the study are as follows:**

1. To describe the current socioeconomic profiles of the dairy farm owners in the study areas;
2. To assess and compare the farm profitability of different categories of small scale commercial farms;
3. To examine the overall marketing system of small scale dairy farms;
4. To identify overall problems and make possible recommendations for sustainable development of small scale dairy enterprise at rural level.

**CHAPTER-III**

**REVIEW OF LITERATURE**

It appears from the following discussion that studies conducted so far mostly focused on cost and returns, in some cases with productivity, re-productivity and some management aspects of raising dairy cows as a supplementary enterprise in the family. Commercial dairy farming is relatively not a new area in Bangladesh and researches dealing with performance of such farming are limited in number. However, some of the studies, which are more relevant to the present study, are given below Rajapurehit (1979) showed that the cost of milk per liter was 0.95 rupee for crossbred cows. The total milk yields per lactation were 2.077for cross breed cows. They also observed that the net returns from crossbred cows were higher.

Ahmed (1984) studied the characteristics of different cross-bred cows of Savar dairy farm from July, 1982 to June, 1983. He found that the age at puberty, the milk production. The length of calving interval and lactation periods, the daily weight gain, the mortality and diseases rates were higher for crossbred cows. Hosain and Routledge (1982) in their study found that the total milk production of Pabna milking cows and native cows stood at 803 +/- 209 and 213+/- 88 liters respectively and their respective length of lactation periods were 286 +/- 67 and 240 +/- 63 days . They also observed that the length of dry period and calving interval were 222 +/- 134 and 485 =/- 87 days for Pabna milking cows and 275 +/- 36 and 536+/- 110 days for native cows respectively.

Karim and Begum (1988) conducted a study to know the prevalent situation of women's involvement is milch cow rearing in two villages of Comilla district. They found that 42 per cent of total number of cattle owned by the entire household was milch cow of which only 14 per cent was of improved type. Average quantity of milk yield per milch cow was 2.77 kilograms

**Alam et al. (1992)** conducted a broad based socio-economic survey in Bangladesh and found that the proportion of cross bred cattle was 11.69 per cent. The results of the study showed that the distribution of cattle holding were less unequal than land holdings..

**Rahman (1993) conducted** a study at Kalihati and Takerhat areas under Tangail and Madaripur districts to quantify the cost and returns, to explore the inter­relationship of factors affecting yield and to examine the rural employment and income generation potentials of dairy enterprise. The average milk yields per cow per day in lactation were 2.33 and 2.43 liters at kalihati and Takerhat respectively. The gross costs per cow per day were Tk. 20.22 at kalihati and Tk. 29.34 and 4.91 at Takerhat areas. The average requirements of human labour per cow per day were found to be 2.33 and 2.39 hours at Kalihati and Takerhat areas respectively

A study was carried out on economics of milk production in the bathan areas of Bangladesh by

**Rahman and Akterzzaman (1994)** to find out the distribution of bathan land, herd size, cost and return of milk production and constraints related to milk production in the two bathan areas of Pabna and Sirajganj districts. The large herd sizes cover large number of owners and large size of bathan land but the land area per cattle was found highest in the medium herd size. The milk yield per animal ' per day in small, medium and large herd size were 3.87, 3.37 and 2.38 litres respectively while the cost of production per liter amounted to Tk. 8.70,9.22 and 12.33 respectively. The net returns per cow per day were Tk. 8.07 and Tk. 4.65 respectively for small and medium herd size and the net loss was estimated at Tk. 3.14 in case of large herd size.

**Alam et al. (1995)** conducted a study entitled " economics of mini dairy farms in selected areas of Bangladesh" to evaluate the economics of dairy farming using data collected data from a total of 20 randomly selected farms, 10 each from Savar and Manikgong thana in Dhaka district.The number of cross­bred cows increased as the farm size increased. The production of milk per cross-bred cows was higher (5.66 litres) than local ones (2.23 -litres). Highest (5.74 litres) milk yield per cross-bred cows was recorded for the large farms. The average lactation period for cross-bred cows were 304 days while the corresponding figure for local bred cows were 210 days.

**Ashrafuzzaman (1995)**The study covered two villages under Shazadpur thana of Sirajganj district. It was revealed from the study that 38 and 62 per cent of cows were indigenous and cross-bred dairy type respectively in the study area. The per day total cost of raising a cross-bred cow (Tk. 35.05) was a little higher over an indigenous cow 6,65 litres for a cross-bred cow which was about double the average milk yield per day of 3.62 litres and Tk. 45.83 for and indigenous and cross­bred dairy cow.

**Kabir (1995)** conducted a study to analyze the economic performance of subsidized dairy farms in Tangail district . The net returns per farm were Tk. 14,463, Tk. 21,773 and Tk. 58,173 annually for local and cross and cross­bred farms respectively. The investment per taka return was of Tk. 1.19, Tk.1.27 and Tk. 1.37 respectively for local, and cross and cross-bred farms. Overall performance of cross-bred dairy cows was comparatively better than that of local bred cows. Milk production as well as milk consumption in all categories of farms increased significantly after introduction of the government subsidy programme.

A study concerned with economics of commercial dairy fanning is relatively a new area in Bangladesh. Moreover to evaluate the economic profitability and marketing systems with current status of dairy farming practices at different categories of commercial farms in some selected milk pocket areas under Narsingdi and Gazipur in Bangladesh has undertaken the study on “Economic Profitability of Small Scale Commercial Dairy Enterprises in Some Selected Areas in Dhaka Division in Bangladesh”.

**CHAPTER-IV**

**METHODs AND MATERIALS OF THE STUDY**

1. **Introduction:**

In this chapter the various steps, which were adopted by the researcher for conducting this study, have been explained. In this study the researcher assesses the socio-economic profiles, examine the feeding, housing, management, milk marketing channels, economic profitability and problem confrontation of small scale commercial dairy enterprises at some selected areas in rural Bangladesh by using proper methods and techniques.

**2. Selection of study areas:**

A two-stage stratified sampling procedures were applied for selection of sample farmers to conduct field base experiment. In the first stage 5 Upazila were selected purposively from Dhaka area. Those are Belabo, Monohordi ,Shibpur, Bajitpur, Raypura under Narsingdi and Kapasia under Gazipur district.

**3. Selection of sample farms for the study:**

The sample dairy farms were selected from three categories small scale commercial dairy farms purposively. The selected commercial dairy farms were categorized as small size (milch cow less than 5), medium size (milch cow varies 5 to 10) and large size (milch cow more than 10 cows) under 3 district in Bangladesh. A primary visit was done at 3 districts head quarter DLS office for selecting sample for in depth study as per their suggestions and population density of dairy farms.

**4. Study type and data collection:**

An analytical cross sectional study with a comprehensive survey protocol was designed. Structured questionnaire consisted of a combination of closed, semi-open; open-ended questions were used to collect information through directed interviews of farm owner, manager and or farm employees. The questionnaire was prepared in conformity with the study objectives and intended to collect information on major areas like farmers regarding socio economics, farm resources, management practices, production and farm profitability.

**5.** **Method of data collection, time and reliability of data:**

The necessary data related to the set objectives of the study were collected by the appointed field investigators under supervision by P.I from the respective farm owners simultaneously by directly visiting the sample farms on general farm characteristics profiles, production, management, marketing and economic point of view during the experimental period from January to June 2011. The collected data were cross verified to the collected data for their consistency and the data were edited and coded by the researcher himself in CVASU.

**6. Data Collection, Analytical Technique and Estimation of Economic profitability:**

The collected 240 sample data from selected dairy farms were screened up and total of small size 40, medium farm 65 and large farm 25 collected farm data out of 240 sample data were selected finally for processed and analyzed in accordance with the objectives of the study as meaningful information. All data processing included field and office editing, coding and tabulation. The data entry template was designed in Microsoft Excel.

**7. Measures used to record farm data:**

**7.1. Qualitative measures:**

Qualitative measures were based on interviewed responses, subjective assessment on visual inspection or its combination wherever applicable. Farmer’s socio-economic status were assessed on their educational qualification, average monthly income, family size and number of dependant(s), possession of fixed farm asset(s) and animal resources. Qualitative assessment on housing management were majorly based on housing type, floor type, drainage system, ventilation status, frequency of cleaning, dung management.

**7.2. Quantitative Measures:**

Total farm area and shed size (length X width) was measured on local land measuring units (shotok) and later converted into standard unit (sqm). The size of each shed was divided by the number of animals kept therein to calculate relative floor space and stocking density. Number of window and entry into shed, access to sunlight and air were used to relatively assess ventilation status of housing. The daily supply amount of roughage per animal was measured indirectly from the number of thumb full volume of daily supply or by measuring the filled in volume of the manger. Total weight of own formulated concentrate mixture of a farm was divided by the total number of animals offered that amount to indirectly calculate the average amount of concentrate supply per animal per day. Readymade concentrate supply amount was quantified by measuring the volume of supply pot and its frequency of their use to supply per animal.

**8. Measures of farm profitability:**

**8.1. Annual farm income:**

Income from annual farming operations was obtained by summing up the returns/receipts from annual sale of animal products (milk sales), annual sale of live animals including young’s (animal sales), saleable annual farm by products (dung, bio-fuel, bio-gas), miscellaneous income from seasonal crop and vegetables grown on farm land (farm by155 products & miscellaneous sales) and increase in value of stock at the end of year

**8.2. Annual farm cost/expenses:**

The components used to calculate annual variable cost includes animal replacement cost, feed cost, cost of hired/contract/daily labor 162 and imputed family labor, therapeutic and preventive care cost, annual breeding cost and annual transport cost. Annual overhead or fixed cost calculation comprised of, wages and allowances of permanent farm employees, annual maintenance and running cost of farm utilities, vehicles and structures, annual farm operation cost (utility-power, water, gas) and miscellaneous annual business expenses like telephone, travelling, farm consultancy fees, farm improvement initiatives and additional or unexpected costs in farm operation.

**8.3.** **Annual farm operating profit:**

Annual farm operating profit was calculated as per method described by Makeham and Malcom (1995) using the formula as follows: a) Total annual income (BDT)/ receipts –total annual variable costs= Gross Margin**.** b) Gross margin – total annual overhead/fixed cost = Farm annual operating profit

**8.4: Annual operating profit/cow:**

Annual operating profit/cow was calculated by dividing the annual farm operating profit (in BDT) by average number of cows at farm (number of cows at farm 12 months preceding the time of survey plus number of cows remained in farm at the end of survey divided by two).

9. **Problem Confrontation of the Dairy Farm Owners**:

The extent of problem confrontation of the commercial small scale dairy farm owners were measured and examined in two ways: firstly according to the percentage of response to the problems on rearing practices of dairy cows in the each item by frequency distribution and secondly according to the total score obtained by the responded in selected items. For clear understanding the items related to problems regarding goats rearing were arranged in order of rank by using problem confrontation index (PCI) following the formula as**:**

Problem Confrontation Index, **(PCI)** = **Pnpx 0 + Plpx1 + Pmpx2 + Phpx 3**

**Where,**

Pnp = Percentage of dairy farm owners with no problem

Plp = Percentage of dairy farm owners with low problem

Pmp = Percentage of goat rearers with medium problem

Php = Percentage of dairy farm owners with high problem

Problem Confrontation Index **(PCI)** for any item could range from 0 to 210 where 0 indicating no problem and 210 indicating the highest problem.

**CHAPTER-V**

**RESULTS AND DISCUSSIONS**

The aim and objectives of this section is to describe the observed results and findings of the study. The findings regarding socio economics status, production, management, marketing and profitability of small scale dairy farms in the study areas are discussed simultaneously as under section of this chapter.

**1: General Profiles of Small Scale Dairying:**

In this section briefly discussed the current status of dairy farming practices under different categories of dairy farms regarding social characteristics profiles dairy farm owners and their farms as under:

1.1 **Describing the general profiles of Small Scale Dairying Farm owners:**

General profiles regarding socio-demographic characteristics of small scale commercial dairy farm owners in relation to different level of farm sizes are summarized in Table 1. The observed highest number farm owners (55.38%) age limits lies in range of 30-45 years and 2nd highest (27.69%) lies in below 30 years and 24.62 % farm owners age lies in above 45 years of age level. Majority of dairy owners registered to be comparatively literate with higher secondary was 50.77%, primary to secondary was recorded as 26.15% and up to graduation to post graduation was found 23.08%. Dairying considered to be the main sources of income to only 31.54 % of farm owners while the majority of owners had dairying and crop culture was found 33.08% and dairying with side business was found 21.54 % and 13.85 % farm owners was found as dairying with service sources of income holders. The difference in educational status, main profession and purpose of farming of the owners was however not significant association with farm sizes. Almost 50,00 % of the observed farm owners yearly average income level lies between Tk. 5 to 10 lakh, 28.54 % below Tk. 5 lakh and 21.45 % lies in above Tk. 10 lakh income level.

The maximum farm owner’s (33.08 %) occupation was found dairying with cropping. Most of the farm owners (68.46%) took the dairying as a additional sources of income. Length of farming experience of owner was found highest(47.69 %) between 5-10 years and below 5 years about 40.00 % farm owners. Highest numbers of farm owners about 48.00% reported that the farm ownership belongs to own self and 28.46% owners operated their farm business associated with shared with other friends and relatives as a partnership business. Most of the farm owners (43.00 %) operated the farm business financed by bank with their own efforts (Table-1).

**Table-1: General Profiles of Small Scale Dairy Farm owners at different categories of**

**dairy farms:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Particulars of Variables** | **Number of Farms under different Farm Categories** | | | | | | | | |
| **Small Sizes Farm**  **(< 5 Cows)**  **N = 40** | **Medium Sizes Farm**  **(5 to 10 Cows)**  **N=65** | | **Large Sizes Farm**  **(> 10 Cows)**  **N=25** | | | **ALL Farm (N=130)** | | |
| **Age of Farm Owner:** | | | |  | | |  | | |
| Below 30 Yrs | 15 (37.50) | 13(20.00) | | 8 (32.00) | | | 36 (27.69) | | |
| 30- 45 Yrs | 24 (60.00) | 35(53.85) | | 13(52.00) | | | 72 (55.38) | | |
| Above 45 Yrs. | 11 (27.50) | 17(26.15) | | 4 (16.00) | | | 32 (24.62) | | |
| **Educational status:** |  |  | |  | | |  | | |
| Primary to Secondary | 13 (32.50) | 15 (23.08) | | 6 (24.00) | | | 34 (26.15) | | |
| Higher Secondary | 21(52.50) | 36(55.38) | | 9 (36.00) | | | 66 (50.77) | | |
| Graduate and above | 6 (15.00) | 14(21.54) | | 10(40.00) | | | 30 (23.08) | | |
| **Sources of income of Farm Owner** | |  | |  | | |  | | |
| Dairying only | 12 (30.00) | 19 (29.23) | | 10 (40.00) | | | 41(31.54) | | |
| Both Dairying &  Cropping | 13 (32.50) | 25 (38.460 | | 5 (20.00) | | | 43 (33.08) | | |
| Both Dairying & other  Business | 9 (22.50) | 13( 20.00) | | 6(24.00) | | | 28 (21.54) | | |
| Dairying & Services | 6(15.00) | 8 (12.31) | | 4(16.00) | | | 18(13.85) | | |
| **Income level of the Farm Owner** | |  | |  | | |  | | |
| Below Tk. 500,000 | 16 (40.00) | 14 (21.54) | | 7 (28.00) | | | 37 (28.45) | | |
| Tk. 500,001-Tk.10,00,000 | 17(42.50) | 35(53.85) | | 13 (52.00) | | | 65 (50.00) | | |
| Above Tk.10,00,000 | 7 (17.50) | 16 (24.62) | | 5 (20.00) | | | 28 (21.54) | | |
| **Occupational Status:** |  |  | | |  | | |
| Dairying only | 12(30.00) | 19(29.23) | 10 (40.00) | | | 41 (31.54) | | |
| Dairying & cropping  cultivation | 13 (32.50) | 25(38.46) | 5 (20.00) | | | 43 (33.08) | | |
| Dairying & other  Business | 9 (22.50) | 13(20.00) | 6 (24.00) | | | 28 (21.54) | | |
| Dairying & other  Services | 6 (15.00) | 8(12.31) | 4 (16.00) | | | 18 (13.85) | | |
| **Type of Farming:** |  |  |  | | |  | | |
| Farming as a main business (Commercial) | 12 (30.00) | 19 (29.23) | 10 (40.00) | | | 41(31.54) | | |
| Extra income (Semi Commercial) | 28 (70.00) | 46 (70.77) | 15 (60.00) | | | 89 (68.46) | | |
| **Year of Farming:** |  |  |  | | |  | | |
| ‘Below 5 Yrs | 17 (42.50) | 23(35.38) | 12 (48.00) | | | 52 (40.00) | | |
| 5 - 10 Yrs | 18 (45.00) | 35(53.85) | 9 (36.00) | | | 62 (47.69) | | |
| Above 10 Yrs | 5 (12.50) | 7(10.77) | 4 (16.00) | | | 16 (12.31) | | |
| **Ownership of Farm** |  |  |  | | |  | | |
| Owned | 25 (62.50) | 29(44.62) | 8 (32.00) | | | 62(47.69) | | |
| Rented in | 6 (15.00) | 15 (23.08) | 10 (40.00) | | | 31 (23.85) | | |
| Shared in | 9 (22.50) | 21(32.31) | 7 (28.00) | | | 37 (28.46) | | |
| **Nature of Financing for operation** | |  |  | | |  | | |
| Fully Own Financed | 11 (27.50) | 19 (29.23) | 4 (16.00) | | | 34 (26.15) | | |
| Both own and Bank Financed | 12 (30.00) | 33(50.77) | 11 (44.00) | | | 56 (43.08) | | |
| Fully Bank Financed | 11 (27.50) | 9 (13.85) | 7 (28.00) | | | 27 (20.77) | | |
| Borrowed from Relatives etc. | 6 (15.00) | 4 (6.15) | 3 (12.00) | | | 13 (10.00) | | |

**Source: Field survey 2011**

**1.2: Productive and Reproductive traits of cows in Small Scale Dairying**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Particulars of Variables** | | **Number of Farms under different Farm Categories** | | | | | | |
| **Small Sizes Farm**  **(< 5 Cows)**  **N = 40** | | | **Medium Sizes Farm**  **(5 to 10 Cows)**  **N=65** | | **Large Sizes Farm**  **(>10 Cows)**  **N=25** | **ALL Farm (N=130)** |
| **Ave. lactation length of cows** | | | | |  | |  | |  |
| Up to 220- 240 days | | | 5 (12.50) | | 10 (15.38) | | 4 (16.00) | | 19 (14.62) |
| 241 to 260 days | | | 25 (62.50) | | 38 (58.46) | | 13 (52.00) | | 76 (58.46) |
| 260 to 280 days | | | 10 (25.00) | | 17 (26.15) | | 8 (32.00) | | 35 (26.92) |
| **Ave. Milk yield per cow per day** | | | | |  | |  | |  |
| Up to 4-7 liters | | | 14(35.00) | | 23 (35.38) | | 6 (24.00) | | 43 (33.08) |
| 7 to 10 liters | | | 16(40.00) | | 25(38.46) | | 12 (48.00) | | 43(33.08) |
| 10 - 13 liters | | | 10 (25.00) | | 17(26.15) | | 7 (28.00) | | 33(25.38) |
| **Ave. Length of calving interval** | | | | |  | |  | |  |
| Up to 275 days | | | 9 (22.50) | | 16 (24.62) | | 5 (20.00) | | 30 (23.08) |
| 276 to 290 days | | | 24 (60.00) | | 35 (53.85) | | 17 (68.00) | | 76 (58.46) |
| Above 290 days | | | 7 (17.50) | | 14 (21.54) | | 3 (12.00) | | 24 (18.46) |
| **Ave. age of puberty** | | | | |  | |  | |  |
| Below 2 yrs | | | 7 (17.50) | | 17 (26.15) | | 4 (16.00) | | 28 (21.54) |
| 2 to 2.5 yrs | | | 25 (62.50) | | 39 (60.00) | | 18 (72.00) | | 82 (63.08) |
| Above 2.5 yrs | | | 8 (20.00) | | 9 (13.85) | | 3 (12.00) | | 20 (15.38) |
| **Ave. dry period of cows** | | | | |  | |  | |  |
| Up to 215 days | | | 7 (17.50) | | 5 (7.69) | | 3 (12.00) | | 15 (11.54) |
| 215 to 230 days | | | 21 (52.50) | | 45 (69.23) | | 18 (72.00) | | 84 (64.62) |
| Above 230 days | | | 12 (30.00) | | 15 (23.08) | | 4 (16.00) | | 31 (23.85) |
| **Ave. Conception rate of Cows** | | | | |  | |  | |  |
| Single time | | 25 (62.50) | | | 45 (69.23) | | 15 (60.00) | | 85 (65.38) |
| 2 to 3 times | | 12 (30.00) | | | 12 (18.46) | | 7 (28.00) | | 31 (23.85) |
| Above 3 times | | 3 (7.50) | | | 8 (12.31) | | 3 (12.00) | | 14 (10.77) |
| **Ave. Calf mortality rate of Cows** | | | | |  | |  | |  |
| No mortality | | | | 19 (47.50) | 39 (60) | | 16 (64.00) | | 74 (56.92) |
| Up to 10 to 30 % | | | | 14 (35.00) | 19 (29.23) | | 8 (32.00) | | 41(31.54) |
| Above 30 % | | | | 7 (17.50) | 7 (10.77) | | 1 (4.00) | | 15 (11.54) |

The productive and reproductive traits of the observed dairy cows regarding socio economic profiles are discussed for clear ideas about the farming status of small scale dairying practicesin Table-7**.** Results from above table it was found the most of the farms (58.46%) reported that,The average length of lactation of the observed cows under different categories of dairy farms, was found under 241 t0 260 days level. The average milk yield per day per cow was found under7-10 liters and it was reported highest number farms (40 %) and then medium farms (38.46%). As per reported by farm owners (58.46%) the average length of calving interval was found 276 to 290 days level considering all farms and the dry period of cows was found highest as per reported by farm owners (64.62%) under 215 to 230 days.

**Table-02: Productive and Reproductive traits of Small Scale Dairy farms at different**

**categories of farms**

**Source: Field survey, 201**

**2: Assessing of Cost, Returns and farm profitability of Small-Scale commercial Dairy**

**Farming**:

The purpose of this section is to assess the costs, returns and farm profitability of small scale commercial dairying practices under different categories of farms.. The items of costs included in this study were feeds, labour, veterinary, housing, capital invested and operating capital, The total costs per cow per lactation were classified into cash and non-cash costs. Cash costs were those cost which the dairy cow owners had to pay out of their pocket to acquire the inputs. on the other hand, non-cash costs were estimated for home supplied feeds, family labour, interests on the value of a dairy cows, interest on housing value, interest on operating capital and depreciations of hosing cots etc.

**2.1. Costs of Small scale Dairying at different categories of farms:**

The required costs per cow per year in commercial dairying are presented in table-9. The total costs per cow per year were estimated at Tk.67640, Tk.78789 and Tk.79690 for small, medium and large farms, respectively. It was found that the cash expenses shared the major part of the total costs and accounted for Tk. 43690, Tk.50829 and Tk. 42705 and shared in respective total cost are 64.59, 64.51and 53.59 percent for small, medium and large categories of dairy farms respectively. The non-cash expenses per lactation year per cow stood at Tk. 25950, Tk. 27385, and Tk. 36985 for small, medium and large farms, respectively which is accounted for 38.37, 34.76 and 46.41 percent of their respective total costs.

**2.2. Feed Cost of Rearing Dairy Cows:**

Feed Cost was one of the major cost item of rearing dairy cows, costs of feed included expenses on paddy straw, green grasses, concentrates salt etc. The purchased feeds were valued according to the supplied feeds were actually paid by the dairy farm owners. t. Feed cost covered Tk. 38,295, Tk. 42,255 and Tk.45, 275 which was accounted for 56.62, 53.63 and 56.81 percent of the respective total cost per cow per year for small, medium and large categories of dairy sizes farms, respectively. Thus, the total feed costs were found almost same both in small and large farms and 3.00 percent lower in case of medium scale dairy farms The cash expenses for feed per cow per year small, medium and large sizes farms were found Tk.32,020, Tk.36,630 and Tk.33,565, respectively and found it was assessed higher for medium scale of dairy farms. On the other hand, the non-cash costs for feed items per lactation per cow were accounted for Tk. 8,275, Tk. 5,675 and Tk.11,710, respectively which accounted for 21.61, 13.43 and 25.86 percent of their respective total feed costs which was assessed higher in large scale dairy farms.

**Table-3: Per cow annual costs of rearing Small Scale Dairy Enterprises under different**

**Categories of dairy farms**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Per cow annual Cost under categories of Farm(in BDT)** | | | | | | | | | | | | | | | | | **% in Total Cost** | |
| **Small Sizes Farm**  **(< 5 Cows)**  **N = 40** | | | | **Medium Sizes Farm**  **(5 to 10 Cows)**  **N=65** | | | **Large Sizes Farm**  **(>10 Cows)**  **N=25** | | | | **ALL Farm**  **(N=130)** | | | | | |
| **Non cash** | | **Cash** | **Total** | **Non cash** | **Cash** | **Total** | **Non cash** | **Cash** | | **Total** | | **Non cash** | | **Cash** | | **Total** | |  | |
| Paddy Straw | | **2500** | **4150** | **6650** | **2100** | **5200** | **7300** | **5000** | **5120** | **10120** | | | **3200.00** | | **4823.33** | | **8023.33** | | **10.64** | |
| Green Grass | | **3200** | **5120** | **8320** | **2200** | **6180** | **8380** | **3200** | **5120** | **8320** | | **2866.67** | | **5473.33** | | **8340.00** | | **11.06** | |
| Concentrates including salt | | **2575** | **22750** | **23325** | **1375** | **25250** | **26575** | **3510** | **23325** | **26835** | | **2486.67** | | **23775.00** | | **25578.33** | | **33.94** | |
| Labour | | **4650** | **6500** | **11150** | **4651** | **6500** | **11151** | **7500** | **4500** | **12000** | | **5600.00** | | **5833.33** | | **11433.33** | | **15.17** | |
| Veterinary care and Treatment | | **-** | **2500** | **2500** | **3000** | **4500** | **7500** | **3750** | **2300** | **6050** | | **2250.00** | | **3100.00** | | **5350.00** | | **7.10** | |
| Cost of Housing | | **4175** | **-** | **4175** | **5110** | **-** | **5110** | **4100** | **-** | **4100** | | **4461.67** | | **-** | | **4461.67** | | **5.92** | |
| Artificial insemination charges | | **-** | **320** | **320** | **-** | **350** | **350** | **-** | **310** | **310** | | **-** | | **326.67** | | **326.67** | | **0.43** | |
| Interest on operating cost | | **-** | **2350** | **2350** | **-** | **2849** | **2849** | **-** | **2030** | **2030** | | **-** | | **2409.67** | | **2409.67** | | **3.20** | |
| Interest on Ave. value of dairy cows | | **7500** | **­-** | **7500** | **7500** | **-** | **8125** | **8375** | **-** | **8375** | | **7791.67** | | **-** | | **8000.00** | | **10.61** | |
| Others (Rent, Tax etc.) | | **1350** | **-** | **1350** | **1450** | **-** | **1450** | **1550** | **-** | **1550** | | **1450.00** | | **-** | | **1450.00** | | **1.92** | |
| **All** | **25950** | | **43690** | **67640** | **27385** | **50829** | **78789** | **36985** | **42705** | **79690** | | **30106.67** | | **45741.33** | | **75373.00** | | **100.00** | |

**Source: Field Survey, 2011**

**2.3. Labour Cost** **of Rearing Dairy Cows:**

In order of importance, the labour cost came next to feed cost in Tables 9. It showed that the total

labour costs per lactation year per cow were estimated at Tk.11,150, Tk.11,151 and Tk. 12,000 andwhich shared in respective total to total cost were found 16.48, 14.15 and 15.06 percent for small,medium and large sizes of dairy farms, respectively. The labour required for providing services forhousing, grazing, feeding and management of cows of farm’s cows.

**2.4. Veterinary charges** of **Rearing Dairy Cows:**

The costs of veterinary charges were calculated by taking into account the actual cost, incurred by the farm owners for a milch cow per lactation year. Doctor’s fees and medicines were the two major components of the total veterinary charges. The total veterinary charges per lactation per cow was amounted to be Tk. 2500, Tk.7500 and Tk.6,050 for small, medium and large sizes of dairy farms, respectively. The veterinary charges is covered about, 3.70, 9.52 and 7.59 Percent of the total costs per lactation year per cow for small, medium and large sizes of dairy farms, respectively.

**2.5. Housing Cost of Rearing Dairy Cows:**

The costs of housing were calculated by taking into account the depreciation cost, repairing costs

and interest on the average value of housing shed. Depreciation cost was measured by dividing the original value of housing by its total probable length of life (present age plus remaining life) of house. Interest rate was assumed to be 12.50 percent per annum.

**2.6. Cost of capital of Rearing Dairy Cows:**

The costs of capital included in the present study were the interest on the average value of dairy

cows and the interest on the operating capital. The interest on average value of cow was calculatedby the following formula: Interest **= (begin value + end value) × rate of interest/2.** The average cost of capital for small, medium and large farms were estimated Tk.7,500, Tk. 8125 and Tk. 8,375, respectively. The interest on the operating capital was also charged at the rate 15 percent per annum. Interest on operating capital was computed by the following formula: **Interest =** **Operating Cost × rate of interest /2.** The average costs of operation capital per year per cow were estimated Tk. 2350, Tk.2849 and Tk.2030 for small, medium and large farms, respectively.

**2.7. Artificial Insemination charge of Rearing Dairy Cows:**

Most of the commercial dairy farms used Artificial Insemination techniques for conception of their reared dairy cows through high quality frozen semen from improved bull given by DLS or BRAC A.I. technicians. Some on gave the services for conception of cows naturally by their own bulls. The average artificial insemination cost per cow was found Tk.320, Tk.350 and Tk.310 for small,

medium and large farms, respectively. Thus, the above estimated results indicated that, the total

costs per cow per lactation year was found higher in case of small and large dairy farms and lower for medium scale commercial dairy farms.

**3 Returns from Dairy Enterprise of Rearing Dairy Cows:**

The purpose of this section is to determine the gross and net returns of small scalecommercial dairying practices of different categories of farms per cow per year over estimated cash and total costs. The returns from dairy cows consisted of selling of milk and milk products, value of consumed milk and milk products, average value of produced calf of cow, selling of cow dung, value used cow dung as fuel and manure of fodder land, selling others materials bags etc.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The average sale proceeds of milk were calculated on the basis of the average lactation period, average quantity of milk produced per day per cow and the average price received by farm owners per litre of milk directly and value of consumed milk. It was assumed that the calves of dairy cows were sold out just after lactation period. The value of calf was estimated on the basis of the respondent’s expectation. The average values of cow dung and selling other material percow are calculated by taking respondent’s opinion on this type of income as lump sum basis. Table 10 showed that, the gross return per lactation year per cow stood at Tk.112165, Tk.113,076 and Tk.118,079 for small, medium and large farms, respectively. The average returns from selling of milk and milk products per cow per lactation year were found Tk. 87,491.25, Tk. 88,596.00 and Tk. 992,808.99 respectively which was accounted for 78.00 percent, 78.25 percent and 78.60 percent of respective gross returns for small, medium and large scale farms. The average returns of produced calf were found Tk. 15000.00 for all categories of farms. The returns of selling of cow dung and selling others materials like as bags etc. were found Tk. 2575, Tk.3100, Tk.3600 and Tk.467.5, Tk.450, Tk. 480 for small, medium and large farms, respectively. The Gross margin per cow per lactation year over cash were estimated at Tk.68,475, Tk.62,248, Tk.75,374 and net return over total costs were also estimated in Tk.44,525, Tk.34,287,Tk.48,389, respectively for small, medium and large farms.  **Table-4: Per cow per year Returns of Rearing Small Scale Dairy Enterprises under**  **different categories of dairy farms.**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Particulars of Item** | **Per cow per year returns under categories of farms (in BDT)** | | | | **% in Gross Return** | | **Small Sizes Farm**  **(< 5 Cows)**  **N = 40** | **Medium Sizes Farm**  **(5 to 10 Cows)**  **N=65** | **Large Sizes Farm**  **(>10 Cows)**  **N=25** | **ALL Farms**  **(N=130)** | | Direct selling of milk and milk products | 87,491.25 (78.00) | 88,596.00  (78.25) | 92,808.99 (78.60) | 89,632.08 | 78.32 | | Value of consumed milk and milk products | 5,681.25  (5.07) | 4,680.35  (4.14) | 5,050.00  (4.28) | 5,137.20 | 4.49 | | Ave. Value of calves of cows | 15,000.00  (13.37) | 15,000.00  (13.25) | 15,000.00  (12.70) | 15,000.00 | 13.11 | | Selling of dairy cow dung | 2,575.00  (2.30) | 3,100.00  (2.74) | 3,600.00  (3.05) | 3,091.67 | 2.70 | | Value of used cow dung as fuel and fodder land | 950.00  (0.85) | 1,250.00 (1.11) | 1,140.00 (0.97) | 1,113.33 | 0.97 | | Selling others materials (Bags, salvage materials etc.) | 467.50  (0.42 | 450.00  (0.40) | 480.00  (0.41) | 465.83 | 0.41 | | Gross Return(in BDT) | **112,165.00** | **113,076.40** | **118,079.00** | 114,440.11 | 100.00 | | | Gross Margin per cow per Year (in BDT) | **68,475.00** | **62,247.40** | **75,374.00** | 68,698.80 | 60.03 | | | Net Return per cow per Year (in BDT) | **44,525.00** | **34,287.40** | **48,389.00** | 39,067.11 | 34.14 | | | BCR (un-discounted) | **1.65:1** | **1.44:1** | **1.69:1** | 1.48:1 | - | | |

**Source: Field Survey, 2012**

The Benefit Cost Ratio (BCR) were accounted for **1.65:1, 1.44:1 and 1.69:1** respectively for small, medium and large scale commercial dairy farms.The share of GM were found 61.05 percent,55.05 percent and 63.83 percent for small, medium and large farms respectively and respective NR to gross return was also found 39.70 percent, 30.32 percent and 40.98 percent, respectively. The results regarding returns of small scale commercial dairying practices are indicated that, the net profit per cow per lactation year resulted higher in case of large sizes farms than that of other categories of farms presented in table-4. The average per cow per year was shown in the following graph-1.

**4: Overall Marketing Channels of Small Scale dairy rearing:**

The milk marketing channels in Bangladesh are not organized. Sometimes, dairy farmers sell their milk directly to the local market, neighbors, tea stalls and local restaurants. Most of the times they sell their milk through different types of middlemen like Gowala, Aratdar and retailer. These intermediaries operating at different level of milk marketing earn margins that affect primary milk producers directly or indirectly. The proportions of milk selling by the farmers through different channels differ from place to place. The typical milk marketing channels are described below:

**4.1. Traditional Milk Marketing Channel:**

Petty milk marketing practice is very common in Bangladesh and milk marketing channels are not regular and organized. Producers may sell their milk directly to local market, neighbors and tea stalls.But most of the times, they sell their surplus milk to the Gowala. In the traditional milk marketing channel, Gowalas collect milk from the producers, sometimes mix water or milk powder for more profit, and sell this in the urban market. In the rural area Gowala perform the door-to-door milk collection from milk producers and deliver the milk to consumers.They sell this milk to different types of consumers in urban area.Price is always uncertain both for primary producers as well as for Gowala in this type of marketing channel. At times, there are few other middlemen such as Aratdar and retailers in this marketing channel. Aratdar is a commission agent and mediates between producers and Gowlas/ retailers, consumers as well as hotels and restaurants. Aratdar charge a fixed amount of commission form of monetary value or milk from producers. Retailer includes the milk trader who buys milk from the Aratdar, Gowala or group or individual producers in the market and supplies this milk to the city customers.

**4.2. Pala Milk Marketing Channel:**

Pala is an informal group made by the villagers having milk cows in the Char area, difficult to be

reached by a normal transportation means. The small dairy farmers in the area producing 1-5 liters of milk which cannot be profitable for individual farmer to sell in city with high transportation cost, make informal marketing group (Pala) with 20-50 members to sell the milk jointly. All the Pala members participate rotationally, each for one day, marketing their milk. The Pala representative brings the group’s milk to the market and sells to retailer through Aratdar. Aratdar is paid certain amount of milk/cash by Pala representative as commission for mediating the job. Retailer finally sells this milk to the urban consumers, restaurants and tea stalls at a higher price and earn his own margins..

**4.3. Cooperative Milk Marketing Channel:**

Bangladesh Government took initiatives to organize poor dairy farmers under a cooperative umbrella known as Bangladesh Milk Producers’ Cooperative Union Ltd. (BMPCUL), in which the Government gave credit to establish the dairy infrastructures such as, milk processing centers, and veterinary services, transportation and a stable market price. BMPCUL started its function with the aims of establishing a dairy base in Bangladesh as well as rural development by providing inputs to the farmers at low cost and ensuring fair price of the milk to the small rural milk producers.

**4.5. Examining marketing channels of small scale commercial dairying:**

Considering the above different types of marketing system in different places, field study was conducted in five different districts to understand the different milk marketing channels in detail in study areas (Graph-2). The overall marketing channels of milk under small scale dairying practices were examined by asking questions and identified few channels. The identified overall participants were identified as the farm owners, consumers at farm gate/household level, consumers at local market, consumers at peri- urban market, local Gosh, sweetmeat shops, local Bepari, Milk cooperatives and milk processors.

The dairy cow owners reported that about 12.31 percent sale to milk cooperatives and about 4.62 percent sale milk and milk products to milk processors.

**CHAPTER-VI**

**PROBLEMS AND RECOMMENDATIONS**

**1. Introduction:**

Risks and uncertainty are quite common facts in dairy farming business. Apart from these, dairy farming practices have been facing a number of remarkable problems. The selected farm owners in the study areas have experienced in dairying since significant years and were confronting many serious production and marketing oriented problems. An attempt have been made in this chapter to identify the major constraints and problems faced by the farmers in dairying practices and to discuss the possible solutions of these problems so that the farmers can obtain better economic return from goat farming business. In order to identify various problems of rearing cows and their solutions, questions were asked to the concerned farm owners/managers and probable findings are discussed in this section.

## 2 Problem Faced by the Small scale Dairy farm owners:

The problems of dairying practices under different categories of small scale commercial dairy farms as reported by the farm owners are presented in below. Brief description of the reported problems by different categories of small scale dairy farm owners regarding milk production and marketing of milk by the dairy are mentioned as under:

**2.1 High prices of feeds and fodder:**

## The grazing facilities or pasture land are very limited especially during cropping season, rainy season and dry period in urban areas in Bangladesh. Once upon a time, there were abundant grazing lands around homestead in the study area. Now a day, the grazing land (pasture land) of the study areas has been decreasing of the last couple of year due to introduction of vegetables, banana and boro rice cultivation.Most of the requirement of feeds and fodder especially concentrates was maintained by purchasing directly from local market but from a couple of years the prices of feeds and fodder are very rising relating milk prices. Under the circumstances more than 93.00 percent of the selected dairy farm owners reported against this problem.

## 2.2 Low prices of milk:

The prices of milk were comparatively low because few middlemen are involved in marketing system in the study area. As a result the milk producer gets low milk price relating to high feed price. The average price of milk per litter in the study area was estimated at Taka 40.00 at production point,  
which was lower than the prices prevailed in many other areas of Bangladesh. The problem of low price milk was reported by the dairy farm owners as a whole about 81 percent of the farm owners.

**2.3. Scarcity of quality feeds and fodders:**

Animal health and production of milk depend on quality feeds, proper rationing and regular standard feeding practices timely. But in our country everywhere grown up animal feed industry and feed shop with poor management and quality assurance facilities. There have no proper public authority to check the quality of animal feed stuffs to apply their authority to maintain quality regularly. Very few cases the Govt. law enforcing agency apply their power in case of human food producing industries and shops but in livestock field it was very poor for a long time in Bangladesh. It is an important constraint of small scale commercial dairying practices in Bangladesh. About 79 percent of dairy farm owners mentioned such type of problems**.**

**2.4. Conception failure of dairy cows:**

The conception failure is a common problem of small scale dairy farming practices is another important constraint of dairying. Some time AI practiced more than one time for a single conception of a cow which leads to be delayed in calving in farming system. About 29 percent of small scale dairy farm owners reported this problem where in case of large farm owners it was found higher about 44 percent than that of other categories of farms.

**2.5** **Variation in market demand of produced milk and fluctuated of input prices:**

The profitability depend on better and regular market price of produced milk and price of inputs

of practices in dairying. In our country there have very few organized milk marketing system developed throughout the country. Occasionally the milk price grow up and the farm profitability also reached in better position but year round the milk price especially the inputs prices over fluctuated with short notice of time. It was reported by the small scale dairy farm owners regarding this problems as a whole is about 60 percent where large scale farmer’s have higher (72 percent) reported this problem and lower (35 percent) in small categories of farms**.**

**2.6. Occurrences of diseases :**

Diseases incidence especially FMD, Mastitis, uterine infections and metabolic diseases are affected the rearing of dairy cows in the study areas. Diseases affect the milk yield and reduced the herd productivity which leads to economic losses of the dairy farms. It is an important constraint of rearing of cows and about **67.69** percent of dairy farm owners as a whole reported on occurrences of diseases as a problem and also found that it was lower in case of small sizes farms than that of other categories of farms because of better management and supervision of farm cows.

**2.7. Insufficient Vet. Care & services:**

Most of the dairy cow owners felt that the availability of the Govt. veterinary care and services was inadequate in the area though most of the dairy farms are registered under DLS. As per nature this organization, the extension services to be afforded by the DLS personnel to the farm animals for such services. But actually Govt. personnel not yet give regular better services for the development dairy industry in Bangladesh as there was only one veterinary surgeon at the Thana level. Moreover supply of medicine and vaccines to the Thana office was quite insufficient. About on average 47 percent of farm owners mentioned this problem. But in case of small scale of dairy farms it was higher about 57.50 percent than that of other two categories of farms.

**2.8: Distance of AI point:**

The AI services are provided by the Government organization likes as DLS and few NGO especially by BRAC throughout the Bangladesh by AI centers and sub centers up to union level in Bangladesh. It is one of the methods used for the improvement of dairy breeds and better performances of dairy cows. It was found that about 39.23 percent of dairy farm owners faced the problems of distance of AI center which was higher about 44 percent in case of large farm owners.

**2.9. Lack of training & extension work:**

The quality of employees and their development through training and education are major factors in determining long-term profitability of a small business and it is a good policy to invest in the development of management skills. The Knowledge on scientific production, rationing and animal health management system is essential for the development of dairy industry in Bangladesh. About 63 percent of dairy farm owners felt that their knowledge on animal management was not sufficient as a whole and therefore they considered the lack of proper training and extension facilities as one of the problem for the development of their dairy enterprises.

**2.10 Fraudulent practice by milk traders and daily labours:**

Fraudulent practice by milk traders and daily labours is another problem reported by the dairy farm owners. The daily activities of the most of the farms were maintained by day labours and the labours sometime theft the farm inputs and materials. In the other hand most of the farm owners’ sale their products to the middlemen in kind and sometimes the milk traders did not give the actual milk price to the farmers by taking up fraudulent practices. About 33.85 percent dairy farm owners reported that they were cheated by the milk traders through the use of fraudulent weights and measures and harassment of day labors in the farming practice and it was higher in case of small farm owner .

**2.11. Non availability of good Bull and quality Semen:**

Most of the dairy farm owners used frozen semen for breeding through using AI techniques by DLS. Someone use their own produced bull in their farm areas also but their quality is very low than that of imported bull and milk yield of cows with quality calves depend on the genetic characteristics of parents.. About 30.77 percent of farm owners felt this problem as a whole and it was found higher in case of large farms about 48.00 percent.

**2.12 Lack of credit facilities:**

**T**he lack of credit facilities was one of the constraints for the development dairy enterprises. Most of the farms operate their business by lending credit from bank and NGO with high interest rate and few farms cannot access in institutional loan system for lack their illiteracy and political backup . About 65.38 percent dairy farm owners reported this problem and it was found higher in case of large farm owners.

**2.13 Feed poising and mineral deficiency:**

Feed poising and mineral deficiency is found another problem of rearing cows commercially under small holder farming system. This problem is created for lack of quality dairy feed and mineral deficiency in feed and water. Sometimes it created animal health haggard in the farm level and reduced productivity of cows. About 16 percent dairy farm owners reported this problem and it was found higher in case of small sizes farm owners.

**2.14 Extent of Confrontation of Problems in Small scale Dairying:**

The recorded problems are categorized according to the extent of felt the problems by the dairy farm owners of the study areas. The data indicates that the problem confrontations of selected items related to small scale dairying were ranged from 20.35 - 251.92 against a possible range of 0 - 520. The presented data indicate that the problem which ranked first on the basis of problem confrontation index (PCI) was High prices of feeds & fodder with a PCI of 251.92. Problems which are ranked in second and third were low prices of milk and Scarcity of quality feeds on the basis of PCI are 158.98 and 145.97, respectively. In this way the problems which were ranked in fourth, fifth, sixth, seventh, eighth, ninth, tenth, eleventh, twelfth and thirtieth on the basis of PCI were Lack of credit facilities, Occurrences of diseases, Lack of training & extension work, Insufficient Vet. Care & services , Variation in market demand of produced milk and inputs, Distance of A.I. point ,Conception failure, Non availability of good bull / semen, Fraudulent practice by milk traders & daily labours and Feed poising and mineral deficiency with **PCI** of 127.57, 126.86, 116.37, 89.83, 81.88, 75.84, 68.45, 40.33, 31.39 and 20.35 respectively out of the problem (Table 13). The results indicate that the severity of overall problems is acceptable and low profiles than estimates highest possible PCI values. The recorded data also revealed that, more than half proportion about 56.15 percent of the small scale dairy farm owners belonged to medium problem, where 24.62 and 19.23 percent belonged to high and low problem categories respectively.

**3: Probable measures to be taken to solve the Problems:**

In order to overcome the problems of small scale commercial dairying practices at urban areas and making the such dairying practices more profitable, the dairy farm owners of the study area were asked to suggest how to overcome the identified problems. Following suggestions were put forward by the dairy farm owners for overall development of small scale dairying practices as a sustainable level by the different sizes of dairy farm according to herd sizes.

**3.1 Reduced the Prices of feeds & fodder:**

**N**atural available green grasses and fodder production be decreased due to the land came under cultivation and built in housing infrastructures rapidly in Bangladesh. The cropping intensity of land also increased for meet up expanding demand of food stuffs of the people in our country. So for introducing sustainable and commercial dairy farming practices by livestock entrepreneurs HYV fodder production should be extended throughout the country by providing technological knowledge of the dairy farm owners in fellow land and highway and local road sides.Special attention should be given for motivating the farmers to cultivate more fodder crops like Para, Napier, maize, Jamboo, German grasses at fellow land and road sides nearby their house to meet up the requirement of feeds and fodder of the dairy cows of small scale commercial dairy farms.

**3.2: Reducing variation in demand of milk and milk products**

In Bangladesh there have some extent of variations in demand and supply of milk and milk products depend on seasonal and occasional issues basically Holy Ramadan, EIDs and Puza etc.. It also depends on income of the consumers and market value of milk and other related products of the markets in Bangladesh. The small scale dairy cow owners economically affected due to variation in demand and supply of milk and milk products thus the respective department and dairy association if minimized the variation of price and demand then small scale dairy farms will be sustained in Bangladesh. About 80.77 percent farm owners reported these suggestive measures to overcome this problems.

**3.3: Ensure regular supply of quality feeds & fodders**

Most of the small scale dairy farm owners buy the feeds and feed ingredients from local areas market/shop. But sometimes, the supply of feeds and feed ingredients could not available in the shop. As a result dairy farm owners faced a major problems regarding nutrient feeding of cows in their farms. Thus if ensured regular supply of quality feeds and feed invariants in the study areas by promoting market facilities and training about feed technological knowledge to the local feed enterprise owners and increasing Govt. controlling systems for maintaining quality of feeds and feeds ingredients of dairy cows . About 79.23 percent of dairy farm owners suggested to ensure regular supply of quality feeds & fodders in the study areas.

**3.4: Make availability of quality semen and trained AI personnel**

Quality bull and semen will give birth of healthy calves of the conceived cows under different categories of commercial dairy farms. But the AI facilities not yet developed adjacent of the studied farms even there have not enough quality semen in the available points. As a result most of the calves were found under weight, weak and the AI personnel were not found enough

trained. Thus to make a profitable farm business the respective departments and farm communities should supply quality semen and give training to AI personnel to achieve higher rate in conception rate. About 48.07 percent of dairy cow owners reported to make available in quality semen and trained AI personnel in the study areas.

**3.5: Ensuring adequate Veterinary services and health care Facilities**

All most all the studied small scale dairy farms have no regular Veterinary Doctor, they call doctor or compounder when necessary for curing of diseases of their cows. Diseases hardly affect the herd productivity of the dairy farms and reduced the economic profitability of the farms. Thus to make sustainable the opportunities of veterinary services and health care facilities should be available by Govt. and private level simultaneously.

**3.6: Proper feeding, housing and management practices**

Herd productivity under the farms depend on proper feeding, housing and management practices of the dairy cows under farms. Thus scientific feeding, housing and management practices should be introduced for getting maximum yield of the dairy cows. About 67.69 percent of dairy cow owners reported to ensure proper feeding, housing and management practices for making sustainable and profitable dairy farm business in Bangladesh.

**3.7: Expansion of AI facilities at reasonable distance**

Due to lack of quality bull in the study areas most of the farms adopt AI techniques for breeding their cows under Govt. and NGO management limited AI points in the study areas for quality calves for next generation. Farm owners sometimes felt problems to bring their cows to far distant AI points and needed more allowances to AI technicians for AI services in the farms. About 39.23 percent of dairy cow owners reported to expansion of AI point and services at reasonable distant for making regular AI facilities in the study areas for development of small scale dairy industries in Bangladesh.

**3.8: Providing regular training & Vet. Extension services**

DLS and some NGOs has served to deliver the veterinary extension services in Bangladesh but their scope is very limited to serve farm to farm basis. Thus, necessary Training and Vet. Extension services to be developed to trained farm people for development of knowledge and skills for smooth running of the farms. About 63.08 percent of dairy cow owners reported to provide regular training and veterinary extension services to develop knowledge regarding operation of farm business in Bangladesh.

**3.9: Controlling of fraudulent practices**

Fraudulent practices now treats like a disease in our daily farm business as farm owners in most cases depend on hired farm employees and other personnel. As a result cash flow of the farms disrupted for fraudulent practices in dairy farm activities in the study areas. About 33.85 percent of dairy cow owners reported to control the fraudulent practices in different stages by the farm personnel and input traders which hampered the smooth running of dairy farm business in Bangladesh .

**CHAPTER-VII**

**Summary and Recommendations**

This chapter presents the summery and conclusions of the present study and also provide some recommendations for future planning to develop the small scale commercial dairying in Bangladesh. Before presenting the summery contents of different chapters are discussed in brief.

**1: Summary**

Dairy is one of the major source of animal protein and cash income of the farm people. Moreover, dairying significantly contribute to total GDP through production of meat, milk and skin representing about 27.00, 23.00 and 28.00 percent respectively to total production from livestock sector (FAO,1997). It contributes greatly to the poverty stricken rural and urban farm people especially to small, marginal farmers and un-employed youth group of people for creation of self employed and sustainable income and livelihood development in Bangladesh. The present study observed the agribusiness analysis by examining the socioeconomic and marketing channels of small scale dairying and found that the cost of dairying varied slightly among the three herd sizes but BCR both cash and full cost basis were higher in herd size 1 containing farm up to 5 cows. It was concluded that the herd size containing up to 5 milking cows were found most profitable and sustainable economically because they easily manage their farms by their own available effort and time.Government of Bangladesh put emphasis on poverty alleviation through expansion dairying practices introducing a project titled as “One House-one Farm” to make the poorest people of Bangladesh self-reliant and to empower them to contribute to the national economy. Banks, NGO and other financial institutions are also coming up to help farmers establishing of dairy farms through credit supply and providing necessary training. The present study has been undertaken with the objectives to evaluate and categorize farms on current status of profitability, describe and compare the socio-economic and existing farm management practices in relation to farm profitability with a view to has undertaken the study on economic profitability of small scale dairy industry at some selected areas in Bangladesh.

The study was carried out in peri-urban areas under Dhaka division. The selected commercial dairy farms were categorized as small size (milch cow less than or equals to 5), medium size (milch cow varies 6 to 10) and large size (milch cow more than 10 cows). A primary visit was done at 5 districts head quarter DLS office for selecting sample for in depth study as per their suggestions and population density of dairy farms .In this study carried out the socio economic profiles, production and management systems with disease occurrences of small scale dairy farms under different categories of farms. This study was also examined the costs, returns, farm profitability and marketing channels of different categories of farms. The Gross margin per cow per lactation year over cash were estimated at Tk.68,475, Tk.62,248, Tk.75,374 and net return over total costs were also estimated in Tk.44,525, Tk.34,287,Tk.48,389, respectively for small, medium and large farms. The Benefit Cost Ratio (BCR) were accounted for **1.65:1, 1.44:1 and 1.69:1** respectively for small, medium and large scale commercial dairy farms.

It can be seen from this study that, high prices of feeds & fodder, low prices of milk, scarcity of quality feeds & fodders, conception failure, variation in market demand of produced milk and inputs, insufficient Vet. Care & services, occurrences of diseases distance of A.I. point, lack of training & extension work, fraudulent practice by milk traders and daily labours, non availability of good bull/ semen, lack of credit facilities and feed poising and mineral deficiency were the main problems for small scale dairy farm owners. If those problems could be reduced small scale dairy farm owners and youth group of people would be interested in dairying practices commercially. Thus, small scale dairying would provide an opportunity to generate employment opportunity to the urban unemployed people and would be able to earn more cash income a result it can play an important role in youth empowerment and poverty alleviation.

**2: Recommendations of the study:**

Some recommendations were given for better dairying practices by committed dairy entrepreneur in private management system by reducing the prices of feeds & fodder, minimizing the variation in demand of milk and milk products, ensuring regular supply of quality feeds & fodders, making availability of quality semen, by trained AI personnel, ensuring adequate veterinary services and health care facilities, introducing proper feeding and management practices, expansion of AI facilities at reasonable distance, providing regular training & Vet. extension services, controlling of fraudulent practices, making available credit facilities etc. for sustainable development of small scale commercial dairy farms in Bangladesh.

**3: Limitation of the study:**

The field Assistant, though trained properly, but sometimes could not approach and convince the dairy farm owners satisfactorily to advice and collect the required information properly. Dairy farm owners and the employed managers were found not to be equally cooperative and friendly. The actual pictures regarding information on production and income did not possible to collect from the farm owners due to they hide the income oriented actual facts. Due to time and cost constraint was felt during the study.

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