A STUDY ON THE ECONOMIC IMPACTS OF DAIRY CO-OPERATIVES IN IDUKKI DISTRICT

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C E R T I F I C A T E

Certified that the thesis " A Study on the Economic Impacts of Dairy Co-operatives in Idukki District" is the record of bonafide research carried out by Sri. T.T.Michael under my guidance. The thesis is worth submitting for the degree of Doctor of Philosophy in Economics.

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INTRODUCTION

India is mainly an agrarian country and it has a large live-stock population which makes animal husbandry an important sub-sidiary occupation of the farmers. Animal husbandry contributes much to the rural economy by providing milk, meat, draught power and manure. With the basic objective of rural upliftment, Government has introduced a large number of rural development schemes. Among them, dairying was an important one. This was mainly because, as pointed out by the National Commission on Agriculture "there is a growing realization that promotion of dairying not only contributes towards national health building but also creates substantial employment opportunities. Properly organised and developed dairying could be effectively used as an instrument of social justice."[1]

An important feature of dairying in our country is that while most of the milk is produced in rural area, market for milk exists mainly in urban areas. So dairy farmers face several problems in marketing their milk. To overcome these problems a large number of dairy co-operatives was established in various parts of the country. These societies provide a stable market

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1. Report of the National Commission on Agriculture, Part (VII), Animal Husbandry, Govt.of India, Ministry of Agriculture and Irrigation, New Delhi (1976) p.120.

for milk producers in rural areas and a dependable source of milk to the urban consumers and thus become intermediaries between the two.

The dairy co-operatives provide the necessary inputs to dairy farmers and procure their marketable surplus of milk at reasonable price. By providing necessary inputs and ensuring regular market for milk, dairy co-operatives give great inducement to farmers to take up dairying as a means of livelihood. A brief analysis of the importance of dairying in the Indian economy is given below.

1.1 Importance of Dairying in India

Unlike in other countries where cattle are maintained mainly for milk and meat, in India they are maintained for various purposes. For example, in addition to milk and meat they are used for draught power and to transport goods. According to the Second All India 'Gosamvardhan Sammelan' "the people of India owe to cow, and will continue to owe to it in future also as their very life-blood, their source of existence and food because cultivation in India is unthinkable without cow."[2] Similar views have been expressed by the Royal Commission on Agriculture in the following words. "Without the ox, no cultivation would be possible, without the ox no produce can be transported."[3] The importance of livestock

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2. Dhebar, U.N.(1967), "Problems of Cattle Development" Khadigramodyog, December, p.1.
3. Report of the Royal Commission on Agriculture in India, (1928), p.169.

in the Indian economy can be seen from its number too, that is, though India constitutes less than three percent of world's land area, it owns about 53 percent of the world's buffaloes, 15 percent of world's cattle and 20 percent of world's goats.[4]

As already indicated, in India dairying plays an important role by providing a major source of subsidiary income to the farmers of the country. Eventhough the share of agriculture in GDP has been declining, the value of output from livestock shows an increasing trend. The contribution of livestock to the agricultural sector stands at nearly 24 percent of the total agricultural income.[5] In India, the livestock sector contributes about Rs.30,000 crores to the GNP. It provides Rs.15,000 crores worth of milk, Rs.10,000 crores worth of work, Rs.6000 crores worth of meat and Rs.1400 crores worth of dry dung for fuel and manure.[6] Dairying reduces farmers' risk in agriculture and provides a regular and at least a subsistance income to the farmers. Whereas most of the farm income is only seasonal, income from dairying is distributed throughout the year.

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4. Patel, R.K.(1993), Present Status and Promise of Dairying in India", Indian Journal of Agricultural Economics, Vol.48, No.1, January-March, p.8.

5. Ibid, p.2.

6. Ramaswamy, N.S.(1989), "Organisational and Managerial System for R.D an Example", Kurukshetra, January, p.5.

The National Commission on Agriculture in India observed that next to crops, animal husbandry has the largest employment potential in rural areas. It provides employment to millions of unemployed and underemployed, particularly to small farmers, marginal farmers and landless labourers in the villages. It also provides employment to large number of people in the processing and marketing of dairy products throughout the country.

Milk and milk products are regarded as important food items. This becomes particularly important in a country having a sizable vegetarian population. In a vegetarian diet, it is milk which is the richest item containing the largest degree of minerals, fats, proteins, vitamins and other contents. About 75 percent of all animal proteins consumed in India is derived from milk. The average national diet of Indians' contains only six grams of animal protein per day of which 4.5 grams comes from milk.[7]

Male bovines supply power for almost all agricultural operations such as ploughing, lifting water from wells and transporting produce from fields to markets. They also provide power for rural industry. Inspite of the increased use of mechanical methods, draught animals contribute about 15 percent of the total power used in agriculture. Work animals help to cultivate two-thirds

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7. Ramachandran Pillai, P.G.(1988), "Policy Changes Needed for Accelerated Growth in Dairy Sector" Paper presented in XXIV Conference, Thiruvananthapuram.

of area sown and they save six million tonnes of petroleum, worth Rs.2,400 crores of foreign exchange per year.[8]

Dairying has an additional role in maintaining the fertility of the soil and thereby increasing agricultural production. Cowdung is an important form of manure used by the farmers. Its importance as a form of manure has tremendously increased because of the awareness regarding the adverse impact of chemical fertilisers and the increase in their prices. Cowdung contributes Rs.1400 crores worth manure and fuel annually.

Most of the rural households, irrespective of their size of land holding, own cattle or a buffalo. It may be interesting to note that though 21 percent of rural households are landless, they own 12 percent of the milch animals and produce 16 percent of all rurally produced milk.[9] Milch animals provide farmers some product or the other-milk, dung, work and companionship. The animals also provide some kind of financial security to the farmers as they can be sold in times of emergency. In short, cattle and buffaloes are intimately related to the rural economy of the country. A brief review of dairy development at the national level is given below.

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8. Ramaswamy, N.S. (1989), "Organisational and Managerial System for R.D. an example", Kurukshetra, Jan, p.5.

9. Bedi, M.S. (1987), Dairy Development, Marketing and Economic Development, Bombay, Deep and Deep Publication, p.10.

1.2. Dairy Development at the National Level - A Review

Dairying in India made remarkable progress after the initiation of Five Year Plans in 1951. Though Government had introduced several programmes of dairy development prior to 1970 such as Key Village Scheme,[10] Goshalas[11] and Intensive Cattle Development Project,[12] (ICDP), it got a new thrust only with the introduction of Operation Flood -I (OF-I) project. The five year OF-I project, a brain-child of Dr.Varghese Kurien[13] was initiated on Ist July, 1970, by the Government of India with the technical and financial help of National Dairy Development Board (NDDB) and Indian Dairy Corporation (IDC). The OF-I was later extended to another six years up to March 1981. This was the largest project of its kind in the Third World. The OF-I, involving an outlay of Rs.116.4 crores aimed at all round development of the dairy sector by organising one crore farmers into 30,000 village dairy co-operatives in virtually all the states of India.

The second phase of OF, known as OF-II, was started in 1981 involving a total outlay of Rs.485.5 crores. This programme was

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10. A village level scheme proposed to give all the key facilities for dairy development.

11. A scheme introduced for better cattle rearing through group basis.

12. A programme launched to improve the quality of cattle through artificial insemination.

13. The Chief Organiser of AMUL and the Chairman of NDDB.

implemented through a three-tier co-operative structure with state federations at the apex level, unions at district level and primary societies at the village level. The OF-II aimed at extending the dairy co-operative structure to 155 districts covering 34,000 primary milk producer co-operative societies with a membership of 10 million families.

The third phase of OF, i.e., OF-III (1985-94) was initiated in 1985 with an outlay of Rs.915 crores. The project gave particular emphasis on promoting measures to consolidate the achievements gained during the earlier phases by improving the productivity and efficiency of the co-operative dairy sector and its institutional base for its long term sustainability. It aimed to expand the number of village dairy co-operatives to 70,000, affiliated to 190 unions, by 1994.

Another major scheme, "Technology Mission on Dairy Development" was started in 1989. The Mission aimed at accelerating the pace of growth of rural income and employment through dairy development. Its operational area would be the OF coverage expressed in terms of the number of districts which was expected to rise to 270 by 1995, covering 60 percent of the country. The Mission proposed to function through strategies such as people's participation, demonstration of excellence, improvement of milch animals, production of improved feeds and fodders, provision of

health cover, scientific processing and intensive marketing for faster growth in milk production.

As a result of the various dairy development schemes of the Government, the dairy sector in India has achieved spectacular progress. Today India is the second largest producer of milk in the world. Milk production in India increased from 17.4 million tonnes in 1950-51 to 61 million tonnes in 1993-94 and per capita availability of milk increased from 132 grams per day in 1950-51 to 190 grams in 1992-93.

1.3. Role of Dairy Co-operatives in Dairy Development

Most of the milk produced in India comes from rural areas. It is produced by small farmers who keep usually one or two milch animals. But market for milk is limited in the villages. Though there is high demand for milk in urban areas, the individual farmers have to face a number of problems to market milk in urban areas. Here emerges the importance of dairy co-operatives as an efficient link between rural milk producers and urban consumers. They liberate the rural milk producers from their dependence on local vendors, hoteliers and tea-shop owners who do not buy the entire milk offered by farmers, especially during the flush season. Moreover, market for milk in the rural areas being limited, large scale dairy farming is impossible in the villages. Under such a situation dairy co-operatives enable farmers to depend on dairying as a regular means of livelihood.

Another major role of dairy co-operatives is in the realization of reasonable price on a regular basis. Dairy farmers are generally very poor and so they need regular receipt of the price of milk. In many cases hoteliers and teashop owners fail to give regular payment to farmers. This creates serious problems to the poor dairy farmers. Dairy co-operatives, on the other hand, provide regular payment, and so the farmers can depend on dairying as a regular source of income. Moreover, fixation of milk price on the basis of fat and Solids-Not-Fat (SNF) encourages farmers to supply quality milk and this promotes their moral standard too.

Yet another important service of dairy co-operatives is the provision of inputs to dairy farmers at reasonable prices. Dairy co-operatives provide various inputs like veterinary facilities, artificial insemination facilities, credit facilities, provision of quality feed, minerals, vitamins, fodder seeds and green and dry fodder to the farmers. Provision of all these inputs at fair prices enables farmers to produce milk at lower cost.

Dairy co-operatives have a very important role in promoting co-operative spirit among the people which is very essential for the success of democracy. It helps people to think together, work together, enjoy the fruits of efforts together and even to suffer together. With the strength of unity, it creates a feeling of self-confidence among the common-man.

1.4 Review of Literature

This section is intended to provide an overview of the available literature on the subject. Although much literature is available on several aspects of dairy farming and other related areas, only limited studies are available pertaining to the impacts of dairy co-operatives in Kerala. Almost all studies, however, are related to states like Gujarat, Andhra Pradesh, Tamil Nadu, Punjab, Haryana and Uttar Pradesh. Here they are discussed under two categories.

1.4.1 Studies on General Impact of Dairy Co-operatives

There is a large body of literature on the impact of dairy co-operatives, particularly after 1965. Jain, R.P, Rawat, K.C. and Saxena, B.C. (1965) attempted to quantify the impacts of milk supply schemes on milk marketing, employment generation and fodder production in the co-operative and non-co-operative areas under the Dudhsagar Dairy. The selected villages were divided into (a) experimental villages supplying milk to Dudhsagar Dairy and other co-operative agencies, and (b) control villages where milk is produced but not supplied to co-operative sector. The study found compa-

ratively better production, yield, employment and income under co-operative experimental areas.

Srivastava R.K. (1970) studied the impact of cattle development programmes on the rural economy of Kheda district by way of comparative analysis between cattle development areas consisting of experimental villages having milk co-operatives and control-villages having no milk co-operatives. The study found that in terms of total production, cost and consumption, the experimental villages having milk co-operatives were in a superior position. But the above two studies failed to measure the impacts of dairy co-operatives in comparison to a base year.

Another notable work on the impact of co-operatives on the economics of dairy farming was done by Vyas, V.S and Chaudhari, K.M.(1971). The study was mainly devoted to the economics of dairy clusters of Mehsana district. The study showed the superiority of the dairy co-operatives structure in terms of higher production, better price of milk and lower cost of production, resulting in higher margins to the dairy farmers.

Thakur, D.S.(1975) made an attempt to evaluate the progress of dairy co-operatives and their impacts on the economic condition of the farmers in general and the weaker sections in particular in different villages of Gujarat. The study revealed that the annual income per household in the experimental area was higher by 18 percent than that in the control area. Further, the landless labour was found to earn as much as 65 percent to 76 percent, and small farmers, 25 percent to 30 percent of their income from dairying. This study, however, found that the proportion of income earned from dairying declined with the increase in the size of land holdings. But this study failed to give adequate attention to the impacts of co-operatives in generating employment in the dairy sector.

Patel, S.M., Thakur, D.S and Pandey, M.K. (1975) in their study on the impacts of milk co-operatives in Gujarat examined how the milk co-operatives in Gujarat have succeeded in raising milk production and procurement rapidly over the years. It was found that there was a positive correlation between land holding and yield performance. But unlike the findings of the study in Kerala by George, P.S. and Narayanan Nair, K. it was found that

the weaker sections in the dairy cluster had a larger share of wet milch animals as compared to the medium and large farmers. The study also found that the marketed surplus of milk was higher in the case of landless and small farmers and tended to decrease with the increase in the size of holding.

In an indepth study on the economic impacts of dairy co-operatives in the rural areas of Kaira district, Patel, S.M. and Pandey, M.K. (1979) brought out the following results: (a) the possession of wet animals were higher in the experimental villages served by co-operatives than in the control villages having no dairy co-operatives, (b) the members of dairy co-operatives obtained 20 percent more yield than the non-members, (c) members of dairy co-operatives received 11 percent higher price than non-members, and (d) members obtained remarkably higher income than non-members.

Babubhai Desai (1980) studied dairy co-operatives and benefits typically accruing to the poor. He found that, (a) most of the milk producers were from land holding class, (b) those who owned land were favourably placed as against small and marginal farmers, (c) there was positive correlation between the size of land holding and the number of milch animals, and finally, (d) it was not possible to make dairying profitable for the landless, particularly with purchased inputs.

Tushaar Shah and Mukesh Bhargav (1982) conducted an indepth study in six villages in the district of Sabarkantha (Gujarat),

Periyar (Tamil Nadu) and Bikener (Rajasthan) to examine the economic impacts of dairy co-operatives through structural changes represented by year-round procurement of milk produced in rural areas at remunerative prices and its processing and marketing in urban centres. The study found that by creating a remunerative and year-round market for milk, the dairy co-operatives have been able to generate powerful 'stimuli' for following dairying as a way of livelihood to the rural poor.

A study on co-operative dairying in the Erode Milk-shed Area of Tamil Nadu by Kulandai Swami, V. (1982) brought out the following findings. (a) Members of dairy co-operatives kept more bovines and milch animals than non-members. (b) The average daily milk production was 40 percent higher in the case of members than that of the non-members. (c) The dairy income as a percentage of gross income was higher (23 percent) in the case of members than that of the non-members (15 percent). (d) The average annual income of members from dairying was 103 percent higher than that of non-members, and (e) The man-hours of employment generated per day among the members of dairy co-operatives was 70 percent higher than that among the non-members.

Rande, C.G. Mathur, D.P. Rangarajan, B. and Gupta, V.K. (1984) in their study on the performance of integrated milk co-operatives in Gujarat, found that dairy co-operatives have played an important role in assisting the small farmers by improving their income from dairying. The study also found that it was the dairy co-

operatives that gave inducement to landless labourers for undertaking dairying as a primary occupation.

Rameshan, P.A. (1985) studied the viability of Anand pattern dairy co-operatives in Ernakulam Milk-shed Area. He analysed the same on the basis of membership, working capital and procurement. He found that a viable dairy co-operative society must have a total membership of 107 with a minimum working capital of Rs.6600. Further he noted that a viable society must procure atleast 214 litres of milk a day.

In a thought provoking study, Baviskar, B.S. (1986) proved that the dairy co-operative's role in reducing rural poverty was extremely limited that about 90 percent of the landless labourers did not benefit from dairy farming. He pointed out that limited access to fodder was the major barrier for the landless labourers to benefit from dairy farming. Land owners were better placed to meet their fodder needs. Since fodder was expensive and constituted a major item in the cost of production of milk, feeding animals on purchased fodder alone made it uneconomic for landless labourers.

Vimal, P.Shah (1986) investigated the role of dairy co-operatives as a source of urban contact in Gujarat. The urban contact of villagers were examined in terms of frequency and purpose of their visits to nearby urban centres and visits by different categories of urban residents to these villagers. The

study revealed that dairy co-operatives did not provide opportunities to the rural people for increasing urban contacts. In contrast to the findings of Rande, Mathur, Rangarajan and Gupta in their study on the performance of dairy co-operatives in Gujarat, this study found that dairy co-operatives have not succeeded in any significant manner to induce landless weaker sections to take up dairying as an important source of income.

In a doctoral study on co-operative dairying and rural development in Guntur district, Durgaprasad, P. (1987) reached the following conclusions.(a) Dairy co-operatives have helped dairy farmers in raising their milk production, income and confidence. (b) The co-operatives reduced the element of exploitation by middlemen. (c) Domestic consumption of milk decreased in the case of small and marginal farmers and the landless as compared to the 'past situation' when there was no dairy co-operative in the village. (d) The management of the co-operative society was monopolised by the affluent and the politically influencial group.

Lontan Singh and Chittraraj (1989) conducted a study on the impact of dairy co-operatives on production, consumption and marketed surplus of milk. They found that by providing remunerative price and stable market, dairy co-operatives promoted milk production and marketable surplus. Again, by making milk regularly available at reasonable price, co-operatives have a

positive impact on milk consumption too. Therefore, they suggested that non-covered villages and households should be covered by dairy co-operatives.

In an in-depth study on the impact of dairy co-operatives on income and employment of small and marginal farmers in Chittoor district, Rajendra Naidu, R., Jithendra Babu, V. and Jayachandra,K. (1992) found that dairy co-operatives were very helpful for small and marginal farmers in raising their income and employment. They found an average increase of 25.5 percent in the income of marginal farmers and 22.5 percent in that of small farmers after joining dairy co-operatives.

1.4.2. Studies of Impact on Employment, Cost and Earnings

Reddy, Y.V.R. and Sampath, R.K. (1980) studied the impact of dairy farming on rural economy of Koratagere DPAP area in Gujarat. They studied the net increase in agricultural income resulting from the introduction of dairying along with farming. The study found that the average income of the farmers had increased from 9.5 percent to 52.6 percent owing to the addition of dairying to farming. The actual income of the farmers in the experimental area increased on an average by Rs.1398 per year.

Narayanan Nair, K. (1981) in his study on the bovine holdings in Kerala analysed the factors governing demand and supply of cattle and milk in Kerala. The demand for draught power was found to be decreasing on account of decreasing paddy field, increasing

mechanisation and greater feeding expense. He pointed out that the tremendous increase in milk production in Kerala was due to the revolution in the cross-breeding technology.

In an indepth study on the impact of dairy development programmes on small farmers, marginal farmers and agricultural labourers of Bangalore district, Hirevenkana Gauda, L.V. (1983) found that majority of the small farmers and marginal farmers realised 50 percent of income from dairying while agricultural labourers realised only 25 percent of their income from it. This study further revealed that small and marginal farmers got more income from dairying than agricultural labourers because of better management and the availability of inputs to the former.

Analysing the factors affecting cost of milk production in Hissar, Jabalpur and Udaipur regions, Rekib, A., Handa, D.P. and Rajpal, S.K. (1987) found that differences in the availability of feed, breed and yield were the main reasons for the variation in the cost of production of milk in the three regions. The cost per litre varied by 40 percent from region to region.

A notable study on cattle holdings in Kerala was done by George, P.S. and Narayanan Nair, K. (1988). This study pointed out that even though technological change has resulted in rapid increase in productivity of milch animals and production of

milk, the performance of this sector in recent years has shown a number of disturbing trends like near stagnation in the rate of adoption of crossbreeding, deceleration in the rate of growth in the productivity of milch animals and decline in the profitability of milk production. Difficulty of foreign breeds to adapt to local climate, failure in the genetic technology, defective dairy management, scarcity of pastures, poor feeding and increasing price of feed were cited as the main reasons for the above disturbing trends. Their study found the following association between land holdings and milch animals. (a) The number of cattle holding increased with the increase in size of land holdings. (b) The percentage of milch animals was low in smaller holdings. (c) The percentage of milk marketed declined sharply with increase in size of land holdings. Availability of infrastructure and inputs, buying and selling policy of bovines and higher consumption of milk on the part of the rich and the heavy dependence on dairy income among the poor were found to be the reasons for the above trends.

A doctoral study on dairy management in India by Madan Mohan,C. (1989) revealed a somewhat different position. Firstly, in the case of landless households as well as the large farmers, the proportion of animals in milk to total bovine was found to be higher than in the case of small holders. This was explained by the fact that landless households having no access to their

own free inputs of crop residues could not afford to keep dry animals. Similarly, large farmers considering dairying purely as a commercial business did not keep dry animals and were supposed to sell them off. Secondly, milk yield of cows possessed by the landless households was greater than that of the small and medium holders. This situation was explained on the ground that the landless households put more care than the small and marginal farmers and produced greater yield. Thirdly, the performance of large farmers was found to be the best, thanks to mainly the better quality of animals and access to feed.

Agarwal, V.K. (1990) made an analysis of factors affecting the selling price of milk. He found that cost of production of milk was only one of the factors determining the selling price of milk. Other factors affecting milk price were found to be demand and supply conditions of milk, seasonal and climatic conditions of the region, distance between the place of production and that of consumption, availability of transport facilities, quality of milk, profit margin of middle-men and government policy.

A study on the role of women in dairy development by Usha Rani, T., Chandra Reddy, T. and Nageswara Rao, A.(1991) found that the role of women in dairying has increased considerably after they became members of dairy co-operatives. Female participation has more than doubled in terms of hours of work

and their income has increased by nearly 150 percent.

Wani, S.A. and Mathur, S.C. (1992), from their study on relative efficiency of milk marketing channels in rural Kashmir, found that producer's share in the final price was only 61 percent. The low share of the producers was attributed mainly to the unorganised nature of the dairy industry. For more remunerative price, they emphasised the need for organising dairy enterprise through co-operatives.

From the above brief analysis of the available literature on the subject, it can be seen that almost all studies are conducted in other states. There is practically no study in Kerala, especially in Idukki district relating to the impact of dairy co-operatives on dairy farmers. Heavy dependence on dairy farming within a co-operative framework in the district calls for an indepth study on the impacts of dairy co-operatives on the dairy farmers in improving their employment, income and standard of living. Along with this, the economics of dairy farming and the specific problems of dairy farmers are also included in this study.

1.5. Statement of the Problem

Idukki is generally considered as a backward district of Kerala. Educational and Industrial backwardness of the district together with heavy dependence on agriculture results in large scale disguised unemployment. The large geographical area of the district with extensive pastures and cold climate provides ample scope for dairying as a good source of employment and income. However, marketing of the rurally produced milk has been a chronic problem to the dairy farmers

in the district. Considering the vast scope for dairying on the one side, and limited size of market on the other, the Government has introduced several dairy development schemes and established a number of dairy co-operatives in the district. They have been established to market the rurally produced milk in the urban areas and to provide various inputs to dairy farmers at reasonable rates. By improving employment, income and living standard of the rural dairy farmers, they are expected to play an important role in the economic upliftment of the farmers. However, no study has been conducted to assess the economic impacts of dairy co-operatives, that is, how far dairy co-operatives have succeeded in improving the lot of dairy farmers.

At the same time, it is also a fact that the dairy co-operatives have not reached all farmers in the district. Further, it is alleged that even the existing societies have not succeeded in providing all the inputs and services expected of them. In addition to these, the pricing policy followed by the co-operatives is also believed to be not quite favourable to the farmers. It is significant to note that none of these problems has been studied by the Dairy Development Department or the Kerala Co-operative Milk Marketing Federation.

Viewed in this background, the need for an indepth study of the working of dairy co-operatives, their impact on dairy farmers, problems of dairy farmers, etc., is obvious. The present study is an earnest attempt in this direction.

1.6 Objectives of the Study

The general objective of the study is to assess the economic impacts of dairy co-operatives on improving the lot of the dairy farmers in Idukki district. The specific objectives of the study are the following.

1. To evaluate the role of dairy co-operatives in the dairy development in Idukki district.
2. To examine the input services provided by dairy co-operatives to dairy farmers.
3. To measure the impacts of dairy co-operatives in creating employment, raising milk production, income, consumption level and the general standard of living of the farmers.
4. To study the cost and return from dairy farming, and
5. To identify the problems of dairy farmers in the district.

1.7 Hypotheses

1. By providing timely inputs and services and by creating a ready and year-round market for milk, the dairy co-operatives have generated a powerful stimulus for dairying in Idukki district.
2. Dairy co-operatives have substantial impact on increasing employment, milk production, income, consumption level and general standard of living of the farmers.

1.8 Data Base and Methodology

The study was conducted in Idukki district because dairying and dairy co-operatives have a very important role in the district, especially after the collapse of the pepper economy of the district. The number of bovine per 1000 population in the district is one of the highest in Kerala and dairying is the main source of livelihood for a large number of farmers. The study involved various

areas like impacts on input supply, milk production, milk consumption, milk marketing, employment generation, self-confidence and co-operative and democratic way of living.

A comparative study of the farmers belonging to the society and non-society area[14] was done to assess the economic impact of dairy co-operatives in the district. The study was conducted among a total number of 350 sample households consisting of 250 households belonging to dairy co-operatives from the society area and 100 households from the dairy farmers belonging to the non-society area. The sample households were taken only from those farmers who follow dairying for the last six years.

Sample households from the society area were taken from all the four taluks of the district, viz, Udumbanchola, Devicolam, Peerumede and Thodupuzha by multi-stage random sampling method. Societies were first divided into Anand pattern dairy co-operatives (APCOS)[15] and traditional societies (TS).[16] There were 32 APCOS and 18 TS in Idukki district which were established before 1988 and still functioning. These societies were further

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14. Society area: Area of the district where dairying and dairy co-operatives are well-developed.
    Non-society area: Area of the district where dairying is widespread but no dairy co-operative exist.
15. Three-tier societies established under the control of Kerala Co-operative Milk Marketing Federation, according to the pattern of societies existing in Anand, Gujarat.
16. Dairy co-operative societies which are traditionally existing in Kerala.

classified into four groups on the basis of the quantity of daily procurement of milk as procuring (a) below 200 litres (b) 201-750 litres (c) 751-1500 litres and (d) above 1500 litres. Among the APCOS, ten societies came under the first group, seven under the second group, eleven under the third group and four under the fourth group. From these, eight APCOS were randomly selected, consisting of two from the first group, two from the second group, three from the third group and one from the fourth group. The selected societies were located at Nediyasala, Karimkunnam, Chettukuzhy, Vellaramkunnu, Anakkara, Mandhippara, Puttady and Nettithozhu villages.

Similarly, T S were also classified into four groups on the basis of the above criterion. One society each was selected at random from each group. They were Vazhithala from the first group, Rajakkad from the second group, Pottenkad from the third group and Ellackal from the fourth group.

For taking the sample households from these societies, the households were divided into three groups based on the number of milch animals possessed, that is, (1) those possessing one milch animal, (2) those possessing two milch animals, and (3) those possessing three or more milch animals. From these three groups, a total of 150 households from the APCOS and 100 households from the T S were selected at random proportionate to the number of households belonging to each group. The final selection of the

sample households from each society was in proportion to the number of households supplying milk to the society atleast for the last five years.

Sample households from the non-society area were selected from Kanthalloor and Keezhanthoor panchayats which belong to Devicolam taluk of the district. Here also sample households were selected according to multi-stage random sampling method. In the first stage, two panchayats from the non-society area were selected. In the second stage, two wards each from these two panchayats were selected and in the third stage, 100 households following dairying for the last six years were selected, proportionate to the number of milch animals possessed.[17]

From these selected sample households, primary data required for the study were collected by using a detailed schedule. Primary data so collected were supplemented by personal interviews and discussions with experts and officials in the dairy field.

The study is also based on secondary data. The major sources of secondary data were the Directorate of Dairy Development, Thiruvananthapuram, Directorate of Animal Husbandry, Thiruvananthapuram, Directorate of Economics and Statistics, Thiruvananthapuram,

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17. Same propotion as in the society area was selected.

Directorate of Census, Thiruvananthapuram, Kerala Livestock Development Board, Thiruvananthapuram, State Planning Board, Thiruvananthapuram, Kerala Co-operative Milk Marketing Federation, Thiruvananthapuram, District Statistical Office, Thodupuzha, District Dairy Development Office, Thodupuzha and from various journals and other publications.

For the empirical analysis of the data, statistical tools such as simple regression and discriminant analysis were used in the study.

1.9. Limitations of the study

The economic impact of dairy co-operatives is spread over dairy farmers, milk consumers, co-operative employees and input suppliers. But because of lack of time and resources, the study is confined to the impacts on farmers alone, which, indeed, is a major limitation.

Lack of up-to-date data was another problem faced by the researcher. Though there has been tremendous increase in the bovine population of the district during the last seven years, no secondary data on bovine population are available after 1987. Similarly, as some pieces of information collected were from the personal memories of the farmers and not from recorded sources, they need not be 100 percent reliable.

Another limitation of the study is that the monetary impacts of dairy co-operatives on the farmers are studied in current prices and not in constant prices. Some other factors also might have influenced the dairy farmers, but they were not taken into account as they were only minor factors.

1.10. Scheme of the study

The study is presented in nine chapters. The first chapter gives an introduction to the study. Importance of dairying and dairy co-operatives, statement of the problem, review of literature, objectives of the study, hypothesis, methodology, limitations of the study and scheme of the study are presented in this chapter.

A brief review of development in the dairy sector in the state under the Five Year Plans is given in the second chapter. Organisation and development of dairy co-operatives in Kerala, dairy development under the plans, investment on animal husbandry and dairying under the plans, growth of milk production and per capita availability of milk are also explained in this chapter.

Dairy development in Idukki district is explained in the third chapter. Importance of dairying in the district, expenditure on animal husbandry and dairying in the district and the growth of milk production and dairy co-operatives in the district are explained in this chapter. This chapter also gives a brief

profile of the district including geographical features, land use pattern, employment and earnings, district income and per-capita income.

The fourth chapter gives a brief profile of the study-area and sample households. General facilities of the villages, details of sample societies, occupational status of sample households, details of literacy, housing, pattern of land and livestock holdings, income and consumption, etc. are explained in this chapter.

An analysis of production, marketing and animal health care is made in the fifth chapter. Details of production, marketing channels, mode of payment, consumption of milk, animal healthcare facilities, etc. are further highlighted in this chapter.

The economics of dairy farming in the district is analysed in the sixth chapter. This chapter discusses the costs and returns from dairying by excluding and including labour charges and costs incurred during the dry period.

Chapter seven discusses the impact of dairy co-operatives. The impacts of co-operatives on employment, production of milk, income, self confidence, self reliance and co-operative and democratic way of life are analysed in this chapter.

The impacts are explained in comparison with dairy farmers belonging to the non-society area.

Problems of dairy farmers belonging to both society and non-society areas are explained in the eighth chapter together with organisational problems.

The last chapter gives the summary of findings, conclusion and suggestions of the study.