INTRODUCTION
Dairy farming is one of the major occupations of the rural population in India. It provides nutritive food, animal draught power for farming and transport, energy for fire and light, manure for cultivation of crops and raw material for different industries. It has tremendous potentiality to enhance the scope of income and employment generation in rural India. Realising the importance of dairy farming in India, various dairy development programmes such as Key Village Scheme (KVS), Intensive Cattle Development Project (ICDP), Operation flood I, II and III etc. have been implemented since the introduction of planning in India. The activities relating to dairy development have been provided a place in various programmes in different five year plans, such as Marginal Farmer and Agricultural Labourers (MPAL), Small Farmers Development Agency (SFDA), Intensive Agricultural Development Programme (IADP), Integrated Rural Development Programme (IRDP), etc., implemented for the development of the weaker sections of the rural India.

**IMPORTANCE OF THIS STUDY:**

India has the highest population of milch animals in the world but the average yield per milch animal is less than that prevailing in most of the countries in the
World (1). i.e. 1993-94 the population of milch animal was 14966300, but the average daily milk yield per milch animal was 13 Kg.

Minimum average requirement of milk per person is 280 grams against the actual consumption of milk per person 153 grams in India in 1979-80, which is very low (1). However, despite of increase in human population, the per capita milk availability in India is increased by over 85 per cent between 1971-72 and 1996-97 i.e from 109 grams per day in 1971-72 to 202 grams per day in 1996-97.

In India the demand for milk is constantly increasing because of relatively higher growth rate of population. Rising per capita income is another important force which gives rise to demand for milk. On an average, milk consumption [requirement] is likely to be more than three times the present availability of the Country's milk production. Hence, a dairy development will have to satisfy the milk demand (2).

Animal husbandry (AH) is a labour intensive occupation and the benefit-cost ratio is considered to be favourable to farmers. The AH programmes give the economic benefits within short time, and provide the opportunity of self-employment to a large number of people at low cost. Thus, dairy development is imminent to reduce poverty and unemployment to some extent (3).
The majority of milk producers who are closely associated with co-operative dairying are small producers. Thus, the participation of the less privileged class seems to be much higher in dairy co-operatives. The co-operative dairying in an integrated manner provides a stable market and better price to all classes of producers in its command area and has earned remarkable benefits in terms of better income, better price, better productivity and resultant production (4).

This indicates that dairy development has helped the landless population to stabilise the nutritional intake. It is also observed that consumption of milk and milk products is substantially higher in the case of households following dairy farming occupation.

The benefits of productivity and production enhancement are most likely to be available to less privileged classes. This is evident from the fact that nature of distribution of animals in India is less skewed than that of land (4). In the above context the present study aims at pointing out the present position of livestock economy at the macro level. While to examine its working at the micro level, a study of Sabarkantha district has been taken up.
OBJECTIVES OF THIS STUDY :-

The specific objectives of the study are as follows:

[1] To study the various cattle and dairy development programmes implemented/undertaken in India, Gujarat and Sabarkantha district,

[2] To assess the growth and regional variations in population of milch animals and factors responsible for that,

[3] To study the effect of various factors such as dry period, lactation length, breeding, maintenance of animals, components of maintenance cost such as green and dry fodder, grazing, concentrates etc. on milk production in the case of cows and buffaloes in Sabarkantha district,

[4] To examine the efficiency of cattle farming among the different types of rural families and to assess the role of cattle farming in the economy of weaker sections of the rural area,

[5] To assess the problems and prospects for milk production and its marketing with respect to rural development in Sabarkantha district and

[6] To study the cost of milk production for cows and buffaloes in the study areas.

METHODOLOGY AND DATA COLLECTION :-

The required data for the present study were collected from both primary as well as secondary sources.
For primary data, some group of households of agricultural labourers, marginal and small farmers and other farmers had been selected who followed dairy farming. The information from all these households were collected on the basis of detailed questionnaire which contained the required information for this study.

The necessary secondary data were collected from the office of Sabar Dairy, volumes of the five year plans (1st to 7th), Directorate of Economics and Statistics, Directorate of Animal Husbandry, Gujarat, as well as from other offices related to livestock development.

**SAMPLING:**

**Selection of District:**

Sabarkantha district of Gujarat was selected purposively for the present study because Sabar Dairy has been one of the best dairy unions (running on co-operative basis) in Gujarat in respect of installed capacity, for collecting and processing milk per day and coverage of milk producers in the villages through milk co-operative societies. The Sabar Dairy has been in operation since 1965 in the district.

**Selection of Taluka:**

In order to select talukas first of all, all the talukas were grouped into three categories. The three categories of milk producers co-operative societies were adopted because Sabar Dairy was considered as an important
agency promoting dairy development. Three categories of milk producers co-operative societies were formed on the basis of available information of collection of milk in liters from the Sabarkantha district statistical abstract 1987-88 [page 76] (6) and are given as follows:

CATEGORY I included those talukas which had more than 15 per cent of milk producers during 1987-88. These talukas were: Idar (29.01 per cent), Prantij (21.58 per cent) and Bayad (16.00 per cent).

CATEGORY II included those talukas which had milk producers in the range of 5 per cent to 15 per cent during 1987-88 from different co-operative societies (as per district statistical abstract). These talukas were: Himmatnagar (13.38 per cent), Modasa (8.57 per cent) and Malpur (5.39 per cent).

CATEGORY III included those talukas which had less than 5 percent of milk producers from different co-operative societies during 1987-88. These talukas were: Bhiloda (4.38 per cent), Khedbrahma (3.73 per cent), Meghraj (1.06 per cent) and Vijaynagar (0.11 per cent).

From each category, one taluka was selected in consultation with dairy officials of Sabar Dairy, Sabarkantha. Thus Bayad taluka from category I, Modasa taluka from category II and Meghraj taluka from category III were purposively selected.
Selection of Villages:

In consultation with dairy officials of Sabar Dairy, Sabarkantha, from each selected talukas, three villages, where milk producers co-operative societies existed, were selected purposively from different directions of the talukas. Thus, in all, nine villages were selected purposively from all the three talukas of the district. The villages selected were Ghabat, Dehmai and Patel-namuvada (Sathamba) from Bayad taluka; Pahadpur, Dolpur and Sikka from Modasa taluka and Vasna, Undava and Meghraj from Meghraj taluka (7).

Sample Households:

In the respective villages door-to-door census was carried out. In the census, information was sought on:


The Cultivating households which followed dairy farming during June-91 to May-1992 were classified into following three groups; [a] marginal farmers [b] small farmers and [c] other farmers; besides [d] agricultural labourers and artisans formed a separate group. The classification of marginal and small farmers in the respective three talukas was done according to criteria of
size of operational holdings followed by small farmers
development agencies in the district. For Bayad, Modasa
and Meghraj talukas the size of operational holdings
considered for marginal farmers was below 4 bighas. For
small farmers between 4 to 8 bighas and farmers whose
operated land above 8 bighas were considered as other
farmers.

From each of the selected villages, 10 to 13 sample
households were selected randomly. The numbers of sample
households in each of the above cited four groups were
decided by proportional allocation method and thereafter
from each group required number of sample households were
selected randomly. Thus, from Sabarkantha district, three
talukas, 9 villages and 100 sample households were
selected.

Reference Year:
The reference period of the study was
agricultural year 1991-92 i.e, 1st June 1991 to 31st May

SCHEDULES:

[A] Household Schedule:- The information collected
under this schedule was as follows: (i) Socio-economic
characteristics of the sample households such as caste,
occupations followed, size of operational holding, level of
education of decision makers etc, (ii) Inventory of
livestock and investments made on dairying during 1991-92,
(iii) The details about milch animals such as age, breed, lactation period, expenses on feed, fodders and milk production from buffaloes/cows, (iv) Joint expenses such as veterinary services, artificial insemination, expenses for dairy purposes and other miscellaneous charges paid such as grazing, hired labour charges, watering, etc, (v) Disposal of milk production and price procured from concerned agency, (vi) Operation-wise family labour and hired labour spent on maintenance and rearing of animals, (vii) Broad particulars about cropping patterns, and (viii) Views narrated by sample households particularly problems faced by them in dairy farming and their opinion regarding functioning of milk producers' co-operative society in respective village.

[B] Schedule for secondary data:

Under this schedule, the following information was collected:

(i) Ten years time series data on procurement prices of milk and the sale price of Sabardan concentrates of Sabar Dairy, Sabarkantha, (ii) The information such as number of milk producers' co-operative societies, membership and milk procured for the period 1975-76 to 1991-92, (iii) Details about livestock position over different periods viz., 1972, 1982 and 1988 in the district and talukas, (iv) Details about land use patterns, crop patterns in the district, talukas and selected villages for the year 1991-92.
METHOD OF DATA COLLECTION:

The data covered under household schedule were collected by recall method from sample household by interviewing the head of the households. Field work in connection with the study was started in the first week of February 1992 and was completed in the last week of June 1993.

Method of Analysis:

The cost of milk production had been estimated on the basis of expenses incurred on in-milk and dry animals in relation to milk production and dung manure produced by the same population during the reference period of the study. The cost concept used in the present study included cash expenses incurred on purchased feed and fodder, medical care, artificial insemination, interest paid on borrowed capital for dairy purpose and other miscellaneous cash expenses on items such as grazing and watering, feed, hired labour charges etc., imputed expenses of feed and fodder and interest on working capital, interest on investment incurred on cattle shed and dairying equipment during reference period and imputed value of family labour. The statistical tools such as percentage, mean, standard deviation, co-efficient of variation, co-relation co-efficient, 't' and $X^2$ chi square test and analysis of variance were used to draw the conclusions from the analysis of the data.
PRESENTATION OF ANALYSIS AND FINDINGS:

CHAPTER SCHEME:

In Chapter-I introduction contains the importance of the dairy sector in economy with respect to occupation, employment and income in rural areas, needs for development of this sector, target for development of dairy in the Eighth five year plan, objectives of this study, data, methodology and presentation of analysis and findings.

Chapter-II presents the Genesis of Sabarkantha district which includes comparison of Gujarat state and India with respect of geographical area, town and villages and location, total population of SCs, STs and others; rural, urban and their growth, occupation of this population, residential houses in rural and urban areas and their growth, family size, sex ratio, literacy rate, infrastructure facilities like roads, railways, electrical facilities, water facilities etc, climatic conditions, rainfall, temperature, net sown area (NSA), gross cropped areas (GCA), net irrigated area (NIA), gross irrigated area (GIA) and changes in it, land use pattern, reported area, gross land area, forest area, barren and uncultivated land etc., cropping pattern and changes in it, yields of different crops etc. of the talukas of Sabarkantha district and Gujarat were also complied/collected.
Chapter-III presents development of dairy enterprises in Gujarat, Plan periodwise outlays, development programmes, establishment of co-operative dairies in the state, their progress in the sense of number of societies, number of members, number of districts, talukas and villages covered, progress in terms of milk collection during last three years period and milk production, employment generation, salaries, infrastructural development by dairy in their command area e.g. buildings for schools, roads, water works, animal hospitals, dair factories etc. and other facilities provided by the dairy in its command area. Its problems, role of dairying in infrastructural development in rural area were also collected.

Chapter-IV presents information on growth of livestock population, growth of different types of livestock population in Gujarat in talukas of Sabarkantha district, factors responsible for favourable and unfavourable growth of livestock population such as NSA, GCA, reporting area, grazing land, rainfall, Net Irrigated Area, GIA etc.

Chapter-V presents economics of dairy enterprise, Socio-economic conditions of sample households, cost of milk production and factors affecting milk production, problems and prospects at micro levels i.e., at farm level, return cost ratio for livestock rearing.
Chapter VI presents summary, conclusion and policy implications.

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