



# Management of Milk Production and Marketing



**Dr. Milton Kumar Acharjee**

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## **DEDICATION**

**The Ph.D Thesis is dedicated to my beloved Parents, Wife and my  
elder Brother**

## Preface

Dairy sector in India is an integral and interwoven part of traditional agriculture and plays an important role in the rural economy. It is closely interlinked with the socio-economic matrix of rural society. The total milk production has increased from 48.40 million tons in 1988-89 to 127 million tons in 2011-2012. Dairying in India is more inclusive compared to crop production in the sense that it involves a majority of the vulnerable segments of the society for livelihoods. However, India being the largest milk producing country in the world the per capita availability of milk is only 281 gm/day, which is much below the world average figure. The per capita availability of milk is even different across Indian states; as for example, in Tripura, it is 80 gm/day, which is much lower than all-India figure (NDDB, 2007-2008). Despite impressive growth in milk production during the past three decades, productivity of dairy animals continues to remain very low and milk marketing system is primitive. This book is mainly focused on the economics of milk production and marketing in Tripura. The present study aims also to estimate the cost and returns of milk production in Tripura, to examine the factors influencing the milk production in Tripura, analyse the marketing channels, efficiency and price spread of milk producers in Tripura and to study the constraints faced by the milk producers in Tripura. The work is conducted in Jirania and Mohanpur R.D Block of West Tripura District. The study is based on primary data, collected with the aid of a schedule, directly from dairy farmers. For interpreting the data, methods like tabulation technique, figure presentation etc, are used. The study is presented in chapters. The first chapter contains general introduction, research methodology and the second chapter deals with the review of literature defining the book of the title. The third chapter deals with the profile of the study area. Fourth chapter contains cost and returns of milk production and factors influencing of milk production in Tripura. Fifth chapter deals with a detailed analysis of marketing channels, efficiency and price spread of milk producers in Tripura the study. Sixth chapter highlights constraint face by the dairy producers in the study areas. Seventh chapter provides findings, suggestion, conclusion and scope for future work of the study. The book will really help the policy makers, researchers to implement the various development activities of state for which higher growth of dairy sector will be increased significantly.

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**Dr. Milton Kumar Acharjee**

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# CHAPTER-1

## 1.1 INTRODUCTION

Dairy sector in India is an integral and interwoven part of traditional agriculture and plays an important role in the rural economy. It is closely interlinked with the socio-economic context of rural society. Indian economy is predominantly an agrarian economy with more than 75.00 percent of its people living in villages, semi-urban areas and depending upon agriculture and allied activities like livestock farming as well as dairy farming. The share of livestock product in the total agricultural sector is estimated at 21.00 percent. The dairy sub-sector occupies an important position in the economy, as milk is the second largest agricultural commodity contributing to the GNP, next only to rice. Dairying is an important activity in Indian economy contributing about 27.00 percent of the agricultural Gross Domestic Product (GDP) and around 4.35 percent of the national GDP (Government of India, 2011-2012). Milk alone contributes Rs. 450.00 billion to the GNP of the country. However, the plan investment in animal husbandry including dairy sector is only 5.00 percent which is not sufficient enough. The total milk production has increased from 48.40 million tonnes in 1988-1989 to 127.00 million tonnes in 2011-2012. Dairying in India is more inclusive compared to crop production in the sense that it involves a majority of the vulnerable segments of the society for livelihoods. Hence the development of livestock sector has been receiving significant priority in India in the last two to three decades. The targeted growth rate during the Eleventh Five Year Plan period was 6.00 percent per annum, but its achievement was 4.17 percent (mid term appraisal of Eleventh plan). Over the plan period, the annual growth rate of livestock and dairy sector maintained a moderate pace and their contributions towards the total growth process in agricultural sector helped to achieve around 3.00 percent in the first three years of eleventh five plan period.

The outcomes of the growth are very important in the democratic country like India, because in the one billion plus populated country, there is a need to address issues of inclusiveness and poverty alleviation through the growth process. The association between rural poverty and agriculture suggested that there is a direct relationship between the growth of the agriculture and dairy, in reduction of rural poverty. A recent study indicated that the benefits of growth in agriculture and dairy have trickled down to the rural poor and the distributive growth has been inclusive (Kumar et al., 2011). Infact next to agriculture, dairying has been proved to be a major source of income and employment for the rural masses. According to All-India Debt and Investment Survey of 1981, about 73.00 percent rural households reared livestock which is the subsidiary source of employment and income to small and marginal farmers, agricultural labourer and other weaker sections of the society. Besides income and employment, dairy farming provides nutritional security to the rural people. It is to be stated that, of the total population living in the rural areas, nearly 50.00 percent of them are poor, the livestock sector demonstrated a beneficial impact on them by providing employment, income and consumption standard and thereby, as a potential tool in alleviating rural poverty. Dairying is carried out mostly by the disadvantaged and poorer section of population as this sector provides part-time/whole time employment to 19.00 million people i.e about 8.00 percent of total working force in 2001-2002.

Despite India being the largest milk producing country in the world. The per capita availability of milk was only 210 gm/day in 1998-1999 which has increased to 281 gm/day during the year 2011-2012 i.e., by about 34.00 percent, which is much below the world average. The per capita availability of milk is even different across Indian states, for example, in Tripura it was 80.00 gm/day, which is much lower than all-India figure of 281 gm/day in 2011-2012. Despite impressive growth in milk production during the past three decades, productivity of dairy animals continues to remain very low and milk marketing system is primitive. For Tripura and all the North Eastern states, per capita availability of milk production during 2006-2007 to 2010-2011 has been shown in table 1.1

**Table No-1.1: Per Capita Availability of Milk Production from 2006 -2007 to 2010-2011 (Gram/Day)**

State Name	2006-07	2007-08	2008-09	2009-10	2010-11
Tripura	71	72	74	77	80
Meghalaya	81	83	83	83	83

Manipur	91	91	90	88	88
Mizoram	46	47	47	29	31
Assam	71	70	70	69	71
Nagaland	86	58	67	96	93
Sikkim	231	195	194	200	194
Arunachal Pradesh	114	298	316	342	364

Note: Per capita availability is calculated based on state estimates of production and projected population of RGI (Revenue Generated index)

Source: Basic Animal Husbandry Statistics 2011 collected by the ARDD department Tripura

Currently, more than 80.00 percent of the milk produced in the country is marketed by the unorganized private organizations i.e., individual producer and less than 20.00 percent is marketed by the organized sector. But, both organized and unorganized sectors in the dairy industry of the country, faces a lot of constraints like infrastructural, technical, socio-psychological, economic and marketing with high or low severity to expansion of milk production in the country. The growth of dairy sector in India particularly during the last couple of decades has been very impressive. What has been achieved in dairy sector is the breedable cattles population has increased by 34.00 percent in the last 30 years, the production of milk actually been doubled during the period. This has become possible due to continuous increase in percentage of animals in milk and yield of milk per animal through crossbreeding. The Government adopted the various policies for the development of dairy sector believed to be the key factor for this impressive and prestigious growth. With the objective of increasing milk production, intensive cattle development project, key village scheme etc, received primary attention of the Government. Under these programmes service facilities for “artificial insemination” for selected breeding and crossbreeding of cattle followed by veterinary hospitals and subcentre, Animal Resource Dairy Development Department played a crucial role in the Animal husbandry sector. Dairy sector is considered complementary to agriculture which has the capability to enrich the protein diet to its people are well documented. As of dairying and milk supply is concerned the basic objective is to increase the production of milk and milk products and management to provide the basic objective of increasing milk production for distribution of milk in small towns and supply milk to the dairy factories. The dairy sector alone accounts for two third of animal husbandry output. The Dairy sector in India derives its strength from 288.00 million of cattle and buffaloes (1992) which is about 52.00 percent of Asian bovine population. The milk production and consumption at the macro level appears to be substantial, but the marketable surplus constitutes a small proportion of the total production. Retention of milk for home consumption depends upon various parameters like food habit, family needs, ceremonial issues and non-availability of regular marketing facilities which are basic of milk utilization patterns of the producer’s level. It is therefore, essential to have latest comprehensive study on the estimates of total milk production, retention of milk for home consumption, marketable surplus and the price realization through the sale of milk and milk products. It was accepted that dairy sector would be able to increase the milk production substantially as milk is the most accepted animal protein in India.

Dairying provides livelihood to millions of Indian women and generates additional income and employment for a large number of families in the countryside. Dairy industry is the one of the largest contributor to India’s GDP and with its profound social impact, involves over 80.00 million small farming households. Our livestock are roughly half as efficient as the average milch animals in the world and probably only one-fifth as efficient as those in the advanced countries. Although milk production in India has shown a rising trend ever since the inception of ‘Operation Flood (OF)’ programme in 1970-1971, the Indian dairy industry acquired substantial growth from eighth plan onwards with rise in milk production from 58.00 million tonnes in 1992-1993 to 108.5 million tonnes in 2011-2012. This has not only placed Indian dairy industry on top of the world but also led to sustained growth in the availability of milk and milk products for the increasing population of the country. India has acquired the position of the largest producer of milk in the world despite constraints

like rearing of cows under sub optimal conditions due to low economic status of dairy owners. The development of Indian dairy sector is an impressive success story as it is based on millions of small producers. The subsidies provided by the developed countries to their dairy farmers have helped them to lower the prices of dairy products, affecting in turn, the farming community in the developing world. Traders are now free to import milk products and thereby earn high profits at the expense of farmers belonging to developing countries like India.

Dairying and agriculture are bound together by a set of mutual input output relationships. Dairying is not an adjunct to the crop-mix of Indian farms, but an integral part of the total farming system. Hence, treating dairy cattle as the backbone of the livestock wealth of our country would not be an exaggeration. Though the dairy industry in India has undergone considerable transformation over the years and is considered the secondary source of income for millions of rural households, but in terms of per capita consumption of milk, India still compares poorly among the nations of the world. Therefore, in view of ensuring food security, livelihood security and rural development, the Indian dairy sector is a strategic one. Dairying is one of the expanding branches that came out of the Green Revolution. It is an agro-based industry, expanding very fast throughout the world. Recent report by the Ministry of Agriculture reveals that, the dairy industry has the potential to offer about 4.2 crore jobs per year. The demand for milk products would increase as a result of increase in national GDP. In order to meet the demand, it is essential to have a consistent increase in milk production and marketing, which will be possible on successful implementation of "Operation Flood" and evolution or new animal breed.

An efficient marketing system is one, which on the one hand minimizes the cost of marketing services to ensure the largest share of producer in the consumer rupee and on the other hand, the consumers should be provided with quality dairy products at a reasonable price. Thus, marketing of milk products is an imperative component of dairy development and has drawn attention of planners, policymakers, researchers and trading communities.

In India, the marketing of milk and milk products is dominated by the unorganized sector, and the organized sector handles only about 14.00 per cent of total milk production (Government of India, 2004). The dairy cooperatives are considered as one of the vital channels to improve milk production and reduce the cost of procurement, processing and marketing of dairy products through economy of scale approach. A number of parameters like marketing cost, marketing margin, marketing efficiency, etc, depend on the structure of milk marketing and how the milk products are marketed. Marketing costs and marketing margins of a particular commodity reflecting the efficiency of a system to a great extent. The analysis of marketing costs and margins of dairy plants would help in reducing the unwarranted costs in marketing of milk and dairy products. Cost of milk procurement included cost on collection, transportation, chilling and delivery of milk at the marketing system.

Integrated food supply chains serving urban areas are the fastest growing and most visible market phenomenon. Yet small scale milk market agents and chains, supplying fresh milk and traditionally processed dairy products still play a very large role in most of the states including Tripura. They often provide the main outlet for small holder dairy producers, and the main source of fresh milk for resource poor consumers. They played an important role in being the primary mechanism for linking growing demand among consumers with increased production from producers. These market chains are increasingly being challenged by public demands for higher standards and safety and facing stiff competition from the large scale regulated players. In India, 80.00 percent of milk marketed, still passes through these traditional marketing channels in spite of the high profile given to co-operative dairy development throughout the Operation Flood programs. However, the dominance of traditional channels varies across states and in some of the underdeveloped states like Tripura, traditional channels are the only milk marketing outlets available for small dairy producers. This basic structure in milk marketing in India is not expected to change significantly in the near future. But the dynamics of efficiency and functioning of the traditional milk market are not well understood and generally evade the attention of policy planners. Due to their exclusion from policy and lack of attention, factual information on its functioning is limited. An understanding of the efficiency and its driver would be

useful to evolve policies, development strategies and business development services for the efficient value chain in milk marketing.

The milk marketing has been undergoing a paradigm shift in India and the emergence of integrated milk supply chains one of the fastest growing and most visible market phenomena. However, the basic structure of milk production and marketing is not likely to change significantly in the near future and therefore, the dominance of traditional milk market chains will continue to persist inspite of the rapid growth of the organized and formal milk marketing chains. The structure and functioning of the traditional and informal milk market is not well understood in India. Indepth understanding of the traditional milk production and marketing would be useful in evolving policies and strategies for the development of an efficient milk value chain.

Many of these producers in India own dairy cattles primarily to supply milk for their own consumption. Only 30.00 percent of the milk produced in the country is retained in producer house. About 70.00 percent of milk is marketed through the highly fragmented unorganized sector, which includes local milk vendors, wholesalers, retailers, and producers themselves. On the contrary the organized dairy industry, which accounts for about 20.00 percent of total milk production, comprises two sectors: Government and Co-operatives. Even though co-operatives provide a remunerative price to the producer, the unorganized sector plays a major role in milk marketing because of three factors. The first factor is the pricing policy of the co-operatives is that their purchase price is based on the fat content of the milk, whereas the private sector pays a flat rate per liter of milk. The second factor, which motivates the milk producers to sell milk to private vendors, involves the type of milk animals reared by the producer. Crossbreed cows yield more milk with a lower fat. The crossbreed cow population has increased over years because of artificial insemination and good management practices. The third factor is payment policy. The private sector can pay their producers every day, whereas the co-operatives pay weekly or fortnightly. Producers sometimes have to fight with the co-operatives to get their payments.

## **1.2 Dairy Development in the North-Eastern Region**

Dairy is an important subsidiary occupation of the farm households in the North Eastern states including Tripura. A large percentage of cows in this part of the country are of non-descript (desi) type; less productive and poorly managed. These poor breeds of cows are the source of milk, curd, ghee and other milk products. Nevertheless, there are certain breeds of cattles which are unique in North Eastern region. Livestock like cattle, buffalo, goat, sheep, and pig are reared under traditional system of management. The animals are let loose throughout the day according to crop cycle and in the evening they are tied in animal shed. The productivity of such indigenous non-descript animals are very low; even then these animals are the backbone of the rural economy of North Eastern region.

The scenario of cows' management and dairy farming in the region is somewhat different in the peri-urban fringes, towns and cities. Particularly crossbreed cows are reared for milk production under stall feeding method. The cows are stall-feeding with cut grasses along with feed concentrates better veterinary services and management practices. In an effort to improve the genetic potentiality of the indigenous cattle cross breeding has been accepted by some of the enlightened producers as it is a national policy. The efforts made for improvement of genetic potential have achieved a milestone in advanced urban fringes but did not reached the fur-flung rural area.

It may however be stated that the status of dairy sector in the hills and plains area is quite different. Dairy keeping in the hilly region forms an integral part of the age-old crop livestock mixed producing system and assumes additional significance, as the dairy options are limited in these areas. In the plains people reared animals like cattle and buffaloes for milk and milk products and to use for different agricultural operations. In the hills traditionally they however reared the domestic animals for meat, milk, skin, hides, manure and for other purposes. The tribals living in the hills, traditionally they are not taking milk or milk product, it was their social taboo. However, with the passes of time the younger generation of the hill people gradually shifted to milk and milk product and the demand for milk and milk product have been increasing.

In the North Eastern region there is no recognized breed of cattle and buffalo, although these are the two important milk producing animals. In the plain areas and the valley areas of the region, these animals are used traditionally, to perform agricultural operations. Milk production is secondary to agricultural operations. There are hardly any commercial dairy farms in the rural areas. Dairy is a sub-sector of agriculture, which plays a significant role in the rural economy by providing part-time employment opportunity to the small and marginal farmers in particular and farming community in general. In the periphery of towns and cities some commercial dairy farms with crossbred cows in small scale are coming up, as there is assured market for milk and milk production.

### 1.2.1 Dairy Statistics in North East India

**Table 1.2: Estimates of Milk Production from Non-Descript Cows 2007-2008 to 2010-2011**

North Eastern states	No. of milch cow (000 nos)				Average yield per animal in milk (kg/day)				Estimates of milk production (000 tonnes)			
	2007-2008	2008-2009	2009-2010	2010-2011	2007-2008	2008-2009	2009-2010	2010-2011	2007-2008	2008-2009	2009-2010	2010-2011
Assam	1310	1355	1299	1326	0.96	0.94	0.95	0.93	462	462	451	448
Tripura	135	146	151	155	1.13	1.12	1.14	1.15	55.6	59.6	62.7	64.9
Manipur	45.9	46.1	46.0	46.3	1.43	1.43	1.43	1.43	24.1	24.1	24.0	24.2
Meghalaya	101	104	105	106	0.77	0.75	0.75	0.76	28.3	28.4	28.7	29.3
Mizoram	4.9	5.3	5.5	5.5	1.57	1.54	1.57	1.56	2.8	3.0	3.2	3.1
Nagaland	0.4	15.1	14.4	14.2	1.47	1.34	1.87	1.74	0.2	7.4	9.8	9.0
Arunachal Pradesh	53.3	43.9	44.8	45.9	1.18	1.15	1.21	1.28	23.0	18.4	19.8	21.5
Sikkim	12.2	12.2	12.2	12.2	1.98	2.01	1.83	1.86	8.9	9.0	8.2	8.3

Source: North East States Animal Husbandry Departments

From the above data in table 1.2, it is clearly shows that North East region maximum milch cows are non-descript type.

**Table 1.3: Estimates of Milk Production from Crossbred Cows 2007-2008 to 2010-2011**

North Eastern States	No. of milch cow (000 nos)				Average yield per animal in milk (kg/day)				Estimates of milk production (000 tonnes)			
	2007-2008	2008-2009	2009-2010	2010-2011	2007-2008	2008-2009	2009-2010	2010-2011	2007-2008	2008-2009	2009-2010	2010-2011
Assam	135	137	153	162	3.36	3.34	3.31	3.70	166	167	185	219
Tripura	19.3	19.3	19.5	20.9	4.42	4.54	4.62	4.58	31.3	31.9	32.9	34.9
Manipur	14.4	14.5	14.3	14.3	7.64	7.64	7.65	7.65	40.3	40.6	39.8	39.9
Meghalaya	14.21	4.4	14.5	14.6	8.97	8.95	8.96	8.98	46.4	47.0	47.4	47.9
Mizoram	4.2	4.3	2.6	2.8	8.42	8.29	7.22	7.46	12.9	13.0	6.9	7.7
Nagaland	22.7	23.6	32.2	33.1	4.95	4.87	5.37	5.18	41.1	41.9	63.2	62.5
Arunachal Pradesh	3.1	2.7	2.9	2.9	7.77	6.07	6.17	6.59	8.9	6.0	6.5	6.9
Sikkim	16.3	16.3	16.3	16.3	5.50	5.53	5.98	5.84	32.9	33.0	35.7	34.8

Source: North East States Animal Husbandry Departments

**Table-1.4: Estimates of North-East Milk Production from 2006-2007 to 2010-2011 (Gram/Day)**

States	2006-07	2007-08	2008-09	2009-10	2010-11
Arunachal Pradesh	114	73	55	59	63
Assam	71	0	70	69	71
Manipur	91	91	90	88	88
Meghalaya	81	83	83	83	83
Mizoram	46	47	47	29	31
Nagaland	86	58	67	96	93
Sikkim	231	195	194	200	194
Tripura	71	72	74	77	80

Source: Basic animal husbandry statistics 2012

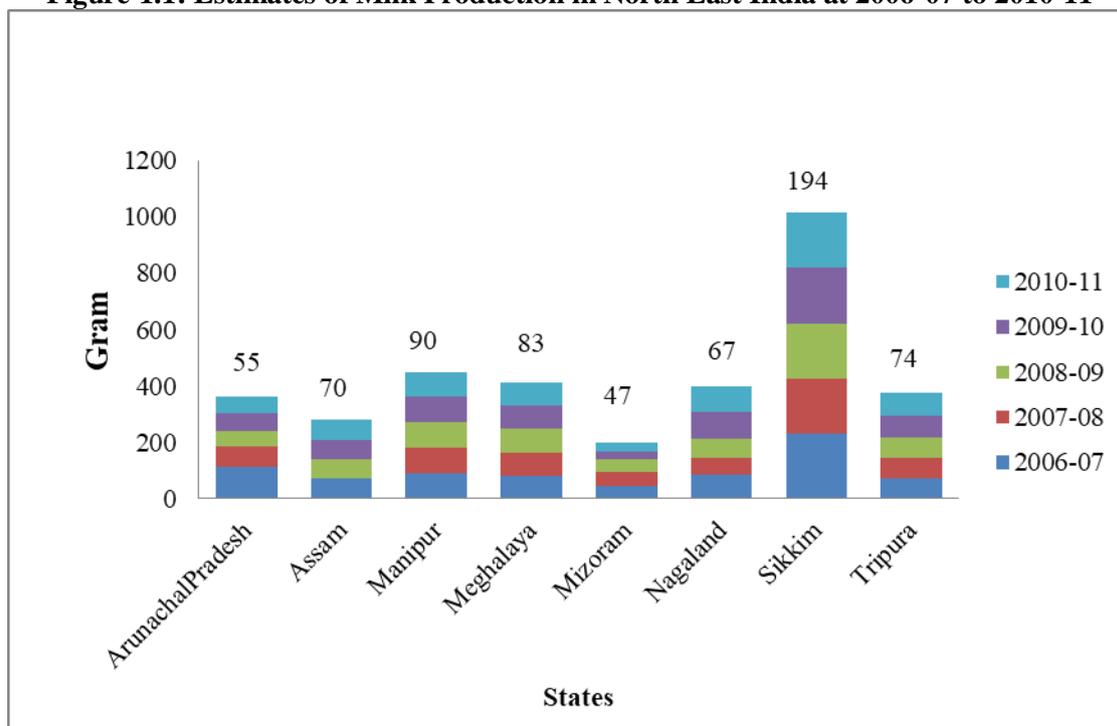
**Figure-1.1: Estimates of Milk Production in North East India at 2006-07 to 2010-11**

Figure 1.1, it is clearly shows that maximum milk production in North East region is in Sikkim and its scored highest number and respectively second, third, fourth position are Manipur, Meghalaya and Tripura.

### 1.3 Importance of Dairying in Tripura

The importance of dairying lies not only in production of milk, but in its capacity to bring about significant changes in the socio-economic structure of rural economy. Its role in employment generation is well recognized. It has provided numerous small and marginal farmers and agricultural labourers with supplementary employment and a regular source of income. Dairying and its related activities create jobs equivalent to about 25 million a year. The significant role played by the co-operatives in stimulation of dairying has also proved to be an important source of progress.

### 1.4 Need for the Study

The need for promotion of dairying in Tripura arises due to several considerations such as low per capita availability of milk, prevalence of large scale unemployment and under-employment, encouraging mixed farming for further utilization of farm products and increasing living condition of rural poor, achieving self sufficiency in the production of milk and milk products. In the ultimate analysis, the need for dairy development in Tripura arises due to various main reasons which stand out prominently as supply of adequate quantity of milk at reasonable price to consumers, and improvement of marketing facilities and extension services. There is poor perception of the farmers towards commercial dairy enterprise as an alternative to other occupations. Owing to lack of proper veterinary extension system, there is poor perception to the farmers towards dairy enterprise as a viable alternative to crop husbandry.

Dairying equally important sector, which needs some support. A majority of the small farmers in Tripura, who do not have productive land for agriculture and depend on dairy for supplementary income. Therefore, promotion of dairy sector with high breed cattle can generate employment for small farmers, throughout the year.

Dairy farming is a common economic activity in rural and periurban areas of Tripura and India as a whole. Smallholder dairy farming is increasingly gaining importance as a source of family income in rural, periurban areas of India. Therefore, this study also focuses how to various motivational factors

directly or indirectly influence the dairy producers to produce milk and marketing the milk, so that it can create a positive impact of the contribution on the income and employment of Tripura.

The study is also necessary to observe the real scenario of dairy producer in Tripura, their status of living, income, employment, education etc. This study will analyse the economics of dairy farming and recommends areas to be encouraged and areas on which more research work to be conducted. Changes in cattle management and cattles feeding practices, especially by small dairy farmers, can be instrumental in raising milk yields in the short run as well as long run. The attempts to enhance production of smallholder dairying are not only important for raising milk yield in the country; they could also become an effective tool of raising incomes of impoverished rural households. Dairy sector is giving self-employment and generating income and livelihood of the rural people therefore, there is a need to improve the production and marketing structure in dairy sector.

### **1.5 Motivation for the Study**

The dairy sectors have made a visible impact on nutritional security and have set models to be emulated by other sectors of agriculture. Dairying is part of agriculture; it is far more profitable than any other sector of agriculture. Infact, it is more prosperous to be a dairy farmer instead of just being an agriculturist. The cow eats what is wasted in the field and converts the same as a value added product in the form of milk. Today milk commands better advantage when compared to any other agricultural crop. One of the most effective instruments for supplementing farmers' income and generating employment in the rural sector is dairying.

Dairy animals, apart from their role in milk supply, contribute huge quantity of organic manure, which is one of the major inputs in our agriculture. Dairy farming is also a very important subsidiary occupation. It provides employment to millions of unemployed and under-employed and particularly small farmers and landless labourers. The proponents of the dairy development programme feel that such activity does indeed raise the level of income of the rural poor. In India more than 80.00 percent of milk produced in the country, in fact comes from small holding and landless farmers. This sector provides additional income and generates job opportunities for 80.00 million farmer families. In this context, this research work has been undertaken to study the economics of milk production and marketing in Tripura.

### **1.6 Statement of the Problem**

India is the largest milk producer country in the world. The milk production of this country, has increased, from 17.00 million tonnes in 1950-1951 to 127.00 million tonnes in 2011-2012 and the per capita availability of milk has also increased from 112.00 gram/day in 1968-1969 to 281.00 gram/day during 2010-2011. Although the milk production has increased from 89.00 thousand tonnes in 2006-2007 to 104.00 thousand tonnes in 2010-2011 in Tripura and in Tripura, the per capita availability of milk has also increased from 71.00 gram /day in 2003-2004 to 80.00 grams / day during 2010-2011. In Tripura, the production of milk is low as compared to the other states. It has an opposite picture of milk production to the other parts of the nation, where production of milk is increasing rapidly. This deficit which is of a very serious nature may affect the health and vitality of the nation, as milk is the only source of animal protein for a large number of people in Tripura. To meet the nutritional requirements of the people, there is an urgent need to boost milk production. Low productivity has been a major problem of Tripura dairying for a long time. It is important to know what policies, and what steps need to be taken for productivity enhancement along with investing scarce capital in certain factors which affect productivity.

The disparity in dairy sector persists with respect to other indicators of dairy development, such as, proportion of crossbreed population, breeding, feeding and marketing facilities for dairy as well. The growth of milk production is important not merely to improve milk availability, but for improving the livelihood status for the bulk of rural poor in this state. The balanced growth in dairy sector apart from the other factors is also influenced by the Government expenditures and regulations in the sector. The main objective of dairy development is to improve the milch cattle, to provide remunerative price to milk, improvement of the socio-economic conditions of the milk producers, to maintain an effective supply system of the milk and milk products at reasonable price for the consumers. In this context, this

study also aims to investigate the problems of production and marketing of milk in Tripura and the problems encountered in the dairy sector on productivity, finance, marketing, feeding, infrastructure, and other problems.

### **1.7 Research Gap**

The Present study covers the economics of milk production and marketing in Tripura. So far no research has been conducted in Tripura, particularly on milk production and marketing. A project have been undertaken to analyse the functions of co-operative societies but no study has been organized individual milk producers to know their production and marketing problems. Therefore milk produced by the people in Tripura and system of marketing followed by them has not been analysed so far. Hence, this study has been undertaken with the following objectives.

### **1.8 Objectives of the Study**

1. To estimate the cost and returns of milk production, in Tripura.
2. To examine the factors influencing the milk production, in Tripura.
3. To analyse the marketing channels, marketing efficiency and price spread of milk producers in Tripura, and
4. To study the constraints faced by the milk producers, in Tripura.

### **1.9 Limitations of the Data Collection**

Respondents are afraid and some of them suffering superstitious problem. Majority of the milk producers generally do not keep any records hence, the information collection was based on mental recollection of recent events such as procurement, price rates etc. The inputs provided by the farmers therefore could not be checked for authenticity. The rates related to non- milk income e.g. income from cow dung etc, were assumed on the basis that there would be assured market accessible to the farmers. No concurrent study was conducted to collect data from market/ intermediaries regarding input and milk prices for cross verification. Limited focused sensitization program was organized amongst the milk producers both prior and during the study period. Information related to ownership could not be verified from secondary sources. The normal tendency of producer is to shows that their cost of production is very high and return from milk is almost low.

### **1.10 Collection of Data and Methodology**

The data were collected from both primary and secondary sources. The primary data were collected from the individual milk producer, village trader, and consumer with the help of structured interview schedule from the respondents.

The data relating to the age, sex, education, occupation, number of animals, the lactation period, details of yield, cost structure of milk production, constraints of production, feeding practices, marketing channels, womens role, human capital, natural capital, assets of the households etc were collected from the sample respondents.

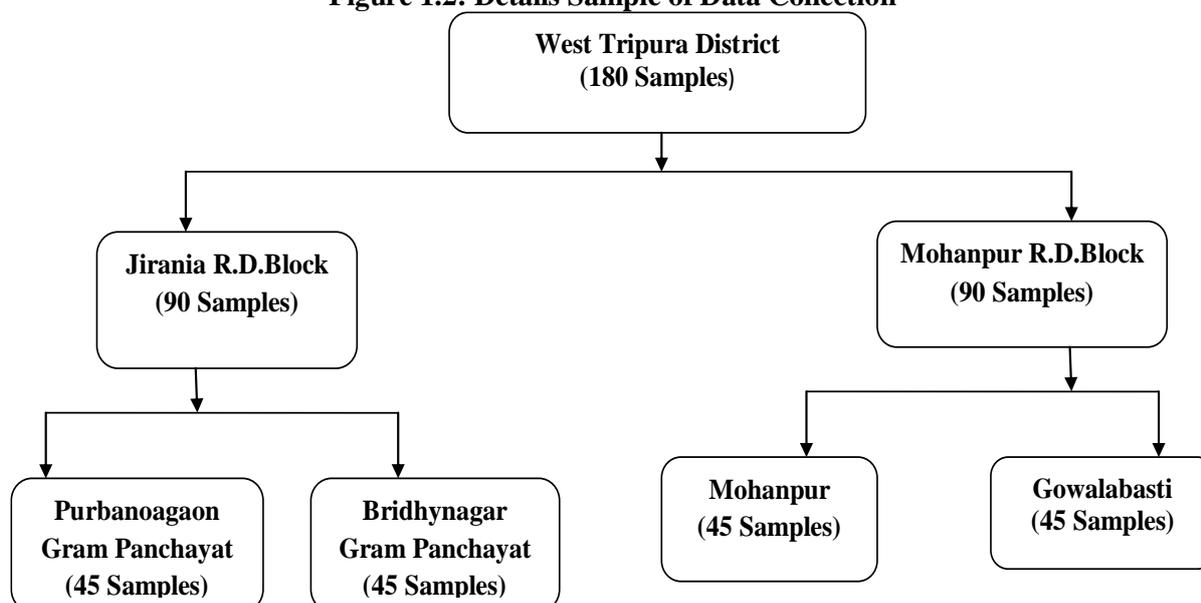
The secondary data were collected from Animal Resource Development Department (ARDD) Government of Tripura, ARDD Block level office like Jirania, Mohanpur, Various subcentres like in Bridhynagar, Radhakrishnanagar, Ranir Bazar Animal Husbandry Department, Gomati Co-operative Milk Producers Union Limited (GCMPUL) of West District. For the purpose of getting area profile, data were collected from records of various Gram Panchayat, like Purbanaoagaon, Uttar Majlshpur, Bridhynagar, and Radhakrishnanagar. Apart from these, necessary information has been collected from various dairy Hand Books, Journals, Published articles, unpublished thesis, Govt of Tripura Statistical Website, West Tripura District website last but not the least the World Wide Web.

#### **1.10.1 Sampling Design**

The West Tripura District was selected purposively for this study as the number of cattle population is highest in this District as compared to other districts. Two Blocks i.e., Jirania and Mohanpur R.D Blocks were also selected purposively from the West Tripura Districts, as the number of cattle population is highest in these Blocks. Furher, from each Block two villages with highest cattle

population was selected purposively. From each village 45 i. e., in total 180 samples were selected randomly from four villages to collect data with the help of structured, pre-tested schedule. After that all the samples are taken together and divided into three size groups to avoid aggregation problem of data i.e., small, medium and large group. Small groups consist of less than 5 milch cows in the house holds interms of non-descript (desi cows) and medium groups consist of 5 to 10 milch cows a household. Large group consists of more than 10 milch cows in the households. In case of crossbreed, small groups consist of less than 3 milch cows and medium group consists of 3 to 5 milch cows in the households. Large group consists of more than 5 milch cows in the households. This is because average production of one crossbreed cows is equal to about to two non-descript cows. It is also clearly noted that only milch cows is taken into consideration for the purpose of the study. Details sample of data collection is given in the figure 1.2 and table 1.5.

**Figure 1.2: Details Sample of Data Collection**



**Table 1.5: Details Sample of Data Collection**

Name of the Block	Name of the Gram Panchayat(Number of Samples)
Jirania R.D.Block	Purbanoagaon(45)
	Bridhynagar(45)
Jirania Block Total	90
Mohanpur R.D.Block	Mohanpur(45)
	Gowalabasti(45)
Mohanpur Block Total	90
Total number of samples	180

### 1.10.2 Statistical Tools Used

Different statistical tools are used. List is given in the below.

1. Mean.
2. Various Statistical Pie charts, Bar figure etc.
3. Correlation analysis.
4. Regression analysis.
5. Break Even Point (BEP)
6. Acharya model is used for measuring the marketing efficiency.
7. Garrett ranking test.

# CHAPTER-2

**REVIEW OF LITERATURE**

This chapter records the finding of the research studies conducted previously on the milk production and marketing in various parts of India and other countries.

**2.1 Review of Literature Related to Production of Milk**

**Patil (1981)** made a random sample survey on fifty dairy farmers from eight villages of Shirpur Tehsil of Dhule district of Maharashtra (India) to know the cost of production of milk in the study area. The total cost of milk production per cow was Rs.113.87 in which the variable cost was 83.76 percent (Rs.95.38) and remaining 16.24 percent (Rs.18.49) was fixed cost. In variable cost, the cost of feed stuff was 73.39 percent (Rs.70.00). Labour cost was 15.73 percent (Rs.15.00), the cost of medical treatment was 2.62 percent (Rs.2.50) and interest on working capital was 8.26 percent (Rs.7.88). Finally, it was found that the cost of milk was Rs.9.10 per litre in the study area. Dairy farming has been recognized as an important source of income and is more remunerative in comparison to crop production. Milk production in India is predominantly the domain of small farmers in mixed farming system. Scientific dairy management helps the farmer to channelize his limited resources to maximize returns from his dairy farm.

**Moran (1987)** viewed that cow's play an important role in the agriculture of South East Asia, providing both milk and meat and also traction for ploughing and transport. The native breeds vary considerably in their characteristics, not only in their inherent qualities but in their response to varying systems of management, some very primitive. Improvement is clearly possible by crossbreeding, but it appears that this is most likely to be achieved within existing native breeds, rather than by introducing exotic ones developed to thrive under very circumstances.

**Garsow, James and Nott (1992)** for the study examined that seven liquid handling systems and one solid manure handling system for three Michigan dairy herd sizes ranges from 60 to 250 cows. They found that investment costs for the least expensive system could be less than a fifth of the most expensive system. Yet; more stringent manure handling regulations could cause some producers to leave the industry because the additional costs of improved manure handling systems could force their break-even price above the expected milk price. The likelihood of a producer leaving the industry depended on the farm's current financial position and performance.

**Sharma and Vanjani (1993)** are of opinion that there is very little breathing time for Indian farmers to face the challenge of importing milk and milk products under WTO regime. It is necessary to reduce the cost of milk production by increasing the productivity of our cows. They also need to reduce the cost of handling of milk and processing by reducing intermediary agencies and by adding value to the produce. They need to discuss with the milk producers and understand their problems and solve them at the earliest.

**Bandyopadhyay (1996)** pointed out that maximum people of thickly populated India live in villages. Majority of them are involved in agriculture and old methods of cultivation are still in vogue. Rearing of cows is also an additional source of income of the villagers in our country. They get from our ancient history that the domestication of the cow dates back to nearly 4000 years. Scriptures of India refer to the wealth through the world Godhan'. Maximum properties of cows of the world are seen in India. This number is too inadequate to meet the country's demand for milk. The supply of milk in some parts of India is higher than the local demand. But supply of milk in the rest of the country is much lower than the demand. In 1965, National Dairy Development Board (N.D.D.B) was set up with the object of meeting the increasing demand for milk, especially in urban areas as well as to develop the rural economy, through the enhancement of the milk production in the country.

**Prasad (1999)** has observed that the concentrates contributed as an important input in the milk production having significant and positive regression coefficient for all the breed of cows. The dummy variables for both the winter and rainy seasons had negative regression coefficients for the local and crossbreed cows, the same were positive and significant for both the seasons.

**Chand, Singh and Singh (2000)** reveal that milk production in commercial dairy herds is an economically viable and profitable enterprise in Bikaner city. It generated around 973 man-days of

gainful employment per year in an average dairy herd. The contractual procurement and auctioning system of milk has helped a lot in increasing the number of dairy herds in the city. The optimum herd size analysis has suggested the scope for further increases in the number of milch animals in the dairy herds.

**Kakaty and Gogoi (2001)** opine that animal husbandary plays a pivotal role in the agrarian economy of India. It is closely interlinked with the socioeconomic matrix of the rural society. The development of livestock sector has been receiving significant priority in India since last two to three decades. Dairy sector contributes significantly in generating employment opportunities and supplementing the income of small and marginal farmers, providing them food security.

**Birthal (2002)** was of the opinion that the income from livestock sector helps in alleviating poverty and smoothening of income distribution.

**Garcia and Khan (2002)** made a study that 2 cow farms (BD-2) not only cover full economic costs, but can produce milk at a cost almost as low as the larger farms included in the study. This should be very encouraging for more than 7.2 million Bangladeshi families involved in small scale cattle rearing, of which few make a profit and most consider it a highly risky activity. The small farm (BD-2) is competitive at the national level but not at the international level. The cost of milk production of all farms in comparison to larger farms in India, Pakistan and Oceania is around 50.00 percent higher.

**Saxena (2002)** in his opinion, milk production in India is characterized by a large number of milch animals, a large number of milk producers, mixed farming and low productivity of milk per animal. Most of the total milk production in the country come from non-descript cows (27.00 percent), crossbreed cows (15.00 percent) and buffaloes (54.00 percent). Goats and other animals contribute only a minor share (4.00 percent) to the total milk production. The population of crossbreed cows and buffaloes is kept largely for milk production while the population of non-descript cows is maintained for producing both milk and drought animals. The study mainly focuses the “Low Cost Approach” (LCA) environmental impact of milk production in terms of methane emissions.

**Kaiser, (2003)** this study investigates the impacts of alternative federal dairy policies on the U.S. dairy sector. In addition to the current dairy price support program, five alternatives are investigated: (1) immediate deregulation, (2) gradual deregulation, (3) target price-deficiency payment program without supply control, (4) target price-deficiency payment program with supply control, and (5) mandatory supply control. An econometric model of the national dairy industry is used to simulate quarterly equilibrium price and quantity values at the farm and wholesale levels for each policy over the period 1980-1990. Consumers are better off under both immediate and gradual deregulation, as well as the target price-deficiency payment scenarios because prices are lower, enabling them to consume more dairy products.

**Sharma and Singh (2003)** milk collection was higher in healthy season (from September to February) and lower in unhealthy season (from March to August). In spite of more production in the month of July and August, the producer members of the society were not in position to transport their product due to lack of all weather roads. As the distance of the milk producer's co-operative society increases from the dairy plant, the volume of milk collection decreases, the milk collection was higher in those societies, which are well connected to the dairy plant. The variable cost was the main component of cost of milk production and the maximum cost incurred in the purchase of feed and fodder and in labour management. Low price of milk was the most important problems in the collection of milk, followed by lack of cold storage, delay in payment, inadequate water for animals, lack of all weather roads, small quantity of marketable surplus of milk, improper treatment, lack of cross breed animals and uncertainty of electricity. Hence, efforts should be made to solve all these constraints.

**Campo and Beghin (2005)** explored and investigated Japanese dairy markets. They provided an overview of consumer demand and how it evolved after World War II. Using historical data and econometric estimates of Japanese dairy demand, they identify economic, cultural, and demographic forces that have been shaping consumption patterns. Then they summarized the characteristics of Japanese milk production and dairy processing and policies affecting them.

**Somda, Kamuanga and Tollens (2005)** suggested that the domestic milk production has been for a long time hindered by many factors including lack of interest from decision makers, distorted economic policy and biotechnical constraints. The current milk production system is surely viable. Constraints to increased productivity include lack of improved technology at farm level and weak institutional support. Despite the low viability status, it is shown that milk production generates reliable incomes, which could be a departure for most farmers to intensify farming systems, particularly in areas where no loan schemes exist for purchasing agricultural inputs.

**Bhowmik (2006)** opined that the cost and returns from milk production were estimated separately for local and crossbreed cattle. The gross cost of maintenance was worked out as the sum of fixed and variable costs items. The net cost was arrived at by deducting the value of dung from gross cost per milch cattle per day was divided by the average milk yield per day of the respective breed. The net return was calculated by deducting gross cost from gross return.

**Bhowmik, Sirohi and Dhaka (2006)** analysed that the net cost of milk production from crossbreed cows in South Tripura was nearly half of the same from local cows. Thus, in the economic interest of the farmers, strategies to be aimed at crossing non-descript cows, with superior germplasm, should be intensified by the concerned State Department.

**Chauhan, Singh and Raina (2006)** made a study in an ISO-9002 dairy plant situated in the north-eastern part of Haryana. It has been observed that all the products, except the double-toned milk are being produced above the recommended breakeven level. A comparison of unit manufacturing cost with unit price received by the plant for different products has revealed that ice-cream manufacturing has been the most profitable proposition among different dairy products, and standardized milk has provided the maximum profit margin among the milk pouches manufactured during the study period, 2000-2001. The double-toned milk has revealed a loss. Therefore, the study has suggested that the quantity of double toned milk production should be raised at least equal to the recommended breakeven level to avoid losses, if there is a market demand for this product or the resources of this product could be shifted to some other profitable products.

**Dash, Sadangi and Pandey (2006)** evaluated "Women Dairy Project - Balasore and Bharak districts of Orissa" sponsored by Ministry of Women and Child Development, Government of India in the year 2005. The Women dairy funded under STEP envisaged formation of women dairy co-operative societies and supporting the societies and members by way of creating marketing infrastructure, supplying physical inputs for dairy development and arranging training for office bearers and members. The project created a good impact on dairy sector as a whole and on cross section of beneficiaries. It provided an assured market to milk producers, released them from the clutches of unscrupulous middle men by offering them a fair and transparent deal.

**Karmakar and Banerjee (2006)** pointed out that growth in milk production is likely to continue at the present rate of 4.4% in the near future. Who is going to handle this incremental milk? They must bear in mind income and price elasticity, account for approximately 15.00 percent of the total expenditure of food. Demand for milk, at current rate of income growth is estimated to grow at 7.00 percent per annum. Interestingly, demand for milk is expected to grow steadily over the next two decades as the low income rural and urban families, who have higher expenditure elasticity, would also increase their income due to new economic environment.

**Gupta (2007)** made a study on the fact that India is today the world's largest milk producer, but the dairy industry is for some strange reason not considered 'glamorous. For policy makers, dairying is viewed as a 'subsidiary' activity. When milk is one of the product that generates cash income to farmers almost on a daily basis, unlike sugarcane or wheat. Besides being a source of liquidity and insurance against crop failure and milk is the only activity where the farmer realizes 60-70 per cent of consumer price - against 20.00 percent or so in fruits and vegetables.

**Doyon, Criner and Bragg (2008)** viewed that the New England dairy farmers are under intense price pressure resulting from important growth in milk production from lower cost of production in Southwest states as well as by retailers' market power. Agricultural officials and legislative bodies in

New England and in other Northeast US states are aware of these pressures and have been reacting with emergency dairy farm aid, following a very low 2006 milk price, and with state legislations in an attempt to address perceived excess retailing margins for fluid milk. In this paper, they have suggested that a sigmoid demand relationship exists for fluid milk. This demand relationship will explain fluid milk asymmetric price transmission, high-low pricing, and the creation of a large retailing margin (chainsurplus) often observed for fluid milk.

**Islam, Goswami and Mazumdar (2008)** have analysed Tehatta-II block of Nadia district in West Bengal. The study revealed that crossbreed cows were more economical and gave higher yield than the indigenous cows and inclusion of a few crossbreed cows can increase the income of a dairy entrepreneur and provide gainful and employment round the year.

**Krishnan, Nigam, and Kumar (2008)** opined that growing human population, rising per capita income and increasing urbanization are fuelling rapid growth in the demand for food and animal origin in developing countries. India possesses the largest livestock population in the world. Contrary to the large population of livestock in India, productivity of Indian livestock is very low compared to many developing countries.

**Singh and Joshi (2008)** reported that a majority of the farm households are not able to meet their requirements from their income from crops. Further dairy farming has emerged as a major allied enterprise for supplementing the income of marginal and small farmers in Punjab.

**Bohra (2009)** opined that dairy farming, one of the most important economic activities in the rural mountain areas of Uttaranchal, is closely intertwined with farming systems. Rural communities fondly relish dairy products. Dairying again is the main purpose of animal husbandry in mountain areas. Apart from ensuring nutrient supplies to the families owning dairy farms, dairying also offers promising employment opportunities and handsome economic returns. In Uttaranchal Mountains, dairying is especially a promising economic activity for smallholders who constitute the majority of farming communities in the region. Smallholder dairy farming is increasingly gaining importance as a source of family income in mountain areas for quite some. However, contributions of smallholder dairy farming accrued to the community and farming system are still not well recognized. India's emerging as the top milk producer in the world is largely due to smallholder, rather than intensive, dairy farming linked with the marketing system.

**Dhanabalan (2009)** opined that dairy has an important role in improving the overall economic conditions of rural India. There is need for sustainable and balanced development of agriculture and allied sectors. From our first plan onwards, planners have given priority to allied sector for the economic development of the rural sector. Dairy farming is described as a small industry which provides substantial gainful employment opportunities, makes it comprises of about six percent of the national income.

**Mathialagan, Chandrasekaran and Manivannan (2009)** in their study, conducted with the objective of training the farmers on feeding technologies for improving the SNF content of milk in milch animals and to assess its impact at the field level. About 159 women dairy farmers cum self help group members belonging to ten different villages of Namakkal district were selected for the study. A benchmark survey was conducted for all the women dairy farmers on cost effective feeding practices for dairy cattle, feeding of chopped fodder on the animals and supplementing diet with minerals. The results indicate that 46.37% of cow milk samples had less than 8.00% of SNF content. When the SNF content falls below 8.00% the payment for the milk will be calculated based on the fat content of the milk as per the price policy of milk co-operative societies. In such cases, the farmers would get a lower price of Rs.6.50/- per litre.

## **2.2 Review of Literature Related to Marketing Efficiency**

**Babb (1981)** analyzed the relationship between milk prices and production costs as sources of change in the level and geographic distribution of milk production in United States of milk production. Milk prices, direct and total costs of production during the period from 1974 to 1980 were estimated as a function of distance from the upper Midwest by ordinary least-squares regression. Milk prices and

costs increased with distance of production areas, from the upper Midwest, but the increases were less than transportation costs. The cost and price changes during 1974 to 1980 provided a strong incentive for increase in milk production, in all the regions. The changes in milk prices and cost of production did not encourage production, expansion in higher cost regions relative to expansion in the upper Midwest.

**Kalsi (1992)** viewed that the unorganized sector usually scores over the organized sector, on due to consumers' confidence, the richness of milk as indicated by "Malai" on milk, the freshness of their products, their ability to give credit and the low overheads costs.

**Raju (1992)** opined that the general practice of milk vendors in Hyderabad was that they finance the producers for purchasing milch animals and other personal needs and thereby bind the producer to sell milk to them round the year.

**Ray and Sunil (2000)** conducted a study in Jaipur city, reported that local milkmen supply fresh raw milk at the doorsteps or to the vendor who in turn supplies it to households. The prices varied from Rs.13-20 per litre for cow's milk depending on adulteration of milk with water and the category of customer. The price generally realized by small farmers from the local vendor was about Rs.10-12 per litre, whereas they got only about Rs.9-10 from the co-operatives. Some middlemen also deployed daily wage workers to collect milk by using bicycles, jeep or camel cart to collect milk from the doorstep and take it to different selling points in nearby major cities.

**Shah (2000)** in his opinion that the predominance of middlemen in this area was mainly due to the non-existence of Milk Co-operative Society. Generally, the middlemen advanced money to needy milk producers and procured milk at a low price round the year. It was reported that 75.00 percent of marketed surplus of small producer's production was cornered by them. Similar observations were reported in a study conducted in Jalgaon and Kolhapur districts of Maharashtra.

**Kurup (2003)** opined that the price realized by farmers from informal sector was Rs.9.50 to Rs.10 per litre, whereas cooperatives paid between Rs.8.00 and 8.50. Further, the middlemen who bought from them made instant cash payments whereas it took 12-15 days to realize payments from the cooperative system.

**Samajdar and Chander (2003)** in their study about the livestock husbandry of the Vangujjars of Uttaranchal also observed that even though they possess sound experience about various aspects of animal husbandry, they are vulnerable to and open for exploitation by the middlemen to whom they sell milk despite the existence of cooperatives in that area. They are often riddled with debt and stand marginalized. The study recommended that the cooperatives should come forward to find out the reasons for Vangujjars' apathy towards cooperatives and involve them as society members

**Rajendran and Mohanty (2004)** explained that the operation flood and dairy co-operatives emerged in India as the largest rural employment scheme. The results of the study indicate that 80 percent of the milk produced by the rural producer is handled by an unorganized sector and the remaining 20 percent is handled by an organized sector. It is found that the dairy co-operatives play a vital role in alleviating rural poverty by augmenting rural milk production and marketing. Involvement of intermediaries; lack of bargaining power by the producers; and lack of infrastructure facilities for collection, storage, transportation, and processing are the major constraints which affect the prices received by producers in milk marketing. Milk quality, product development, infrastructure support development, and global marketing are found to be future challenges in milk marketing.

**Edward, Norman and Vijay (2006)** opined that, in the third in depth country study, the Babcock Institute study team discusses India's dairy sector. India is an interesting case study because it has the world's second largest population making it the world's largest milk-producing country. The country's main system of dairy productions involves a smallholder production system in which most of the milk produced is consumed on the farm or distributed through informal channels. This system of production, combined with Indian policies that encourage selfsufficiency and restrict dairy imports, leaves much unused potential in the Indian market.

**Sharma, Saxena and Das (2007)** had their opinion that India is the leading milk producer in the world and the dairy cooperatives are the backbone of Indian dairy industry. This study has analyzed the inefficiencies existing in improving milk production, procurement pattern, marketing channels, and price spread of a dairy cooperative, Uttaranchal Cooperative Dairy Federation Ltd (UCDFL), also known as the Kumaun region of Uttarakhand and has proposed a model for eliminating these inefficiencies. It has been found that UCDFL is focused mainly on liquid milk marketing and has not adopted product diversification, which is the need of the day. Nainital and Almora districts of Kumaon region have been selected for the study; these cover almost 40.00 percent of cattle population in the division, except Udham Singh Nagar. It has been found that due to insufficient margins, the number of agents working for other private dairies has increased. Different marketing channels for milk have been identified and price spread has been calculated for all the channels. Lack of business development services related to dairy industry has been found leading the farmers to disassociate from Anchal. The study has suggested that Anchal should evolve a definite policy incentive package should be provided. Anchal should find ways to establish fodder banks at strategic locations for providing fodder during emergencies and periods of fodder scarcity. Local sale of milk at the society level should be encouraged to increase the popularity of Anchal brand.

**India Post (2008)** reported that the demand for value added milk products, such as cheese, dahi (Indian yoghurt) and probiotic drinks is increasing at a double digit rate. At present, India seems to be self-sufficient in meeting its requirement for milk and milk products. However, given that demand is growing faster than supply, there could be serious issues with respect to self sufficiency in the near future. Farm gate prices have increased by more than 50.00 percent in the last three years.

**Kamat (2008)** has focused on the market-oriented dairy development. In his opinion it can alone be ensured the success of dairy units whether they are in public, private or co-operative sector. There is a great need to institutionalise milk trade from the stage of production to marketing.

**Daniel (2009)** explored that the agricultural policy in the United States is often structured around conflicts and relationships within particular production regions. These regional solutions may evolve into national policies. Both urban and rural groups were important in this development. Urban groups took a particular interest in milk production and regulation due to its importance as a nutritious but highly perishable staple. Rural groups responded to urban attempts to control production practices by organizing cooperatives. Negotiations and strikes resulted in an agreement in 1929 that was positive for farmers, the Chicago Department of Health, and other major entities in the milkshed. It attempted to place regulatory barriers around the milkshed. However, it soon failed due to improvements in transportation technology and new distribution systems that allowed for cheaper retail prices. The group then proposed a marketing plan to the USDA, which became the ancestor of the federal milk marketing order program. This story sheds light on the manner in which local interest groups and internal politics within the U.S. Department of Agriculture combined to shape New Deal agricultural legislation future. Any increase in milk production is dependent on the farm gate price received by the with regard to procurement of milk in both lean and regular periods and to sustain its members.

### **2.3. Review of literature Related to constraints in milk production and marketing**

**Janakiraman (1990)** has observed that that the scientific management of a dairy herd is essential not only to exploit the genetic potential of the animals, but also for taking care of the animals and use the resources in an optimal manner. The management inputs have been decomposed into various aspects like breeding, feeding, housing, health management and general up keeping of animals. Almost all the stalls maintained their own bulls for breeding purposes which is a serious constraint of milk production. Though the State Government has set up Artificial Insemination centers in the vicinity of the area where most of the stalls are located, the majority of stall owners preferred natural service to Artificial Insemination because of high success rate. The success rate in Artificial Insemination is reported to be low.

**Das (1998), Jhabvala (1998), Unni and Rani (2001), Kundu and Sarma (2001), Ambalavanan and Madheswaran (2001)** Stated that informal sector typically characterised by low productivity, low

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earnings, poor working environment, long hours of work and unproductive handling on hazardous substances, without proper social recognition and effective social security provision. ”

**Mehta, Pancholi and Shukla (2004)** in their research have extensively used world –wide for decision making related to policy due to its nature of involving the researcher and decision maker in the process. Following independence in India, one of the major revolutions was brought about in the dairy sector with regard to complete management systems. Most innovations and changes occurred in the line function, while the staff function was more often neglected in the overall change. The authors undertook an action research study focusing on staff function and re-laid improvements that can influence policy related to decision making.

**Rajarajan (2006)** opined that the combined effects of both domestic reforms and WTO commitments in the last decade have changed the environment in which the Indian dairy industry will operate in future. A term of trade is a significant indicator of gains from trade and efficiency of domestic industry. In average terms, the terms of trade of Indian dairy products have declined in the post-liberalization period compared to pre-liberalization years. The year-wise trend is unstable with wide fluctuations in post-liberalization years. The real effects of trade liberalization will probably unfold only when the WTO provisions are properly implemented.

**Singh, Coelli and Fleming (2008)** viewed that, Since the 1970s, the policy of Indian government has been to promote dairy development on the basis of the cooperative organizations. During the 1990s the dairy industry in India was liberalized. This study examines the impact of the liberalization policy on the cooperative dairy plants in India.

**Shisode Dhumal and Siddiqui M.F. (2009)** opined that the constraints expressed by the dairy cattle owners of Rajarambapu Patil Sahakari Dudh Sangh Ltd. Islampur as regards the reproduction, nutrition, management, health, economic and milk distribution some remedial measures like trainings, exhibitions, brain storming sessions, poster presentations, radio talks and programmes on Door-darshan can be taken up to create awareness in dairy farmers and to impart knowledge to them to undertake new animal managemental practices to increase the milk yield.

**Shylendra (2013)** has focused is on the need to make some of the existing interventions under dairying more inclusive so that they have been better outcomes in terms of growth and equity.

# CHAPTER-3

**PROFILE OF THE STUDY AREA****3.1 Profile of the Study Area****History**

Tripura has its unique tribal culture and fascinating folklore. The history of Tripura can be learnt from 'Rajmala' chronicles of king and writings of historians. There are references of Tripura even in the Mahabharata and the Puranas. According to 'Rajmala', the rulers were known by the surname 'Fa' meaning 'Father'. There is a reference to rulers of Bengal helping Tripura Kings in the 14<sup>th</sup> century. Kings of Tripura had to face frequent Mughal invasions with varying successes. They defeated the sultans of Bengal several battles. Nineteenth century marked the beginning of the modern era in Tripura king Maharaja Bir Chandra Kishore Manikya Bahadur modeled his administrative set –up on the British India pattern and brought in various reforms. His successors ruled Tripura till 15<sup>th</sup> October 1949 when the State merged with the Indian Union. Initially, a part 'c' state, it became a centrally administered territory with the re-organisation of States in 1956. In 1972 Tripura attained the status of a full –fledged state. Tripura is strategically situated between the river valleys of Myanmar and Bangladesh. Encircled almost on three sides by Bangladesh and it is linked Assam and Mizoram in the North –East.

**Tripura: Size, Location and Topography**

Tripura is one of the seven states in the North Eastern part of India with a geographical area of 10,491km<sup>2</sup>. It is located in the South-West extreme corner of the north-eastern region, between latitudes 22<sup>o</sup>57' and 24<sup>o</sup>33' N and longitudes 91<sup>o</sup>10' and 92<sup>o</sup>20'E. The State is situated between the river valley of Myanmar and Bangladesh, and is bounded by Bangladesh on the North, West, South and Southeast; in the east it has a common boundary With Assam and Mizoram.

Many researchers explain the name 'Tripura' from its etymological origin, the word 'Tripura' is a compounds of two separate words, 'Tui' (Water) + 'Pra' (near) which is totally means 'near water'. The geographical location of the state with its close proximity to the vast water resources of Eastern Bengal (present Bangladesh) coupled with the generic identity of the State original inhabitants as 'Tipra' or 'Twipra' apperently justify this explanation of the state's name. Except 'Rajmala' there is no authentic document to base Tripura's history upon even through a plethora of archaeological and numismatic evidences have helped to reconstruct the history of state over the past five centuries.

Tripura is a land locked State and its geographical limits touch both national and international boundaries. Its length of international boundary line with Bangladesh measures 856 km. Its national boundaries with Assam and Mizoram measure 53 km and 109 km respectively. The terrain by and large consists of Parallel hills and ridges running from the northwest to the Southwest direction with alternating narrow valleys. The range of hills rises from the plains of Sylhet in Bangladesh at the north and proceeds southwards until they join the hills of the Chittagong hill tracts Bangladesh. The elevation of hills gradually increases in the east. The eastern range of the Jampui is situated at an elevation of 914 meters above meter square length (MSL) and the western range of the Baramura, Deotamura with its elevation of 244 meters above meter square length (MSL) is the lowest.

**Figure: 3.1 Map of Tripura**



Source: [www.deshtripuranic.in](http://www.deshtripuranic.in).

### **Tripura: General Information at a Glance**

Attained Statehood in : 21<sup>st</sup> January 1972

State Capital: Agartala

Area: 10,491.69 sqkm

Altitude: 12.80 meters.

Longitudes: 91°09' and 92°20' East

Latitudes: 22°56' and 24°32' North

Population :Persons 3,671,032 (population census 2011)

Temperature (Summer):20 to 36 degree centegrade

Temperature (Winter):27 Degree Centegrade. Winter 2 Degree .centegrade

Rainy season: June to August

Average rainfall:2500 mm per annum

Official Languages: Bengali and kokborok

Other Languages: English,Hindi,Manipuri,Chakma

International Border: 856 Km.

Literacy Rate: 87.75 % (2011) Males: 92.18% and Females: 83.15. %

**Administrative set up**

Previously Tripura had only 4 districts namely North Tripura, Dhalai, West Tripura and South Tripura. Now 4 more Districts have been carved out of these four. List of existing 8 Districts with administrative blocks is given below.

1. North Tripura : Headquarters 'Dharmanagar'
2. Unakoti District:Headquarters 'Kailasahar'(New)
3. Dhalai District : Headquarters 'Ambassa'
4. Khowai District: Headquarters 'Khowai'(New)
5. West Tripura District:Headquarters 'Agartala'
6. Sepahijala District: Headquarters 'Bisramganj'(New)
7. Gomati District : Headquarters 'Udaipur'(New)
8. South Tripura District: Headquarters 'Belonia'.

No of Autonomous District: 1

No. of Sub Division: 23

No .of Blocks: 45

Nagar Panchayat: 15

Municipal Council: 1(Agartala Municipal Council-35 Wards)

Panchayat Samity: 23

Gram Panchayat: 511

Major Towns: Agartala, Kumarghat, Dharmanagar, Kailasahar, Teliamura, Udaipur, Khowai, Sonamura etc.

**There are twenty four Sub–Divisions in Tripura which are listed below:**

1. Sadar	13. Teliamura
2. Udaipur	14. Jirania(New)
3. Dharmanagar	15. Mohanpur(New)
4. Kanchanpur	16. Bishalgarh
5. Panisagar(New)	17. Sonamura
6. Kailasahar	18. Jampuijala(New)
7. Kumarghat(New)	19. Amarpur.
8. Gandachera	20. Karbook(New)
9. Ambassa	21. Belonia
10. KamalPur.	22. Santirbazar.
11. Longtharai valley.	23. Sabroom.
12. Khowai.	24. Bisramganj

**There are 45 (Forty five) Blocks of Tripura:**

1. Mohanpur.	16. Mungiakami.	31. Salema
2. Jirania	17. Lefunga(New)	32. Durga Chowmohani
3. Bishalgarh	18. .Matabari	33. Ambassa
4. Dukli.	19. Kakraban	34. Manu
5. Hejamara	20. Amarpur.	35. Chawmanu
6. Melaghar	21. Rajnagar	36. Dumburnagar
7. Boxanagar	22. Hrishyamukh	37. Gournagar
8. Kathalia	23. Bagafa	38. Kumarghat
9. Khowai	24. Jolaibari (New)	39. Panisagar

10. Teliamura	25. Satchand	40. Kadamtala
11. Kalyanpur	26. Killa	41. Dasda
12. Mandai	27. Ampa	42. Damchera
13. Jampuijala	28. Karbook	43. Pecharthal
14. Tulashikhar	29. Rupaichari	44. Jampui Hill
15. Padmabil	30. Silachari(New)	45. Jubarajnagar.

### 3.2 Scenario of Dairy in Tripura

Indigenous cattle in Tripura are small in size, low producing and non-descript (desi cows). Indigenous cattle constitute 89.00 percent of the milch animal population in Tripura but contribute only 71.00 percent of the milk production. The crossbred cattle population in the State is only 11.00 percent of the milch animal population and they contribute over 25.00 percent of the total milk production.

**Table 3.1: The Status of Non-Descript and Crossbred Cows of Tripura**

Livestock Population		2003(Census)	2007(Census)
Species			
Cattle (Non-Descript)			
a.	Male	3,13,923	3,59,559
b.	Female	3,67,949	5,15,179
c.	Total	6,81,872	8,74,738
d.	Female Cows in milk	1,36,431	1,45,788
Cattle (Crossbreed)			
a.	Male	10,684	12,393
b.	Female	46,620	61,150
c.	Total	57,304	73,543
d.	Female cows in milk	16,430	18,949
Total breedable Cows		1,83,151	2,42,323

Source: Directorate of animal husbandry Department Tripura

**Table 3.2: Important Figures of 18<sup>th</sup> live stock census-2007 in Tripura State (Provisional Report)**

Sl No.	District	CB in Milk	Total CB Female	Total CB Cattle	ND in Milk	Total ND Female	Total ND Cattle	Total Cattle
1	2	3	4	5	6	7	8	9
1	West	11391	36901	42830	55445	203045	329814	373644
2	South	4365	14334	18038	46938	163559	276834	294872
3	North	1707	5739	7106	27095	93007	162574	1699680
4	Dhalai	1486	4176	5569	16310	55565	105513	111082
5	Grand total	18949	61150	73543	145788	515176	874735	874735

Source: Directorate of animal husbandry Department Tripura

Demand projections reveal that milk consumption in Tripura would be well over 263126 metrictonnes annually by 2015, a growth of 14.00 percent in total Demand over the period 2005 to 2015. The per capita milk availability in Tripura is 77.00 gram/day (2009-2010) as against the ICMR recommended quantity of 250.00 gram/day. Thus, there is huge gap in per capita milk availability in Tripura.

In order to meet this rising demand of milk, therefore there is urgent need for enhancing the productivity of the cattle population. Therefore the state has adopted a breeding policy which on one hand will preserve the genetically derived adaptability, while on the other are better milk producers.

#### Breeding Policy of Tripura:

The policy for improvement of milch animals in Tripura is:

- Crossbreeding of the indigenous non-descript cattle with Exotic Dairy Breeds.

- (ii) Interseminating of crossbreed cows with selected half bred bulls to produce an inter se mating population of halfbreeds, maintaining the genetic contribution of the two parental types constantly at half and half, ensuring endurance and survivability inherited from the Indian Mother; and high milk production qualities from the Exotic Bull.

The exotic breed used as donor for crossing the indigenous non-descript cattle in Tripura is Jersey. Halfbreed Holstein Friesian X Gir Bulls used for inter se mating of the halfbreeds/and all existing crossbreed cows and heifers.

The non-descript cattle in Tripura are small in size (150-200 Kg body weight) and the crossbreeds produced out of them with Jersey too would be small. A correction in the body size of the next generation will produce an animal with 300-350 Kg body weight their inherent genetic potential.

Therefore Bulls (Frozen Semen) used for Artificial Insemination of the indigenous cattle is pure Jersey and for halfbreed populations genetically evaluated F1 crossbreed bull semen (Holstein Friesian X Gir) produced on contract in an identified specialist farm.

The outcome of the breeding policy implementation will be a growing population of intermating, high yielding, halfbreed cows for milk production in the state with 300-350 Kg body weight and some 3000 Kg milk production per lactation of 300 days.

Livestock sector in Tripura is extremely livelihood intensive. Livestock production in the state is predominantly the endeavour of the small producer's. Marginal and small farmers and the landless together own nearly 95.00 percent of all species of livestock. Over 80 percent of all rural households own livestock, often a mix of several species and as part of the traditional mixed crop-livestock farming system: earning substantial incomes out of them and enriching family diets with nutrient rich animal products.

The Tripura Livestock Sector Review Exercise (LSRE) sector analysis shows that over 60.00 percent of the rural household income comes from livestock farming for almost 70.00 percent of the rural households. Milk is a commodity traded widely across the rural areas and milk constitutes a major source of household income.

### **General Overview of Feeds and Fodders in Tripura**

All livestock production in Tripura, across all species, except poultry, depends on crop residues, crop by products, cut green fodder and tree from private land and forests. While grazing in forests is prohibited in Tripura, cutting and carrying of green herbage and tree from forests land are permitted. Crop residues/ crop-by –products commonly available are: straws, stovers, crop tops and crop thrush; and by-products like brans, chunis and oil cakes. Lopping from trees is a major green fodder source for ruminants in Tripura. Concentrate feed items and compounded feed for livestock are partly imported from other states although quantities imported is not very high.

Common property resources in the State are limited to current and other fallows and forests bordering inhabited villages. There are no permanent pastures or extensive grazing lands attached to villages in the state. While cultivable land in Tripura only some 27.00 percent of the total land state's total land mass, livestock farming depends on some 60.00 percent of the total land (27.00 percent net shown area plus sum 30.00 percent of the total forests land adjoining inhabited villages) for grazing or for cut and carry edible herbage. The degree of access to and availability of edible herbage from this land mass would however be area specific, as vegetation and physiography varies widely in Tripura over short distances.

### **Green Fodders**

Forests land adjoining to the inhabited villages constitutes the most important source of green herbage as well as tree loppings in Tripura. Natural Grasses, edible local weeds from cropped areas, edible weeds, bushes and shrubs from private land, fallows, culturable waste and land under tree groves and miscellaneous shrubs and bushes, all constitute the other sources of green fodder, along with grazing on field /crop boundaries. Cultivated perennial fodder grass on such as Hybrid Napier, seasonal crops like cow pea and other pulses mainly grown on cultivated land /crop borders and in the paddy field

after the paddy harvest, also provide another source of green herbage for animal feeding. A number of fodder trees having high nutrient contents are available in Tripura forests near villages. The plantation of such fodder trees for feeding animals in the state has been going on for decades. It can be said that these tree fodders are the most important and constantly available fodder resource in this region particularly during the dry months of the winter season.

### Crop Residues

Rice straw, wheat straw, maize stalks, stovers from pulses and oilseed crops as well as pulses crop tops and crop thrushes constitute the most important source of dry matter intake for ruminants in Tripura. Vegetable waste and also form part of the animal feed chain in Tripura.

### Concentrate Feeds- Crop By-Products & Grains

The most popular concentrate feed ingredients used by Tripura farmers are: crushed maize ,rice bran ,wheat bran, dal chunni( a mix of husk, bran and small qualities of broken grains of different pulses, a by-product grain and flour milling industry) ,rice polish , de-oiled rice bran, balanced concentrate feeds , grains grits/ broken rice ,crushed paddy and oil cakes. The rice bran fed is really a mix of bran and broken paddy husk, found in all rural markets.

All farmers make their own feed mixes using these ingredients; and even the ready mixed balanced commercial feeds, when used form only an ingredients in such mixtures. The dry fodder popularly used, in the order of quantities consumed, is: paddy straw, maize stalks of millets, pulses tops and sugar cane tops.

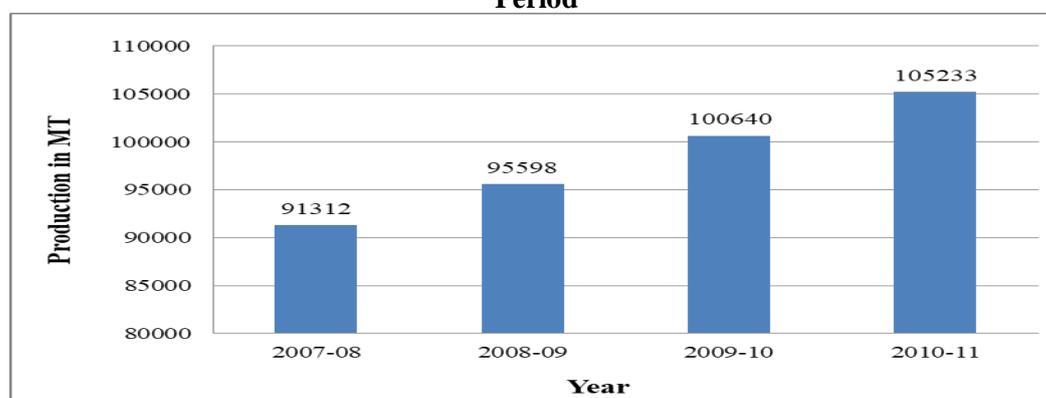
### Livestock Services

All livestock services in Tripura are provided by the state Government through its Animal Resource Development Department, State wide. The Tripura Milk Union is the only other agency in the state providing limited inputs and services exclusively to their producers in the areas of the dairy cooperative societies affiliated to the union. The Department has a state wide net work of veterinary and AI institutions for providing services at the Block , Gram panchayat and village level. The most important service offered by the ARDD are curative veterinary services, Artificial insemination services and Preventive Veterinary services as well which is delivered through various veterinary delivery institutions.

### Artificial Insemination Services

The Government of India Promoted the National Project for cattle and buffalo Breeding (NPCBB),under which the thrust is home delivery of AI and increased coverage of breeding animals under AI. Home delivery of services also enhances the reach and coverage of the AI technician and enables him to bring many more animals under AI for breeding. Tripura is a participating state in the NPCBB. Especially constituted agency named Tripura Livestock Development Agency (TLDA) is implementing the NPCBB programme.

**Figure 3.2: Milk Production in the State has been on an Increasing Trend during the 11<sup>th</sup> Plan Period**



Source: Economic Review of Tripura 2010-2011

**Table 3.3: Season Wise Milk Production in Different District of Tripura**

Name of the District	Name of Season	Milk Production (in MT)
1	2	3
West Tripura	Summer	14592.95
	Monsoon	15020.61
	Winter	15434.87
	Total	45048.43
South Tripura	Winter	9489.56
	Monsoon	9767.71
	Winter	10021.06
	Total	29278.33
North Tripura	Winter	5182.68
	Monsoon	5333.26
	Summer	5466.30
	Total	15982.24
Dhalai District	Winter	3347.28
	Monsoon	3446.47
	Summer	3537.64
	Total	10331.39
STATE TRIPURA	GRAND TOTAL	1,00,640.39

Source: ISS 2009-2010

### 3.3 Milk Procurement and Processing by the Organized and Unorganized Dairy Sector in Tripura

Milk accounts for over 36.00 percent of the total output value of the livestock sector in Tripura. Major milk marketing in Tripura is under traditional and unorganized sector. The local organized sector for milk processing and marketing in Tripura is represented by the Gomati Milk Producers Union Limited (GCMFUL). The total share of the organized sector is only about 1.3 percent of the total milk production in the state in 2007-2008. A little over 30.00 percent of milk produced in Tripura is retained in producer households for home consumption and some 60.00 percent is traded in traditional channels directly from producers to consumers or more often local intermediaries who collect milk from the producer households and trades it in the market.

**Table 3.4: Total Milk Production and Market Share in Tripura**

District	Total Milk Production (MT)	Marketable Surplus	Percent Share		
			Un-organized Sector	Private Organized sector	Dairy Cooperatives
West District	42,046.57	Nil	98.70%	-	1.30%
South District	27,037.26	Nil	100%	-	-
Dhalai District	7,209.16	Nil	100%	-	-
North District	14,983.18	Nil	100%	-	-
	91,312.17	Nil	100%	-	-

Source: Report of Advisory committee on AH &amp; Dairying, vol-II, Set up by Planning commission GOI, 2009

### 3.4 Profile of the West Tripura District

While Tripura as a whole lies approximately between the north latitude 22 degrees 56' and 24 degrees 32' and between longitude 91 degrees 0' and 92 degrees 20' east, the West Tripura district lies approximately between latitude 23 degrees 16' to 24 degrees 14' north and longitude 91 degrees 09' east to 91 degrees 47' east. The West Tripura District is bounded by Bangladesh in the north and west by North Tripura in the east and by South Tripura in the south. Total area of the district is 3544 sq.kms. The District headquarters is located at Agartala, which is also the capital of the State. Tripura

was a princely State. Bir Bikram Kishore Manikya was the last King. After the death of Bir Bikram Kishore Manikya in May 1947, a council of regency under the leadership of his widowed wife Maharani Kanchanpura Devi took over charge of administration on behalf of the minor prince Kirit Bikram Kishore Manikya. Monarchy came to its end on 9th September 1947. Tripura was taken as a Part-C state administered by Chief Commissioner. Tripura became a Union Territory on 1st November 1956. The Territorial Council was formed on August 15, 1959. The dissolution of Territorial Council and formation of Legislative Assembly and a Council of Ministers in July 1963 were notable events. Finally, Tripura became a full-fledged State in January 1972. The district administration was run by one District Magistrate and Collector upto 31.8.1970. For better attention of problems of land and tenancies, for accelerating the pace of development in this backward area especially in the remote Tribal areas and for bringing the people closer to the administration, Tripura was divided into three districts, viz., North Tripura District, West Tripura District and South Tripura District. Three District Magistrates and Collectors were appointed for the districts from 01-09-1970. While it was one District Union Territory there were 10 sub-divisions. When it became a full-fledged State, the 10 sub-divisions remained the same. The West Tripura district comprises three sub-divisions viz., Khowai, Sadar and Sonamura. Now West Tripura District totally reconstructed and it is comprises reorganised Sadar, Jirania and Mohanpur newly created. There are many languages spoken in the district Bengali, Kakbarak, Manipuri etc.

It is true that the State as a whole was, in the bygone days, far richer in forest wealth but with the increasing pressure on land through population increase has rendered this rich forest susceptible to decay, through the process of reckless falling of the trees for different reasons like settlement of landuse and jhumes in some cases and for also augmenting the revenue of the erstwhile princely State even since the past great wars. With the increase in population, the pressure on land was intensive and the tall tress of the forest had to give way to the increasing need to settling the refugees who came in exodus to this tiny state as well as for maintaining jhum cycle for the considerable percentage of Tribal, who still continues to practice jhum cultivation. Without being scholarly to discuss the extent of ecological imbalances created by such indiscriminate exploitation of forest for immediate reasons, it is very much clear that the State has suffered quite heavily in the forest wealth during the past decade. The experimentation for introduction of rubber plantation, which was found suitable for the soil and climatic condition of the State has also proved to be successful and thus brightened the prospect of this sector which might go a long way in the total economic development of the State as a whole. The total area under rubber plantation has been increased to 3320.77 hectares from the experimental minimum of 5.80 hectares in 1963. The Tripura Forest Development and Plantation Corporation Limited, a public sector enterprise under the State Government have also taken intensive programme of development of rubber plantation in the whole state as well as West Tripura District.

Coffee plantation is another addition in the sector which has attained coverage of 10,183 hectares in 1981 from 2.40 hectares in 1975. Tripura, being a land locked State, is having constraint in importing coal for domestic use. The extent of fire-wood supplied from forests is about 17, 7000 cu.m. The supply of firewood from the forest is also a main source of livelihood for the population residing in the interior forest area. The quantity of timber produced from the forest as in 1980-1981 is about 37,204 cu.m as stated earlier, the details for the District in particular are lacking but the overall picture of the State will reflect the position as obtained in the West Tripura District. Howrah rivers flow within the district. It rises from the Baramura range and its tributaries are Dowraigang, Ghoramara and Debda on the right bank and Charupanadi, Dhobatilachhara and Bangeswargang on the left bank. The length of Howrah river is 53 kms. and it flows towards west and enters into Bangladesh by side of Agartala town. Burigang it rise from Baramura and flows towards west and ultimately enters into Bangladesh. There are long river valleys extending over a vast area in different sub-divisions formed mostly of deep alluvial deposits with rich fertility excellently suited for the cultivation of paddy jute, oil seeds, spices, fruits and vegetables would be evident from the aforementioned position. Due to the indiscriminate felling of trees the ecology of Tripur is being affected to a great extent and human beings and trees belong to the category of living species. There is a gap of feeling which might be attributed to the factors of immediate benefit as the very question of subsistence is involved

particularly when the majority of the people in Tripura are below poverty line. Exploitation and not extinction should be the way of life.

The Demographic status of the West Tripura District are as follows as per (2011 census), total number of population is 9, 17,534. Out of that male population are 4, 65, 279 and female population are 4, 52, 255. Female literacy rate is (%) 88.10. Female per thousand males 972. West Tripura District is the most populas District in the state where population density is a whopping 1005 per square kilometer. Despite having a below poverty line (BPL) population of 62% as per statistical data of the State Government, West Tripura District is far ahead of other districts in development index where as literacy rate in the district is, overall literacy rate is (%) 91.31. Male literacy rate is (%) 94.45. Among of them mentioned rural population is 58% and urban population is 42%.

**Figure 3.3: Map of West Tripura District**



Source: www.indiamapssite.com

**Table 3.5: Undivided West Tripura District at a Glance 2009-2010**

Total Population (Census-2011) (P)	17,24,619
Male Population (Census-2011) (P)	8,77,930
Female Population (Census-2011) (P)	8,46,689
ST Population (Census-2001)	3,87,081
SC Population (Census-2001)	2,95,698
Literacy rate (%) (Census-2011)(P)	88.9
Female Literacy rate (%) (Census-2011)(P)	84.8
Child Population (0-6 year) (Census-2011)(P)	1,84,656
Net area sown (in hac) (2007-08)	1,12,081
Area sown more than once (in hac) (2007-08)	75,706
Forest Area (in sq.km) (2007-08)	1,145.86
Cropping intensity (%) (2007-08)	168
Production of rice (in MT)	2,60,112
Production of potato (in MT)	24,460
Production of other pulses (in MT)	687
Veterinary hospitals	5
Veterinary dispensary	23
Veterinary first aid centre	96

**3.5 Area Profile of the Jirania Block**

Jirania is a small town in Tripura state of India on the banks of river Saidra. It is a nagar panchayat and also the headquarters of Jirania Rural Development Block. It is located in Sadar sub-divisions of West Tripura district. The local population consists mainly of Bengalis who are the residents of Tripura. It has 3 major high schools. Its market is of great importance for the local business and its sustenance. It lies on the National Highway 44 (Assam-Agartala Highway) of India.

It is the connecting link with the town of Khumulwng and Mandwi with the national highway. Other nearby towns includes Ranirbazar and Champak Nagar.

**Table 3.6: Overview of the Jirania Block (Area and Administrative Division)**

SL	ITEM	UNIT
1	D.C Circle	1
2	R.I Circle	1
3	Number of T.K	9
4	Number of voters	87770
5	Number of Assembly Constituency	2(full)/2(part)
6	Number of TTAADC Constituency	1(full)/2(part)
7	Number of Police Sub Division	1
8	Number of Police Station	4
9	Number of police outpost	4
10	Number of FP shop	64

Source: Block Disaster Plan and Response Management 2011-2012, Jirania R.D.Block

**Table 3.7: Demographic Details of Jirania Block**

No.	Name of GP/Village	Total no.of HH	Popul-ation		Category					
			Adult	Children <5 years	Total	ST	ST	OBC	RM	UR
1.	Paschim Noagaon G.P	858	4023	355	4378	1264	158	2673	10	273
2.	Paschim Noabadi G.P	1516	5208	493	5701	980	285	1166	834	2436
3.	Purba Debendranagar	1029	3368	332	3700	1497	1002	508	165	528

4.	Joynagar G.P	639	2283	293	2576	549	13	762	438	814
5.	Uttar Champamura	1698	6175	534	6709	1853	85	2116	123	2532
6.	Purba Barjala G.P	1173	5473	495	5968	1859	186	1807	407	1709
7.	R.K. Nagar G.P	1670	5758	473	6231	2808	867	1880	147	529
8.	Majlishpur G.P	1953	6343	527	6870	1450	27	4090	80	1223
9.	Krishnanagar G.P	657	2305	274	2579	347	0	1859	0	373
10.	Purba Noagaon G.P.	1017	3709	329	4038	249	409	3207	0	173
11.	Uttar Majlishpur G.P	1010	3840	346	4186	958	0	2550	86	592
12.	Sachindranagar G.P	810	3005	294	3299	1442	65	1101	2	689
13.	Bridhyanagar G.P	1852	7123	549	7672	1975	33	3704	281	1679
14.	Paschim Champamura	1472	6837	534	7371	3259	368	1704	121	1919
15.	Meghlipara G.P.	979	4087	345	4432	1652	443	1795	40	502
16.	Kobrakhmar G.P	794	3017	321	3338	946	447	1430	63	452
17.	Harijoy Chow. Para	639	2298	234	2532	869	788	501	99	275
18.	M/ Debendranagar	933	2998	357	3355	1421	19	1509	119	287
19.	Barjala Binapani G.P	537	1831	195	2026	48	1797	54	20	107
20.	Bankimnagar G.P	1304	4524	367	4891	1704	449	951	513	1274
21.	Jirania G.P	1198	4012	335	4347	867	138	912	42	2388
22.	Tulakona G.P	577	2724	231	2955	431	315	1247	32	930
23.	Durganagar G.P.	1088	4063	386	4449	252	436	2221	1045	495
24.	Champaknagar	768	3141	285	3426	204	2956	177	89	0
25.	Jiraniakhola	831	3806	328	4134	14	3530	0	467	123
26.	Madhabbari	278	1107	113	1220	7	1185	10	8	10
27.	Dhupcherra	285	1093	94	1187	10	1007	0	156	14
28.	Kaiyachanbari	215	778	87	865	0	865	0	0	0
29.	Chargharia	428	1689	128	1817	0	1817	0	0	0
30.	Champabari	278	1147	116	1263	0	1263	0	0	0
31.	Bardhaman Thakur Para	401	2226	175	2401	0	2401	0	0	0
32.	Paschim Jirania- khola	727	2987	265	3252	118	2723	49	192	170
33.	Purba J.J. Nagar	500	2425	245	2670	0	2670	0	0	0
34.	Radhamohanpur	452	2298	278	2576	0	2576	0	0	0
35.	Santinagar	231	931	76	1007	0	1007	0	0	0

Source: Block Disaster Plan and Response Management 2011-2012, Jirania R.D.Block

**Table 3.8: Type of Workers**

Sl. No	Type of Workers							
	Main Workers		Marginal Workers		Non Workers		Total Workers	
	M	F	M	F	M	F	M	F
1	55002	14500	4610	40109	4638	9448	64250	64057

Source: Block Disaster Plan and Response Management 2011-2012, Jirania R.D.Block

**Table 3.9: Literacy Rate in Percentage**

Category							
SC		ST		OBC		UR	
M	F	M	F	M	F	M	F
99%	99.5%	98.5%	97%	99%	98.5%	99.5%	99%

Source: Block Disaster Plan and Response Management 2011-2012, Jirania R.D.Block

**Table 3.10: Geographical area (Hect) in Jirania Block**

Sl No	Name of the GP	Agricultural land (Ha)			Grazing land (Ha)	Forest Land (Ha)	Others	Total Area
		High	Medium	Low				
1	Paschim Noabadi	250	146	68	7	00	22	493
2	R.K.Nagar	329	148	80	5	00	50	612
3	Bridhynagar	62.20	257	196	12	00	42	569.2
4	PaschimChampamura	202	198	97	10	00	14	521
5	Uttar Champamura	110	250	96	00	00	24	480
6	Tulakuna	176	82.59	17	7	20	18.02	320.61
7	Meglipara	129.72	203.94	5.85	13.15	00	77.26	429.92
8	Durganagar	5	188.92	95	00	00	5	293.92
9	Kobrakhamar	18	153.02	29	13.02	00	65.37	278.41
10	Paschim Noagaon	100	140	7	15	45	17.04	324.04
11	Purba Noagaon	45	237	20	5	00	16.09	323.09
12	Majlishpur	4.8	144	16.24	6	00	18.80	189.04
13	Uttar Majlishpur	5	120	40	00	00	63.09	228.09
14	Krishanagar	1	60	6.04	2	00	1.50	70.54
15	Harijoy Chowdhury Para	135	100	15	3.20	00	10	263.2
16	Barjala Binapani	30.20	190.04	19.20	00	00	6	245.44
17	Jirania	00	65	20	00	00	6	91
18	Bankimnagar	68.18	100.90	3	6.15	00	14.24	192.97
19	Sachindranagar	175	215	10	25	00	28	453
20	Purba Barjala	140	125	26	21	00	12	324
21	Joynagar	20	89.90	10	3	00	15.09	137.99
22	Purba Devendranagar	27	50.31	101	3	00	17.21	198.52
23	Madhya Devendranagar	50	116	18.97	50	00	53	287.97
24	Dhupcherra	20	64.02	3	20	479	30	616.02
25	J.J.Nagar	80	95.41	10	80	958	5	1228.41
26	Purba J.J nagar	208	160	4	15	80	15	482
27	Dakshin Radhapur	225	212	26	00	00	57	520
28	Radhamohanpur	65	118	10	25	856	32	1106
29	Radhapur	290	124	35	10.02	900	17.20	1376.22
30	Bardhaman Thakurapra	190	5	2	10	700	60	967
31	Paschim Jirania Khola	224	214	32	00	00	50	520
32	Belbari	15.90	200	20	15	00	75	325.9
33	Jirania Khola	50	254	10	5	00	5	324
34	East Belbari	115	190	17	00	00	15	337
35	Champaknagar	100	250	50	00	329	17.05	746.05
36	Champabari	147	36	2	140	1007	5	1337
37	Uttar Joynagar	180	245	5	2	00	50.02	482.02
38	Chargaria	20	125	40	5.75	00	19.02	209.77
39	Santinagar	180	17	3	25	609	20	854
40	Madhabari	80	156	9	5	00	5	255
41	Paschim Radhamohanpur	125	160	00	37.17	704	54	1080.17
42	PaschimDevendranagar	35	105	2	7.32	00	35	184.32
43	Kaiyachandbari.	33	108	3	6.5	00	33	183.5
	Total	4466	6219.05	1279.3	615.28	6687	1195.5	20462.13

Source: Block Disaster Plan and Response Management 2011-2012, Jirania R.D.Block

**Table 3.11: Land Holding Pattern (No. of HH)**

Sl. No	Name of the GP	Large Farmers	Marginal farmers	Small Farmers	Agricultural laborers	Landless	Total
1.	Paschim Noabadi	32	40	150	123	62	407
2.	R.K.Nagar	66	57	204	510	90	927
3.	Bridhyanagar	31	93	381	291	23	819
4.	Paschim Champamura	05	48	334	358	30	775
5.	Uttar Champamura	08	41	329	291	22	691
6.	Tulakuna	02	06	54	77	123	262
7.	Meghlipara	04	12	117	145	164	442
8.	Durganagar	30	126	280	210	25	671
9.	Kobrakhamar	21	49	259	157	96	582
10.	Paschim Noagaon	11	110	149	74	54	398
11.	Purba Noagaon	17	156	177	54	21	425
12.	Majlishpur	26	48	173	280	206	733
13.	Uttar Majlishpur	17	100	54	140	124	435
14.	Krishnagar	02	25	57	149	04	237
15.	Harijoy Chawdhuri Para	12	16	38	66	42	174
16.	Barjala Binapani	18	102	80	85	10	295
17.	Jirania	15	45	70	112	80	322
18.	Bankim Nagar	21	175	30	190	71	487
19.	Sachindranagar	5	20	81	410	20	536
20.	Purba Barjala	32	15	170	120	147	484
21.	Joynagar	00	49	60	77	05	191
22.	Purba Debendranagar	04	16	60	180	08	268
23.	Madhya Debendranagar	17	97	162	222	21	519
24.	Dhupcherra	00	00	15	100	103	218
25.	J.J. Nagar	17	42	94	189	59	401
26.	Purba J.,J. Nagar	17	06	127	276	35	461
27.	Dakhsin Radhapur	15	35	151	146	220	567
28.	Radhamohanpur	19	90	94	63	34	300
29.	Radhapur	20	95	35	167	80	397
30.	Bardhaman Thakurpara	11	22	122	50	65	270
31.	Paschim Jirania Khola	15	42	138	145	05	345
32.	Belbari	18	102	92	92	21	325
33.	Jirania Khola	30	85	281	250	138	784
34.	East Belbari	45	32	128	188	90	483
35.	Champaknagar	28	120	150	180	50	528
36.	Champabari	00	00	15	59	94	168
37.	Uttar Joynagar	00	01	56	80	08	145
38.	Chargaria	17	22	101	75	45	260
39.	Shantinagar	00	10	41	85	15	151
40.	Madhabbari	35	35	15	80	18	183
41.	Paschim Radhamohanpur	27	11	74	125	70	307
42.	Paschim Debendranagar	04	10	45	45	03	107
43.	Kaiyachandbari	02	08	39	59	78	186
	Total	714	2214	5582	6775	2679	17666

Source: Block Disaster Plan and Response Management 2011-2012, Jirania R.D.Block

### 3.6 Area Profile of the Purbanoagaon Village

Purbanoagaon Gram Panchayat is coming under the Jirania R.D.Block. The Gram Panchayat having the 7(seven) ward. Majority of the people living in this area are poor and their livelihood occupation is

depend on the agriculture, dairy and wage earning. It's a highly probable zone of milk production and marketing in Tripura. The area of the village is 6 square kilometer.

### Demographic Profile

Total Family 1034

Total Population 4251 Male-2125 Female-2126

Literacy rate 100 percent.

Details Cattles-Crossbreed-636 Non-Descript 291= Total 927

**Table 3.12: At a Glance of Purbanoagaon Gram Panchayat**

Category	Family Number	Male	Female	Total Population
SC	96	214	201	415
ST	64	136	141	277
O.B.C	834	1690	1708	3398
UR	40	85	76	161
BPL Family	535	-	-	-

Source: Gram Sava Book of Purbanoagaon Panchayat

**Table 3.13: Occupational Details of Purbanoagaon Gram Panchayat**

Category	Total Family member
Agricultural Depended Labourers	105
Non-agricultural Labourers	139
Agricultural Household	467
Handloom	25
Industrial Family	10
Business	83
Government and non Government employee	144
Handicraft	26
Others	35

Source: Gram Sava Book of Purbanoagaon Panchayat

**Table 3.14: Geographical area of Purbanoagaon (Hect)**

Category	Area(Hect)
Cultivable Land	247
Present Cultivable land	227
Tila Land	46
Greenary land	32
Single crops land	30
Double crops land	180
Tripple crops land	25
Khas land	5
Fallow Land	3

Source: Gram Sava Book of Purbanoagaon Pachayat

**Table 3.15: Land Use Pattern Area (Hect)**

Category	Area(Hect)
Paddy crops cultivation	227
Vegetable cultivation	17
Fruit Cultivation	18
Dal,oilseeds and others	4
Rubber cultivation	27

Source: Gram Sava Book of Purbanoagaon Pachayat

### 3.7 Area Profile of the Bridhyanagar Village

Bridhyanagar Gram Panchayat is coming under the Jirania R.D. Block. The Gram Panchayat having the 10 ward. Majority of the people living in this area are poor and their livelihood occupation is dependent on the agriculture, dairy and wage earnings. It's a highly probable zone of milk production and marketing in Tripura. The area of the village is 3.75 Square square kilometer (approx).

**Table 3.16: Geographical area of Bridhyanagar G.P (Acre)**

Total Land	806.01
Plain Land	327.83
River area	45.27
Road/park	24.19
Government Establishment	21.57
Temporary retail markets	387.15

Source: Gram Sava Book of Bridhyanagar Gram Panchayat

### Demographic Profile

Total Family Number-1865

Total Population-7605 Male-3808 Female-3797

Literacy rate 100 percent.

Details of cattles-Crossbreed-464 Non -Descript (Desi Cows)-406 Total- 870

**Table 3.17: Demographic Profile of Bridhyanagar Village**

Category	Family Number	Male	Female	Total Population
SC	496	1115	1068	2183
ST	15	22	27	49
O.B.C	1065	2057	2084	4141
UR	222	435	455	890
Minority	67	179	163	342
B.P.L family	695	-	-	3127

Source: Gram Sava Book of Bridhyanagar Gram Panchayat

**Table 3.18: Agricultural Land of Bridhynagar (Hect)**

Category	Area(Hect)
Cultivable Land	140
Single crops land	140
Double crops land	130
Tripple crops land	22
Tree,Garden	154
Average production of crops	1375

Source: Gram Sava Book of Bridhyanagar Gram Panchayat

### 3.8 Mohanpur R.D Block

Mohanpur is one of the Towns in West Tripura District of Tripura State. Mohanpur is 13 km far from its District main City Agartala. Nearest Towns are Hezamara (11.4 k.m.), Jirania (13.8 k.m.), Mandwi (18.3 k.m.). There are near about 30(thirty) Gram Panchayat and 10 (ten) numbers are Autonomous District Council. Majority of the peoples are not so much financially enrich and their livelihood depends on the dairy, agriculture, fisheries etc. Purba Gandhigram, Patunagar, Laxmilunga, Paschim Bamutia, Kamalghat, Devendranagar etc are the village's falls under this block.

**Table 3.19: Family and Population Statement of Mohanpur R.D Block after Upgradation for During 2009-2010 Category Wise Family Numbers**

SI No	Name of the Block	No of Families					Total Families	BPL Families
		ST	SC	OBC	RM	Others		
1	2	3	4	5	6	7	8	9
	Mohanpur	6998	14152	13529	53	8930	43662	17861

Source: ARDD office Mohanpur

**Table 3.20: Category Wise Population and Total Population**

SI.No	Name of the Block	No of Population					Total Population	Male	Female
		ST	SC	OBC	RM	Others			
1	2	3	4	5	6	7	8	9	10
	Mohanpur	32533	63680	59689	240	37132	193274	98944	94330

Source: ARDD office Mohanpur

**Table 3.21: Administrative Setup of ARDD under Mohanpur**

SI No	Institution wise/category of employee	Name of the Block	
		Mohanpur	
1	Asst.Director(Block Level) office	1	
2	Vety.Dispensary	3	
3	ARD sub centre		
	SMSC	13	
	VFAC	8	
4	Asstt.Director of ARDD	1	
5	Asstt.Director of ARDD(Fodder)	1	
6	Vety.Asstt.Surgeon	1	

Source: Asstt. Director of ARDD (BL) Mohanpur

**Table 3.22: Action Plan for the Year 2012-13 in Milk Sector**

Activity	Mohanpur Block	
	Target	Achievement
Milk Sector		
Artificial Insemination	12000	935
Fertility Management Programme (nos of camps)	17	00
Organization of milk yield competitions/calf rally (nos)	04	00
Fodder plots to be Developed (nos)	03	00

Source: Asstt. Director of ARDD (BL) Mohanpur

**Table 3.23: Animal Population as per 18<sup>th</sup> Cattles census-2007**

SI.No	Name of the Block (Mohanpur)	Category	Total Number
1.	Human Population	-	193274
2.	Crossbreed	In Milk	1379
		Dry	732
		Total cattle	5132
3.	Non- Descript (Desi-cows)	In milk	7035
		Dry	4752
		Total cattles	36731

Source: Asstt. Director of ARDD (BL) Mohanpur

**Table 3.24: Panchayat Wise Major Cattles as per 18<sup>th</sup> Livestock Census -2007**

SI No	Name of the Block	Name of the GP	No. of House-holds	Major Cattles Population			
				CB Cattles		ND Cattles	
				In milk	Total	In milk	Total
1.	Mohanpur	Purba Gandhigram	2006	92	364	119	514

2.	Mohanpur	Paschim Gandhigram	1007	52	193	110	471
3	Mohanpur	Patunagar	1175	63	214	78	285
4	Mohanpur	Laxmilunga	1406	38	163	332	1560
5	Mohanpur	Nutannagar	1163	48	141	64	182
6	Mohanpur	Singerbill	1584	147	457	110	504
7	Mohanpur	Lankamura	1809	75	294	269	1457
8	Mohanpur	Anandanagar	1212	115	247	103	481
9	Mohanpur	Narsingar	1629	43	169	133	785
10	Mohanpur	Devendranagar	698	0	0	102	456
11	Mohanpur	Lembucherra	747	52	143	166	738
12	Mohanpur	Purba Bamutia	1108	49	165	401	1594
13	Mohanpur	Fatikcherra	955	38	175	166	1122
14	Mohanpur	Kamalghat	1147	35	145	318	1526
15	Mohanpur	Paschim Bamutia	1111	69	449	263	1358
16	Mohanpur	Satdubia	1282	47	174	175	1167
17	Mohanpur	Kalkalia	980	7	34	372	3248
18	Mohanpur	Kalacherra	648	19	67	175	863
19	Mohanpur	South Taranagar	1014	18	77	208	1058
20	Mohanpur	Bijohnagar	560	10	69	140	1042
21	Mohanpur	Mantala	700	38	85	74	176
22	Mohanpur	Ishanpur	419	1	6	106	752
23	Mohanpur	Vidyasagar	924	15	90	370	2733
24	Mohanpur	Brahmnakunda	1091	22	119	370	2701
25	Mohanpur	Mohanpur	1022	22	91	72	382
26	Mohanpur	Tulabagan	530	40	230	125	582
27	Mohanpur	Taranagar	664	61	212	64	225
28	Mohanpur	Mohinipur	1334	102	264	256	1266
29	Mohanpur	Harinakhala	680	17	61	43	283
30	Mohanpur	West Taranagar	1333	44	230	76	626
		Total	31938	1379	5128	5360	30137

Source: Asstt. Director of ARDD (BL) Mohanpur

### 3.9 Definition of Various Categories of Incomes

There are enormous categories of incomes that are being practised by the respondents in the study area. They can be under as the income from milk production, sale of cow dung, and at last from the sale of calves.

The significance of the concept of deriving income from milk production reveals that lot of income has been collected by the various respondents, through the way of milk production. Hence this activity namely selling of milk as it is being produced becomes one of the greatest givers of income to the respondents in the study area.

Next to the source of getting income from the milk production, there exists another essential source of grasping the income for the respondents in the study area respectively. That is nothing but the income which could be derived from the sale of cow dung that is being produced by the respondents in their own places respectively. Thus, it becomes another important beneficially way of getting income.

Along with all the above mentioned ways of getting income in different ways, there exists an important source of getting income through selling of calves. This present situation refers to the way of selling out the calves and raising the income. Especially it becomes an advantage of selling out the crossbreed calves which creates more income to the respondents in the study area. Hence the income that comes by selling of crossbreed calves is more when compared to the other types of calves.

### 3.10 SOCIO ECONOMIC PROFILE OF THE RESPONDENTS

The present chapter is also devoted to the analysis of profile of the milk producers in the study area. This chapter describes the details of cows, age group of the respondents in the sample households.

#### Profile of the Respondents

The profile of the respondents who own cows are given in the following tables.

#### 3.10.1 Age Wise Classification of the Respondents

The age wise classification of the respondents is presented in table 3.25.

**Table 3.25: Age Wise Classification of the Milk Producer**

Sl. NO	Age of the respondents	Respondents Number	Percentage
1.	20-30	14	7.78
2.	30-40	36	20.00
3.	40-50	53	29.44
4.	50-60	30	16.67
5.	Above 60	47	26.11
6.	Total	180	100.00

Source: Primary data

Data in table 3.25 reveals that, 29.44 percent respondents are in the age group of 40 to 50 years. Data in table 3.25 also reveals that, 26.11 percent respondents belong to the age group of above 60 years, 20.00 percent respondents are in the age group of 30 to 40 years, and 16.67 and 7.28 percent respondents respectively belong to the age group of 50 to 60 years and 20 to 30 years.

#### 3.10.2 Gender Wise Distribution of the Respondents

Sex ratio is one of the strong indicators of the social health condition of the any society. It conveys a great deal about the state of gender relations. It gives the ratio of women and men in the population and reflects the relative chances of survival of women in relation to men.

**Table 3.26: Gender Wise Distribution of the Respondents**

Sl.No	Category	No. of Respondents	Percentage
1	Male	155	86.11
2	Female	25	13.89
3	Total	180	100.00

Source: Primary data

Data in table 3.26 shows the sex distribution of the respondents 86.11 percent respondents is male category. As for gender wise distribution of the respondents, male respondents dominates the female respondents and the females are less in number.

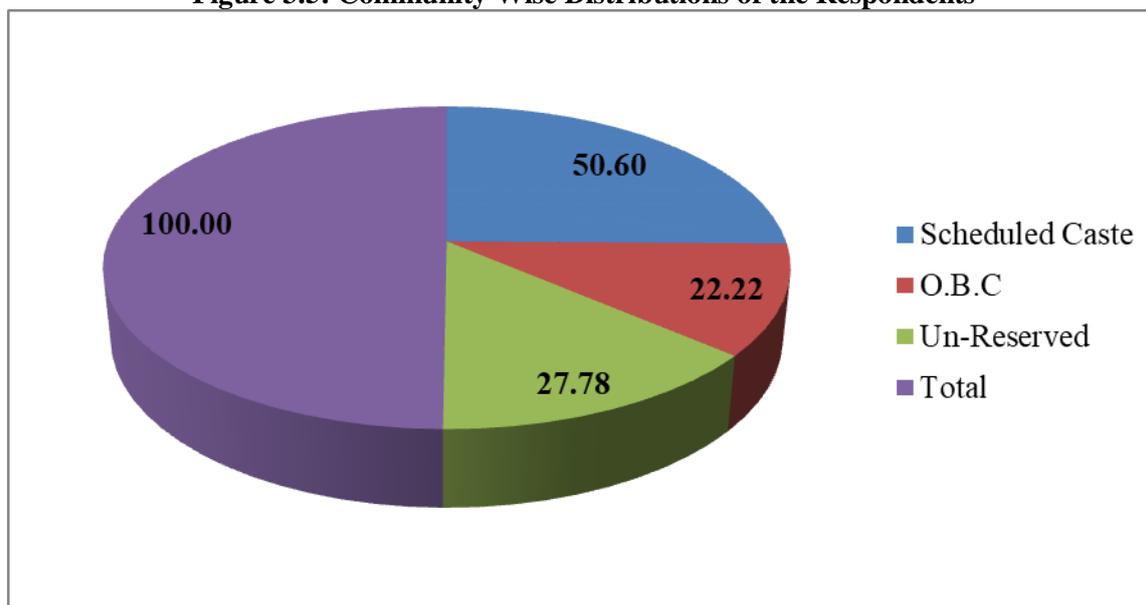
#### 3.10.3 Community Wise Distribution of the Respondents

**Table 3.27: Community Wise Distributions of the Respondents**

Category	No. of Respondents	Percentage
Scheduled Caste	90	50.60
O.B.C	40	22.22
Un-Reserved	50	27.78
Total	180	100.00

Source: Primary data

Data in table 3.27 and figure 3.5 explains the community wise distribution of the respondents. The respondents belong to the different communities namely scheduled caste, other backward community and un-reserved community. Most of the respondents (50.60 percent) are in the scheduled caste category, 27.78 percent respondents belong to the group of un-reserved category and only 22.22 percent respondents are in the other backward community.

**Figure 3.5: Community Wise Distributions of the Respondents**

Source: Primary data

**3.10.4 Family Sizes of the Respondents**

The family sizes of the respondents play an important role in dairy farming because of the utilization of family labour and determination of marketed surplus of milk per household depending upon it. The family size is classified into four different groups, as less than 3, 3 to 4, 4 to 5, and more than 5 in a household. Details of ownership of non-descript (desi) cattles and crossbred cattles in relation to family size are established in the table 3.28.

**Table 3.28: Family Size of the Respondents with Details of Milch Cattles Ownership**

Sl. No	Family Size	No .of Families Rare Non- Descript Cattles	No. of Families Rare Crossbreed Cattles	Total
1.	Less than 3	15 (15.15)	10 (12.34)	25 (13.88)
2.	3-4	20 (20.20)	16 (19.76)	36 (20.00)
3.	4-5	24 (24.24)	20 (24.70)	44 (24.45)
4.	More than 5	40 (40.41)	35 (43.20)	75 (41.67)
5.	Total	99 (100.00)	81 (100.00)	180 (100.00)

Source: Primary data

Note: Figures in brackets represent percentage to total

Data in table 3.28 reveals that, 41.67 percent respondents have more than 5 members in their families with more number of milch cows. Data in table 3.28 also shows that, 40.41 percent respondent's families having non-descript cows and 43.20 percent respondents' families having crossbreed cows out of 41.67 percent. It is also clear from the data in table 3.28, that most of the large family dealing with the crossbreed cows. Only 13.88 percent respondents are having less than three members in their families. 24.45 percent respondents having 4 to 5 members in their families and out of 24.45 percent respondents, 24.24 percent families dealing with the non-descript cows and 24.70 percent respondents dealing with the crossbreed cows.

### 3.10.5 Educational Status

Education is one of the vital requirements of dairy farming. If the head of the household is educated, there would be better management of dairy farming. In the present study, the educational status was divided into 3 levels as, 'no education', 'school education' and 'college education'. Educational status represented in the table 3.29 and figure 3.6.

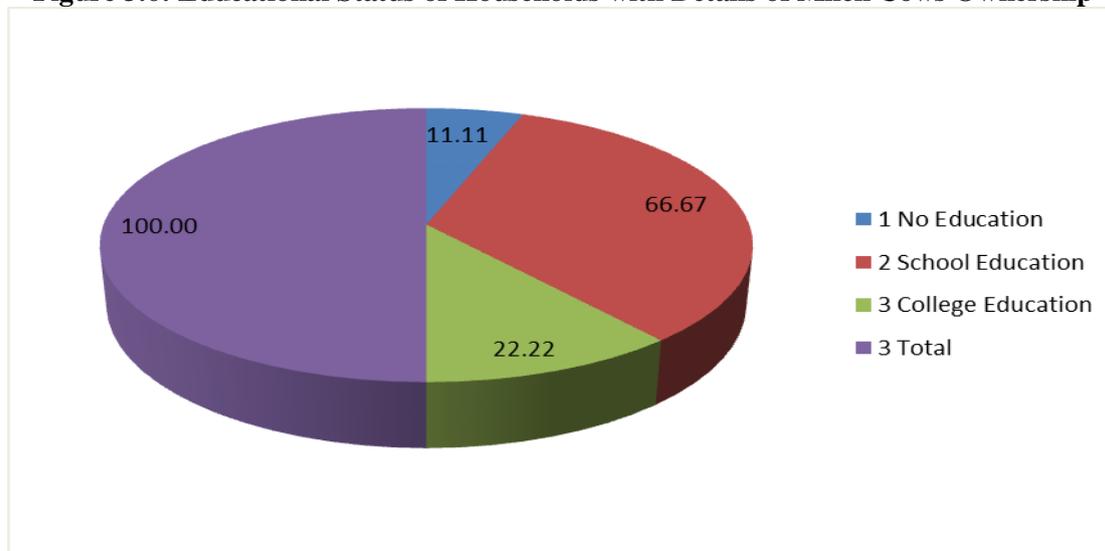
**Table 3.29–Educational Status of Households with Details of Milch Cows Ownership**

Sl. No	Educational Status	Respondents Number	Percentage
1.	No Education	20	11.11
2	Class 10 <sup>th</sup> Passed	120	66.67
3	College Education	40	22.22
	Total	180	100.00

Source: Primary data

Data in table 3.29 and figure 3.6 clearly shows that, most of the respondents have studied upto the school level. Out of 180 respondents 120 (66.67 percent) respondents are class 10<sup>th</sup> passed, 40 (22.22 percent) respondents have obtained the college education and 11.11 percent of the respondents are having no education.

**Figure 3.6: Educational Status of Households with Details of Milch Cows Ownership**



Source: Primary data

### 3.10.6 Income Status of the Respondents

The income status of the respondents is classified into three levels, namely, 'Rs .less than 5,000', 'Rs 5,000 to Rs.10, 000' and 'more than Rs10, 000' per month. The relationship between income levels and milch ownership of cattles is presented in the table 3.30.

**Table 3.30: Income Status of the Respondents with Milch Cattles Ownership**

Sl.No	Monthly Income (Rs)	Respondents Number	Total
1.	Less than,5,000	35	19.45
2.	5,000-10,000	105	58.33
3.	More than 10,000	40	22.22
4.	Total	180	100.00

Source: Primary data

Data in table 3.30 reveals that, majority of the respondent's monthly income is Rs 5,000 to 10,000. The major percentage is 58.33 percent, 40 (22.22) percent respondent's monthly income was more than Rs. 10,000 and 35 (19.45 percent) respondent's monthly income was less than Rs. 5,000.

### 3.10.7 Family Income

The other family income apart from heads of families may be earning in order to support the family. The total family income is classified as 'less than Rs.10, 000,', 'Rs.10,000 to Rs.15, 000' and 'more than Rs .15,000'. The relationship between family income and ownership of milch cattles is shown in table 3.31.

**Table 3.31: Family Income Status of the Respondents with Details of Milch Cows Ownership**

Sl.No	Monthly Income of the family (Rs)	Non-Descript Cows	Crossbreed Cows	Total
1.	Less than,10,000	25 (25.25)	10 (12.34)	35 (19.45)
2.	10,000-15,000	60 (60.61)	45 (55.56)	105 (58.33)
3.	More than 15,000	14 (14.14)	26 (32.09)	40 (22.22)
4.	Total	99 (100.00)	81 (100.00)	180 (100.00)

Source: Primary data

Note: Figures in brackets represent percentage to total

Data in table 3.31 shows that, out of 180 respondents, majority of the respondent's monthly income of the family is Rs.10, 000- Rs. 15,000. Out of that 60 (60.61 percent) respondent dealing with the non-descript cattles and 45 (55.56 percent) respondent dealing with the crossbreed cattles. Approx more than one –fourth of the respondents having monthly income more than 15,000, i.e. the number of respondents is 40 (22.22 percent). Out of 40 respondents 14 (14.14 percent) respondent dealing with the non-descript cows and 26 (32.09 percent) dealing with crossbreed cows. Here the important fact is non-descript family is more but family income is less compared to crossbreed cows families. Only 35 (19.45percent) respondents monthly family income is less than Rs .10, 000. Out of 35, 25 (25.25 percent) possess non-descript cattles and 10 (12.34 percent) possess crossbreed cows.

### 3.10.8 Distribution of Milch cattles by Land-holding Category

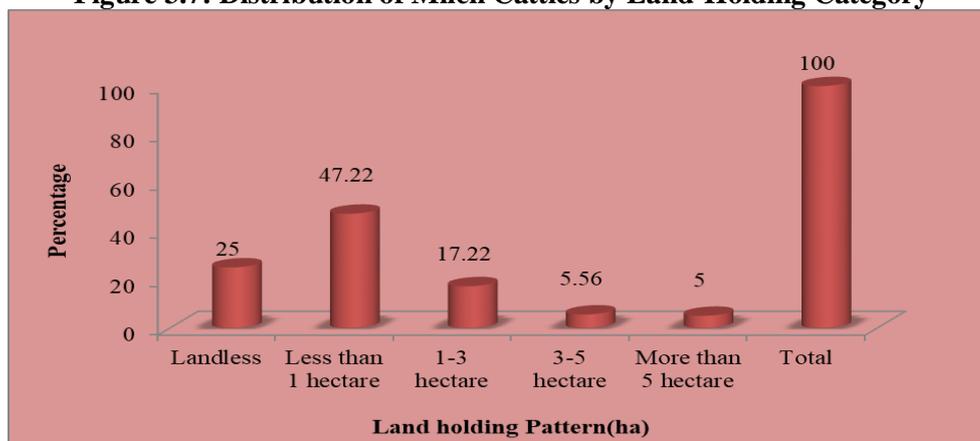
The present analysis describes the land pattern of the milk producer in the study area and it is represented in the table 3.32 and figure 3.7.

**Table 3.32: Distribution of Milch Cows by Land-holding category**

Sl .No	Land holding Pattern(ha)	Respondents Number	Percentage.
1.	Landless	45	25
2.	Less than 1 hectare	85	47.22
3.	1-3 hectare	31	17.22
4.	3-5 hectare	10	5.56
5.	More than 5 hectare	9	5
	Total	180	100.00

Source: Primary data.

Data in table 3.32 and figure 3.7 reveals that, out of 180 respondents 45 (25.00 percent) respondents are landless. It clearly depicts that, 47.00 percent of respondents having the land of less than 1 hectare and 17.22 percent respondents having the land of 1 to 3 hectare, 5.56 percent respondents having the land of 3 to 5 hectare. Only 5.00 percent milk producer having the land of more than 5 hectares.

**Figure 3.7: Distribution of Milch Cattles by Land-Holding Category**

Source: Primary data

**3.10.9 Details Year Involvement of the Milk Production by the Milk Producer**

The present analysis describes the respondent's length of the business that means producer year involvement of the milk production and it is shown in the table 3.33.

**Table 3.33: Details Year Involvement of the Milk Production by the Milk Producer**

Sl. No	Year	Respondents Number	Percentage
1	Less than 5 years	20	11.11
2	5-10 years	37	20.56
3	10-20 years	65	36.11
4	More than 20 years	58	32.22
5	Total	180	100.00

Source: Primary data

Data in table 3.33 reveals that, majority of the respondents, 36.11 percent they are involve the milk production business since 10 to 20 years. This is one fifth of the total respondents surveyed. 20.56 percent respondents are involved in the milk production business since 5 to 10 years. 32.22 percent milk producers are involved in the business for more than 20 years and still continuing. 20.56 percent are involved in the business for 5 to 10 years.

**3.10.10 Other Sources of Income**

The present analysis describes that apart from milk production and income, milk producer having other sources of income. Here income sources are classified into, Agriculture, business and service. It is given in the table 3.34.

**Table 3.34: Other Sources of Income**

Sl. No	Sources of Income	Non-Descript	Crossbreed	Total
1.	Agriculture	55 (55.56)	45 (55.56)	100 (55.56)
2.	Business	24 (24.24)	20 (24.70)	44 (24.44)
3.	Service	20 (20.20)	16 (19.76)	36 (20)
4.	Total	99 (100.00)	81 (100.00)	180 (100.00)

Source: Primary data

Note: Figures in brackets are percentage total

Data in table 3.34 reveal that, out of 180 respondents, 55.56 percent of non-descript and crossbreed milch producer, they have agriculture as the important sources of income apart from milk production because, agriculture is the allied activities of milk production.

# CHAPTER - 4

## COST AND RETURNS OF MILK PRODUCTION AND FACTORS INFLUENCING OF MILK PRODUCTION IN TRIPURA

This chapter has compared the cost and returns structure of milk production among the small, medium and large milk producers. It also describes the number of milch cows owned by the sample respondents and human labour employed in dairying operations. For better exposition, the analysis, of the present chapter has been classified under the following headings. This chapter also explains the mean. “Mean is a set of observations is defined as their sum, divided by the number of observations”. Mean is defined as the following formula.

$$\text{Mean (or } \bar{X}) = \frac{\sum X_i}{n}$$

Where,  $\sum$  = symbol for summation

$X_i$  = value of the  $i$ th item  $X$ ,  $i=1, 2, \dots, n$

$n$  = total number items

### 4.1 Size Group Wise Per Day Average Feed Cost of Non-Descript Cows

Since, feeding is directly related to the milk production, the feeding cost for milch animal was examined. The feed consist of the costs of dry fodder, green fodder and concentrates. Thus total feed cost is the combination of costs of green fodder, dry fodder and concentrates. The present analysis describes the size group wise feeding costs of non-descript cows. It is represented in the table 4.1 and figure 4.1(a).

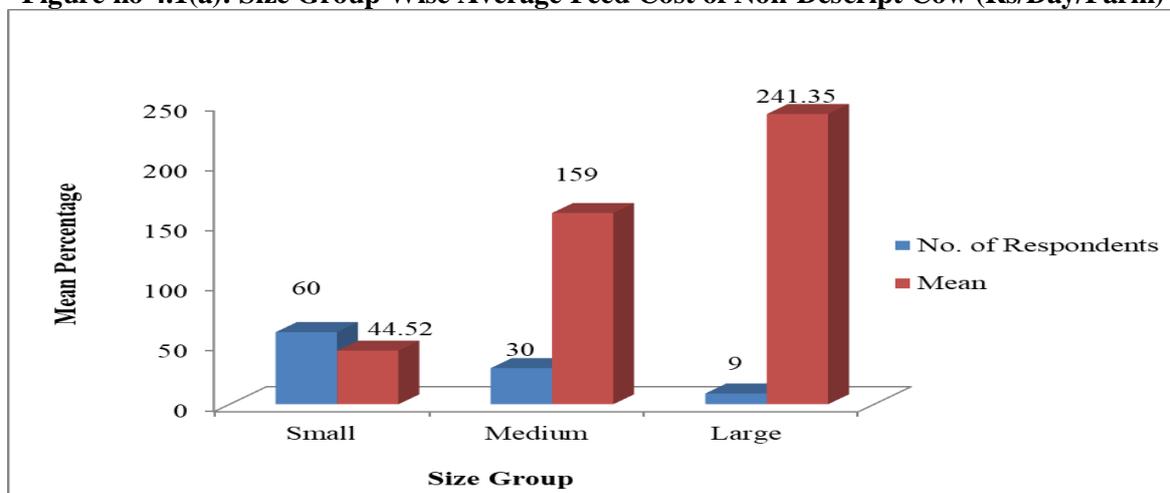
**Table 4.1: Size Group Wise Per Day Average Feed Cost of Non-Descript Cows (Rs/Day/Farm)**

	Small	Medium	Large
No. of Respondents	60	30	9
Mean	44.52	159.00	241.35

Source: Primary data

Data in table 4.1 and figure 4.1(a) explains the per day average feed cost of non-descript cows in different size groups. The average feed cost of small dairy farms is Rs. 44.52 per day which is substantially lower as compared to medium and large dairy farms. It is because of most of the non-descript small producers rare their small number of animals by grazing in a common property land, hence the feed cost per day of this group is minimum. For medium group of milk producer's, the average feed cost for his herd is Rs. 159.00 per day and for a large group of producer with a large number of animals, the average feed cost for the whole farm is Rs. 241.35 per day. These make it abundantly clear that the cost of feeds per day increased directly, with size of the farms, in the study area.

**Figure no 4.1(a): Size Group Wise Average Feed Cost of Non-Descript Cow (Rs/Day/Farm)**



Source: Primary data

#### 4.2 Size Group Wise Per Day Average Feed Cost of Crossbreed Cows

The present analysis describes the size group wise per day average feed cost of crossbreed cows. This analysis is represented in the table 4.2 and figure 4.2 (a)

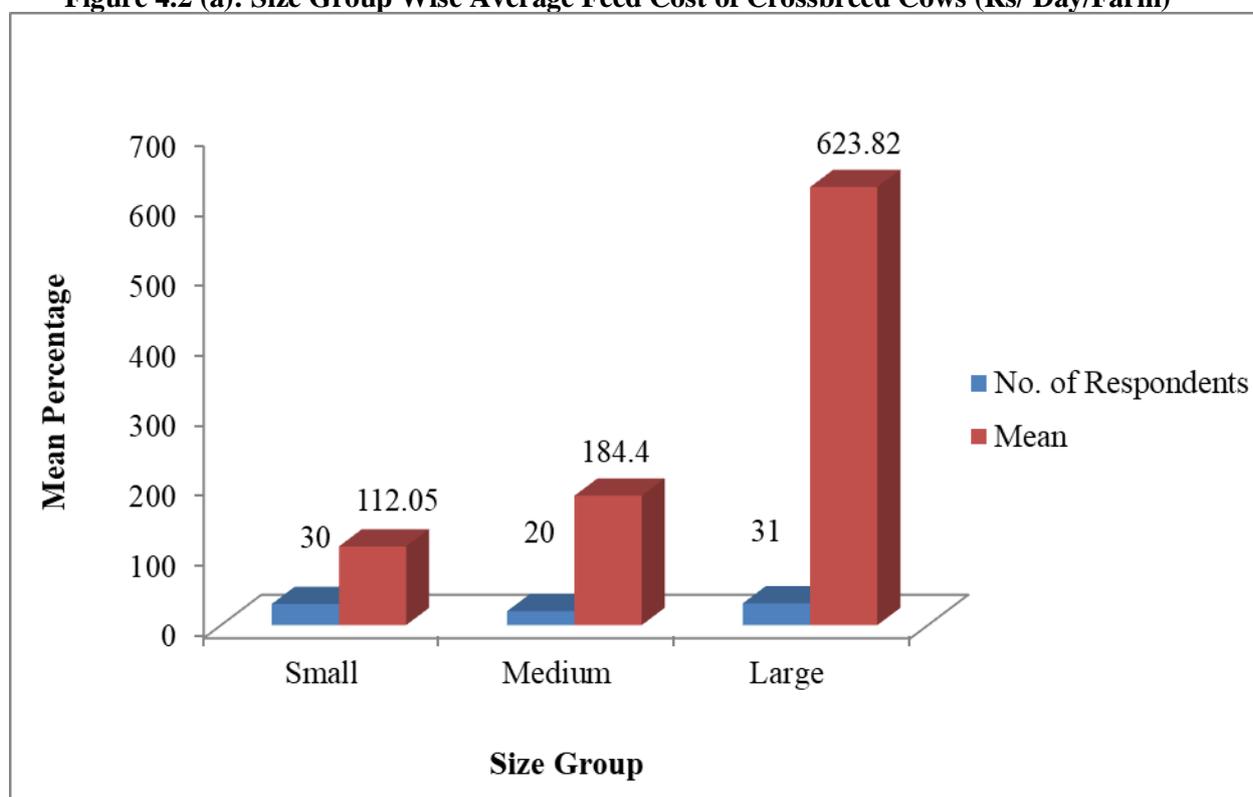
**Table 4.2: Size Group Wise Per Day Average Feed Cost of Crossbreed Cows (Rs/ Day/Farm)**

	Small	Medium	Large
No. of Respondents	30	20	31
Mean	112.05	184.40	623.82

Source: Primary data.

Data in table 4.2 and figure 4.2 (a) describe the per day average feed cost of crossbreed cows in different size groups. Data in this table reveals that for the small size group of crossbreed milk producers, the average feeding costs for the farm is Rs. 112.05 per day, which is lowest as compared to medium and large dairy farms. For the medium size group of producer the average feed cost per farm per day is Rs. 184.40 and for the large group of milk producer, the average feed cost is per farm is Rs.623.82 per day. Thus, increase of cost directly related to the size of farms.

**Figure 4.2 (a): Size Group Wise Average Feed Cost of Crossbreed Cows (Rs/ Day/Farm)**



Source: Primary data

#### 4.3 Size Group Wise Labour Cost of Non-Descript Cows

The present analysis describe the size group wise per day labour cost of of non –descript cows. Labour is divided into two categories. First category is family labour and second category is hired labour. Labour cost is calculated in the following way. If one labour getting the wages Rs. 200 and he is working for per cow on an average 2 hours, his labour cost is Rs. 50. One mandays =8 hours.

$$L = \frac{TW}{TM} = 1 \text{ hours}$$

Whereas, L = labour cost

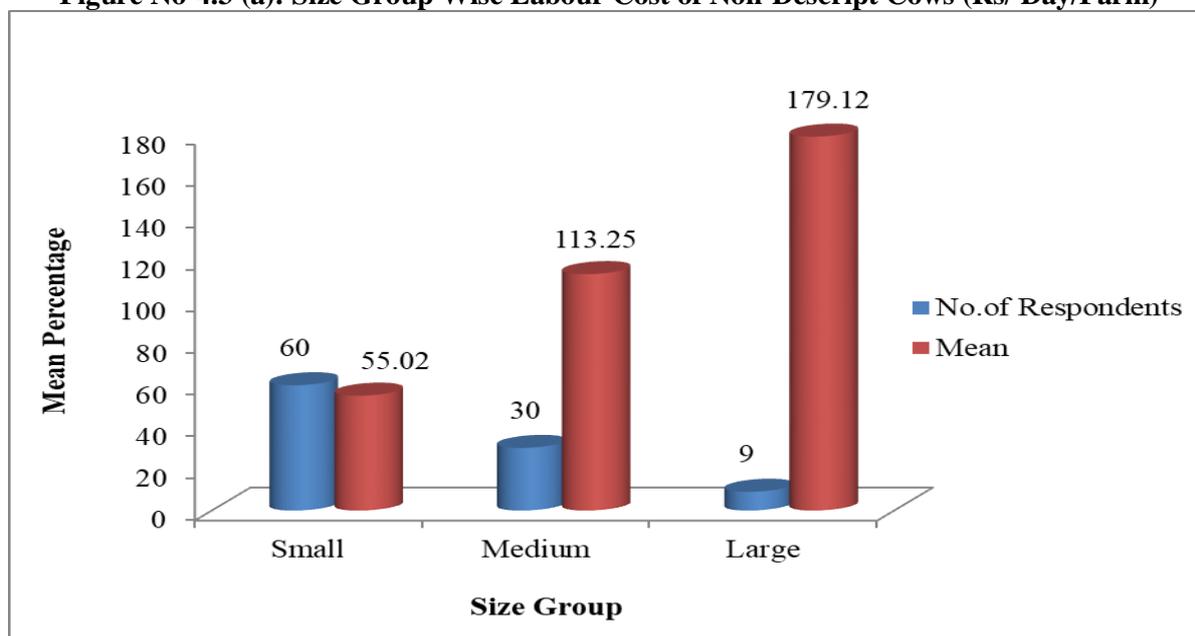
TW=Total wages, TM=Total mandays.

**Table No-4.3: Size Group Wise Labour Cost of Non-Descript Cows (Rs/ Day/Farm)**

	Small	Medium	Large
No. of Respondents	60	30	9
Mean	55.02	113.25	179.12

Source: Primary data

Data in table 4.3 and figure 4.3 (a) reveal that size group wise per day labour cost of non-descript cows. On small size group of milk producer the per day average labour cost is Rs. 55.02, which is lowest as compare to medium and large groups. It is because they use only family labour and the size of their herd is smallest. For medium size group of milk producer per day average labour cost is Rs.113.25, because they use mostly family labour to maintain their desi/non-descript cows. For large milk producers, per day average labour cost for non-descript cows is Rs. 179.12 per day, because they use both family and hired labour and their size of herd is largest as compared to other two groups.

**Figure No-4.3 (a): Size Group Wise Labour Cost of Non-Descript Cows (Rs/ Day/Farm)**

Source: Primary data

#### 4.4 Size Group Wise Average Labour Cost of Crossbreed Cows

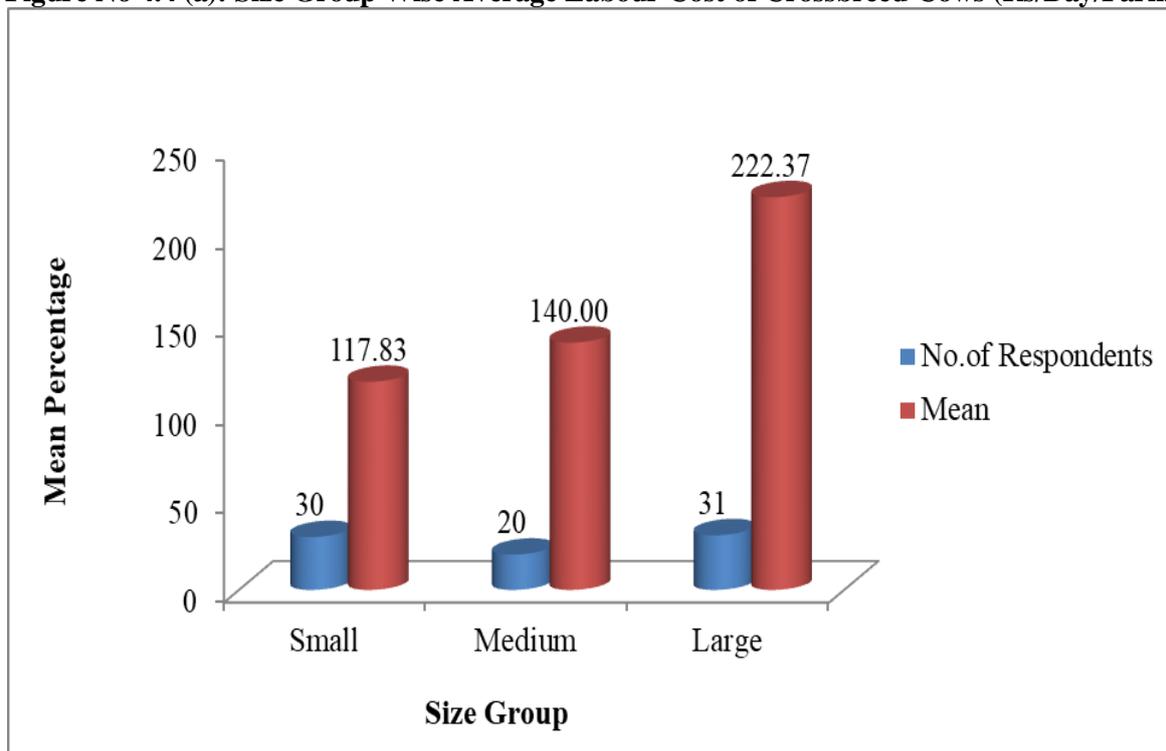
The present analysis describes the different size group wise average labour cost of per farm for per day basis of crossbreed cows. Here labour means both family and hired labour. Size group wise average labour cost of crossbreed cows (Rs/ day/farm) is given in the table 4.4 and figure 4.4(a)

**Table 4.4: Size Group Wise Average Labour Cost of Crossbreed Cows (Rs/ Day/Farm)**

	Small	Medium	Large
No. of Respondents	30	20	31
Mean	117.83	140.00	222.37

Source: Primary data

Data in table 4.4 and figure 4.4 (a) indicate that for small size group of milk producers the average labour cost is Rs. 117.83 per day which is lowest among the groups, because they have the lowest number of crossbreed cows in their farm. It is also clear from the data in table 4.4 and figure 4.4 (a) that the medium size group of producer has to pay higher labour cost per day as they have bigger size of herd as compared to the small size groups. It is also evident from the table 4.4 that large size group of producer pay the highest labour cost per day per farm because they have the maximum number of cattles in the farms.

**Figure No 4.4 (a): Size Group Wise Average Labour Cost of Crossbred Cows (Rs/Day/Farm)**

Source: Primary data

#### 4.5 Size Group Wise Average Production (Litres) and Feeding (Kg) Intake of Non-Descript Cows Per Day

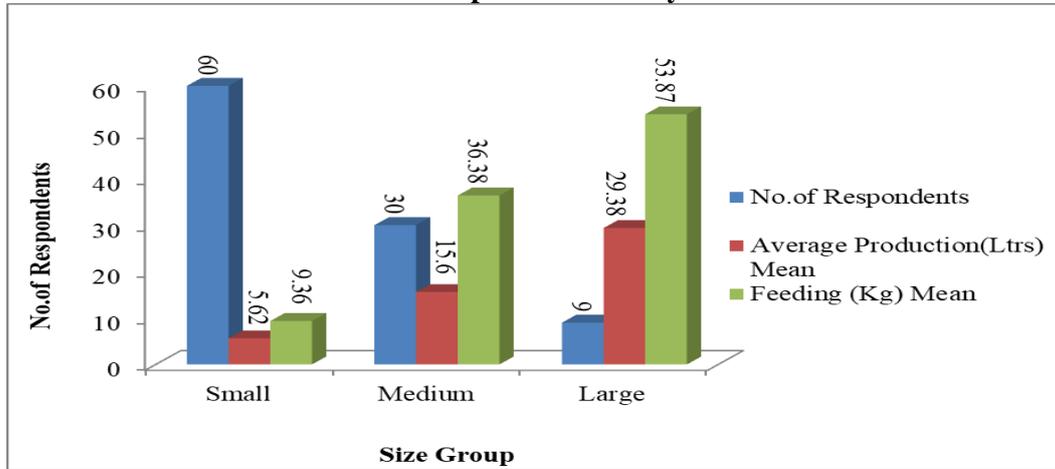
The present analysis explains the size group wise average consumption of feeds (kg) provided by the milk producers and average milk yield (litres) per farm per day for non-descript cows. The feed contains green fodders, dry fodders and concentrates. Further, concentrates means the rice brand, rice garbage and bhushi mixture, master cakes etc, which have been explained in table 4.5 and figure 4.5 (a).

**Table No 4.5: Size Group Wise Average Productions (Litres) and Feeds (Kg) Intake of Non-Descript Cows Per Day Per Farm**

Size Group	No. of Respondents	Average Production (Ltrs)	Feeds (Kg)
		Mean	Mean
Small	60	5.62	9.96
Medium	30	15.06	36.68
Large	9	29.38	53.87

Source: Primary data.

Data in table 4.5 and figure 4.5 (a) explain that, average production of small dairy farms is 5.62 litres /day and they have given on an average feed per day 9.96 kgs for their farm. Most of the small producers given the green and dry fodders more as compare to medium and large size groups but they fed very less quantity of concentrates as the concentrates are highly expensive. Similarly, average milk production on medium size groups was 15.06 litres and for which they fed 36.68 kgs of different kinds of feeds. It also makes it clear from the data in table 4.5 that on large dairy farms, the average production is 29.38 litres /day and they have given 53.87 kgs of different kinds of feeds per day. Thus, it is crystal clear that the larger the size group higher is the milk production and feeding cost per day.

**Figure 4.5 (a): Size Group Wise Average Production (Litres) and Feeding (Kg) Intake of Non-Descript Cows Per Day**

Source: Primary data

**4.6 Size Group Wise Average Production (Litres) and Feeds (Kg) Intake of Crossbreed Cows Per Day**

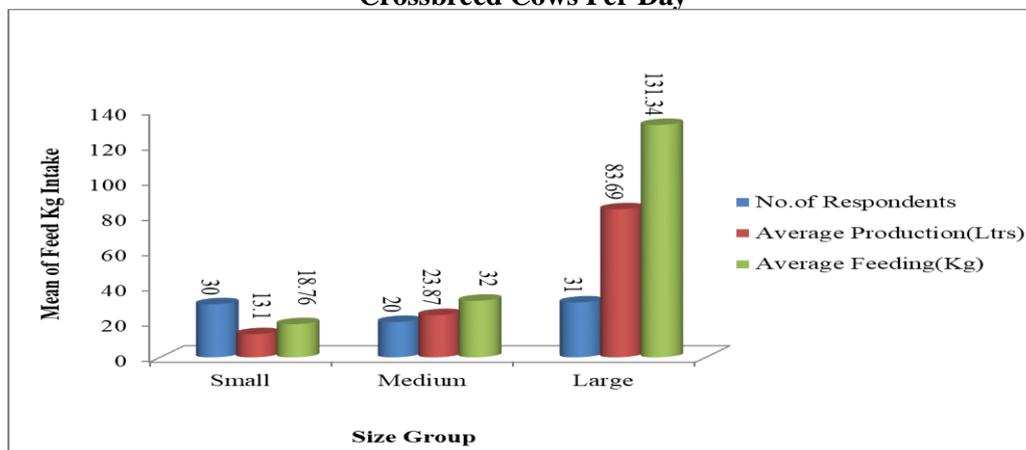
The present analysis in table 4.6 and figure 4.6 (a) describe the size group wise feeding provided by the milk producer and average production of milk of crossbreed cows per day per farm .

**Table No 4.6: Size Group Wise Average Productions (Litres) and Feeding (Kg) Intake of Crossbreed Cows Per Day**

Size Group	No. of Respondents	Average Production (Ltrs) Mean	Feeding (Kg) Mean
Small	30	13.10	18.76
Medium	20	23.87	32.00
Large	31	83.69	131.34

Source: Primary data

Data in table 4.6 and figure 4.6 (a) reveals that average production of small dairy farm was 13.10 litres and on an average they used 18.76 kgs of feeds per day. Similarly, average milk production per day was 23.87 litres on medium size groups for which they used 32.00 kgs of different kinds of feeds per day while on average milk production per day on large farms was 83.69 litres and they used about 131.34 kgs of feeds per day. Thus, larger the size group, more is the production of milk and feedings cost per day.

**Figure 4.6 (a): Size Group Wise Average Productions (Litres) and Feeding (Kg) Intake of Crossbreed Cows Per Day**

Source: Primary data

#### 4.7 Size Group Wise Lactation Period and Milk Yield of Non- Descript and Crossbreed Cows

The lactation period is the period in which the milching cows are in the stage of yielding milk. To measure the productivity of milk, the lactation period and milk yield are considered to be very important elements. Lactation period and milk yield of non-descript and crossbreed cows are presented in the table 4.7

**Table 4.7: Size Group Wise Lactation Period and Milk Yield of Non-Descript Cows and Crossbreed Cows**

Particulars	Small		Medium		Large	
	Non-Descript	Crossbreed	Non-Descript	Crossbreed	Non-Descript	Crossbreed
No.of respondents	60	30	30	20	9	31
Average lactation period per year(in days)	235.20	315.37	261.66	339.21	316.11	357.90
Average milk yield per lactation(in litres)	1321.82	4131.34	3930.59	8096.94	9287.31	29952.65
Average milk yield per day in lactation (in litres)	5.62	13.10	15.06	23.87	29.38	83.69

Source: Primary data

From the data in table 4.7, it has been inferred that the different size group wise milk yield per day during the lactation period ranges from 5.62 to 29.38 litres for non-descript cows and 13.10 to 83.69 litres for crossbreed cows. This variation occurs because of the variation of lactation period and the number of milking cows owned by various size groups. The average lactation period for crossbreed cow is higher than the non- descript cow. During the lactation period, size group wise average production of non-descript cows are 1321.82 litres, 3930.59 litres and 9287.31 on small, medium and large groups respectively. During the lactation period size group wise average yield of crossbreed cattles are 4131.34 litres, 8096.94 litres and 29952.65 litres which is higher than small and medium size groups.

#### 4.8 Size Group Wise Per Day Average Miscellaneous Expenditure of Non-Descript and Crossbreed Cows

The miscellaneous expenditure covers the veterinary charges which include the charges for artificial insemination, cost of medicine and honorarium for the dispensary staff, repairs carried out to cattleshed and purchase of ropes, equipments used for milking non- descript and crossbreed cows. Details of this expenditure have been collected from the respondents with the help of structured and pre-tested schedule. Only the average lactation period has been taken into account. Table 4.8 gives the clear presentation of miscellaneous expenditure for non-descript and crossbreed cows.

**Table 4.8 Size Group Wise Average Miscellaneous Expenditure of Non-Descript Cows and Crossbreed Cows Per Day Per Farm**

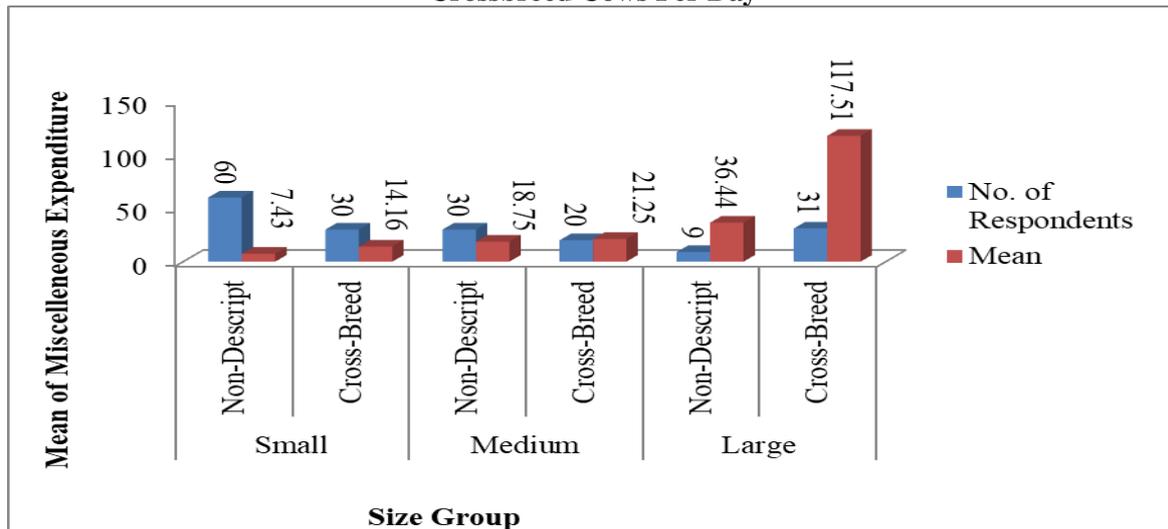
	Small		Medium		Large	
	Non-Descript	Cross-Breed	Non-Descript	Cross-Breed	Non-Descript	Cross-Breed
No. of Respondents	60	30	30	20	9	31
Mean	7.43	14.16	18.75	21.25	36.44	117.51

Source: Primary data

Data in table 4.8 and figure 4.8 (a) clearly shows that for small size group of non –descript milk producer, the average miscellaneous expenditure was Rs 7.43 per day on small dairy which is considerably lower as compared to the crossbreed cows. It is also evident from these data in table 4.8 that on small size group of crossbreed milk producers, per day the average miscellaneous expenditure is Rs.14.16. Data in table 4.8 and figure 4.8 (a) also shows that medium size group of non- descript

milk producer's per day average miscellaneous expenditure is Rs.18.75. Data also makes it clear that on medium size group of crossbreed milk producer, the average miscellaneous expenditure is Rs. 21.25 which is comparatively higher to medium size group of non- descriptor milk producer. Data in table 4.8 and figure 4.8 (a) also shows that on large size group of non- descriptor milk producer the average miscellaneous expenditure is Rs.36.44 whereas it was Rs117.51, for crossbreed cows, because crossbreed cows suffer more from various diseases as compare to than non-descriptor cows in the study area.

**Figure 4.8 (a) Size Group Wise Average Miscellaneous Expenditure of Non-Descriptor Cows and Crossbreed Cows Per Day**



Source: Primary data

#### 4.9 Size Group Wise Correlation Co-efficients between Average Production (Litre) and Feeding (kg) of Non- Descriptor and Crossbreed Cows

“Correlation analysis attempts to determine the “degree of relationship” between variables” –Ya Lun Chou

The word “Correlation” is used to denote the degree of association between variables. If two variables x and y are so related that variations in the magnitude of one variable tend to be accompanied by variations in the magnitude of the other variable, they are said to be correlated. If y tends to increase as x increases, the variables are said to be positively correlated. If y tends to decrease as x increases, the variables are negatively correlated. The Correlation Co-efficients, or Coefficient of Correlation, between x and y (denoted by the symbol r) is then defined as

$$r = \text{cov}(x, y) / \sigma_x \cdot \sigma_y$$

Where,  $\sigma_x$  and  $\sigma_y$  are the standard deviations of x and y respectively, and cov(x, y) denotes the covariance of x and y, r value indicate  $\pm 1$ , if zero there is no association between the two variables.

The present analysis describe the various size group wise correlation between average milk yield (litres) and feeding intake of green fodder, dry fodder and concentrate (kg) per day, for non- descriptor and crossbreed cows. The data also indicate that the green fodder, dry fodder and concentrate are to be increased for the purpose of increasing the existing per day milk production level.

**Table 4.9: Size Group Wise Correlation Co-efficients\*\* between Average Production (Litres) and Feeding (Kg) of Non- Descriptor Cows and Crossbreed Cows (Per Day)**

Particulars	Small		Medium		Large	
	Non-Descriptor	Cross-Breed	Non-Descriptor	Cross-Breed	Non-Descriptor	Cross-Breed
No .of Respondents	60	30	30	20	9	31

Average milk yield(ltrs.) and green fodder(kg)	0.76	0.81	0.86	0.88	0.85	0.95
Average milk yield (ltrs.) and dry fodder (kg)	0.64	0.76	0.76	0.82	0.81	0.92
Average milk yield (ltrs.) and concentrates (kg)	0.82	0.86	0.88	0.88	0.89	0.95

Source: Primary data

\*\*All correlation coefficients are significant at 1 percent level

The correlation coefficients, presented data in table 4.9 reveal that green fodders and concentrates have the significantly higher and positive impacts on milk production on all the size groups and both for crossbreed and non-descript cows. It is also crystal clear from the correlation co-efficients that on an average, the contribution in milk production of green fodder and concentrate, are generally higher on crossbreed cows as compared to non-descript cows. Therefore, to get optimum milk production from crossbreed particularly, it is necessary to supply them, these essential feeds, in required quantity and on regular basis, for the whole milking period.

#### 4.10 Size Group Wise Correlation Coefficients between Per Day Average Milk Production (Litre) and Labour Cost (Rs.) of Non- Descript and Crossbreed Cows

The present analysis describe the various size group wise correlation between average milk yield (litres) and labour cost of (Rs), for non- descript and crossbreed cows.

**Table 4.10: Size Group Wise Correlation coefficients\*\* between Per Day Average Milk Production (Litre) and Labour Cost (Rs.) Non- Descript and Crossbreed Cows (Per Day)**

Particulars	Small		Medium		Large	
	Non-Descript	Crossbreed	Non-Descript	Crossbreed	Non-Descript	Crossbreed
No .of respondents	60	30	30	20	9	31
Average milk yield(ltrs.) and family labour	0.86	0.92	0.90	0.95	0.39	0.60
Average milk yields (ltrs.) and hired labour.	-	-	-	0.72	0.96	0.98

Source: Primary data

\*\* All correlation coefficients are significant at 1 percent level

Data in table 4.10 shows that milk yield is significantly dependent on family labour, particularly, incase of small and medium size groups. The large size group, however, is considerably dependent on hired labour and not on family labour. This has happened not only, due to large size of herd to be reared by the large group but also of family members of large size group, being more educated, is normally engaged in different kinds of white colour jobs. It is also clear from the data that small farms normally do not use hired labour for rearing their cattle farms whereas medium farms also do not need to use hired labour for rearing their non-descript cows.

#### 4.11 Size Group-Wise Per Day Per Cow and Per Day Per Litre Cost of Milk Production of Non-Descript and Crossbreed Cows

The present analysis describes the size group wise average cost of milk production for per cow per day. The cost of milk production is classified into variable cost and fixed cost. The variable cost

consists of feed costs, labour cost and miscellaneous expenditure. Feed costs consists of cost of green fodder, dry fodder and concentrates while labour cost includes the cost of only hired labour. The fixed cost includes family labour, depreciation of cattle shed and equipments.

#### **4.11.1 Cost Components**

The measurement of cost components used for the present studies are:

#### **4.11.2 Feed Costs**

Feed cost is the summation of green fodder, dry fodder and concentrates used by the all the size group of non-descript and crossbreed milk producer and its average on per day.

#### **4.11.3 Green Fodders**

Green fodders include the green grasses, cultivated fodders and green leaves etc. The cost of these varies according to the place, time and size group. The respondents used only the cheapest available fodder. In case of small size group of producer of non- descript cows, largely depends on green grasses which is free of cost because, most of the milk producer collect the grass from the common property land. But opportunity cost of family labour is taken into consideration as a green fodder cost for this group. Medium size group of producer sometimes pay for it to arrange the green fodder @Rs.1 per kg and sometimes they collect green fodder from common property land which is free of cost. Large size group of non- descript milk producer, normally pay for buying the green fodder @ Rs.1 per kg.

#### **4.11.4 Dry fodder**

Dry fodder means the paddy straw. Paddy straw may be purchased for a price which varies with time, place and size group. Small size group normally purchase paddy straw @ Rs.2 per kg, medium and large size group of milk producer normally need not pay for it, because generally they used dry fodder from their own agricultural land and mortgage land where they grows the paddy twice in a year. The study takes into consideration here only per cow per day average cost of the dry fodder used.

#### **4.11.5 Labour Cost**

The labour cost includes the payment made to hired labour or opportunity cost of family labour for discharging duties like feeding, watering, washing, cleaning, milking, transporting grass from the field to household and also time spent for providing veterinary care to animals. These services are calculated on the basis of time spent on them by the labours. Eight hours spent are taken as one manday. The prevailing wage rates for labour is Rs.200 per day in the study areas. Labour is classified into two that is family labour and hired labour and the hired labour cost is coming under the category of variable cost

#### **4.11.6 Miscellaneous Expenditures**

The miscellaneous expenditure covers the veterinary charges which include the charges for artificial insemination, cost of medicine and honorarium for the dispensary staff, purchase of ropes, repairs carried out to cattle shed and equipments used for milching cows. The details of these expenditures have been collected from the respondents in regards to lactation period. Only per cow per day average is taken into account for all the milching cows. These expenditures size group wise for non-descript and crossbreed cows.

#### **4.11.7 Fixed Cost**

The fixed cost includes family labour, depreciation of cattle shed and farm equipments.

#### **4.11.8 Depreciation on cattle shed and Dairy Equipments**

The cattle shed require an area of 50 sq.ft. for a non-descript and crossbreed cattle. The value of which can be calculated with the help of the market rate per sq.ft. This value varies from one size group to another size group. The depreciation on pucca sheds and and kutcha sheds are 2.00 percent and 5.00 percent respectively. The depreciation on dairy equipments like baskets, ropes, nails and the like is calculated at 5.00 percent. These two depreciations are added to arrive at the total.

**4.11.9 Total Fixed Cost**

The total fixed cost is the sum of family labour, depreciation on cattle shed, dairy equipments etc.

**4.11.10 Total Cost**

Total Cost consists of the total variable costs and fixed costs.

**4.11.11 Income from Dung**

Size group wise dung is sold as a commodity for various purposes. The value of dung is estimated on the basis of information given by the non-descript and crossbreed milk producer.

**Table 4.11: Size Group-Wise Cost of Milk Production Per Day Per Cow for Non- Descript and Crossbreed Cows**

Particulars	Small		Medium		Large	
	Non-Descript	Cross-Breed	Non-Descript	Cross-Breed	Non-Descript	Cross-Breed
No .of Respondents	60	30	30	20	9	31
<b>A. Variable Cost</b>						
<b>(i)Feed Cost</b>						
Green Fodder	1.98	4.25	2.51	3.97	2.23	4.96
Dry Fodder	3.19	8.80	4.35	6.45	3.25	8.75
Concentrates	13.76	38.54	16.40	42.40	18.38	51.57
Total Feed Cost	18.93	51.59	23.26	52.82	23.86	65.28
<b>(ii)Labour Cost</b>						
Hired Labour	-	-	-	26.21	4.15	32.61
Miscellaneous expenditure	3.16	8.17	2.74	5.74	2.92	9.84
Total Variable Cost	22.09	72.79	26	81.77	25.43	94.70
<b>B.Fixed Cost</b>						
Family Labour	23.41	40.98	16.57	37.83	14.44	20.00
Depreciation on cattle shed and dairy equipments	5.47	6.48	7.74	8.74	19.92	20.50
Total Fixed Cost	28.88	47.46	24.31	46.57	34.36	40.50
Total Cost(A+B)	50.97	120.25	73.57	181.16	83.65	200.48

Source: Primary data

Data in table 4.11 reveal the cost of production of different size group of dairy farm for the crossbreed and non-descript cattles. It is clear from the data that cost of green fodder per day per cow was Rs.1.98 for non- descript cow whereas it was Rs. 4.25 per crossbreed milch cow on small size group. Data in table 4.11 also indicates that for the medium size group, the cost of green fodder for a non-descript cow was Rs. 2.51 per day and it was Rs. 3.97 per day for a crossbreed cow. Similarly, for the large group, the cost of green fodder per day was Rs. 2.23 for a non-descript cow and it was Rs. 4.96 per day for a crossbreed cow. Thus, it is clear that the feeding cost of green fodder per day per cow was substantially higher for crossbreed cows as compared to non-descript cows in all the size groups. These data also reveal that the cost of green fodder is positively correlated with the size groups of dairy farm both for non-descript and crossbreed cows except for the crossbreed cows of medium size group. The reason for positive relation for expenditure on green fodder and size group, is that the large dairy farmers depend mainly on the stall feeding i.e., purchase of green fodders, whereas the smaller size groups arranged green fodders from the nearby fellow lands for which there is no transport and labour costs except, the involvement of opportunity cost of family labour which is very low in the study area. Data in table 4.11 also indicate that the feeding cost also increases, as the size of the dairy increases. However these data also reveal that the cost of dry fodder for a crossbreed cow per day is much higher as compared to a non-descript cows on all the size groups. It is interesting to note that the expenditure on concentrate for feeding a crossbreed cows per day, is much higher than a non-descript

cows on small group. The same trend also prevails for the medium and large size groups. It is also evident from the data in table 4.11 that cost for concentrates per day per cow is directly varies with size of the dairy farms. These data also clearly reveal that the cost of feeding of concentrate per day per cow is considerably higher for a crossbreed cow as compared to non –descript cows on all size groups.

The total feed cost for a cow also increases with the increase of size groups, both for the non-descript and crossbreed cows. The total feed cost also depicts that the feeding cost of crossbreed cows are substantially higher as compared to non-descript cattles, on all size groups. Data in table 4.11 indicates that total cost of feed both for non-descript and crossbreed cows are considerably higher on medium and large size groups as compared to small size group.

It reveals from the data, in table 4.11 that small farms do not use any hired labour for rearing both for non-descript and crossbreed cows owned by them, because the family labour is sufficient to maintain their small herd.

Whereas medium farms also do not need any hired labour, for maintaining their non-descript cattles. However data also depicts that medium farm engaged some hired labour only to manage their crossbreed cows.

But large dairy farms, need to engage hired labour to maintain their both non –descript and crossbreed cows. But the requirement of hired labour both for non-descript and crossbreed cows, per day is much higher for crossbreed cows as compared to non-descript cows on large size farms.

Data in table 4.11 also reveals the miscellaneous expenditure per cow per day was also much more on crossbreed as compared to non-descript cows, because the expenditure on treatment, medicine etc are comparatively higher on crossbreed cows as compared to non-descript cows .

The data in table 4.11 makes it absolutely clear that total variable cost per day per cow is substantially higher for crossbreed cows as compared to non-descript cows, on all the size groups.

Data in table 4.11 also reveal that opportunity cost of family labour per cow per day is much more on small dairy as compared to medium and large dairy farms both incase of non-descript and crossbreed cattles. Data in table 4.11 makes it crystal clear that use of family labour per day per cow is inversely related to the size groups of dairy farms. This may happen because more availability of family labour on the small size of dairy farms, whereas on large size groups dairy owners, normally do not like to work himself and depend more on the hired labour.

Data in table 4.11 also shows that the depreciation on cattleshed and dairy equipments are higher on the medium and large size group.

It is also interesting to note that total fixed cost is higher on crossbreed cows as compared to non-descript cows in all size groups.

Data in table 4.11 clearly points out that total cost considerably increases as the size group increases for both the non-descript and crossbreed cows.

**Table 4.12: Size Group-Wise Cost of Milk Production per Day per Litre for Non- Descript and Crossbreed Cows (Rs. Per Litre)**

Particulars	Small		Medium		Large	
	Non-Descript	Crossbreed	Non-Descript	Crossbreed	Non-Descript	Crossbreed
No .of Respondents	60	30	30	20	9	31
<b>A. Variable Cost</b>						
<b>(i)Feed Cost</b>						
Green Fodder	0.35	0.32	0.16	0.16	0.07	0.05
Dry Fodder	0.10	0.13	0.27	0.28	0.56	0.67
Concentrates	0.61	0.62	1.08	1.77	2.44	2.94
Total Feed Cost	1.06	1.07	1.51	2.21	3.07	3.66

<b>(ii) Labour Cost</b>						
Hired Labour	-	-	-	0.14	0.38	1.09
Miscellaneous expenditure	0.09	0.11	0.18	0.24	0.56	0.62
Total Variable Cost	1.15	1.18	1.69	2.59	4.01	5.37
<b>B. Fixed Cost</b>						
Family Labour	3.12	4.16	2.10	1.58	0.49	0.23
Depreciation on cattle shed and dairy equipments	0.24	0.67	1.51	2.36	1.61	1.97
Total Fixed Cost	3.36	4.83	3.61	3.94	2.10	2.20
Total Cost(A+B)	4.51	6.01	5.30	6.53	6.11	7.57

Source: Primary data

The data in table 4.12 reveal that the cost of green fodder for per litre milk production has declined as the size groups increased both for non-descript and crossbreed cows. This makes it crystal clear that the small dairy owners, mainly depend on the grazing and collection of green fodder from the fellowlands which is not possible for the medium and large dairy owners. The expenditure on dry fodder and concentrates were highest on the large dairy farmers followed by medium and small dairy farms. Data on total variable cost also highlighted that the cost of milk production per litre was much higher on large dairy farms followed by medium and small farms both for non-descript and crossbreed cows. Data in this table, also highlighted that the small milk producer do not hire labour both for rearing their non-descript and crossbreed cows but medium producers need to hire labour for rearing their crossbreed cows only. However, the large farmers depends mainly on stall feeding with the help of hired labour hence, their expenditure for hired labour, both for non-descript and crossbreed cows were substantially high in the study area. The miscellaneous expenditure is also increased with size groups both for non-descript and crossbreed cows. It is also clear that the total variable cost of per litre milk is also highest in the large size group followed by the medium and small size groups as the dependency of stall feeding and hired labour is much more on large size groups followed by medium and small size groups. The opportunity cost of family labour presented as fixed cost in the table 4.12 reveals that, this cost is highest on the small groups followed by medium and large groups. It is quite in the line of our expectation that the expenditure on family labour is much higher on the small size groups, because the small group mainly depends on the family labour to maintain their cattles whereas comparatively larger farms depends more on hired labour to maintain their cattles. The expenditure on cattleshed and dairy equipments is highest on the large group, followed by medium and small group because the dairy equipments are used rarely by the small group whereas the use of dairy equipments are common and frequent on the large size groups. The pucca and semi pucca cattlesheds are used by the large and medium farms which have involve high expenditure in the form of interest. Whereas small group normally use temporary and cuchia sheds which does not involve any expenditure except, the opportunity cost of family labour. However, the data in table 4.12 also indicate that fixed cost per litre for non-descript cow is considerably higher on the small and medium groups as compare to large groups. Since the major portion of fixed cost includes the value of the opportunity cost of family labour hence, the total fixed cost of milk production per litre is higher on the small and medium size groups as compare to large group.

#### 4.12 Size Group Wise Average Return of Milk for Non-Descript and Crossbreed Cows

The rate of returns measures the returns per litre of milk on various size groups for non- descript and crossbreed cattles. For this, the gross returns are calculated by adding the value of milk yield in rupees with the value of Dung. The net returns are measured in two ways namely net returns over variable cost (gross return-variable cost) and net returns over total cost excluding family labour (gross return-total cost).

**Table 4.13: Size Group Wise Average Return of Milk for Non-Descript and Crossbred Cows Per Day Per Litre (Rs.Per Day)**

Particulars	Small		Medium		Large	
	Non-Descript	Cross-Breed	Non-Descript	Cross-Breed	Non-Descript	Cross-Breed
No .of Respondents	60	30	30	20	9	31
<b>A. Per day Returns</b>						
Per day average quantam of milk yield(in Litres)	5.62	13.10	15.06	23.87	29.38	83.69
Value of milk yield (inRs.)	189.9	442.28	529.93	787.15	993.77	2784.30
Value of Dung (in Rs.)	8.38	14.56	21.68	22.75	49.77	138.64
<b>B. Gross Returns</b>	198.28 (35.28)	456.84 (34.87)	551.61 (36.62)	809.9 (33.92)	1043.54 (35.51)	2922.94 (34.92)
<b>C. Net Returns</b>						
<b>Net Return over Variable Cost</b>	146.33 (26.03)	330.64 (25.23)	373.86 (24.82)	507.25 (21.25)	714.10 (24.30)	1792.31 (21.41)
Net Returns over total cost when family labour is not included in the total cost	133.47 (23.74)	301.89 (23.04)	338.94 (22.50)	453.96 (19.01)	652.84 (22.22)	1629.25 (19.46)
Net Returns over total cost when family labour is included in the total cost	78.45 (13.95)	184.06 (14.05)	225.69 (14.98)	313.96 (13.15)	473.12 (16.10)	1406.88 (16.81)
<b>Rate of Return per rupee</b>						
Gross return/variable cost ratio	3.82	3.62	3.10	2.68	3.17	2.59
Gross return/total cost ratio excluding family labour	3.06	2.95	2.59	2.28	2.67	2.26
Gross return/total cost (including family labour)	1.65	1.67	1.69	1.63	1.83	1.93

Source: Primary data

Note: Figures in brackets are the return per litres

From the data in table 4.13, it has been observed that the gross returns per day per litre of milk was higher for non-descript cows as compare to crossbred cows on all size groups. The price of milk is normally depends on the fat contents in it. As the fat content in the milk of non-descript cows is higher than the milk of crossbred cows therefore, the gross return per kg from the milk of non-descript cow is normally higher than the milk of crossbred cows. The same trend was also observed for the net returns over total cost when a family labour was not included in the total costs, on all the size groups. The trend was more or less opposite when net return has been calculated including the opportunity

cost of family labour. The per day per litre gross returns and variable cost ratios clearly reveal that it was higher for the milk of non-descript cows as compare to crossbreed cows on all the size groups. However, it is interesting to note that the ratios of per litre gross returns and variable costs is higher on small farms for both non-descript and crossbreed cows as compare to the medium and large size groups. The trend of ratios of per litre gross return and total cost excluding family labours, is also depicted a similar trend that of ratio of the gross return and variable costs on all the size groups. A comparison between the ratio of per litre gross return and total cost ,excluding family labour with the ratio of per litre gross return and total cost including family labour clearly indicated that about half of the return from milk is due to the contribution of family labour particularly, on the small farms both for non-descript and crossbreed cattles.

From the data in table 4.13, it has been observed that size group wise gross return per farm was substantially higher on large size groups as compare to the small and medium size groups both for non-descript and crossbreed cows. This has happened due to the highest number of milch cattles reared by the large farms followed by medium and small size groups. Size group wise per day average gross returns were Rs .198.28, 551.61 and 1043.54 respectively on small, medium and large size groups. The size group wise average gross return of crossbreed was Rs. 456.84, 809.90 and 2922.94 respectively.

#### 4.13 Size Group Wise Regression Analysis for Non-Descript and Crossbreed Cows

Regression analysis is used for estimating the relationship between a response (dependent) variable and independent variables. Here milk yield value (litre) per day per litre is taken as the dependent variable Y and feed costs per day (green fodder, dry fodder and concentrates combination) as independent variables. Independent variables are denoted as  $X_1$  and per day labour cost is denoted  $X_2$ . A statistical analysis using the following models were conducted. Due to time constraint only two independent variables have been considered in this model. Different forms of model have been tried but linear form gives more significant results, hence, the results of linear form has been used and presented in the table 4.14.

$$Y=a+b_1X_1+ b_2X_2$$

Where,

Y= Return of per day milk yield (Rs.)

a= Constant

$b_1$  and  $b_2$ =regression coefficients,

$X_1$ = Feed Cost (Rs) per day/litre, and

$X_2$ =Labour Cost (Rs) per day/litre.

**Table 4.14: Size Group Wise Regression Co-efficients and R Square Value for Non-Descript and Crossbreed Cows**

Particulars	Small		Medium		Large	
	Non-Descript	Crossbreed	Non-Descript	Crossbreed	Non-Descript	Crossbreed
No .of Respondents	60	30	30	20	9	31
R Square ( $R^2$ )	0.89	0.76	0.87	0.77	0.85	0.87
a	24.55	59.80	1.94	225.61	202.42	302.13
$b_1$	2.57*	1.22*	2.23*	0.32	2.36*	14.46*
$b_2$	0.92*	2.08*	1.52*	2.11*	0.95*	1.58*

Source: Primary data

\*\* Co-efficients are significant at 5 percent level

From the data in table 4.14 it is clear that the feed cost is highly influencing on all the size groups except for the crossbred cattles of medium size groups, which means for one unit addition of feed cost per day increase milk yield, more than one unit in almost all the size groups, except for crossbred cows in medium size groups. Thus, feeds on almost in all size groups shows a significant influence to milk production. From the data in table 4.14 also reveal that the contribution of labour for the milk production is highly influencing on the crossbred cows as compared to non-descript on all size groups, which indicate that labour is more productive for crossbred cows as compare to non-descript cows on all the size groups.

#### 4.14 Size Group Wise Break-Even Output for Non-Descript and Crossbred Cows

Break –even analysis was employed to find out the break even output for non-descript and crossbred cattles. Break –even analysis indicates at what level of output costs and revenues are equal. The break-even point (BEP) is most important in break-even analysis. It has been said that “the break-even point is that point of activity (sales volume) where total revenues and total costs are equal, it is the point of Zero profit.” In other words, break-even point is that specific level of activity or volume of sales where the firm breaks even, i.e., the total costs equal the total revenue. Therefore, it is a point where losses cease to occur while profits have not yet been earned. If the firm produces and sells less than that of break-even level, it would incur losses; while if it produces and sells above break-even level, it makes profit. The break-even point indicates the minimum level of production which the firm has to undertake to become economically viable.

It can also be defined as the point at which the total revenue curve breaks through the total cost curve.

$$\text{BEP} = \text{TFC} / \text{ASP} - \text{AVC}$$

Where,

BEP= Break –even output of milk in litres

TFC= Total fixed cost.

ASP= Average Selling Price of milk per litre, and

AVC= Average variable cost per litre of milk.

The percentage of break-even output (BEP) to the total output is calculated which is reverse of margin of safety. Margin of safety is the cushion owned by the farm even when there is a decline in production of per non- descript and crossbred cows, but the farm will not incur any loss. According to Horngern, “the Margin of safety is the excess of budgeted or actual sales over the break-even sales volume.” Margin of safety represents the difference between the actual sales volume and the sales volume at break-even point. The percentage of safety margin is calculated by

Margin of safety = Actual output - BEP output / Actual output.

Size group wise per day break-even output and Margin of safety non-descript and crossbred cattles are presented in the table 4.15.

**Table 4.15: Size Group Wise Break-Even Output for Non-Descript and Crossbred Cows**

Particulars	Small		Medium		Large	
	Non-Descript	Crossbreed	Non-Descript	Crossbreed	Non-Descript	Crossbreed
No .of Respondents	60	30	30	20	9	31
Average yield(litres)	5.62	13.10	15.06	23.87	29.38	83.69
Fixed Cost per animal (in Rs.)	67.88	146.58	148.17	193.29	240.98	385.43
Variable Cost per animal (in Rs.)	51.95	126.2	177.75	302.65	329.44	1130.63
Total Cost per	119.83	272.78	325.92	495.94	570.42	1516.06

animal (in Rs.)						
Price per litre (in Rs.)	35.28	34.87	36.63	33.93	35.52	34.93
Variable Cost Per litre (in Rs.)	9.24	9.63	11.80	12.67	11.21	13.50
BEP output (in litres)	2.60	5.80	5.96	9.09	9.91	17.98
Margin of safety (%)	53.73	55.72	60.42	61.91	66.26	78.51
Percentage to BEP output to total output.	46.26	44.27	39.57	38.08	33.73	21.48

Source: Primary data

The data in table 4.15, reveal that the size group wise break even output of milk production is the lowest in case of non-descript cattles, which was 2.60 litres on small size groups, 5.96 litre on medium size group and 9.91 litre on large group. It is also to be noted that break even point is normally higher on crossbreed cow as compared to non-descript cow. It implies that, higher production of milk is needed incase of crossbreed cows as compare to the non-descript cows, cover atleast the total cost of production of milk on all size groups. The results in the table 4.15 also indicate the percentage of marginal safety of milk production of the total milk production increases from small size to medium and large size groups. It also reveals that the efficiency of milk production is more on small size groups, as compared to medium and large size groups. Hence, it can be said that the efficiency of milk production per day per farm is more on small size groups followed by medium and large size groups in the study area. It is interesting to note that, percentage to Break Even Point output to total output is inversely related to the size groups because per day production of large producer is highest followed by medium and small producers.

# CHAPTER - 5

## TO ANALYSE THE MARKETING CHANNELS, EFFICIENCY AND PRICE SPREAD OF MILK PRODUCERS IN TRIPURA

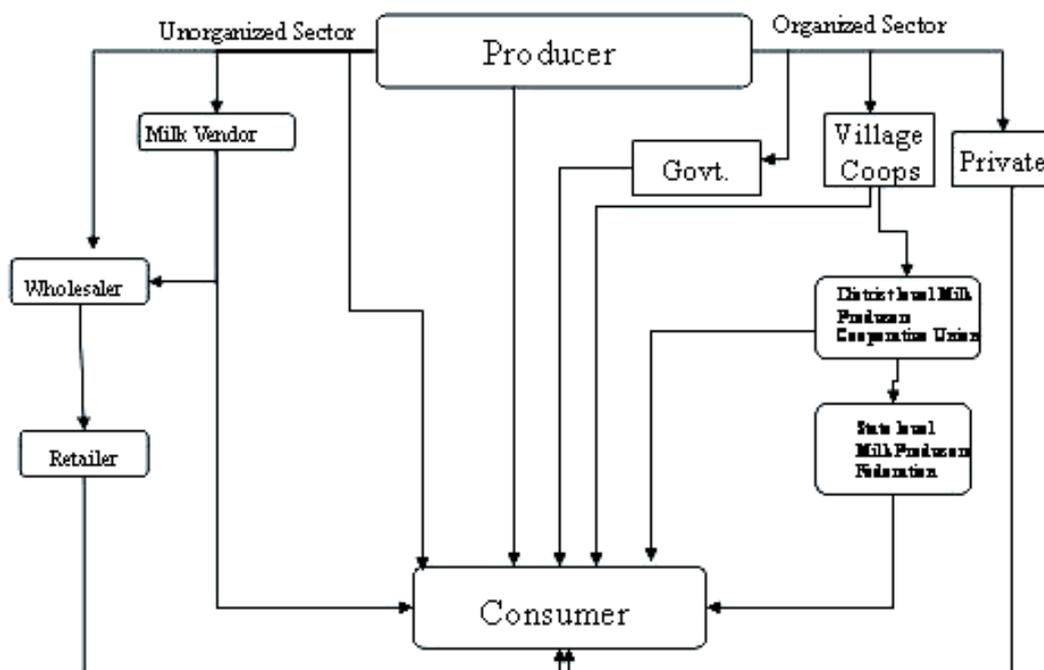
This chapter is devoted to the analysis of the marketing efficiency and various channels of milk marketing in Tripura. Milk being perishable commodity, needs to have an effective and efficient marketing system. An efficient and effective marketing system not only minimizes the cost of marketing services and ensures the largest share of consumers' price to the producers. The quality produces to be provided to the consumers at a reasonable price. But the presence of the large intermediaries in the channel of milk marketing and distribution, not only works against the managerial skill of milk producers but also decreases the marketing efficiency. Hence for the development of the dairy industry, it is also necessary to examine the marketing margin, and marketing cost of milk which may help to explore the possibilities of reducing marketing costs and margins for the welfare of both the producers and consumers.

### 5.1 Marketing Channels

The marketing channel of milk in India is presented in the schematic figure no 5.1.1, which reveals that eighty percent of milk is marketed through the highly fragmented unorganized sector, which includes local milk vendors, they also called as Village Trader, wholesalers, retailers and producer themselves. On the other hand, organized dairy sector, which accounts for about 20 percent of total milk production, comprises two sectors, Government and Co-operatives. However Co-operatives provide a remunerative price to the producer. Even than the unorganized sector plays a major role in milk marketing because of three factors.

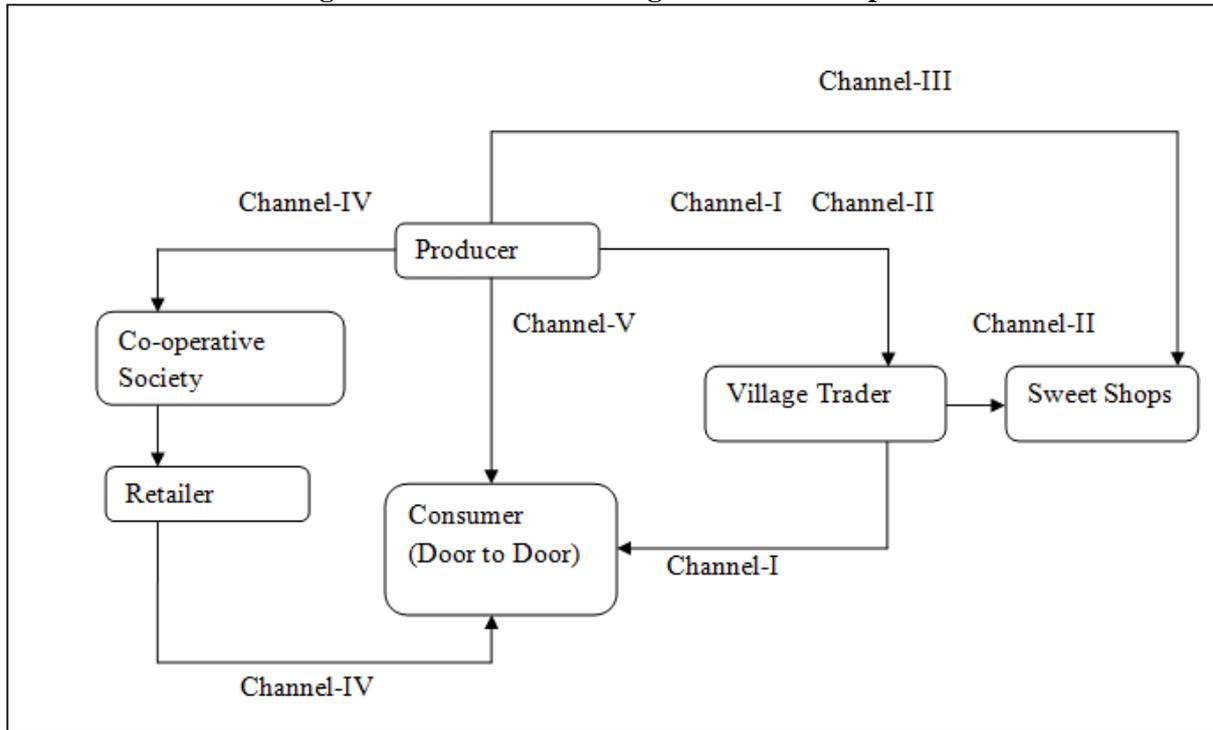
The first factor is the pricing policy of the co-operatives: their purchase price is based on the fat content of the milk, whereas the private sector pays a flat rate per liter of milk. The second factor, which motivates the milk producers to sell milk to private vendors, involves the type of milk cattles reared by the producer. Crossbreed cows yield more milk with a lower fat than by the non-descript cattles. The crossbreed cows' population has increased over the years because of more profit which motivates producers to sale their milk to the private sector. The third factor is the easy payment policy. The private sector can pay their producers everyday, whereas the co-operatives pay weekly or fortnightly.

**Figure 5.1.1: Milk Marketing Channels in India**



Source: Edhyavarman c.s "Economics Analysis of Production and Marketing of Milk in Tamilnadu"  
pp. 162

**Figure 5.1.2: Milk Marketing Channels in Tripura**

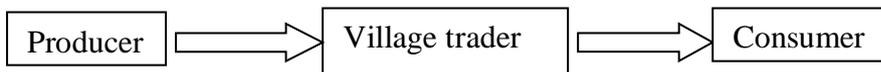


Source: Primary data

There are various marketing channels identified in Tripura.

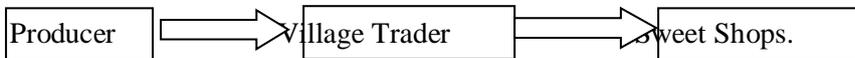
Marketing channels of milk may vary from place to place and it's based on different size group. There are five channel identified in the study area.

**Channel-I**



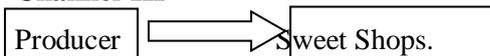
The channel –I, constitutes of producer, village trader and consumer. Where producer directly sells the milk to village trader and village trader sell it to final consumer. So it is clear that producer is not directly dealing with the consumer. Producer dealing with the consumer through the middlemen i. e., village trader.

**Channel-II**



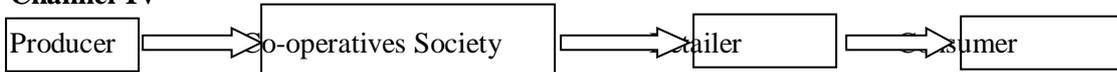
The channel- II, constitutes of producer, village trader and sweet shops. It is clear from this channel that producer is selling milk to the village trader, where village trader dealing with the sweet shops and producer are not directly selling, the milk to the sweet shops.

**Channel-III**



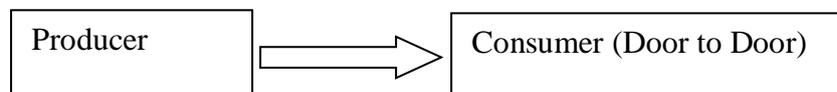
In the channel –III, constitutes of producer to sweet shops. Here producer directly sells the milk to sweet shops. Here middlemen having no existence, but existence of this channel is very limited in study area.

**Channel-IV**



The channel –IV, constitutes of producer to co-operative society to retailer to consumer. Here also producer is not directly sell, the milk to the consumer. Producer selling the milk to the co-operative society and co-operative society is sell it to the retailer.

#### Channel-V



In channel- V, the producer is selling directly to consumer. It is the direct channel where producer directly sell the milk, to the consumer. In this channel, the producer is supplying the milk on door to door basis (domestic supply).

#### 5.2 Size Group Wise Various Milk Marketing Channels Followed by the Producer

The present analysis describes the size group wise various marketing channels followed by the Milk Producer. Table 5.2.1 presented the different channel where producer sell the milk.

**Table 5.2 .1: Different Marketing Channels Followed by the Milk Producer**

Particulars	Small	Medium	Large
<b>Channel-I</b> Producer → Village Trader → Consumer	14 (15.55)	8 (16.00)	6 (15.00)
<b>Channel-II</b> Producer → Village Trader → Sweet Shops	5 (5.55)	4 (8.00)	10 (25.00)
<b>Channel –III</b> Producer → Sweet Shops	7 (7.77)	9 (18.00)	5 (12.5)
<b>Channel-IV</b> Producer → Co-operative Society → Retailer → Consumer	30 (33.33)	18 (36.00)	14 (35.00)
<b>Channel-V</b> Producer → Consumer(Door to Door)	34 (37.77)	11 (22.00)	5 (12.5)
<b>Total</b>	90 (100.00)	50 (100.00)	40 (100.00)

Source: Primary data

Note: Figures in brackets are percentage to total

Table 5.2.1 shows that the, percentage wise various marketing channels used by the different size groups of milk producer. Data in table 5.2.1 also reveals that in channel-I, producer sell the milk to the consumer with the help of village trader. Here producer do not directly sell the milk, to the consumer. Only 15.00 to 16.00 percent dairy producer, follow this channel as village trader played a vital role to sell the milk to the consumer, for which producer share in consumer rupee is considerably lower in this channel.

Data on channel –II, in table 5.2.1 makes it clear that 25.00 percent large milk producer sell the milk to the sweet shops through village trader whereas about 5.00 percent small producers and 8.00 percent medium producers used this channel. The reasons for higher use of this channel by the large dairy farms may be that per day large amount of milk production by this group which they cannot sell directly to the consumer or retailer, hence, the excess amount is sold to the sweet shops. The reason for not preferring this channel by medium and small groups is that, profit received by the producer in this channel is lower as compare to some other channels.

Data on channel-III in table 5.2.1 shows, that there is no middleman at all and producer are directly selling their milk to sweetsshops. It is clear from the data that, the medium group of producer used this channel more as compared to small and large group. The most of the small groups of producer do not

use this channel as the price per litre is lower in this channel as compared to the door to door selling practices.

It is clear from the channel IV, that this channel is longer than any other channel. However, it is also clear from the data in table 5.2.1, that this channel is preferred by all the size groups of producer because, the producer in this channel, gets various types of subsidies on concentrate feeds. In this channel co-operative society also pay bonus rate on the basis of co-operation to the society for higher production of milk per day per cow. Moreover the co-operative society buys milk through out the year, in reasonable rates from the producer in this channel. This channel also reduces the seasonal price risk of the producer as a result the producer like this channel. Another reason for preferring this channel by all the size groups is that the co-operative society pays advance money in a low interest rate to the producer to buy the crossbreed cattles.

Data on channel-V in table 5.2.1 also shows, that in channel –V, the producer sell the milk directly to the consumer on door to door basis. It is also clear from the table that most of the small and medium farmers also prefer this channel because the price of milk per litre is substantially higher in this channel. This data also reveals that the large producer does not prefer this channel as they do not have enough manpower to sell milk, on door to door basis.

### 5.3 Channel Wise Price Spread, Marketing Efficiency and Marketing Margin of Milk Producers in Tripura

The present analysis in table 5.3.1 to 5.3.5 describes, the channel wise price spread and marketing margin received by the milk producers in Tripura. This analysis also explains the marketing cost and marketing margin in the study area. The expenditure incurred by the middlemen from the stage of procurement of milk and to sale of milk to the ultimate consumer is called the marketing cost. Marketing cost is the difference between Consumer's Price and the net price received by the producer plus the marketing margin of the middlemen. Therefore it is measured under the following formula:

Marketing Cost=Consumer Price-Net Price Received by the Producer (when there is no middlemen)

Marketing Cost=Consumer's Price- Net Price Received by the Producer+Margin of the Middlemen

The difference between the consumer price and the marketing cost plus producer's share is the marketing margin. The present analysis describes the measurement of marketing efficiency ratio. Acharya's formula is used to calculate the measurement of marketing efficiency. Measurement of Marketing Efficiency (MME):

Acharya's Method:

$ME = PS/MC + MM$

Where ME=Marketing efficiency

PS=Price received by the Producer

MC= Marketing Cost.MM= Margins of Middlemen.

**Table 5.3.1: Price Spread and Marketing Efficiency, Marketing Margin of Milk Producers (Channel-I)**

Particulars	Amount(Rs/Per Litre)
Producer sale Price	30.00
Net Price received by the Producer	30.00 (75.00)
Village Trader	
1)Transport Cost	1.50
2)Labour Cost	2.00
Total Village Trader Cost	3.50 (8.75)
Net Price Paid by the Village Trader	33.50

	(83.75)
Price Paid by the Consumer	40.00
	(100)
Total Marketing Cost	3.50
	(8.75)
Marketing Margin for Village Trader	6.50
	(16.25)

Source: Primary data

Figures in brackets are percentage to total

Channel –I Measurement of Marketing Efficiency (MME)

=Ratio 3

Data in table 5.3.1 reveals that in channel-I, about 75.00 percent, of consumer price was received by the producer, village trader share was 8.75 percent, total marketing cost was 8.75 percent and marketing margin for village traders was 16.25 percent. Thus, it can be inferred from this data that the share of village trader in the rupee paid by the consumer, was quite high in this channel.

**Table 5.3.2: Price Spread and Marketing Efficiency, Marketing Margin of Milk Producers (Channel-II)**

Particulars	Amount(Rs/Per Litre)
Producer Sale Price	30.00
Net Price received by the Producer	30.00
	(85.71)
Village Trader	
1)Transport Cost	1.50
2)Labour Cost	
	2.00
Total Village Trader Cost	3.50
	(10.00)
Net Price Paid by the Village Trader	33.50
	(95.17)
Price Paid by the Sweet Shops	35.00
	(100)
Total Marketing Cost	3.50
	(10.00)
Marketing Margin for Village Trader	1.50
	(4.28)

Source: Primary data

Figures in brackets are percentage to total

Channel –II Measurement of Marketing Efficiency (MME)

=Ratio 6

Data in table 5.3.2 made it clear that in channel-II, about 85.71 percent, of consumer price was received by the producer, village trader share was 10.00 percent, total marketing cost was 10.00 percent and marketing margin for village trader was 4.28 percent. It is interesting to note from this data, that the share of village trader, in the rupee paid by the consumer, was also quite high in this channel.

**Table 5.3.3: Price Spread and Marketing Efficiency, Marketing Margin of Milk Producers (Channel-III)**

Particulars	Amount (Rs/Per Litre)
Producer Sale Price	35.00

1)Transport Cost	1.00
2) Labour Cost	2.00
Net Price received by the Producer	32.00 (91.42)
Price Paid by the Sweet Shops	35.00 (100)
Total Marketing Cost	3.00 (8.57)

Source: Primary data

Figures in brackets are percentage to total

Channel –III Measurement of Marketing Efficiency (MME)

=Ratio 10.66

Data in table 5.3.3 reveal that in channel-III about 91.42 percent of consumer price was received by the producer. Total marketing cost was 8.75 percent. Thus, it can be inferred from this data that the share of producer in the rupee paid by the consumer was high in this channel as compared to channel I and II.

**Table 5.3.4: Price Spread and Marketing Efficiency, Marketing Margin of Milk Producers (Channel-IV)**

Particulars	Amount (Rs/Per Litre)
Price Paid by the Co-operative Society to the Producer/Producer Sale Price	32.00
1)Transport Cost	1.00
2) Labour Cost	1.00
Net Price received by the Producer	30.00 (75.00)
Co-operative Sales price to the Retailer	38.00
1) Transport Cost	2.00
2) Labour Cost	1.50
Total Marketing Cost for Co-operative	3.50 (8.75)
Net Price received by the Co-operative	35.50 (86.25)
Price Paid by the Consumer to the Retailer	40.00 (100.00)
Total Marketing Cost	5.50 (13.75)
Marketing Margin for Co-operative Society	2.50 (6.25)
Marketing Margin for Retailer	2.00 (5.00)

Source: Primary data

Figures in brackets are percentage to total

Channel –IV Measurement of Marketing Efficiency (MME)

=Ratio 3.00

Data in table 5.3.4 reveals that about 75.00 percent of consumer price was received by the producer, co-operative societies share was 8.75 percent, total marketing cost was 13.75 percent and marketing margin for co-operative society and retailer were 6.25 and 5.00 percent respectively. Thus, it can be

inferred that from this data that share of co-operative society in the rupee paid by the consumer was quite high in this channel.

**Table 5.3.5: Price Spread and Marketing Efficiency, Marketing Margin of Milk Producers (Channel-V)**

Particulars	Amount (Rs/Per Litre)
Producer Sale Price to the Consumer(Door to Door)	40.00
1)Transport Cost	1.50
2) Labour Cost	1.50
Marketing Cost for Producer	3.00 (7.50)
Net Price received by the Producer	37.00 (92.50)
Price Paid by the Consumer	40.00 (100)
Total Marketing Cost	3.00 (7.50)

Source: Primary data

Figures in brackets are percentage to total

Channel –V Measurement of Marketing Efficiency (MME)

=Ratio 12.33

It is clear from data in table 5.3.5 shows that in channel –V, about 92.50 percent of consumer price received by the producer. There is no middleman at all. Total marketing cost for producer was 7.50 percent in channel-V. Thus it can be inferred from this data in table that the share of producer in the rupee paid by the consumer, was highest in this channel.

It is clear from the data in table 5.3.1 to 5.3.5 that marketing efficiency of milk was highest in channel -V followed by channel- III. In both cases although, milk was sold directly to the ultimate consumer, but price of, door to door selling was higher, because in this system, a small quantity of milk was being sold, to consumer at their door steps , hence, the price charged by the producer was much higher in this channel as compared to channel -III. Further, price and credit interlocking system, made the channel-III inefficient as compare to channel –V for the following reasons.

- (i) The price of milk was decided in advance, while credit was given to the milk producer by the sweet shop owners, and
- (ii) Price was lower than normal market price.

The channel–IV was the longest as well as inefficient, as compared to channels-V and III. But this channel was popular among some dairy producers for the following reasons.

- (i) The concentrates were supplied by the co-operative society in a subsidized rate to the producer.
- (ii) Some bonus was given every year by the society, to the milk producers.
- (iii) Required veterinary medicines were also supplied by the society, and
- (iv) Unlike others channel, milk is accepted by the society for 365 days in a year.

A critical analysis of channel –I and II indicates that, in channel –II, the sweet shop owner paid price, Rs. 35 per litre while purchase price of village trader was Rs.30 per litre. But in channel-I sale price of village trader was Rs.40 per litre while purchase price from producer was Rs.30 per litre. Hence, the share of producer in consumer Rupees, was more in channel-II as compare to channel-I that is marketing efficiency was shown higher in channel-II as compared to channel-I .

# CHAPTER-6

### CONSTRAINTS IN PRODUCTION AND MARKETING OF MILK IN TRIPURA

The dairy sector is characterized by small, medium, large and unorganized milk holders facing low productivity, inadequate and inappropriate animal feeding and health care, lack of an assured year-round remunerative producer price for milk, inadequate basic infrastructure for provision of production inputs and services, inadequate basic infrastructure for transportation, processing and marketing of milk and above all lack of professional management. Other important characteristics of the dairy sector are the predominance of mixed breed livestock farms. The fact is that most of the milk animals are fed on crop by-products and residues, which have very low opportunity costs. Additionally, the dairy-development policies and programs that are followed, including those relating to foreign trade, are not congenial to the promotion of sustainable and equitable dairy development. In the study area, size group wise study of production and marketing of milk plays a vital role in the upliftment of the poor.

#### 6.1 Size Group Wise Shortage of Land

The present analysis describes the percentage of milk producers facing the problems of shortage of land. Table 6.1 and figure 6.1(a) are given the shortage of land problems facing by the small, medium and large milk producers.

**Table 6.1: Size Group Wise Opinion on Shortage of Land Problems in Tripura**

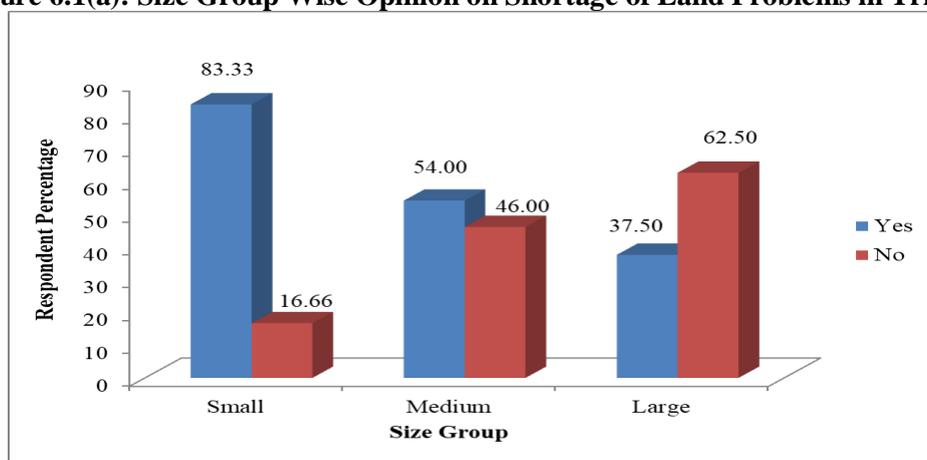
Particulars	Small	Medium	Large
Yes	75 (83.33)	27 (54.00)	15 (37.50)
No	15 (16.66)	23 (46.00)	25 (62.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Data in table 6.1 and figure 6.1(a) made it clear that the 83.33 percent small dairy producers opined that they are facing the problems of inadequate land. Data in table 6.1 and figure 6.1(a) also made it clear that 54.00 percent medium dairy producer facing the problems of shortage of land. Only 37.50 percent large milk producers facing the problems of lack of own land. The table 6.1 also shows that 62.50 percent large dairy producers reported not facing the problems of shortage of land. The low availability of land causes, small size of hard on small group. The poor health and frequent occurrence of diseases was also caused, by lower availability land of on small groups. It was also clear from this data that large producer normally do not face space limitation problem where as almost half of medium producers did not report shortage of land problem for their dairy farming.

**Figure 6.1(a): Size Group Wise Opinion on Shortage of Land Problems in Tripura**



Source: Opinion as per primary data

### 6.2 Size Group Wise Common Property Land Using for Milk Producers

The Present problems describe the size group wise Common property land using for milk rearers. Size group wise common property land used by milk producers presented in the table 6.2 and pie figure 6.2 (a)

**Table 6.2: Size Group Wise Opinion on Common Property Land Using for Milk Producers**

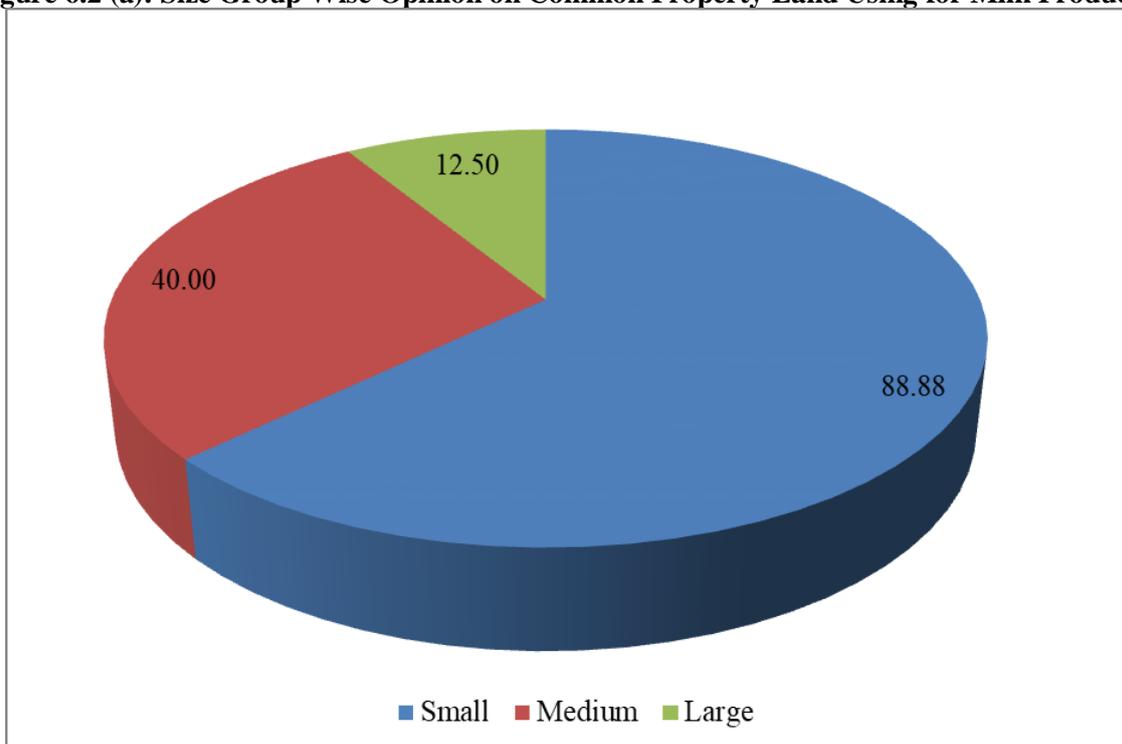
Particulars	Small	Medium	Large
Used	80 (88.88)	20 (40.00)	5 (12.50)
Not used	10 (11.11)	30 (60.00)	35 (87.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Data in table 6.2 shows that about 88.88 percent small dairy producers used the common property land for grazing the milching cows and it is considerably higher percentage, compared to the large and medium dairy producers. The reason behind this is that, most of the small dairy producers grazing the desi cows and they follow the loose management system whereas on medium and large groups, it is not possible. It is also depicts from the table 6.2 and figure 6.2 (a) that 11.11 percent small dairy farmers those who are having the crossbred cows, they don't go for grazing common property land and it is substantially lowest percentage compared to the rest of the groups. It is also interesting to from the above data in table 6.2 and figure 6.2 (a) that majority of the (87.50 percent) large dairy producer, have not used the common property land for grazing. About 60.00 percent medium dairy owner also reported that they do not go for grazing in common property land. Because most of the large and medium dairy owners having larger herd of crossbred cows hence, they follow the stall feeding practices. Social and economic status of these groups, also go against grazing of cows by the small and medium size groups.

**Figure 6.2 (a): Size Group Wise Opinion on Common Property Land Using for Milk Producers**



Source: Opinion as per primary data

### 6.3 Size Group Wise Problems of Feed and Fodder Cost

The present analysis describes the size group wise facing the problems of fodder cost. Fodder cost rate is classified into a three ways i. e. high, medium and low. It has been describe in the following table 6.3 and figure 6.3 (a).

**Table 6.3: Size Group Wise Opinion on Problems of Feed and Fodder Cost in Tripura**

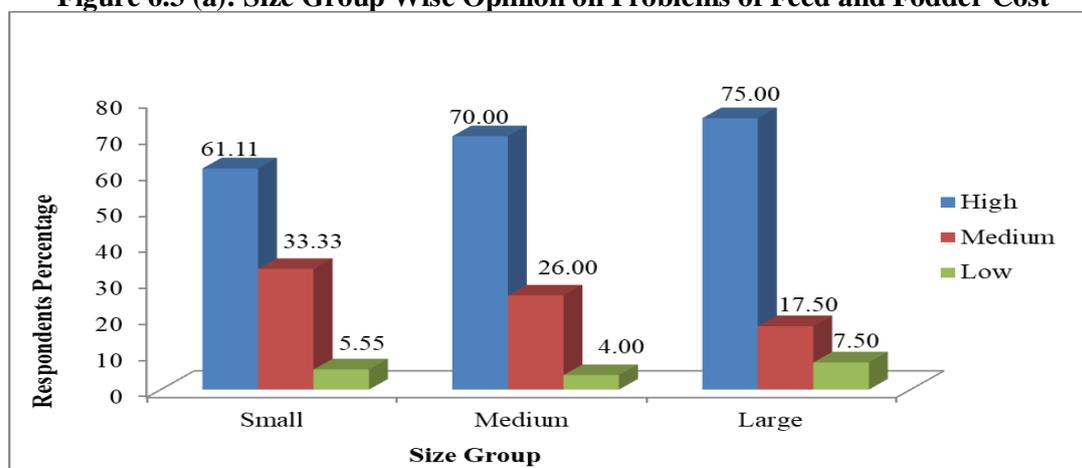
Category	Small	Medium	Large
High	55 (61.11)	35 (70.00)	30 (75.00)
Medium	30 (33.33)	13 (26.00)	7 (17.50)
Low	5 (5.55)	2 (4.00)	3 (7.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Data in table 6.3 and figure 6.3 (a) reveals that the 75.00 percent and 70.00 percent large and medium dairy producers respectively are facing the problems of high cost of feeds and green fodder and dry fodders, however more than 60.00 percent small producers are reported the problems of high cost of green and dry fodders. Only 33.33 percent small, 26.00 percent medium and 17.50 percent of large category producers reported that the costs of green and dry fodders are not so high. But almost negligible percents of all size groups opined that the costs of fodders are low in the study area.

**Figure 6.3 (a): Size Group Wise Opinion on Problems of Feed and Fodder Cost**



Source: Opinion as per primary data

### 6.4 Size Group Wise Non-availability of Green Fodder during a Year

The problems of size group wise non-availability of green fodder are given in the table 6.4 and figure 6.4 (a) during a year.

**Table 6.4: Size Group Wise Opinion on Non-availability of Green Fodder during a Year**

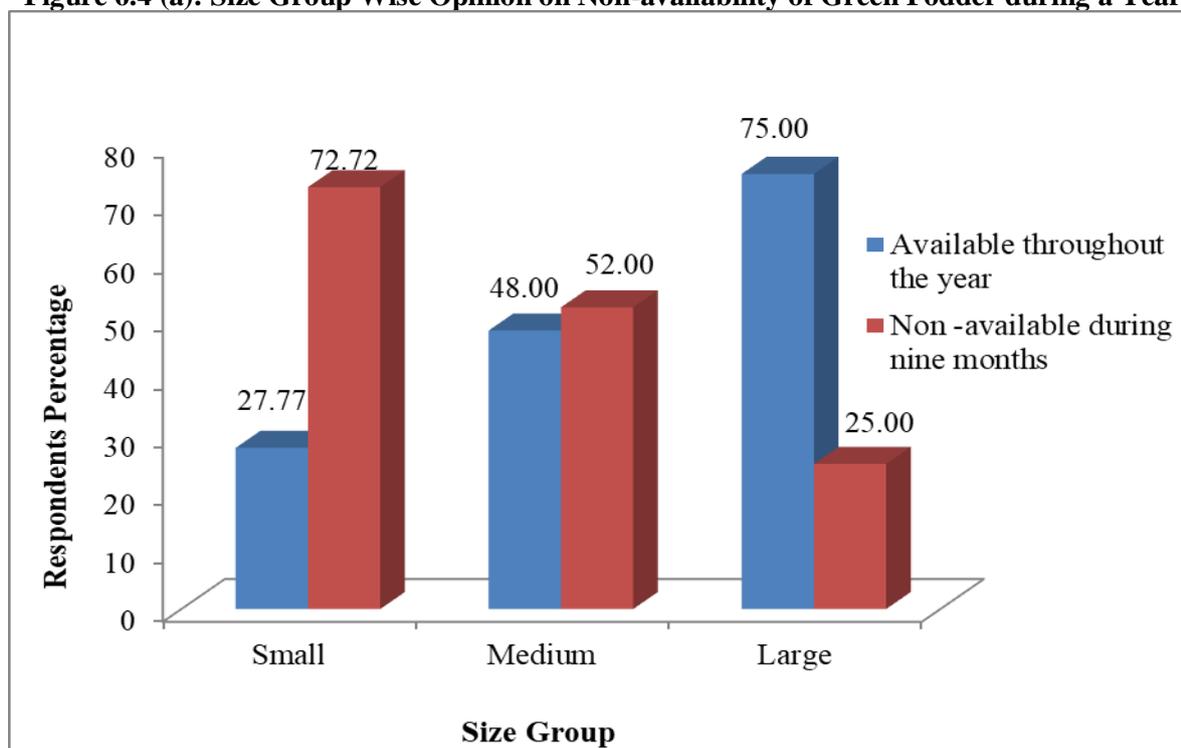
Particulars	Small	Medium	Large
Available throughout year	25 (27.77)	24 (48.00)	30 (75.00)
Non-available during nine months	65 (72.22)	26 (52.00)	10 (25.00)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Data in table 6.4 and figure 6.4 (a) makes it clear that size group wise non-availability of green fodder. Table 6.4 and figure 6.4 (a) shows that 72.22 percent small size group of milk producers reported that they are facing the problems of non-availability of green fodder. According to them about nine months, green fodder is not available adequately. At that time they feed more dry fodder to the milching cows. From the data in table 6.4 and figure 6.4 (a), it is interesting to note that the opinion of large producers were opposite to small producers. In case of 75.00 percent large dairy producers opinion is that green fodder is available. This is because, large producer, cultivate green fodder throughout the year, which is not possible for small producers due to shortage of land and capital. About 52.00 percent medium size group of milk producers that they are facing the problems of non-availability of green fodder.

**Figure 6.4 (a): Size Group Wise Opinion on Non-availability of Green Fodder during a Year**



Source: Opinion as per primary data

### 6.5 Size Group Wise Problems of Shortage of Hired Labour

The present problems discuss the size group wise shortage of labour hired problems in Tripura. Labour problems is one of the important causes that most of the milk producers are not getting interest to do the milk production more and more. Size group wise shortage of hired labour problems is given data in table 6.5 and figure 6.5 (a).

**Table 6.5: Size Group Wise Opinion on Problems of Shortage of Hired Labour**

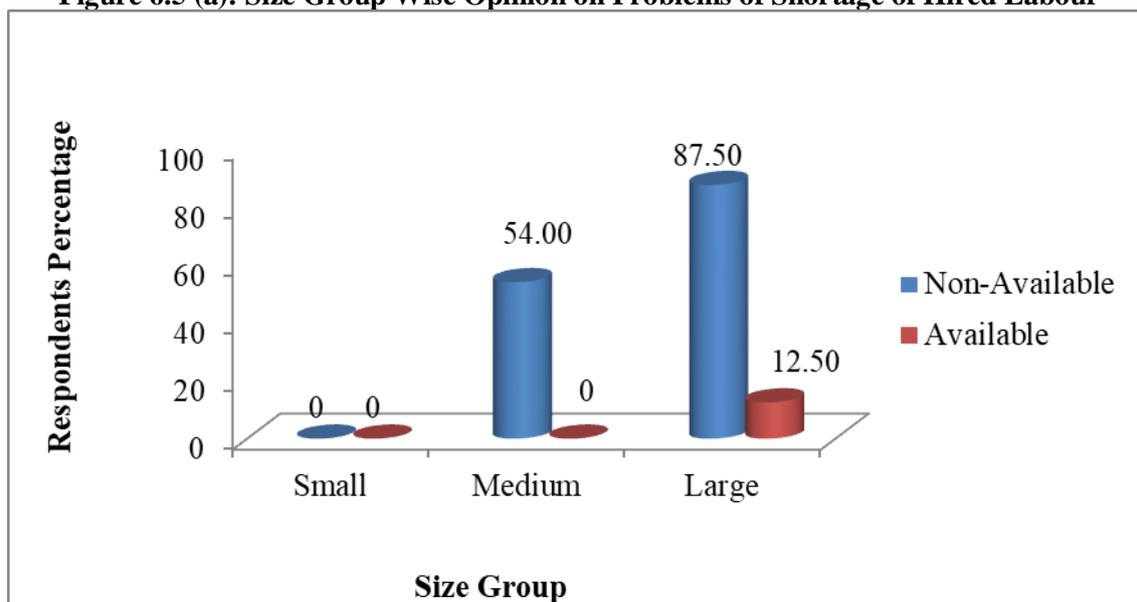
Particulars	Small	Medium	Large
Available	-	-	5 (12.50)
Non-available	-	27 (54.00)	35 (87.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Data in table 6.5 and figure 6.5 (a) shows that majority of the large dairy producers facing the problems of shortage of hired labour as compared to the medium dairy producers. Because most of the large group milk producers are educated and do not like to work their dairy farm. Because they have capacity to hiring labour, whereas small dairy producers they do not use hired labour at all and about 46.00 percents medium producers used the hired labour. Hence small producers do not have sufficient capital to hire labour, however small producers work themselves along with their family members to rare their cattle hard. Most of the labour they choose the other occupation like construction works, agricultural works, rubber tapping etc for their bread and butter purposes .

**Figure 6.5 (a): Size Group Wise Opinion on Problems of Shortage of Hired Labour**



Source: Opinion as per primary data

### 6.6 Size Group Wise Problems of Productivity of Milk in Tripura (Kg/Day)

Data in table 6.6 and figure 6.6 (a) are given in the size group wise problems of productivity of milk in Tripura (kg/per day).

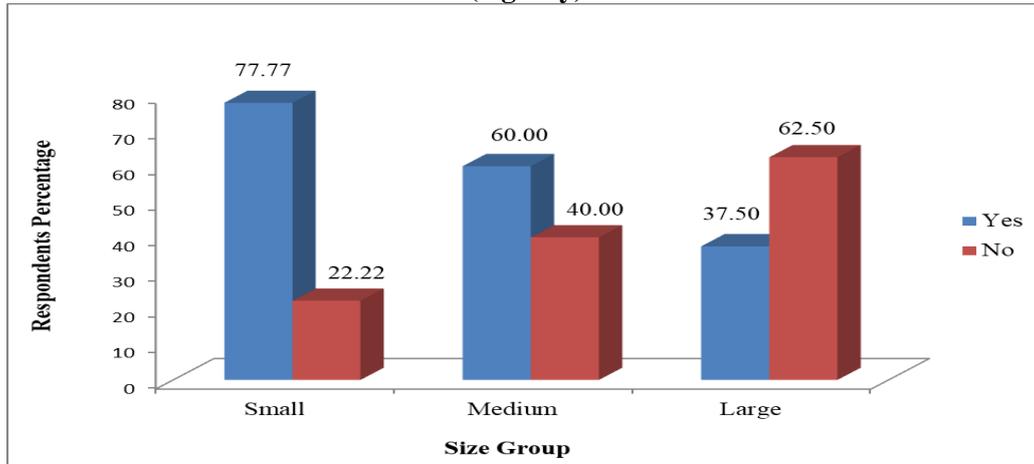
**Table 6.6: Size Group Wise Opinion on Problems of Productivity of Milk in Tripura (Kg/Day)**

Particulars	Small	Medium	Large
Yes	70 (77.77)	30 (60.00)	15 (37.50)
No	20 (22.22)	20 (40.00)	25 (62.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Data in table 6.6 and figure 6.6 (a) reveals that 77.77 percent small producers stated that the per day per cow milk production is low where as 60.00 percent medium producers retreat this opinion and incase of large size group, about 37.50 percent stated that the problems of low productivity of milk exists in their dairy. However, about 62.50 percent large producers and about 40.00 percent medium and 22.22 percent small producers opined that the milk production is not low in their dairy. About 77.77 percent small producers faces low productivity because they neither can afford concentrate nor cultivated green fodder whereas 62.50 percent, large producers and 40.00 percent can afford green fodder and concentrate, therefore their productivity of milk is not low in the study area.

**Figure 6.6 (a): Size Group Wise Opinion of Problems of Productivity of Milk in Tripura (Kg/Day)**

Source: Opinion as per primary data

**6.7 Non-availability of Regular Market Facilities of Milk in Tripura**

Size group wise non –availability of regular market milk facilities are presented in the table 6.7 and figure 6.7 (a)

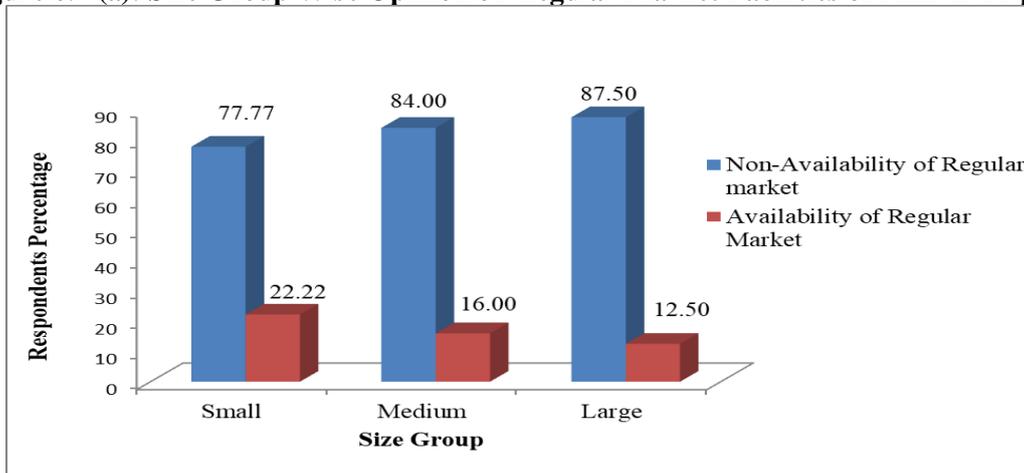
**Table 6.7: Size Group Wise Opinion on Regular Market Facilities of Milk in Tripura**

Particulars	Small	Medium	Large
Availability of regular market	20 (22.22)	8 (16.00)	5 (12.50)
Non-availability regular market	70 (77.77)	42 (84.00)	35 (87.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Another major problem of milk producers facing in Tripura was non-availability of regular milk marketing facilities. Data in table 6.7 and figure 6.7 (a) represents the size group wise problems of non-availability of regular market. It is clear from the table 6.7 and figure 6.7 (a) that almost 87.50 large producers, 84.00 percent medium producers and 77.77 percent small producers opined that regularly marketing facilities of milk are not available in the study area.

**Figure 6.7 (a): Size Group Wise Opinion on Regular Market Facilities of Milk in Tripura**

Source: Opinion as per primary data

### 6.8 Delays in Payments

Size group wise problems of delay in payments have been represented in the table 6.8 and figure 6.8(a).

**Table 6.8: Size Group Wise Opinion on Problems of Delay in Payments**

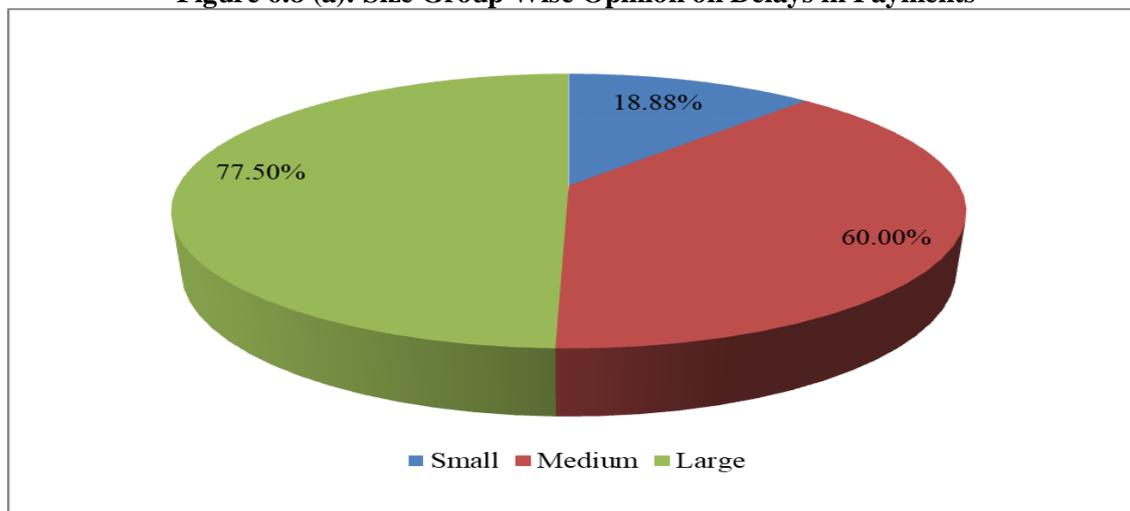
Particulars	Small	Medium	Large
Delay in Payments	17 (18.88)	30 (60.00)	31 (77.50)
Not in Delay Payments	73 (81.11)	20 (40.00)	9 (22.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

From the data in table 6.8 and figure 6.8 (a) it is clear that problems of delay in payments for milk marketing acute on large and medium producer as compared to their small counterparts in West District in Tripura. The delay in payments on large and medium producers is higher as compared to small farmers because the medium and large group of milk producer sell their milk through middlemen i.e., village trader who did not pay them in time where as small producer normally sell the milk on door to door basis and develop a regular relation with the consumers which help them to get the payments usually in time.

**Figure 6.8 (a): Size Group Wise Opinion on Delays in Payments**



Source: Opinion as per primary data

### 6.9 Size Group Wise Lack of Inadequate Veterinary Facilities

Size group wise lack of inadequate veterinary facilities is given in the table 6.9 and figure 6.9(a)

**Table 6.9: Size Group Wise Opinion on Lack of Inadequate Veterinary Facilities**

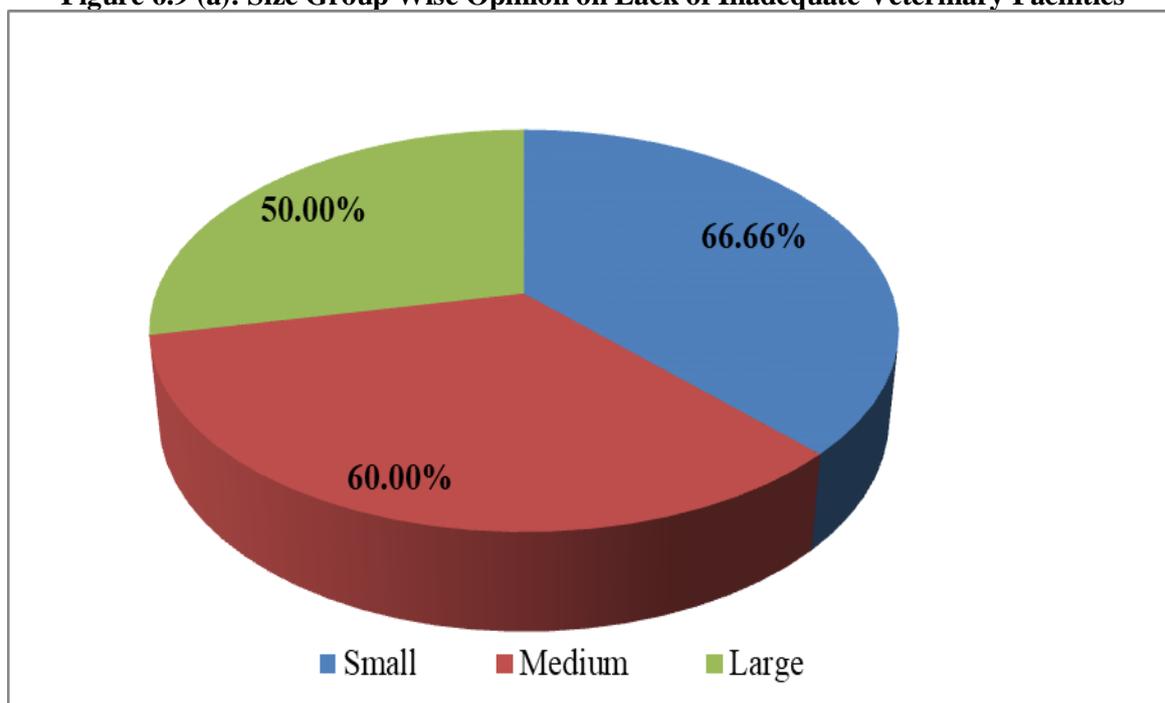
Particulars	Small	Medium	Large
Inadequate Veterinary Facilities	60 (66.66)	30 (60.00)	20 (50.00)
Adequate Veterinary Facilities	30 (33.33)	20 (40.00)	20 (50.00)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Data in table 6.9 and figure 6.9 (a) depict that inadequate veterinary facilities are highest on small groups followed by medium and large group. The highest inadequacy of veterinary facilities on small groups indicates that the small dairy producer neither can afford veterinary treatment nor they get adequate attention from the Government veterinary treatment system. The large producer being educated and socially in a better position can get due attention from the Government veterinary doctors. If Government doctors are not available due to their strong economic background, can afford and arrange treatments from the private doctors.

**Figure 6.9 (a): Size Group Wise Opinion on Lack of Inadequate Veterinary Facilities**



Source: Opinion as per primary data

### 6.10 Size Group Wise Problems of Quality Based Price

Size group wise problems of quality based support price are given in the table 6.10 and figure 6.10 (a).

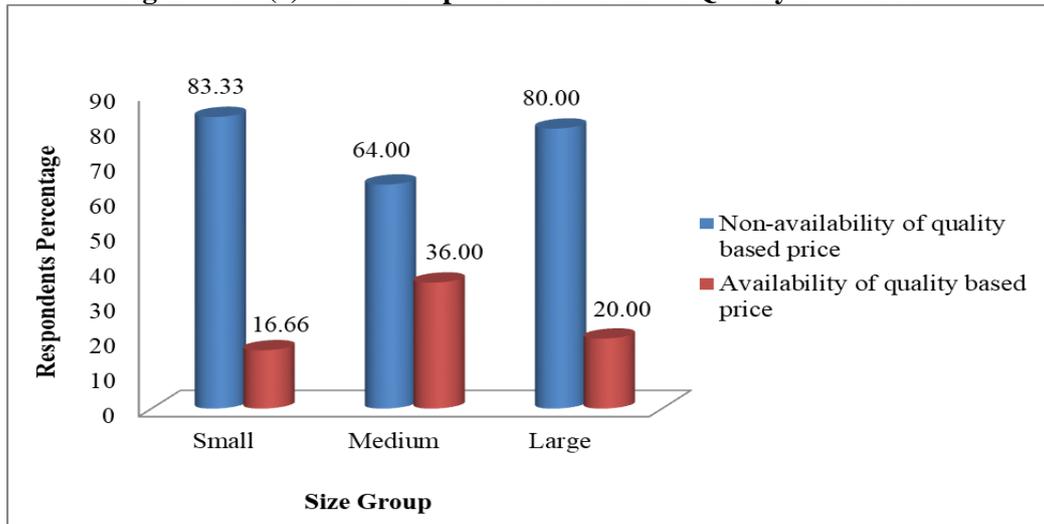
**Table 6.10: Size Group Wise Opinion of Problems of Quality Based Price**

Particulars	Small	Medium	Large
Non-availability of quality based price	75 (83.33)	32 (64.00)	32 (80.00)
Availability of quality based price	15 (16.66)	18 (36.00)	8 (20.00)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

Further the data in table 6.10 and figure 6.10 (a) reveal that availability of quality based price is highest on medium producer followed by large and small producer, because the highest (36.00) percent of the medium producer takes the opportunity of selling milk through co-operative societies, followed by large and small groups.

**Figure 6.10 (a): Size Group Wise Problems of Quality Based Price**

Source: Opinion as per primary data

**6.11 Size Group Wise Seasonal Price Fluctuation**

Opinion regarding size group wise seasonal price fluctuation is given in the table 6.11 and figure 6.11 (a).

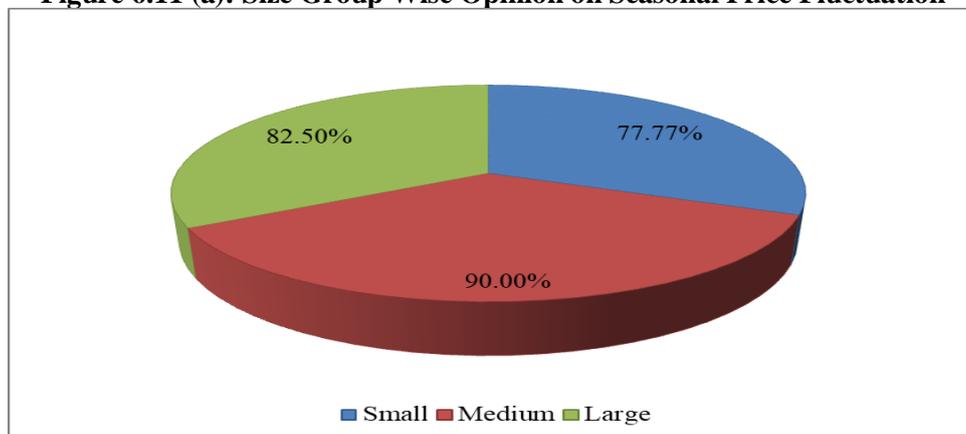
**Table 6.11: Size Group Wise Opinion on Seasonal Price Fluctuation**

Particulars	Small	Medium	Large
Seasonal price fluctuation	70 (77.77)	45 (90.00)	33 (82.50)
Price is not fluctuating	20 (22.22)	5 (10.00)	7 (17.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

The data in table 6.11 and figure 6.11(a) explain that the seasonal price fluctuation is maximum on the small size groups followed by large and medium size groups. The medium size groups sell their considerable amount of milk through Co-operative society, hence price fluctuation is least on these groups. But small size group sell their milk through door to door selling and demand in door to door selling fluctuate randomly which cause highest seasonal price fluctuation on the small groups.

**Figure 6.11 (a): Size Group Wise Opinion on Seasonal Price Fluctuation**

Source: Opinion as per primary data

### 6.12 Size Group Wise Non-availability of Institutional Credit Facilities

Size group wise non-availability of loan facilities in time are given in the table 6.12 and figure 6.12 (a).

**Table 6.12: Size Group Wise Opinion on Non-availability of Institutional Credit Facilities**

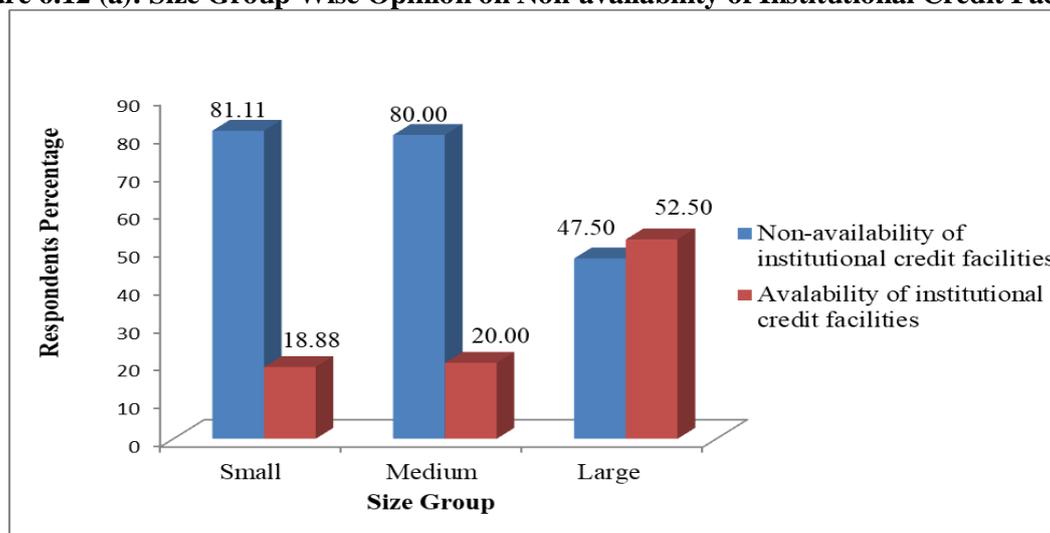
Particulars	Small	Medium	Large
Non-availability of institutional credit facilities	73 (81.11)	40 (80.00)	19 (47.50)
Availability of institutional credit facilities	17 (18.88)	10 (20.00)	21 (52.50)
Total	90 (100.00)	50 (100.00)	40 (100.00)

Source: Opinion as per primary data

Note: Figures in brackets are percentage to total

It is clear from the data in table 6.12 and figure 6.12 (a) availability of institutional credit facilities is highest on large producer followed by medium and small producers. This has happen because the large producer can get loan from the Government institution by using their social, political and economic influences. But the medium and small groups lack this opportunity and hence availability of loan from institutional sources on these groups are scanty. In case of Small producers particularly, the loan is available from the institutional sources is lowest because they cannot afford to give any gurantee such as land mortgage against the institutional loan.

**Figure 6.12 (a): Size Group Wise Opinion on Non-availability of Institutional Credit Facilities**



Source: Opinion as per primary data

### 6.13 Problems Faced by the Milk Producers Through Garrett Ranking Analysis

To analyse the problems faced by the respondents, all the possible problems were made known to the respondents. They were asked to rank the reasons in the order of their importance. The ranks given by them were quantified using the Garrett Ranking Technique (Garrett,1969) using formula:

n

$$\text{Per cent position} = \sum_{j=1}^n [(R_{ij} - 0.5) / N_j] \times 100 \dots (1)$$

j=1

Where,

R<sub>ij</sub> = Rank given for the ith item by the jth individual, and

N<sub>j</sub> = Number of items ranked by the jth individual.

**Table 6.13: Problem Faced by the Milk Producers (Garrett Ranking Table)**

S.NO	Nature of Problem	Mean Score	Rank
1.	Shortage of land problems	64.72	VI
2.	Common property land problems	52.50	X
3.	Problems of feed and fodder cost	66.38	V
4.	Non- availability of green fodder	55.38	IX
5.	Problems of shortage of hired labour.	36.94	XII
6.	Problems of productivity in milk	63.61	VII
7.	Non-availability of regular market	81.38	II
8.	Delay in payments.	43.05	XI
9.	Lack of inadequate veterinary facilities	60.83	VIII
10.	Problems of quality based price	76.94	III
11.	Seasonal price fluctuation	81.94	I
12.	Non-availability of institutional credit facilities	73.05	IV

Source: Opinion as per primary data

From the data in table 6.13, it is observed that the highest problems faced by the respondents is the seasonal price fluctuation of milk with a mean score of Garrett ranking 81.94, followed by non availability of regular market with a mean score of 81.38. Quality based price and non-availability of institutional credit facilities are third and fourth problems with a mean score of 76.94 and 73.05 respectively. Feed and fodder cost and non-availability of green fodder are the fifth and sixth problems with a mean score of 66.38 and 64.72. The seventh, eighth and ninth problems are the productivity in milk, inadequate veterinary facilities and non-availability of green fodder. It can be inferred from the data in table 6.13 that a sizeable number of the respondents are also dissatisfied with the grazing problems in the common property land (mean score of 52.50) and delay payments (mean score of 43.05). However it is to be noted that the availability of hired labour is not a serious problem in the study area and hence ranked last among the all problems in the study area.

# FINDINGS

**7.1 FINDINGS**

The major findings of this study, drawn on the basis of for going results and discussion are as follows:

- ❖ This study identified that 50.00 percent of milk producers belongs to the small group.
- ❖ Results of this study reveals that during the lactation period, average production of non-descript cattles are 1321.82 litres, 3930.59 litres and 9287.31 liters per day per farm for small, medium and large group respectively which is lower against yield of crossbreed cattles.
- ❖ The correlation coefficients, reveal that green fodders and concentrates have the significant and positive impacts on milk production on all the size groups both for crossbreed and non-descript cows. It is also crystal clear from the results of correlation co-efficients that on an average, the correlation in milk production of green fodder and concentrate, are higher on crossbreed cows as compared to non-descript cows. Therefore, to get optimum milk production from crossbreed particularly, it is necessary to supply them, these essential feeds, in required quantity and on regular basis, for the whole milking period.
- ❖ This study shows that milk yield is significantly dependent on family labour, particularly, incase of small and medium size groups. The large size group, however, is considerably dependent on hired labour and not on family labour.
- ❖ It is clear from the results of this study that cost of feeding of green fodder per day per cow was Rs.1.98 for non- descript cow whereas, it was Rs.4.25 per crossbreed cow on small size group.
- ❖ The results also indicates that, for the medium size group, the cost of green fodder for a non-descript cow was Rs.2.51 per day and it was Rs.3.97 per day for a crossbreed cow. Similarly for the large group, the cost of green fodder per day was Rs.2.23 for a non-descript cow and it was Rs.4.96 per day for a crossbreed cow. Thus, it is clear that the feeding cost of green fodder per day per cow, was substantially higher for crossbreed cows as compared to non-descript cows in all the size groups.
- ❖ This study also reveal that the cost of green fodder is positively correlated with the size groups of dairy farm both for non-descript and crossbreed cows, except for the crossbreed cows of medium size group. The reason for positive relation for expenditure on green fodder and size group, is that the large dairy farmers depend mainly on the stall feeding i.e., purchase of green fodders for feeding, whereas the smaller size groups, arranged green fodders from the nearby fellow lands for which there is no transport and labour costs except, the involvement of opportunity cost of family labour which is very low in the study areas.
- ❖ This study indicates that the feeding cost also increases, as the size of the dairy increases. However this study also reveals that the cost of feeding of dry fodder for a crossbreed cow per day is much higher as compared to a non-descript cows on all the size groups. It is interesting to note that the expenditure on concentrate for feeding a crossbreed cows per day, is much higher than a non-descript cows, on small group. The same trend also prevails for the medium and large size groups. It is also evident from this analysis that cost for feeding of concentrates, per day per cow was directly varies with size of the dairy farms.
- ❖ The total feed cost for a cow also increases with the increase of size groups, both for non-descript and crossbreed cows. The total feed cost also depicts that the feeding cost of crossbreed cows are substantially higher as compared to non-descript cattles, on all size groups.
- ❖ This study also indicate that, total cost of feed both for non-descript and crossbreed cows are considerably higher on medium and large size groups as compared to small size group.
- ❖ This study reveals that small farms do not use any hired labour for rearing both for non- descript and crossbreed cows owned by them, because the family labour is sufficient to maintain their small herd. Whereas medium farms also do not need any hired labour, for maintaining their non-descript cattles. However data also depicts that medium farm, engaged a few hired labour to manage their crossbreed cows. The large dairy farms, need to engage hired labour to maintain

their both non -descript and crossbred cows. Further, the requirement of hired, labour both for non-descript and crossbred cows, per day was much higher for crossbred cows as compared to non-descript cows on large farms.

- ❖ This study also reveals the miscellaneous expenditure per cow per day was also much more on crossbred as compared to non-descript cows, because the expenditure on treatment, medicine etc are comparatively higher on crossbred cows as compared to non-descript cows .
- ❖ This study made it absolutely clear, that total variable cost per day per cow was substantially higher for crossbred cows, as compared to non-descript cows, on all the size groups.
- ❖ This study also reveals that opportunity cost of family labour per cow per day is much more on small dairy as compared to medium and large dairy farms both incase of non-descript and crossbred cattles.
- ❖ The result of this study make crystal clear that use of family labour per day per cow is inversely related to the size groups of dairy farms. This may happen because more availability of family labour on the small size of dairy farms, whereas on large size groups dairy owners, normally do not like to work himself and depend more on the hired labour.
- ❖ Results also show that the depreciation on cattleshed and dairy equipments are higher on the medium and large size groups as compare to small size group.
- ❖ It is also interesting to note that total fixed cost is higher on crossbred cows as compared to non-descript cows in all size groups. It is clearly pointed out that total cost considerably increases as the size group increases for both the non-descript and crossbred cows.
- ❖ The study also reveal that family labour expenditure per day per cow is also much more on large dairy as compared to small and medium dairy farm incase of non-descript and crossbred cattles.
- ❖ It is also interesting to note that total fixed cost is higher on crossbred cows as compared to non-descript cows in all size groups. It is clearly pointed out that total cost is considerably increases as the size group increases for both the non-descript and crossbred cows.
- ❖ This study reveals that the cost of green fodder for per litre milk production, has declined as the size groups increased both for non-descript and crossbred cows.
- ❖ This study also reveals that the expenditure on dry fodder and concentrates were highest on the large dairy farmers followed by medium and small dairy farms.
- ❖ From this study it is crystal clear that total variable cost of milk production per litre was much higher on large dairy farms followed by medium and small farms, both for non-descript and crossbred cows.
- ❖ Results of this study also shows that the expenditure on dairy equipments is highest on the large group, followed by medium and small groups, because the dairy equipments are used rarely by the small groups, whereas the use of dairy equipments are common and frequent on the large size groups. The ‘pucca and semi pucca’ cattle sheds are used by the large and medium farms which have involved high expenditure in the form of interest, whereas small groups normally use ‘temporary and cuchasheds’ which does not involve any expenditure except the opportunity cost of family labour.
- ❖ However the analysis of this study also indicated that fixed cost per litre is considerably higher on the small groups as compare to medium and large groups. Since the major portion of fixed cost includes the value of the opportunity cost of family labour, hence the total fixed cost of milk production per litre is higher on the small size group as compare to other groups.
- ❖ This study reveals that the gross returns per day per litre of milk was higher for non-descript cows as compare to crossbred cows on all size groups. The price of milk is normally depends on the fat contents in it. As the fat content in the milk of non-descript cows is higher than the milk of crossbred cows therefore, the gross return per kg from the milk of non-descript cow is normally

higher than the milk of crossbred cows. The same trend was also observed for the net returns over total cost when family labours was not included in the total costs, on all the size groups. The trend was more or less opposite when net returns has been calculated including the opportunity cost of family labour.

- ❖ This study reveals that per day per litre gross returns and variable cost ratios clearly reveal that it was higher for the milk of non-descript cows as compare to crossbred cows on all the size groups.
- ❖ However, it is interesting to note that the ratios of per litre gross returns and variable costs is higher on small farms for both non-descript and crossbred cows as compare to the medium and large size groups. The trend of ratios of per litre gross return and total cost excluding family labours, is also depicted a similar trend that of ratio of the gross return and variable costs on all the size groups. A comparison between the ratio of per litre gross return and total cost ,excluding family labour with the ratio of per litre gross return and total cost including family labour clearly indicated that about half of the return from milk is due to the contribution of family labour particularly, on the small farms both for non-descript and crossbred cattles.
- ❖ It is clear that the feed cost is positively and significantly influencing milk production on all the size groups except, for the crossbred cattles of medium size groups, which means for one unit addition of feed cost per day, increase milk yield, by more than one unit in almost all the size groups, except for crossbred cows in medium size groups. It is also revealed that the contribution of labour for the milk production is positively and significantly influencing on the crossbred cows as compared to non-descript on all size groups, which indicate that labour is more productive for crossbred cows as compare to non-descript cows on all the size groups.
- ❖ This study reveals that the size group wise break even output of milk is the lowest in case of non-descript cattles, which were 2.60 litres on small size groups, 5.96 litres on medium size group and 9.90 litres on large group. It is also to be noted that break even point is normally higher on crossbred cows as compared to non-descript cows. It implies that, on all size groups' higher production of milk is needed incase of crossbred cows as compare to the non-descript cows to cover atleast the total cost of production of milk on all size groups.
- ❖ This study reveals that in channel-I, producer sell the milk to the consumer with the help of village trader. Only 15.00 to 16.00 percent dairy producer, follow this channel as village trader played a vital role to sell the milk to the consumer, for which producer share in consumer rupee is considerably lower in this channel.
- ❖ It is also clear from this study that, channel-II only 25.00 percent large milk producer sell the milk to the sweet shops through village trader whereas about only 5.00 percent small producers and 8.00 percent medium producers used this channel. The reasons for higher use of this channel by the large farmers may be due to per day higher production of milk which they cannot sell directly to the sweet shops. The reason for not preffering this channel by medium and small groups is that, profit received by the producer in this channel is lower as compare to some other channels.
- ❖ This study reveals that channel-III, there is no middleman at all and producers are directly selling their milk to sweetshops. It is also evident from this study, that medium groups prefer this channel more as compared to large and small groups. The most of the small groups of producer do not use this channel as the price per litre is lower in this channel as compared to the door to door selling practices.
- ❖ It is clear from the channel IV, that this channel is longer than any other channel. However it is also clear from this study that, this channel is preffered by all the size groups of producer because, the producer in this channel gets various types of subsidies on concentrate feeds. In this channel co-operative society also pay bonus rate on the basis of co-operation to the society producer for higher production of milk per day per cow. Moreover the co-operative society buys milk through out the year, in reasonable rates from the producer in this channel. This channel also reduces the

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seasonal price risk of the producer as a result the producer like depend to on this channel. Another reason for preferring this channel by all the size groups is that the co-operative society pays advance money in a low interest rate to the producer to buy the crossbreed cattles.

- ❖ It is clear from this study, in channel –V, the producer sell the milk directly to the consumer on door to door basis. It is also clear from the analysis that most of the small and medium farmers prefer this channel, because the price of milk per litre is substantially higher in this channel. This data also reveals that the large producer does not prefer this channel as they do not have enough manpower to sell milk channel on door to door basis.
- ❖ This study revealed that the Channel –V was the most efficient channels as compared to the Channels I to IV. The reason was that in this channel the producers directly sell the milk to the consumer on door to door basis.
- ❖ The Garrett ranking analysis revealed that the highest problems faced by the respondents is the seasonal price fluctuation of milk with a mean score of Garrett ranking 81.94, followed by non availability of regular market with a mean score of 81.38. Quality based price and non-availability of institutional credit facilities are third and fourth problems with a mean score of 76.94 and 73.05 respectively. Feed and fodder cost and non-availability of green fodder are the fifth and sixth problems with a mean score of 66.38 and 64.72. The seventh, eighth and ninth problems are the productivity in milk, inadequate veterinary facilities and non-availability of green fodder. It can be inferred from the data in table 6.13 that a sizeable number of the respondents are also dissatisfied with the grazing problems in the common property land ranked tenth (mean score of 52.50) and delay payments is ranked eleventh in the study area (mean score of 43.05). However it is to be noted that the availability of hired labour is not a serious problem in the study area and hence ranked last among the all problems in the study area.

# SUGGESTIONS

## 7.2 SUGGESTIONS

Dairy sector in the study area depends upon the natural resource such as grazing land, forest, pastures and other uncultivated land. In a nutshell for the development of milch population resources, into an income and employment generating enterprise, the productivity of milch cows has to be improved by adopting appropriate breeding policies. Necessary steps should also be taken for supply of balance feed, to enable the off spring to protect their genetic potential. For improvement of milk production, the innovative technique has to be adopted by the dairy farmers. This study extend researcher observes the following suggestions on the basis of the analysis of the present study and experience gained during the survey.

**7.2.1 Supply of Feed and Fodder at a Subsidized Rate:** It is suggested that better results could be obtained, if arrangements are made by the Governments for the regular supply of green fodder and concentrates. It is desirable and will be helpful, if the Government distributes cattles feed and fodder at subsidized rate to milk producers through the Milk Producer's Society.

**7.2.2 Adequate Veterinary Services:** The veterinary facilities available in the study area are not adequate and sufficient particularly, for the small size groups. Steps should be taken to provide adequate and proper veterinary facilities to each Gram Panchayet. A cluster of two or three villages should have a veterinary first aid centre. Every Four to five Gram panchayet, there is need to establish a Veterinary dispensary as well as there is also need to establish a block level veterinary hospital to prevent and controll diseases and also to provide primary veterinary services in grassroot level. Diseases survialance, vaccination programme must be introduced. The Government and Non Governmental organization should organize veterinary medical camps for the benefit of milk producers in rural areas, to escape from seasonal and epidemic diseases.

**7.2.3 Proper Training Facilities:** To provide the awareness of the dairy farmers by giving training, skill development programmes, workshop etc to be organized and to ensure that each farmers gain some knowledge and they can realize the experience and truly it is capitalize in the practical field. Continuous skill development and training programme should be organized by the Farmers Club, Government sector, NGO etc for the dairy farmers in a weekly or monthly basis. There is need to educate and assist the dairy farmers in respect of breeding, feeding, animal management technique and marketing of milk and milk products.

**7.2.4 Reserve the Separate Land:** The Government should also take necessary steps to reserve adequate acreage of suitable land for grazing the dairy cows particularly for the small size groups, in order to arrest the rise in prices of cost of production of milk.

**7.2.5 Infrastructure Development:** Some infrastructural development like road construction is needed for transportation of fodder, feed concentrates, veterinary services, medicines and transportation of milk to the consuming centres round the year.

**7.2.6 Credit Facilities:** It is suggested that the government should instruct the banks to give more loans at appropriate time to the dairy producers and terms and condition of this loan must be at par with agricultural loan advanced in the study area. The financial institutions can also play a significant role in improving the processing infrastructure by extending credit to good working milk producing units. Governments should also try to provide adequate working capital loan to milk producers through co-operative banks.

**7.2.7 Infrastructure Development of Cattles Sheds:** The government should introduce a special scheme for milk producers to construct animal shelters and the cost of shelters should be shared by both the government and milk producers equally, which is necessary to protect the health of the milch cows. Governments through milk producers union, Farmers Club may provide necessary equipments to the milk producers.

**7.2.8 Marketing Infrastructure:** Establishment of organized regulated or Co-operative marketing networks of market is necessary, so that the dairy farmers get the remunerative return for their produce. Minimum support price on milk production to be declared by the appropriate authority.

Government to ensure a better price for the milk producers, the price of milk should be periodically revised by taking into account the cost of input.

**7.2.9 Artificial Insemination:** There is urgent necessity of genetic upgradation of milching cows in a massive scale; to improve the milk production level in the State. The State Veterinary Department should create facility for Artificial Insemination and pregnancy test at the door step of the dairy farmers.

**7.2.10 Introduce the Dairy Co-operative Society:** In semiurban and Periurban areas there is need to introduce the Milk Procurement Co-operative Societies (MPCS) or Dairy Co-operative Societies (DCS).

# CONCLUSION

**7.3 CONCLUSION**

From this study it, reveals that milk production activities of Tripura is affected by a number of social, economic, administrative and technical constraints. Some of these constraints are physio-environmental and do not have solution until unless fundamental research is carried out in the area. This study reveals that dairying has the capacity to reduce poverty, unemployment at the household level and it should be an integral part poverty alleviation programmes. Despite all the problems it faces, the dairy sector holds high promise as a dependable source of livelihood for the vast majority of the rural poor. Liber-alization of world trade in dairy products under the new trade regime of the WTO, poses new challenges and has opened up new export opportunities for the dairy industry. The role of Tripura Government should be to direct, coordinate, and regulate the activities of various organizations engaged in dairy development; to establish and maintain a level playing field for all stakeholders; and to create and maintain a congenial socio-economic, institutional, and political environment for dairy development. A comprehensive dairy development policy must be formulated. Such policy should be an integral part of state and national development policy. Due consideration also to be given to its direct and indirect impacts on other sub-sectors of the economy and vice-versa. All the above mentioned suggestions shall certainly pave the way for more milk production with better returns to milk producers and growth and development of dairy sector all over the nation and in the state of Tripura, in particular.

# SCOPE FOR FUTURE WORK

**7.4 SCOPE FOR FUTURE WORK**

This research particularly concentrates on production and marketing of milk in research area but there is also shadow area which has to be concentrated apart from these aspects of production and marketing. Following are the areas of further research of milk production and marketing.

- ❖ A comparative analysis of production and marketing techniques of some leading milk producing countries with India can be done.
- ❖ A study on the performance of integrated milk co-operatives could be taken.
- ❖ A study on women's participation in dairying may be considered.
- ❖ A study may be conducted on impact on dairying on rural employment and income generation.
- ❖ A study of milk production of different breeds of milch animals may be conducted.

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# ANNEXURE

**ANNEXURE: 1****ECONOMICS OF MILK PRODUCTION AND MARKETING IN TRIPURA****INTERVIEW****SCHEDULE****FOR****PRODUCER/WHOLESALE/RETAILER/CONSUMER/VILLAGE TRADER**

1. SI No: \_\_\_\_\_

2. A) Village- \_\_\_\_\_ B) Block \_\_\_\_\_

C) District- \_\_\_\_\_ D) State- \_\_\_\_\_

3. A) Name, father's name of the head of the family: \_\_\_\_\_

B) Age: \_\_\_\_\_ years C) Whether belongs to: SC  OBC  General **CAPITAL ASSET OF LIVELIHOOD:****4. HUMAN CAPITAL:**

A) Family size:

B) Family Education Status:

SI No	Family member's name	Age	Relationship	Education

Do you possess any agricultural area: yes/no

**5. NATURAL CAPITAL**

Tenancy of land	Irrigated area Ha	Un-irrigated area- Ha	Waste/Grass/Plantation Land	Term of contract/ Share for b & c only
(a) Owned				
(b) Leased in				
(c) Leased out				
(d) Joint cultivation				
<b>TOTAL</b>				
Tax of Land Rs.				
Rental value Rs.				
<b>Utility of CPRs</b>		<b>Availability</b>		<b>Accessibility</b>
Fodder quantity				
Other				
Use of rail/roadside land				
<b>Water source for</b>	Drinking	Livestock	Irrigation	

**6. SOCIAL CAPITAL**

Social participation (Write 1 for Member and 2 for office bearer)

Organisation	SHGs	Mahila Mandal
Gram Panchayat	NGO	Youth Club
Agri.Coop	Dairy Coop	Any other labour union etc.

**D. PHYSICAL CAPITAL**

## Livestock Inventory

Category	Cow	Qty	CB Cow	Qty	Buffalow	Qty
In milk						
Dry						
Heifer						
Calf						

**Characteristics**

No Of Animals	Procured/ (Purchased/ Contact/ inherited	Breed	Approximate Cost	Age at Ist Calving/ Kidding	Service/ conception	Lactation Length	Dry Period
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

**Assets of the Household: other Assets**

S.L No	Name of the asset	No	value	Construction/ Purchase Date	Amount Spent (Rs)	Assistance from State Govt/Bank , Amount, Rate of interest
1	Dugwell/Borewell/Tubewell					
2	Cattle Shed					
3.	Residential House					
4	Domestic assets(House, Consumer durables,vehicle etc)					

**E. FINANCIAL CAPITAL**

## Employment and income status of household

Sl. No	Name of the Household member	occupation		Income		Days in month spent on			Whether need an addi. employment	Type of work	Nature of Assistance Desired (if any)
		Main	Subsidiary	Main	Subsidiary	Type of Work	Own or wage	No of days			

--	--	--	--	--	--	--	--	--	--	--	--

**Type and extent of savings and credit**

Source	Credit		Saving	
Bank	Amount Rs.	Interest Rate	Amount Rs.	Interest rate
Cooperative				
SHG				
Other				

**Production & disposal of farm produce including dairy**

Name of the Produce	Quantity produced	Qty. Consumed	Sold			Qty given as kind payment	Qty. stored
			To whom	Qty(Kg)	value		
1. Dairy							
Cow milk							
CB Milk							
Dung							

**Livelihood option**

Livelihood option Now	Livelihood option before	Cause of Shifts

**Access to livestock health and breeding services**

Institutions Traditional	Access	Preference	Experience/year
vet Services			
Private vet			
Cooperative vet			

**C. GENDER SENSITIVE ANALYSIS**

Assessment of nutritional status of the farm families

Please mention the food items and their quantity consumed by your family members within last 24 hours (please specify name of cereal, pulse, veg. fruits etc. food items)

Type of Meal	Food items (major items)	Quantity of food items taken by different family members					
		1	2	3	4	5	6
Breakfast morning							
Lunch Noon							
Dinner Night							

**Access & control over Resources and Benefits**

Please indicate who (male/female) does following activities:

Activities	Gender
Keeps Cash in hand	Male/female
Making household budget	Male/female
Making farm budget	Male/female
Borrowing money	Male/female
Giving loans	Male/female
Having bank account	Male/female
Having registration of land	Male/female

Purchasing and selling of land	Male/female
Purchasing and selling of livestock	Male/female
Deciding the use of land	Male/female
Deciding the use of livestock	Male/female
Leasing in and leasing out land	Male/female
Hiring labours	Male/female
Allocation of duties of labours	Male/female
Supervising labours	Male/female
Purchase of inputs (seed /fertilizers/pesticides/machineries/feed-fodder/vaccines/medicines)	Male/female
Borrowing inputs(seed /fertilizers/pesticides/machineries/feed-fodder/vaccines/medicines)	Male/female

### Work schedules of farm families

Please mention daily activities of family members along with their duration and timings within 24 hours and who performed activities by family members (male & female, male & female child)

Activity	Who			Timing			Rate/Labour		
	Male	Female	Child	Male	Female	Child	Male	Female	Child
Animal									
Feeding									
Milking									
Cleaning									
Watering									
Grazing									
Fodder etc.									
Chaffing									
Marketing									

### Preference of farm women for the type of Job: Agriculture/business/service

Please indicate No .of training received by male/female

Reasons for not working of farm women	Reasons of farm women for not attending training programmes

### Organization /institutions (write 1 if males visit and 2 if female visit)

Agricultural Cooperative	College	Bank
Dairy Co –operative Qt Rate	Adult edu.Centers	Gram panchayet School
Hospitals	NGO's	
Primary Health Centers	Vet hospitals	

### GROUP-B

#### Identify the Marketing Channels for Milk Marketing

Please –Tick ✓ and mention the specific channel for milk marketing.

i.	Producer/seller- consumer/Buyer
ii.	Producer –Trader/village Traders-Consumer
iii.	Producer –Trader/village Traders-commission Agent-Consumer
iv.	Producer –commission Agent-wholesalers-cum retailer-consumer
v.	Producer –village Trader- Retailer-consumer
vi.	Producer-Broker-Commission Agent –Trader-Consumer
vii.	Producer-Commission Agent –Trader-Consumer

viii.	Producer-Broker-Commission Agent –Consumer
ix.	Producer-Commission Agent –Consumer
x.	Producer-Transporter-Consumer
xi.	Producer-Trader- Transporter-Consumer
xii.	Producer-Commission Agent-Trader- Transporter-Consumer
xiii.	Producer/seller-Transporter-cum Commission Agent-village Trader/Trader-Consumer/Buyer
xiv.	Producer –Commission Agent-Retailer-Consumer
xv.	Producer-Trader/village Trader-Wholesaler – Cum – Retailer - Consumer
xvi.	Producer/Trader/Village Trader-Wholesaler-Retailer-consumer

Note: If above mentioned channel does not match your milk marketing channel then mention the specific sequence of milk marketing channel you follow.

#### Existing Feeding pattern – cost of feeding/day

Sl No	Particulars	Green Fodder (kg)	Dry Fodder (Kg)	Concentrate (Cake,Khud/Wheat brand)Kg	Price/kg(Rs)			Total Cost (Rs)
					GF	DF	CT	
1.	Milch Cow a.Indigenous b. Cross Breed							
2.	Cow Calves							
	Total							

#### Cost of milk marketing

Category	Cow	Rate
No	Q	P/kg
Producer/Sellers(/)Q		
Village Trader		
Wholesaler(/)Q		
Retailers(/)Q		
Distance wholesale market(/)Q		
Consumer/buyers		
Shops		
Transportation		

Q- Q denotes quantity

p- P denotes price

#### Participation of women in milk Production and marketing

Type	Cow milk
a. Farmer's sell/selling	
b. village Trading	
c. Commission agent	
d. Transporter-cum-commission agent	
e. Wholesaling	
f. Retail purchase	
g. Others (pls specify)	

**Problems of milk production and marketing**

## 1. Producers Problems

Category	Yes	No
a. Green fodder availability		
b. Dry Fodder availability		
c. Credit I. Govt		
ii. Private		
d. Concentrate –I Khole		
ii. Khud		
ii. Bhusi		
iii. Others		
e. Transport Fodder Dry Green		
f. Others.		

## 2. Marketing problems for (Producers)

Category	Yes	No
a. Regulated market.		
b. Distance		
c. Transportation		
d. Storage		
e. Credit		
f. Others Problems		

## 3. Problems for wholesalers

a. Quality		
b. Transport.		
c. Timely Available		
d. Credit		

## 4. Problems for Retailers

a. Timely		
b. Quality		
c. Price Fluctuation		

## 5. Problem for Consumer

a. Quality		
b. Transport.		
c. Timely Available		
d. Credit		

**Annexure 2****List of ISSN Journal Published:**

1. **Acharjee Kumar Milton (2013)**, “Status of Livelihood through Milk Production and Marketing in Tripura” *International Journal Innovative research and Development* Volume 2 Issue 5, May, Issn No-2278-0211(online) pp.1718-1728
2. **Acharjee Kumar Milton and Ray.A.K (2013)**, “Research Issues and Priorities in the Field of Agriculture Sector and Dairy Scenerio of Tripura-A Critical Analysis” *International Journal of Research Engineering and Technologies* Volume 2 Issue 7 July pp. 49-55 ISSN No-2319-1163
3. **Acharjee Kumar Milton and Ray.A.K (2013)**, “A Comparative Study Based on Critical Literature Review of Livestock Research Areas, Priorities and Constraints in Bangladesh and India” *Tactful Management Research Journal* Volume 1, Issue 11, August pp. No-1-13 ISSN No -2319-7943

**List of Conference Proceedings Published:**

1. **Acharjee Kumar Milton and Ray.A.K (2011)**, “ Strategies of Fodder Marketing and Female Labour Use Pattern in Peri-Urban Areas of Agartala and Kolkata”, *Emerging Issues and Marketing Challenges and Perspectives*, Galgotia Publishing Company, Janakpuri New Delhi, India, pp .17

**Annexure-3****List of National and International Seminar Attended and Paper Presented**

1. Conference Theme –**Mapping Changes in South and South –East Asia: Geoplitics, Economics and Demography**”

Title of The Paper- A comparative Study on Livestock Research areas, priorities and constraints in Bangladesh and India, 24th-26<sup>th</sup> March 2011.(International Seminar Organiser- Deptt of Geography - North East Hill University Shillong

2. Conference theme- **Identification of research priorities in Tripura (IGNOU Agartala)** Paper Title-Research issues and priorities in the field of agricultural sector of Tripura-Feb-12-13 2011.
3. **Natonal seminar on Religio Cultural dynamics & Social exclusion and Inclusion in India (CSSEIP Tripura University)**

Paper Title-A study on the social exclusion and inclusion of Tribalpopulation inTripura –Special References to Reang Tribes in North Tripura- 25<sup>th</sup> April 2011.

4. **International Seminar on Globalization : it’s issues and challenges with special reference to India ( Tripura University and Holy Cross College)**

Paper title –The challenges of financial inclusion in era of globalization-29-30 October 2011.

5. **Naional Seminar on Emerging issues in marketing :Challenges and perspectives ( BCIPS New Delhi Affiliated to CGS Indraprastha University)**

Paper Title- Strategies of Fodder Marketing and female labour use pattern in periurban areas of Agartala and Kolkata -5<sup>th</sup> February 2011

6. **National Seminar on Pedagogy-Trends in Teaching and learning.(ICFAI University Tripura)**

Paper Title- Challenges in E-learning in India- 3-4<sup>th</sup> June 2011.

7. **National Seminar on The changing role of Indian Judiciary.( Holy Cross College)**

Paper Title-Study on the hierarchy of judicial system at Agartala-Tripura-22-23 January 2011

**List of Workshop Attended**

1. **Workshop on Research Methodology**-Organised by Omeo Kumar Das Institute of Social Change and Development An Institute of ICSSR ,New Delhi and Government of Assam and Department of Economics Tripura University From January 29 to February 4,2012
2. **UGC Sponsored National Workshop on Research Methodology and Preparation of Proposal**- Govt.Hrangbana College ,Aizawl ,in Collaboration with Department of Education ,Mizoram University during 9<sup>th</sup> to 11<sup>th</sup> June 2010.
3. **Workshop on Introduction to Research Methodologies** –Conducted by Indian Institute of Technology Bombay Collaboration with ISTE and National Institute of Technology ,Agartala from 25<sup>th</sup> June to 04<sup>th</sup> July ,2012
4. **Workshop on Capacity Building in Rural Development**-Conducted By Tripura University From 26-30 December 2005

**List of Orientation**

1. **Orientation Programme on Academic Consellers**-Organised By Indira Gandhi National Open University from February 2<sup>nd</sup> and 3<sup>rd</sup> 2013.

**Annexure-4****Crossbreed Cattles****Crossbreed Cattle shed****Fedding of Crossbreed Cows****Cleaning of Crossbreed Cows**



**Non-Descript Cows**



**Non-Descript Cows with Heifer**



**Fedding of Non-Descript Cows**



**Milk Market -1**



**Milk Market -2**



**Producer Given the Milk to the Co-operative Society**

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- Producer Given the Milk to the Co-operative Society.

**List of Abbreviations**

- GNP**- Gross National Product  
**NDDB**-National Dairy Development Board  
**RGI**- Revenue Generated Index  
**ARDD**-Animal Resource Development Department  
**CSO**-Central statistical organization  
**OF**-Operation Flood  
**FAO**-Food and Agricultural Organization  
**GOI**-Government of India  
**GCMPUL**-Gomati Co-operatives Milk Producers Union Limited  
**ND**-Non-Descript (Desi Cows)  
**CB**-Crossbreed Cows  
**UCDFL**-Uttaranchal Cooperative Dairy Federation Limited  
**LCA**-Low cost approach  
**ISS**- Integrated sample survey  
**MT**-Metrictonnes  
**WTO**-World Trade Organisation  
**SNF**-Solid Not Fat  
**CMIE**-Centre for Monitoring Indian Economy  
**ILRI**- Indian Livestock Research Institute  
**LSRE** -Tripura Livestock sector Review Exercise  
**NPCBB**-National Project for cattle and Buffalo Breeding  
**TLDA**-Tripura Livestock Development Agency  
**ISS**-Integrated Sample Survey  
**IS**-Informal Sector

## ABOUT THE AUTHOR



**Dr. Miltan Kumar Acharjee** graduated with Bachelor of Business Administration specialization with Marketing at Tripura University (A Central University), did his Master of Business Administration with Finance and Marketing at Satyabama University, Chennai, Post Graduate Diploma in Business Operation from IGNOU and Master of Commerce from IGNOU. Ph.D from National Institute of Technology, Agartala in the field of rural marketing and economics. He has contributed a number of research papers in national seminars, journals and edited volume.

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Keeping this background, the book examines the Management of Milk Production and Marketing in Tripura. This book will be useful for students, scholars, teachers and other policy framers in this field.

## ABOUT THE BOOK

The book presents the concise idea on management of milk Production and marketing in India especially in Tripura. Dairy sector in India is an integral and interwoven part of traditional agriculture and plays an important role in the rural economy. It is closely interlinked with the socio-economic matrix of rural society. The total milk production has increased from 48.40 million tons in 1988-89 to 127 million tons in 2011-2012. Dairying in India is more inclusive compared to crop production in the sense that it involves a majority of the vulnerable segments of the society for livelihoods. However, India being the largest milk producing country in the world the per capita availability of milk is only 281 gm/day, which is much below the world average figure. The per capita availability of milk is even different across Indian states; as for example, in Tripura, it is 80 gm/day, which is much lower than all-India figure (NDDB, 2007-2008). Despite impressive growth in milk production during the past three decades, productivity of dairy animals continues to remain very low and milk marketing system is primitive.

This book is mainly focused on the economics of milk production and marketing in Tripura. This book aims also to estimate the cost and returns of milk production in Tripura, to examine the factors influencing the milk production in Tripura, analyse the marketing channels, efficiency and price spread of milk producers in Tripura and to study the constraints faced by the milk producers in Tripura.

It is to be stated that, of the total population living in the rural areas , nearly 50.00 percent of them are poor, the livestock sector demonstrated a beneficial impact on them by providing employment , income and consumption standard and thereby, as a potential tool in alleviating rural poverty. Dairying is carried out mostly by the disadvantaged and poorer section of population as this sector provides part-time/whole time employment to 19.00 million people i.e., about 8.00 percent of total working force in 2001-2002.

This book will really help the policy makers, researchers to implement the various development activities of state for which higher growth of dairy sector will be increased significantly.



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