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## Milk Marketing in North East India: Experiences from Assam

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### **Abstract:**

*Dairying in India is growing fast but faces problems of high input and low output prices leading to lower profitability. Due to globalization and the impact of world milk price changes, dairy farmers need to find ways of reducing costs and increasing returns in order to be more competitive. The study has addressed the issues associated with the alternative milk market chains and their implications on small dairy farmers. It is observed that modern milk market chains especially the milk co-operatives have grown significantly across the country. The study has shown that in spite of growing presence of modern milk supply chains, the traditional milk supply is still dominant. The empirical evidence does not appear to support the perceptions of exploitative nature of the traditional milk market agents. The traditional milk processing seems to offer good opportunities for the small and resource poor milk producers and traders to enhance their income. The traditional milk sector should be addressed in a constructive manner and the policies should be evolved which would allow informal players improve their performance including quality control and their integration with the emerging modern milk supply chains. A vibrant dairy sector, recognized for its role as a sustainable 'milky route' to food / livelihood security, better human health and efficient enterprise growth for inclusive development. The results of the study indicate that 80 percent of the milk produced by the rural producer of an organized sector and the remaining 20 per cent is handled by an organized sector.*

**Keywords:** Milk market chains, Milk co-operatives, Modern milk supply chains, Traditional milk sector, Vibrant Dairy sector, Inclusive development

### **1. Introduction**

The dairying has been considered as a potential means of alleviating large scale unemployment especially in rural areas. Dairying in India is growing fast but faces problems of high input and low output prices leading to lower profitability. The food marketing has been undergoing a paradigm shift in India and the emergence of integrated food supply chains is one of the fast growing and most visible market phenomena. Yet, about 80 per cent of marketed milk still passes through the traditional channels of handling raw milk and traditionally produced milk products (Kumar and Staal, 2010). These traditional and informal milk marketing chains often provide the main outlet for smallholder dairy producers and major source of fresh milk supply for consumers. The emergence of modern milk marketing chains is posing stiff competition for the existence of traditional milk market agents. 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 in spite 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. The criticism about the functioning of traditional/informal milk market is mainly built on the perceptions and not backed by the hard core empirical evidences.

In-depth understanding of the traditional milk marketing would be useful in evolving policies and strategies for the development of an efficient milk value chain. In India dairying has entered in new millennium with flying colours. It ranks first with 185 million cattle and 97 million buffaloes (total 282 million) accounting for about 51 per cent of Asia and 19 per cent world bovine population. It has played a prominent role not only in household nutrition security but also in strengthening our rural activity. Today, milk is the leading agricultural produce, contributing more than 9 per cent to India's GNP. But the unique feature of the system is that to million rural families are engaged in milk production in India, as against a small population which runs the large specialized dairy farmers in the western world.

Market oriented smallholder dairying offers significant scope for diversification and augmenting income and employment generation for small and marginal farmers. Like any other enterprise, the profitability and sustainability of dairy production depends upon its cost structure and a remunerative price, for which a good marketing outlet is crucial. Indian dairy sector has made remarkable progress over the last few decades. The co-operative movement, especially Operation Flood, has been an important driver of this progress and has played an important role in facilitating the participation of smallholders in this expanding sector. Thus dairy farming has now emerged as an important income generating activity and a source of mass employment in rural areas in the tune of white revolution.

The demand for milk is increasing rapidly in the country. This is primarily due to increasing population and growing incomes accruing from the multitude of central schemes launched for livelihood and employment generation. If we by the emerging trend, the demand for milk is likely to be about 155 million tons by the end of 12<sup>th</sup> five year plan and in the range of 200-210 million tons in 2021-22. Annual average increase in the production of milk over the last 10 years has been around 3.5 million tons per annum whereas there is a need to reach an average of 6 million tons per year over the 12 years to meet the ever increasing demand.

### *1.1. Rationale of Study*

Dairying is an important source of subsidiary income for the farmers. The manure from the animals provides acute source of organic matter for improving the crop fertility and crop yield. With the increasing population and decrease in land holding size seen amongst most of the farmers in North Eastern Region, more and more people are becoming unemployed. The problem has become even more acute among the rural poor due to the saturation of job. This has been the major reason evidently seen in the North Eastern Region scenario. So, it has been widely recognized that dairy husbandry sector can provide job opportunity to the educated unemployed persons. The commercial dairy units are coming up these days in a big way and provide full time job opportunities to a large number of rural poor. These units deal with the scientific lines and helps in improving the availability of milk and milk products in a considerable proportion which consequently will have greater export potential

Dairy cooperative is basically a useful marketing institution as it increases the bargaining power of individual farmers and provides a sound infrastructure for dairy development. Co-operative milk marketing has a relatively strong hold in the states of Gujrat, Rajasthan, Maharashtra, Tamilnadu, and Karnataka Dairy co-operatives have a particularly low profile in the eastern and northern parts of the country. Cooperative milk unions have been organized in several parts of the country and have tackled successfully the twin's problems of marketing the rurally produced milk and of supplying good quality of milk to the urban population. The successful implementation of Operation Flood between 1970-1996 has brought India to the forefront of milk production in the world. But the benefits of (OF) by and large could not reach Eastern and North-East India primarily due to the reason that "OF" was confined to those regions which were better endowed and relatively higher in productivity with easy access to urban and peri-urban markets. It is evident from the facts that dairy development programs have not received the impetus they deserve in the region.

### *1.2. Review of Literature*

The study of dairy farming has been virtually ignored by our researchers and the material generated on this aspect is both insufficient and insignificant. Some books, journals and isolated papers have been written in the country but all attempts are independent, isolated and fragmented peace meals. Efforts have been made to work out the optimum or desirable number of milch cattle population from the foods of crop and animal origin. In recent years, scholars have also examined the problems and prospects of developing dairying as an instrument of economic change in rural areas. Attempts have been made to study the production and cost functions relating to milk production from the cows. These are some basic approaches in the studies undertaken so far to analyse the economic aspects of the dairy sub-sectors. However, some efforts have also been made to identify the economics of processing and marketing of milk and milk products. Mention maybe made of G.H. powel's book "co-operation in Agriculture", J.D. black's "production Economics", K. R. Kulkarni's Theory and Practice of co-operation in india and Abroad, Goyel's 'some aspects of Co-operative Farming in India, 'Operation flood and social science Research' in Economic and Political weekly xvii(27)1983 an and Chakravarti's 'some Apects of inequality in Rural India(1983)', R.R. Patel's 'Milk production, Consumption and Market Surplus in some villages Around Karnal', Anil Bhuimali's 'The Experiments and Prospects of Rural Co-operatives in west Bengal' and so on.

### *1.3. Objectives*

Keeping the views and information at hand, specific objectives of the study are as follows:

- To examine the structure of milk production and milk marketing chain in Assam of North East India .
- To investigate the marketing setup for the milk sector.
- To highlight the constraints to milk marketing channels
- To identify the drivers for participation in milk supply chain and value addition.
- To built village level institutions in Co-operative sector to manage the dairy activities.
- Finally, to suggest strategies, Policies and recommendations.

### *1.4. Methodology*

- **Study Area:** Assam is chosen as the representative area of North Eastern states of india for the empirical study. Assam a North Eastern state of India comprises an area of 78,523 square kilometers (30,318 square miles) with diverged topographical range. Based on rainfall, terrain and soil characteristics the state is divided into six agro-climatic zones. On the basis of topography, climate, land endowment, water, forest resources and the human resources, the state of Assam has the suitability of exploring scientific dairy farming practices. Assam is the most populous of the eight sister States of North East India and has much in common with the many areas in India, especially those that are more remote and poor, where the dairy cooperative model has been tried but not proven successful yet large-scale commercial dairy has also limited penetration.

### 1.5. Data Source

The present study is basically empirical in nature. Data for the study have been collected mainly through opinion survey method supplemented by secondary. The secondary data, are mainly collected from web articles, Journals, Indian Dairy Year Book, Indian Dairy Man, Indian Journal of Dairy, FAO Year Book Dairy India 1997, Ministry of Agriculture and Ministry of Commerce, New Delhi, Others Agricultural and allied Journals

### 1.6. Limitation of Study

Week data base, lack of needed information, lack of updated information technology, and lack of extensive research and development it has become difficult to make in-depth study on this sector. Further it is impossible to cover all the aspects of milk sector with in limited time. A much larger and extensive study is required to explore the issues and challenges of the supply chain of milk marketing.

## 2. Materials and Discussion

### 2.1. Milk Sector in Assam (A Glance)

The milk production of the state has shown a gradual increase from 1986-87 to 2005-06. The production however, decreased to 751 million tons during 2006-07 from 821 million tons in the year 2005-06. The per capita availability of milk during 2006-07 was 70gm/day in comparison to the all India figure of 246gm/day. As per 2003 livestock census the total milch bovine population of the state is 2808 thousands. Considering per capita availability and suggested nutritional requirement as well as population based demand projection, milk production in Assam leaves a huge gap with actual demand. As the demand grows, traditional dairy activity in many pockets has transformed to small and medium scale commercial dairy activity. Commercial dairy farming plays significant role in generating gainful employment in the rural sector, particularly among the landless, small & marginal farmers and women besides providing cheap and nutritious food to the growing human population.

Despite these favourable natural endowments, Assam has been a low milk production state. One of the basic reasons being that the indigenous cows are low milk yielders. As unorganized sector is predominant in milk trading in Assam and likely to remain so for next couple of years, there is justification of actions aimed at building the capacity of unorganized sector to immediately address the growing concerns related to milk and milk based food hygiene and safety. The commercial dairy farms concentrate mostly in the urban /peri-urban areas due to easy access to market and accessibility to required inputs. Urban / Peri urban commercial farming is mostly dominated by traditional dairy farmers of Nepalese community. The farms are small to Medium in size. Most preferred breeds in the region are Jersey and Holstein Friesian. The farmers in general follow a management style which is a blend of inherited traditional knowledge and modern scientific understanding. A critical observation regarding marketing is the fact that only 26.29 % of total milk produced by the respondents was channelized through cooperative or organized marketing route.

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Poor rural infrastructure coupled with dispersed nature of farms in the state is one of the greatest hindrances to efficient quality milk procurement from interior areas to urban processing centers. Milk quality is directly related to the time required from production to processing. Identifying the strong consumer demand for whole milk and customer convenience as the root cause of growing unorganized trading of unpasteurized milk in the state, the policy attempts to highlight the need for innovation in milk marketing preferably involving private organization

### 2.2. Identifying Problems

The study has identified a number of problems faced by the milk farms. The major problems faced by the milk farmers include small herd strengths, small land holdings, shortages of green and dry fodder, low productivity of animals, non-availability of timely inputs for breeding, feeding and health care of animals, lack of suitable education/training for skill development for new viable and sustainable technology, inadequate finances, poor rural infrastructure facilities and lack of proper marketing support for their produce.

### 2.3. Milk Marketing Chain

A marketing system is an important means for raise the income levels of milk producers, which ultimately decides production of milk in the area. Efficiency of marketing depends, generally on number of channels of middlemen and functionaries through which a commodity is being marketed. The share of consumer rupee received by the producer, depends on the number of marketing channels exists, between the point of production to point of consumption, as each middlemen needs to pay for their services. Hence, it is necessary to study the marketing channels of each product to optimize the number of middlemen so that share of producer in consumer's rupee, can be maximized to induct more area under a crop. The profitability of dairy enterprise depends upon cost structure and a remunerative price for which a good marketing outlet is crucial. Milk is procured, processed

and sold by various agents involved in the dairy business from the point of production to consumption either as fresh liquid milk or processed milk products. Conventionally, these agents engaged in milk marketing have been classified into 'Organized or Formal' and 'Unorganized or informal'.

The dominance of informal market agents (Vendor, Middlemen so on) in marketing of milk and milk products in India is likely to continue in the foreseeable future. It is therefore important to understand the dynamics of various marketing channels, including buying and selling behavior of buyers and sellers, marketing efficiency and the ability of different market agents in reaching out to the poor producers and consumers. Surprisingly little systematic work is available on these aspects and whatever little work has been done either lacks methodological rigor or has very narrow conceptual and geographical coverage.

#### *2.4. Milk Marketing Channels in India*

India has co-existing organized and unorganized sectors for the marketing of milk and milk products. The informal or traditional milk market sector, comprised of the marketing of raw milk and traditional products such as locally manufactured ghee, fresh cheese, and sweets. The organized or formal sector is relatively new in historical terms, and consists of Western-style dairy processing based on pasteurization. Considering the present needs and situation, it is better to understand the new type of informal sector which competes with the organized sector ( co-operative and modern style private factories) in the field of processing, procurement and marketing of milk and milk products. Although the share of organized market has steadily increased over the last four decades, the informal sector still accounts for a very large proportion of marketed milk in the country. In a nutshell, the reviewed studies suggested that while the informal sector scores over the formal sector by virtue of the fact that in many areas it is the only marketing channel open to the rural producer and other factors related to, paying slightly higher prices, offering short term instant cash credit and providing milk collection service at farmer doorstep, the formal sector provides an assured and permanent market as well as an number of other livestock support services. Nowadays, both the private sector and the cooperatives drive the value chains.

The informal sector consists of the village milk vendors who procure loose milk from farmers and sell it in urban and peri-urban areas directly to consumers, small private processors or hotels. The milk vendors also may sell processed products, such as paneer or separated cream. The quality of the vendors' milk and milk products is not guaranteed. Largely sold in loose form, it is often adulterated with several additives to control spoilage.

#### *2.5. Milk Marketing Chain in Assam ( A Look)*

Dairying is an important component of mixed farming systems in Assam. About 82% of rural households in Assam keep cattle or buffalo. The predominance is for cattle, with only 5% of the households keeping buffalo. However, milk productivity is very low in the state. The average milk yield of indigenous cattle, crossbred cattle and buffalo is far below the national average. In Assam, dairying is characterized mostly by rural smallholders' production using indigenous cattle and buffalo, with pockets of specialized dairy production using improved dairy cattle in the peri-urban areas and in certain rural zones having better market access. While the increasing farm-level production and productivity will require more improved animals, improved fodder/feed technology, and access to livestock services, smallholders' access to reliable markets to absorb more milk at remunerative prices may remain a critical constraint. Organized marketing of milk in Assam remains insignificant, despite efforts in the past to develop and promote collective market mechanisms. Formal pasteurized milk and dairy product channels, both cooperative and private, account for only about 3% of the total locally-produced marketed milk. The traditional market, either for fresh liquid milk or importantly, for traditional products such as sweets, thus accounts for about 97% of the market opportunities for farmers. For smallholder producers in areas with poor market access there are likely to be no alternative market options, besides the traditional market. Developments in the traditional market will be extremely important for the Assam dairy sub-sector, and a set of interventions that could facilitate improvements in that market could complement the ongoing efforts to develop cooperative organized milk markets. traditional market will be extremely important for the Assam dairy sub-sector, and a set of interventions that could facilitate improvements in that market could complement the ongoing efforts to develop cooperative organized milk markets. In some parts of Assam, rural farmers still have primary milk producers' societies and use that channel to market milk. Since there is very little processing of milk, and that too virtually restricted to Kamrup district, marketing of milk by the rural farmer is not at all easy. Most of the rural farmers all over Assam depend on middlemen for marketing of milk. Consequently, they are exploited by the middlemen. Out of the 3 Milk Unions, which had been set up, only WAMUL (West Assam Cooperative Milk Producers' Union Ltd.) is functional, but that too is functioning at a small percentage of its capacity. The failure of the Milk Unions has rendered a huge chunk of the primary co-operative societies non-functional. That apart, delays in payment from the WAMUL Milk Union forcing farmers to look for alternative options. Even the co-operative members are not selling their entire produce to the Union. In Kamrup district, Central Dairy under the Directorate of Dairy Development also has constraints with regard to timely payments and hence the farmers are supplying to them in a limited way. In other parts of Assam like Jorhat and Silchar, some of the primary milk producing societies, which are still functional, are marketing the milk locally, because there are no milk processing units in the area. As such marketing of milk for rural farmers all over Assam is a major problem and unless processing & preservation needs are addressed it is likely to remain so.

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The societies in most parts of Assam are selling their milk locally without selling it to any middleman or Processing unit. In Kamrup district, some farmers are selling part of their produce to the Milk Union or Central Dairy, which in turn process the milk and then market it through retailers. Even in this district most members use the distribution channel of middlemen to sell part of their produce. Therefore all over Assam there are a huge number of rural farmers who are using the distribution channels comprising of middlemen. Only in some areas do the rural farmers have access to urban pockets and are able to reach the consumer directly without the aid of middlemen.

Consumers play a vital role in the marketing of milk. It is seen about 80 per cent of fresh milk produced in these lagging rural economies are consumed non-pasteurized fresh milk in different habitations. No sort of processing of this fresh milk for their preservation for a number of days exists for the benefit of these producers. If infrastructural facilities such as refrigerated vehicles and new technology of processing exist, milk production and availability will be assured. Such institutional support should aim at safeguarding the interests of producers as well as consumers of milk.

On the basis of the detailed examination of the current status of technology in production, processing, transportation and marketing of milk, the present study has made some detailed recommendations in the form of an action plan to facilitate the formulation of appropriate policy strategy in the short, medium and long term for the dairying sector.

The dairy development department, which looks after the milk collection and processing and distribution on the other hand, renders its services through 8 numbers of dairy processing plants and 11 numbers of chilling plants. However majority of these processing and chilling plants are currently under renovation and steps are being initiated in some cases to run the plants on Private Public Partnership mode.

### 3. Observations and Finding

The milk-producing households in the rural Assam, on an average, produce about 1.5- 2.0 litres of milk per day. Taking into account that this low level of milk production will lead to low marketed surplus, the steps for collective pouring of milk at the producers' level need to be planned as part of the collection mechanism.

Key findings were that dairy production was dominated by rural smallholder production using indigenous cattle and buffalo, and demand for milk and milk products (especially sweets) is increasing. Currently production, distribution and processing is dominated by the small-scale, informal, traditional sector. Most urban and rural households usually or occasionally consume fresh milk, which mostly originates from the smallholder sector. The traditional milk market, comprising unprocessed milk and traditionally processed dairy products, sold 97% of all milk and dairy products in the State with the remaining 3% being sold by the formal milk market. However, because producers on average sell only 17% of the milk they produce, the local market only supplies 66% of total consumption. The rest is supplied by dairy products imported from outside the State. However, both milk production and productivity are low by national standards, and nearly a third of dairy products are imported. Small farmers have strong potential to increase production and the high demand-supply gap implies increasing the capacity of farmers and traders to supply quality milk has a high *a priori* probability of success.

The study revealed dairy production to be a feasible option in Assam for raising incomes and improving livelihood opportunities, particularly for the rural poor. While recording a huge gap between demand of mostly raw milk, milk products and their supply, it suggested for dairy interventions through adoption of cluster approach addressing issues related to productivity, access to livestock services and markets and improved milk quality in the traditional sector.

According to survey many farmers expressed a desire to involve themselves in increased marketed milk production, but low milk yield and inadequate marketing infrastructure were identified as major obstacles. It highlighted the fact that government of Assam have been making efforts to bring smallholders into collective market mechanisms, but marketing of milk through the processed milk channel remains relatively insignificant and smallholders receive little remuneration.

The study cautioned that dairy systems in Assam may be too diverse to have a singular policy thrust. The report of study states: 'We need to recognize such diversities of the system and place them within pro-poor dairy intervention designs and enable poor households to take part in the process.' A Pro poor inclusive dairy development plan should necessarily address the problems faced by the traditional sector. In this context, the study documented the fact that most of the milk consumed in Assam is 'raw' unpasteurized milk supplied by smallholders which also indicates the consumer preference for whole fresh milk.

It is scientifically observed that the vast majority of indigenous / cross bred dairy cattle in Assam suffers from nutritional / mineral deficiency in lean seasons or post flood period besides high incidence of worm infestation. These deficiencies coupled with worm infestation leads to poor health and reproductive abilities thus jeopardizing publicly funded grading initiatives. The policy therefore suggests focused actions aimed at generation of awareness for appropriate feeding, development of regulated market for enriched crop residues and facilitation of production and distribution of mineral mixtures.

Study on cost of production conducted amongst commercial dairy farms in and around Guwahati – the capital, reveals that profitability of urban /peri urban farms are at stake due to high cost of production. The efficiency of these farms is also showing a decreasing trend as animals are being reared under unhygienic / unscientific housing conditions.

#### 4. Conclusions and Recommendations

Dairy has a lot of potential to improve rural incomes, nutrition and women empowerment, and hence is a very critical area for investment. A well-developed industry will enable millions of farmers to capitalize on the emerging opportunities and make a significant impact on rural incomes. Given the overwhelming predominance of the informal dairy sector in Assam, the limited success of attempts to develop the formal milk sector, and the lack of any marked difference in the two sectors to comply with milk safety standards, we recommend the support and promotion of small-holder dairying in Assam. This support should include training of all milk chain actors to improve milk handling practices, recognition of training by authorities along with a branding and certification scheme to provide incentives for milk chain actors to participate in training, and awareness-raising of consumers to increase demand and willingness to pay for safe milk.

Given the overwhelming predominance of the informal dairy sector in Assam, the limited success of attempts to develop the formal milk sector, and the lack of any marked difference in the two sectors to comply with milk safety standards, we recommend the support and promotion of small-holder dairying in Assam. This support should include training of all milk chain actors to improve milk handling practices, recognition of training by authorities along with a branding and certification scheme to provide incentives for milk chain actors to participate in training, and awareness-raising of consumers to increase demand and willingness to pay for safe milk.

Major areas of intervention in the dairy sector have been highlighted in this review. Carrying out interventions requires resources and commitment from key actors – government, NGOs, development agencies and the National Dairy Development Board – to partner and work together.

The low marketed surplus of milk in Assam makes the logistics of its collection from rural areas more complex and expensive. In this regard, the government should organize the SHGs/DCS and motivate the farmers to supply milk to the organized sector. component of the dairy development under the AACP, has started showing positive results. Such efforts will also help in attracting private investments in dairy processing sector. In nutshell, instead of piecemeal efforts, a holistic approach is required for boosting the formal milk processing sector in Assam and effectively linking the milk producers in the value chain.

##### 4.1. Policy Prescriptions

Dairy sector needs a big push in these lagging rural economies. For creating institutional capacity building, for efficient and sound milk marketing the proper planning of small scale dairying is strongly advocated. It can take care of food security of the lagging rural economies of the country as a whole.

The necessary infrastructure (chilling plant, fodder bank, updated breeding centers & veterinary care, research & extension services, refrigerated transportation system etc.) as well as the skilled manpower at this stage is strongly advocated for the dairy development in the state.

A network of cooperative processing of milk and milk products and marketing with professional management right in the villages would have established the state as strong milk and milk product exporting area. With correct planning, proper reforms and matching infrastructural facilities it is possible to shift the main productivity centre from town to villages with professional management of cooperatives.

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