CHAPTER-V
PROFILE OF SANGAM DAIRY
AND
ECONOMIC ANALYSIS OF DAIRY FARMING
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PROFILE OF SANGAM DAIRY AND ECONOMIC ANALYSIS OF DAIRY FARMING

History of Co-operative Law

Reformation of co-operatives has been in tandem with socio-economic changes happening in the country and several committees have been set up to assist in restructuring of the co-operatives with time. Recommendations are available in the A. D. Gorawala Report 1954, Cooperative Policy 1959, Committee on Co-operative Administration 1963, Mirdha Committee 1965, Ardhanareeshwaran Committee 1985, Committee on Co-operative Law 1987, Brahm Prakash Committee 1991, Advisory Committee on Co-operation 1996 and the Alagh committee have recommended incorporation of cooperatives as companies and conversion of existing co-operatives into companies. The Government has also been requested to define their policy and encourage the role of autonomous, self-reliant co-operatives, by fully exempting them from income tax, reducing incidence of double taxation when transactions take place between a member and its federal co-operative. The government draws the powers for interfering in the functioning of cooperatives through the State Cooperative Act, rules and regulations. In 1991 the Brahm Prakash Committee had enlightened that “the essence of cooperative organisation is the principle of democratic management, signifying institutional regulation by members and their elected representatives in accordance with the bye-laws. It precludes control and interference by any agency including Government...” The Committee had identified the following restrictive provision in the State Cooperative Societies Act that empowered the Government/Registrar to:
• Notify compulsory amendment of bye-laws
• Nominate directors on the Management Committee/Board of Directors
• Veto, annul, rescind resolutions of the Board/General Body
• Give any directives
• Supersede/suspend the Management Committee/Board of Directors
• Restrict the terms of office of office bearers
• Compulsorily amalgamate/divide the co-operative societies.

Clearly all the problems that hamper the efficient functioning of the co-operatives emerge from one common factor – the Government support. The support can be in the form of financial and/or management. It is a matter of perception as to how this support helps. Let us take the case of financial assistance. If any person, leave alone the government, gives an assurance to the chief executive that the losses incurred by the business enterprise, he is heading, would be made up, notwithstanding the reasons of loss, the chief executive would have no reason to manage that enterprise efficiently and according to strict business ethics and principles. On the other hand when the government assures that the loss of the enterprise would be made from state resources, it gains legitimate right to give directives for unsuccessful working of the enterprise. Either way a foundation has been laid for inefficiency. There would a conflict when under such conditions the expectation is that the enterprise should make profit or at least pay for its own managerial expenses. By then it is too late. The other is the management intervention. The assistance is generally in the form of appointment of chief executive from the civil services. There is a merit to it. Invariably, the executives from civil services have experience of managing large organizations as a generalist and it has advantages. It is possible to highlight many cases where the co-operatives promoted by people to fulfill their needs lost their voluntary nature. Those
promoted by the government had members with no common business interest or sense of belonging. Such co-operatives became channels for the government to distribute credit, cheap and scarce resources.

**History of Dairy Co-operatives**

The bye laws of the dairy cooperatives were modeled on those of ‘Anand Pattern’ wherein at least the persons who were not in milk business could not make direct entry as members of the village dairy co-operatives. But the cooperatives at the district level and the state level were in no situation than their counterparts in other fields. Before the district and state co-operatives were incorporated the NDDB had insisted on educating the state co-operative officers and registrars so as to ease the registration of co-operatives. It turned out the other way. In many cases the registrars and the top level politicians found that if the district and state dairy co-operatives were registered in accordance with the model bye laws proposed by the NDDB, they would become far too autonomous for their comfort and out of bounds of their control. Commenting on such autonomy a chief minister told Amul fame Kurien, “Do you really expect me to let you set up a parallel government in my state to challenge my power and influence?”

Continued lobbying by the well-meaning co-operators and politicians brought out some positive result for promoting ‘true co-operatives’. In 1995 the Andhra Pradesh government decided to replace the existing co-operative societies act with a model co-operative act on the lines proposed in the Brahm Prakash Committee and by the Co-operative Development Foundation. It was realized that replacing the existing act would create difficulties for the very existence of the government-controlled cooperatives. The government therefore adopted a parallel act — the Andhra Pradesh Mutually Aided Co-operative Societies Act 1995 (MACS Act). The success of true co-operatives registered under the MACS Act encouraged other states to follow the path
shown by Andhra Pradesh. Similar acts were passed in the states of Bihar, Chhattisgarh, Jammu and Kashmir, Jharkhand, Karnataka, and Madhya Pradesh. The autonomy granted by the MACS Act did not remain a fallacy. The advantages became clear in the performance of the Guntur District Co-operative Milk Producers' Union popularly called as the ‘Sangam Dairy’ after its registration under the MACS Act. The Sangam Union and its affiliated village co-operatives were originally constituted on Anand Pattern. The Sangam Union did suffer from the bureaucratic controls and political interference and gradually turned into a co-operative with poor performance that was losing the support and the confidence of its member milk producers. In 1997 the Union switched its registration from the old co-operative societies act to the MACS Act. The NDDB facilitated the conversion to the MACS Act by waiving the requirement of a government guarantee for repayment of loan given under Operation Flood. The new found autonomy, accountability to its members, policy directives from the democratically elected board of directors and the freedom to its professional managers to perform made the Sangam Dairy improve its achievements and financial results and continued to perform better. The adoption of the mutually aided cooperative societies act by the Andhra Pradesh government, and similar acts passed by many other states, was a revolutionary step and opened vistas for a new generation of co-operatives to be formed and to function on the principles of co-operation pronounced by the ICA.
BRIEF HISTORY OF SANGAM DAIRY:

Our beloved Prime Minister Late Sri Lalbahadur Sastry while inaugurating Cattle Feed plant at Kanjery in Gujarat has asked Dr.V.Kurien to replicate ‘AMUL’ pattern throughout the country and for the fulfillment of the same, National Dairy Development Board was emerged. The programs that were taken up to develop dairy industry in India are named as ‘OPERATION FLOOD PROGRAMS’ Under this, schemes are envisaged for remunerative returns to the milk producers along with a package of inputs through a single agency owned and operated by the farmers. Under the operation flood-I, 18 districts were selected within the country for spread of Dairying in India and on among them is the Guntur District in Andhra Pradesh state. Guntur District was selected for development of Dairy under Anand pattern. As a part of the program ‘feeder balancing’ dairy has been established at the village Vadlamudi for balancing the supply of milk, which was called as the ‘SANGAM DAIRY’ This dairy was set up by NDDB with the financial assistance from Indian Dairy Corporation in the year 1976. The name of Sangam Dairy is due to the presence of ‘SANGAMESWARA’ temple at Sangamjagarlamudi village near the vicinity of Vadlamudi village. The dairy is located on the Guntur-Tenali state high-way about 15 km from Guntur and 10 km from Tenali having good architectural view attracting visitors. It became one of the most familiar visiting spot in Guntur District.

Sangam dairy is a milk producer’s co-operative union originally for Guntur District and subsequently extended to Prakasam district. The popular adage ‘Nothing Succeeds like success’, is applicable to the dairy development in India. The milk producers of Krishna, Guntur and Godavari districts have generously contributed and donated one day milk value and purchased 34.46 acres land at the cost of Rs.1.2 lakhs for the construction of Dairy. The Guntur District Milk Producers Co-operative Union Limited was registered under APCS ACT-1964 ON
23/2/1977 with registration number 896 DD. On 1/8/1978, the government of Andhra Pradesh has handed over the feeder balancing dairy to the union board along with 2 chilling centers located at Narasaraopet and Gurajala. There were 81 registered milk societies at that time. Government also contributed Rs.81 lakhs to the union as share capital. Further, 53 acres of land was purchased for construction of staff quarters and for implementing technical inputs programs.

Prior to existence of Sangam Dairy, the entire population in towns of Guntur district was compelled to depend upon the milk vendors for milk. The vendors are monopolists and they used to adulterate milk, extracted the cream out of it with an intention of making profits while the milk producers were not paid reasonable prices. And the rural milk producers were not in a position to lead their livelihood with meager incomes as they were un-organised. The vendors used to sell milk to the consumers with unreasonable/high prices till the emergence of Sangam Dairy in Guntur District. People from all walks of life, without any bar of age and sex joined in the movement and main thrust was not in just producing milk but also giving opportunities to improve the quality of rural life in all angles.

The Union started its own marketing in the important towns like Hyderabad, Tirupati and Chennai.

MISSION OF SANGAM DAIRY:

‘To integrate the milk producers into the co-operative fold and provide all the necessary technical inputs for increasing the quality of milk production. To give better price to the members and improve their socio-economic condition. To achieve excellence by manufacturing and marketing quality milk and milk products with an aim of ensuring consumer satisfaction.’
CHART V.1 SHOWING

ORGANISATION CHART OF SANGAM DAIRY

Board of Directors

Chairman

General Manager

Senior Manager (Accounting)

Senior Manager (Dairy)

Senior Manager (Production)

Supervisors

Skilled Workers

Unskilled Workers
ADMINISTRATIVE HEAD-SHIP LINE OF SANGAM DAIRY:

The State Government nominated Sri. Yadlapati Venkatarao as Chairman of the Union and thus he is the founder Chairman of Sangam Dairy. Later, Sri Dhulipalla Veeraiah Chowdary was elected in the year 1979 as Chairman of Sangam Dairy who contributed remarkable service for the growth and success of Sangam dairy and fought for the upliftment of the rural milk producers. He is called and popularly known as ‘PALA VEERAIAH CHOWDARY’ as he was closely associated with milk producers and he was always proud to identify himself with Sangam Dairy. He later elevated to the Chairman of APDDCF Ltd., Hyderabad and he also held the post of Revenue Minister in the state cabinet of Dr. N.T. Ramarao. It is pertinent to mention in this connection that he had provided employment opportunities in large scale especially to the children of milk producers during his tenure. He had actively involved in expansion works, introduction of computers in dairy in 1985 and in commissioning of Tetra pack plant and other expansion programs.

On the sudden demise of Sri. Veeraiah Chowdary, Sri Dhulipalla Narendra Kumar was elected as the Chairman in the year 1994. Sri Narendra Kumar has implemented many schemes for the betterment of the Dairy and its staff. Many new societies and centers are started and many more new milk routes opened in the so far untouched areas in the district.

Sri Dhulipall Narendra Kumar was re-elected as the Chairman of the Union for a second term on 23/09/2010. He is continuing with his efforts for the fulfillment of the Dairy objectives.
GROWTH OF SANGAM DAIRY:

The initial milk handling capacity of the dairy was 1.5 lakh liters per day and the product manufacturing capacities are 12 MTs of Skim Milk Powder, 8 MTs of Butter and 2 MTs of Ghee. Under Operation Flood-II Program, the dairy’s milk handling capacity was raised to 2.5 lakh liters per day. Again under Operation Flood-III, the handling capacity was raised to 3.5 lakh litres per day and the Government of Andhra Pradesh has invested Rs.81 lakhs as share capital in the Union. The Union has contributed milk supplies to the National Milk Grid by sending milk to Mother Dairy at Calcutta through rail tankers and also supplied butter to the defense department.

The Union converted to the A.P MACS Act 1995 on 01-02-1997 to facilitate more democracy and freedom to the affiliated societies as well as in the governing of the Union and repaid the share capital of Rs. 81 lakhs to the Government of Andhra Pradesh.

Aseptic milk packaging station was inaugurated on 9th April 1986 by the Honorable Late Sri Nandamuri Taraka Ramarao garu Ex-chief Minister of our state in the dairy premises. The station was run on sound lines. However due to market fluctuations, the station was temporarily closed. The present chairman carried out necessary repairs and replacements and revived the tetrapack milk for marketing purposes.

Sangam is strength of 1.67 lakh member producers and procures around 479 lakh litres per annum. It pumps back around Rs.240 lakh into the rural economy, every 10 days towards payment to the milk producers. Sangam Co-operative has spread over and interwoven with 643 villages of Guntur District. Sangam besides giving remunerative price to the farmers has been consistently paying price difference to all its milk producers from its surpluses.
Sangam Dairy has 4 milk chilling centers at Narasaraopet, Gurajala, Vinukonda and at Bhattiprolu and also having 7 bulk milk cooling centers in the district. This dairy has one cattle feed plant at Vadlamudi, Seed processing plant and city marketing office at Guntur.

FEATHERS OF CREDIT IN THE PERFORMANCE CAP OF SANGAM DAIRY:

- Sangam Dairy is the one of the largest co-operative milk dairies in South India and the main motto of this Milk Union is to procure milk from the milk producers in the rural areas by paying remunerative price to them and to supply the milk and products to the consumers with high quality standards at reasonable prices.

- Sangam Dairy is the 1st co-operative milk union in the state and it is the role model for all the milk unions in the state for implementation of technical input programs, breed development programs from its inception.

- History was made in 1995-96 when India surpassed the USA in Milk Production, while Sangam stood in the forefront to come into the New Mutually Aided Co-operative Societies Act as a model institution for the entire country.

- Sangam is the recipient of Excellence Award and Udyog Ratna Award from the Institute of Economic Studies-New Delhi.

- Sangam is the recipient of Gold Star Award from the Council of Economic Studies-New Delhi.

- Sangam is the recipient of Sri Mulukumuru Viswanatha Reddy Award for Co-operative Excellence by the Co-operative Development Foundation-Hyderabad.

- Sangam Dairy is continuously getting ‘A’ certificate from the audit point of view from its inception and it is also awarded as best tax payer from the commercial tax department, Government of Andhra Pradesh in the year 2000-2001.

• Sangam Dairy is the only dairy manufacturing Table butter in the state and supplying/marketing at Delhi and Bombay under ‘Vijaya’ Brand.

• It is running in good stead with balanced financial income without any losses from its inception with very high reputation and is helping milk producers to sustain themselves with prompt payments, required financial and other material assistance and keeping them at steady to their satisfaction.

• Sangam Dairy has not lost even a single man-day and there are no lock-outs/production holidays from its inception. This clearly shows that there are cordial industrial relations with employees/trade unions in the largest interests of the organization.

• Sangam Dairy stood in first place both in procurement and sales in Guntur district. Nearly one lakh producers are leading their livelihood on the earnings of milk.

SOCIAL RESPONSIBILITY OF SANGAM DAIRY TOWARDS THE VARIOUS INTEREST GROUPS:

• Scholarships are given to the children of the members in Janasri Scheme through LIC.

• Sangam Dairy is supplying cattle feed, fertilizers and seeds to the milk producers at reasonable prices besides other assistance.

• Several other benefits such as group insurance, cattle insurance etc and scholarships to the children of the milk producers are provided.

• A Janasri Bhima Yojana Insurance scheme was introduced for milk producers and about 33 percent of the premium payable was subsidized by the Union. Under this scheme if a milk producer dies, due to accident his family is paid Rs.80,000/- and if the death is due
to natural causes the family is paid Rs.35,000/-. Producers who are not covered under Janasri Bhima are paid an amount of Rs.10,000/- as solitium on the natural death of milk producers.

- Encouragement is given to the dairy farms by offering additional rates to the farmers. Union provides Encouragement to the cow rearers through payment of transportation and insurance charges incurred by them.

- In order to encourage development of good breed of cattle, bulls are procured from Haryana and given to the farmers at 50 percent subsidy.

- In order to develop the skills of dairy farmers, employees and others the existing training centre is converted into a 'Resource centre'

- For the farmers who have purchased cows under Rashtriya Kisan vikas yojana, payment of Rs.1/- extra was offered for their milk and to that extent, an amount of Rs. 428 lakhs distributed for the year 2011-2012.

- Interest on loans availed for purchase of murrah and other crossbred animals were waived if the loans are repaid in time.

- Dairy is arranging salaries and other allowances to the employees at the end of every month itself from its inception and providing all statutory and welfare facilities and other services such as medical insurance, uniform, allowances etc.,

- Swavalambana-a unique pension plan-was commissioned for over 800 paid staff of societies.

- Every employee of Sangam Dairy is getting his retirement benefit on the day of retirement itself.
• The loyalty of Sangam Dairy can be well known through its award of best tax payer from commercial tax department.

• The Union procurement is about 2 lakh litres per day during flush in 2011-2012. Varied milk needs of the customers are met as the liquid milk sales is 1,70,000 litres per day in three variants i.e., Toned Milk, Full cream milk and Double Toned Milk. Varied milk product needs of its customers are satisfied as it manufactures a range of products such as Table butter, white butter, cooking butter, skim milk powder, ghee, doodhpeda, butter milk, sterilized flavoured milk, curd, sweet lassi, milk cake, paneer, basundi, kalakand and malai laddu.

• The milk needs of far-off customers are also met as milk under Sangam brand is being marketed in Chennai and Tirupati to the extent of 70,000 litres per day.

• Sangam Dairy has launched ‘Packaged Drinking Water’ under ‘Vijayasangam’ brand. It is processed by the latest technology, using “Reverse Osmosis” process. The Product is well-accepted and is the leading brand in drinking water segment.

TECHNICAL INPUTS AND MILK ENHANCEMENT PROGRAM:

The various technical inputs offered to the milk producers in phased manner for the purpose of milk production enhancement are classified as follows:

1. Artificial Insemination Services

2. Milk Marketing

3. National Milk Grid

Artificial Insemination Services:

There is a sperm production center in the dairy, maintaining 20 Murrah Bulls for semen production purpose and producing 50,000 of semen every year. Further it is running 120
artificial insemination centers societies with the workers after giving them training in veterinary, first aid and artificial insemination.

Milk Marketing:

This union is meeting the fluid milk requirements in Guntur and other towns in the district. They are selling 40000 liters of milk per day in the district. They are also marketing tetra milk in Vishakapatnam, Calcutta, Chennai and Coastal belt.

National Milk Grid:

They are supplying whole milk to mother dairy Calcutta through Rail Milk Tankers since 1980 and condensed milk since 1989.

The Union is marketing daily 75000 liters of fluid milk in the district as well as in the city of Hyderabad and Secunderabad.

Cattle Feed:

The Cattle feed plant was installed with a capacity of 100 million tons per day. The pelleted feed plant was constructed by National Dairy Development Bank (NDDB) under the action No.7 of Operation flood program. The plant has started producing the pelleted cattle feed since 1982.

DISTRIBUTION OF MINERAL MIXTURE ON SUBSIDY BASIS:

Sangam Dairy is manufacturing mineral mixture in their cattle feed plant and supplying the same to the milk producers of Guntur District with 50% subsidy. At present they are supplying mineral mixture at Rs.5.25 per kg.
Cattle Insurance:

Discretionary inputs union has undertaken milk cattle insurance in a massive scale. They are insuring the milk cattle of their producers with a concessional premium of 3.4%. Out of which a third of the premium is born by the producer. They are insuring 5000 to 6000 animals per year.

Training Program:

Sangam Dairy has got full-fledged training centre for imparting training to their society workers in Veterinary First Aid (VFA) and Artificial Insemination with duration of 90 days. There is also a 30 days training program to the paid secretaries in clean milk production testing and in maintaining the society record.

Product Profile:

a. Pouch Packing: This is of two types
   1) Total Milk which has 3 percent of fat contents
   2) Whole Milk which has 6 percent of fat contents
b. White Butter
c. Table Butter
d. Ghee
e. Salted Butter
f. Cooking Butter
g. Skim milk Butter
h. Whole Milk Powder
i. Sterilized flavored milk
Bi-products:

a. Doodh Peda
b. Kalakand
c. Sweet Lassie
d. Badam Milk
e. Mango Drink
f. Packed Drinking water etc

The turnover of bi-products comes to 120 crores every year.

Other Incentives:

In addition to the above the union is supplying all testing equipments to the milk producing societies and Milk collection centers on no profit and no loss basis. This is to facilitate the societies to get standard equipment and for maintaining the union records. The union is also supplying milk to the mother dairy Calcutta on an average of 30 to 40 thousand litres per day throughout the year. The milk will be sent in rail tankers as a part of national milk grid program under operation flood.

The Union has following subsidiary units

- Milk Chilling centre of 1 lakh litres per day at Narasaraopet.
- Milk Chilling centre of 30000 litres per day at Gurazala, Bhattiprol and Vinukonda each.
- A modern 100 million tons capacity per day of pelleted cattle feed plant at Vadlamudi.
- An aseptic packaging station of 50000 litres per day at Dairy campus.
• A modern seed processing plant was also located in Guntur to process and market 1000 million tons of fodder seed.

FUTURE ASPIRATIONS OF SANGAM DAIRY:

Sangam has new targets for the new millennium which are as follows:

• Enhancement of procurement to 3.0 lakh litres per day.
• Enhancement of business turnover to 600 crores.
• Construct pucca buildings for all the milk societies in villages.
• Achieve total computerization through ERP Program with WAN network which facilitates inter connection among all units of the Dairy.
• Implement 200 Automated Milk Collection Units in the Milk Societies of the District
There has been tremendous progress in the performance of Sangam Dairy over the years which can be shown through the following table.

**TABLE V.1**

**SHOWING SANGAM DAIRY PROGRESS FROM 2002-2012**

<table>
<thead>
<tr>
<th></th>
<th>Particulars</th>
<th>02-03</th>
<th>03-04</th>
<th>04-05</th>
<th>05-06</th>
<th>06-07</th>
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<td>04-05</td>
<td>05-06</td>
<td>06-07</td>
<td>07-08</td>
<td>08-09</td>
<td>09-10</td>
<td>10-11</td>
<td>11-12</td>
</tr>
<tr>
<td>1</td>
<td>Milk procurement in lakh liters</td>
<td>666</td>
<td>563</td>
<td>502</td>
<td>457</td>
<td>470</td>
<td>522</td>
<td>479</td>
<td>434</td>
<td>392</td>
<td>428</td>
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<tr>
<td>2</td>
<td>Milk handled in lakh litres</td>
<td>862.4</td>
<td>780.9</td>
<td>769.2</td>
<td>654.5</td>
<td>628.3</td>
<td>735.1</td>
<td>757.9</td>
<td>821.2</td>
<td>819</td>
<td>879.2</td>
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<td>3</td>
<td>Milk Marketed in lakh litres</td>
<td>320</td>
<td>329</td>
<td>358</td>
<td>383</td>
<td>402</td>
<td>420</td>
<td>461</td>
<td>488</td>
<td>518</td>
<td>580</td>
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<td>4</td>
<td>Turnover (in crores)</td>
<td>115</td>
<td>117</td>
<td>118</td>
<td>115</td>
<td>136</td>
<td>153</td>
<td>189</td>
<td>201</td>
<td>250</td>
<td>320</td>
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<tr>
<td>5</td>
<td>Milk price difference paid per Kg to Milk Producers (Rs.)</td>
<td>15ps</td>
<td>30ps</td>
<td>10ps</td>
<td>nil</td>
<td>nil</td>
<td>nil</td>
<td>50ps</td>
<td>1Rs</td>
<td>1Re</td>
<td>1Re</td>
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<td>6</td>
<td>Milk price difference amount paid to milk prodcers</td>
<td>99</td>
<td>169</td>
<td>50</td>
<td>nil</td>
<td>nil</td>
<td>nil</td>
<td>239</td>
<td>434</td>
<td>392</td>
<td>428</td>
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<td>7</td>
<td>Union share capital from societies (incl share suspense) in</td>
<td>888</td>
<td>888</td>
<td>888</td>
<td>888</td>
<td>888</td>
<td>888</td>
<td>888</td>
<td>943</td>
<td>1379</td>
<td>1575</td>
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<td>8</td>
<td>Milk price paid per kg (Rs.)</td>
<td>11.58</td>
<td>12.5</td>
<td>12.98</td>
<td>13.02</td>
<td>14.68</td>
<td>16.61</td>
<td>19.44</td>
<td>22.82</td>
<td>25.86</td>
<td>30.69</td>
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<td>9</td>
<td>Networth (in lakh Rs.)</td>
<td>1625</td>
<td>1654</td>
<td>1670</td>
<td>1673</td>
<td>1681</td>
<td>1672</td>
<td>1763</td>
<td>2113</td>
<td>2510</td>
<td>2683</td>
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DAIRY FARMING IN SANGAM DAIRY
AN ECONOMIC ANALYSIS

In India more than 80 percent of operational landholdings are of small and marginal farmers which are not economically viable. There is a possibility to maximize the returns of the small holdings by establishing a proper combination of dairy enterprise with the crop production. The percentage contribution of dairy income increases with decreasing land size.98

Crop production is a seasonal income generating activity and so the farmers choose dairying to meet the daily cash needs of their families. Dairy enterprises provide employment opportunities to the farmers. It helps the farmers to engage the semi-employed family labour more efficiently during the slack period of crop production as the availability of family labour is more with respect to small and marginal farmers.

CHART V.2 DEPICTING MODEL DAIRY FARMING

Dairying is also likely preferred by the farmers because the farm yard manure which is a by-product of animal helps them to improve the fertility of their soil. More than 73 percent of the

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rural households in the country maintain livestock as a source of subsidiary income generation which accounts for 40 percent of their annual income. Almost 80 percent of the 479 million livestock are held by small and marginal farming households, thereby making the livestock rearing an integral component of their livelihood system.

**CHART V.3 DEPICTING DAIRY FARMING CYCLE**

At this juncture, it was felt worthwhile to undertake an economic analysis of dairy farming around the areas near Sangam Dairy in order to:

- Examine the cost structure and returns from dairy farming among different categories of farmers in the different regions, and
- Examine the factors affecting the gross returns from dairy in different regions around Sangam Dairy

**DATA COLLECTION:**

The study was undertaken in the regions around Sangam Dairy. The entire area around Sangam Dairy was divided into three regions: Narasaraopet Region (9 percent), Guntur region (65 percent) and Tenali region (26 percent). Three stage stratified random sampling technique was adopted. Two blocks from Narasaraopet region, five blocks from Guntur region and three blocks from Tenali region were selected at the first stage. Two villages from each selected block

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comprising of 20 villages and 15 families; five marginal (up to 1 ha), five small (greater than 1 to 2 ha) and five other categories (greater than 2 hectares) were selected. Thus the total sample comprised of 100 marginal, 100 small and 100 other categories of farmers. A well structured comprehensive schedule was designed and pre-tested. Data related to number of dairy animals, feed cost, fodder, concentrates, veterinary expenses and other fixed investments were gathered from the selected farm families.

To study the impact of different variables on return from dairying multiple linear regression analysis was used as follows:

\[ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + U \]

- \( Y \) = Returns from milk production (Rs.)
- \( X_1 \) = Cost of green fodder (Rs.)
- \( X_2 \) = Cost of dry fodder (Rs.)
- \( X_3 \) = Cost of concentrates and mineral mixture (Rs.)
- \( X_4 \) = Animal Health Services (Rs.)
- \( X_5 \) = Cost of human labour (hired + family) (Rs.)
- \( X_6 \) = Depreciation on fixed capital (Rs.)
### TABLE-V.2
SHOWING COST STRUCTURE ON DAIRY FARMING AMONG SAMPLE FARMS, NARASARAOPET REGION:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Marginal</th>
<th>Small</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herd size (No.)</td>
<td>4.61</td>
<td>5.64</td>
<td>12.28</td>
</tr>
<tr>
<td>Green fodder</td>
<td>4543.0 (29.2)</td>
<td>3437.5 (21.6)</td>
<td>8930.0 (19)</td>
</tr>
<tr>
<td>Dry fodder</td>
<td>1350.0 (8.6)</td>
<td>1156.4 (7.2)</td>
<td>4240.15 (9)</td>
</tr>
<tr>
<td>Concentrates</td>
<td>8642.5 (55.5)</td>
<td>10096 (63.4)</td>
<td>20078 (42.7)</td>
</tr>
<tr>
<td>Veterinary Services</td>
<td>687.5 (4.4)</td>
<td>550.0 (3.4)</td>
<td>2465 (5.2)</td>
</tr>
<tr>
<td>Hired human labour</td>
<td>0.0</td>
<td>227.8 (1.4)</td>
<td>10366 (22)</td>
</tr>
<tr>
<td>Depreciation on fixed capital</td>
<td>327.9 (2.1)</td>
<td>433.6 (2.7)</td>
<td>837.75 (1.7)</td>
</tr>
<tr>
<td>Cost A1</td>
<td>15550.9 (100)</td>
<td>15901.1 (100)</td>
<td>46916.9 (100)</td>
</tr>
<tr>
<td>Imputed value family labour</td>
<td>11972.0</td>
<td>11160.2</td>
<td>10366.0</td>
</tr>
<tr>
<td>Interest on fixed capital</td>
<td>5949.0</td>
<td>5828.0</td>
<td>15425.0</td>
</tr>
<tr>
<td>Cost C1 (7+8+9)</td>
<td>33453.8</td>
<td>32889.4</td>
<td>72708.4</td>
</tr>
<tr>
<td>Cost (A1) per animal</td>
<td>3373.3</td>
<td>2819.4</td>
<td>3820.6</td>
</tr>
</tbody>
</table>

Figures in the parentheses are the percentage to A1 cost of the respective categories.
### TABLE V.3
SHOWING COST STRUCTURE ON DAIRY FARMING AMONG SAMPLE FARMS, GUNTUR REGION:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Marginal</th>
<th>Small</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rs/farm</td>
<td>Rs/farm</td>
<td>Rs/farm</td>
</tr>
<tr>
<td>Herd size (No.)</td>
<td>4.6</td>
<td>5.2</td>
<td>12.4</td>
</tr>
<tr>
<td>Green fodder</td>
<td>4155.0(17.1)</td>
<td>3744.5 (13.2)</td>
<td>10182(10.9)</td>
</tr>
<tr>
<td>Dry fodder</td>
<td>8447.7 (34.9)</td>
<td>11367.1 (40.0)</td>
<td>26842.8(28.7)</td>
</tr>
<tr>
<td>Concentrates</td>
<td>8075.0(33.4)</td>
<td>9555.1 (33.6)</td>
<td>22672.9(24.2)</td>
</tr>
<tr>
<td>Mineral Mixture</td>
<td>290.4 (1.2)</td>
<td>206.0 (0.7)</td>
<td>991.8 (1.0)</td>
</tr>
<tr>
<td>Veterinary Services</td>
<td>1254.0 (5.1)</td>
<td>1636.0 (5.7)</td>
<td>6598 (7)</td>
</tr>
<tr>
<td>Hired human labour</td>
<td>252.4 (1.2)</td>
<td>331.4 (1.1)</td>
<td>22520.5(24.1)</td>
</tr>
<tr>
<td>Depreciation on fixed capital</td>
<td>1688.0(6.9)</td>
<td>1520.8 (5.30)</td>
<td>3554.4(3.80)</td>
</tr>
<tr>
<td>Cost A1</td>
<td>24162.4 (100)</td>
<td>28360.9 (100)</td>
<td>93353.4 (100)</td>
</tr>
<tr>
<td>Family labour</td>
<td>16826.5</td>
<td>19491.0</td>
<td>45041.0</td>
</tr>
<tr>
<td>Interest on fixed capital</td>
<td>6751.5</td>
<td>6083.2</td>
<td>14217.6</td>
</tr>
<tr>
<td>Cost C1</td>
<td>47488.3</td>
<td>53603.7</td>
<td>130091.5</td>
</tr>
<tr>
<td>Cost per animal</td>
<td>5252.7</td>
<td>5412.4</td>
<td>7528.5</td>
</tr>
</tbody>
</table>

Figures in the parentheses are the percentage to A1 cost of the respective categories.
### Table V.4

**Showing Cost Structure on Dairy Farming Among Sample Farms, Tenali Region:**

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Marginal</th>
<th>Small</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herd size (No.)</td>
<td>4.1</td>
<td>5.5</td>
<td>11.4</td>
</tr>
<tr>
<td>Green fodder</td>
<td>4240.0(21.7)</td>
<td>4383.3(15.4)</td>
<td>9995 (11.4)</td>
</tr>
<tr>
<td>Dry fodder</td>
<td>5786.0(29.7)</td>
<td>10591.2(37.3)</td>
<td>28339.2(32.4)</td>
</tr>
<tr>
<td>Concentrates</td>
<td>7426.7(38.1)</td>
<td>10672.0 (37.6)</td>
<td>23495.7(26.8)</td>
</tr>
<tr>
<td>Mineral Mixture</td>
<td>277.3 (1.4)</td>
<td>328.3 (1.1)</td>
<td>1344.7 (1.5)</td>
</tr>
<tr>
<td>Veterinary Services</td>
<td>1080.0</td>
<td>1312.7</td>
<td>5651.7(6.4)</td>
</tr>
<tr>
<td>Hired human labour</td>
<td>214.7 (1.1)</td>
<td>565.9 (1.9)</td>
<td>17120.9(19.5)</td>
</tr>
<tr>
<td>Depreciation on fixed capital</td>
<td>430.0 (2.2)</td>
<td>485.6 (1.7)</td>
<td>1475.5 (1.6)</td>
</tr>
<tr>
<td>Cost A1</td>
<td>19454.7 (100)</td>
<td>28339 (100)</td>
<td>87422.7 (100)</td>
</tr>
<tr>
<td>Family labour</td>
<td>12414.3</td>
<td>14326.1</td>
<td>11653.7</td>
</tr>
<tr>
<td>Interest on fixed capital</td>
<td>1719.9</td>
<td>1942.5</td>
<td>5902.0</td>
</tr>
<tr>
<td>Cost C1</td>
<td>33588.9</td>
<td>44607.6</td>
<td>105178.3</td>
</tr>
<tr>
<td>Cost per animal</td>
<td>4803.6</td>
<td>5152.6</td>
<td>7004.2</td>
</tr>
</tbody>
</table>

Figures in the parentheses are the percentage to A1 cost of the respective categories.
EMPIRICAL FINDING

Dairy is an important source of supplementary income for all farm size categories of farmers. Cost structure on dairy farming on marginal, small and other categories of farmers in different regions around Sangam Dairy were worked out and presented in Table 1 to 3. The herd size varied directly with the farm size in Narasaraopet region being 4.61, 5.64 and 12.28 animals per household among marginal, small and other categories of farmers.

The working expenses which include cost of green fodder, dry fodder, concentrates, mineral mixture, veterinary charges, hired human labour and depreciation on fixed capital came to Rs. 15,550.88, Rs. 15,901.14 and Rs. 46,916.90 per farm on marginal, small and other farm categories respectively in this region.

Major items of cost were expenditure on concentrates being 55, 63 and 43 percent respectively on different categories of farmers. The second highest cost was on green fodder of the order Rs. 4543 (29 percent), Rs. 3437.50 (22 percent) and Rs. 8930 (19 percent) in respective categories of farmers, while the lowest amount was incurred on hired human labour in case of marginal and small farmers because of small size of dairy farms managed by the farm family. On large farm size category, the minimum amount was incurred on veterinary services. Per animal costs were worked out the highest on large size category of farmers (Rs.3820) followed by marginal farmers (Rs.3373).

Dairy farming investments involves investments on animals, dairy buildings, machinery and equipment, etc. Depreciation component includes only dairy buildings and machinery; it is assumed that depreciation and appreciation on animals are equal to each other; hence this component of depreciation on part of animal was not included. Interest on working capital was

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also not included in cost items as dairy returns starts early as compared to crops. Including interest on fixed capital and imputed value of family labour total cost (C1) worked out to Rs. 33,453.88, Rs.32,045.00 and Rs.72,720 in respective categories of farmers in Narasaraopet region.

In Guntur region the average herd size was 4.6, 5.2 and 12.4 animals on sample farm of marginal, small and other categories of farmers. It was observed that working cost on dairy farm came out to be the highest i.e., Rs. 24,162.43, Rs.28,360.9 and Rs. 93,353.40 on marginal, small and other farm size categories respectively. Dry fodder came out to be much costly on small and marginal farms (35-40 percent) of the A1 cost. The lowest cost item in dairy farming on marginal farms was human labour (1 percent) followed by mineral mixture Rs. 290.40 per dairy farm. In comparison, large farm size categories paid higher cost for human labour (24 percent) than other categories of farmers. After adding interest component and imputed value of family labour total cost (C1) worked out as Rs. 47,488.33, Rs. 53,603.70 and Rs. 1,30,091.50 on marginal, small and other farm size categories of farmers respectively.

In the third region that is the Tenali region, the average cost of marginal farmers on variable items (A1 costs) like green fodder, dry fodder, concentrates, mineral and mixture, veterinary services, hired human labour and depreciation came to Rs. 19,454.67. Among all cost items, cost of concentrates, were high at (38 percent) per farm as compared to other cost items, the lowest cost was for mineral mixture and hired human labour on marginal farms. Similarly on small farms the total cost (A1) of variable items came as Rs.28,339 and same structure of costs was observed on this farm size category. Cost of family labour came as Rs.14,326.10 and interest on working capital Rs.1942.50 per farmer. Total cost (C1) worked out as Rs.44,607.60 on small farmers category in Tenali region.
Large farm size categories termed as other farmers paid Rs.87,422.79 per farm on variable items on dairy farms. Amongst all costs dry fodder (32.4 percent) and concentrates (26.8 percent) accounted for the highest share followed by hired human labour, but the imputed value of family labour is less i.e., Rs.11,653.74 on this category farms in Tenali region. Cost (C1) was worked at Rs.1,05,178.3 on large farm size categories of farms.

THIS REFLECTS THAT DAIRYING IS MORE REMUNERATIVE AND PROFITABLE ON SMALL AND MARGINAL DAIRY UNITS AS THEY HAVE SURPLUS FAMILY LABOUR

RETURN STRUCTURE FROM DAIRY FARMS:

According to Neo-classical theory of production the central problem of any production activity is efficiency in the allocation of resources. A producer is technically efficient in resource allocation if maximum possible output is obtained from a given quantity of input. It is widely believed that there is substantial variation in economic efficiency and profitability across different farm sizes. These differences in relative performance can be due to differential transaction costs stemming from asymmetric access to assets and information between large and small farm sizes, differences in spending on environmental practices, or differences in access to policy subsidies. If efficiency varies across farms, those with relatively more efficiency will be more profitable.

Return structure from dairy farms on different size categories of farmers in different regions is given in Table 4 as follows:
TABLE V.5 SHOWING

Returns over cost among different categories of farmers in areas around Sangam Dairy

<table>
<thead>
<tr>
<th>Region</th>
<th>Cost/Returns</th>
<th>Marginal</th>
<th>Small</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narasaraopet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gross returns</td>
<td>36330.00</td>
<td>32045.00</td>
<td>72720.00</td>
</tr>
<tr>
<td></td>
<td>Returns over A1 cost</td>
<td>20799.13</td>
<td>16143.86</td>
<td>25803.10</td>
</tr>
<tr>
<td></td>
<td>Returns over C1 cost</td>
<td>2876.12</td>
<td>-844.38</td>
<td>11.60</td>
</tr>
<tr>
<td>Guntur</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gross returns</td>
<td>62201.30</td>
<td>76001.20</td>
<td>155290.83</td>
</tr>
<tr>
<td></td>
<td>Returns over A1 cost</td>
<td>38038.87</td>
<td>47640.35</td>
<td>61937.45</td>
</tr>
<tr>
<td></td>
<td>Returns over C1 cost</td>
<td>14712.97</td>
<td>22397.50</td>
<td>25199.35</td>
</tr>
<tr>
<td>Tenali</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gross returns</td>
<td>47173.3</td>
<td>59830.8</td>
<td>144141.9</td>
</tr>
<tr>
<td></td>
<td>Returns over A1 cost</td>
<td>27718.67</td>
<td>31491.81</td>
<td>56719.32</td>
</tr>
<tr>
<td></td>
<td>Returns over C1 cost</td>
<td>13584.50</td>
<td>15223.20</td>
<td>38963.60</td>
</tr>
</tbody>
</table>

Table-IV indicates that in Narasaraopet region returns over cost A1 was Rs. 20,779.13, Rs.16,143.86 and Rs. 25,803.10 respectively for different size categories of farmers. These margins were squeezed at cost C1 and came to Rs 2876, Rs. -844 and Rs. 12 average per farm on
marginal, small and other categories of farmers. The returns from dairy bear inverse relationship with farm size in the less developed region of the state. This was also observed\textsuperscript{101} that the income of the dairy farmers was found to be the highest on small dairy farms, followed by marginal, landless, medium and large farmers.

In Guntur region, margin from dairy was the highest of large farm size categories (61,937) at cost A1 and declined at cost C1 Rs. 25,199.35. In Tenali region, it was the lowest for the marginal farmers at cost A1 Rs. 27,718 and at cost C1 Rs. 13,584 respectively.

On an average, for the area as a whole the net margin from dairy was calculated at Rs. 31,489, Rs. 36,4978 and Rs. 53,145 at cost A1 and Rs. 11,875, Rs. 15,432 and Rs. 13,091 at cost C1 respectively (TABLE V.6)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Marginal</th>
<th>Small</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rs/farm</td>
<td>Rs/farm</td>
<td>Rs/farm</td>
</tr>
<tr>
<td>Herd size (No.)</td>
<td>4.4</td>
<td>5.4</td>
<td>12.1</td>
</tr>
<tr>
<td>Green fodder</td>
<td>4258.1(20.2)</td>
<td>3874.7(14.9)</td>
<td>9875.5(12.1)</td>
</tr>
<tr>
<td>Dry fodder</td>
<td>6229.7(29.6)</td>
<td>9092.2(35.1)</td>
<td>22771.2(27.6)</td>
</tr>
<tr>
<td>Concentrates</td>
<td>7996.0(38)</td>
<td>9998.4(38.6)</td>
<td>22400.8(27.2)</td>
</tr>
<tr>
<td>Mineral Mixture</td>
<td>228.39(1)</td>
<td>201.5(0.7)</td>
<td>899.3(1.0)</td>
</tr>
<tr>
<td>Veterinary Services</td>
<td>1088.5 (5.1)</td>
<td>1321.2(5.1)</td>
<td>5483(6.6)</td>
</tr>
<tr>
<td>Hired human labour</td>
<td>190.6</td>
<td>381.0 (1.4)</td>
<td>18469.7(22.4)</td>
</tr>
<tr>
<td>Depreciation on fixed capital</td>
<td>1038.6(4.9)</td>
<td>992.8(3.8)</td>
<td>2387.4(2.9)</td>
</tr>
<tr>
<td>Cost A1</td>
<td>21029.9 (100)</td>
<td>25861.8 (100)</td>
<td>82286.9 (100)</td>
</tr>
<tr>
<td>Family labour</td>
<td>14531.9</td>
<td>16275.4</td>
<td>28089.8</td>
</tr>
<tr>
<td>Interest on fixed capital</td>
<td>5081.7</td>
<td>4789.9</td>
<td>11964.4</td>
</tr>
<tr>
<td>Cost C1</td>
<td>40643.5</td>
<td>46927.1</td>
<td>122341.1</td>
</tr>
<tr>
<td>Cost per animal</td>
<td>4747.2</td>
<td>4789.2</td>
<td>6823.1</td>
</tr>
<tr>
<td>Gross returns</td>
<td>52518.64</td>
<td>62358.84</td>
<td>135432.00</td>
</tr>
<tr>
<td>Returns over A1 cost</td>
<td>31488.74</td>
<td>36,497.04</td>
<td>53145.10</td>
</tr>
<tr>
<td>Returns over C1 cost</td>
<td>11875.14</td>
<td>15,431.74</td>
<td>13091.0</td>
</tr>
</tbody>
</table>
Figures in the parentheses are the percentage to A1 cost of the respective categories.

**TABLE V.7 SHOWING**

**DETERMINANTS OF DAIRY RETURNS PER ANIMAL IN SELECTED REGIONS**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Narasaraopet</th>
<th>Guntur</th>
<th>Tenali</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1966.70</td>
<td>-24027.5</td>
<td>7287.71</td>
</tr>
<tr>
<td>Human Labour</td>
<td>1.22</td>
<td>7.17***</td>
<td>-0.17</td>
</tr>
<tr>
<td>(0.78)</td>
<td>(1.80)</td>
<td>(0.79)</td>
<td></td>
</tr>
<tr>
<td>Green Fodder</td>
<td>1.46***</td>
<td>10.15***</td>
<td>1.69**</td>
</tr>
<tr>
<td>(0.40)</td>
<td>(1.35)</td>
<td>(0.82)</td>
<td></td>
</tr>
<tr>
<td>Dry Fodder</td>
<td>-0.05</td>
<td>0.21</td>
<td>0.44</td>
</tr>
<tr>
<td>(0.78)</td>
<td>(0.39)</td>
<td>(0.36)</td>
<td></td>
</tr>
<tr>
<td>Concentrates and Mineral Mixture</td>
<td>0.21</td>
<td>2.27**</td>
<td>1.16***</td>
</tr>
<tr>
<td>(0.41)</td>
<td>(0.88)</td>
<td>(0.38)</td>
<td></td>
</tr>
<tr>
<td>Animal Health Care</td>
<td>5.54**</td>
<td>4.66**</td>
<td>1.92</td>
</tr>
<tr>
<td>(2.08)</td>
<td>(2.16)</td>
<td>(1.08)</td>
<td></td>
</tr>
<tr>
<td>Depreciation on fixed capital</td>
<td>0.99</td>
<td>3.96</td>
<td>-11.65</td>
</tr>
<tr>
<td>(7.65)</td>
<td>(2.37)</td>
<td>(9.34)</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>0.38</td>
<td>0.70</td>
<td>0.24</td>
</tr>
<tr>
<td>No. of observations</td>
<td>52</td>
<td>138</td>
<td>89</td>
</tr>
</tbody>
</table>

Figures in the parenthesis are the S.E. of the respective co-efficients.
Determinants of income:

Linear regression analysis was carried out to determine the impact of different components on returns from milk production among different regions of Narasaraopet, Guntur and Tenali and was shown in Table-V.7 above:

It was observed that green fodder and animal health services found to be significant variable in Narasaraopet region. The coefficient being 1.46, 5.54 indicating one rupee investment on these variables will add to the amount of the value of the coefficient to the gross returns of the dairy. In Guntur region the value of the coefficient of human labour 7.17, green fodder 10.15, concentrates and mineral mixture 2.27 and animal health care were 4.66 and all were significantly contributed to the returns from milk production. Green fodder (1.69) and concentrates (1.16) contributed significantly in Tenali region.

CONCLUSIONS

It was concluded from the observations that,

1. Herd size varies directly with the farm size in all the regions.

2. Variable cost per animal varies directly with farm size/herd size among different regions except Narasaraopet region, where it was the lowest for small farm size categories.

3. Variable cost per animal was highest in Guntur region followed by Tenali in all farm size categories.

4. Green fodder and concentrates constituted 85 percent of the total cost among the marginal and small farmers in Narasaraopet region; whereas it is 62 percent for other categories. In Guntur region and in Tenali region these items constituted 50 percent and
35 percent and 60 percent and 38 percent of the total cost respectively, varying inversely with the farm size.

5. Hired labour constituted around 1 percent among marginal and small farmers; 19-24 percent for other categories for different regions.

6. Returns per lactating animal were estimated to about Rs. 12,000/ annum for marginal and small farmers and Rs. 9,000/ annum for other categories of farmers. It was the highest in Guntur region and lowest in Narasaraopet region. Among different farm size categories, it was the highest for marginal farmers and the lowest for other categories of farmers among different regions.

7. Definite trend was not followed in returns over C1 cost among different categories of farmers. However it was the highest for small size categories of farmers. Higher use of green fodder, animal health care and concentrates and mineral mixture improve the returns from dairy in the regions around Sangam Dairy.
ECONOMIC ANALYSIS FOR DETERMINATION OF NET FARM INCOME:

Further economic analysis was undertaken to determine the net farm income and that cost of production of a litre of milk was always less than selling price of a litre of milk in the dairy farm

Objective

To determine the:

☐ Net farm income

☐ Cost of production of a litre of milk, using two methods:

(i) Cost per equivalent income

(ii) Cost per unit sold

Economic analysis of small dairy farms

Methodology

Regions

1. Narasaraopet region

2. Guntur region

3. Tenali region

• Data collected from 24 medium size and 42 small farms

• Each farm was visited twice weekly over a period of 12 months

DATA RECORDED

• Milk yield: quantity of milk sold (as reported by the farmers).

• Total expenses: concentrate bought, transport cost, fuel, electricity, water, interest on loan, lease on land etc.

• Total income: sale of calves, culls, manure etc.
• Any change in the inventory of animals on the farms (during the study period).

• All the data were entered into a model as developed in Microsoft Excel software for analysis.

Assumptions:

• Value of cow @ Rs 30000 and for heifer @ Rs 15000

• Estimated cost of labour to take care of one cow per year @ Rs 15000

• Useful life of machinery 10 years and for building 20 years

• Depreciation: straight line method, no residual value

• Selling price of fresh milk @ Rs 40.00/ litre

**Net Farm Income (NFI)**

• In dairy farms, working family members are not compensated on a set wage basis.

• NFI shows the amount of income available to the family.

• It takes into account all cash and non-cash income (birth of calf) and cash and non-cash expenses (depreciation)

• NFI-(General Accepted Accounting Practice)

• Adopted by Livestock Policy Initiative of FAO-India, Pakistan, Bangladesh.

**Net Farm Income (NFI)**

• **Total farm receipts** = sum of cash income and non-cash income (change in inventories)

• **Total farm expenses** = sum of cash expenses and non-cash expenses (depreciation).

• **NFI** = total receipts minus the total expenses
Net Farm Income (NFI)

Total income = Sale of milk + Sale of cull animals + Sale of manure

Total expenses = Variable cost + Paid interest on liabilities + Paid land rent + Transport cost + Paid utilities

Net cash income = total income – total expenses

Non cash adjustment: (- Depreciation, +/- change in inventory, +/- capital gains/losses)

RESULTS AND DISCUSSION

Net farm income against the type of farms

<table>
<thead>
<tr>
<th>Methods</th>
<th>Small farms (1 to 3 cows)</th>
<th>Medium farms (4 to 7 cows)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Net Farm Income (Rs)</td>
<td>1,20,000-1,75,000</td>
<td>1,75,000-3,40,000</td>
</tr>
<tr>
<td>Range Net Farm Income (Rs)</td>
<td>48,000-2,16,062</td>
<td>3,20,000-5,20,000</td>
</tr>
</tbody>
</table>
Cost of production

- Cost of production (per unit) = total cost associated with production

  ____________________________________________

  Number of units produced

Two methods used:

1. Cost per unit sold

2. Cost per equivalent inc

Cost of production

- Cost per unit sold = S all expenses incurred on the farm

  ____________________________________________

  number of litres of milk sold

- Value of secondary products (sale of calf, cull animals, manure) not included

Cost of production

- An equivalent unit is calculated:

  Equivalent unit = the total farm income

  ____________________________________________

  average price of the milk

- Cost of a litre of milk = S expenses on the dairy farm

  ____________________________________________

  equivalent unit
Cost per equivalent income method is more appropriate, because Dairy farms have multiple sources of income from milk (the major produce), manure and sale of animals (secondary products).

Results and discussion

Cost of Production of a litre of milk

<table>
<thead>
<tr>
<th>Methods</th>
<th>Small farms</th>
<th>Medium farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1 to 3 cows)</td>
<td>(4 to 7 cows)</td>
<td></td>
</tr>
<tr>
<td>Cost per equivalent income</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>(Rs/litre)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost per unit sold</td>
<td>38</td>
<td>36.75</td>
</tr>
<tr>
<td>(Rs/litre)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSIONS

- Using the cost per equivalent income method, farms are producing a litre of milk at a cost less than the selling price.
- This method of economic analysis applies to farms that are currently operating.
- Dairying is a profitable enterprise, nevertheless other factors are impeding its further development (Environmental laws, problem of organized marketing, a change in consumer taste etc)