
Dairy Economics

Farm production economics is concerned with the choice of production pattern and resource uses in order to maximise the objective function of the farm operator, their families, the society or the nation, within a frame work of limited resources. The laws of production economics explain the conditions under which the quantities can be maximised (profit, output, national income) or minimised (cost, use of physical input).

The main objectives of production economics are.

1. To determine and define the conditions, which provide for optimum use of resources.
2. To determine the extent to which the existing use of resources deviates from the optimum use.
3. To analyse the factors or forces which are responsible for the existing production patterns and resources use.
4. To delineate means and methods for changing the existing use of resources to the optimum level.

In India the dairy farming is still existing as a subsidiary to the agriculture, which gives additional income to agricultural labours, small and middle farmers. In India growing atleast one or two dairy animals by farmers have many advantages of economic importance.

1. Dairy animals fits well in any diversified farming programmes i.e. it can be clubbed with agriculture, fisheries, horticulture, etc., which helps to give additional source of income.
2. In agriculture different types of roughages as paddy straw, Jawar straw, Wheat straw etc., are bulky fetching less amount and also not possible economical to transport them to long distances. Dairy animals are efficient convertors of roughage to produce milk.

3. The prices of most of the agricultural produce show great fluctuation where as milk will not have such fluctuations in price.
4. The income from agriculture is seasonal and the farmer receives income on harvesting crop only where as dairy animals gives money daily and it is distributed throughout the year. The economics can be calculated daily also.
5. Normally farmers will not take milk by spending money. But the family members will consume certain amount of milk invariably, which improves the family diet in terms of nutrition.
6. Legumes and grasses are grown on farm providing fodder to the animals. These crops are soil conserving and soil building crops. The manure produced will be utilised as natural fertilisers for growing, agricultural crops economically.
7. The male animals are utilised for draft purpose: In India still most of the agricultural operations are carried by use of bullocks power: In India the size of the land holdings are small and it is becoming still smaller portions by divisions and they cannot afford for mechanical farm operations.
8. Even after death, the carcasses are utilised for meat meal production, bone meal production, blood meal production etc., skin is used as hides.

In dairy farming the cost feed accounts for roughly 60-65% of the cost and so the economic milk production mainly depends upon the economic feed formulations. There are other factors also which contribute to the economics of dairy farming. The economic factors in a successful dairying one.

1. *The effective breeding policy:* Selection of high yielding animals for dairy farming. For breeding high record site or good sites semen for. All should be utilised. Unless the animal have high productive nature, even heavy feeding of balanced nutrition cannot improve the milk production much.
2. *Economic feeding practices are important which can alone decrease the cost of production milk appreciably.* Feeding of adlibitum of green forages will decrease the feed cost and ultimate less cost of milk production. Feeding of certain amount of leguminous fodders still improve the milk production.

Feeding of certain amount of dry roughages will improve the butter fat content, which again adds to the high payment for the milk.

Among the concentrate feed ingredients, most of the traditional ingredients are competed by human beings, so the cost is increasing resulting high feed cost making dairy farming uneconomical. Use of unconventional feeds which are available at throw away price or less price will decrease the feed cost resulting low cost of milk production.

3. The managerial conditions are cardinal in maintaining the optimum level of production and also to keep up the animal health. Ill health reduces the milk production drastically and, it takes more time to reach original production.
4. The optimum use of land, manure resources to produce fodder with less investment, which ultimately affects the economic milk production.
5. The ability to direct and make use of labour efficiently after the economics of milk production.
6. Efficient disposal of milk plays half of the economic role in dairying. Even a small price increase in the sale price of milk, will have much impact on the economics of dairy farmings.
7. Sound business practices appropriate to dairy farming is important at all levels. Let purchases of inputs, and also disposal of products and by products.

The main theme of dairy economics rests on maximum reduction in feed cost producing high level of milk production economically and proper disposal of milk.

Postproduction of milk, milk processing and preparation of milk products also comes under dairying. A medium or big size dairy farm simultaneously they can have either processing of milk or production of many dairy products. Some times more profit can be obtained in the sale of processed milk/dairy products. Simultaneous establishment of processing plant will increase the income of dairying 30-40% and establishment of products factory will increase the profit by 40-50 % over dairy farming. If these processing or products factories are established within farm premises it reduces the cost of raw material i.e. milk collection and transportation costs. Further the quality of milk produced in own dairy farm will be superior as it is processed immediately without lapse of time, limiting less processing problems, uniform quality of milk is obtained which troubles less in products preparations compared to wide variation in collected milk from various sources.

ECONOMIC VIABILITY FOR DIFFERENT SIZE OF DAIRY AND ENTERPRISE

1. *Economic planning*: The following factors require considerable attention when one decides to go for milk production on a farm.
 - Suitability of the farm
 - Suitability of farm, buildings and other fixed equipments.
 - Supply of right type of labour.
 - Availability of capital capability of the farmer.
 - Physical condition of the soil.

- Climate
- Water supply

The basis of economic planning of dairy farm depends upon the following factors.

- a) Size of the herd
- b) Level of milk yield
- c) Feeding policy and stock density
- d) Farm area devoted to dairy farm and stocking density
- e) Housing facilities
- f) Seasonal production policy
- g) Raising replacement stock.
- h) Watching milk yield
- i) Check on food quantity and quality
- j) Labour utilisation.
- a) *Size of the herd:* The result of National investigation of milk i shows that upto the a certain point, herd size has an important on the profitability of milk production. No appreciable improve profitability was noted with a level of cows above 40. Infact a distinct in profits seemed to result above that level. The greater part of variety profits was found to be due to reduction in costs of labour percent increase in herd size. The size of herd depends upon the following factors.
 - Method of milking
 - Milking of shed facility
 - Milk yield
 - Cow shed layout
 - Labour efficiency
 - Area under forage

Most of the farmers appear to find that herds of 30 cows with a cowshed layout and 40 with parlour system can be handled conveniently and efficiently. It is assumed that a producer in his interest maintain normally a herd of 130 animals consisting of 40 milking animals, 40 dry animals and 2 bulls and rest comprising followers.

The number of cows to be handled efficiently and conveniently is dictated by the acreage of farm and cow shed accommodation. Every farmer should ascertain

periodically whether his herd size could be increased, at the same time, carry out culling process with discretion.

- b) *Level of milk yield:* Statistical evidence appear to favours high yielding herd. The upward tendency in profit with the increasing in milk yield is what one should expect but upto certain limit only, because the food cost per cow- also increases due to extra concentrate with the increase in milk yield
- c) *Feeding policy and stock density:* It is observed that feed accounts for 61% in cost structure of milk production in buffaloes, therefore attempts to lower the feed cost will reduce the cost of milk production, which can be achieved by use of less of concentrates and use of more green fodder.
- d) *Density of stocking and farm area devoted to dairy farm:* Dairy unit of 3 cows and followers can be maintained on one acre fertile and fully irrigated land.
- e) *Housing facilities:* The yard and parlour system requires less capital investment per cow and less labour /cow compared to conventional cow shed.
- f) *Seasonality in milk production:* Milk plants offer incentive in the form of or by way of higher price for milk during lean period of summer months so that the farmer may obtain more milk in those months of higher prices.
- g) *Raising replacement stock:* Most dairy farmers prefer rearing most of their heifers on their farm to maintain required number because to avoid risk of buying poor quality stock and also it is proved that use of by products and unconventional feed stuff heifer can be raised cheaply.
- h) *Watching milk yield:* The dairy milk yield record of an individual cow can be used as a guide for rationing, an indication of status of health on faulty feeding and as a basis culling.
- i) *Check on Feed Quantity & Quality:* Depending upon the milk yield and requirements of an animals, farmers must work out the ration for each cow and write it on the chart against the animal. It helps to ensure the supply of right quantities of concentrates, from time to time depending upon the quality and quantity of roughage.
- j) *Labour Utilisation:* Cost of labour is second to cost of feed in the annual cost of keeping of a cow. Loose housing system saves labour because cows come to milking parlour instead of man going to cow. Manure loader can be used in the loafing area. *Viability for small size farms:* For a family (2) members having 2-5 acres of land for crop production the economically size of dairy farm is 2-5 animals, depending upon their interest, capability, availability of fodder and marketing facilities. These two family members can work for 2-5 animals without engaging any extra labour and also

without affecting the routine farm operations. The dairy farming will act as side employment to the main agriculture work. These small farms will be more economical than larger farms due to:

- a) No dependence on external labour to work.
- b) Agricultural by products & wastes can be utilised to produce more profitable milk item.
- c) It helps to increase the fertility of agricultural lands in the way of manure.
- d) It gives more income which is daily cash crop to the farmer without waiting for a season to get money.
- e) More supervision on the individual animals as animals are less and also the owner will have more enthusiasm and love with animals.
- f) No problem with marketing of milk, as the quantity is not bulk.

Viability for large farms

The farms having more than 25 animals comes under large/commercial farms and 5-25 animals will come under medium farms. The economic viability of large farms depends on

- a) Effective management/supervision on materials and animals.
- b) Individual animal feed requirements calculation and feeding.
- c) Effective labour use and management.
- d) Production of green fodder required.
- e) Preparation of nutritive concentrate mixture.
- f) Effective breeding management.
- g) Effective health control measures.
- h) Effective marketing of milk and milk products.
- i) Culling and replacement of animals in the farm.

When comparative to small farms, survivability of large farms will be difficult as overhead charges will be more in all aspects, in addition to lack of individual responsibility and care on the animals.

ECONOMIC PRINCIPLES INVOLVED TO ENHANCE BENEFITS IN DAIRYING

The various factors that can influence the dairy farms profitability can be enlisted and linked as given below.

Gross profitability/acre.

Gross profitability/cow

Milk produced/cow	Milk price	Replacement cost	Variable cost	
Lactation yield breed	Quantity of milk	-Replace cow cast	Labour	Other
	-Quantity	- cost of	cost	cost
Feeding	Of produce	new cow	Feed	cost
Management	Advertisement	-cost of	Fodder concentrate	
Calving index	Govt. policies	calves		
Decrease incidence			House Purchases	

By detailed study of the above factors that influence profitability of a dai farm, the following principles can be drawn to maximise profits.

1. *Selection of good animals:* A good lactating breed and also good animal is that breed will yield more milk production.
2. *Balanced feeding:* Feeding of animals with standard DCP al TDN content of required quantity will increase/maintain the m production.
3. *Green fodder feeding:* Feeding of adlibitum green fodder v decrease the use of concentrates which ultimately decrease the cost production of milk.
4. *Conservation of greens:* The green fodder will be excess during flush season. It should be converted into silage/hay which preserve it nutritive value of green fodder and it can be used during summer in plain of green fodder which will reduce the cost of milk production.
5. *Formulation of concentrates with unconventional ingredients:* Certain unconventional feed ingredients are not used for any purpose which can be conveniently used in concentrates formulation to decrease the cost of concentrate, as the cost of concentrates place an important role in the cost of milk production.
6. *Uses of agricultural by products:* The use of agricultural products like straws etc. will decrease the cost of milk production.
7. *Effective utilisation of labour:* The cost of labour ranks second after feed cost in dairy farming. The effective use of labour depends on
 - Proper planning of cattle housing unit
 - Loose housing system saves labour and energy

- Proper grouping of buildings in layout for saving time of labour.
- System of tying is conventional housing system

Tail to tail tying will decrease the labour requirement as 'it is man time is spend in back of the animal for cleaning, which space in tail to tail system.

8. *Replacement of the herd*: After few lactation's, the animals are culled to remove uneconomical animals, which should be replaced by growing own calves or by purchase. It is scientifically proved that replacement of dairy stock by growing their own calves is more economical and also have the information about the animal.
9. *Milk price*: The profitability of dairy farming mainly depends upon the sale price of milk. Even a marginal extra price per litre of milk will have higher profitability per year. It is better to practice home/Institution delivery of milk to get more price for milk, even a considering the distribution costs.
10. *Advertisement*: Advertisement about the quality and benefits of the milk will give more demand and price ever, after deducting the advertisement costs.
11. *Conservation in to milk products*: During flush season more milk will be produced and also the factories will pay less price. To get maximum profits some milk can be converted into products like cream, ghee, butter, paneer etc., which will also solve the problems of marketing of milk and also gives 30-50% extra profits over the cost of milk.
12. *Good-management practices*: Clean environment will produce more milk, when compared to uncleanliness in the" sheds. Proper protection of animals against environmental conditions like heat and cold will helps to maintain the production, other wise drastic fall in production is not protected. Maintenance of proper timings of feeding and milking will help in maintaining the optimum production. Maintenance of cattle health by proper vaccination and treatment will definitely helps in production of more milk.

ECONOMIC INSTITUTIONS SUPPORTING DAIRY DEVELOPMENT PROGRAMMES. PROGRAMMES

For starting any business, the foremost important resource one should give prime importance is finance. One cannot start any business/industry on their own money. The rural people are poor or middle income people and so they cannot afford to invest large amounts for establishment of any size of dairy farms. Several institutions are concerned either directly or indirectly in the activities or providing finance to establish dairy farm, milk collection centres, dairy plants etc. They are

1. *Indian Dairy Corporation*: Earlier it is the financing agency for all the dairy developmental activities i.e. establishing dairy plants, chilling centre, progeny

testing farms, formation of dairy cooperatives under Anand pattern. Now there is no- Indian dairy corporation and it is merged with NDDB.

2. *National Dairy Development Board*: Earlier it is only implementation agency implementing all the dairy developmental programmes throughout the country. After merging of Indian dairy corporation, now it 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 & dairy products factories; chilling centers, feed factories, establishing progeny testing farms, improving Artificial insemination centers. The NDDB also acts as agent for international business/loan for the development of dairy industry. NDDB will provide finance to the state federations Or cooperative society by taking guarantees from the respective state government. The finance will be 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 dairying. Eg: Embryo transfer Technology, cross breeding programme, indigenous dairy processing equipment development.
3. *National Bank for Agriculture and Rural Development (NABARD)*. This is the apex bank for refinancing for all types agricultural operations for the commercial banks at less interest. Earlier this is a wing in reserve bank as agricultural refinance wing of reserve bank. NABARD will not directly finance to the dairy farms, -dairy factories or allied business, but only through commercial banks. For community/social schemes like water shed, small irrigation schemes, tanks rural roads etc., it will finance directly to the state government to provide basic amenities to agriculture and related fields. For community work the interest rate is very low.
4. *Commercial Bank*: In-our country there are 28 nationalised banks and many private banks who are financing for dairying. These banks will finance for small to large dairy farms, dairy factories, feed mixing plants other dairy based business. The amount of finance will vary from 75-85% of the cost of project depending upon scheme or non scheme projects. For dairy farms one should have their own land and no loan will be given for land. The interest rates charged will be 12-15.5% P.A. depending upon the amount of loan.
5. *Cooperative Bank*: In each state apex cooperative bank will be there, in each district cooperative bank which will have branches throughout the district in rural areas. Just like commercial banks, cooperative banks will give for all dairying projects for both short term and long term loans, the rules and regulations are almost commercial banks with little less interest rates.
6. *Village Cooperative Societies*: For a cluster of villages cooperative societies will be there, which will give loans for small scale animal husbandry activities. The finance for

these societies will be by cooperative banks. The interest rates will be less compared to commercial banks.

7. *State Financial Corporation:* Each state will have state financial corporation (SFC) which will also finance for dairy projects. The interest rates are almost equal to commercial bank: In our state Andhra state financial corporation is located at Hyderabad and it is branches in all district head quarters.
8. *Dairy Development Cooperative Federation and District Milk Producers Cooperative Societies:* The state dairy development cooperative federation will get some loans from NDDDB and other agencies for development of dairying, which will be provided to district unions, who will inform will give loans to milk producers. They will not give loans directly to the beneficiaries, but they will procure good genetic high milk producing animals 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.
9. *District Rural Development Agencies:* In each district one DRDA will be there which will operate most of the centrally and state sponsored schemes. DRDA will assist programmes like
 - a) Draught 'prone area programmes (DPAP)
 - b) Small farmers development agencies (SFDA)
 - c) Marginal farmer and Agricultural labour development agency
 - d) Integrated rural development programmes.

The (IRDP) DRDA will sponsor the above schemes by sanctioning loans by commercial, banks and provide subsidies from 25-50% depending upon the classes of people involved in the schemes.

10. *B.C and SC Corporation:* SC and BC corporations will arrange loans for dairy programmes of respective class of people through milker commercial/cooperative banks and provide subsidy of 25-50%.
11. *Tribal Development Agencies:* For the development of tribal areas, the government has established tribal development agencies which will give subsidies and arrange loans through financial institutions.

MILK PROCUREMENT

Surveys for Milk Potential Area for Surplus

To assess whether any project or industry would be available in a certain area, a survey of available resources in that particular area is carried out. Milk shed are generally

denotes a district (or) from which area milk is procured~ and processed in the common plant located in the central part of that particular are The villages in the milk shed area should be preliminary survey is conducted as different aspects of milk production as detailed given below:

1. The existing cattle and buffalo population
2. The production and utilisation/disposal pattern of milk and milk product.
3. Marketing channels for surplus milk.
4. Returns from the sale of milk realised by the farmers.
5. Agricultural facilities and production patterns.
6. Basic amenities such as communications links, educational facilities etc.
7. Other sources of income.
8. Performance of other institutions including multipurpose cooperatives etc.,
9. Different communities living in a village and their interrelationship.
10. 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 roots are identified so as to cover all the milk potential areas. In selecting the roots the prime idea should be considered is that the vehicle from the starting point loading the milk from different collection centres, reaches milk chilling centers (or) processing plants within a reasonable time without allowing the milk for spoilage.

Systems of Milk Procurement

The success of any dairy project depends on a well planned an organised system of milk procurement. In the case where programme system is not well established dairy plants remains under utilised on the other hand, if systems is well planned the following advantages can be obtained.

- An assured market round the year to the milk producers.
- Full capacity utilisation of the dairy plant.
- Increase in the milk production through inputs at reasonable cost.
- Planning and scheduling of milk procurement.

Following two aspects.

- Policy decisions at top management level
- Scheduling the actions for smooth running

Policy Decisions at Top Management Level

Before starting milk procurement the following decision should be taken.

- 1) Price to be paid for raw milk in different seasons
- 2) The system and frequency of payment for milk—Daily Weekly, fortnight or Monthly.
- 3) Reserve funds required to carry milk procurement to avoid hard ships
- 4) Material, equipment, chemicals and stationary required of collection centres.
- 5) Transportation of milk—hiring of transporting vehicles better rather than owning the vehicle.
- 6) Technical inputs i.e. Veterinary aids, A.I, feeds and fodder to be given in advance to the producers to get the advantage of favour.
- 7) Man power required and training engaged in milk procurement needed to people

Scheduling the actions

Once the above policy sessions are taken, the milk procurement activities are planned. After preliminary and detailed survey of villages, village society's are started. Society staff is recruited and necessary training in the fields related to milk collection, testing, maintenance of records, bank transactions bye-laws etc. is given. Transport time table for milk root is prepared and the all society's are informed about the time of loading of milk cans and (or) unloading of empty cans. All the members of the society will be informed about the time of milk collection at the collection centers. Depending upon the quantity of milk collected indent for extra cans or information about the quantity of milk to be procured in future should be reported promptly to the concentrated authorities by the society organisers.

Systems of Milk Pricing

The pricing of any commodity is always based on its cost price and the price paid by the consumer. Working out the cost price of milk under field conditions is a complex subject 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:
- 4) Based on milk constituents.

Methods of milk pricing

The old systems followed in India are volume basis and weight basis. The volume basis will encourage the adulteration of milk with water and also quantity of milk will be affected on, with formation of foam. The weight system will not be effected by foam but it also encourages adulteration of milk. The various other pricing systems are:

1. *Pricing on pro-rata fat basis:* In this system the price of milk is fixed proportional to the fat content of milk. This system will assign practically zero value for S.N.F content.

The advantage of this method are:

- easy to calculate the milk price
- easy to adopt as it required only fat estimation, farmer will easily understand the system and it can be adopted to any type of milk.

The disadvantages are:

- It encourages adulteration of milk with water, as there is not check on S.N.F. This system will encourage buffalo milk and do not provide remunerative price for cow milk.

Pricing on Two Axis Basis

This method is used in pricing cow as well as buffalo milk where both fat and SNF contents are taken into accounts. As the system is based on both fat and SNF, it is called as "Two axis pricing". The prices of fat and SNF are fixed depending upon the market price of GHEE and skim milk powder. Normally the price of fat will be declared by the union for different seasons and the price of SNF will be $\frac{2}{3}$ price of the fat. The price is calculated using the following formulae.

Ex: Price of 100 kgs milk = Kg fat rate x Fat percentage + kg SNF rate x SNF%

Ex: If the price of kg Fat is 100 then the price of 9% SNF be $100 \times \frac{2}{3} = \text{Rs. } 66.60$

Then the cost of 100 kg of milk testing 6% fat and 9% SNF = $(100 \times 6) + (66.6 \times 9) = 600 + 599 = 1199$ i.e. Rs. 11.99 per kg.

The advantages are:

No discrimination against cow or buffalo milk as cow milk is reasonably priced due to consideration of SNF contents which is well comparable to that of buffalo milk.

Pricing on Equivalent Fat Unit Basis

In this method the SNF units are converted into equivalent fat units in proportion to the relative market prices of fat and SNF. The SNF is

Value at $2/3$ units of fat. For example: The buffalo milk testing 6% fat and 9% SNF

The total number of Fat units = $6 + 9 \times 2/3 = 6 + 6 = 12$

If the fat price is Rs. 100/- then the cost of 100 kg of milk = $100 \times 12 = 1200$

Or Rs. 12 per kg of milk.

This method will leave the same advantage of two access pricing system.

Principles involved in Pricing of Milk Products

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

1. *Selecting the pricing objectives:* Whether the pricing objectives should be or profit oriented service oriented. Normally government agencies, voluntary organisations or cooperative bodies objective will be service oriented with minimum profit, where as private people will aim on maximum profit. For any producer aiming at reasonable profit will have many advantages to have in market for longer period with maximum percentage of market share.
2. *Determining the demand:* By making market surveys the demand for individual product can be assessed. The heavy demand product should be prepared. The price of heavy demand product will be high.
3. *Estimating the cost:* The cost of the product at which it can be marketed can be calculated as follows
 - a) Cost of raw materials used for the preparation of the product i.e. milk, sugar, species, salt etc.,
 - b) Cost of processing the product: Normally in dairy industry the
 - c) Processing costs will be around 20% of cost of raw packing cost:
 - d) Depreciation on the cost of raw material.
 - e) Distribution cost (i.e. transportation)
 - f) Distribution margin (whole sales margin)
 - g) Retailers margin.

The total of the above gives actual price for the product. For that add profit margin which may be 10-15% depending upon the demand.

- 4.. *Analysis of competitors price and offer:* The price of product should be competitive and attractive compared to competitors product. Some times extra quantity of product is offered with the same prices (Add 100 gms with 500 gms of product) by competitors. That should also be taken into account.
5. *Selecting the final price:* After deciding the above factors the final price of the products may be arrived.

For any product price fixation other factors will also influence like.

- 1) *Season:* During summer, demand for flavoured milk, butter milk, Ice cream, kulfi will be enormously increased. So the price of fast moving products in summer can be increased.
- 2) *Area of marketing:* If the income of people is high, their purchase will be more.

Planning for Milk Collection and Transportation Routes

For efficient collection of milk, certain problems arising at the collection centre should be solved. The various problems faced at the collection centres are

1. Producers having vested interest—some persons will try to influence the staff and get undesirable things done to save their personal interest. This should not occur.
2. Some persons will supply adulterated or substandard milk. This should be discouraged.
3. Strict timings for milk procurement—Some producers will supply the milk very late, the society will not receive it resulting a direct conflict between the producers and staff. This can be sorted by explaining the farmers about the difficulties.
4. Some producers will think that sample of milk drawn is an extra quantity of milk which is not paid for. This can be explained to the farmer that all the samples are polled and sold which is distributed to all members as bonus.
5. Some farmers due to many reasons will supply evening milk in the next morning and morning milk in the evening which causes curdling of milk and loss to the society. Such producers should be carefully checked and explain about the quality of milk causing problems in processing of milk.
6. Some staff members will not following the timings for milk collection, so that the procedures will have to wait for hours together and loose their interest on society. Maintenance of the time by the staff is essential for improving the milk procurement.

Transportation of milk to the processing centre or chilling centre will be undertaken by the union. Some societies will not have proper roots, it's the responsible of the society to transport the milk from the collection centre to the near by truck pick-up point. In some societies there will be transportation root through that village, but the collection centre will be interior, in such case also it is the responsibility of the society.

At union level different roots are planned to get the milk from different places to the processing plant. Each root will be planned in such a manner that it will go through all the society villages or atleast nearer to the societies. The roots are so planned that if any damage to the road or traffic an alternative road is available to the processing centre.

The transport vehicles will deliver the empty cans for next collection and lift the can with milk. In case of any break to the transporting vehicles an alternative vehicle or atleast the other route vehicle may be diverted.

Measures to Enhance Milk Collection during Lean Season

During rainy and winter season, there will be, lot of green, roughages which will help in enormous milk production, where is in summer the 'most of the, fields' including grazing lands become dry in a green fodder will be available adversely affecting the milk production. Moreover no farmer will plan to calve the animals just before or during, summer, which will adversely affect the lactation yield. Most of the cows will be in dry or late *lactation or late lactation with pregnancy. Recent studies indicate that the milk production during summer season will be decreased of the milk production during rainy and winter seasons. The summer season in which low production of milk is called lean season and flush season when high milk production exists.

As the output of milk production is decreased, the demand will be as such for the milk, there will be lot of completion for the collection of milk. The competitors of milk processors will start their own strategies to get maximum share of milk collection by any dairy in lean season. The following are the some of such steps.

1. The milk production during flush season will be surplus, the collection centres are unable to collect full quantity due to varied reason. The processors should regularly collect full quantities of milk from those producers who will be faithful and supply full quantity of milk to him during lean season. The producers are also remember the collection centers, who has helped them during flush season. Some processors even declare milk holidays once in a week, or so during flush season, which will cause economical loss to the producers. If farmers are tackled well during flush season, they will inturn help by giving whole quantity of milk during lean season.

2. Fixing of high price or giving bonus or extra payments for the milk supplied during lean season will also improve the milk collection. As the level of production drops during summer and also most of the dairy animals in dry/pregnant conditions, the cost of the milk production will generally high during summer season. To compensate this high cost of milk production, the processors should enhance the purchase price of milk.
3. Advance payment/prompt and regular payments for the purchased milk by the collection centers will definitely improve the milk collection during summer.
4. Supply of inputs like concentrate feeds, fodder seeds, fertilisers A.I facilities to the producers in advance and adjusting the cost for the price of milk collected.
5. Satisfying the producers by explaining about the cunning nature of competitors who will give high price of milk during lean season. The collection center people should explain to the producers, that the competitors would not collect the milk during flush season.
6. Especially during festival occasion, children school reopening, marriages time farmer need of money and they may come for agreement with milk collection center people, by supplying milk-during lean season, if they give any finance to them. Any processors should make advance payments during the above occasions to attract the producers.
7. Training programmes should be conducted on management of animals during summer season without affecting the milk production.
8. The collection centre persons should respect customs, of the local people and they should participate in a various social and cultural activities of the village so that the farmers think that these are one among them and definitely they sell milk to them only.
9. Out of their profits, the processors/milk collection centre persons should spent certain portion for social activities in the village, i.e. laying or repairing of roads, construction of school buildings. Maintenance of parks, donations to temples, or donation to any religious/other functions will have effect on milk collection.
10. Milk competitions, bull competitions, calves and other groups of animal competition regularly in the village will also increase the faith in the villagers. In addition to the above encouragement points, the processors/collection centre people should not do the following things.
 - a) Cheating the producers by taking extra quantity by manipulating the weights and measures.

- b) Showing less readings of fat and SNF levels in the milk.
- c) Wrong calculation in the price fixation of milk.
- d) Utilisation of money for personal use and delaying the payments to the producers.
- e) Not paying the bonus after the year.
- f) Not bothering about the collection of milk during flush season.
- g) Not attending to the problems of animals.

DAIRY DEVELOPMENT PROGRAMMES

Milk has emerged as the second largest agricultural commodity next to rice production. India ranks world first in milk production in 1996. India's milk production is 70 million tones. Cross breeding of indigenous cows with exotic bulls/semen has encouraged for augmenting milk production.

Government Project/programme

1. All India key Village Scheme—1951
2. Intensive Cattle Development Projects (ICDPs)—1964—65.
3. Operation Flood phase I—1970.
4. IDA Assisted Dairy projects.
5. Operation Flood Phase II—1979
6. Operation Flood Phase III—1985.
7. Dairy Technology Mission—1987.

Key Village Scheme (KVS)

It was taken up in August, 1952. Under the scheme a "key village block" consists of one AI centre along with four key village units attached to it. Each key village unit is a compact area of contiguous village having a population of about 500 cows and/or she buffaloes fit for breeding and milk supply. Selection of pedigree bulls, proper administration and technical organisation consisting of one VAS, one milk recorder and three stockmen had been provided for every centre. During the third five year plan the KVS was considered to be the main programme for IDCP. The main activities are:

1. To intensify the construction programme in the key village areas.

2. Extending the PTS to the On gole breed in Andhra Pradesh and Kankrej breed in Gujarath. (PTS—Primary Testing Scheme)
3. Establishing bull-rearing farms
4. Development of grazing areas by setting up two fodder banks and also a grass land and Research Institute.

Intensive Cattle Development Projects (ICDP's)

During the third and fourth five year plan it gained its significance by its activities such as

- (i) Formation of NDDB
- (ii) Establishing progeny testing farms—IV plan
- (iii) Establishing frozen semen stations—VI plan
- (iv) Institute for Buffalo Research—VI plan
- (v) Embryo transfer technology—VII plan.

Progress Review

By the end of 1965, there was an awareness about the success and failures of the Government's own programme. The review of above revealed the following.

Progress made under 5—year plans

- Dairying acquired national-level recognition.
- Concept of planned approach was introduced at all the levels.
- Organised marketing was adopted by private, public and cooperative sectors.
- The multi-national introduced new milk products.
- To overcome the economic barriers, toned milk, with less fat and at comparatively cheaper price, was formulated.
- India started developing its own cadre of trained technical personnel.
- The concept of intensive cattle development was introduced.

Unfortunate trends

Besides above contributions, some negative effects were also observed as listed below.

- modernisation and planning of dairy industry was consumer oriented.
- the package of inputs required for enhancing milk production was left in the hands of State Animal Husbandry Department without any correlation with milk industry. Those inputs hardly reached the producer. This made dairy farming an unattractive proposition for rural milk producers as they were to bear entire burden of maintaining the milk animal.
- the private city dwellers/duhias exploited the consumer due to increased demand as a result of industrial development.
- Cattle colonies, housing large number of good cattle and buffaloes brought from the home tracts got established to meet cities demands. Maintenance of these animals in big cities was a problem, especially in dry periods. The best animals thus started finding way to slaughter houses, once these were found uneconomical. Old stocks were replaced by the new ones from villages. This anti-dairy cycle perpetuated.

OPERATION FLOOD

Operation flood—the Indian white revolution was launched to overcome the above mentioned unhealthy trends. It is designed to raise milk producer's income by organising them into cooperatives and eliminating middlemen; to increase milk production in rural areas creating a flood of milk to meet demand on a regular year-round basis; and to create a self-sufficient dairy industry in India.

Operation Flood I was launched in 1970, following an agreement with the United Nations World Food programme. The European Economic Community was also closely associated with Operation Flood I provided much of the food aid to the World Food Programme.

To launch Operation Flood I and finance projects undertaken within its framework, the Delhi Government set up the Indian Dairy Corporation (IDC) in 1970. The actual implementation of the various projects is left to the village cooperative societies and milk unions which own dairies at district level.

Objectives of Operation Flood I

- a) To increase the capacity of milk processing facilities.
- b) To change urban markets from traditional milk supplies to modern dairy milk supplies.
- c) To make provision for the resettlement of city based cattle in rural areas.

- d) To develop long distance milk transport and storage facilities.
- e) To develop Anand pattern of milk procurement system of improve dairy farming standards.

Operation Flood II

Operation flood II was started in April 1981 and ended in March 1985 with the expressed intention of creating a viable dairy industry to meet India's needs in milk and milk products.

India's White Revolution has not only received support from the European Community and the World bank, but also from a number of Western Governments, the United Nations food and Agriculture Organisation (F.A.O), the United Nations Children's Fund (UNICEF) and European NGOs such as the British Relief Agency OXFAM. It has also been regularly evaluated over the years.

IDA ASSISTED DAIRY PROJECTS

The world bank's assistance to dairy development started with the coverage of Karnataka, Madhya Pradesh and Rajasthan. The project comprises of:

- i) establishment of about 7200 DCS and 12 milk producer's unions.
- ii) Important and multiplication of pure bred exotic breeding stock and an associated A.I. programme of crossbreeding native cattle with high producing exotic breeds. Provisions of extension programme to encourage production of fodder, mixed farming and improved animal husbandry practice.
- iii) Construction of 12 dairy plants and cattle feed mills.
- iv) Establishment of one regional diagnostic laboratory and a plant for production of biological veterinary vaccines.
- v) Provisions of a training centre for each union.

Objectives of Operation Flood II

- a) To cover 10 million milk producer families in rural areas.
- b) To create National Milk Herd of 14 million cross-bred graded buffaloes.
- c) To strengthen national Milk and by linking milk supply and demand centres cows and
- d) To construct a base structure for National Dairy Industry.
- e) To increase percapita consumption of milk products at 144 gms/day

Operation Flood III

Operation Flood III was launched in April 1985 to run until March 1990. The results achieved in Operation Flood II justified the confidence faced by the Government in farmer's own organisations as instruments of dairy development and led to the initiation of Operation Flood III which was implemented, covering most of the Anand pattern milk sheds of the country.

Objectives of Operation Flood III

- a) To increase the coverage of milk producers.
- b) To establish an additional 15,500 village Milk co-operative societies in 173 Anand pattern milk sheds as constituents of the State Federation.
- c) To increase milk animals in co-operative ambit.
- d) To strengthen National milk Grid.
- e) To better utilisation of technical inputs in co-operation with state governments.
- f) To develop dairy co-operatives own system of improving health, environmental sanitation, nutrition etc.,

National Dairy Development Board (NDDB)

To replicate the Anand pattern throughout the country National Dairy Development Board (NDDB) was established in 1965. The dairy development programmes are being implemented through a network of milk co-operatives organised on the model existing in Gujarat state namely ANAND pattern dairy cooperatives. The three tier structure of the dairy development programme are:

1. Village level primary milk co-operative producers societies.
2. District level milk producers co-operative society unions.
3. State level federation of district co-operative milk producers unions.'

The main objectives are to assure remunerative price for the milk produced by the milk producers through a stable, steady and well organised market support, and distribution of milk and milk products at reasonable prices to consumers.

Milk and Milk Products Order (MMPO)

This programme has been issued by the Government of India during 1992 under the liberalisation policies. It empowers that those dairy plan exceeding its utilisation of 10,000

liters per day must register with Government for its modernisation, product manufacturing and to collect milk in specified area.

WHITE REVOLUTION

Just like 'green revolution' which is intended over all increase in agricultural produce, white revolution in the increase of milk production tremendously so that sufficient quantity of milk is available for all affordable price. To tune up the milk production the infrastructure required are

1. High yielding genetic potential dairy animals in India most of the dairy cattle are native breeds, in which majority are poor yielders of milk. It is not economical to raise the animals with 1-2 litres of milk production. The milk potential of animals can be improved by
 - a) *Introduction of Exotic cattle*: Exotic breeds like Jersey, Holstein Friesian, Brownswiss etc., are excellent milk producers. These breeds can be introduced to some extent through out the country to increase the milk production.
 - b) *Cross breeding programme*: Purchase of exotic breeds are costly and mass introduction is not possible. The semen of exotic breeds can be utilised on native breeds to produce superior breeds which can be utilised on native breeds to produce superior offsprings. With little investment the future herd will be cross breeds having good milk production capacity. Massive cross breeding programme should be undertaken.
 - c) *Selective rearing of native breeds*: Under native breeds there are some breeds which are yielding optimum milk production. These breeds can be maintained by maintaining pure breeding, programme.
 - d) *Upgrading native buffaloes*: Murrah buffalo breed is the good breed under buffalo which can be utilised for upgrading native buffaloes. Slowly the future stock will become graded murrah buffaloes.
2. *Animal Husbandry activities*: Veterinary doctor should be there in or around—at least within a reasonable distance who will take care of the animals in the following activities.
 - To maintain the health by doing vaccination. To treat the diseased animal
 - To inseminate the animals and confirming pregnancy diagnosis. Attending dystocia
 - Maintaining reproductive health.

- Advising on balanced nutrition and managerial tips.
- And many other activities concerned with animal husbandry.

Now a days trained personal are involved in door step Artificial insemination. Rural unemployed people will under go short duration training on artificial insemination and they will do door step A-I on payment.

3. *Improving the fodder:* the fodder crops development in India is not favourable. Most of the farmers are opting for commercial crops; not leaving any land for fodder crops. Green fodder is necessary to increase the milk production economically and also maintains good health and reproductive status. Those who are maintaining dairy animals they should allot some land for fodder production. High yielding fodder crops like Napier Bajra, Para grass, leucerne, cowpea, Berseem, and other grasses can be grown whose yield is more and also give cuttings. In India the grasses grown for grazing. These grazing lands can be improved by sowing with high yielding grass varieties.
4. *Establishing feed plants, 9:* The availability of good quality of concentrate feeds in India is not satisfying the needs. Modern feed plants, should be established especially under cooperative system, to produce well balanced rations for high milk production and also to keep the price of concentrate feed at minimum affordable level. As the human beings are competing for the most of the feed ingredients, much emphasis shot id be given for use of unconventional feed ingredients. Many agricultural by products and unconventional feed ingredients can be included without affecting palatability by using palletisation process. Molasses are used both as sweetening as well as energy supplements.
5. *Formation of Cooperative three tier system:* The development of milk production under government has not given boost. It is proved in our country in Gujarat, that only cooperatives will perform better to boost up milk production. Cooperatives system advantage is the milk producers will manage all the activities i.e. milk production, collection, disposal and providing basic requirements. Anand pattern of three tier system is successful system. In this in a village all the milk produces will farm village cooperative society. In a district all the village cooperative societies will form district milk producers union. All the district unions in the state will form state federation which is the apex body to take policy decision. Village societies will collect the milk and send to district union where milk is processed and milk products are prepared. Liquid milk and products are marketed by the district union. In all the villages village milk producer's cooperative societies should be formed to enhance the milk production.

6. *Providing inputs to the milk producers:* The district union should provide the inputs like artificial insemination facilities, supply balanced concentrate feeds, fodder seeds on subsidised rates, fertilisers and arranging for loans for the purchase of dairy animals. Training programmes should be conducted periodically in the subject of dairying, so that the farmers will get sufficient knowledge in the management of dairy animals and also in producing milk production economically.
7. *Improving the rural transport:* The roads are in very poor conditions in the rural areas. The milk collected at rural cooperative societies should be transported to chilling centre/processing centre within reasonable time, to keep up the quality of milk to withstand processing. If the roads are in bad condition, the milk will spoil when it reaches the destination.
8. *Processing centres/product factories:* The milk processing centres/products factories should have the /sufficient capacities and sufficient number to deal with surplus milk during flush season. The surplus milk should be converted into products. If the processing centre are at long distance from collection points, chilling centres can be established in which the milk is chilled and transported to processing centres by refrigerated thermo packed road tankers.
9. *Marketing facilities:* For the sale of liquid milk and milk products marketing infrastructure should be developed. i.e. C & F agents, distributors, whole sale, retailers, Mobile quality checking teams should be provided to check the quality on the spot, if any complaint comes, to get consumer's satisfaction. A poor marketing structure, will easily damage the business. Now a days any body can produce any product, but ability depends on efficient marketing.
 - Other basic infrastructure includes
 - Electricity
 - Water supply In the village. Drainage

NATIONAL TECHNOLOGY MISSION FOR DAIRY DEVELOPMENT

The government of India has formed a body "Technology mission" to coordinate the activities of various institutes concerned with dairy development such as NDDB, IVRI, Agricultural universities, state government department working for dairy development with the ultimate objective to promote dairying on "Operation Flood" model for the welfare of millions of milk producers in the country. Most of the above institutions are working piece meal and in isolation. This body was established in 1988 to 1994 (7 years programme) with headquarters at Anand in Gujrat State. This body also sets targets, monitor the progress and advise government on policies and statues. This will help to

promote institutional based dairying in India more rapidly during the nineties, in comparison to what we have achieved in the seventies and eighties.

The idea of mission was conceived by the then prime minister of India, Sri. Rajiv Gandhi during his visit to Anand, head quarter of National Dairy Development Board (NDDB) during 1986.

Mr. Gandhi felt that the pace of the dairy industry growth under operation flood was not fast enough and that there was a need for technological intervention. The mission would accelerate the pace of rural employment through Dairy development and bring about effective coordination among various government programmes and agencies for optimum use of resources. The mission was launched by the Advisor to the prime minister of India on Technology mission Mr. Sam Pitroda, Dr. V.Kurean Father of India's White revolution is the chairman of the mission. The main objectives are:

- a) Under the Technology mission the milk production in the country is expected to go up from 44 million tonnes in 1987 to 61 mm by 1995.
- b) To increase the percapita availability of milk from 158 to 186 gr/head/day.
- c) The average lactation yield of the cow is expected to be increased from 390 to 640 lit. and in buffaloes from 900 to 1010 lit per lactation.
- d) Number of districts covered by dairying would go up from 242 to 270.
- e) Number of village milk co-operatives to increase from about 49000 to 50000. These include about 21,000 additional village cooperatives planned under of phase III.
- f) Milk marketing facilities will go up along with processing capacity.
- g) Various government Departments associated with the mission. Indian council of Agricultural research (ICAR) Central Scientific and industrial Research (CSIR) Agricultural universities and NDDB will be involved with the mission.
- h) The mission plans to set up large energy efficient dairies and lactoperoidase system to preserve milk quality.
- i) The mission would have a total outlay of about Rs. 1070 crores including 915 crores under OF—III.

Role in Voluntary Organisations in Dairy Development

Social institution may be defined as any voluntary, private, cooperative or sponsored organisation for poor people who are under below poverty. Social institutions are service oriented organisation and not aimed at profit making. Most of the social institutions are sponsored by voluntary organisations . Eg: Awane, Artic etc.

The various types of social institutions are:

1. *Voluntary Organisation:* The persons who are interested in rural development and social activities will form a social institution and registered with central Government under ministry of human resource development. The finance sources for these organisations are
 - a) Funds from human resource development ministry.
 - b) Foreign bodies donations
 - c) Donation from Industrial/business/ individuals
 - d) Income on donated properties.

The organisation is organised by a committee. They will take the help of any volunteers of different professionals, who will work voluntarily, or they will appoint persons on honorarium basis. The Govt. of India will audit the accounts and take necessary actions, if any miss happening occurs.

2. *Promoted by industrialists/business people:* Some of the industries/business people who are interested in rural development/social work will form a "trusty". The funds for these "trustes" a portion of the profit from their group of companies are diverted to it, for which tax exception is provided by the government. They will also collect donations for people, for which also tax is exempted. It is also managed by a committee. They will take the help of different professions and also employees of their group of companies to do the work.
3. *Promoted by Cooperatives:* Milk producers cooperatives or compound live stock feed manufacturers associations or Breeding associations etc. will organise social institutions. They fertiliser:
4. *Promoted by banks:* Nabard and other commercial/cooperative banks will sponsor service centres to promote rural development. Funds are financed by respective banks.
5. *Qiftas-Indo Swiss project:* Jointly organised by Switzerland and Indian governments. Some are organised by PJRI person etc.

Activities of social-institution concerned with dairying

1. They will adopt some villages where poor, people are dominated under poverty line.
2. They will identify the beneficiaries by their own surveys and gathered information.
3. They will select the people of 25-40 members per batch as beneficiaries.

4. They will provide training to these beneficiaries on dairying by professional experts, they
5. They will help in formulating dairy project.
6. They will assist in getting loans from commercial banks and subsidies from government.
7. They will develop community facilities which are useful for most of the beneficiaries. The cost for these facilities will be borne by them. Eg: Community fodder crops, water supply, vaccination programme.
8. They will supervise the dairy farms frequently to see that it is properly running.
9. They will provide veterinary aid freely /with law fee by appointing their own doctors.
10. They will help in marketing of milk and milk products. Some times they will take the marketing work to benefit milk producers.
11. They will supply inputs like concentrate feeds, fodder, seeds, fertilisers on actual cost which can be repaid in instalment.

Concept of Socio-economic and Cultural Changes

Society is a group of people in more or less permanent association who are organised for their collective activities and who feel that they belong together. Important aspects of society is not the structure, it is the system of relationship. Society exists only when the members know each other and possess common interest on subjects. The likeness, cooperation, interdependence are the important elements to constitute society.

Community is a social group that have some degrees of co-operation, likeness, interdependence and living in a specific area. Community is a natural group of people residing in a particular locality permanently with a feeling.

The society is heterogeneous in nature. These are rich, poor, industrialists, peasants, rulers, sweepers etc. Every where society is divided into various classes, economic, social, political and religious. The process by which individuals and groups ranked in a more or less enduring hierarchy of status is known as stratification. Every society is divided into more or less distinct groups. No society is unstratified. Where there is a social stratification, there is social inequality since social stratification means division of society into social classes.

Social classes are defined as abstract category of persons arranged in levels according to the social status they possess. There are no firm lines separating one category from

the other. Social class is a culturally defined group that is accorded a particular position or status within the population as a whole. A social class is the aggregate of persons having essentially the same social status in a given society. Each social class has its own particular social behaviour, its standards and occupations. The relative positions of the class in the society arise from the degree of prestige attached to the status. Status is the basic criterion of social class or in other words class is a status group.

In a social class there is, firstly a feeling of equality in relation to members of its own class in behaviour, standard of life, occupation etc. Secondly, there is a feeling of inferiority in relation to those who stand above in a social class. Thirdly, there is a feeling of superiority to those below in social hierarchy.

Every class has its own distinctive ways of life. A social class is distinguished from other classes by certain customary modes of behaviour, which are taken to be characteristic of that class and may be concerned with such things as mode of dress, the type of conveyance, the way of recreation and expenditure. Thus the upper class members are masters rather than servants. Economic classes are the groups engaged in different economic activities or standing in different relationships to the means of production in a society eg. Business, service, farmer and other classes.

Cultural class as further social strata that have developed sub cultural patterns of behaviours. The patterns are distinguished from each other eg. Hindu and Mohammedan cultural classes.

Farmers and their families are members of the society in which they live. In any society there are strong pressures on its members to behave in certain ways. In all societies there are accepted ways of doing things and these ways are directly related to the culture of the society. The culture of society is the accepted way of doing things in that particular society. Sargent etc also defined "Culture is a pattern of learned behaviour shared by members of a society. It includes not only the way of making things and doing things, but the pattern of relationships of many people, the attitude they foster, the beliefs and ideas they have and even the feelings with which they respond. Culture is not merely customs, though customs are a part of culture. For culture, is the pattern of whole of responses, the more or less consistent unity that links the many diverse elements of living into the way of life. The culture of a society is learned by individual members of that society eg: children learn by seeing how elders behave.

The basic difference between society and culture is that society is people and culture is behaviour. Members of a society share to some extent at least a common culture, live with it, alter it, and transfer it to the next generation. Culture has a structure that is made of various units i.e.

- a) *Culture trait*: Which may be material or non material trait Bullock cart, Doti, Sari are examples for material culture and vanakkam and namaskaram and also pulling the harm of sari over the head to cover a women's face in the presence of outsiders are examples for nonmaterial. Certain cultural traits are essential to all are called as universal eg. Young people use to show extreme respect and obedience to the elders, dress, language etc., culture in which the individual has a choice among several forms of behaviour are called alternative traits eg: When a cow comes to heat the farmer can get inseminate his animal either taking it to veterinary dispensary or subcentre or milk producers cooperative society, which ever he chooses as most convenient or beneficial to him. Some traits are practised by some groups but not by all groups are called specialists traits. Individual peculiarities such as fears prejudices or capabilities are called individual traits
- b) *Culture complex*: It is a group of cluster of related cultural traits eg. Mattu pongal festival in livestock farmers community, thread ceremony in brahmin community, a girl coming of age function (attaining puberty).
- c) *Cultural pattern*: It is a group of cultural complexes eg: Cultural pattern of rural hindu society.
- d) *Customs*: Customs are socially prescribed form of behaviour, transmitted by tradition and enforced by social disapproval of its violation. Customs are the accepted ways in which people do things together in personal contacts. Customs are interwoven with our social life, and are part and parcel of our society.

Customs can be classified as

- a) *Unidentified acts*: eg: a farmer prefers goat milk, using a particular brand of products.
- b) *Folk ways*: Are the customary way of behaving in a society in which society exerts some force for conformity. Eg: Removal of shoes before entering in to house.
Vanakkam (greeting others with folded hands)
Folk ways are the expected forms of behaviour but are not rigidly enforced.
- c) *Superstitions*: Eg: in a farm a cow delivered a male calf on Friday and later the farmer fell ill and died. The farm women explains that the death was due to the birth of male calf on Friday.
- d) *Mores*: Are the pattern of behaviour consider essential by society. It is strickly enforced eg: Halal method of slaughter in muslim society, standing up during the playing of the national anthem.

- e) *Taboo*: Those things which persons ought not to do. Eg: prohibition of pork in Muslims society and beef in hindu religion.
- d) *Acculturation*: It means contact between culture when people of two different cultures come in contact, they may influence each in different ways. The impact may be one side or reciprocal.
- e) *Ethnocontrison*: It is the tendency of man to consider his own culture of high value and superior to all others and judge, other cultures in terms of standards and values that exists in ones own culture eg: Arranged Marriage, American father of lady would never sell his daughter in marriage to any man.

Social and cultural change

Social structure and cultures are never completely static, they can and do change. Cultural change in society has two major aspects.

- a) Cultural change by discovery and invention.
- b) Cultural change by diffusion and borrowing.

The first comes from within the society and culture, the second from another culture outside of the society. The extension worker will help to "seek up cultural change in farming. This may in turn contribute to wider social change. Eg:

- a) Amul pattern of milk society: Cultural change, social change
- b) Ox drawn plough to tractors.

Animal Husbandry Cooperatives as an instrument of social and economic change

The advent of dairy and other animal husbandry cooperatives has been a boon for farmers especially those who are traditionally weak. It provided year round income to the farmers 60-65% of income of the group from animal husbandry.

Social Impact

Membership is open to all regardless of caste and creed barrier. Untouchability reduced. Other impacts are

- Age old superstition of selling milk as a social evil is removed.
- Democratic election procedures of societies increased awareness of the farmers about their vote.
- Enables adoption of better managerial practices.

- Portion of cooperative profit can be spent for improvement of road conditions, establishment of small libraries and educational units, helping establishment of hospitals, schools etc.

Interaction with educated society improves the lives of farming community.

Economic Impact

- (a) *Direct impact:* Large number of youth especially women, widows are given employment. Farmers have become self reliant by regular in flow of money from urban to rural areas.
- (b) *Indirect impact:* Financial position of farmers is improved by increase milk yield, low expenses on veterinary aid. Middle man and exploit of farmers are checked. Gainful employment, family labour and agricultural by products are also utilised efficiently.

REFERENCES

- COWI Consulting Engineers and Planners. 2000. *Cleaner Production Assessment in Dairy Processing*. United Nations Environment Programme Division of Technology, Industry, and Economics, Denmark. Published by UNEP/Earthprint.
- Jay, J.M. 1992. *Modern Food Microbiology. Fourth Edition*. New York: Chapman & Hall. pp. 237-9.
- Potter, N.N. & J. H. Hotchkiss. 1995. *Food Science. Fifth Edition*. New York: Chapman & Hall. pp. 279-315.
- Swasigood, H.E. 1985. "Characteristics of Edible Fluids of Animal Origin: Milk." In *Food Chemistry. Second Edition. Revised and Expanded*. O.R. Fennema, Ed. New York: Marcell Dekker, Inc. pp. 791-827.
- The Scientific Committee on Animal Health and Animal Welfare. *Report on Animal Welfare Aspects of the Use of Bovine Somatotrophin*. European Union. Retrieved on 2008-01-16