

Rural Development and Milk Cooperatives in India

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Abstract— After the success of Green Revolution, Government of India taken up a project called White Revolution and Operation Flood for improving the living standards of the rural people and rural economy. One basic difference between producing more food-grains and more milk is overlooked, namely, that whereas the former has an interval between sowing of crop and its harvesting of about 120 days only, in the case of later, it may be a 1000 days between the birth of female calf, and its calving and giving any marketable milk and it is also a much more capital intensive and time consuming exercise than that of growing of crops. The main aim of this article is to analyze the phenomenal growth of socio economy of milk producers by encouraging dairy farmers to keep more animals, movement of procurement and input systems and supportive federal structures.

Keywords— Milk Producers, Socio Economy, Women Empowerment

1. Introduction

Dairying is an ancient profession. Its increasing popularity has brought prosperity to millions of agricultural labourers and small farmers. Milk is important to a well balanced diet. Dairying is a centuries-old tradition for millions of Indian rural households; domesticated animals have been an integral part of the farming systems from time immemorial. Milk contributes more to the national economy than any other farm commodity.

Dairying has become an important secondary source of income for millions of rural families and has assumed a most important role in providing employment and income generating opportunity. The unique feature of the system is that about 120 million rural families are engaged in milk production activities as against big specialized dairy farmers in the west.

Since 1947 after India gained freedom, attempts have been made to provide wholesome milk to urban consumers. One by one, a large number of dairies, mostly under the control of government, were set up in urban areas to meet the demand. No proper arrangement was made for augmenting supplies. Serious problems in the form of shortage of raw milk occurred, particularly in the lean production season. Short out remedial measures were adopted without taking into account the entire supply-demand system. This brought in more problems.

For want of effective and stable procurement system and organization, the urban dairies depended on the traditional system of buying milk. As a result, middlemen contractors who dominate the traditional system also started dominating the urban dairies, under the control of the Government. This resulted in shortage of raw milk for the dairies, and the dairies had to fall back on imported milk solids.

Availability of cheap milk solids discouraged the urban dairies from paying a proper price for indigenous milk. During the flush season, the producers had to sell milk at a throw-away price to the middlemen contractors. Under such a situation, no farmers had fed his milch animals properly and provide the necessary inputs for milk production enhancement. With increase in the number of urban dairies as well as consumers, larger and larger quantities of milk powder had to be imported. When the urban dairies' commitment to consumers was small, the high fat buffalo milk was adequate to meet the requirement of milk fat for toned milk and double toned milk. With increase in the supply of milk to consumers, the need for procurement and therefore for import of milk fat became necessary. This situation continued till 1974.

In 1975, there was a temporary glut of milk powder in the country, although practically none of the new Feeder Balancing Dairies under Operation Flood was commissioned. The milk powder manufactures, almost all in private sector, approached the Government to buy the SMP from them at the market price. The Government agreed that the Indian Dairy Corporation (IDC) buy the indigenous SMP at the lowest tendered rate.

During the post independence period, progress made in dairy sector has been spectacular. Milk production has increased more than four folds from a mere 17 million tons during 1950-51 to 104.8 million tons in 2007-08 but the country's per capital availability is still lower than the world's daily average of about 285 gms though it has double from 124 gms in 1950-51 to 256 gms per day in 2007-08 through Operation Flood. Currently the India is the second largest milk producer in the world after the United States. Milk production in Tamil Nadu during 2012-13 was around 1.82 crores litres per day and the eighth rank in milk production in India.

2. Health Benefits of drinking Cow's milk

Milk is very valued food in India. Expenditure on milk and milk products accounted for a little over 9 per cent of

the total household consumer for the economy as a whole and the expenditure on milk would provide a substantial boost to the milk production due to cow's milk is a very rich source of nutrition in a small package and available in more varieties like whole, skim, lite, fat-free and flavoured. Milk is high in protein, a healthy carbohydrate called lactose, B-vitamins, Vitamin-A, Vitamin-D and Zinc. Once our child is ready to digest it, though, milk becomes an important part of their diet. It is a rich source of calcium, which builds strong bones and teeth and helps regulate blood clotting and muscle control. And it is one of the few sources of vitamin D, which helps the body absorb calcium and is crucial for bone growth. Milk also provides protein for growth, as well as carbohydrates, which will give our child the energy they needs to toddle all day. And if our child gets enough calcium from the get-go, there is evidence that he will have a lower risk of high blood pressure, stroke, colon cancer, and hip fractures later in life.

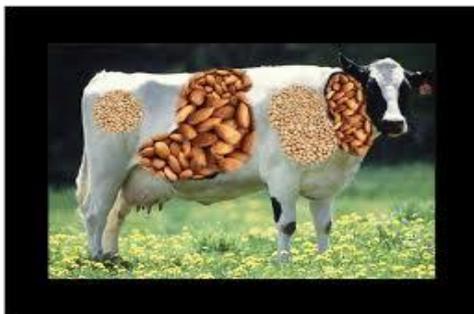


Fig 1: Enriched cow image

According to the American Academy of Pediatrics (AAP), most kids will get enough calcium and vitamin D, if they drink 16 to 20 ounces (2 to 2 ½ cups) of cow's milk a day.

Sarah Schenker, Dietitian says that the cow's milk has nutrients that are important for children as grows since it provides protein, calcium, magnesium and vitamins B-12 and B-2.

Julie Redferm, Registered Dietitian said that to get adequate amounts of calcium during pregnancy, drink three 8 ounce glasses of non fat milk each day or eat a variety of other calcium-rich foods milk products such as yogurt, cheese.



Fig 2: World Milk Day image

3. National Dairy Development Board (NDDB)

Shri Lal Bahadur Shastri, Prime Minister in India, visited Anand on 31st October 1964 for inauguration of the Cattle Feed Factory of Amul at Kanjari. As he was interested to knowing the success of this cooperative, spent a whole night with farmers in a village, even had dinner with a farmer discusses his wish to Dr.Vergheese Kurien, then the General Manager of Kaira District Cooperative Milk Producers' Union Limited (AMUL) to replicate this model to other parts of the country for improving the socio-economic conditions of farmers. As a result of this visit, it is initiated to organize separate department to mold the citizens in achieving quality of lift to our society and his public interest and to attain group goal that the National Dairy Development Board (NDDB) was established at Anand in 1965 and by 1970 it launches the Dairy Development Programmes for India popularly known as Operation Flood under the Seventh Five-year Plan of the Government of India by the Ministry of Community Development and Cooperation, for doubling milk production, which envisages a comprehensive programme of animal breeding, animal nutrition and animal health and hygiene, livestock marketing and extension work of scientific lines and latterly known as White Revolution. To route the gifted commodities and funds under Operation Flood, the Government of India set up the Indian Dairy Corporation (IDC) in 1970 which was later merged with NDDB in 1987, by an Act of Parliament (the NDDB Act 1987).



Fig 3: Dr. Vergheese Kurien,
Father of White Revolution

Dr.Vergheese Kurien is the Milk man and Father of White Revolution who born on November 26, 1921 in Kozhikode, Kerala, and studied at Madras University for a Bachelor of Science in 1940, a Bachelor of Mechanical Engineering (Honours) from Madras University in 1943, and was a graduate of the Tata Iron and Steel Company Technical Institute, Jamshedpur in 1946. He took a Master of Science in Mechanical Engineering (Distinction) from Michigan State University in 1948 and then went for specialized training in dairying at the National Dairy

Research Institute, Bangalore and he had 17 honorary doctorates from Universities in India and Abroad and he died on 09.09.2012. At the time of his death he was Chancellor, University of Allahabad since April 17, 2006, Member, Board of Trustees, Lal Bahadur Shastri National Memorial Trust, New Delhi since 1986, and Member, Advisory Committee, South Asian Network on Fermented Foods since 2004. He was Founder Chairman of the National Dairy Development Board (1965-1998), the Gujarat Cooperative Milk Marketing Federation Ltd., Anand (1983-2006), the National Cooperative Dairy Federation of India Ltd (1986-1993, 1995-2000 and 2003-2006), and the Board of Governors, Institute of Rural Management, Anand (1979-2006) amongst several other posts he held in his working life. He was the recipient of several distinguished Indian and International awards of the Padmashri (1965); Padmabhushan (1966); Krishi Ratna (1986); and the Padma Vibhushan (1999). Outside India, it was the Ramon Magaysay Award for Community Leadership (1963); the "Wateler Peace Prize" Award of the Carnegie Foundation for the year 1986; the World Food Prize award for the year 1989; the "International Person of the year" by the World Dairy Expo, Wisconsin, U.S. (1993); the "Ordre du Merite Agricole" by the Government of France in March 1997; and the Regional Award 2000 from the Asian Productivity Organization, Japan.

NDDDB launched 'Operation Flood' in 1970, making India the largest milk producer in the world. He served as Chairman of NDDDB for 33 years from 1965 to 1998. Today over 10 million farmers under NDDDB provide over 20 million liters of milk procured per day from 200 dairy cooperatives across the country.

4. Operation Flood Phase-I

Operation Flood-I (1 July 1970 to 30 June 1981), 18 of the country's main milk shed were connected to the consumers of the four metros viz. Mumbai, Delhi, Kolkata and Chennai and the total cost of this phase was Rs.116.5 crores and these funds were generated from gifted

commodities received from the United Nations World Food Programme 1,26,000 tons of Skimmed Milk Powder and 42,000 tons of butter oil over project period with benefiting 1.56 million rural families, banded together in 12,000 village cooperative milk producers societies (VCMPs) in 27 selected milk shed districts. The commodities were recombined as liquid milk and sold in these cities at prevailing market price that went in for building the cooperative dairies under the programme, while capturing the urban market for rurally produced milk and the main objectives were, commanding share of milk market and speed up development of dairy animals respectively hinder lands of rural areas. During the end of this period, the milk procurement is 2.56 million kg per day from 17.5 lakhs members. Since 1950, the total

expenditure on dairying in all the six five year plan period up to 1983-84 amounted to Rs.6, 613 million.

5. Operation Flood Phase-II

Operation Flood-II (2 October 1979 to 31 March 1985), with an additional investment of Rs.7,800 million, covering 155 milk shed districts and linking them to markets in 147 towns and cities benefiting 10 million rural families. The imports of milk powder, which averaged 35,000 tons per year in 1956-70 dropped to 28,000 tons per year in the subsequent 14 years. Significantly, the use of imported milk powder as a percentage of total throughput plummeted sharply from an average of 60 percent in the decade of 'fifties', to 39 percent in 'sixties', 14 percent in the 'seventies', and 7.4 per cent in 1983-84. The commercial imports of dairy products have stopped since 1975-76. Subsequently, only gifted powder and butter oil were received through bilateral aid under Operation Flood. The indigenous production of milk powder, including infant food, went up from 22,000 tons in 1970 to about 1,00,000 tons in 1983.

Operation Flood-II, the management increased the milk sheds from 18 to 136; 290 urban markets expanded the outlets for milk. By the end of 1985, a self-sustaining system of 43,000 village cooperatives with 42.5 lakhs milk producers were covered. Domestic milk powder production increased from 22,000 tons in the pre-project year to 1,40,000 tons by 1989, all of the increase coming from dairies set up under this phase and the cost of this phase was Rs.277.2 crores. The prime objective of Operation Flood-II was to establish a modern and self sustaining dairy industry, building on the foundation of OF-I to meet the nation's needs in milk and milk products. For OF-II, donated commodities were received directly from the European Economic Community (EEC), 1,86,000 tons of Skimmed Milk Powder and 76,000 tons of Butter oil. Financially supported by money generated by the sale of these commodities as recombined milk, a soft loan of US\$150 million from the World Bank and the internal resources of the Indian Dairy Corporation, OF-II covered 150 milk sheds. To link these milk sheds to the city market and ensure a year-round sustained milk supply, the National Milk Grid with storage and long distance transport facilities was created. During the end of this period, the milk procurement is 5.78 million kg per day from 36.3 lakhs members.

6. Operation Flood Phase-II

Operation Flood-III (1 April 1985 to 31 March 1996), the dairy cooperatives were enabled to expand and strengthen the infrastructure required to procure and market increasing volumes of milk with a total investment of Rs.1303 crores. Veterinary first-aid health care services,

feed and artificial insemination services for cooperative members were extended, along with intensified member education. It went with adding 30,000 new dairy cooperatives to the 42,000 existing societies organized during OF-II. The Milk sheds peaked to 173 in 1988-89 with the numbers of women members and Women's Dairy Cooperative Societies increasing significantly. The third Phase of Operation Flood focused on consolidating the milk procurement, processing and marketing infrastructure created under OF-I & OF-II. OF-III was funded from the internal resources of NDDDB as well as through a World Bank loan / credit of US\$365 million and proceeds from the sales of EEC gifted dairy commodities. During the end of this period, the milk procurement is 10.99 million kg per day from 92.63 lakhs members.

7. National Project for Cattle and Buffalo Breeding (NPCBB)

The Government of India had initiated a major programme from October 2000 for genetic improvement called as National Project for Cattle and Buffalo Breeding (NPCBB) over a period of ten years, in two phases each of five years, with an allocation of Rs.402 crores for the first phase and it envisages genetic up gradation and development of indigenous breeds on priority basis.

8. National Dairy Plan

India is agricultural country and a cow worshipping nation but the milk yield of our bovine animals is very low in the world. In the year of assessment 2011-12 the milk production of the nation was 127 million tones and our requirement by 2021-22 will be 200 million tonnes. The Central Government has formulated a scheme "National Dairy Plan" with Rs.2,040 crores, including a credit from International Development Agency (IDA) for Rs.1,584 crores, the Government of India's share of Rs.176 crores and contribution of Rs.280 crores from End-Implementing Agency (EIA) of cooperatives and in addition, NDDDB and its subsidiaries would contribute about 200 crores towards technical and implementation support, with maintain an annual growth of over four percent in the next 15 years under the Phase-I and launched at National Dairy Development Board (NDDDB) on April 19, 2012 and its objective is to increase productivity of milch animals and thereby milk production to meet the rapidly growing demand for milk in the country by increasing productivity through scientific breeding and nutrition.

National Dairy Plan-I (NDP-I) (October 2011-September 2016 – end of the 12th Five Year Plan) aims at a multi-state, multi-pronged, and long-term strategy to increase milk production. Around 400 bulls or equivalent embryos or semen doses of high-fertility pure and jersey pure breeds are being imported into India for nearly Rs.46

crores. Besides, NDDDB will also strengthen the existing semen stations and set up new ones at a cost of Rs.237 crores.

9. Developing Human Resources

NDDDB continues to place special emphasis on the growing human resource needs with a major focus on capacity building through training and development as a preparatory task for effective and timely implementation of the NDP-I.

Training on the use of the ration balancing software was conducted. To ensure effective delivery of training programmes, training capabilities for trainers within NDDDB were assessed. Training programmes on "Lead Trainers" modules with the objective of honing training skills were conducted. An initiative to create awareness amongst the employees of NDDDB on the objectives of NDP and its sub-components was taken up in the form of interactive workshop.

In addition, training continued of milk producers, village resource persons, board of directors of milk unions, staff and officers working in cooperative dairies across the country to equip them with the latest knowledge and skills and a positive attitude for leveraging their energies to achieve the organization's desired objectives. The trainings focused on up scaling business as well as better governance in the milk cooperatives. Emphasis was given on ensuring more women participation in the programmes. Training programmes related to Artificial Insemination, Dairy Animal Management, Fodder Seed Production, etc., were conducted at NDDDB's Regional Demonstration and Training Centres situated at Jalandhar, Siliguri and Erode. Technical training in the areas of operation, maintenance and energy conservation in milk plants, bulk milk chilling units and cattle feed plants were organized at Mensinh Institute of Training, Mehsana. To equip the support staff in office management and behavioral skills, programmes of two days duration on personal effectiveness were organized.

10. Socio economy and women milk producers

The urban woman has largely succeeded in breaking the traditional shackles which used to deter her from leaving the 'secure' confines of her home. And, today, her economic role has contributed a lot of the family's well being. On the other hand, the rural woman for long has been part of income generation activities in the village either at the farm or in the dairy. But, she has got little recognition and respect for her untiring efforts to save her family from economic misery.

Milk production is the single largest source of employment for women, while the man tills the more profitable source – the land. It is the woman who looks after the dairy herds and gets paid for the milk delivered to

the society. This has, in some ways, empowered women economically and socially.

Women contribute greatly to the economy. Employment of women is a index of their economic status in society specially with reference to equality. With the introduction of new macro-economic policies, skill and vocational training for women assume key importance. It is also important to note that poorer the family, the greater is dependence on women's economic production. These women's earnings increase the aggregate income levels of these poor hose-holds. Also important is the fact that Indian women contribute a much larger share of their earnings to basic family maintenance than do men. Increases in women's income translate more directly into better health, childcare, and shelter.

In a nutshell, women's earnings, in the short term, have an immediate positive effect on the incidence and severity of poverty at the house-hold level. In the long term, there are important intergenerational effects on the quality of human capital. However, the fact of the matter is that India invests far less in its women workers / producers than in its working men. Women also receive a smaller share of what society produces. Women have little access to land and other productive assets.



Fig 4: Women Empowerment in milk sector

11. Women Empowerment

Women's contribution to socio-economic development as producers and workers will be recognized in the formal and informal sectors (including home based workers). The principle of gender equality is enshrined in the Indian Constitution in its preamble, Fundamental Rights, Fundamental Duties and Directive Principles. The Constitution not only grants equality to women, but also empowers the State to adopt measures of positive discrimination in favour of women.

Within the framework of a democratic polity, our laws, development policies, plans and programmes have aimed at women's advancement in different spheres. From the Fifth Five Year Plan (1974-78) onwards has been a marked shift in the approach to women's issues from welfare to

development. In recent years, the empowerment of women has been recognized as the central issue in determining the status of women. The National Commission for Women was set up by an Act of Parliament in 1990 to safeguard the rights and legal entitlements of women. The 73rd and 74th Amendments (1993) to the Constitution of India have provide for reservation of seats in the local bodies of Panchayats and municipalities for women, laying a strong foundation for the participation in decision making at the local levels.



Fig 5: image of pleasure

In view of the critical role of women in the agriculture and allied sectors, as producers, concentrated efforts will be made to ensure that benefits of training, extension and various programmes will reach them in proportion to their numbers. The programmes for training women in dairy development including animal husbandry expanded to benefit women worked in the agriculture sector. Support to Training and Employment Programme (STEP) primarily focused on women's role in White Revolution. The main objective of STEP is 'organization of All Women Cooperative Milk Societies', wherein all the members of the managing committee and even the society working staff are women. And, they will have no interference from men in the running of these societies. They will be free to take decisions concerning business and administrative matters. This project was the first step towards economic and social uplift of women. STEP aims to make a significant impact on women in traditional sector by upgrading their skills and providing them employment on a project basis. In sort, STEP offers an integrated package for overall development of poor women in traditional sectors. The ultimate aim is to develop women groups which can thrive on a self-sustaining basis in a market place with the minimal governmental support and intervention after the project period is over.

Women upliftment through such projects would go a long way in reforming the Indian society and enable it to keep pace with the fast moving world.

12. Welfare of SC/ST employees

NDDB continued its efforts for the welfare of SC/ST employees and their children. An exclusive training programme on "Achieving organizational excellence

through personal effectiveness” was organized for non-officers which were well received. In all, SC/ST employees were provided training to equip them with the skill-sets required for effective performance of their roles in the organization.

SC/ST employees were reimbursed expenses incurred on education of their children up to the age of 25 years instead of the normal limit of 21 years. The expenditure on purchase of books to children of SC/ST employees from 1st standard up to graduation was also reimbursed.

To motivate the children of SC/ST employees, cash prizes and certificates were given to meritorious students in class 10 examinations. SC/ST students pursuing professional education in Institute of Rural Management, Anand are offered loan-cum-scholarship.

Ambedkar Jayanti was celebrated in NDDDB with ceremonial fervor.

13. Conclusion

In the past five decades, India has achieved tremendous progress in the field of dairy development. In terms of milk production, as also the annual growth in production, the country’s performance has been phenomenal. It is very well established that, compared to any other sector of the Indian economy, dairying has benefited the poor maximum.

Livestock sector generates massive employment opportunities, particularly rural self employment, for the lowest possible investment unit compared to other sectors. Livestock production in general, and cattle and buffalo in particular, is highly women oriented, as it is labour intensive. Livestock sector in India is thus extremely livelihood intensive, closely interwoven into the social and economic fabric of the rural society, making investments in development of the sector the critical pathway for rural prosperity. India had over the past five decades proven beyond all doubts, how successfully dairying can be used as an instrument of social and economic change in the Indian villages.

Rural economy is to be viewed as a whole and not in isolated segments. There is need to provide a permanent economic system to rural economy; a system in which entire village community may be involved as was envisaged by Nehru and the system may have wider operational links with outside so that village community gets through its own system all that it needs and disposes of its surplus produce through it. Cooperative is obviously the best form to provide such a system. Cooperative village economy management will have links nationally and internationally through higher federations. When Nehru visualized cooperative, Panchayat and school, his objective was to build a village administrative, economic and social system, each supporting the other. If the village economy is not taken as a whole be cooperatives, the benefits will not reach the entire community.

Dairying had been considered as a secondary / subsidiary occupation in India till a few years back, wherein the animals were maintained just on available crop residues and byproducts and the milk produced was used for consumption by the farmer’s family. However, with the introduction of Operation Flood projects and increased demand for milk and milk products in urban areas, dairying has become a major source of income / employment in many parts of rural and urban India. The margin of profit in milk production can be enhanced to a considerable extent by scientific management of dairy animals. Feeding, Artificial Insemination and health care are the major activities in any dairy farm.

Operation Flood and milk cooperatives emerged in India as the largest rural employment scheme, enabling the modernization of the dairy sector to a level from where it can take off to meet not only the country’s demand for milk and milk products but can also exploit global market opportunities. It is found that the milk cooperatives play a vital role in alleviating rural poverty by augmenting rural milk production and marketing.

The plan of Operation Flood/White Revolution agreed that the rural producers would get a remunerative price all the year round and the urban dairies would get conserved milk solids when needed and to improve milk marketing by enabling the organized dairy sector to obtain a commanding share of the markets and at speeding up dairy development by increasing milk procurement and production in rural areas which supply milk to the cities.

The Father of White Revolution, Dr.Verghese Kurien has pointed out on several occasions very eloquently the other advantages which dairy development programmes offer. He pointedly refers to the social and educational benefits imparted to the rural families through coordinated dairy development activities.

Milk and milk product is the second largest contributor to the gross agricultural output and dairying has been part of life in India. Dairy Development is an essential part of our agricultural, rural and economic development and will help all aspects of crop production, supply of draft animal power, create new employment opportunities, provide nutrition to vulnerable sections of the populations through milk and milk products, help farmers to make profits and result in true rural as well as dairy development, if the goals we set forth are clear and implementation of programmes and policies are directed towards achievement of goals.

It is also assumed that the NDDDB, Anand pattern for development of dairy cooperatives is appropriate for land-poor and land-less women because: (i) dairying is recognized as being women’s work, (ii) the products and income from dairying can be controlled by women, (iii) the Anand pattern takes the household with a small number of milch cattle as the unit of production – which is the traditional mode of production.

It is assumed that dairy-farming has the greatest potentiality to benefit the rural population including the small and marginal farmers and agricultural labourers for economic growth and development – as stated in the National Commission on Agricultural Report (1971).

The Planning Commission, after evaluating the findings of the NDDB and the National Commission on Agriculture, has estimated that the animal husbandry sector even with the existing stock could generate employment equivalent to 86 million person years, inclusive of employment in processing and marketing of milk and milk products.

The World Bank audit shows that Rs.200 crores was invested in Operation Flood II and net return into the rural economy has been a huge Rs.24,000 crores per year and Rs.2,40,000 crores over a period of ten years and no other major development program has matched this input output ratio.

The World Bank Report 1997 said “Operation Flood can be viewed as a twenty year experiment confirming Rural Development Vision”. World Bank experts make another valid point that the total employment creation impact of 1,00,000 litres/day of dairy development activity is in excess of 12,000 new jobs. Dairy Development thus offers a great potential for employment generation which is a vital need in our country. There is thus no doubt that increased dairy development activities result in many

‘bonus’ benefits in addition to the primary benefits of daily cash income to farmers or their family, manure and fertilizer benefit (including legume rotation) to farmers land, better utilization of labour and time etc.

References

- [1] Operation Flood, www.indiadairy.com/ind_operationflood.html
- [2] Operation Flood, Amul; Kaira District Co-operative Milk Producers' Union Ltd, White Revolution, www.amuldairy.com
- [3] Operation Flood; National Dairy Development Board; www.nddb.org/english/genesis/operation-flood.aspx
- [4] Indian Dairyman monthly journal – Feb.1996 issue – p.157-162
- [5] Indian Dairyman monthly journal – Jan. 2000 issue – p.26
- [6] Indian Dairyman monthly journal – March 2000 Issue, p.9-12
- [7] Indian Dairyman monthly journal – December 2000 Issue, p.43
- [8] United States Department of Agriculture, USDA – Cooperatives in the Dairy Industry – Rural Development – Cooperative Information Report 1, Section 16 – www.rurdev.usda.gov/rbs/pub/cir116.pdf
- [9] K.Rajendran and Samarendu Mohanty – Dairy Cooperatives and Milk Marketing in India: Constraints and opportunities – published in the Journal of Food Distribution Research July 2004 - Web: ageconsearch.umn.edu/bitstream/27233/1/35020034.pdf
- [10] <http://wcd.nic.in/empwomen.htm>
- [11] Dr. R.C.Dwivedi, Director, Centre for Promotion of Cooperativism; Editor, The Coop Times – Jawaharlal Nehru his vision of cooperatives – March 1989 edition – p.279
- [12] National Dairy Development Board Annual Report 2011-2012 – p.24 & 25