CHAPTER –VI
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The contribution of livestock and milk production had a long legacy and had its genesis since time immemorial in Indian civilization. In ancient India during *Vaidic* period cattle, raising and milk production was a prime occupation. The *Arthashastra* has mentioned systematic record keeping of animals in ancient India. In brief, animal husbandry and cattle rearing have been a way of livelihood generation in India throughout history, to date.

India ranks first in milk production, accounting for 18.5 percent of world production, the per capita availability of milk in India has increased from 176 grams per day in 1990-91 to 322 grams per day by 2014-15.

The contribution of animal husbandry and dairy farming to total Gross Domestic Product in all India level was 3.9 percent in 2013-14 at current prices as estimated by the Central Statistical Organisation.

The success of the dairy industry in India has resulted from the integrated co-operative system of milk collection, processing and marketing. As on March 2011, the Dairy Cooperative Network covers 346 districts of the country. It links over 1,44,246 village level dairy cooperative societies which are operating and collecting 21.99 million litres of milk per day and marketing about 18 million litres a day. About 22.45 million people work in the livestock sector, which is around 5.8 percent of the total workforce in the country.

In Assam, the prospect of dairy farming was well envisaged during the British rule itself. The genesis of formal milk production activity in the state lies with the advent of British rule in Assam. The Assam land revenue Act 1886, in fact, encouraged it as a profession for a livelihood.

The geographical area of Assam is 78438 sq. Km. supporting 3.12 crore of the population in 2011 Census. The cattle and buffalo population of the state as per 19th Livestock Census, 2012 were 103.08 lakh and 4.35 lakh respectively.

During the year 2015-16, the total milk production in Assam was 885.63 million litre. The per capita availability of milk in the state is almost stagnant around 75 gm/day almost since the 1990s. The local tribes do not have a tradition of cattle rearing for milk, but today it has found that the business of dairy farming has got popular among the SC and ST.

There are several studies relating to the Dairy sector in Assam. But no single study has made on problems and prospects of milk production in terms of cost and returns. Moreover, the cost and return scenario provides the possibility of employment avenues.

Hence, the present study on 'Milk Production and Marketing in Assam: Problems and Prospects with special reference to Mayong Block of Morigaon District in Assam' is undertaken to analyze and compare the cost and returns of milk production and the constraints faced by the producer and the marketer of milk in Assam, especially the producers and marketer of Mayong block in the district of Morigaon.

During the study it has been observed that in Assam no secondary data has been available regarding employment level through animal husbandry and the requirement and availability of feed and fodder, and data for quantifying the employment opportunities that can be generated along different livestock value chains, including on farm, off-farm and nonfarm jobs were 'not available to understand the broader sector level employment'. Therefore employment indicating coefficients have been derived from the survey data, and for the determination of demand and supply of feed and fodder, we followed the line of IGFRI and Handbook of Agriculture.

6.2 Summary of Findings

India's livestock sector is one of the largest in the world comprising 4 percent of the GDP and 26 percent of the agricultural GDP'. The total output worth has been higher than the value of food grains.

The livelihood oriented dairy cattle farming by smallholders cannot be sustained without well-organised marketing in favour of farmers, which is not possible without cooperation. The well-organised structure and farmer-centric

approach is the reason behind the towering of *AMUL* and sustenance of SJDUSS. In comparison, it has also been observed that the states having more cooperatives produce more milk. The present study area is one of the traditional milk pockets of the state since the 1930s, and the ratio among the professional dairy farmer associated with Cooperative to those not associated with it was found to be 93.60 percent.

SJDUSS and AMUL, when compared, found that the genesis behind the inception was identical. Both the cooperatives were formed to free the farmers from rapacious private parties and differ only in the scale of business and geographical location. Moreover, cooperatives like SJDUSS in Assam are still waiting for the association of personalities like Kurien-Dalaya, the technocrats, as well as enthusiasts and powerful supporters like Moraraji Desai, Sardar Patel, Lal Bahadur Shastri and other policymakers.

Assam is unable to raise any of its cooperative structure like *Anand* in Gujarat or *Nandini* in Karnataka or *Verka* in Punjab. This has accrued less benefit to the dairy farmers of the region. Moreover, encroachment and dereservation of grazing land further enhance the problems of dairy cattle farming. This pushed Assam to be a milk scarce state, in place of milk abundant state.

The state of the formal milk processing sector in Assam is that the infrastructure created in the state are either largely defunct or grossly under-utilized. The government is not yet showing its enthusiasm and trust towards farmers owned cooperatives in providing those infrastructures in their hands. However, this could have made the dairy sector self-reliant on the one hand, and on the other, it could have eased the problems of dairy cattle farmer by cutting down the cost of dairy production and marketing.

Fresh liquid milk is the most preferred dairy product and is generally consumed by most of the consumers in Assam. In Guwahati city itself, 60 percent milk consumers in our sample preferred fresh milk and only 40 percent of the consumers were ready to accept pasteurised packaged milk. 60 percent of the consumers believed that pasteurised packaged milk is always produced with reconstituted milk and this lacks fragrance of fresh milk.

In the study area under Mayong block, the culture of rearing cattle progeny of High Yielding varieties was five-decades-long, and most of the cattle have been observed to be crossbreeds of local Lakhimi, Holstein Friesian, Jersey, and Sahiwal. In comparison to Lakhimi, Jersey and Sahiwal, Holstein Friesian produces low-fat milk but higher in quantity. Except for Lakhimi, pure breeds of cattle are rarely found in the study area.

The study reveals that dairy farming has been getting popular among the SC and ST at present. Among the sample of 171 dairy households, the numbers of SC and ST households were 32 and 25, *i.e.* 18.71 percent and 14.62 percent respectively. The number of OBC households found to be of 14.62 percent and the dairying found to be dominated by General Caste comprising 52.05 percent.

In the survey of 2456 numbers of cattle, 2003 were female cattle and out of it the numbers of total milch cattle were 1042, *i.e.* the ratio of milch cattle on total cattle was 42.43 percent, and the ratio of milch cattle on total female cattle was 52.02 percent. Among the survey households, only crossbreed cattle were available

The average revenue earnings from milk, of farmers associated with cooperative found to be significantly higher than the farmers not associated with any cooperatives. Cooperator farmers were able to realise milk price ₹ 42.00 per litre in an average during 2017-18. However, far-flung farmers not associated with any farmer's cooperatives and supplying milk to the local traders, hotels and other institutions were able to get only about ₹ 35.50 per litre.

The production of survey households was found to be 7727.5 LPD, i.e. the annual production was 2820537.50 litre. Estimated total annual revenue earnings were ₹ 118,462,575.00 and farmers average revenue earnings from milk was ₹ 42 per litre.

The information from the survey shows that the sum of total net income from animal production after deduction of the replacement cost of the animals was 12,277,760.00. This amount of income is earning of the dairy farmers as a compensatory bonus of milk production activity. The composite revenue from milk and animal production sums to the tune of ₹ 130,740,335.00. Thus, the share

of animal production in the total income from dairying was found to be 9.39 percent.

It is observed that the dairy sector is very important in the study area. It has been found that the share of income from dairying among the surveyed households was as high as 73.01 percent, with all other sources accounting for only 26.99 percent.

The total cost incurred by dairy households was ₹ 102,132,671.00. The profit from milk proper was estimated at ₹ 16,329,904.00, *i.e.* the profit percentage in terms of milk revenue has been found to be 14 percent. When the income from animal production was added to the profit from milk, the profit amounted to ₹ 28,607,664.00. The business of dairying in the Mayong Block in Morigaon district of Assam accrues profit by 22 percent. The important feature of the milk business in the study area is that it has been under the control of farmers, because of the presence of a strong farmer's cooperative for the last sixty years. It is observed that in other parts of the state, except the fringe areas of Guwahati city and other important towns, due to the lack of milk marketing infrastructure farmers are being unable to reap this level of benefit. Therefore, the growth rate of dairying found to be slow in the state and the occupation is surviving out of city & town fringe areas as well as in the areas with a few dedicated dairy cooperatives.

The gross returns in dairy farming are higher in the case of farmers associated with cooperative than that of the farmers not associated with any cooperative organisation.

Sitajakhala has been able to provide remunerative milk price to the level of farmer's satisfaction out of its additional revenue from value addition and business. During the period of this study, we found that farmer's net price of milk and producer's share on consumer price under SJDUSS found to be more than any other place. In the year 2016-17 and 2017-18 SJDUSS have paid to its farmers ₹ 42.39 and ₹ 42.5 respectively per litre of milk. The return was found to be 90.19% and 85% of consumer's price in the year 2016-17 and 2017-18. This is more than the price shared by WAMUL during the same period. This share is also more than that found in the study 'Economic Analysis of Production and Marketing of Milk

in Tamil Nadu'. Where Producers' share was '65.96% of consumers price' (Edhayavarman, 2011) and the 'producers' share in consumer rupee was about 58 percent in Bihar (Singh, *et al.* 2012) marketing their milk through co-operatives.

That is, so long as the benefit of value addition and business could not be perforated to farmers, dairy farming as a livelihood business is difficult to sustain in the future.

In the areas where farmers do not have any attachment to farmers' cooperative and pouring their milk to a private trader or even to WAMUL has been getting about ₹ 35.50 for their output of milk. The study, has estimated average cost of production to the level of ₹ 36.21 and almost all over the state on the basis of cropping pattern, there exist fair chance of having a similar cost structure in milk production, 'High cost and low return from the production of milk creates disincentives in the occupation of dairy cattle farming' the hypothesis has been rejected, in the study area, but the hypothesis itself holds good for the areas where dairy farmers are getting less than ₹ 36.21 as their milk price.

This study reveals that in 171 numbers of dairy farms, total regular employment of labourers was 485, and the 171 number of entrepreneurs were self-employed. That is, the total employment was 656. The average annual output of milk for one unit of employment was 4299.6/annum litre, *i.e.* the average output of milk for one unit of labour is 11.78 litres per day.

For employment generation through milk marketing, data was collected from Sitajakhala Dugdha Utpadak Samabai Samiti Limited (SJDUSS), and the same has been investigated for the financial year 2017-18. It was found that total regular employment generated through milk Marketing was 144, handling annually 5475000 litres of milk in an average.

On the basis of the findings in regards to employment generation in study area, the employment generated in Assam through dairy cattle farming has been estimated 190509 nos. in the year 2002-03, has increased to the 221820 nos in 2015-16 and for the district of Morigaon it was 4700 in 2002-03 and increased to 6932 nos. in 2015-16. Similarly, it has been found that if the state of Assam can manage to produce whole of its milk shortage, *i.e.* over 1600 million litres it can

generate about four lakhs of new employment over the present day level. Therefore, the concept 'There is ample scope for Employment Avenue in Milk production and marketing' is true in the state of Assam.

In India, the shortfall of green and dry fodder at present has been over 60 percent and about 25 percent respectively. In Assam, the total fodder requirement accounted to the level of 21.57, 15.31, and 1.03 million tonnes of green fodder, dry fodder, and feed concentrate respectively. It is also noted that adult male animals require more feed and fodder than that of female animals. The shortfalls of green fodder dry fodder and feed concentrate have been estimated to be 74.69 percent, 52.38 percent, and 33.98 percent respectively.

The shortfall of feed and fodder could not be estimated for the study area due to unavailability of required data about land and crops. However, the requirement of green fodder dry fodder and feed concentrate has been estimated to be 680,800; 494,479.30 and 43,688.90 tonnes respectively.

During the study, 90 percent of the farmers having an attachment with the cooperative revealed that finance was not a major problem. However, almost all the farmers not attached to any cooperative always face twin problems, *i.e.* of finance and low price of milk resulting low level of profit.

In the study area among other Foot and Mouth Disease, seasonal diarrhea, mastitis, and repeat breeding are the frequently occurring cattle health problems. The problem, coupled with the insufficient numbers of veterinary practitioners, is a major problem in regards to veterinary facilitation.

There is a significant difference between perceptions of the respondents belonging to cooperative and members not belonging to any cooperatives about the problems of non-availability of loan facilities. The respondent belonging to farmers cooperatives have the perception that the loan can be availed when it is required. On the other hand, the farmers who are not associated with any cooperative have the perception that availing loan from banks is a difficult task.

The study observed that farmers were not much interested in favour of purchasing an insurance policy for all of their cattle, because no insurance

companies till date honoured insurance claim in regards to cattle insurance on non-mortality damage cases.

In the state cattle are mostly reared in two ways; in grazing system and in the stall-feed system. It is also observed that the cattle kept in the grazing system hardly escorted by cattle keeper, almost 80 percent of those are let loose like stray cattle. The system involves high social cost on the one hand and creates difficulty for the concerned department in preventing contagious diseases. This, in turn, exaggerates the cost of production. On the other hand, in the stall feed system cattle are kept always tied with rope since their birth. This not only affects productivity by hampering the growth and health of the cattle but also reduces their lifespan.

The planning of the Government Departments to popularize fodder cultivation at institutional wasteland and Silage making is yet to come to fruition. However, SJDUSS under its 'Vision 2020 Sitajakhala', has shown a keen interest in taking venture of silage making, envisaging for a reduction in the cost of production of milk as well as providing symbiotic linkage between cultivator and dairy farmer for employment and income generation.

Conscious farmers of Assam consider the lack of coherence effort of Department of Agriculture, Department of Animal Husbandry & Veterinary, Department of Dairy Development, and Department of Cooperation in the state are one of the causes for the underdevelopment of dairy sector in the state.

6.3 Recommended policy changes

Dairy sector has been suffering from a number of economic and non-economic problems the consequences of which are reflected in the cost of production of milk.

For the development of the rural economy through animal husbandry and dairy development, coherence planning and effort among Department of Agriculture, Department of Animal Husbandry & Veterinary, Department of Dairy Development, and Department of Cooperation in the state are considered urgent and necessary.

The government may rectify the policy of Department of Animal Husbandry and Veterinary, and establishments under it may be developed according to the requirements, *i.e.,* number and quality of animals rather than the political demarcation of the area.

The government should introduce a special scheme for milk producers to construct scientific animal shelters so as the stall-fed system could be systematically transited to the free stall system and the cost of shelters should be borne by both the government and milk producers equally, which is necessary to protect the health of the milch animals, to reduce cost of production and to enhance productivity of cattle.

Regarding forestation of the state, it is suggested for springing back from exotic species like teak, pine, *etc.* to endemic woody perennial of native vegetation with fodder value supporting grasses and shrubs. This would be able to serve trine purposes, *i.e.* protection of the environment, create in situ congeniality for floras and faunas and can enhance fodder production for fringe villages along with conservation of forest and biodiversity. This would not only bring down the cost of milk production in the state but also strengthen the sustainability of rural livelihood economy.

To alleviate the financial problem as well as the risk factor of the cattle farmers in the state, the system of insurance is to be rectified so as the farmers can get the value for a milch cow from insurance when a cow becomes unproductive and sterile. This can not only save the farmer from unforeseen losses but also provide a safeguard to bankers of their extended credit. This would encourage commercial banks to extend more credit for dairy development in rural areas. Therefore, Damage Insurance may be encouraged by the government in association with insurance companies to reduce the risk of a dairy farmer.

No sector can prosper unless it is backed by research and extension services. Therefore, research and extension services should be expanded coordinating dairy farming, agriculture, silviculture, and forestation, so as resources can be suitably balanced for smooth economic growth of rural areas maintaining harmony among agriculture, forestry, and animal husbandry.

In Assam, along with a viable plan for fodder cultivation, silage making, production of fodder blocks, the market for fodder is also to be developed in the line of dairy-rich states in India.

The government may consider budget provision for providing required high tech human resource and technical know-how to successful rural dairy cooperatives. This would help in the speedy generation of employment and income as well as augmentation of production.

For the better marketing facilities, dairy cooperatives in the state should come up with enthusiasm to benefit the farmers and Government should take policy for the three-tier model, or *Anand* Model of cooperative that grows in a bottom-up manner.

The government may also take required steps to include cattle rearing and cooperation in the syllabus of general education beginning from secondary school to colleges as an elective vocational subject with a provision for necessary facilities. This process would motivate the upcoming youth towards dairy farming and other agricultural activities as their occupation.

6.4 Conclusion

Regardless of problems the dairy sector confronts, it bears high prospects as a reliable source of livelihood for the majority of the rural masses. In Assam, this sector provides vast scope for the generation of employment and income in the rural areas and also thereby helps to alleviate poverty and nutritional deficiency. Under the regime of new trade order after liberalisation, farmers are facing new challenges. On the other, this has opened up new export opportunities for the dairy industry, particularly in Asian countries. A comprehensive policy for dairy development in the state must be formulated coordinating all the concerned departments as mentioned above and this should be continuously an integral part of the development policy in the state. This needs integrated effort, enthusiasm and cooperation of various sections of system facilitators of all concerned departments, cultivator, milk producers, feed & fodder producers, traders, transporters, processors, product manufacturers *etc.* involved in the system of milk business for the fruitful growth of the sector.

The suggestions provided above shall certainly provide a roadmap for increasing milk production in the state with remunerative returns to farmers and develop the dairy sector in the state and study area transiting the Assam from milk scarce state to milk abundant one.

6.5 Scope for future research

The following are the areas in which further research may be undertaken in regards to the development of milk production in the state:

i) A study of production and marketing of milk products and by-products of dairy farming in the state;

ii) A study on demand and supply of feed and fodder in the State;

iii) A comparative study on feed and fodder consumption by male and female cattle and their respective return;

iv) A study on the performance of the longest running milk cooperative in the state and its replicability;

v) A study may be conducted on value addition of milk and its impact on rural dairying in the state; and

vi) A study may be conducted on the impact of dairying on rural employment and income generation.