

## CHAPTER V

### SUMMARY

#### 1) SUMMARY AND FUTURE SCOPE

Mathematics is being used by every person. Mathematics plays an important role in Real Life situation. It is used not only by scientist, Agriculturalist, Technologists but also by every individual in his day to day life. It can be used for solving real world problems.

The research paper mainly devoted to develop a mathematical model in particular Linear programming model for profit maximization. A mathematical model is developed for a dairy plant to increase over a period of time, subject to resources and restrictions. A composite milk plant Shree Warana Sahakari Dudh Utpadak Prakriya Sangh Ltd., Amrutnagar was selected for the present study.

The plant had well developed milk shed area with vastly dispersed milk assembling centres. A dairy plant with multiproduction system and a well set network of its product distribution.

The data was collected for the financial year 1992-93 on various economic parameters of all the three systems procurement, processing and distribution of the dairy products by use of records, personal interviews and observations.

The milk procurement with efficient route system was linked in the form of milk purchasing activity to Linear programming optimization model, used for processing and distribution.

A Mathematical Model, for optimization is developed to determine how much intermediate products should be manufactured and sold. The optimal product mix should maximize the total contribution value subject to various bottlenecks and constraints.

The collected data is for 100 units of each of milk and milk products. Resources used are labour hour for procurement as well and milk products, steam and refrigeration used for products is taken from observations and interview. The same is represented in Requirement data tabular form.

To solve, first step is to make inequalities in terms of equalities. To do this slack variables viz  $S_1, S_2$ ---etc. are necessary to used. Now the problem is ready for solution. Solution is the set of values of  $X_1, X_2, \dots, X_{12}$ . The solution can be obtained by simplex. Method it is necessary to select best possible solution which optimize the objective function Z.

Solution is left for further studies.

## 2) FINDING OF THE INVESTIGATION

1) According to the projections made by marketing experts following trends are likely to emerge that could effect demand for dairy products.

i) an increase in the number of households but decrease in their average size, thus enhancing demand for more products in smaller packages.

ii) Growing automation in homes.

iii) Growing tendency to outdoor eating.

iv) an emphasis on quality above prices.

v) an increased emphasis on the health aspect of foods. Sliminess and fitness, strength and fitness, strength and energy, Low cholesterol, low fat.

vi) demand for newer dairy products with extended shelf life.

Above expert opinion needs to be taken seriously. Dairy plant must set up an action plan for increasing milk products in small packets. More concentration should be given on quality fat and SNF percentage should be increased or decreased as per requirements for batter health.

2) Fluid milk marketing is necessary to be improved. As there is no home delivery service facility, consumption is less. Marketing milk products is also necessary. Dairy plant management needs to think about increasing sub-stations at different areas. In particular dairy plants booths are less in Urban area where the population is high. It will

automatically increase the efficiency of dairy plant.

3) Dairy plant does not produce cheese even though cheese seems to have maximum growth potential during the 21st century. The quantum as well as range of cheese varieties is likely to undergo intensive growth. This might promote the growth of whey products.

Further butter, ghee and skim milk powder growth is envisaged so as to balance the regional and seasonal fluctuations in milk production.

Intensive Research and Development efforts are needed to develop suitable technologies for large scale manufacture and packaging of traditional milk products. This growth can be achieved through integrations with newly emerging energy efficient unit operations developed in advanced countries.

Developmental activity would be scientific documentation of the desirable physico-chemical and shelf life characteristics of the regions having specific traditional milk products. Scope exists for introduction of at least 25 additional value added milk products, through organized sector of the dairy for diversification and higher profitability.

4) The market milk in sachets and tanker or cans was profitable to be sold through all marketing channels, at their respective maximum demand. The study suggests that the mixed system of milk distribution through milk booths and sales agencies should be retained by the plant.

Installation of new milk sale booths as well as milk product distribution and sale in metropolitan cities is a must. The efficient milk pick routes, marketing fluid milk and milk product routes planning, optimization of processing and rationalisation of distribution subsystems will result in the net gain. This will reduce the wastage as well as minimize the variable cost of each milk product.

5) The self improving factors generated through optimization would not only produce sufficient capital to be ploughed back for the growth of dairy industry, but also it would help in achieving the socio-economic objectives of dairying as an instrument of social and economic change. The objectives set for dairy industry as a whole, it would further help in creating a chain reaction of payments of reasonable milk prices to the milk producers and consequently increased milk production. Increase milk supply and productivity of dairy plant.

This will reduce the cost of production and increase the sale due to its quality. Automatically the demand for milk and milk product will increase in greater quantity and thus the profit will definitely increase.

6) Excellent scope for the manufacture of a wide range of spray dried milk products. The capital requirements for such ventures are within the scope of limits stipulated for small industries sector. A new entrepreneur may do well in

venturing into products which are new to the food industry in India, and serve the Soci-economic needs of the population.

7) It is necessary to give more scope for Research and Development work to improve quality and for developing new products using recent technologies.

8) With availability and surplus Milk and Milk products efforts to export the products of "International Standards" is required.

9) Economics of dairy production Milk yield is less therefore it is necessary to research to get the improved breeds of Animal giving maximum Milk.