A STUDY ON PROCUREMENT OF MILK BY BALAJI DAIRY IN CHITTOOR DISTRICT OF ANDHRA PRADESH

BY

CH.BHAGYA PHANINDRA

B. Sc. (Horti.)

MASTER IN AGRIBUSINESS MANAGEMENT

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THESIS SUBMITTED TO THE
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CHAIRPERSON: Smt. Y. PRABHAVATHI

DEPARTMENT OF AGRIBUSINESS MANAGEMENT
SRI VENKATESWARA AGRICULTURAL COLLEGE
ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY
RAJENDRANAGAR HYDERABAD – 500 030

2015

DECLARATION

I, **CH.BHAGYA PHANINDRA,** hereby declare that the thesis entitled **"A STUDY ON PROCUREMENT OF MILK BY BALAJI DAIRY IN CHITTOOR DISTRICT OF ANDHRA PRADESH"** submitted to **Acharya N.G. Ranga Agricultural University, Hyderabad** for the degree of **Master in AgriBusiness Management** is the result of original research work done by me. I also declared that no material contained in this thesis has been published earlier in any manner.

Place: Tirupati **(CH.BHAGYA PHANINDRA)**

Date: **I. D. No. : TMBA/13-04**

CERTIFICATE

This is to certify that the thesis entitled **"A STUDY ON PROCUREMENT OF MILK BY BALAJI DAIRY IN CHITTOOR DISTRICT OF ANDHRA PRADESH"** submitted in partial fulfillment of the requirements for the award of degree of **MASTER IN AGRIBUSINESS MANAGEMENT** to the Acharya N.G. Ranga Agricultural University, Hyderabad, is a record of the bonafide research work carried out by **Mr. CH.BHAGYA PHANINDRA** under our guidance and supervision.

No part of the thesis has been submitted by the student for the award of any other degree or diploma. The published part has been fully acknowledged. All assistance and help received during the course of the investigations have been duly acknowledged by the author of the thesis.

Thesis approved by the Student Advisory Committee:

Chairperson : **Dr. Y. PRABHAVATHI** _____
Assistant Professor
Department of AgriBusiness Management,
S.V. Agricultural College,
Tirupati-517502,
A. P.

Member : **Dr. N. VANI** _____
Assistant Professor
Department of Agricultural Economics
S.V. Agricultural College,
Tirupati-517502,
A. P.

Member : **Dr. G. MOHAN NAIDU** _____
Associate Professor and Head
Department of Statistics and Mathematics
S.V. Agricultural College,
Tirupati-517502
A. P.

Date of final viva-voce:

CERTIFICATE

Mr. CH. BHAGYA PHANINDRA has satisfactorily prosecuted the course of research and that the thesis entitled **"A STUDY ON PROCUREMENT OF MILK BY BALAJI DAIRY IN CHITTOOR DISTRICT OF ANDHRA PRADESH"** submitted is the result of original research work and is of sufficiently high standard to warrant its presentation to the examination. I also certify that neither the thesis nor its part thereof has been previously submitted by him for a degree of any University.

Date:

(Smt. Y. PRABHAVATHI)
Assistant Professor
Department of AgriBusiness Management,
S.V. Agricultural College,
Tirupati-517502,
A. P.

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ABSTRACT

Name of the Author	: CH.BHAGYA PHANINDRA
ID NO	: TMBA/13-04
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Major Advisor	: Smt. Y. PRABHAVATHI
University	: ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY
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Indian dairy sector has grown substantially over the years. India ranks first among the world's milk producing nations, achieving an annual output of 137.7 million tonnes of milk during 2013-14 recording the growth of 3.5 percent. India's milk production accounts for 16 percent approximately of the world's total output.

The present project entitled "A Study on Procurement of Milk by Balaji Dairy in Chittoor District of Andhra Pradesh" was taken up with the following objectives.

1. to identify and analyse the factors influencing supply of milk by farmers to Balaji dairy.
2. to study and examine the cost and returns in procurement per unit of milk.
3. to identify and analyse the factors influencing procurement of milk.
4. to suggest measures for efficient procurement of milk.

The present study was under taken in Chittoor district of Andhra Pradesh in view of importance dairy farming in the district. From the district 4 villages supplying milk to Balaji Dairy were selected purposively. Fifteen farmers from each village are chosen randomly. The total sample size of the study was 60. For this study, both primary and secondary data were collected. Primary data have been collected at the village level from the milk producer households. The information on problems of procurement, price received and expenses incurred by the dairy farmers were collected. Secondary data with regard to factors influencing procurement and quantity of milk supplied were collected from the records of Balaji dairy milk collection units, statistical abstracts, journals, websites etc. The data is collected through structured schedules by interview method. The collected data were analyzed by simple statistical tools such as percentages, averages, etc.

Average milk yield in the study area for cow, buffalo and crossbred cow are 12, 6-7 and 13 litres per day per animal respectively.

Average supply of milk per day per respondent was upto 10 litres, 11-20 litres and above 20 litres are 51.66 percent, 13.33 percent and 35 percent respectively of the total sample respondents.

The total operational costs per unit of milk (1000 litres) including interest on working capital were Rs.25,80,09,993.1. The cost of raw material (milk) accounted for 31.5 percent of the total operational costs followed by interest on working capital 4.12 percent.

The total fixed costs per unit of milk (1000 litres) including interest on fixed capital was Rs.40,06,82,866.4. The depreciation on machinery accounted for 42.1 percent followed by depreciation on buildings 10.2 percent.

CHAPTER – 1

INTRODUCTION

Chapter I

INTRODUCTION

Indian dairy sector has grown substantially over the years. India ranks first among the world's milk producing nations, achieving an annual output of 137.7 million tonnes of milk during 2013-14 recording the growth of 3.5 percent. India's milk production accounts for 16 percent approximately of the world's total output.

Constituting an important segment of the Indian rural economy, dairy and dairy products provide livelihood to millions of homes in villages and ensure supply of quality of milk and milk products to people of both urban and rural areas. Dairying has become an important secondary source of income for millions of rural families. The accelerated socio-economic development during the 21st century is throwing up challenging issues like food security, food safety, quality and their linkages with the national and international markets as the demand for food is increasing.

1.1 DAIRY INDUSTRY IN INDIA

Dairy activities have traditionally been integral to India's rural economy. The country is the world's largest producer and consumer of dairy products. Almost its entire produce is consumed in the domestic market and the country is neither an importer nor an exporter, except in a marginal sense.

Despite being the world's largest producer, the dairy sector is by and large in the primitive stage of development and modernization. Though India may boast of a 200 million cattle population, the average output of an Indian cow is only one seventh of its American counterpart. Indian breeds of cows are considered inferior in terms of productivity. Moreover, the sector is plagued with various other impediments like shortage of fodder, its poor quality, dismal transportation facilities and a poorly developed cold chain infrastructure. As a result, the supply side lacks elasticity that is expected of it.

On the demand side, the situation is buoyant. With the sustained growth of the Indian economy and a consequent rise in the purchasing power during the last two decades, more and more people today are able to afford milk and various other dairy products. This trend is expected to continue with the sector experiencing a robust growth in demand in the short and medium run. If the impediments in the way of growth and development are left unaddressed, India is likely to face a serious supply – demand mismatch and it may gradually turn into a substantial importer of milk and milk products.

Fortunately, the government and other stakeholders seem to be alive to the situation and efforts to increase milk production have been intensified. Transformations in the sector are being induced by factors like newfound interest on the part of the organized sector, new markets, easy credit facilities, dairy friendly policies by the government, etc. Dairy farming is now evolving from just an agrarian way of life to a professionally managed industry – the Indian dairy industry. With these positive signals, there is hope that the sector may eventually march towards another white revolution.

Operation Flood had created a national milk grid linking milk producers throughout India with consumers in over 700 towns and cities, reducing seasonal and regional price variations while ensuring that the producer gets a major share of the price consumers pay, by cutting out middlemen. By reducing malpractices, it had helped dairy farmers direct their own development, placing control of the resources they create in their own hands.

The bedrock of Operation Flood has been village milk producers' co-operatives, which procure milk and provide inputs and services, making modern management and technology available to members. Operation Flood's objectives included:

- Increase milk production ("a flood of milk")
- Augment rural incomes
- Fair prices for consumers

Importance of Dairying:

Dairy production in India will experience a brisk growth in the coming years. The increase in production arises from traditional small family farms. In addition, new companies are emerging. Mechanization and automation are at low ebb in both types of farm. How rapidly this will change mainly depends on price and the availability of labour.

There is a strong increase in the demand for milk in India, partly due to the growing number of inhabitants. The country is expected to count 1.5 billion inhabitants by 2035. Population growth in India is exceeding that of China, thus resulting in a larger population in India than in China by 2030. Dairy consumption is also increasing per capita. This is mainly due to the growing middle class. In 2012-2013 the milk supply was 290 grams per day per capita. As a result of better living conditions and a recovering economy the increasing demand for dairy products in India is expected to exceed production.

PROBLEM STATEMENT

India has witnessed white revolution which portrayed manifold increase in milk yield during the post independence era. Milk production in the country has been enhanced from 17 million tonnes during 1951 to 137.7 million tonnes during 2013-2014 and India has become a number one in milk production during 1998 surpassing the USA. Milk production has become a major farm enterprise contributing about 7 percent GDP to India. For running a business economically, the fixed as well as variable costs must be realized so that, the organization runs at profit. To use optimally the fixed and variable capital invested, milk procurement should be commensurate with the installed capacity of the plant.

The various factors influencing procurement of milk include market influence, seasonal variation, spatial variation, pricing according to the cost of

milk production, effect of feed, effect of disease etc. The changes are impacting pressure on how the procurement function performs its internal and external processes and procedures in order to achieve its objectives.

Against this background the study was undertaken with the following specific objectives.

5. to identify and analyze the factors influencing supply of milk by farmers to Balaji dairy.
6. to study and examine the costs and returns in procurement per unit of milk.
7. to identify and analyze the factors influencing procurement of milk and
8. to suggest measures for efficient procurement of milk.

1.3 SCOPE OF THE STUDY

The results of the study throw light on cost structure, return and economic viability of the selected firm. The study also provides information regarding factors that influence farmers in supply of milk to dairy firm. Thus, the findings will be of great utility to financing institutions, farmers and academicians. The study also deals in general the marketing aspects, procurement aspects of milk in Chittoor district.

1.4 LIMITATIONS OF THE STUDY

The study has been conducted over a limited period of time, in a limited area and under different socio-economic conditions and hence suffers from drawbacks. Furthermore, the information collected and presented depended on opinion of sample dairy farmers. The necessary primary data regarding the dairying were collected from farmers by survey method and hence has inherent limitations.

1.4 PLAN OF THE PROJECT

The project report is presented in five chapters. The first chapter deals with the introduction along with the importance of dairying history, scope and profile of the company. The second chapter deals with review of literature. Third chapter deals with sampling procedure, collection of data and analytical tools employed. The fourth chapter encompasses a critical analysis of the results and discussion. The final chapter presents the summary and conclusions of the study.

COMPANY PROFILE

COMPANY PROFILE

The Chittoor Dairy, which was established in 1969 with a capacity of 6000 litres per day, reached to the capacity of 2.5 lakh litres per day in 1989-1990. The huge surplus milk was converted in to milk powder and the dairy could not sell the milk powder due to slump in the prices in the country. The dairy could not pay the farmers milk bills and the dairy went into loss making unit and finally was closed down on 31-08-02.

The district authorities sought intervention of the National Dairy Development Board (NDDB) and established the Balaji dairy with the assistance from state government. In order to help the women SHG dairy members/village organizations, District Rural Development Authority (DRDA) launched a detailed study for creating market infrastructure. After understanding the problem, DRDA decided to establish two Bulk Milk Coolers (BMCs) at Gangavaram and V. Kota on pilot basis with a capacity of 3000 litres per day. Each Bulk Milk Cooler costed around 9.5 lakhs and it was assisted by DRDA to Mandal Mahila Samakhyas (MMSs) of Gangavaram and V.Kota. There was an understanding between Balaji dairy and Mandal Mahila Samakhyas for supplying milk to Balaji dairy after cooling to 4°Centigrade, for which they will get 25 paise per litre. At present, total 5700 litres per day are supplied to Balaji dairy every day from both the BMCs.

A tripartite agreement is reached on the mutually agreed terms and conditions among the DRDA, Balaji dairy and Zilla Mahila Samakhya. The project director DRDA arranged meeting with the institution of poor represented by chair persons of Mandal Mahila Samakhyas (MMS), general managers of Balaji dairy and co-ordinated various activities. Negotiations were facilitated on milk price, chilling charges, transport charges, roles and responsibilities of the Village organizations (VOs), MMSs, Balaji dairy and DRDA. DRDA and Balaji Dairy jointly conceived the idea and evolved establishment of two BMCs for better remunerative price, by collecting milk

from villages around 8 to 9 km radius of BMCUs. MMS is a society which over sees the functioning of BMCU, recruitment and capacity building of the all women dairy staff members. It is the executive committee represented by elected members i.e. the sarpanches of the village organizations (VOs). VO is registered co-operative under Andhra Pradesh Mutually Aided Co-operative Societies (APMACS) Act, 1995. Registrar of co-operative does not have control on this co-operative. As per the terms, the BMCU is expected to procure milk from the VOs and chill the milk at 4°c for supplying it to Balaji Dairy. BMCUs inculcated the habit of procuring clean and good quality milk through milk producers and the individual milk testing was practiced. This public private partnership market intervention received accolades all over from academicians and policy makers.

For giving better remunerative price before establishing BMCUs, the Balaji Dairy and DRDA jointly formed milk producer's institutions (MPIs) around 8 to 9 km radius in 23 to 27 villages. Milk is collected from these villages through small tempos in stainless steel milk cans. A flat rate of Rs. 1.35 is paid for a litre of milk to the Mandal Mahila Samakhya by the Andhra Pradesh Dairy Development Co-operative Federation (APDDCF). Village organization gets forty paise and another 45 paise is spent on transportation of milk from VO to BMCU (Mandal). BMCU allows rupees 3 per kilometer to auto trolley usually carrying 10 cans (44 lit each) of milk. It is also reported that out of Rs 1.35, fifty paise is kept aside to make payment to milk producers, in case of delay for APDDCF. As per agreement, it is the responsibility of APDDCF to transport milk from BMCU (Mandal) to Central Dairy. The reagents, chemicals and detergents supplied by APDDCF are free of cost. The milk samples from each milk producer and from each village are collected and tested at BMCU. Payment is made as per the fat and SNF in the milk, through cheque to the MPIs from Balaji Dairy. The MMSs are spending nearly Rs.18,000/- per month expenditure on each BMCU for salaries, electricity, water, rent, diesel, stationery and chemicals. Income per month is

Rs. 22,500/- @ 25 paise per litre for 3000 litres per day as cooling charges from Balaji Dairy. An amount of Rs.5000/- is received per month after selling individual sample milk. Total income will be Rs. 22,500/- + Rs.5000/- = Rs. 27,500/-. Nearly 9,500/- surplus amount is received for Mandal Mahila Samakhya. Out of which Rs.1000/- to Rs.2000/- is kept apart for maintenance of the BMCU and rest of the amount is kept as reserve fund for future expansion. By supplying good quality milk to the BMCU, community learnt that good quality milk will fetch them good price.

Through milk vendors the milk is sold to consumers in the form of standardized milk (Fat 4.5%, SNF (solids not fat) 8.5%), full cream milk (Fat 6%, SNF 9%), toned milk (Fat 3%, SNF 8.5%) and double toned milk (Fat 2%, SNF 9%) in 250ml, 500ml and 1 litre sachets.

CHAPTER – II

REVIEW OF LITERATURE

Chapter II

REVIEW OF LITERATURE

This chapter presents a review of the available literature on the various aspects of dairying. The studies covered the impact of dairying on the overall development of villages, its overall benefits to the farmers, role of dairy sector in the production, procurement and marketing of milk.

9. Factors influencing supply of milk by farmers to Balaji dairy.
10. Costs and returns in procurement per unit of milk.
11. Factors influencing procurement of milk.
12. Measures for efficient procurement of milk.

2.1 STUDIES ON FACTORS INFLUENCING SUPPLY OF MILK

Koshta and Chandrasekar (1999) conducted a study which covered a sample of 100 milk producers in Raipur district in Maharashtra State in India. The required and relevant data were gathered through structured questionnaire with the personal interview technique. The study analyzed the production of milk, size of the families of milk producers, categories of milk animal possessed, productivity cost and returns of milk production and sale. The study suggested supplying cattle feed and arrangements for the artificial insemination services for increased milk production and institutional arrangements for the sale of milk.

Kurup (2000) conducted a study on “Milk Production in India – Perspective-2020” The study revealed that the cow and buffalo milk productions were not uniform and the increase was not in the same trend. The production of milk was influenced by the introduction of economic policies, infrastructure available in milk production, technology upgradation, institutional set up and quality assurance and the like. Such influencing factors were also the

constraints for increasing the production. For better perspective, the supply of qualitative cattle feed, better arrangements for artificial insemination services, provision of adequate required infrastructural facilities for the milk production and arranging for the sale of the milk produced by the milk producers with the help of well organized institution set-up were suggested.

Banerjee and Yadav (2003) have studied "Production and Marketing of Milk in Central Uttar Pradesh". Milk producers were categorized into urban and rural. Further, the producers were classified into small (owning up to two milch animals), medium (owning three to five milch animals) and large (owning more than five milch animals) producers. The study concluded that mostly small producers were members of the co-operative society and most of the large and medium producers disposed their surplus milk through direct sale. Cost of production per litre of milk decreased with the increase in the size of the enterprise. Keeping crossbreds was more profitable than keeping she buffaloes.

Babu and Verma (2010) studied the value chains of milk and milk products in the co-operative and private dairy plants in the Salem district of Tamil Nadu based on the data collected from one co-operative plant, one private plant, five milk transportation routes, ten co-operative societies, ten private milk collection centres and six chilling centres. The marketing margins and marketing efficiency have been found higher in toned milk, standardized milk and butter for the private plant and in full cream milk, ghee and SMP for the co-operative plant.

2.2 STUDIES ON COSTS AND RETURNS ON PROCUREMENT OF MILK

Dorge *et al.*, (1998) observed that the performance average of milk production in the Western Maharashtra was 34.74 litre per day, which was twice than in Konkah district (15.11 litre/day).

Shakeel and Khan (1998) observed that the performance of any milk union depended on how efficiently it procured milk from dairy co-operative societies. The ideal cost method was employed to evaluate the DCS-wise efficiency of milk procurement routes. The results indicated that in route R1, 12 out of 13 societies had efficiency of more than 90 percent.

Suriyamurthi and Ramachandran (2003) in the article "Problems and Prospects of Co-operative Milk Producers Union in Tamil Nadu" reported that the rural farmers joined together with production managers to make the country self sufficient in milk. The aim of co-operative society was not to maximize the return on capital employed but to render service to its members effectively and efficiently.

Ramanujam (2003) studied the "Role of Co-operatives in Milk Marketing Venture" as Indian middle class consumers have a craze for milk and its products. As they have good purchasing power, there existed high demand for milk and milk products. As a result, India was emerging as one of the largest and fastest growing consumer markets for milk and value added milk products in the world and the ever increasing demand for milk products was a testimony for this. Therefore, only by having an effective and sound system of distribution of milk and milk products will emerge India as the world's leading dairy nation.

Kulkarni (2004) felt the need for strong logistic system which will primarily maintain the equilibrium of milk collection, processing and distribution. It will increase the productivity of the dairies and maintain an optimum supply for the consumers.

Ramanujam and Rajmohan (2004) have spoken of the rural poverty of farmers in India. Co-operative dairying helped the farmers to earn extra income. Due

to white revolution, our milk production has reached to desirable heights. It encouraged income generating activities allied to agriculture. It could help to solve the problem of unemployment, poverty, malnutrition and social injustice. Youth took the milk production as a way of life.

Venkateswarulu *et al.*, (2004) concluded that there was increased awareness of consumers for the market milk and stiff competition among the different brands sold in the market. The private dairies were maintaining the minimum standards meeting the PFA requirements and some of the brands were also laid to keep high standard to gain advantage over the rival brands.

Sulaiman and Pillai (2006) study revealed that even though the dairy co-operatives were rendering services to member farmers, the working of the societies was not up to the expectation. Majority of the member farmers were not satisfied with the various efforts of the societies in improving the efficiency in the marketing of milk produced by the farmers.

Kumar and Steven (2010) have reported that most of the informal milk market agents in the state of Assam were small traders and derived substantial portion of their household income from it. The scale of their business continued to be low, though the returns from the milk marketing seemed to be comparable with or higher than the prevailing wages for an unskilled worker. Majority of the milk marketing agents established their business themselves. The net returns from milk processing and value-addition were significantly higher than fresh milk marketing.

2.3 STUDIES ON COSTS FACTORS INFLUENCING PROCUREMENT OF MILK

Jayachandra and Naidu (2006) studied “Impact of Dairy Co-operatives on Income, Employment and Creation of Assets of Marginal and Small Farmers”. The study revealed that the increase in income from dairying was

Rs.850 (25.5 per cent) in the case of marginal farmers and Rs.1480 (22.98 per cent) in the case of small farmers per annum. Dairy income as part of total income formed nearly 43.4 per cent in the case of marginal farmers and 38 per cent in the case of small farmers.

Rajput and *et al.,* (2006) revealed that the farmers could increase the gross returns in local cow by applying more green fodder, dry fodder, concentrates and human labour. The inputs might be increased for obtaining higher gross returns. The four marketing channels were identified for marketing of milk in the study area.

Singh and Agarwal (2007) have undertaken a study in Imphal West district of Manipur State with the objective to work out costs and returns from milk production. It was observed that two-thirds of the total milch cows were found in milk. The average fixed investment on dairying per household was highest (Rs.54697) on milch cows.

Yogi and *et al.,* (2007) conducted a study on "Economics of Milk Marketing" reported that the marketed surplus increased with increase in herd size category. The unorganized sector was dominating in procurement of milk with a share of about 80 percent, whereas the organized sector procured only 20 per cent of total marketed surplus. The vendor exploited the producers by paying them low rate of milk and passed on the deteriorated milk to the consumers at high price. The study focused the four methods of marketing channels.

Rangasamy and Dhaka (2008) studied "Marketing Efficiency of Dairy Products for Co-operative and Private Dairy Plants in Tamil Nadu". The study found that the marketing cost for toned milk was same in both the dairy plant, when it was higher for standardized milk, full cream milk and flavoured milk in the co-operative dairy plant. The marketing cost has been found less in the

co-operative plant for products like butter and ghee. All the dairy products earned more marketing margins in the private than co-operative dairy plant, expect for toned milk.

Basumatary *et al.,* (2008) studied "Nutritional Status of the Dairy Animals". The study was conducted in Jorhat district of Assam. Sample of concentrate mixture and roughages offered to the animals were collected, pooled and analyzed for proximate composition, neutral detergent fibre and acid detergent fibre. The study revealed that the nutrient composition of provided feed supplements was not up to the satisfaction for sustenance of good health and optimum productivity of dairy animals of the district.

Sarker and Ghosh (2008) analyzed the cost, return and relative profitability of cooperative and non-cooperative milk producers in West Bengal of India. Study revealed that cooperative farms have much higher profitability and non-BPL farms working under both cooperative and non-cooperative dairying are benefited higher than BPL farms.

Singh and Meena (2012) studied that per litre cost of milk production varied from`10.12 for crossbred cows to 13.90 and 13.57 for buffalo and local cows respectively, which was higher than price paid by co-operatives for standard milk (fat-6% and SNF-21%). Herd size and type of milch animal along with parity had significant influence on cost of milk production. Production cost is likely to decrease with increase in size of unit and in production of crossbred cows in herd.

Sylvia (2015) study focused on the specific objectives of analyzing three main methods of public procurement, which are: effects of information technology on performance of procurement function in public technical training institutions, establishment of extent in which competency of staff influence performance of procurement functions and to enumerate the ethical issues

affecting decision making in performance of procurement functions in public technical training institutions.

2.4 STUDIES ON MEASURES FOR EFFICIENT PROCUREMENT OF MILK

Thomas and Manju (2007) conducted a study and determined herd milk fat percentage and solids not fat (SNF) percentage and milk price in organized dairy farm over a period from 2009-13. The influence of year, season and month on milk composition and price were analyzed. The results of the study calls for a state specific milk composition data as the mean SNF percentage did not comply with provisions in the Prevention of Food Adulteration Act, 1955.

Ramanujam and Periaswamy (2008) revealed that dairy co-operatives played a significant role in rural economy. They produced both “Public goods” and “Private goods”. They created excludable and non-excludable benefits to members. Non-excludable benefits once produced may be consumed by all the producers whether they pay the cost of production or not.

Gautam and Gogoi (2009) revealed that the composition of milch animals with adequate number of crossbred animals could boost up milk production significantly. The farmers of the study area were found to have used their wisdom to exploit the resource substantially in a sustainable manner. The sustainable development of dairy farming in the state through utilization of natural resources followed by health-care of livestock, improvement of breeding through Artificial Insemination, timely vaccination can go on a long way in the field of animal husbandry in general and dairy sector development in particular.

Patil *et al.,* (2009) carried out a study to analyze the constraints faced by dairy farmers in Nagpur district. The study revealed that, majority of the

respondents (72.44 per cent) stated their constraint as low milk production from the local breeds, 45.33 per cent as shortage of green fodder and 41.33 per cent as lack of clean water while 25.33 per cent stated lack of preservation facility as their constraint.

Reddy and Moorthy (2014) conducted a study on Andhra Pradesh Dairy Development Cooperative Federation, an apex organization of farmers cooperative milk producers has been established under the Indian Cooperatives Act of 1956. The milk procurement of the Federation in the old districts grew by about 16 per cent per annum during the period 2002-03 to 2009-10 and the average milk procurement per day rose from 1.39 lakh liters to 3.25 lakh liters.

CHAPTER – III

MATERIAL AND METHODS

Chapter III

METHODOLOGY

This chapter presents the procedural details in selecting the sample, method of data collection and analytical techniques employed in attaining the objectives of the study. This chapter is presented under the following heads.

3.1 Sampling procedure

3.2 Collection of data

3.3 Methods of computation

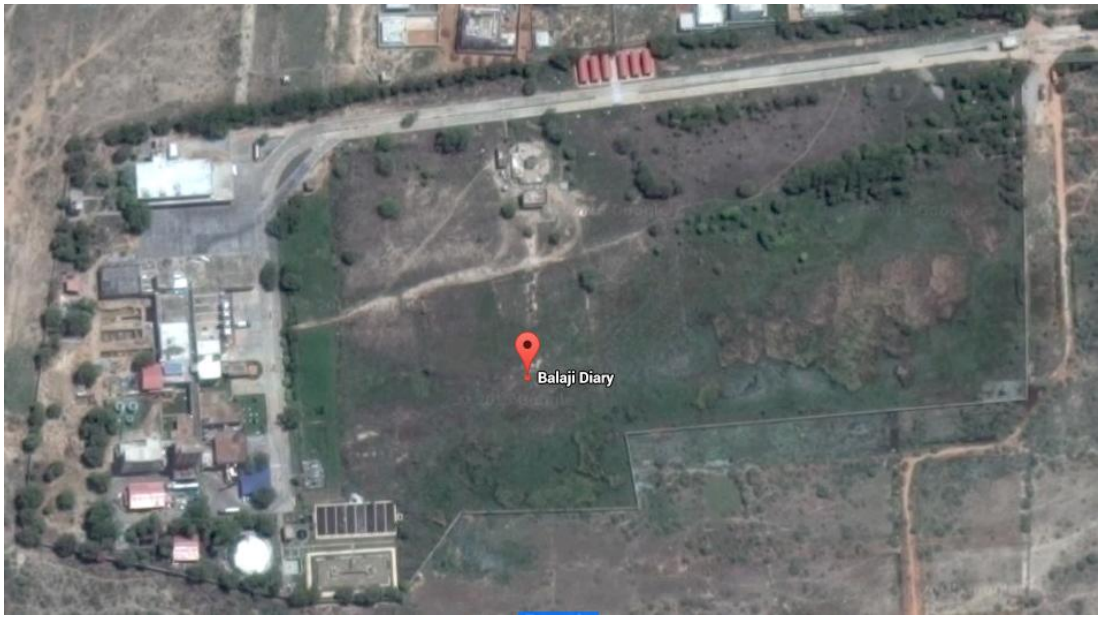
3.4 Tools of analysis

3.5 Concepts and terms used in the study

3.1 SAMPLING PROCEDURE

3.1.1 Selection of the dairy:

Balaji dairy in Chittoor district was selected purposively as it is the only milk producer company supplying milk.



A satellite view of Balaji dairy factory (*Source: Google maps)*

3.1.2 Selection of the district: The present study was under taken in Chittoor district of Andhra Pradesh in view of importance dairy farming in the district.

Chittoor district is a part of Rayalaseema region of Andhra Pradesh. The district occupies an area of 15,359 square kilometers (5,930 sq mts). The district is bounded by Anantapur district to the northwest, Kadapa district to the north, Nellore district to the northeast, Krishnagiri district, Vellore district and Tiruvallur district of Tamil Nadu state to the south and Kolar district of Karnataka stateto the west. Chittoor district lies extreme south of the Andhra Pradesh state approximately between 12°37'-14°8' north latitudes and 78°3'-79°55' east longitudes. Thirty percent of the total land area is covered by forests in the district.

3.1.3 Selection of the mandals and villages: From the selected district two mandals were selected purposively based on the highest population of milch cattle. Two villages under each mandal were selected purposively based on the milch cattle population criteria.

Mandals	Villages
1. Chinnagottigallu	A) Thummachenupalli B) Bhakarapet
2. Yerravaripalem	A) Yerravaripalem B) Ellamanda

3.1.4 Selection of dairy farmers:

Fifteen dairy farmers from each village were chosen randomly making total sample size of the study to 60.

3.2 COLLECTION OF DATA

For the study both the primary and secondary data were collected.

3.2.1 Primary Data:

Primary data have been collected at the village level from the milk producer households. The information on problems of procurement, price received and expenses incurred by the dairy farmers were collected.

3.2.3 Secondary Data:

Secondary data with regard to factors influencing procurement and quantity of milk supplied were collected from the records of Balaji dairy milk collection units, statistical abstracts, journals, websites etc.

3.2.4 Method of survey:

A well structured schedule was prepared and questions were posed to each dairy farmer and the management of the company on the problems associated with procurement. The data were collected by direct interview method. The data collected from the farmers pertain to the agricultural year 2013 -14.

3.3 METHODS OF COMPUTATION

Operational costs: These costs include raw material costs, wages, salaries, bonus, allowances to labourers, packing charges, electrical charges, fuel and lubricant charges, agent costs, storage costs, pasteurization costs, printing and stationery and selling and distribution expenses.

Interest on working capital: The capital incurred for carrying out total operational costs was worked out. The interest charged by financial institutions for working capital loans was taken and the interest on working capital was computed.

Fixed costs: Fixed costs of the factory include depreciation on vehicles, buildings, machinery, furniture and spare parts, repairs and maintenance, insurance, electrical installation (software) cost, leased property, rents and taxes.

Interest on fixed capital: The interest charged by the financial institutions for lending term loans was taken as base and interest on fixed capital was computed.

Total costs: It is the sum of fixed costs and operational costs.

3.4 TOOLS OF ANALYSIS

The collected data was analyzed by using simple statistical tools such as percentage analysis, cost concepts, so as to make meaningful inferences.

3.6 CONCEPTS AND TERMS USED IN STUDY

Procurement price: It is the best possible price offered to sellers to meet the needs of the acquirer in terms of quality and quantity, time, and location.

SNF: Solids not fat

Types of milk:

a) Standardized milk (Fat 4.5%, SNF (solids not fat) 8.5%)
b) Full cream milk (Fat 6%, SNF 9%)
c) Toned milk (Fat 3%, SNF 8.5%)
d) Double toned milk (Fat 2%, SNF 9%)

Operational costs: Operating costs are the expenses which are related to the operation of a business, or to the operation of a device, component, piece of equipment or facility.

Fixed costs: Fixed costs are business expenses that are not dependent on the level of goods or services produced by the business.

Depreciation: A reduction in the value of an asset over time, in particular due to wear and tear.

Working capital: The capital of a business which is used in its day-to-day trading operations.

Fixed capital: It refers to any kind of real or physical capital (fixed asset) that is not used up in the production of a product.

CHAPTER – IV

RESULTS & DISCUSSION

Chapter IV

RESULTS AND DISCUSSION

The data collected from 60 dairy farmers were processed and analyzed with reference to specific objectives of the study. The results and discussion of the study are presented under the following heads.

4.1 Factors influencing supply of milk by farmers to Balaji dairy.

4.2 Costs and returns in procurement per unit of milk.

4.3 Factors influencing procurement of milk.

4.4 To suggest measures for efficient procurement of milk.

4.1 FACTORS INFLUENCING SUPPLY OF MILK BY FARMERS

The socio-economic profile shows the social and financial status of farm families. In this section, size of the family, size of the farm and farm inventory are discussed.

4.1.1 Demographic Profile of Respondents

A brief account of the demographic profile of 60 sample respondents, the producers of milk, drawn from four villages of Chittoor district, the study area, is given below in Table 4.1.

From the Table 4.1, it is evident that out of sample respondents of 60, 100 per cent were female.

Age group of sample respondents indicate that 5 percent of the samples are in the age group of below 25 years, 25 percent are in the age group of 26-35 years. The sample respondents between the age group of 36-45 years, 46-55 years and above 55 years account to 53.33 percent, 15 percent and 1.67 percent respectively. Majority of the sample population are in the age group of 36-45 years.

Table 4.1 Demographic profile of sample respondents

S. No.	Demographic profile factor	Number of respondents	Percentage
1.	**Gender**		
	a. Female	60	100
	b. Male	0	0
	Total	**60**	**100**
2.	**Age group**		
	a. Below 25 years	3	5
	b. 26 – 35 years	15	25
	c. 36 – 45 years	32	53.33
	d. 46 – 55 years	9	15
	c. Above 55 years	1	1.67
	Total	**60**	**100**
3.	**Size of the family**		
	Upto 2 members (small)	8	13.3
	2 – 5 members (medium)	29	48.3
	Above 5 members (large)	23	38.4
	Total	**60**	**100**
4.	**Education**		
	a. Illiterates	35	58.3
	b. Primary education	16	26.7
	c. Secondary education & above	9	15
	Total	**60**	**100**

Fig 4.1 Age group of sample respondents

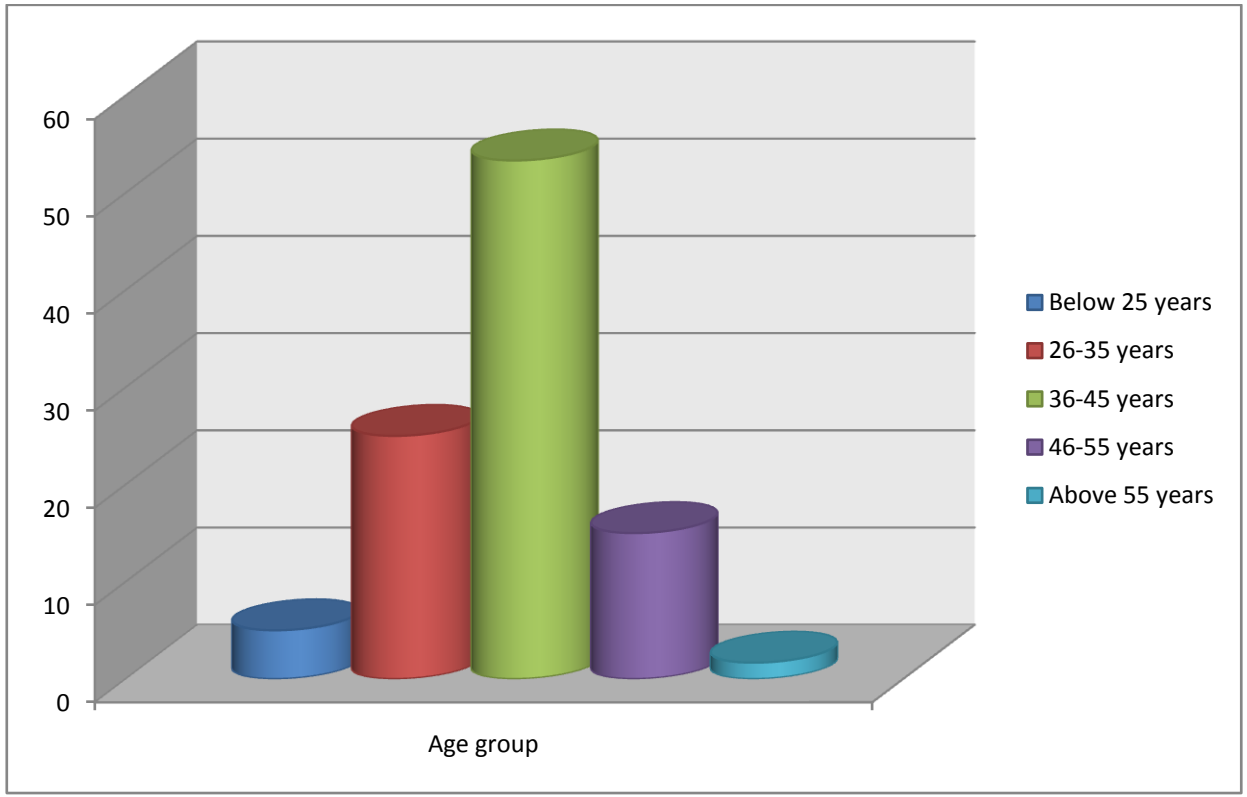


Fig 4.2 Family size of the sample respondents

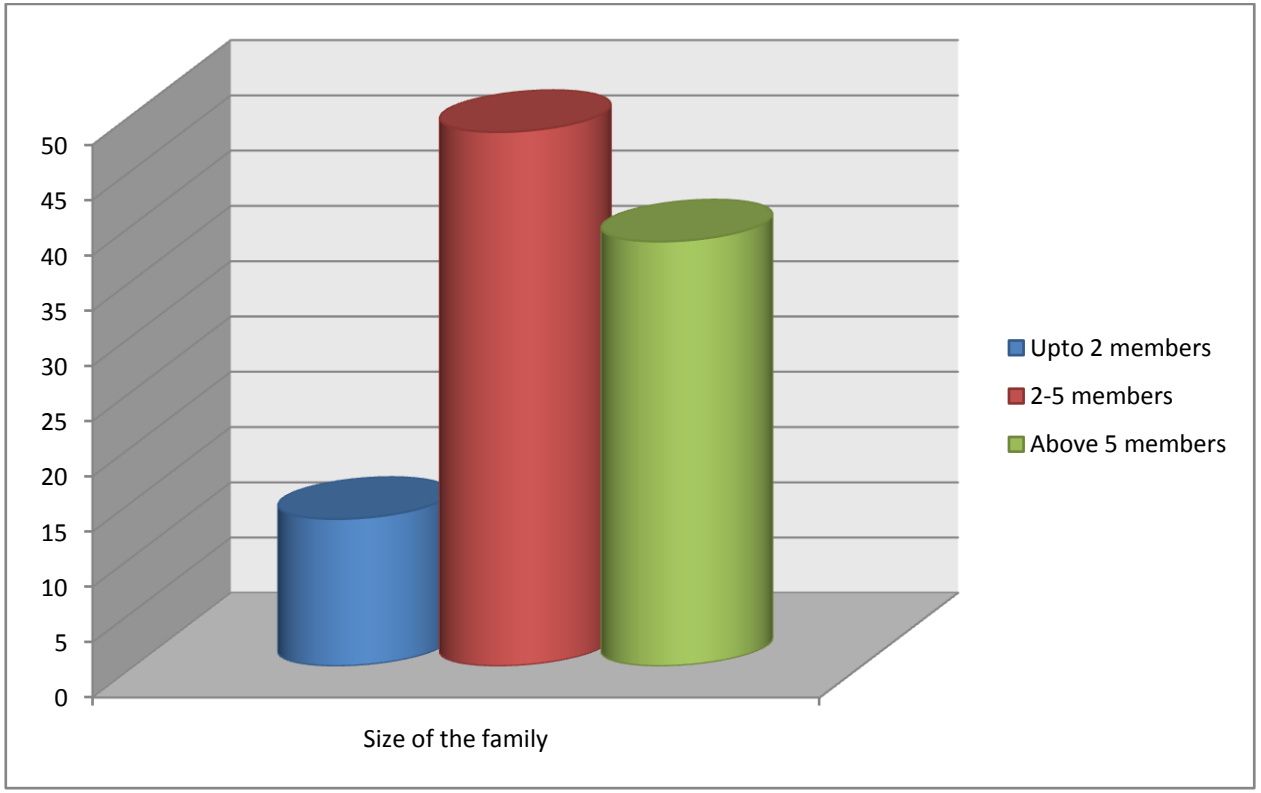
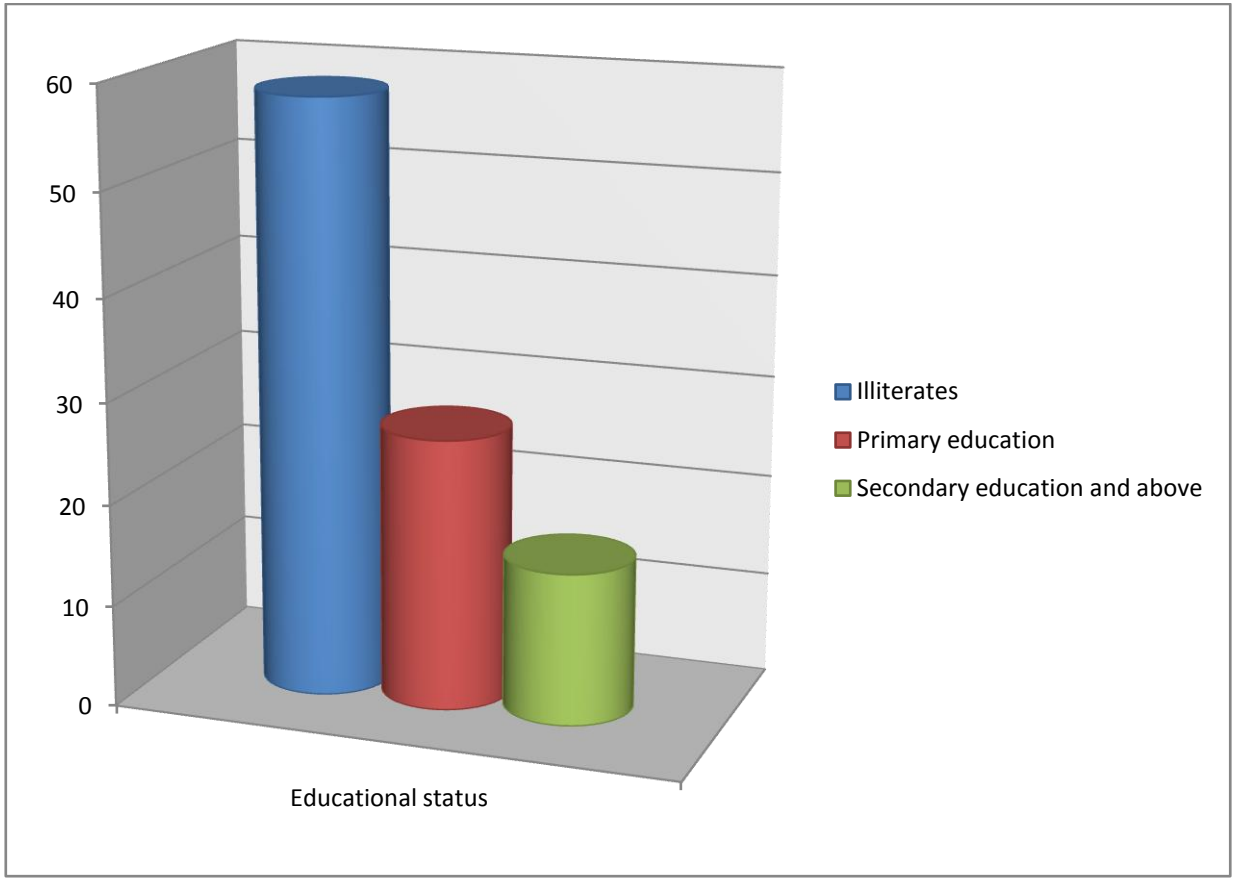


Fig 4.3 Educational status of the sample respondents



Taking the size of family members into consideration, out of 60 sample respondents 13.3 percent are having family size up to 2 members, 48.3 percent and 38.4 percent are having 2-5 members per family and above 5 members per family respectively. Families having 2-5 members account for highest percentage out of sample respondents.

Educational status of the sample respondents reveal that out of 60 sample respondents , 58.3 percent of them are illiterates, 26.7 percent are having primary education and 15 percent are having secondary education and above. Thus majority of the sample respondents are illiterates.

4.1.2 Economic Profile of Respondents

An idea of economic profile of respondents would help to well understand the milk production aspects; the same is given in the Table 4.2.

Table 4.2. Economic profile of respondents

S. No.	Demographic profile factor	Number of respondents	Percentage
1.	**Size of land holdings**		
	a. Landless	0	0
	b. Marginal farmers (upto 2.5 acres)	37	61.7
	c. Small farmers (2.5 to 5 acres)	15	25
	c. Large farmers (above 5 acres)	8	13.3
	Total	**60**	**100**

It is observed from the above Table 4.2, out of 60 sample respondents 61.7 percent of milk producers were marginal farmers whose size of

operational holding was below 2.5 acres, 25 percent of respondents are small farmers having operational holding between 2.5 to 5 acres. The remaining 13.3 percent of them are large farmers having more than 5 acres of holding. Thus, majority of the milk producers are marginal farmers.

4.1.3 Profile of Milch Animals

In Chittoor district, milk producers possess different types of milch animals like cow, buffalo and cross bred cow. The number of milch animals maintained by them varied from two to eight depending upon the factors like occupation, income, size of land possessed, climate prevalent in the locality etc. Usually the milk animals possessed by the respondents are of different categories.

Table 4.3. Profile of milch animals

S. No.	Profile factor	Number of respondents	Percentage
1.	**Types of milch animals**		
	a. Cow	16	26.67
	b. Buffalo	2	3.33
	c. Crossbred Cow	42	70
2.	**Number of milch animals**		
	a. Below 3	39	65
	b. 3 – 5	14	23.3
	c. Above 5	7	11.7

From the Table 4.3, it is implied that the milch animal possessed by 26.67 percent of sample respondents was cow, 3.33 percent of them possess buffalo and 70 percent of sample respondents posses crossbred cow as milch

Fig 4.4 Types of milch animals per respondent in the study area

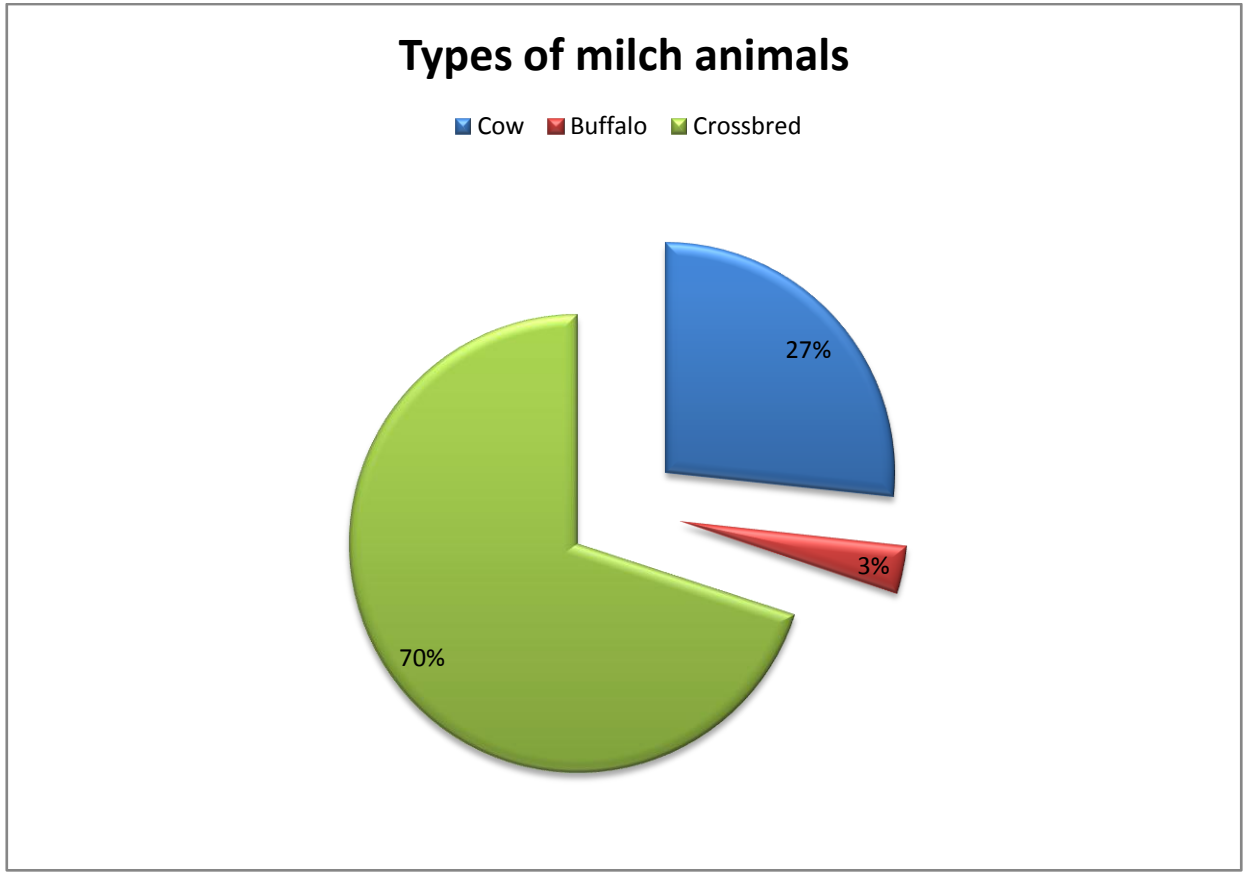
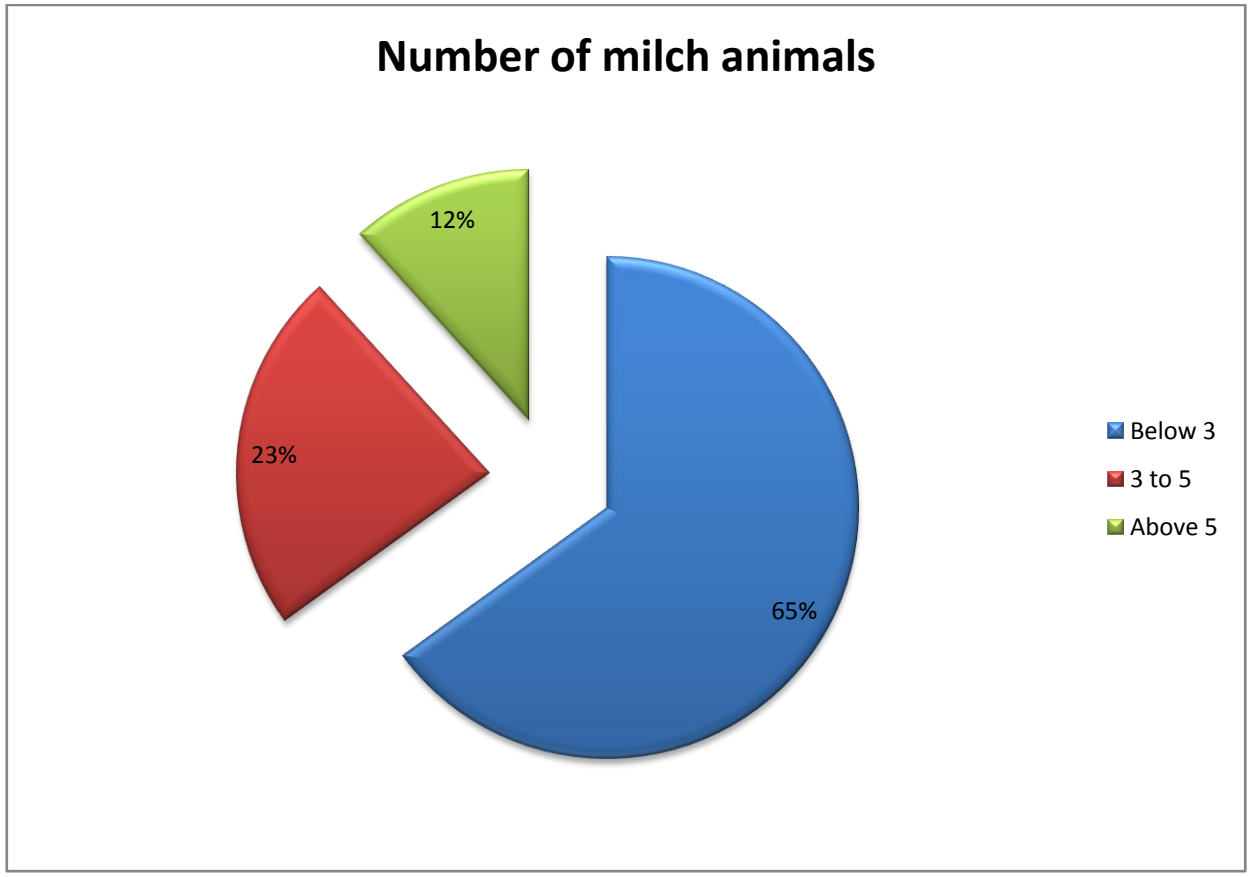


Fig 4.5 Number of milch animals per respondent in the study area



animal. Hence, out of 60 sample respondents 70 percent possess crossbred cow as milch animal.

Similarly, out of 60 sample respondents 65 percent of them have milch animals below three, 23.3 percent have 3-5 milch animals and 11.7 percent possess milch animals above 5. Thus, majority of sample respondents possess milch animals below 3.

4.1.4 Average yield of milk per day per animal

The level of milk production depends upon various factors like the type of milch animal, its breed, the fodder used, the climate, milking time etc. In Chittoor district, usually the milk production will be more during the months of November and December. Besides the milk production from cow will be greater than from buffaloes.

Table 4.4. Average milk yield per day per animal

S. No.	Types of milch animal	Average milk yield/Day/Animal (lts)
1.	Cow	12
2.	Buffalo	6 – 7
3.	Crossbred Cow	13

The average milk yield per animal in the study area is presented in the Table 4.4. The milch animals namely cow, buffalo and crossbred gives 12, 6-7 and 13 litres of milk per day per animal respectively. Thus crossbred cow average milk yield is high compared to cow and buffalo.

4.1.5 Supply of milk per day per respondent

The average milk capacity supplied by each respondent on each day is worked out and presented in the table.

Table 4.5. Average milk capacity supplied per day per respondent

S. No.	Milk production	No of respondents	Percentage
1.	Upto 10 litres	31	51.66
2.	11 – 20 litres	8	13.33
3.	Above 20 litres	21	35
	Total	60	100

From the Table 4.5, it is inferred that out of 60 sample respondents 51.66 percent supply upto 10 litres of milk per day. 13.33 percent of them supply 11-20 litres of milk per day and remaining 35 percent of the respondents supply above 20 litres each day by each respondent. Thus, majority of the sample respondents supply milk upto 10 litres per day per respondent.

4.1.6 Factors influencing supply of milk by farmers to Balaji dairy

A pre tested interview schedule was used to collect data regarding various factors that influence supply of milk by sample respondents to Balaji dairy. Factors include procurement price, fat and SNF content, Quality tests, regular visits, training programmes, awareness programmes, veterinary services, loan assistance, provision of resource centre, insurance services, extension services etc.

A three point rating scale was used and each respondent was asked to rate against each factor and the cumulative score given for each factor by all the respondents was computed. The scores so obtained are then divided into four categories with the factors having a score of 150-180 as most favorable,

120-150 as favorable, 90-120 as less favorable and 60-90 as unfavorable influencing the supply of milk to Balaji dairy.

Table 4.6. Factors influencing supply of milk to Balaji dairy.

Most favorable	Favorable	Less favorable	Un favorable
Fixing of price as per fat and SNF content	Nearness to the collection centre	Procurement price - economical	Non existence of fodder banks
Regular payment of price	Regular visits of dairy technical personnel	Quality tests conduction by dairy technical personnel	No scholarships provided to children of members
Provision of loans	Quick response of dairy technical personnel	Regular training programmes	Absence of resource centre
Inputs like mineral mixture, feed provided	Yearly bonus	Awareness about Govt. schemes.	
Veterinary services	Insurance		
Reliability of milk testing equipment	Breed improvement		
Quality standards maintained	Good extension services provided		
Individual billing			
Dairy services provided			

From Table 4.6, it is inferred that fixing of price as per fat and SNF content, regular payment of price, provision of loans, provision of veterinary services, reliability of milk testing equipment and quality standards maintained are the most favorable factors influencing supply of milk by farmers to Balaji dairy.

Favorable factors include nearness to the collection center, regular visits of dairy technical personnel, yearly bonus, provision of insurance, development of good breed of cattle and good extension services.

Factors like procurement price paid per litre of milk, quality tests conducted by dairy technical personnel, regular training programmes and awareness about Government programmes are less favorable influencing supply of milk by farmers to Balaji dairy.

Among all factors non existence of fodder banks, lack of scholarship facility to the children of members and absence of resource centre are unfavorable factors influencing supply of milk by farmers to Balaji dairy.

4.2 COSTS AND RETURNS IN PROCUREMENT PER UNIT OF MILK

4.2.1 Milk Procurement Cost

The total procurement cost of milk of Balaji dairy for the year 2013-14 was collected, analyzed and discussions were made accordingly. The total procurement cost is the sum of total operational costs and total fixed costs. 1000 litres of milk was fixed as a unit and procurement cost was worked out for the same.

The total operational costs per 1000 litres of milk account to 39.17 percent in total procurement cost. Out of total operational costs, raw material cost account to 31.50 percent, wages, salaries, bonus, allowances to labour account to 0.38 percent, packing charges cost account to 0.4 percent, electrical charges cost account to 0.65 percent, fuel and lubricant charges cost account to 0.07 percent, agent costs account to 0.04 percent, storage costs account to 0.03 percent, pasteurization costs account to 0.02 percent, printing and stationery expenses account to 0.45 percent, selling and distribution expenses account to 1.12 percent, miscellaneous expenses account to 0.39 percent, interest on working capital account to 4.12 percent.

The total fixed cost per 1000 litres of milk account to 60.83 percent. Out of this total fixed cost depreciation on vehicles account to 0.71 percent,

Costs of procurement per unit of milk of Balaji dairy for the year 2013-14

S.No	Components	Total costs (in Rs.)	Cost of procurement per unit of milk (in Rs.) (1000lts)	Percentage
A	**Operational costs**			
1	Cost of raw material	207488250.7	7829.6	31.50
2	Wages, salaries, bonus, allowances to labourers	2503032.8	94.4	0.38
3	Packing charges	2634771.4	99.4	0.4
4	Electrical charges	4281503.6	161.6	0.65
5	Fuel and lubricant charges	461085	17.4	0.07
6	Agent costs	263477.1	9.9	0.04
7	Storage costs	197607.8	7.45	0.03
8	Pasteurization costs	131738.6	4.9	0.02
9	Printing & Stationery	2964117.9	111.8	0.45
10	Selling and distribution expences	7377360	278.3	1.12
11	Miscellaneous expences	2568902.1	96.9	0.39
12	Sub total	233835965.1	8711.9	35.05
13	Interest on working capital	27138145.8	1024	4.12
14	Total operational costs	258009993.1	9736	39.17
B	**Fixed costs**			
1	Depreciation on vehicles	4676719.3	159	0.71
2	Depreciation on buildings	66001024.5	2535.3	10.20
3	Depreciation on machinery	270722765.2	10215.7	41.10
4	Depreciation on others (Furniture and spareparts)	4544980.7	189	0.69
5	Repairs and maintenanace	4281503.6	161.5	0.65
6	Insurance	3688680	139.1	0.56
7	Electric installation cost (Software)	3227595	121.8	0.49
8	Leasehold property	658692.9	24.8	0.10
9	Rents and taxes	5994105	226.2	0.91
10	Sub total	364981713.4	13772.6	55.41
11	Interest on fixed capital	35701153	1347.2	5.42
12	Total fixed costs	400682866.4	15119.8	60.83
13	Total costs	658692859.5	24855.9	100

Fig 4.6 Operational costs per unit of milk (1000 lts)

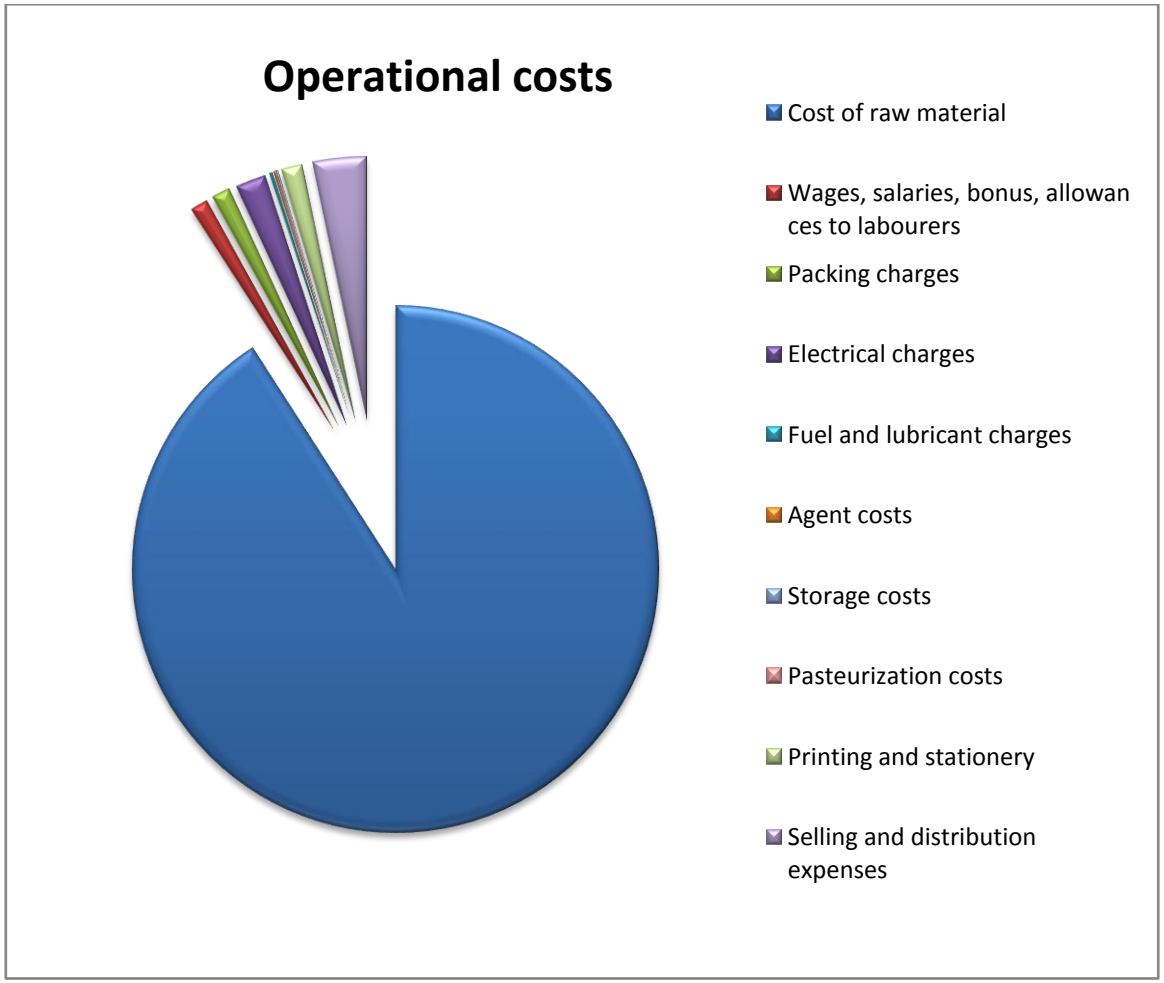
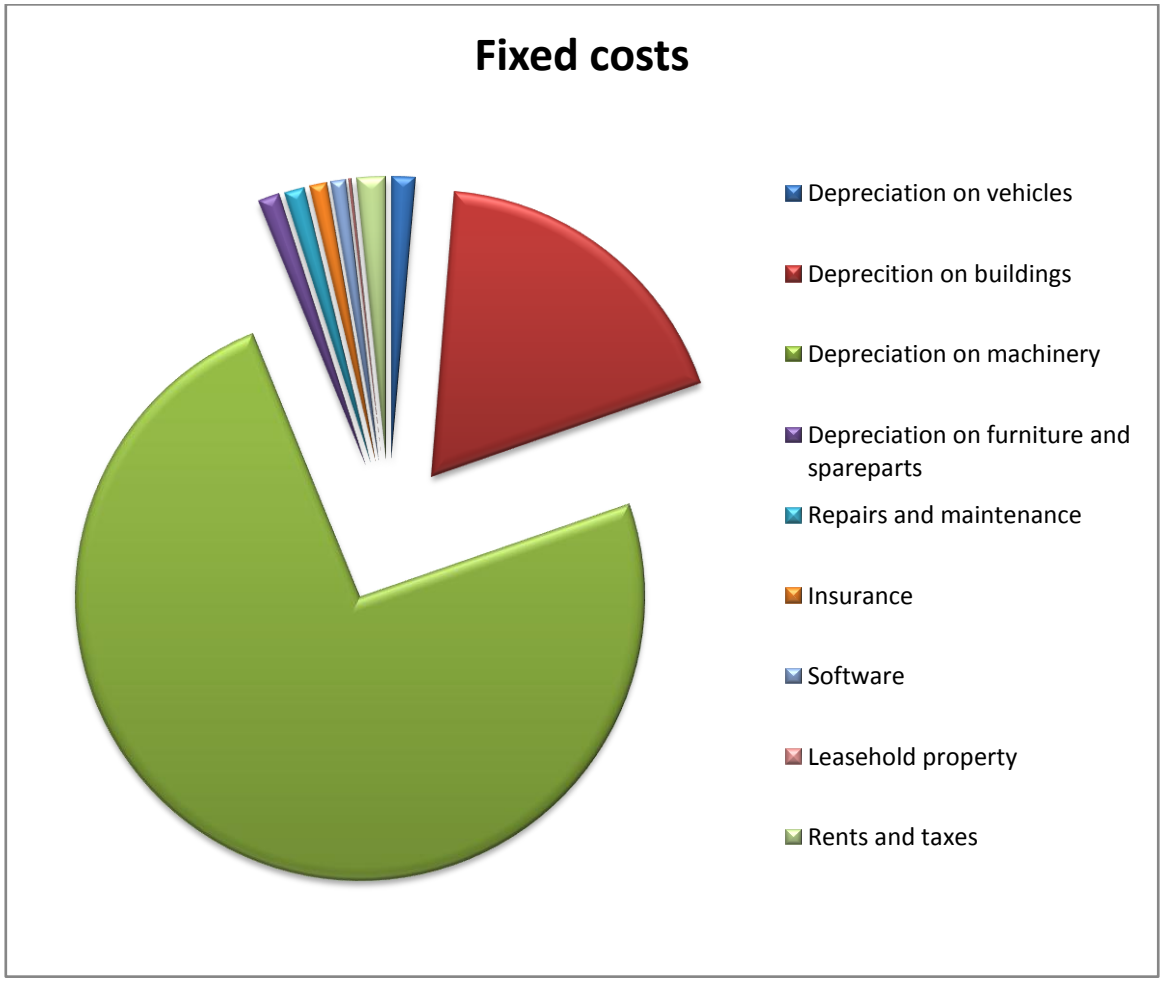


Fig 4.7 Fixed costs per unit of milk (1000 lts)



depreciation on buildings account to 10.2 percent, depreciation on machinery account to 41.1 percent, depreciation on furniture and spare parts account to 0.69 percent, repairs and maintenance account to 0.65 percent, insurance account to 0.56 percent, electric installation cost (software) account to 0.49 percent, leasehold property account to 0.1 percent, rents and taxes account to 0.9 percent and interest on fixed capital account to 5.42 percent.

Among the operational costs, raw material cost incurs the major cost followed by interest on working capital. Among the fixed costs, depreciation on machinery incurs the major cost followed by depreciation on buildings.

4.2.2 Calculation of net returns per unit of milk:

Net return per unit of milk (1 unit is equal to 1000 litres) is calculated by taking total procurement, transportation and miscellaneous expenses and total sale price.

Table 4.7: Returns from sale of one unit (1000 litres) of milk

Particulars	Amount
Sale price per litre of milk	32
Total sale price	32,000.00
Total cost of procurement	24,855.90
Transportation and miscellaneous expenses	4,000.00
Net returns per unit of milk	= 3,144.10

From table 4.7, it is inferred that the total cost of procurement per 1000 litres of milk account to Rs.24,855.90. Transport and miscellaneous expenses accounts to Rs.4,000. Total sale price of unit of milk account to Rs.32,000. Hence the net returns per unit of milk are Rs.3,144.10. This implies the margin incurred in selling one litre of milk is Rs.3.14.

4.3 FACTORS INFLUENCING PROCUREMENT OF MILK

The various factors which influence procurement of milk are shown below.

Market influence: Milk is highly perishable and essential food item. The purchasing capacity of consumers is also not encouraging. Therefore, its sale price is either administratively regulated or adulterated milk at affordable price is sold to consumer. This consumer's rupee is shared by producer, processor and distributor. In this rupee, the share of producer is 60 to 65% only remaining goes to other agencies.

When production and availability of milk is increasing at a faster pace, any substantial increase in consumer price is ruled out as this will discourage expansion of fluid milk market. In consumer's rupees , share of farmer should be increased by decreasing handling costs. The objective of increasing producer's profit is to help him so that they can adopt improved dairy practices and increase per animal milk yields to bring down per liter cost of milk production.

Seasonal Variation: This is due to seasonality in calving, availability of green fodders and climatic stress. From the pricing point of view, there are four seasons.

A. Flush- November, December, January and February.
B. Transitory to lean- March and April.
C. Lean- May, June, July and August
D. Transitory to Flush- September and October.

Compositional Variation: Fat and Solids not fat (SNF) are two major constituents of milk which considered for price fixation of milk. The

variations in fat and SNF content also majorly influence the process of procurement.

Spatial Variation: Price of agricultural commodities vary from region to region. Milk producers near to cities get more price than those located far off. Procurement cost of milk can be minimized by getting more milk from reduced area or getting more milk from existing milk shed area. Maximization of milk quantity from minimized milk collection area increases the procurement efficiency.

Pricing according to the cost of milk production: The price should be related to the cost of milk production and ensure a fair margin of profit to the producers. It should take into account the seasonal variation in production and demand and should be linked with consumer's price index, taking into account general market trends.

Effect of Feed: Both the quantity and quality of milk may be affected by the feed a cow receives. In addition to affecting the quantity of milk, the feed may affect the fat percentage and the character of the fat, and it may add compounds to the milk or fat which may affect both its nutrient value and its flavor.

Effect of the Disease: Udder diseases (Principally mastitis), digestive disturbances, and other diseases are responsible for a decrease in milk yield and affect the quality of the milk in various ways.

Mastitis: The composition of the milk may be changed in various degrees by mastitis infection, depending upon the severity of the infection.

Digestive disturbances: Any marked digestive disturbance, such as going "off feed" or diarrhea, is followed by a marked decline in milk yield. The fat percentage of the milk usually increases, but in some cases it may decline. The flavor of the milk is usually affected.

Side selling: Farmers are influenced by the price offered per litre of milk by various dairy firms. Farmers are diverted to other dairies which are offering high price. Due to severe competition in the present days, dairies are offering high price purposively to attract the farmers supplying milk.

Reduction in volume of milk production: Out of the total interviewed farmers 62.5% of the respondents are of opinion that milk production is showing a decreasing trend. Respondents in the study area are of the opinion that to meet the food requirements of burgeoning human population, most of the area under fodder crops is being shifted to growing of food crops. Due to this, some of the interviewed farmers reduced their herd size and has changed a large number of local cow to few number of crossbreed cows due to the shortage of animal feeds. From the field study result it was observed that 55% of the respondents mentioned a decrease in herd size compared to the previous year. This reduction in herd size lead to an overall reduction in milk produced in the study area, due to which members could not deliver the same quantity of milk as supplied by them earlier.

Production cost: From the total interviewed farmers 67.5% of the respondents farmers rank high cost of animal feeds as the main problem of milk production in the study area. Due to shortages of animal feed supplies, the cost of running a dairy farm is becoming more expensive. Some small holders in regional towns also closed their farms because of the scarcity of feed supply and high cost of feed.

In the commercial dairy production system, feed costs constitute 74 percent of the total on farm production costs while labour cost accounts for only 6 percent of farm costs. Most of the interviewed farmers indicated that the cost of animal feeds increased from time to time but the increase in price of milk is relatively low as compared to the cost of animal feeds. Out of the total interviewed farmers 87.5% of the interviewed farmers indicated the availability of animal feeds has decreased. Not only cost of animal feeds but

also the availability of animal feed is becoming a major challenge for small-scale dairy farmers to feed their animals.

Competitors: There are different private milk processing companies who strongly compete with Balaji dairy to purchase milk from small scale dairy farmers in the study area.

Due to strong competition especially with Heritage dairy and local dairies, the Balaji dairy was facing challenge to collect not only huge volumes of milk but also to retain the milk suppliers. The Balaji dairy is forced to increase the price of milk procured from the suppliers in case if competitors do so. Failing to do the same, dairy selected will lose the milk suppliers as they will be purposively diverted to other dairy companies.

4.4 MEASURES FOR EFFICIENT PROCUREMENT OF MILK

Based on the investigation of the problem and observations of present study , the following measures and strategies are recommended for efficient procurement of milk by Balaji dairy.

4.4.1 Measures to be taken at the chilling center level:

- ✓ Raw milk should be chilled to 4°C as early as possible when it reaches the BMCs.
- ✓ All milk cans should have names and numbers of representative villages or persons.
- ✓ Agitator should run continuously at the time of milk reception.
- ✓ The pipelines, silo's Dip- Saver, dump tank should be cleaned as per the procedures and should be kept for reception of milk.
- ✓ Re-chilling should be done from silo to tanker (or) from silo to silo.

- ✓ Explained about procurement software and its application for route supervisors and procurement in charges for enhancing their performance.

- ✓ Supervisors are trained how to use the procurement software for testing the milk and to chill the milk supplied by the individual members.

3.4.2 Measures to be taken at the milk collection units:

- ✓ Dairy technical personnel should educate farmers regarding importance of quality of milk, hygiene at all stages of milk production, use of clean and proper utensils and pricing of milk based on fat and SNF content.

- ✓ Supply of clean water and continuous electrical supply should be provided at milk collection units for uninterrupted testing and collection of milk.

- ✓ Milk should be transported to the main dairy immediately without any delay for processing; failing to do so may affect the quality of milk and milk products.

- ✓ Dairy technical personnel have direct contact with dairy farmers and diary. The same can act as a messenger and can implement various dairy schemes to needy dairy farmers.

3.4.3 Measures to be taken while transporting the Raw Milk:

- ✓ Vehicle used for transporting milk should be in good condition.

- ✓ Avoid using open top vehicles for transportation of milk.

- ✓ Avoid other materials while transporting the milk.

3.4.4 Suggestions to Dairy Farmers:

- ✓ Farmers should bring milk to the collection centers as early as possible after milking.
- ✓ Avoid adulteration of milk which deteriorates the quality of milk. Poor quality milk fetches fewer prices and also affects the quality of whole milk procured at a collection center.
- ✓ Dairy farmers should have awareness on the quality tests of the milk.
- ✓ Artificial insemination should be followed to improve the milch animal breed, which brings higher milk yields.
- ✓ Manual ration balancing should be followed to feed the milch animals which includes green fodder, dry fodder and concentrates in suitable proportions to get high milk yields.
- ✓ Milk producers should maintain same milking method and milking time in routine.

3.4.5 Measures to be taken by the milk procurement supervisors:

- ✓ The milk procurement supervisors should educate the milk producers about clean milk production.
- ✓ The supervisors should explain the dairy farmers about various methods of enhancing the milk production.
- ✓ The supervisors should bring awareness among the dairy farmers about the importance of vaccination and deworming programmes.
- ✓ The supervisors should provide an idea about the role of feed and mineral mixture etc in enhancing milk production.
- ✓ The supervisors should also find out and correct the general problems of milk producers and milk representatives.

- ✓ The supervisors should have to solve the problems of the agents and the dairy farmers during procurement of the milk.

3.4.5 Measures to be taken by the management:

- Management has to arrange training programmes to dairy farmers on clean milk production, proper feeding schedule for milch animals, precautions to be taken to prevent diseases like mastitis, digestive disturbances, adoption of milking method, regular milking time etc.

- The diary management has to arrange awareness campaign regarding quality milk production practices, which will be beneficial to both dairy farmers and dairy.

- The management has to use the efficient and effective extension activities for implementation of dairy schemes among dairy farmers such as breeding programmes of milch animals, vaccination programmes etc.

- The dairy management should also provide awareness programmes to the agents for the efficient procurement of milk from the dairy farmers.

- To overcome the problem of seasonal variation in milk availability August to December (flush season) January to July is (lean season) the management should access more and more small and medium dairy farmers in operating and non operating areas for continuous supply of milk.

- Continuous up gradation of home grown technologies is necessary.

CHAPTER – V

SUMMARY AND CONCLUSIONS

Chapter V

SUMMARY AND CONCLUSIONS

Dairy activities have traditionally been integral to India's rural economy. The country is the world's largest producer of dairy products and also their largest consumer. Almost its entire produce is consumed in the domestic market and the country is neither an importer nor an exporter, except in a marginal sense.

Despite being the world's largest producer, the dairy sector is by and large in the primitive stage of development and modernization. Though India may boast of a 200 million cattle population, the average output of an Indian cow is only one seventh of its American counterpart. Indian breeds of cows are considered inferior in terms of productivity. Moreover, the sector is plagued with various other impediments like shortage of fodder, its poor quality, dismal transportation facilities and a poorly developed cold chain infrastructure. As a result, the supply side lacks in elasticity that is expected of it.

On the demand side, the situation is buoyant. With the sustained growth of the Indian economy and a consequent rise in the purchasing power during the last two decades, more and more people today are able to afford milk and various other dairy products. This trend is expected to continue with the sector experiencing a robust growth in demand in the short and medium run. If the impediments in the way of growth and development are left unaddressed, India is likely to face a serious supply – demand mismatch and it may gradually turn into a substantial importer of milk and milk products.

The present study entitled "A study on procurement of milk by Balaji Dairy in Chittoor District of Andhra Pradesh" was intended to examine factors influencing supply of milk by farmers to Balaji dairy, costs and returns

in procurement per unit of milk and to analyse the factors influencing procurement of milk.

Fortunately, the government and other stakeholders seem to be alive to the situation and efforts to increase milk production have been intensified. Transformations in the sector are being induced by factors like newfound interest on the part of the organized sector, new markets, easy credit facilities, dairy friendly policies by the government, etc. Dairy farming is now evolving from just an agrarian way of life to a professionally managed industry – the Indian dairy industry. With these positive signals, there is hope that the sector may eventually march towards another white revolution.

5.1 THE OBJECTIVES OF THE STUDY

1. to identify and analyze the factors influencing supply of milk by farmers to Balaji dairy.
2. to study and examine the costs and returns in procurement per unit of milk.
3. to identify and analyze the factors influencing procurement of milk and
4. to suggest measures for efficient procurement of milk.

The study was carried out in Chittoor district of Andhra Pradesh as it is the major milk producing district. From the selected district two mandals were selected purposively based on the highest population of milch cattle. Two villages under each mandal were selected purposively based on the milch cattle population criteria. Fifteen dairy farmers from each village were chosen randomly. The total sample size of the study was 60. For this both primary and secondary data were collected. Primary data were collected from dairy farmers and milk collection units. Secondary data with regard to the factors influencing procurement and quantity of milk supplied were collected from the records of milk collection units, journals, websites etc. The data were collected by direct interview method. The collected data were analyzed by using simple statistical tools such as percentage analysis, averages etc.

5.2 MAJOR FINDINGS OF THE STUDY

Age group of sample respondents states that 53.33 percent of the samples are in the age group of 36-45 years. Similarly, sample respondents between the age group of below 25years, 26-35 years, 46-55 years and above 55 years account to 5 percent, 25 percent, 15 percent and 1.67 percent respectively.

The average size of the family was 13.3, 48.3 and 38.4 in case of small, medium and large family members.

About 58.3 percent of the total sample respondents were illiterates while 26.7 percent were educated upto primary education and 15 percent were educated upto secondary level and above. Majority of the sample respondents are illiterates.

Of the total respondents, over 61.7 percent were having operational holding upto 2.5 acres, 25 percent having 2.5 to 5 acres and 13.3 percent having operational holding above 5 acres. There were no landless respondents in the sample .

Sample respondents possess crossbred cows (70 percent) in large number, followed by cow (26.67 percent) and buffalo (3.33 percent).

39 respondents have milch animals below 3, 14 sample respondents have 3- 5 milch animals and 11.7 percent have 7 milch animals.

Average milk yield in the study area for cow, buffalo and crossbred cow are 12, 6-7 and 13 litres per day per animal respectively.

Average supply of milk per day per respondent was upto 10 litres, 11-20 litres and above 20 litres are 51.66 percent, 13.33 percent and 35 percent respectively of the total sample respondents.

The total operational costs per unit of milk (1000 litres) including interest on working capital were Rs.25,80,09,993.1. The cost of raw material

(milk) accounted for 31.5 percent of the total operational costs followed by interest on working capital 4.12 percent.

The total fixed costs per unit of milk (1000 litres) including interest on fixed capital was Rs.40,06,82,866.4. The depreciation on machinery accounted for 42.1 percent followed by depreciation on buildings 10.2 percent.

In view of pricing milk, there are four seasons namely flush, transitory, lean and transitory to flush which are due to seasonality in calving, availability of green fodder and climatic stress.

Fat and SNF (solids not fat) were two major constituents of milk and variations in fat and SNF influences the procurement price of milk.

Udder diseases (principally mastitis), digestive disturbances and other diseases are responsible for decrease in milk yield and affect the quality of the milk in various ways.

The composition of the milk may be changed in various degrees by mastitis infection, depending upon the severity of the infection.

62.5 percent of the respondents were of opinion that milk production is showing a decreasing trend. Respondents in the study area are of the opinion that to meet the food requirements of burgeoning human population, most of the area under fodder crops is being shifted to growing of food crops. 55 percent of the respondents mentioned a decrease in herd size and has changed a large number of local cows to few numbers of crossbred cows due to the shortage of animal feeds.

67.5 percent of the respondents ranked high cost of animal feeds as the main problem of milk production in the study area.

Due to the strong competition especially with Heritage dairy and other local dairies, the Balaji dairy was facing challenge to collect not only huge volumes of milk but also to retain the milk suppliers.

5.3 CONCLUSIONS

1. Majority of the sample population are in the age group of 36-45 years.
2. Families having 2-5 members account for highest percentage out of sample respondents.
3. Majority of the sample respondents are illiterates.
4. Most of the sample respondents are marginal farmers.
5. Crossbred cows are prevailing mainly in the study area.
6. Major part of sample respondents possesses milch animals below 3 in number.
7. Average yield of crossbred cow is more compared to cow and buffalo.
8. Majority of sample respondents supply milk upto 10 litres per day.
9. Most favorable factors influencing the supply of milk by farmers are consideration of fat and SNF content, regular payment of price, provision of loans, inputs provided, veterinary services, milk testing equipment, quality standards for milk, individual billing and dairy services provided.
10. Unfavorable factors include non existence of fodder banks, lack of scholarship facility provided and absence of resource centre for skills improvement for farmers.
11. Among the operational costs, raw material cost incurs the major cost followed by interest on working capital.
12. Among the fixed costs, depreciation on machinery incurs the major cost followed by depreciation on buildings.
13. Net returns per unit (1000 litres) of toned milk is Rs.3,144.10
14. Milk production is showing a decrease in trend in the study area due to shortage of animal feed and conversion of area under fodder crop to growing of food crops.
15. The major competitors of Balaji dairy in the study area were heritage and other local dairies. Balaji dairy is forced to increase the price of milk to prevent the diversion of milk suppliers to other dairy firms.

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ANNEXURE

SURVEY ADMINISTERED TO THE DAIRY FARMERS

1 Name of the respondent:
2 Village:
3 Age:
4 Literacy status:
5 Occupation:
6 Family size:
7 Land holding:
8 Livestock population:
9 Milk yield (lts/day):
10 Milk consumption (lts/day):
11 Milk Marketing (lts/day):
12 Milk price/litre:

S.No	*Questions*	*Always*	*Sometimes*	*No*
1	Is the procurement price that you receive for milk is economical?			
2	Whether the fat and SNF content are considered by the dairy while fixing the price?			
3	Whether the distance to the collection centre is near?			
4	Are quality tests are conducted by dairy technical personnel?			
5	Whether the firm is going to pay the price amount regularly?			
6	Is the dairy management providing loan assistance to the farmers?			
7	Are the dairy agents regularly visiting the farmers?			
8	Whether the dairy is providing any feed/mineral mixture/fodder seeds to the dairy farmers?			
9	Is the dairy management is providing veterinery services like artificial insemination?			
10	Whether the dairy is providing regular training programmes to the farmers?			
11	Are the awareness programmes conducted by the dairy are satisfactory?			
12	Whether the dairy personnel are responding quickly for any problem faced by the farmer in time?			

13	Whether the dairy management is creating awareness about Government schemes in terms of subsidy/insurance/ vaccinations/any others?			
14	Are you satisfied with the equipment used at collection centre to measure the fat% and SNF% ?			
15	Is there any quality standards like minimum fat and SNF percentage to procure the milk by the dairy ?			
16	Whether the bill for the procured milk is given individually?			
17	Whether any bonus is provided to the farmers yearly?			
18	How far the extension services provided by the dairy are good?			
19	Whether fodder banks are existing in your village?			
20	Whether any scholarships are provided to the children of the farmer members?			
21	Whether insurance is provided by the dairy ?			
22	Is there any support from dairy to encourage development of good breed of cattle?			
23	Is there any Resource centre to develop the skills of dairy farmers and employees?			
24	Services provided. a)Fertility camps b)Film shows c)Clean milk production programme d)Demonstrations e)Vaccinations			
25	Will you shift to any other dairy if other dairy is offering higher price?			