Chapter 5

Milk Procurement, Pricing Policy and Financial Support

Objective: *To improve knowledge of the students about milk procurement, milk procurement systems, costs of milk procurement and animal insurance.*

Introduction

To increase the procurement of milk depends on the pricing policy of milk, risk coverage of milch animals through livestock insurance and financial support. This chapter dwell upon these issues to highlight their importance in the dynamics of milk production and procurement.

Milk procurement

Milk procured is the quantity of milk purchased from dairy farmers by the marketing agencies such as private milk processing plants, dairy cooperatives, milk vendors, etc. Generally, milk procured is analysed with respect to time period and a particular type of marketing agency e.g. milk procured by cooperatives in a day or milk procured by private milk processing plants in a month and the relative value of milk procured (percentage) is more important than the absolute value (litres). For instance, the dairy cooperative societies procure 18 per cent of the total milk produced in the country in

a year. The total milk procured by all marketing agencies is equal to marketed surplus (quantity of milk actually sold in the market after consumption).

Whereas, the term 'milk procurement' is the overall system of procuring milk which includes collection, transportation and storage of milk from farm to the plant. If the distance between farm and the plant is long, the procured milk also needs to be chilled during transportation or at a place to avoid spoilage. In that case, chilling also become part of milk procurement. The whole process of milk procurement and its costs have been discussed in the latter part of the chapter. Since milk procured has direct bearing on surplus of milk available, it is important to know, at this point, how to estimate the milk potential areas for surplus.

Surveys of Milk Potential Areas for Surplus

The milk potential areas for surplus are, collectively, termed as Milk Shed Area. In other words, it is total area from where surplus milk is collected for marketing & processing. Milk shed area may be group of village, a block or even district depending on surplus quantity of milk available for procurement. The question, whether the milk processing plant will get sufficient supply of the milk regularly throughout the year, could be answered by the surveys for milk potential area for surplus. It is comprised of assessing seasonal total production and consumption of milk in particular area. The preliminary survey is conducted on following aspects of milk production and consumption:

- Existing cattle and buffalo population.
- Productivity and utilization/disposal pattern of milk and milk product.
- Different marketing channels for surplus milk.
- Returns from the sale of milk realised by the farmers.
- Agricultural facilities and production patterns.
- Basic dairy based infrastructure such as processing etc.
- Performance of other institutions including multipurpose cooperatives etc.
- Different communities living in a village and their inter-relationship.
- Other relevant information if any.

Once the milk potential areas are located detailed survey is conducted i.e. door to door survey about the milk production, surplus milk with the family, whether they are interested to sell the milk to the society or not, infrastructure needed for enhancement of milk production, etc. After detailed survey, possible milk routes are identified so as to cover all the milk potential areas. In selecting the routes, the major considerations are the time and the cost so that from the starting point, the vehicle loading the milk from different collection centres reaches milk chilling centres (or) milk processing plants at lesser cost without allowing the milk to spoil.

Systems of Milk Procurement

The success of any dairy project depends on a well planned and organised system of milk procurement. In the case where procurement system is not well established dairy plants remains underutilized and the cost of processing will increase. A well planned milk procurement system has the following advantages:

1. An assured market for milk round the year.
2. Full capacity utilization of the dairy plant.
3. Increase milk production and processing at reasonable cost.

As mentioned above in the Chapter, milk procurement is comprised of whole systems of milk collection, preservation, transportation and chilling. The milk procurement systems are the different arrangements of these activities depending on the quantity of milk procured and the size of milk shed area. Some of the possible milk procurement systems are as following:

1. Collection-transportation-processing.
2. Collection-preservation-transportation-processing.
3. Collection-preservation-transportation-chilling transportation-processing.
4. Collection-transportation-chilling-transportation-processing.

All activities of milk procurement have its own modus operandi.

Collection: Collection of surplus milk from farmers has dimensions like number of milk collection centres, frequency of milk collection and mode of payment. A milk collection centre is a focal point from where milk procurement agency (marketing agency) receives milk from farmers and note down the quantity and quality of milk processed. The

number of milk collection centres are decided to reduce the time and increase the quantity procured. If the milk surplus is large in quantity and there is no provision of preservation/storage, the frequency of milk collection would be more than once in a day. It is also due to the fact that milking is done twice in a day. If the milk surplus is less and there is a provision of storage, milk may be collected only once in a day. For the storage and preservation of milk, some of the milk collection centres have been provided the milk cooler, popularly known as the Bulk Coolers. A bulk cooler is both electric and diesel operated and can store milk from 500 litres to 3000 litres which may go up to 10,000 litres depending upon the type of cooler. The payment to the farmer for the milk procured is made either weekly, fortnightly or monthly.

The costs incurred in milk collection are on weighing, fat measurement equipment, stationary, human labour, cooling, electricity and detergents. The marketing agencies try to lower the total cost of milk collection by reducing the milk collection centres and pooling of resources like weighing machine and quality measurement equipments.

Transportation: After collection, milk is transported either to the processing plant or to the chilling plant if the distance between collection centre and the processing plant is more, to avoid spoilage. In India, bulk of the milk is produced in the rural areas and it has to be transported as raw milk from the place of its production to the urban dairies for processing and ultimate consumption. Due to adverse climatic conditions and excessive cost of refrigeration, transportation of milk must be done regularly in a cost effective way. There are various modes of transportation available based on different considerations. These are bullock carts or tonga, motor cycle or ricksaw, truck or tampo, milk tanker and railway wagons. Milk is stored in milk cans to be transported on carts, motor cycle and truck or tempo. Most of the vehicles available with milk tanks (popularly called milk tankers) have insulated tanks in which milk could be transported for five to six hours without raising its temperature. Transportation of milk through railway wagons is economical when substantial quality of milk is to be transported for comparatively longer distances. A railway wagon can carry approximately 10 to 12 tonnes of load.

The major decisions in transportations of milk are related with the capacity of transportation vehicle and milk route. The total milk shed area is divided into different milk routes depending on the amount of milk collection and the distance. The capacity of vehicle sent for transportation of milk on a route should be equal to the sum of milk available on all milk collection centres falling on that route. If a vehicle of large capacity is put on service, it will be wastage of fuel and, wear and tear.

The costs of transportation of milk are fuel, depreciation of vehicle, maintenance of

vehicle & cans, refrigeration, wages of driver and facilitator and sterilization of the milk tank or cans. When milk tanks are not insulated, raw milk is transported mixed with ice. In that case, cost of ice also becomes part of transportation cost.

Chilling: Chilling of milk means rapid cooling of raw milk to sufficiently low temperature so that the growth of microorganisms present in milk is checked. If the milk shed area is very large and collection of milk is not sufficient enough to be economically transported to the processing plant, it is advisable to have a chilling facility in the centre of the milk shed area. This chilling facility is generally in the form of a chilling plant. In a chilling plant, the milk is collected from all around areas and is chilled to 3 to 4 degree Celsius to stop multiplication of micro-organisms. Chilled milk can easily be transported without having appreciable change due to the growth of micro-organisms. The frequency of transportation of milk from chilling plants to the processing plant is generally on alternative days. Some of the chilling plants also sell milk to meet the demand of local people.

The cost of chilling milk is comprised of wages of employees, refrigeration cost, depreciation of equipments, interest on investment, cost of steam and cleaning.

Pricing of Milk

The procurement of milk in sufficient quantity also depends on the price being paid for the milk to the suppliers (farmers) besides other factors. The pricing of any commodity has bearing of its cost price and the price paid by the consumer. Working out the cost price of milk under field conditions is a complex subject but any pricing system followed should be (1) remunerative to the producers, (2) competitive to the local market prices, (3) discourage adulteration and promote quality consciousness, and (4) based on milk constituents i.e. Fats & SNF.

The conventional method of pricing of milk was volume basis or weight basis. The major limitation of this method was that volume could be increase by adding water and hence, encouraged adulteration of milk. Consequently, the pricing of milk was decided to be quality based rather than the quantity. The major components of quality of milk are contents of fat and Solid Not Fat (SNF) in the milk. This led to the development of two alternative approaches for pricing the milk.

1. Pricing of milk based on fat contents
2. Pricing of milk based on fat and SNF contents (two-axis pricing)

Fat based Pricing of Milk

In this system, the price of milk is fixed proportional to the fat content of milk. The advantages of this method are that estimation of fat content is easy and calculation of milk price is simple. If the fat content of one litre milk is six per cent and the price of fat is Rs 420 per kilogram, price of one litre milk will be Rs 25.20. These calculations have been done without taking the weight-volume difference into account. For calculation part, please refer to the practical exercises.

The major disadvantage of this method was that if the fat contents of milk are low, the milk was fetching lesser price. In this way the cow milk was paid less price due to low contents of fat (3-4%). The cows are generally high yielder but their fat content is low. This pricing method was discouraging the rearing of cow and also encouraged adulteration of milk with non-animal fats.

Fat-SNF based Pricing of Milk

Instead of considering only the fat content of milk, the price of milk, in this case, is based on both fat and SNF contents. SNF content is an important part of milk which contains various minerals and proteins, and is determinant of quality of milk. As the pricing system is based on both fat and SNF contents, it is, popularly, known as 'Two Axis Pricing'. The prices of fat and SNF contents are fixed depending upon the market price of ghee (butter oil) and skim milk powder (SMP). Normally, the price of fat is declared by the Milk Unions for different seasons and the price of SNF is taken as 2/3rd of price of the fat. If the price of fat is Rs 420 per kilogram, the price of SNF will be 2/3*420 (Rs 280 per kilogram). These prices are multiplied with the contents of fat and SNF in the milk to calculate price of milk. For estimating price of milk, please refer to the practical exercises. Two axis pricing has benefited millions of farmers rearing cow.

Equivalent Fat Unit

In this method, the SNF unites are converted into equivalent fat units in proportion to the relative market prices of fat and SNF. The SNF is valued at 2/3rd units of fat. If the milk is tested 6 per cent fat and 9 per cent SNF, the equivalent fat unit of SNF will be 9 x 2/3 (6 units of fat). This way, price of milk will be calculated on the basis of 12 per cent of fat (6% fat and 6% equivalent fat unit of SNF). This method is considered as variant of the two axis pricing.

Principles involved in Pricing of Milk Products

While finalizing the price for milk products there are six steps to be followed.

1. Selecting the pricing objectives: Whether the pricing objective should be profit oriented or service oriented? Normally, government agencies, voluntary organizations or cooperative bodies have, the service oriented objective where as private agencies involved in milk processing have profit oriented objectives. For any producer/ processor aiming at reasonable profit will have many advantages to remain in market for longer period with maximum percentage of market share.

2. Determining the demand: Market surveys should be conducted for assessing demand of individual products and to separate out heavy demand products. The price of heavy demand product will be high.

3. Estimating the cost: The cost of the product at which it can be marketed is calculated by adding the cost of distribution, profit margin and wholesale & retail margins to the costs of raw material and processing.

4. Analysis of competitor's price and offer: The price of product should be competitive and attractive compared to competitor's product. Sometimes extra quantity of product is offered with the same prices.

5. Pricing may be based on cost accounting or market penetration or price leadership.

6. Selecting the final price: After deciding the above factors, the final price of the products is arrived. For any product, other factors that influence the market price are (1) season and (2) area of marketing. During summer, demand for flavoured milk, butter milk, Ice cream, kulfi will enormously increase. So the price of fast moving products in summer can be increased. Similarly, higher prices can be charged from the affluent areas by improving the quality.

Insurance of Dairy Animals

Insurance is a contract between two parties, whereby the insurer undertakes in consideration of certain periodical fixed amount called premium, to indemnify the dairy animal owner called insured, against a certain amount of risk or loss to the animal insured. Cattle insurance has gained importance in recent years. The initiatives for

insurance of dairy animals started with the country heading for white revolution. The introduction of new technologies and breeds of high productivity, increased both working and fixed capital requirements of dairy farmers. When farmers were unable to meet the capital requirements for their own funds, they borrowed loan from banks and financial institutions to purchase dairy animals, construction of animal shed, etc. In that process, financial institutions pressed for security of loans for the purchased animals which many of the landless or small dairy farmers could not provide. This led to the development of dairy animal insurance schemes. The insurance of animals which are hypothecated to the financial institution proved to be the security for livestock loans.

The following four subsidiaries of General Insurance Corporation are providing cattle insurance- National Insurance Company, New India Assurance Company, Oriented Insurance Company and United India Insurance Company. The premium for cattle insurance is four per cent of the cost of animal insured. The types of dairy animal and their age group insured are milch cows and buffaloes (from the age of first calving to 12 years of age), calves/heifers (from 4 months upto the age at first caving), stud bulls, bullocks and castrated male buffaloes (in the age group of 2-8 years).

Policy provides indemnity in the event of death of insured cattle due to following events:

1. Accident (Inclusive of fire, lightning, flood, cyclone, famine)
2. Surgical operations.
3. Strike & Riot
4. Diseases (inclusive of anthrax, Black quarter, Foot and Mouth disease, hemorrhagic Septicemia, Rinderpest, and Thelariaslis) contracting and occurring during the period of policy.

The premium rates varies as per the cattle owned by individuals/institutions/bank financed, bullocks and male buffaloes and for all dairies operating under NDDB. The rate of premium may vary under special poverty alleviation schemes of the government.

After the death of animal, the insured (farmer) has to furnish duly completed claim form and certificate of death given by qualified veterinarian for the animals covered under insurance scheme.

In spite of its importance in national economy, cattle insurance has not gained momentum in the country. The various reasons have been cited for this e.g. enormous cattle

population, ownership widely dispersed among millions of farmers, low productivity of animals, acute shortage of feeds and fodders and lack of effective disease control mechanism in place.

Financial Institutions supporting Dairy Development Programmes

For the start of any business, the foremost importance one should assign to the finance. The majority of dairy farmers in the country are landless, marginal and small. These farmers cannot afford to invest large amounts for establishment of any size of dairy farm. Several institutions are concerned either directly or indirectly in the activities of providing finance to establish dairy farm, milk collection centres, dairy plants etc. These have been briefly described as under:

National Dairy Development Board (NDDB): Indian Dairy Corporation (IDC) was earlier the only agency extending financial support to all the dairy developmental programmes throughout country. Now IDC has been merged with NDDB, therefore, now this (NDDB) is acting as financial as well as implementation of dairy developmental activities in the country. It provides finance to all the state owned milk cooperative federations, for the establishing and/or increasing the capacity of milk processing plants; chilling centres, feed factories, establishing progeny testing farms, improving artificial insemination centers, etc. The NDDB also acts as agent for international business/loan for the development of dairy industry. The state dairy federations/cooperative societies are extended financial assistance by taking guarantees from the respective state government. The finance can be of different types i.e. with nominal interest, no interest and repayment of one scheme to investment for other scheme. NDDB also involved in the research activities of dairy, embryo transfer Technology, cross breeding programme, indigenous dairy processing equipment development.

National Bank for Agriculture and Rural Development (NABARD): This is an apex bank for refinancing of all types agricultural operations through commercial banks. NABARD not directly finances the dairy farms/dairy plants and the allied businesses but indirectly through commercial banks. That is why it is called refinancing institution. For community/social schemes like water shed, small irrigation schemes, tanks, rural roads etc., it provides finance directly to the state government to provide basic amenities to agriculture and related fields. The interest rate charged for community work is, generally, very low.

Commercial Bank: In our country, there are 28 nationalized banks and many private banks who are financing for dairying. These banks provide finance for small to large dairy

farms, dairy factories, feed mixing plants and other dairy based businesses. The amount of finance varies from 75-85 per cent of cost of the project depending upon scheme or non-scheme projects. For dairy farms, one should have their own land because no loan is given for land. The interest rates charged ranges between 12 to 15.5 per cent per annum depending upon the amount of loan.

Cooperative Bank: Besides commercial banks, there are state cooperative banks which work on same prudential banking regulations as the commercial banks but they differ in structure of their organizations. It works on cooperative basis. In each state, there is an apex State Cooperative Bank followed by Central or District Cooperative Bank at the middle level and finally have Primary Cooperative Credit Society at the village level. Just like commercial banks, cooperative banks extends both short term and long term loans and finance dairy development activities but at lesser interest rate.

Co-operative banks are deeply rooted inside local areas and communities and hence reduce banking exclusion and foster the economic ability of millions of people.

State Financial Corporation: Each state has state financial corporation (SFC) which finances dairy projects. The interest rates are almost equal to commercial bank. In state of Andhra Pradesh, State Financial Corporation is located at Hyderabad and it has branches in all district headquarters.

State Dairy Cooperative Federations: Just like cooperative banks, there is three tier structure of dairy cooperatives in the state. In each state, there is an apex State Dairy Cooperative Federation followed by Cooperative Milk Unions and finally Dairy Cooperative Societies at village level. The state Dairy Cooperative Federation gets finance from NDDB and other agencies for development of dairying. These Federations, then, provide support to Milk Unions who ultimately extend loans to milk producers. Loan is generally extended in kind by not directly lending to beneficiaries, genetically high milk producing animals are procured and distributed to the beneficiaries. Part of the amount will be subsidy and the remaining amount will be treated as loan with less interest rates. These federations also provide funds for various dairy development activities like establishing milk processing or chilling plants, manufacturing and supply of animal feed and other inputs, etc.

District Rural Development Agencies (DRDA): In each district, there is one DRDA which operates most of the centrally and state sponsored schemes. DRDA assists programmes like Draught prone area programmes (DPAP), Small Farmers Development Agencies (SFDA), Marginal Farmer and Agricultural Labour Development Agency, and Integrated

Rural Development Programmes (IRDP). DRDA sponsors the above schemes by sanctioning loans from commercial banks and provide subsidies from 25 to 50 per cent depending upon the classes of people involved in the schemes. IRDP which was launched during Sixth Five Year Plan (1980-85), under its activity of providing productive assets, the poor people were supplied dairy animals at highly subsidies rates.

Backward Classes and Schedules Castes Finance & Development Corporations: The central government has National Backward Classes and National Schedule Castes Finance and Development Corporations with the main objective of promoting the economic and development activities of the backward classes and scheduled castes living below the poverty line. These Corporations can assist loan for their self employment ventures in the areas of (1) agriculture and allied activities, (2) small businesses and Artisans, (3) transport and service sector and (4) technical and professional trade and courses. The corporations finance the corresponding state corporations for their activities in the above fields. The state corporations arrange loans for dairy programmes of respective class of people through commercial/cooperative banks and provide subsidy from 25 to 50%.

Integrated Tribal Development Agencies: For the all round development of tribal areas, the government has established Integrated Tribal Development Agencies which provide subsidies and arrange loans through financial institutions for all kind of development in the tribal areas including dairy development. It helps in establishment of dairy cooperatives, provide high yielding dairy animals and other support services to increase income from dairy farming.

Activity

- Visit a Milk Collection Centre of a cooperative and note down the activities carried at the centre.
- Visit New India Assurance Company Limited office near to you and note down the procedure and rates for insuring a dairy animal.
- From an agriculture development bank or a commercial bank near to you, find the procedure and interest rates to get loan for establishing a dairy farm.

REVIEW QUESTIONS

1 What is milk procurement? How can it be increased without increasing milk production?

2 What are the risks in dairy farming? How is the livestock insurance helpful in reducing it?

3 Why dairy sector needs financial support? What is the role of National Dairy Development Board in this?