National Dairy Development Board

ANNUAL REPORT 2010 • 2011

Contents

Members of the Board
(As on 31 March 2011)

Dr. Amrita Patel
Chairman

Shri Dilip Rath*
Joint Secretary
(Administration & Dairy Development)
Department of Animal Husbandry, Dairying & Fisheries
Ministry of Agriculture, Government of India

Shri Sanjeev Ranjan
Joint Secretary
(Administration & Dairy Development)
Department of Animal Husbandry, Dairying & Fisheries
Ministry of Agriculture, Government of India

Shri S Parthasarathy
Expert

Shri G S Babehali
Chairman
Punjab State Cooperative Milk Producers' Federation Ltd
Chandigarh

Shri P T Gopalakurup**
Chairman
Kerala Co-operative Milk Marketing Federation Ltd
Thiruvananthapuram

Shri Parthibhai G Bhatol
Chairman
Gujarat Co-operative Milk Marketing Federation Ltd
Anand

Shri D Tikku***
Managing Director

Dr. N V Belavadi
Executive Director

Shri Ravi Shankar
Executive Director

* Till November 2010 ** Till December 2010
*** Till June 2010

Management Committees

The NDDB Act 1987 provides for the constitution of Management Committees for NDDB managed and subsidiary Units. The Board is of the view that the management of these Units can best be done through such Committees. The Board determines the number of persons to constitute the Management Committees subject to the condition that in each such Committee, either the Chairman or a full-time Director shall be a member. The Management Committees function under the general control, direction and superintendence of the Board and for such duration and in such manner as the Board directs.

Members of Management Committees
(As on 31 March 2011)

Sabarmati Ashram Gaushala, Bidaj

Dr. Amrita Patel
Chairman

Shri D Tikku
Vice-Chairman

Dr. K R Trivedi
Member

Dr. G K Sharma
Member

Shri Y Y Patil
Member

Dr. C P Devanand
Member-Convenor

Jalgaon Jilha Sahakari Dudh Utpadak Sangh Maryadit, Jalgaon

Dr. N V Belavadi
Chairman

Shri N K Ramachandran
Member

Shri Anil Hatekar
Member

Shri Vinayakrao D Patil
Co-opted Member

Shri S N Patil
Co-opted Member

Smt. Geeta S Chaudhari
Co-opted Member

Shri R C Patil
Co-opted Member

Smt. A A Barhate
Co-opted Member

Shri R S Lahane
Member-Convenor

The National Dairy Plan

In the last four decades, India's small holder dairy system has contributed substantially to increasing national milk production five-fold, from about 22 million tonnes in 1970 to 112 million tonnes in 2009-10. Domestic per capita availability of milk is presently about 263 grams per day. India has about 127 million adult breedable female buffaloes and cows. They are largely fed agricultural by-products and residues. Little acreage is devoted to fodder cultivation. Some 70 million rural households are engaged in milk production, with a very high proportion being the small and marginal farmer and the landless. Milch animal holding is far more equitable than land holding. The cost of milk production by small holders is competitive.

Emerging trends indicate that the demand for milk is now growing much faster and is likely to be about 150 million tonnes by 2016-17 (end year of 12th Five Year Plan) and between 200 and 210 million tonnes by 2021-22. To meet the growing demand for milk, the average incremental increase in milk production will have to be about six million tonnes per annum over the next 15 years compared to an average of about three million tonnes over the last 15 years. Unless milk production increases at the pace required, there is a possibility of a widening gap in supply of milk, which could lead to a dependence on imports. At the same time, some milk producers are not finding milk production to be sufficiently remunerative and are turning to alternative sources of livelihood.

It is, therefore, imperative that a scientifically planned multi-state initiative is launched at the earliest, to increase milk production by increasing milch animal productivity in existing herds through a focused and systematic process for breeding and feeding. The National Dairy Plan (NDP) has been envisaged with a fifteen-year horizon, considering that three to five years are required to produce a more productive animal and it takes time to develop and expand systems that support efforts to increase milk production.

The first phase of the National Dairy Plan (NDP-I) is proposed to be implemented between October 2011 and September 2017. The objectives of the NDP I are: (i) To help increase the productivity of milch animals and thereby increase milk production to meet the rapidly growing demand for milk; and (ii) To help provide rural milk producers with greater access to the organised milk-processing sector.

The project would be carried out by End Implementing Agencies (EIAs) such as State Cooperative Dairy Federations; District Cooperative Milk Producers Unions; some State Livestock Development Boards; Registered Societies/Trusts (NGOs); Section 25 companies; subsidiaries of statutory bodies; ICAR institutes and veterinary/dairy institutes/universities that meet the criteria for each activity.

The project components of the NDP-I, which will span over six years, are:

(I) Increasing Productivity through scientific breeding and feeding

Breeding

When breedable animals are bred through

Artificial Insemination (AI), it becomes possible to use the semen of a few top bulls of High Genetic Merit over a much larger population and achieve genetic progress in any population. Presently, only about 20 per cent of our breedable animals are bred through AI and the balance through natural service. To accelerate genetic progress, the proportion of milch animals bred through AI needs to be raised substantially from the present 20 per cent to 35 per cent. This in turn requires:

Increasing the production of High Genetic Merit (HGM) bulls that are used for production of semen through progeny testing and pedigree selection programmes and the import of exotic purebred bulls or equivalent embryos or frozen semen doses

About 2,500 HGM bulls would be produced in the country through Progeny Testing (PT) or Pedigree Selection (PS) following a prescribed Standard Operating Procedure (SOP). The breeds identified for bull production are pure Holstein Friesian (HF), Holstein Friesian crossbred, Jersey crossbred, *Murrah* and *Mehsana* buffalo through Progeny Testing programmes and *Rathi, Kankrej, Tharparkar, Gir, Sahiwal, Pandarpuri, Hariana, Nili Ravi* and *Jaffrabadi* through Pedigree Selection programmes. A number of EIAs with the requisite experience and located in the native tracts of the identified breeds, have been tentatively identified to undertake the production of the required number of bulls for semen stations in the entire country. To meet the initial demand, it is also proposed to import exotic bulls of HF and Jersey breeds (or equivalent embryos or frozen semen doses).

Increasing the production of high quality disease-free semen

The annual production of semen doses of the required breeds would need to be increased from the current level of about 65 million to 100 million high quality disease-free doses by the end of the project period. As per the semen station evaluation report 2007-08, 27 semen stations inspected by the GoI's Central Monitoring Unit were graded A or B, which together produced about 53 million semen doses. These stations, along with other stations that may be graded A or B in future, would need to be expanded to produce an additional 38 million doses. Another nine million doses would be produced annually by two new mega stations by the end of the project.

Setting up a pilot model for viable doorstep AI delivery services through a professional service provider

While current efforts to expand AI delivery services would generally be strengthened under the Central Government's National Project for Cattle and Buffalo Breeding, it is proposed to pilot a model for offering viable doorstep AI delivery service (which would operate based on SOPs) through a professional service provider that will receive initial support for only five years, unlike the continued financial assistance that is given in the case of government AI delivery systems.

In most states, government charges for AI delivery are low and are a small proportion of the full costs actually incurred and there are no laid down SOPs for delivery of the AI service. This is likely to result in state governments continuing to fund AI services

Draft Bovine Breeding Bill

A draft Bovine Breeding Bill is under consideration of the Central Government. It aims at regulating processes based on prescribed protocols and SOPs for the production of High Genetic Merit bulls, production of high quality disease-free semen and the delivery of quality doorstep AI services. Once this Bill becomes law, it will have to be followed by all agencies and institutions involved in breeding activities and will contribute significantly to increasing productivity through an efficient quality AI service that can be monitored.

indefinitely. At the same time, producers are unable to demand accountability for the quality of service, since the charge is low. More importantly, there is no mechanism in place to capture data on the service provided for AI delivery and actual conception. Some state governments promote AI service through an outsourced arrangement with NGOs by funding them about ₹ 10 to 12 lakh per AI technician/ centre over a period of five years. In this case also, state governments are likely to continue funding AI delivery services indefinitely.

Therefore, a pilot model for viable doorstep AI delivery services (based on SOPs) is proposed to be implemented. About 3,000 trained mobile AI technicians would be performing up to four million AIs per annum. Funds would be provided for expenditure on capital items, training, extension, promotion and computerised data management. The salary of key personnel and stipend for AI technicians would be provided on a tapering basis for five years. The charges for AI delivery services will be raised on an incremental basis to cover the full cost of the service by the end of the fifth year. The pilot is expected to continue operations in a self sustainable manner thereafter. State governments could introduce a suitable scheme to support BPL milk producers so that they could avail of AI delivery services at subsidised rates.

Nutrition

The Breed Improvement programme needs to be supported by feeding the animal a balanced ration commensurate with its genetic potential. Milch animals are usually fed one or two locally available concentrate feed ingredients, grasses and crop residues. This often leads to an imbalanced ration – resulting in proteins, energy, minerals and vitamins being either in excess or deficient. Imbalanced feeding adversely impacts not only the health and productivity of animals, preventing them from producing milk commensurate with their genetic potential, but also the income from milk production since an estimated 70 per cent of the total cost of milk production is contributed by feed.

There is, therefore, a need to educate milk producers on ration balancing so that the nutrients required by their individual milch animals is fulfilled in an optimum manner, thereby improving milk production efficiency

and the economic return.

Ration Balancing Programme (RBP)

Local Resource Persons (LRPs) will be trained to provide advisory services to dairy farmers in balancing their animals' ration. Research and field trials show that this approach to feeding has the potential to increase milk yield, reduce cost of production and contributes to reducing methane emissions. The project plans to cover about 2.7 million milch animals in 40,000 villages using about 40,000 LRPs who would be identified, trained and supervised by existing dairy cooperatives and producer companies. The project will finance the training costs of LRPs, necessary equipment, and a modest monthly stipend for the LRPs on a tapering basis for about two years. Thereafter, the LRPs would be expected to earn a self-sustaining income from the commission they earn through sale of area-specific mineral mixtures and feed supplements.

Trained LRPs would also educate milk producers on the use of field tested technologies such as feeding milch animals with bypass protein, bypass fat, area-specific mineral mixtures, treated or enriched crop residues, etc.

Fodder development

Extension initiatives would cover increasing fodder yields by making available quality fodder seed to farmers, and demonstrations in silage making, conservation of green fodder through silage making and enrichment/ densification of biomass for use in fodder deficit areas. Use of mowers will be demonstrated for securing crop residues left by combine harvesters from the farmers' field, which are otherwise wasted.

It is expected that the scientific approach to feeding of milch animals will also lead to reducing methane emissions.

Computerised information systems for Enhancing Productivity

These are essential for capturing information and for analysing and ensuring feedback to both managers and producers while implementing the various programmes.

- Breeding services in villages – capturing data (at source) on activities such as identification (registration) of animals, artificial insemination, pregnancy diagnosis, calving, milk recording, typing, growth measurement of calves and thereafter providing analytical information to various stakeholders.
- Ration balancing advisory services in villages – through the use of a simple user-friendly computerised software by LRPs to formulate balanced and least-cost rations using locally available feed materials and offering advice on an appropriate ration at the farmers' doorstep.

The main expected results from the interventions proposed through a scientific approach to breeding and feeding are increased milk production through increased productivity per milch animal, increase in in-milk animals, improved AI conception rates, improved nutrition, reduction in feeding costs per animal and reduction in methane emissions.

(II) Promoting and strengthening village based milk procurement systems

The private sector, large MNCs and retail chains are rapidly expanding their operations in the dairy business. It is estimated that the capacity created by them in the last 15 years equals that set up by cooperatives in over 30 years. While the private sector will continue to grow, it is essential that the cooperatives retain their existing 50 per cent share of the milk handled by the organised sector to ensure inclusiveness and livelihoods for small holder milk producers.

Cooperatives currently procure about 16 per cent of the national marketable milk surplus covering around 21 per cent of the country's villages and 18 per cent of rural milk producing households. It is desirable that the cooperative sector achieves a procurement share of at least 20 per cent of the marketable milk surplus by 2016-17 so that it retains an overall 50 per cent share of the marketable surplus handled by the organised sector. While significant and substantial strengthening of existing dairy cooperatives is envisaged, Part IX-A of the Companies Act would also be used to promote Producer Companies. This legislation provides the same legal and regulatory framework enjoyed by companies, but protects the basic principles of cooperation: voluntary and open membership, democratic member control, member economic participation, autonomy and independence. Producer Companies would generally be set up in areas where cooperatives are not present or have low coverage or low procurement.

Efforts to increase milk production through increase in productivity would need to be supported by expanding the setting up of village based milk procurement systems to collect milk in a fair and transparent manner and ensure timely payments.

Investments would be made in village level infrastructure for milk collection and bulking such as milk cans, bulk milk coolers for a cluster of villages, associated weighing and testing equipment and related IT equipment.

The main expected results from the interventions proposed under this initiative are an increase in the number of additional villages covered and more milk producers organised into Dairy Cooperative Societies and Milk Producer Institutions.

(III) Project management and learning

Decision-making based on reliable information is a key requirement for satisfactory implementation of the project. The initiatives aimed at increasing animal productivity and the share of milk sold by milk producers to the organised sector are extremely complex and will be dispersed over different geographies. It is therefore critical to integrate ICT based information systems in the operations of the various activities, i.e. breeding, nutrition and milk procurement systems, as well as at different levels for monitoring and reporting to ensure optimum results.

EIAs will be funded to put in place computerised information systems for

collection of data and dissemination of information related to breeding, nutrition and village based milk procurement systems. These information systems would be used by EIAs to ensure effective monitoring of processes and reporting outputs. The project envisages funding support to each EIA for acquiring the relevant hardware and software for each component/sub-component. In addition, the project would also support funding EIAs for specific application software that will enable transmission of aggregate data/information required by NDDB's Project Monitoring Unit (PMU) for overall monitoring and reporting. All EIAs will be required to feed specified data/information on a regular basis to the centralised database systems so that the PMU can carry out the necessary analysis, provide feedback, facilitate necessary changes in project implementation wherever required and ensure satisfactory progress of the project.

The main expected results are effective monitoring and coordination of project activities by the PMU among various EIAs, timely preparation and implementation of annual plans, regular review and reporting of project progress and results, a comprehensive and functional project management information system (MIS) and learning that will support improvement and innovation.

Capacity building

NDP I recognises that skilled/trained human resources will be essential and critical for the successful implementation of the project. Therefore, facilitating training and development of field personnel in EIAs will be an important area for support under the project. Also, capacity building, training and information/education campaigns at village level will be a key initiative which would extend beyond the life of the project.

Project area

Given the rapidly increasing demand for milk, it will be necessary to give priority to those areas in the country that have a higher potential to enhance milk production, namely the fourteen major dairying states which account for more than 90 per cent of the country's milk production, have over 87 per cent of the breedable cattle and buffalo population and 98 per cent of the country's fodder resources.

The project will be implemented through EIAs that meet eligibility criteria, in states that have either already undertaken the key policy or regulatory measures to create a more enabling state level policy environment for activities to be supported under NDP or have conveyed that they will do so within a stipulated time line.

Progress on the National Dairy Plan

In March 2007, NDDB had forwarded an outline of the National Dairy Plan (NDP) to the Department of Animal Husbandry, Dairying and Fisheries (DADF), Government of India. Based on discussions with various stake holders, the Planning Commission, in December 2008, gave an in-principle approval to the Preliminary Project Report (PPR) prepared by NDDB spanning a period of 15 years with a proposed aggregate investment of about ₹ 17,300 crores. In March 2009, the Department of Economic Affairs, Government

of India, forwarded the PPR to the World Bank with a request to consider the proposal favourably for funding under IDA credit.

In the initial discussions that followed, the World Bank's response was positive, but it indicated that to begin with it could consider financial support through an IDA credit for Phase-I of five to six years. The IDA credit would broadly cover activities related to increasing milk production by increasing productivity and milk collection at village level. It was estimated that this would require funding of about ₹ 2,000 crores.

In June and July 2010, DADF and NDDB held the first round of discussions on NDP-I with representatives of the state governments of 14 major dairying states, viz. Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

In March 2011, DADF and NDDB held a second round of discussions with representatives of the state governments when it was impressed upon them that it would be necessary for them to adopt certain key policy and regulatory measures to create a more enabling state policy environment for activities to be supported under NDP-I namely: having in place an appropriate breeding policy; AI delivery denotified as a minor veterinary service; charges for AI delivery being raised gradually to cover full cost; semen for AI delivery in the state to be sourced only from semen stations graded A or B; adoption of common protocols and SOPs issued by DADF for all breeding activities; and notification of state rules under the Prevention and Control of the Infectious Diseases in Animals Act. Most of the states were in agreement with the need for bringing about these policy changes.

By the end of the year, a draft Project Implementation Plan was prepared. This would be appraised by the World Bank and approval for the project is expected by the last quarter of 2011.

For activities that are commercial in nature such as plants for milk processing and manufacture of cattle feed, discussions are being held with the International Finance Corporation (IFC), an affiliate of the World Bank, as this would require additional funding over and above the outlay of ₹ 2,000 crores.

Conclusion

In terms of overall benefits, the NDP-I will put in place a scientific approach and systematic processes which, it is hoped, would take the country on a path to improving the genetics of milk producing animals in a consistent and continuous manner. It will: make much more prudent use of the country's scarce natural resources; have an impact on reducing methane emissions; improve the quality of milk being marketed; contribute to disease control; help strengthen regulatory and policy measures that will provide an enabling environment for future growth of dairying in the country; and contribute to strengthening livelihoods of small holder milk producers that form the majority of India's milk production system. ◆

The Dairy Scene

India continued to be the largest milk producing nation in 2010-11 with an anticipated milk production of 116.2 million tonnes, an increase of 3.3 per cent over the previous year. This was close to 16 per cent of world milk production. The dairy cooperatives collected 9.6 million tonnes of milk, an increase of around one per cent compared to 2009-10. Milk marketing by the cooperatives stood at 8.2 million tonnes, an increase of around four per cent compared to the previous year. The cooperatives increased producer prices by about ₹ 2 to 3 per litre, a part of which was passed on to the consumers. To ensure the availability of liquid milk in the lean months, and based on the requirement given by the cooperatives and city dairies, the National Dairy Development Board was asked by the Government of India to import 30,000 tonnes of milk powder and 15,000 tonnes of butter oil under Tariff Rate Quota (TRQ).

World milk production increased to 710 million tonnes in 2010, an increase of 1.6 per cent over the previous year. Global prices of dairy commodities remained high on account of increased demand. ◆

Chairman elected to the Board of International Dairy Federation

Dr. Amrita Patel, Chairman, NDDB, was elected to the Board of Directors of the International Dairy Federation (IDF), an international non-governmental organization of dairying nations set up in 1903, which provides scientific expertise and knowledge for development and promotion of quality milk and milk products in order to improve nutrition, health and wellbeing. Dr. Patel was elected to the Board of IDF at its 98th General Assembly in November 2010 in Auckland, New Zealand. This is the first time that a developing country will be represented on the Board of IDF. ◆

Strengthening Cooperative Business

NDDB continued to assist dairy cooperatives to strengthen their business through better governance, management and performance.

NDDB remains committed to assisting dairy cooperatives to strengthen their business and provide better services to their members. As a complementary cooperative strategy, NDDB continued to support the promotion of Milk Producer Institutions (MPIs).

During the year, orientation programmes were organised for board members of milk unions to sensitise them to the importance of dairy cooperatives functioning as professionally managed business enterprises in an increasingly competitive environment. Training programmes for procurement personnel were conducted to make them more effective and efficient facilitators. The training covered improvement of extension skills in processes required to ensure quality through clean milk production, in the scientific application of animal breeding, feeding, healthcare and management practices. Farmer Orientation Programmes were also organised for milk producers to demonstrate the merits of a collective approach to dairying, milk procurement through fair and transparent systems, scientific animal management, and the important role of women in dairying.

During 2010-11, cooperative milk unions together procured 26.2 million kg of milk per day compared to 25.9 million kg per day in the previous year, registering an annual growth of around one per cent. Liquid milk marketing by the cooperatives, at 22 million litres per day compared to 21.1 million litres per day in the previous year, showed a growth of around 4 per cent.

Source of livelihood – a woman producer tending to her buffaloes.

New Generation Cooperatives

NDDB continued to promote Milk Producer Institutions (MPIs) in areas where cooperatives have little or no presence. By the end of March 2011, about 2,45,000 producers were organized into 9,900 MPIs in eight states: Andhra Pradesh, Bihar, Gujarat, Haryana, Maharashtra, Punjab, Rajasthan and Uttar Pradesh. Collectively, these states procured an average of 13,02,000 kg of milk per day with a peak procurement of 18,03,000 kg per day during 2010-11.

Ration balancing advisory services were provided to milk producers in the MPIs in 146 villages in five districts covering 2,951 animals, by Local Resource Persons (LRPs). Technical officers were trained by NDDB, who in turn trained the LRPs to formulate balanced rations using locally available feed resources. Animals fed on a balanced ration showed an improvement in milk production and reduction in cost of feeding.

Veterinary service was provided by Indian Immunologicals Ltd (IIL) through its Raksha Veterinary Centres (R Vet C) and by a team of veterinarians in some MPIs. During the year, 87 qualified veterinarians located in 20 districts spread across six states delivered animal health care services and treated 96,658 cases. Around 900 infertility/health camps, 1,143 farmers' meetings and 116 video-on-wheel programmes were organised in the six states. During the year 368 AI technicians performed 2,81,811 inseminations in cattle and buffaloes.

A user-friendly producer payment system in collaboration with commercial banks was implemented in Gujarat, Maharashtra and Uttar Pradesh. Under the system, each milk producer has been provided with a smart card which enables biometric identification

Workshops on Design and Formation of a Milk Producer Company

Two workshops on 'Design and Formation of a Milk Producer Company' were organised in Mumbai and Delhi during 9 –12 April, 2010 and 14–18 February, 2011 respectively, with a view to arriving at actionable strategies in setting up a Milk Producer Company (MPC) covering key issues such as the business model, capital formation, member relations, governance, etc. Altogether about 50 experts from India and abroad participated in the workshops.

and contains demographic details of the producer. An amount of ₹ 248 crore was paid to about 51,000 individual milk producers in their homes.

Management of milk unions and dairy projects

Jalgaon Milk Union

NDDB continues to manage the Jalgaon Milk Union, which it took over in 1995 at the request of the Government of Maharashtra, when it had an accumulated loss of about ₹ 170 million. During the year, the union procured on an average 138,000 kilograms of milk per day. Liquid milk marketing increased from 156,000 to 162,000 litres per day. The turnover of the union increased from ₹ 1,750 million in 2009-10 to about ₹ 2,110 million in 2010-11.

Jalgaon Milk Union continues to be the only cooperative milk union in Maharashtra to have received four integrated certificates including Food Safety Management System (ISO 22000:2005) from the Det Norske Veritas (DNV), the Netherlands. These were renewed by DNV for a further period of three years.

Ongole Dairy

NDDB continued to manage the Ongole Dairy and its related operations, including marketing. The sale of liquid milk increased to 58,000 litres per day in March 2011 from 23,600 litres in 2005 when the dairy was taken over.

West Assam Milk Union

NDDB continued to manage the West Assam Milk Union (WAMUL), which it took over in April 2008 at the request of the Government of Assam. While the union continued to make efforts to procure milk locally, milk had to be sourced from nearby states to meet the demand for liquid milk. The marketing efforts led to an increase in sale of the 'Purabi' brand from 12,000 litres of milk per day to 23,000 litres with a peak sale of 43,500 litres. It also expanded its product portfolio by launching a new milk variant 'cow milk' which was well received by consumers. During 2010-11, the turnover of the milk union almost doubled (₹ 232 million) compared to the previous year.

Women milk producers supplying milk at a remote village in Assam.

Jharkhand Dairy Project

Following the positioning of a multi-disciplinary team from NDDB in February 2008, procurement

Reaching milk cooperatives through various modes – a daily ritual.

operations commenced in August 2009. A significant variation in the secondary data on availability of milk and the ground realities was noticed in the villages of Jharkhand Dairy Project (JDP) area. A survey was therefore carried out to make a more accurate estimate of milk production, consumption and marketable surplus in ten districts of Jharkhand, namely Deoghar, Dumka, Giridih, Godda, Hazaribagh, Jamtara, Khunti, Lohardaga, Ramgarh and Ranchi, to facilitate correction of the Project Plan prepared in September 2008 based on the revised statistics.

Milk production in a village in the Project area was generally found to be about 85 litres per day compared to the national average of more than 450 litres per day. The milk production density is less than 50 litres per square km per day, compared to almost twice the quantity for the country. The situation necessitates a thrust to be given for increasing milk production through induction of milch animals and other productivity enhancement services and veterinary health care such as AI, feed, fodder, etc., by the government. 242 Milk Producer Institutions (MPIs) with 1,368 pourers have been formed till date. The project procured 4,240 kg of milk per day and marketed 4,260 litres per day.

Assistance to cooperatives

Launched by the Government of India (GoI) in 2000, the scheme provides assistance as grant-in-aid to loss making dairy unions/federations based on revival plans prepared with the assistance of NDDB to offset losses and encourage them to become viable. Since the launch of the rehabilitation scheme, plans for 37 milk unions have been approved by the GoI with an aggregate outlay of ₹2,497 million to be shared equally by GoI and the respective state governments. Till 31 March 2011, rehabilitation assistance of ₹2,131 million was released to the milk unions.

The rehabilitation period of seven years is over with respect to 20 unions. Of these, six unions achieved positive net worth while five unions are earning profits but have not yet achieved positive net worth. The remaining nine unions continue to incur losses and have a negative net worth. ◆

Enhancing Productivity

With focused efforts on providing quality breeding, nutrition and healthcare services and enabling farmers to improve the productivity of their animals, it is possible to reduce the cost of milk production and enhance the incomes of dairy farmers.

Breeding

Programmes undertaken to enhance the productivity and induction of improved genetics continued.

Production of high quality genetic merit bulls

The implementation of seven progeny testing programmes, in partnership with Banaskantha, Mehsana, Panchmahal, Sabarkantha and Surat Milk Unions in Gujarat, Karnataka Milk Federation, Pradeshik Cooperative Dairy Federation in Uttar Pradesh and Tamilnadu Cooperative Milk Producers' Federation, to produce high quality genetic merit bulls, namely Holstein Friesian (HF), crossbred HF and crossbred Jersey cattle breeds and *Murrah* and *Mehsana* buffalo breeds, continued during the year. These seven programmes collectively put 220 bulls under test and carried out 0.32 million test inseminations. Daughters born to the first sets of bulls are being registered. Simultaneously, nominated services of elite dams with the semen of top ranking Proven Bulls also continued. Till 31 March 2011, 138 bull calves born through these mating were procured after confirming their parentage through DNA markers and testing them and their dams negative for tuberculosis, Johne's disease and brucellosis. Till 31 March 2011, 47 bulls of high genetic merit procured under these programmes have been distributed to various semen stations.

Indigenous breed development

NDDB's Indigenous Breed Development Projects

HF male calves produced through nominated mating reared at KMF station.

A nucleus herd of elite Gir *calves at SAG, Bidaj.*

initiated for the conservation and development of *Rathi* and *Kankrej* breeds in their respective native tracts continued during the year. The *Rathi* breed is generally bred through natural service. A breakthrough was made by introducing AI in around 50 villages of Bikaner and Shri Ganganagar districts to breed a larger number of *Rathi* cows using quality genetics.

The *Kankrej* breed development project implemented in select villages of Banaskantha district in Gujarat during the year procured 10 superior male calves born to elite mothers and distributed eight bulls to various agencies for semen production and natural service.

Efforts by NDDB to preserve indigenous breeds of cattle and buffalo by *in vitro* methods in the form of frozen embryos and frozen semen continued in cattle breeds, namely *Sahiwal, Red Sindhi, Gir, Rathi, Kankrej, Khillar, Hariana* and *Tharparkar*; and in buffalo breeds, namely *Murrah, Jaffarabadi, Pandharpuri* and *Toda*.

Male calves of* Mehsana *breed produced through nominated mating for Progeny Testing.

Information network for animal productivity and health (INAPH)

The application of INAPH was utilised by 373 AI technicians and 129 milk recorders in seven Progeny Testing (PT) programmes. Thirty eight supervisors, twelve district coordinators and five project coordinators generate operational and review reports for monitoring their field activities using the application. By 31 March 2011, some 0.27 million animals were registered under the seven PT programmes. The pilot testing of the health module was successfully completed at Sabar Milk Union during the year. About 100 veterinarians of the Sabar Milk Union will henceforth use this application for monitoring veterinary health services.

Frozen semen production and AI services

The two NDDB managed semen stations, viz Sabarmati Ashram Gaushala (SAG), Bidaj and Animal Breeding Centre (ABC), Salon together produced 12.1 million

Data on milk recording captured on a PDA.

frozen semen doses accounting for about 18 per cent of the total frozen semen doses produced in the country during 2010-11. The eight other semen stations in the cooperative sector produced about 12.4 million semen doses.

IndiaGen, a wholly-owned subsidiary of NDDB, during 2010-11 carried out about 1.08 million AIs through their 1,346 mobile AI units. Further, the cooperative unions performed 11.9 million AIs through about 17,000 field AI centres covering around 48,600 villages.

SAG's renovated semen lab follows GMP.

Balanced ration also helps in improving the immune status of animals.

Animal Nutrition

Productivity of dairy animals would need to be improved with available feed resources through a variety of approaches, including balanced feeding.

Ration balancing advisory services

NDDB continued to provide ration balancing (RB) advisory services for improving the net daily income of milk producers through increase in daily milk/fat yield and reduction in the cost of feeding. Till date, 10 Technical Officers have been trained by NDDB, who in turn trained 169 Local Resource Persons to formulate balanced rations using locally available feed resources at the farmers' doorstep. RB advisory services are being provided in 438 villages in six states covering 12,521 lactating animals. The benefits of the programme vary between milch animals and depends on the stage of lactation, milk yield, type of animal, quality of available feed resources, ambient temperature, etc. On an average, however, an increase in the net daily income of more than ₹20 per animal was seen in animals yielding 7-10 kg milk. Data on RB programmes in NGCs, Bangalore, Chittoor and Junagadh milk unions are now available online.

Mineral mapping

NDDB completed a mineral mapping programme for all the districts in the state of Madhya Pradesh. An area-specific mineral mixture was developed for the state taking into consideration the levels of macro- and micro-minerals in feeds and fodder. An area-specific mineral mixture was also developed for

Production of area-specific mineral mixture.

Sabarmati Ashram Gaushala, Bidaj based on the mapping of their farms from where fodder is sourced. During the year, two mineral mixture plants were set up in Kerala and Orissa.

Bypass fat supplement

With the increasing number of high yielding animals, care needs to be taken that their ration has the desired level of fat which leads to proper body condition score, reduced inter-calving interval and a higher lactation yield. 100 g bypass fat supplement fed to cross-bred cows helps in increasing daily milk yield by 1.50 kg per cow. This combined with an additional supplement of 10 g rumen protected choline chloride can result in daily milk yield increase by 1.75 kg per cow.

Fodder production

NDDB arranged the supply of about 8.5 tonnes of breeder seeds of improved varieties, to dairy cooperatives and farms, from Indian Council of Agriculture Research (ICAR). During the year, dairy cooperatives produced about 5,100 tonnes of certified/truthfully labelled fodder seeds of maize, sorghum, berseem, lucerne, oats, cowpea, pearl millet and cluster bean as compared to 4,500 tonnes in the previous year. The use of high-yielding fodder varieties of sugar beet, as nutritious fodder, was demonstrated to farmers and trainees. Thorn-less cactus, suitable for cultivation in arid zones as a source of fodder, was also introduced recently at NDDB's fodder demonstration unit with the aim of multiplying the planting material for propagation in dry/arid areas.

Enrichment and densification of crop residues

Crop residues can be transported, stored and fed to animals in deficit areas after their enrichment and densification from areas of surplus. NDDB assisted Kerala Livestock Development Board and Kerala Feeds Limited, in setting up two straw processing plants to overcome the perennial deficiency of fodder in the state. ◆

Promotion of green fodder production for enhancing productivity.

Research & Development

The Research and Development activities of NDDB are focused on developing technologies and products that are need based, innovative and affordable.

Animal vaccines and diagnostics

Improved diagnostics and vaccines for foot and mouth disease (FMD) continued to be the top priority. A pen-side kit was developed for quick sero-typing under field conditions. An ELISA was developed for differentiation between an FMD virus carrier and vaccinated animal.

Initial results with Virus Like Particle (VLP)-based type O vaccine were encouraging. Studies on the efficacy and duration of immunity of VLP-based vaccine of other FMD virus types are being undertaken in cattle. VLPs do not contain viral genetic material and hence they are non-infectious. Further, expensive bio-security facilities are not required for manufacturing a VLP-based vaccine.

A collaborative study was undertaken with the Project Directorate on FMD of the Indian Council of Agricultural Research (ICAR) for the identification of a new vaccine strain for FMD virus type A.

A study on genetic and antigenic characterisation of 22 field strains of BHV-1 revealed that all the Indian strains belong to BHV-1.1 subtype. Studies on gE deleted marker vaccine against IBR are in progress.

The laboratory is undertaking molecular and antigenic characterisation of Indian isolates *Mycobacterium tuberculosis* and *Mycobacteriumm avium subsp. paratuberculosis.*

Considering the need for an early and accurate diagnosis of bovine tuberculosis and Johne's disease, ELISA and ELISpot assay for estimation of bovine gamma interferon and multiple antigen print immune assay using recombinant antigens were developed and are being evaluated.

Glyco-conjugate vaccines containing lipopolysaccharide of various strains of brucella *(B. abortus* S19, *B. abortus* M22P50 and *B. melitensis* Rev-1) and outer membrane proteins as carriers were developed. These vaccine formulations were found to be safe and efficacious in mice and trials on large animals are under progress. Of the 124 milk and genital swab specimens collected from five different dairy farms, *Brucella abortus* could be isolated from eight specimens.

Characterisation of animal viral genome by real-time PCR and nucleotide sequencing.

Attempts were made to develop an oral vaccine using an avirulent recombinant strain of the rabies virus for easy administration and wide application of the vaccine with a view to provide improved immunisation coverage. Oral administration of the trial vaccine in mice induced high antibody titres. Molecular and antigenic characterisation of Indian rabies virus isolates indicated that all the isolates belong to rabies virus genotype 1 and none to rabies related virus (RRV) genotypes.

Animal Genomics

The association of toll like receptor (TLR) gene's polymorphism in cattle and buffalo with various infectious diseases such as bovine brucellosis, bovine tuberculosis and Johne's disease was investigated.

Eight TLR genes (1,2,4,6,7,8,9 and 10) of Indian breeds of cattle (*Sahiwal, Kankrej, Rathi* and *Red Sindhi*) and buffalo (*Murrah, Jaffarabadi* and *Surti*) were sequenced. Four hundred and sixty seven novel Single Nucleotide Polymorphisms (SNPs) were detected which can be used to study their association with disease resistance in cattle and buffaloes. The identified SNPs would also be a valuable resource for developing the high-density SNP chips for whole genome selection studies in buffaloes.

Animal Nutrition

Solid State Fermentation technology

With the growing shortage of feed resources, there is a need to utilise highly lignified biomass such as cottonseed hulls, cotton stalks, soybean straw, mustard straw, etc. for feeding dairy animals, which have hitherto, not been fed.

Research on Solid State Fermentation (SSF) treatment is in progress at Mallarpura farm, where highly lignified biomass such as cottonseed hulls were treated anaerobically and fed to 16 growing male calves to study the effect on the digestibility of nutrients. Results of the study indicate that there was an increase in digestibility of the organic matter from 65 to 74 per cent, crude protein from 46 to 49 per cent, ether extract from 56 to 64 per cent, neutral detergent fibre from 57 to 61 per cent and acid detergent fibre from 47 to 54 per cent. The treated material is being tested on lactating cows.

Methane emission reduction through balanced feeding

NDDB continued field studies on methane emission reduction. The studies show that ration balancing in addition to increasing milk/fat production and reducing the cost of milk production, also reduces methane emissions and improves feed conversion efficiency.

An imbalance of nutrients can also alter the activity of certain enzymes, thereby impairing the overall immune function. The impact of feeding a balanced ration was studied on the immune status of field animals. On feeding a balanced ration to *Gir* cows in Junagadh district for 60 days, the levels of serum immunoglobulin, such as IgG, IgM and IgA, increased from 13.10 to 22.32, 3.19 to 3.60 and 0.72 to 0.96 mg/ml, respectively, indicating that feeding a balanced ration also helps in improving the overall immune status of dairy animals.

In another field study conducted in Nanded district of Maharashtra on 26 lactating buffaloes, it was observed that by balancing the ration of animals it was possible to significantly increase microbial protein synthesis, as measured by allantoin derivatives in daily urine voided.

Cotton seed hulls under treatment in airtight silos.

A supplement for reducing the incidence of sub-clinical mastitis

A significant loss of milk due to increasing incidence of sub-clinical mastitis in high yielding cows and buffaloes under farm and field conditions is being seen. A vitamin and chelated mineral based

Measuring methane emission reduction as a result of balanced feeding.

supplement was formulated and tested on high-yielding crossbred cows at some of the progressive dairy farms in Punjab. This supplement showed promising results when fed to 29 pregnant cows with a history of clinical and sub-clinical mastitis, four weeks prior to calving. Sub-clinical mastitis was reported only in five out of the 29 cows, as confirmed by the Mastrip test and somatic cell count.

Measuring lactose hydrolysis in reduced lactose flavoured milk.

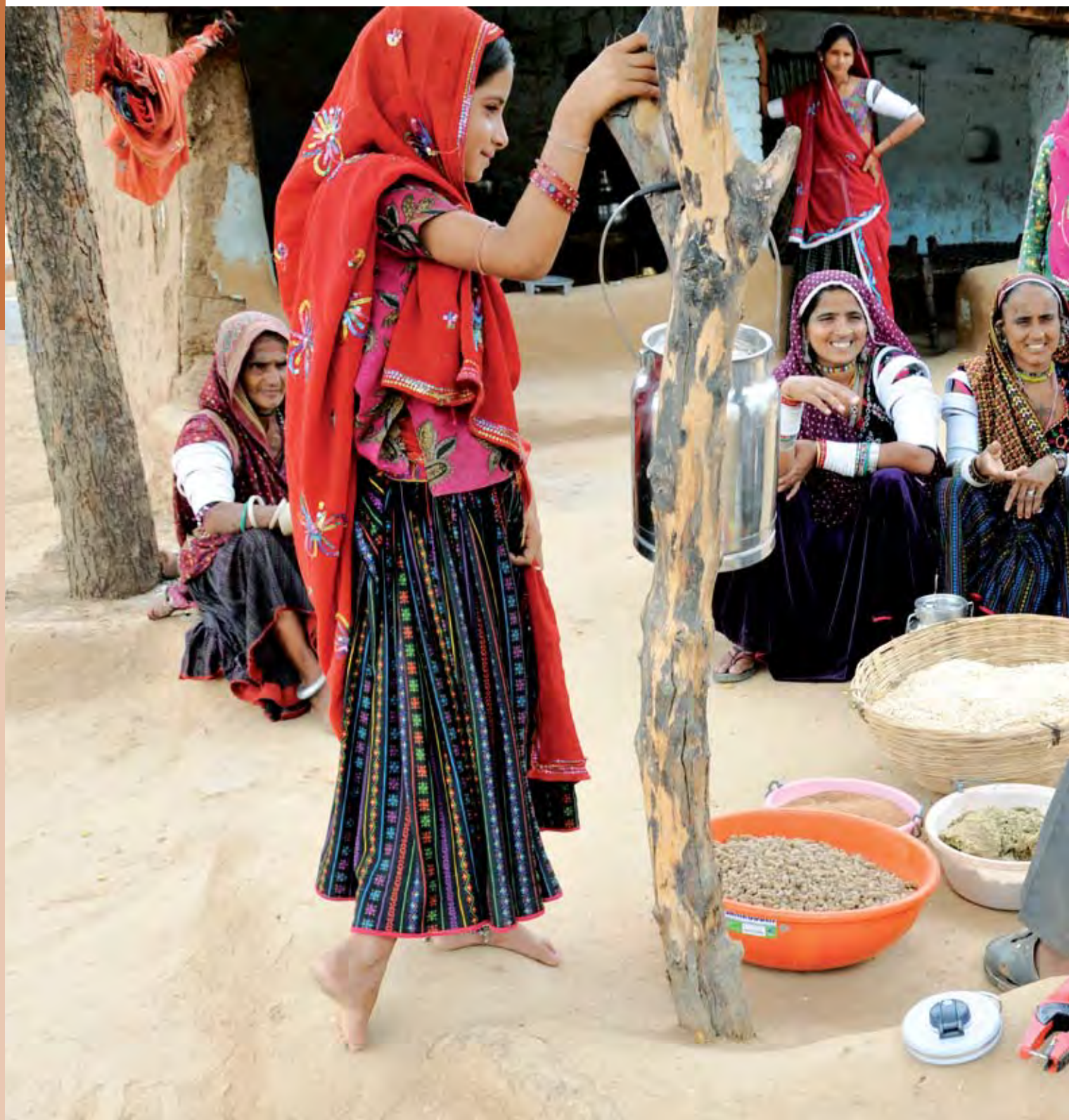
Product and process development

In its effort to enhance the income of dairy farmers by enabling dairy cooperatives to diversify their product range, NDDB continued research for development of new products and process technologies. A reduced lactose flavoured milk and acidified milk drink were developed using an enzymatic hydrolysis process. Both products, in addition to being beneficial to the lactose intolerant, have lower calories. Trials were initiated on a low fat butter spread and fermented dairy spread having better spreadability at refrigeration temperature and a brined cheese variant with potential culinary application like grilling and baking due to its resistance to melting at higher temperatures. A multiplex polymerase chain reaction was standardised to identify nine closely related *dahi* cultures at genus and species level.

During the year, NDDB extended technical support and supplied freeze-dried starter cultures for the production of fermented dairy products to various dairy cooperatives: West Assam Milk Union Ltd., Jaipur Zilla Dugdh Utpadak Sangh, and Ambattur Dairy. ◆

Building an Information Network

The Sectoral Analysis and Studies Group endeavours to harness various primary and secondary data sources to create a dairy sector database and information network to facilitate decision making.



Under NDDB's internet-based information network, all milk unions and federations continue to share data on their physical progress in milk procurement, marketing, society organizations and cooperative membership. In addition, prices of cattle feed ingredients, fodder and dairy commodities were monitored across the country.

Locating a dairy cooperative society using GPS.

A study to assess the awareness with regard to feeding of mineral mixture by the milk producers to their animals was completed in Jaipur and Kolar unions. The study found that the awareness is high and the realised benefit in improving productivity of milch animals was perceptible.

A repeat survey to assess the changes in the incidence of sale of milch animals in Aligarh and Mathura districts of UP has been undertaken through AC Nielson ORG Marg.

To support proposed activities to be included under the NDP, a survey was undertaken to assess milk production and marketable surplus in six districts of Maharashtra, 12 districts of Punjab, 23 districts of Rajasthan and 26 districts of Uttar Pradesh. ◆

Measuring and recording feeding of animals.

Developing Human Resources

Developing human resources continued to be one of the prime focuses. Training initiatives and interventions focused on equipping dairy professionals with the latest technologies and hands-on practices and also orientating milk producers on the recent trends and developments in the dairy sector.

NDDB continued its efforts in the area of capacity building of farmers, staff and directors on the boards of milk unions with the objective of developing appropriate knowledge, skill-sets and attitudes that can help their organisations achieve their mission.

Staff promoting Milk Producer Institutions (MPIs) in Junagadh were trained at Anand. An all women Producer Company board from Andhra Pradesh attended a Board of Directors' orientation programme. Seven participants from Nepal and six from Bangladesh spent three and five days respectively for an exposure-cum-orientation on recent developments in Indian dairying.

NDDB's Regional Demonstration and Training Centres (RDTCs) conducted training related to Artificial Insemination (AI), Dairy Animal Management and Fodder Seed Production. Mansingh Institute of Training (MIT) provided training to personnel working in dairies, bulk milk chilling centres and cattle-feed plants for 41 clients from 12 states across the country.

Officers and non-officers of NDDB were imparted need-based training in reputed training institutions in the country. This year, an exclusive Management Appreciation Programme was organised for SC/ST officers. Staff and workers were imparted training on employee motivation.

In addition, 33 new recruits were provided functional and general orientation during the year. ◆

Seeing is believing – visit to a community fodder farm.

Board of Directors orientation programme for participants from Amritsar union.

Training programmes

A. Cooperative Services

(i) Training for Dairy Cooperatives

Name of the programme	No. of programmes	No. of participants
Board Orientation	14	158
Orientation of Procurement Personnel from Unions	15	313
Customised Orientation Programme for union/ federation personnel	5	28
Farmer Orientation	105	3866
Customised Orientation Programme for Farmers	4	120
Gender Sensitisation/Women awareness programme	2	23
Orientation programme for personnel from overseas	3	13
DCS Secretary Training	6	142
Total	**154**	**4663**

(ii) Training for Milk Producer Institutions

Orientation for Procurement Personnel	20	145
Orientation for Producers at Anand	3	114
Board Orientation	1	11
Bulk Milk Cooler / Automatic Milk Collection Unit Operations	32	1103
Clean Milk Production Awareness and Quality Assurance	27	360
Clean Milk Production & Milk Quality Testing Training for BMC Workers	77	2069
Awareness Programme for BMC Workers	80	2110
Awareness Programme for PI Assistants/Sahayak	23	338
Coordinator/ Supervisor training	14	136
Training of NGC officers	14	104
Producers Year End Incentive Meetings	25	5130
Producer orientation at villages	267	11252
Total	**583**	**22872**

B. Productivity Systems

Orientation of Coordinators on PT projects	1	2
Orientation of AI technicians on PT projects	5	100
Refresher training of AI Technicians on PT projects	5	197
Orientation of milk recorders on PT projects	4	79
Refresher training of milk recorders on PT projects	3	95
Using PDAs for online data capturing in PT projects	9	122
Training of PT project Supervisors	1	6
Refresher Training for PT Project Supervisors	1	21
Training on INAPH for Coordinators and Data entry operators of PT projects	2	34
Training on INAPH for Coordinators and Data entry operators of Indigenous Breed Development, IndiaGen and Patna Animal Development Trust, Patna	4	72
Training for Pregnancy Diagnosis for PT Supervisors	1	4
Artificial Insemination (AI)	18	449
Artificial Insemination Refresher	27	583
Dairy Farm Management	27	634
Fodder Seed Production for Supervisors	1	21
Enhancing Green Fodder productivity and Fodder Conservation for Farmers	13	320
Resource Person Training	1	31
Training on Ration Balancing Programme, using PDAs, for supervisors and technical officers	3	18
Training on Ration Balancing Programme, using PDAs, for Local Resource Persons	2	17
Training on least cost feed formulation, using LCF programme for quality control officers of cattle feed plants	2	5
Total	**130**	**2810**

C. Quality Assurance

Energy Management and Dairy Plant Operations for Unions	7	122
Operations & Maintenance of Dairy Plant and Utilities	13	180
Hygiene, Food Safety, Plant Safety and Others	9	163
Bulk Milk Cooler / Automatic Milk Collection Unit Operations for unions	4	38
Bulk Milk Cooler / Automatic Milk Collection Unit for unions- In situ	4	116
Operation & Maintenance of Cattle Feed Plant	1	5
Analysis of Cattle Feed Ingredients including Minerals	4	6
Analysis of Milk and Milk Products	1	1
Total	**43**	**631**

D. Sectoral Analysis and Studies

Internet-Based Dairy Information System	16	57
Total	**16**	**57**
Grand Total	**926**	**31033**

E.Training of NDDB Manpower

Name of the programme	No. of programmes	Participants	
		Total	SC/ST
Management Appreciation Programme	1	22	22
Enterprise Project Management	3	57	5
Training on Employee Motivation for non-officers	5	103	16
Other Programmes (sponsorship of employees at outside institutions)	20	43	1
Total	**29**	**225**	**44**

Engineering Projects

The Engineering Services group sets up cost effective, energy efficient and state-of-the-art dairy and cattle feed plants to support the cooperative milk unions for processing and marketing of milk and milk products and enhancing cattle feed production.

Ice cream Freezing and Filling section of a dairy plant.

Concentrate feed section of milk drying plant.

Recent advances and improvements in dairy plant

NDDB continued to introduce improvements in dairy plant design by incorporating high levels of process automation. This has helped in improving product quality and operating conditions, in addition to reducing product loss, maintenance time, manpower requirement and energy consumption.

The new large dairy plants are now being provided with process equipment, including plate heat exchangers, cream separators, pumps and valves that meet European Hygienic Engineering and Design Group (EHEDG) specifications.

Innovations like cooling of hot cream with chilled raw milk have been adopted to improve regeneration efficiency and thereby reduce energy consumption. Automated, push water recovery systems are being provided in new dairy plants for better recovery of milk solids and less consumption of cleaning chemicals. Building designs now provide more natural light coupled with a natural ventilation system and the application of thermal barriers of building walls has led to conservation of energy as well as improvement in operating conditions.

Work on the turnkey execution of a fully automated 1000 tonnes per day cattle feed plant, the largest plant in the country, at Katarva in Banaskantha district commenced in January 2011 and is expected to be completed by December 2011.

Engineering Projects

Four turnkey projects and three consultancy projects were completed during the year. These included a fully automated 800 tlpd liquid milk processing plant with 40 tpd butter making and 50 klpd ice cream making at Banaskantha, Palanpur (Gujarat); an automated refrigeration plant with expansion of cold store and deep freezes at Mother Dairy Bangalore (Karnataka); a new semen station (five million doses per annum) at SAG Bidaj (Gujarat) and seven milk shops in Delhi and Noida.

The three projects undertaken and completed on consultancy basis include a 50 tpd bypass protein plant at Jodhpur (Rajasthan), strengthening of milk processing & packaging facility at Nandan Dairy, Baramati (Maharashtra), and expansion of refrigeration system at Sugam Dairy, Vadodara (Gujarat). ◆

Proflex roof sheet construction in a Cattle Feed Plant.

Ongoing Projects

Project	Capacity	Location
Northern Region		
Marketing Shops for MDFVL	11 shops	Delhi & Noida
Mohali Dairy Expansion	100 to 500 tlpd	Mohali, Chandigarh
Jhansi Dairy	10 tlpd	Jhansi, UP
Lalitpur Chilling Centre	5 tlpd	Lalitpur, UP
Cattle Feed Plant Expansion	100 to 200 tpd	Ghania-ke-Banger, Punjab
Cattle Feed Plant Expansion	200 to 300 tpd	Khanna, Punjab
Cattle Feed Plant Expansion	150 to 300 tpd	Jodhpur, Rajasthan
Cattle Feed Plant Expansion	150 to 300 tpd	Bikaner, Rajasthan
Cattle Feed Plant Expansion	150 to 300 tpd	Nadbai, Rajasthan
Cattle Feed Plant Expansion	150 to 300 tpd	Ajmer, Rajasthan
Western Region		
Banas Powder Plant	100 tpd	Palanpur, Gujarat
Sabar Dairy Expansion	600 to 1600 tlpd	Himmatnagar, Gujarat
Cattle Feed Plant	1000 tpd	Katarva, Gujarat
Mahananda Dairy Renovation	600 tlpd	Mumbai, Maharashtra
Cattle Feed Plant	300 tpd	Kolhapur, Maharashtra
Dairy Plant Expansion	150 to 250 tlpd	Bhopal, MP
Cattle Feed Plant	50 tpd	Seoni, MP
Bypass Protein Plant	50 tpd	Bhopal, MP
Eastern Region		
Dairy with Milk Powder Plant	400 tlpd dairy/30 tpd pp	Biharsharif, Bihar
Dairy Plant	100 tlpd	Hajipur, Bihar
Southern Region		
Cattle Feed Plant	300 tpd	Hassan, Karnataka
Dairy Plant Expansion	100 – 325 tlpd	Tumkur, Karnataka
Dairy Plant Expansion	150 – 300 tlpd	Mysore, Karnataka
Dairy Plant Expansion	120 – 300 tlpd	Hassan, Karnataka
Product Dairy	–	Bangalore, Karnataka
Dairy Plant	200 tlpd	Hosakote, Karnataka
Dairy Plant Expansion	250 – 400 tlpd	Mandya, Karnataka
Dairy with Milk Powder Plant	250 tlpd dairy/20 tpd pp	Thiruvannamalai, TN

tlpd – thousand litres per day

tpd – tonnes per day

Projects under Planning

- Expansion of Rajkot Dairy from 175 to 600 tlpd, a 200 tlpd dairy at Bharuch, a 400 tlpd expandable to 600 tlpd dairy at Navapura (all in Gujarat)
- A 50 tlpd expandable to 100 tlpd dairy at Ranchi, Jharkhand
- Bio safety laboratory for ICAR at Bangalore and Bhubaneswar
- A Dairy Science and Food Technology College at Dantiwada, Banaskantha, Gujarat

Centre for Analysis and Learning in Livestock and Food (CALF)

Inter Laboratory Comparisons are practised at CALF to evaluate technical competence at the international level.

Automated Protein Analysis.

CALF received 17 per cent more samples than the previous year – for feed and ingredients, mineral mixture and mineral salts, and milk and milk products. To facilitate safe delivery of milk and milk product samples to the laboratory, sample collection centres were opened at the National Dairy Development Board offices at Bengaluru and Noida.

In addition to food and feed samples, four cattle and four buffalo bulls were screened for chromosomal abnormalities. A total of 261 families were screened for parentage verification using microsatellite markers.

To keep abreast with the developments in analytical procedures, two senior scientists underwent training, entitled "School of Advanced Residue Analysis in Food" organised by the Export Inspection Agency, Kochi. The scientists were trained in determining residual contaminants as per European Union norms by experts from the Netherlands and France. ◆

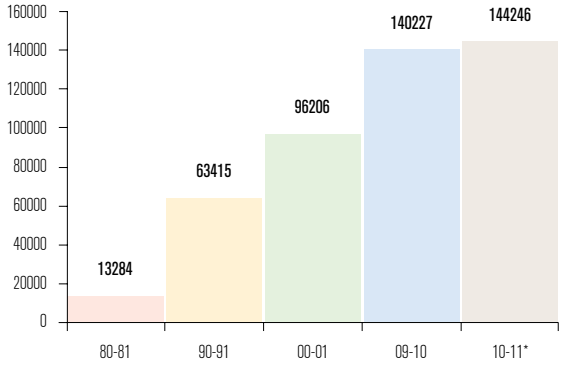
Screening of pesticides on a gas chromatograph.

Dairy Cooperatives at a Glance

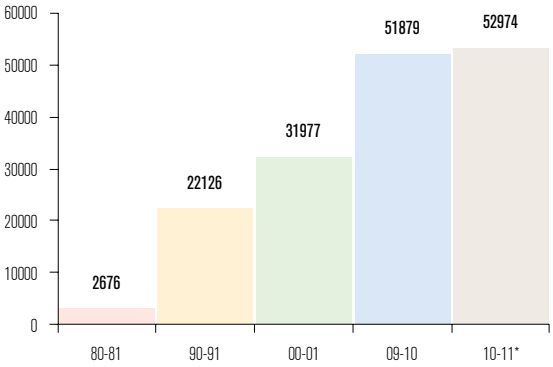
Dairy Coop Societies

(In numbers+)

Total

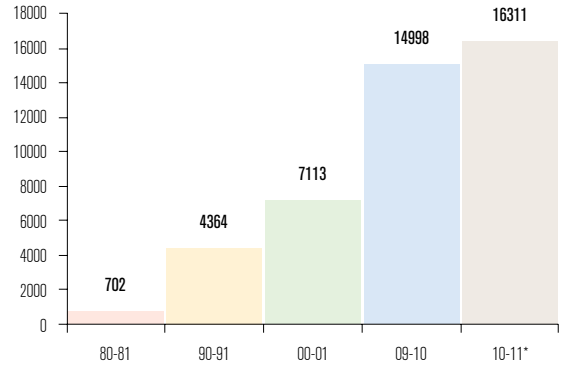


North



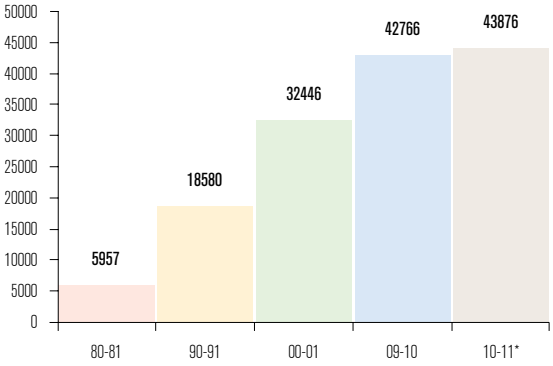
NORTH	80-81	90-91	00-01	09-10	10-11*
Haryana	505	3,229	3,318	6,881	7,019
Himachal Pradesh		210	288	795	803
Jammu & Kashmir		105	**	**	**
Punjab	490	5,726	6,823	6,904	7,069
Rajasthan^	1,433	4,976	5,900	15,956	16,290
Uttar Pradesh	248	7,880	15,648	21,343	21,793

East



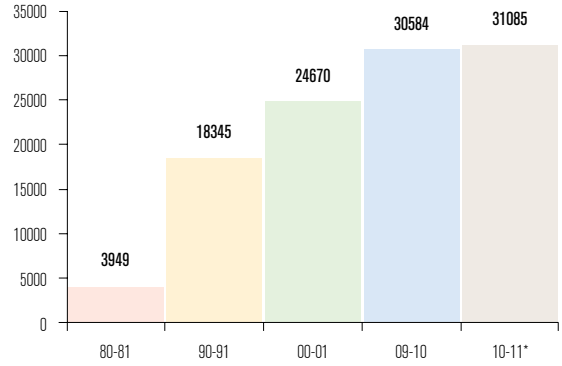
EAST	80-81	90-91	00-01	09-10	10-11*
Assam		117	125	66	145
Bihar	118	2,060	3,525	8,299	9,425
Jharkhand				50	53
Nagaland		21	74	47	49
Orissa		736	1,412	3,203	3,256
Sikkim		134	174	287	287
Tripura		73	84	84	84
West Bengal	584	1,223	1,719	2,962	3,012

West



WEST	80-81	90-91	00-01	09-10	10-11*
Chhattisgarh				751	757
Goa		124	166	179	178
Gujarat	4,798	10,056	10,679	13,890	14,347
Madhya Pradesh	441	3,865	4,877	5,729	6,216
Maharashtra	718	4,535	16,724	22,217	22,378

South



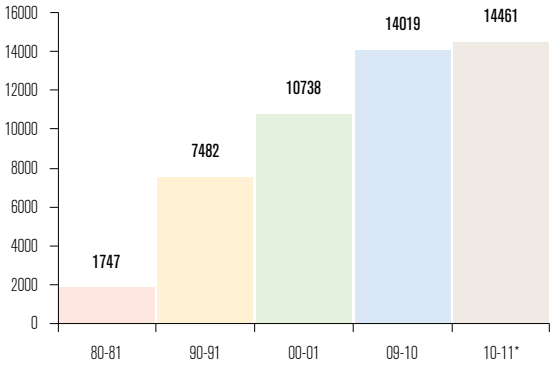
SOUTH	80-81	90-91	00-01	09-10	10-11*
Andhra Pradesh	298	4,766	4,912	4,911	4,964
Karnataka	1,267	5,621	8,516	11,902	12,273
Kerala		1,016	2,781	3,632	3,666
Tamil Nadu	2,384	6,871	8,369	10,038	10,079
Puducherry		71	92	101	103

+ Organized (cumulative) includes conventional societies and Taluka unions formed earlier * Provisional ** Not Reported
^DCS includes registered and proposed societies (collection centres)since 2009-10

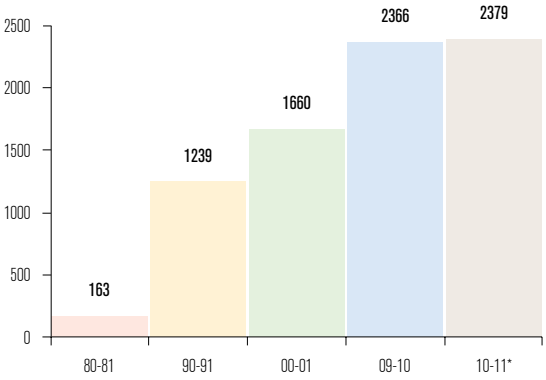
Producer Members

(In thousands)

Total

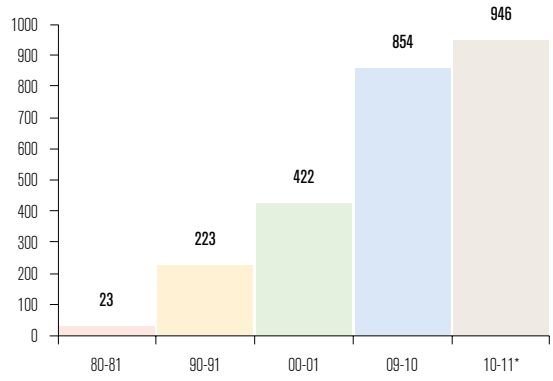


North



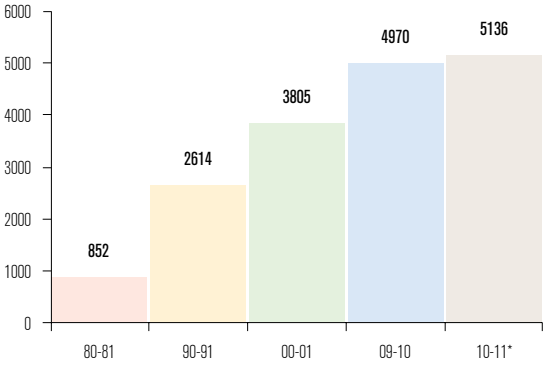
NORTH	80-81	90-91	00-01	09-10	10-11*
Haryana	39	184	185	312	313
Himachal Pradesh		17	20	32	33
Jammu & Kashmir		2	**	**	**
Punjab	26	304	370	381	386
Rajasthan	80	340	436	670	670
Uttar Pradesh	18	392	649	971	977

East



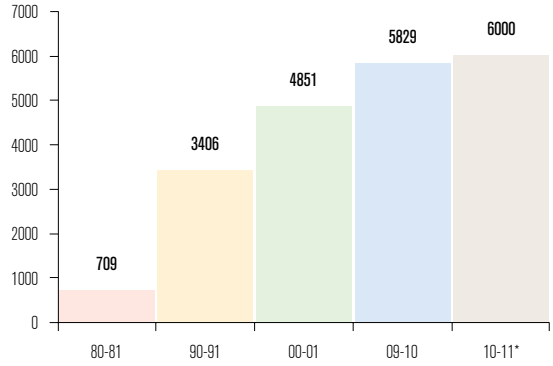
EAST	80-81	90-91	00-01	09-10	10-11*
Assam		2	1	3	4
Bihar	3	100	184	441	523
Jharkhand				1	1
Nagaland		1	3	2	2
Orissa		46	111	181	187
Sikkim		4	5	10	10
Tripura		4	4	6	6
West Bengal	20	66	114	210	213

West



WEST	80-81	90-91	00-01	09-10	10-11*
Chhattisgarh				31	31
Goa		12	18	19	19
Gujarat	741	1,612	2,147	2,809	2,970
Madhya Pradesh	24	150	242	266	271
Maharashtra	87	840	1,398	1,845	1,845

South



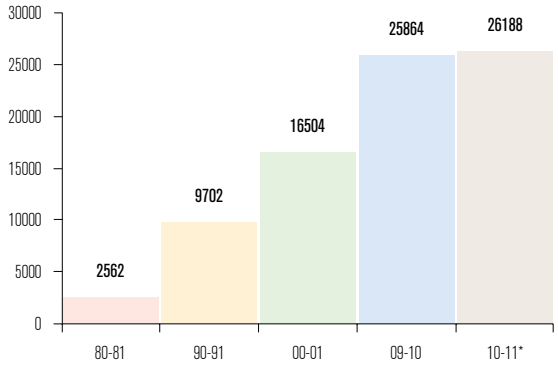
SOUTH	80-81	90-91	00-01	09-10	10-11*
Andhra Pradesh	33	561	702	841	846
Karnataka	195	1,013	1,528	2,052	2,091
Kerala		225	637	775	851
Tamil Nadu	481	1,590	1,957	2,122	2,176
Puducherry		17	27	39	36

* Provisional ** Not Reported

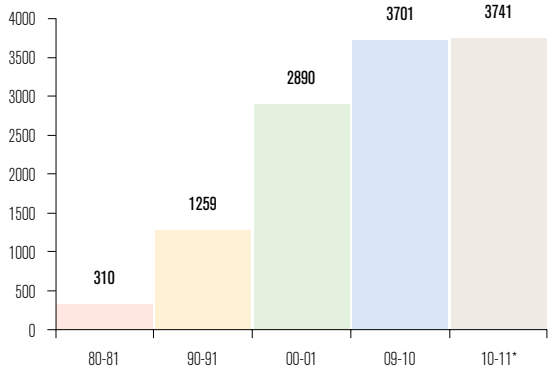
Milk Procurement

(In thousand kilograms per day)

Total

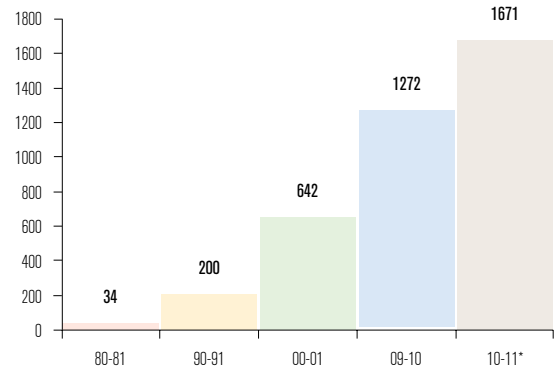


North



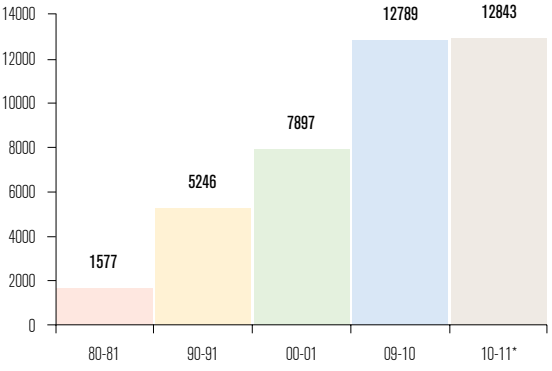
NORTH	80-81	90-91	00-01	09-10	10-11*
Haryana	33	94	276	522	511
Himachal Pradesh		14	24	55	60
Jammu & Kashmir		11	**	**	**
Punjab	75	394	912	952	1,037
Rajasthan	138	364	887	1,654	1,629
Uttar Pradesh	64	382	791	518	504

East



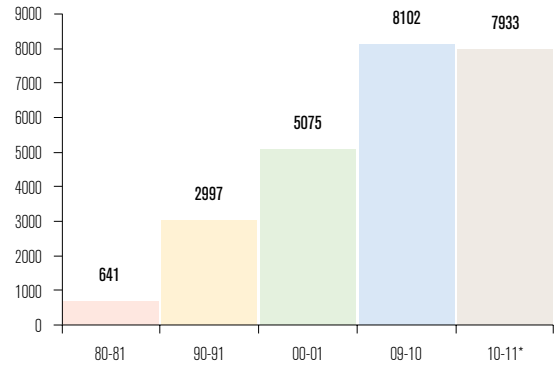
EAST	80-81	90-91	00-01	09-10	10-11*
Assam		4	3	5	5
Bihar	3	95	330	736	1,090
Jharkhand				5	5
Nagaland		1	3	9	2
Orissa		41	94	241	276
Sikkim		4	7	12	18
Tripura		3	1	2	2
West Bengal	31	52	204	262	273

West



WEST	80-81	90-91	00-01	09-10	10-11*
Chhattisgarh				24	25
Goa		16	32	36	38
Gujarat	1,344	3,102	4,567	9,053	9,158
Madhya Pradesh	68	256	319	525	588
Maharashtra	165	1,872	2,979	3,151	3,034

South



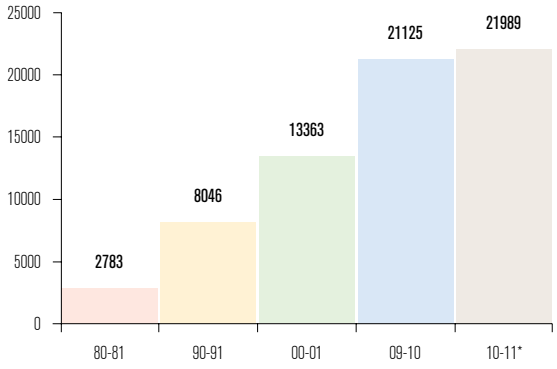
SOUTH	80-81	90-91	00-01	09-10	10-11*
Andhra Pradesh	79	763	879	1,443	1,371
Karnataka	261	917	1,887	3,565	3,742
Kerala		185	646	769	688
Tamil Nadu	301	1,106	1,618	2,277	2,097
Puducherry		26	45	48	35

* Provisional ** Not Reported

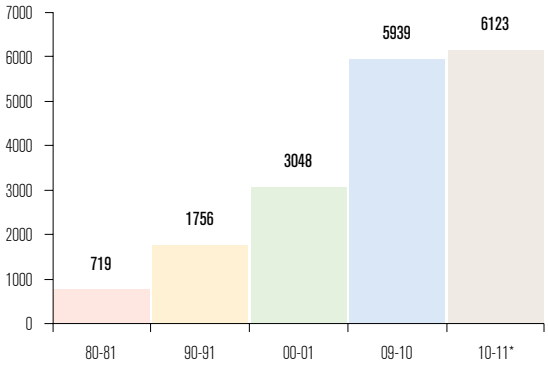
Liquid Milk Marketing+

(In thousand litres per day)

Total

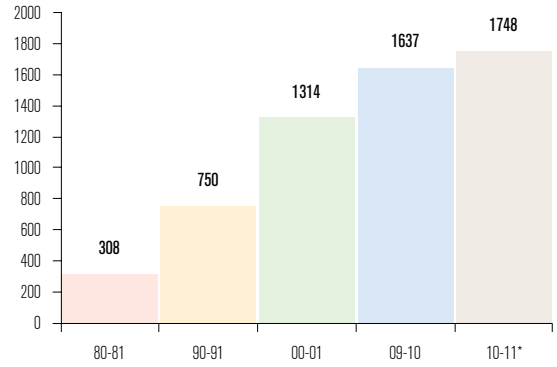


North



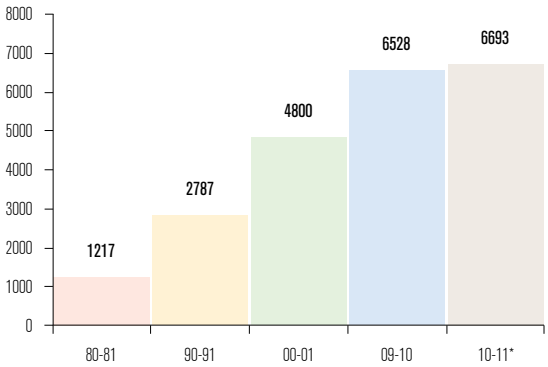
NORTH	80-81	90-91	00-01	09-10	10-11*
Haryana	2	80	108	384	362
Himachal Pradesh		15	20	18	24
Jammu & Kashmir		9	**	**	**
Punjab	7	139	420	723	802
Rajasthan	12	136	540	1,365	1,505
Uttar Pradesh	1	326	436	402	380
DELHI	697	1,051	1,524	3,047	3,050

East



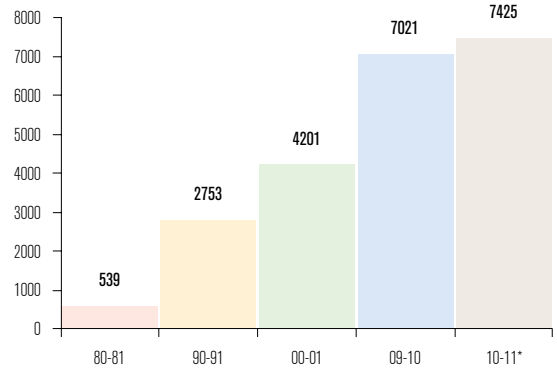
EAST	80-81	90-91	00-01	09-10	10-11*
Assam		10	7	12	22
Bihar	8	111	324	437	464
Jharkhand				240	253
Nagaland		1	4	3	3
Orissa		65	98	264	290
Sikkim		5	7	14	17
Tripura		6	7	13	14
West Bengal	17	26	27	38	41
KOLKATA	283	526	840	617	644

West



WEST	80-81	90-91	00-01	09-10	10-11*
Chhattisgarh				35	34
Goa		36	83	75	69
Gujarat	210	1,052	1,905	3,164	3,237
Madhya Pradesh	39	279	244	447	495
Maharashtra	18	363	1,178	1,881	2,017
MUMBAI	950	1,057	1,390	926	841

South



SOUTH	80-81	90-91	00-01	09-10	10-11*
Andhra Pradesh	19	552	733	1,409	1,565
Karnataka	166	889	1,501	2,468	2,661
Kerala		223	640	1,067	1,092
Tamil Nadu	109	405	559	976	989
Puducherry		22	43	87	93
CHENNAI	245	662	725	1,014	1,025

+ Cooperatives (state) and metro dairies * Provisional ** Not Reported

Other Activities

Technical support to the Government of India

NDDB continued to provide technical inputs to the Government of India for its interventions on issues under consideration of the Codex Alimentarius Commission, and nominated experts to Indian delegations to the meetings of the Commission and its Committee on Food Hygiene. The delegation to the Codex Committee on Food Hygiene was led by an NDDB officer. India's efforts resulted in favourable development of several Codex documents relevant to the dairy sector, including a revision of the Model Export Certificate for Milk and Milk Products. ◆

Progressive use of Hindi

Concerted efforts were made during the year to promote Hindi in official work. A large number of employees participated in various competitions organised during the Hindi fortnight. Cash awards amounting to ₹31,600 were distributed to successful candidates. As a token of recognition, an English-Hindi dictionary was distributed to all.

NDDB translated and printed the Annual Report and other educative documents, including pamphlets, in Hindi.

NDDB has introduced various incentive schemes for the promotion of Hindi. One such scheme is Hindi noting and drafting incentive scheme. Thirty two employees participated in this scheme and were given cash incentives amounting to ₹31,250. Besides, 11 employees, whose children scored 75 per cent and above in Hindi in Class 10th and 12th board examinations, were given a cash prize of ₹1,000 each.

Poetry recitation competition in Hindi.

The NDDB library has a number of books in Hindi. During the year, books on Hindi, amounting to about ₹31,000 were added to the library.

NDDB is a member of the Town Official Language Implementation Committee (TOLIC), Vadodara, and participated in its half-yearly meetings and other activities.

Programmes on the occasion of Republic Day, Independence Day, Gandhi Jayanti and Ambedkar Jayanti were conducted in Hindi. ◆

Welfare of SC/ST employees

NDDB has various Welfare Schemes for SC/ST employees. SC/ST employees were reimbursed expense incurred on education as well as books for their children to encourage them to pursue higher studies. Meritorious children of SC/ST employees studying in SSC, HSC, graduation and post graduation courses were awarded cash prizes and certificates.

Meritorious student being awarded cash prize and certificate.

During the year, 44 SC/ST employees were nominated for different training programmes to enable them to update their knowledge, skill and competency levels. A Management Appreciation Programme was organized exclusively for SC/ST employees.

Ambedkar Jayanti was celebrated in all offices of NDDB. ◆

Visitors

During 2010-11, NDDB received 968 visitors from India and abroad.

Overseas visitors came from: Canada, Denmark, France, Indonesia, Italy and the United States of America.

Canadian delegation from Gay Lea Foods Co-operative Ltd, Canada.

Prof KV Thomas, Hon'ble Minister of State for Agriculture, Consumer Affairs, Food & Public Distribution, Government of India.

A group of fourteen IAS probationers of batch 2010.

Dr Nitin Raut, Hon'ble Minister (Animal Husbandry Dairying & Fisheries), Government of Maharashtra.

Dr Harinder Makkar, Animal Production Officer, FAO United Nations.

A five-member delegation led by Mr Valentino Fatima Soares Varela, Secretary of State for Agriculture, Government of Timor Leste.

Accounts

Ray & Ray
CHARTERED ACCOUNTANTS
G-2, Ramkrishna, 11, Happy Home Society
Nehru Road, Vile Parle (E) Mumbai 400 057
Tel: +91-22-2614 6080/26150621
Fax: +91-22-26131586
Email:admin@raynraymumbai.com

Auditors' Report

To The Board of Directors of National Dairy Development Board

We have audited the attached Balance Sheet of National Dairy Development Board as at 31st March 2011 and the Income and Expenditure Account and also the Cash Flow Statement for the year ended on that date, annexed thereto. These financial statements are the responsibility of the Board's Management. Our responsibility is to express an opinion on these financial statements, based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in India. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We report as under:

(i) We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purposes of our audit.

(ii) In our opinion, proper books of account as required by law, have been kept by the Board, so far as appears from our examination of those books.

(iii) The Balance Sheet, Income and Expenditure Account and Cash Flow Statement dealt with by this report are in agreement with the books of account.

(iv) In our opinion and to the best of our information and according to the explanations given to us, the said accounts give a true and fair view in conformity with the accounting principles generally accepted in India:

(a) in case of the Balance Sheet, of the state of affairs of the Board as at 31st March 2011.

(b) in case of the Income and Expenditure Account, of the surplus for the year ended on that date and

(c) in case of the Cash Flow Statement, of the cash flows for the year ended on that date.

For **Ray & Ray**
Chartered Accountants

Place: Anand
Date : 5th August 2011

Anil Karnik
Partner
Membership No. 031005
Firm Reg. No. 301072E

National Dairy Development Board
(A Body corporate constituted under the National Dairy Development Board Act, 1987)

Balance Sheet as at 31st March, 2011

₹ in million

	Annexure	31.03.2011	31.03.2010
LIABILITIES			
National Dairy Development Board Funds			
General Funds	I	24,037.01	22,670.80
Project Funds	II	298.25	280.25
		24,335.26	22,951.05
Secured loans	III	117.20	433.06
Current liabilities and provisions	IV	9,798.54	11,476.77
Total		**34,251.00**	**34,860.88**
ASSETS			
Cash and bank balances	V	1,353.85	5,683.82
Inventories	VI	976.95	371.25
Sundry debtors		105.35	15.37
Loans, advances and other current assets	VII	13,364.02	15,504.76
Investments	VIII	15,641.03	10,572.06
Fixed Assets	IX	2,604.04	2,668.67
Deferred tax assets		205.76	44.95
Total		**34,251.00**	**34,860.88**
Notes to Accounts	XVII		
Significant Accounting Policies	XVIII		

In terms of our report of even date attached.
For **Ray & Ray**
Chartered Accountants

Anil Karnik
Partner
Membership No. 031005
Firm Reg. No. 301072E
Anand, August 5, 2011

On behalf of the Board.

Y Y Patil
Deputy General Manager
(Accounts)

N V Belavadi
Executive Director

Amrita Patel
Chairman

Anand, August 5, 2011

National Dairy Development Board
(A Body corporate constituted under the National Dairy Development Board Act, 1987)

Income and Expenditure Account

For the year ended 31st March, 2011

₹ in million

PARTICULARS	ANNEXURE	2010-2011	2009-2010
INCOME			
Interest		1,426.69	1,471.63
Service charges	X	64.52	72.08
Sales		6,692.88	5.99
Hire charges		32.84	23.58
Rent received		124.26	121.29
Dividend received		40.49	38.06
Other income	XI	1,482.19	465.70
Total (A)		**9,863.87**	**2,198.33**
EXPENDITURE			
Interest and financial charges		56.36	131.03
Remuneration and benefits to employees	XII	999.94	464.99
Cost of materials sold	XIII	6,511.05	5.99
Administrative expenses	XIV	85.30	86.06
Grants		302.93	520.70
Research and development expenses		76.31	72.63
Maintenance of assets	XV	95.79	112.36
Other expenses	XVI	63.12	35.72
Bad debts written off		20.91	6.51
Depreciation (See Note 4)		354.89	299.55
Total (B)		**8,566.60**	**1,735.54**
Surplus during the year before tax (A - B)		**1,297.27**	**462.79**
Less: Provision for taxation			
Deferred tax		(160.80)	(13.72)
Income tax		90.65	-
Wealth tax		0.72	0.85
Surplus during the year after tax		**1,366.70**	**475.66**
Less: Appropriations			
Special Reserve		107.18	57.77
Balance carried to General Fund		1,259.52	417.89
Total		**9,863.87**	**2,198.33**

In terms of our report of even date attached.
For **Ray & Ray**
Chartered Accountants

Anil Karnik
Partner
Membership No. 031005
Firm Reg. No. 301072E
Anand, August 5, 2011

On behalf of the Board.

Y Y Patil
Deputy General Manager
(Accounts)

N V Belavadi
Executive Director

Amrita Patel
Chairman

Anand, August 5, 2011

National Dairy Development Board
(A Body corporate constituted under the National Dairy Development Board Act, 1987)

Cash Flow Statement

For the year ended 31st March, 2011

₹ in million

PARTICULARS		2010-2011	2009-2010
Surplus during the year		**1,297.27**	**462.79**
Adjustments for :			
Premium charged on purchase of investment	26.11		1.29
Depreciation	354.89		299.55
(Write back)/Provision for inventory obsolescence	(5.45)		(2.35)
Loss on sale of investments	–		1.21
Profit on sale of investments	(1.76)		(0.22)
Bad debts written off	20.91		6.51
Investment Income considered separately	(850.67)		(1,078.34)
Profit on sale of fixed assets considered separately	(0.58)		(2.13)
Interest financial charges considered separately	56.36		131.03
Provision for VRS Monthly Benefits	180.03		-
Provision for PRMS	8.27		0.99
Provision for leave encashment	(60.03)		48.86
		(271.92)	**(593.60)**
Cash flow before changes in current assets/liabilities		**1,025.35**	**(130.81)**
Decrease / (Increase) in Inventories	(600.69)		(367.81)
Increase in Interest Accrued	181.91		25.69
Decrease/(Increase) in Sundry Debtors	(89.98)		9.20
Decrease/(Increase) in Loans and Advances	2,122.44		347.64
Reduction in provision for contingencies	(1,626.46)		(388.96)
Tax refunded/(paid)	(184.52)		(219.33)
Increase/(Decrease) in current liabilities	(263.38)		1,040.88
Increase in General / Project Fund (excluding excess of income over expenditure)	17.51		21.08
		(443.17)	**468.40**
Net cash from operating activities (A)		**582.18**	**337.59**
Investing activities			
Investment income	850.67		1,078.34
Proceeds from maturity of investments(Bonds)	351.02		1,158.79
Purchase of investments (Shares)	(1,990.00)		(10.00)
Purchase of Investments (Bonds)	(777.59)		(600.00)
(Increase)/Decrease in FDR's with banks more than 90 days	(574.74)		789.21
Proceeds from sale of fixed assets	0.91		2.19
Purchase of fixed assets	(291.08)		(222.00)
Cash flow from investing activities (B)		**(2,430.81)**	**2,196.52**
Financing activities			
Repayment of borrowed funds	(315.85)		(364.45)
Interest and financial charges	(63.53)		(139.76)
Cash flow from financing activities (C)		**(379.38)**	**(504.21)**
Net Cash flow during the year (A+B+C)		**(2,228.01)**	**2,029.90**
Cash and cash equivalents at the beginning of the year		**2,369.86**	**339.96**
Cash and cash equivalents at the end of the year		**141.85**	**2,369.86**

Cash and cash equivalent	**31.03.2011**	**31.03.2010**
Balances with Banks:		
In fixed and short term deposits	128.30	2,299.10
In current accounts	8.15	21.84
Cash and cheques on hand and in transit	5.40	48.92
Total	**141.85**	**2,369.86**

In terms of our report of even date attached.
For **Ray & Ray**
Chartered Accountants

Anil Karnik
Partner
Membership No. 031005
Firm Reg. No. 301072E
Anand, August 5, 2011

On behalf of the Board.

Y Y Patil
Deputy General Manager
(Accounts)

N V Belavadi
Executive Director

Amrita Patel
Chairman

Anand, August 5, 2011

General Funds

ANNEXURE I

₹ in million

		31.03.2011	31.03.2010
General Reserve (Note 1)			
Balance as per last balance sheet		3596.64	3,596.64
Grant for Fixed Assets (Note 2)			
Balance as per last balance sheet	12.28		12.77
Less: Recoupment of depreciation	0.49		0.49
		11.79	12.28
Special Reserve (Note 3)			
Special Reserve	390.76		332.99
Add: Transfer from Income and Expenditure Account	107.18		57.77
		497.94	390.76
Grants from Government of India (Note 4)			
For Dairy Development Centre	44.59		44.59
For Sabarmati Ashram Gaushala, Bidaj	4.41		4.41
		49.00	49.00
Income and Expenditure Account (Note 1)			
Balance as per last balance sheet	18,622.12		18,204.23
Add: Surplus during the year	1259.52		417.89
		19,881.64	18,622.12
Total		**24,037.01**	**22,670.80**

Note: 1. Utilised to promote, plan and organise programmes for development of dairy and other agriculture based industries as per the NDDB Act.
2. In accordance with Accounting Standard - 12 on Accounting for Grants.
3. Under section 36(1)(viii) of Income Tax Act 1961
4. Received prior to 12.10.1987, the date on which NDDB body corporate was incorporated.

Project Funds

ANNEXURE II

₹ in million

		31.03.2011	31.03.2010
North Kerala Dairy Project Fund			
Balance as per last balance sheet	280.25		258.68
Additions during the year (Interest)	18.00		21.57
		298.25	280.25
Total		**298.25**	**280.25**

Note: 1. The project is externally funded by Swiss Development Corporation. Proportionate Income Tax on account of interest income of the project will be charged to project as and when it crystalises.
2. Loans and advances, interest accrued, balances with banks & provisions made from project fund are included under respective schedules.

Secured Loans
ANNEXURE III

₹ in million

	31.03.2011	31.03.2010
Loans from the Government of India (Secured against the assets of the Board)	117.20	433.06
Total	**117.20**	**433.06**

Current Liabilities and Provisions
ANNEXURE IV

₹ in million

			31.03.2011	31.03.2010
a)	Current Liabilities			
	Advances and deposits		23.71	80.64
	Sundry creditors		492.52	830.44
	Bank Overdraft (secured against fixed deposits)		322.51	132.00
	Net liability on account of turnkey projects			
	Funds received	3,992.42		3,031.11
	Due to suppliers for expenses	265.91		107.49
		4,258.33		3,138.60
	Less: Expenditure	3,525.70		2,298.10
		732.63		840.50
	Add: Per contra, Refer ANNEXURE VII	62.72		13.89
			795.35	854.39
	Interest accrued but not due on loans from Government of India		4.97	12.15
			1,639.06	1,909.62
b)	Provisions for Contingencies for assets:			
	Non-performing	5,972.25		7,584.15
	Sub-standard	4.59		–
	Standard	411.50		475.74
	Others	527.21		482.12
			6,915.55	8,542.01
c)	Provisions for :			
	Leave encashment	121.94		181.97
	Post retirement medical scheme	65.03		56.76
	VRS monthly benefits	180.03		–
	Income tax	876.21		785.56
	Wealth tax	0.72		0.85
			1,243.93	1,025.14
Total			**9,798.54**	**11,476.77**

Cash and Bank Balances

ANNEXURE V

₹ in million

		31.03.2011	31.03.2010
Balances with Banks			
In fixed and short term deposits (not exceeding one year)	1,340.30		5,613.06
In current accounts	8.15		21.84
		1,348.45	5,634.90
Cash and cheques on hand and in transit		5.40	48.92
Total		**1,353.85**	**5,683.82**

Inventories

ANNEXURE VI

₹ in million

		31.03.2011	31.03.2010
Dairy commodities		973.69	368.27
Stores, spares and others	16.88		17.31
Project equipment	17.59		21.89
	34.47		39.20
Less : Provision for obsolescence	31.21		36.22
		3.26	2.98
Total		**976.95**	**371.25**

Loans, Advances and Other Current Assets

ANNEXURE VII

₹ in million

		31.03.2011	31.03.2010
Loans to cooperatives			
Milk – Secured	2,394.34		3,098.47
– Unsecured	1,626.00		2,719.40
		4,020.34	5,817.87
Oil – Unsecured		1,984.23	2,091.68
Loans and advances to subsidiary companies/ managed units			
Secured	1,131.30		1,223.25
Unsecured	1,317.45		1,738.17
		2,448.75	2,961.42
Loans to employees			
Secured	5.57		8.62
Unsecured	7.73		10.69
		13.30	19.31
Interest accrued			
Loans and advances	2,455.08		2,846.95
Investments	582.70		393.65
		3,037.78	3,240.60
Advances to suppliers and contractors		407.55	25.94
Recoverable on account of turnkey projects (Per contra, Refer ANNEXURE IV)		62.72	13.89
Sundry deposits		11.34	8.51
Tax deposit including advance tax and TDS		1,331.92	1,147.40
Prepaid Gratuity		15.01	28.54
Other advances		31.08	149.60
Total		**13,364.02**	**15,504.76**

Note: Secured loans are secured against the mortgage of assets and/or hypothecation of stocks/assets.

Investments

ANNEXURE VIII

₹ in million

		31.03.2011	31.03.2010
Long term investments:			
Shares in subsidiary companies:			
Mother Dairy Fruit & Vegetable Private Limited	2,500.00		2,500.00
IDMC Limited	283.90		283.90
Indian Immunologicals Limited	90.00		90.00
NDDB Dairy Services Limited	2,000.00		10.00
		4,873.90	2,883.90
Term deposits in Banks (exceeding one year)		7,662.60	4,985.90
Debentures/bonds in Government companies, financial institutions and banks		3,103.63	2,701.36
Shares in Co-operatives and Federations		1.00	1.00
Less: Provision for diminution in value of investments		0.10	0.10
Total		**15,641.03**	**10,572.06**

Fixed Assets

Annexure IX

₹ in million

Particulars	Gross Block (at Cost)				Depreciation				Net Block	
	As at 01.04.2010	Additions	Deductions/ (adjustments)	As at 31.03.2011	As at 01.04.2010	For the year	Deductions/ (adjustments)	As at 31.03.2011	As at 31.03.2011	As at 31.03.2010
Freehold land	451.17	–	–	451.17	–	–	–	–	451.17	451.17
Leasehold land	64.16	–	–	64.16	6.28	0.75	–	7.03	57.13	57.89
Building and roads	1833.60	1.22	–	1834.82	615.13	53.20	–	668.33	1166.50	1218.47
Plant & machinery	412.79	–	0.06	412.73	234.91	33.61	0.05	268.47	144.26	177.87
Electrical installations and air conditioning	265.81	39.12	0.40	304.53	108.25	33.95	0.38	141.82	162.71	157.55
Furniture, fixtures, computers, software and equipment	1355.18	254.93	7.89	1602.21	792.31	231.18	7.70	1015.79	586.42	562.87
Rail Milk Tankers	217.83	–	–	217.83	217.83	–	–	217.83	–	–
Vehicles	27.53	0.48	2.04	25.96	22.55	2.69	1.93	23.31	2.65	4.98
Total	**4628.07**	**295.75**	**10.40**	**4913.42**	**1997.26**	**355.38**	**10.06**	**2342.58**	**2570.84**	**2630.80**
Previous years	4431.81	218.91	22.65	4628.07	1718.41	301.23	22.38	1997.26	2630.80	2713.40
Capital work in progress	37.87	42.52	47.19	33.20	–	–	–	–	33.20	37.87
Total fixed assets									**2604.04**	**2668.67**

Notes:
1. Land for FMD Control Project is obtained from Government of Tamil Nadu by alienation.
2. Freehold land includes land for Oil Tank farm, Narela amounting to ₹ 17.94 million which has been obtained on perpetual lease for which lease deeds are yet to be executed.
3. Land taken on lease from Bangalore Development Authority for a period of 30 years which is being amortised over the lease period. The allotment of the said land is in the name of the subsidiary company Mother Dairy Fruits & Vegetable Pvt. Ltd., the title in respect of the Lease hold land is pending Transfer.
4. Depreciation for the year includes prior period depreciation amounting to ₹ 6.30 million (31.03.2010: ₹ 0.41 million)
5. Capital work in progress includes ₹ 17.68 million (31.03.2010 ₹ 22.60 million) in respect of GDDC assets taken over by NDDB in 2004-05

Service Charges
ANNEXURE X

₹ in million

	2010-2011	2009-2010
Training fees	4.37	3.14
Management fees	1.61	1.58
Procurement and technical service fees	56.14	62.34
Fees from consultancy and feasibility studies	0.95	1.84
Royalty and process knowhow fees	1.45	3.18
Total	**64.52**	**72.08**

Other Income
ANNEXURE XI

₹ in million

	2010-2011	2009-2010
Miscellaneous income (including interest on income tax refund)	21.40	111.22
Profit on sale of fixed assets (net)	0.58	2.13
Profit on sales of investments (net)	1.76	–
Excess provision written back	1458.45	352.35
Total	**1482.19**	**465.70**

Remuneration and benefits to employees
ANNEXURE XII

₹ in million

	2010-2011	2009-2010
Salaries and Wages (including ex-gratia, VRS payments and retainership fees)	895.29	349.62
Contribution to Provident, Superannuation fund and Gratuity	66.20	79.67
Staff welfare expenses	38.45	35.70
Total	**999.94**	**464.99**

Remuneration excludes ₹ 37.79 million (Previous year : ₹ 34.58 million) shown as part of research and development expenses.

Cost of Materials Sold
ANNEXURE XIII

₹ in million

	2010-2011	2009-2010
Opening Stock	368.27	–
Purchases	6857.89	373.21
Expenses (net)	258.58	1.05
Less : Closing Stock	973.69	368.27
Total	**6,511.05**	**5.99**

Administrative Expenses

ANNEXURE XIV

₹ in million

		2010-2011	2009-2010
Printing and stationery		3.56	3.05
Communication charges		6.89	7.15
Audit fees and expenses (including service tax)			
Audit fees	0.47		0.47
Tax audit	0.18		0.18
Fees for other services	0.03		0.02
Out of pocket expenses	0.18		0.21
		0.86	0.88
Legal fees		1.20	5.77
Professional fees		13.13	8.52
Vehicle expenses		9.89	11.19
Recruitment expenses		1.46	3.74
Advertisement expenses		8.86	3.79
Travelling and conveyance expenses		36.73	39.89
Other administrative expenses		2.72	2.08
Total		**85.30**	**86.06**

Maintenance of Assets

ANNEXURE XV

₹ in million

	2010-2011	2009-2010
Repairs and maintenance	66.64	86.30
Electricity and rent	27.05	24.49
Insurance	2.10	1.57
Total	**95.79**	**112.36**

Other Expenses

ANNEXURE XVI

₹ in million

	2010-2011	2009-2010
Training expenses	21.28	10.91
Computer expenses	8.40	6.93
Other expenditure	33.44	17.88
Total	**63.12**	**35.72**

Notes to Accounts
ANNEXURE XVII

1 At the request of the concerned authorities, the National Dairy Development Board has been managing the Sabarmati Ashram Gaushala, the Jalgaon Jilha Sahakari Dudh Utpadak Sangh Maryadit, Ongole Dairy, West Assam Milk Producers' Co-operative Union Ltd., and Jharkhand Dairy Project. These are separate and independent entities and their accounts are audited separately. In the case of Ongole Dairy the Board has to recover its dues during the management period and hand over the management of the dairy free from liability on account of the agreed loans to the concerned authority at the expiry of the management period.

2 **Contingent Liabilities:**

2.1. Principal amount of claims not acknowledged as debt : ₹ 20.34 million (Previous Year : ₹ 20.89 million)

2.2. **Sales Tax Demand**

The Sales Tax Department has demanded incremental sales tax together with interest thereon amounting to ₹ 16.40 million. (Previous Year: ₹ 16.40 million) against which the Board has preferred an appeal.

2.3. **Income Tax Demands**

₹ in million

Assessment Year	Demand	Provision exists in the books	Status
2004-05	81.69	51.84	Appeal is pending before Income Tax Appellate Tribunal (ITAT) on the issues rejected by Commissioner of Income Tax (Appeals) (CIT (A)) on the original order of Assessing Officer (AO). Additional appeal filed before CIT(A) on the effective order giving effect to first order of CIT(A) by AO.
2005-06	69.48	37.74	Appeal filed before ITAT.
2005-06 (Penalty order)	79.32	0.00	Appeal filed before CIT(A).
2007-08	309.20	16.11	Appeal is pending before ITAT on the issues rejected by CIT (A) on the original order of AO. Additional appeal filed before CIT(A) on the effective order giving effect to first order of CIT(A) by AO.
2008-09	202.66	81.24	Appeal filed before CIT(A).

2.4. Demands raised by Land & Land Reform Department, Siliguri of ₹ 5.00 million (previous year ₹ 5.00 million) and Patharghata Panchayat of ₹ 0.02 million (previous year ₹ 0.02 million) which have been contested by the Board before appropriate forums.

3 The Government of India had requested NDDB to import dairy commodities under the Tariff Rate Quota on behalf of actual users for recombination into milk for sale of liquid milk to consumers.

4 Depreciation charge for the year is net of ₹ 0.49 million (Previous Year: ₹ 0.49 million) charged against the grants received.

5 During the year, NDDB had offered a Voluntary Retirement Scheme (VRS) to its eligible employees. Remuneration and benefits to employees includes ₹ 390.29 million towards payment of Ex-gratia and ₹ 211.21 million towards the additional monthly benefit payable as per the terms of the VRS.

6 Balances of sundry debtors, creditors, secured loans, deposits and loans & advances are subject to confirmations.

7 Staff welfare expenses include an amount of ₹ 6.99 million reimbursed to the Provident Fund Trust to compensate the interest deficit.

8 Disclosure of Transactions as per Accounting Standard 18 regarding Related party transaction for FY 2010-2011:

₹ in million

Particulars	Interest Income	Purchase of Equity shares	Dividend	Rent (Income) (Note)	Grant	Sale of Fixed Assets	Other income/ (expenditure)	Loan released	Loan repaid / Adjusted	Balance outstanding Dr/ (Cr)
Subsidiary Companies										
IDMC Limited	27.50	–	24.29	2.23	–	0.01	0.17	335.00	597.00	380.18
Indian Immunologicals Limited	14.98	–	16.20	20.08	–	–	0.02	4.88	49.41	262.22
Mother Dairy Fruit and Vegetable Private Limited	69.52	–	–	91.34	122.57	–	14.87	5.42	252.81	1,355.20
NDDB Dairy Services Limited	–	1,990.00	–	–	–	0.10	0.03			0.55
Total	**112.00**	**1,990.00**	**40.49**	**113.65**	**122.57**	**0.11**	**15.09**	**345.30**	**899.22**	**1,998.15**
Other enterprises where management has significant influence over the management										
The West Assam Milk Producers Co.op Union Ltd	–	–	–	–	0.69	–	–	–	–	14.16
Animal Breeding Research Organisation	–	–	–	–	–	–	–	0.53	1.31	2.54
Anandalaya Education society	–	–	–	0.60	–	–	0.20	–	–	0.01
Total	–	–	–	**0.60**	**0.69**	–	**0.20**	**0.53**	**1.31**	**16.71**
Remuneration to key management personnel										
Dr. Amrita Patel	1.52									
Mr. NV Belavadi	1.73									
Mr.Ravi Shanker	1.57									
Total	**4.82**									

Note: Represents amount where arrangements with such related party is finalised.

9 Deferred tax assets have been recognised as per Accounting Standard 22 on Accounting for Taxes on Income issued by Institute of Chartered Accountants of India. Details are as under:

₹ in million

Particulars	Balance as on 01/04/2010	Adjustment during the year 2010-11	Balance as on 31/03/2011
Deferred Tax Assets :			
Depreciation	(10.96)	18.57	7.61
Expenditure allowable on payment basis	55.91	(21.30)	34.61
Voluntary Retirement Scheme	-	163.54	163.54
Total	**44.95**	**160.81**	**205.76**

10 Disclosure as per Accounting Standard 19 regarding Leased Assets:

Operating leasing arrangements entered into by NDDB as a Lessor:

a) Nature of Assets leased

₹ in million

Class of Asset	Gross value of assets	Depreciation for the year	Accumulated Depreciation
Buildings and Roads#	1623.34 (1570.43)	47.33 (45.95)	562.80 (506.74)
Electrical Installations	150.07 (109.73)	18.37 (10.94)	51.29 (27.17)
Plant & Machinery	329.64 (351.18)	32.87 (33.04)	187.61 (175.26)
Furniture, fixtures, computers, software and office equipment	1103.15 (891.74)	188.72 (152.27)	590.96 (381.58)
Rail Milk Tankers	184.61 (113.98)	- -	184.61 (113.98)
Vehicles	0.44 (0.44)	- (0.09)	0.44 (0.44)
Total	**3391.25 (3037.50)**	**287.29 (242.28)**	**1577.71 (1205.17)**

include staff quarters and cold storage

b) Initial Direct cost relating to leasing arrangements is charged to revenue in the year of arrangement of lease.

c) Significant Leasing arrangements:

All assets mentioned above are leased out to subsidiaries, federations and others with an option to renew or cancellation of the agreement.

(Figures in bracket represent previous year figures)

11 Segment information

NDDB is a body corporate constituted under the National Dairy Development Board Act, 1987. As per the objectives set out in the Act, all the activities of NDDB revolve round the Dairy/Agriculture sector and the main source of income is the interest on loans and surplus funds. As such there are no reportable Segments as per Accounting Standard-17.

12 There is no impairment loss to be recognized in the financial statements for the year in terms of Accounting Standard 28 regarding Impairment of Assets.

13 Disclosure as per Accounting Standard 15 (Revised 2005) regarding Employee Benefits:

Various benefits provided to employees are classified as under:

i. Defined Contribution Plans
   a. Provident Fund
   b. Superannuation Fund

Following amounts are recognised in Income and Expenditure Account:

₹ in million

Particulars	Year Ended March 31, 2011
Employer's contribution to Provident Fund	27.66
Employer's contribution to Superannuation Fund	16.45

ii. Defined Benefit Plans
   a. Contribution to Gratuity Fund (Funded Scheme)
   b. Leave Encashment (Non – Funded Scheme)
   c. Post Retirement Medical Benefit Scheme (Non – Funded Scheme)

In accordance with the Accounting Standard (AS 15) (Revised 2005), actuarial valuation has been obtained in respect of the aforesaid defined benefit plans based on the following assumptions:

Discount Rate (per annum)	8%
Rate of increase in compensation levels (per annum)	7%
Rate of return on Plan Assets (for Funded Scheme)	8.25%
Expected Average remaining working lives of the employees (years)	18
Turnover Rate	1%

A. Change in the Present Value of Obligation

₹ in million

Particulars	Year Ended March 31, 2011	
	Funded Scheme	Non-Funded Scheme
Present Value of Defined Benefit Obligation as at beginning of the period	235.37	238.73
Interest Cost	19.42	19.69
Current Service Cost	8.63	6.73
Benefits Paid	(128.37)	(103.77)
Actuarial (gain) / loss on Obligations	9.85	25.59
Present Value of Defined Benefit Obligation as at the end of the period	144.89	186.97

B. Changes in the Fair Value of Plan Assets (For Funded Scheme)

₹ in million

Particulars	Year Ended March 31, 2011
Present Value of Plan Assets as at beginning of the period	263.91
Expected Return on Plan Assets	15.57
Contributions	8.79
Benefits Paid	(128.37)
Actuarial gains / (losses)	–
Assets Distributed on Settlement	–
Fair Value of Plan Assets As at end of the period	159.90

C. Reconciliation of Present Value of Defined Benefit Obligation and the Fair Value Assets

₹ in million

Particulars	Year Ended March 31, 2011
Present Value of Funded Obligation as at end of the period	144.89
Fair Value of Plan Assets as at end of the period	159.90
Funded Asset recognised in the Balance Sheet	159.90
Included Loan & Advances (Annexure VII)	15.01

D. Amount recognised in the Balance Sheet

₹ in million

Particulars	Year Ended March 31, 2011	
	Funded Scheme	Non-Funded Scheme
Present Value of Defined Benefit Obligation as at the end of the period	144.89	186.97
Fair Value of Plan Assets As at end of the period	159.90	–
Liability / (Net Asset) recognised in the Balance Sheet	(15.01)	186.97

E. Expenses recognized in Income and Expenditure Account

₹ in million

Particulars	Year Ended March 31, 2011	
	Funded Scheme	Non-Funded Scheme
Current Service Cost	8.63	6.73
Past Service Cost	–	–
Interest Cost	19.42	19.69
Expected Return on Plan Assets	(15.57)	–
Curtailment Cost / (Credit)	–	–
Settlement Cost / (Credit)	–	–
Net Actuarial (gain) / Loss recognised in the Period	9.85	25.59
Total Expenses recognised in the Income and Expenditure Account (Annexure XII)	22.33	52.01

F. Actual Return on Plan Assets

₹ in million

Particulars	Year Ended March 31, 2011
Expected Return on Plan Assets	15.57
Actuarial gain / (losses) on Plan Assets	–
Actual Return on Plan Assets	15.57

14. Disclosure as per Accounting Standard 29 regarding Provisions, Contingent Liabilities and Contingent Assets:

₹ in million

Particulars	Non-Performing	Sub-standard	Standard	Others
Opening balance	7584.15	–	475.74	482.12
Add: Provision made	3.55	4.59	69.17	–
Add / (Less): Adjustments	(1615.45)	–	(133.41)	44.89
Closing balance	5972.25	4.59	411.50	527.21

15. The figures of the previous year have been regrouped wherever necessary.

Significant Accounting Policies

ANNEXURE XVIII

1. **Method of Accounting**

   The financial statements are prepared on accrual basis, using the historical cost convention and comply with the applicable accounting standards issued by the Institute of Chartered Accountants of India.

2. **Use of Estimates**

   The preparation of financial statements in conformity with the Generally Accepted Accounting Principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent liabilities on the date of the financial statements. Actual results could differ from those of estimates. Any revision to accounting estimates is recognized prospectively in the current and future periods.

3. **Asset Classification and Provisioning**

   NDDB being a Public Financial Institution follows the guidelines of Reserve Bank of India for asset classification and provision for NPAs is made at the rates approved by the Board.

4. **Income Recognition**

   Interest income on standard assets is recognized on accrual basis.

   Interest income from non performing assets, classified in conformity with the guidelines of Reserve Bank of India applicable to Financial Institutions, is accounted on cash basis.

   Income from Service Charges, Hire Charges and Rent is recognized on proportionate completion basis.

   Dividend income is recognized on receipt basis

   Other income is recognized when there does not exist any material uncertainty as to its ultimate recovery.

5. **Grants**

   a. Grants relating to fixed assets are initially credited to Grant for Fixed Assets under the General Fund. This amount is adjusted against the depreciation charge over the useful life of the assets.

   b. Revenue grants are adjusted in the Income and Expenditure Account.

   c. Grants received for specific projects are credited to the Project Fund and are reduced as and when disbursements for these projects are made.

6. **Research and Development Expenditure**

   Research and Development costs (other than cost of fixed assets acquired) are charged as expenses in the year in which they are incurred.

7. **Employee Benefits**

   The Board has a defined contribution plan for Provident Fund and Superannuation Fund and the Board's contributions thereto are charged to the Income and Expenditure Account.

   Provision for gratuity, leave encashment and post retirement medical benefit scheme being defined benefit plans are made as per actuarial valuation as at the end of the financial year. Further, the Board has participated in Group Gratuity cum Life Assurance Scheme of Life Insurance Corporation of India.

8. **Fixed Assets and Depreciation**

   Each asset costing ₹ 10,000 or less is depreciated at 100 per cent in the year of purchase.

   Depreciation on fixed assets costing more than ₹ 10,000/- each is charged on Straight Line Method basis at the rates fixed by the Board.

   Depreciation is charged for the full year in the year of capitalisation and no depreciation is charged in the year of disposal.

9. **Investments**

   Long term investments are valued as under:

a) Shares in Subsidiaries, Co-operatives and Federations – at cost of acquisition;

b) Debentures / bonds in Government Companies, Financial Institutions and Banks purchased at premium – at face value and those purchased at discount – at cost.

Current investments are valued at lower of cost or market value.

Premium on purchase of debentures / bonds in Government Companies, Financial Institutions and Banks is charged to Income & Expenditure Account in the year of purchase.

Provision for permanent diminution in value of investments is made in the year in which such diminution is assessed.

10. **Inventory**

Inventories of stores and project equipments are valued at cost. Other inventory items are valued at cost or net realisable value, whichever is lower. Provision for obsolescence is made, wherever necessary.

11. **Foreign Currency Transactions**

Transactions in foreign currencies are recorded at the exchange rate prevailing on the date of the transactions.

Monetary items denominated in foreign currency and outstanding at the Balance Sheet date are translated at the exchange rate prevailing at the year-end.

Non-monetary items denominated in foreign currency are carried at the exchange rate in force at the date of the transaction.

Exchange differences arising on foreign currency transactions are recognised as income or expense in the period in which they arise.

12. **Sales**

Sales are accounted for on transfer of substantial risk and rewards, which normally coincides with delivery of goods and booked net off sales tax.

13. **Taxation**

Deferred Tax Liabilities are reckoned for all timing differences that have arisen upto the end of the accounting year and that are expected to reverse in the subsequent accounting periods.

Deferred tax assets are recognized wherever considered prudent.

14. **Leases**

Lease arrangements where the risks and rewards incident to ownership of an asset vest substantially with the lessor are recognized as operating leases. Lease rent under operating leases are recognized in the income & expenditure account with reference to lease terms.

15. **Impairment of Assets**

In accordance with 'AS-28 Impairment of Assets' as issued by the Institute of Chartered Accountants of India, an asset is treated as impaired when the carrying amount exceeds its recoverable value.

Impairment loss is charged to the Income and Expenditure Account in the year in which an asset is identified as impaired.

Impairment loss recognized in the prior accounting period is reversed if there has been a change in the estimate of recoverable amount.

On behalf of the Board

Y Y Patil	**N V Belavadi**	**Amrita Patel**
Deputy General Manager (Accounts)	Executive Director	Chairman

Anand, August 5, 2011

NDDB Officers

Head Office, Anand

Chairman & Chief Executive

Amrita Patel, BVSc & AH

Executive Director

N V Belavadi, EXE. DIR,
BVSc

Ravi Shankar, EXE. DIR,
B Sc, PGDRM

Chief Executive's Office

S Rajeev, SR MGR,
B Tech (Industrial Engg), PGDRM

T V Balasubramanyam, DY MGR,
B Com, LLB (Gen)

Project Finance & Appraisal

N K Ramachandran, SR GEN MGR,
B Sc (Agri), MBA (Fin & Mktg),
Dipl (Exp-Imp Mgmt)
(Addl. Charge Internal Audit)

M C Shah, SR MGR,
B Sc (DT), PGDRDM

K Manek, SR MGR,
B Com, AICWA

P C Patnaik, SR MGR,
M Com

Chintan Khakhariawala, DY MGR,
B E (Chem), MBA (Fin)

P V Subrahmanyam, DY MGR,
BBM, MBA (Fin)

Swati Srivastav, DY MGR,
B Sc (Phy), PGDRM

Cooperative Services

NDDB, Anand

G Chokkalingam, DY GEN MGR,
M Sc (Agri Stats), PGD (Agri Stats)

Sajal Biswas, SR MGR,
B Sc (DT), PGDIM

Hemali H Mehta, DY MGR,
B E (Power Elect.), MBA (Fin)

New Generation Cooperatives

Bhuj

Chandrakant C Vegda,
DY MGR, B A (Eng Lit), MSW, PGDCCM

Junagadh

S S Vyas, MGR, B Com,
LLB, MLS

Dhanraj Sahani, MGR,
MBA (Mktg), DPCS

Pretesh Joshi, DY MGR,
B E (Mech), PGDRM

Nidhi Raval, DY MGR,
B Sc (Bot), MSW

Rajni B Tripathi, DY MGR,
B Sc (Bot), MSW, PGDIRPM

Surendranagar

A D Patel, MGR,
B A, LLB (Gen)

NDDB, Delhi

Sriram Singh, DY GEN MGR,
B Tech (Agri Engg), PGDRM, PGDFA

M K Goyal, SR MGR,
B E (Mech)

R Mariappan, SR MGR,
B Sc (Agri)

Seema Mathur, MGR,
M A (Eng)

Rajesh Kumar, DY MGR,
B A (Eco), PGDRM

Rupesh Kumar, DY MGR,
B Sc (Agri), PGDRM

Nidhi Negi, DY MGR,
B Sc, M Sc (Chemistry), PGDRM

Rahul Tripathi, DY MGR,
B Com, MBA (Fin)

New Generation Cooperatives

Chhapra (Saran Siwan)

Sandeep K Yadav, DY MGR
B Tech (EIE), PGDRM

Prashant J Tirkey, DY MGR,
B Sc (Hons), PGDRD

Arbind Kumar, DY MGR,
B Sc (Electro), DIP-TM, MSW

Shelly Topno, DY MGR,
B A (Hons), M A (SW)

Dhaulpur

Sandip Srivastava, DY MGR,
B Tech (Chem Engg)

Hrishikesh Kumar, DY MGR,
B Sc (Phy), PGDRM

Etawah

S B Phatakwala, DY GEN MGR,
M Sc (Stats)

Dhanraj Khatri, DY MGR,
B A, MA (SW)

Viney Rao, DY MGR,
B Sc, PGDRM

Milan Kumar Mishra, DY MGR,
B Com, PGDDM

Gurgaon

Dharmendra Shastri, MGR,
B Tech (Agri Engg), LLB

Dheeraj Kumar Khare, DY MGR,
B Sc (EEM), MBA (Mktg)

Gwalior

Sandeep Bharti, DY MGR,
B Sc, PGDDM

Karnal

S K Attri, MGR,
B Tech (DT)

Jagdishpur

Titiksha Shukla, DY MGR,
B A (Political Sci), MA (SW)

Shruti Pandey, DY MGR,
B Sc (Maths), MBA (RD)

Pir Panjal Milk Producers Company Limited, Jammu

Sandeep Dheeman,
DY MGR, B Com, M A (SW)

Rae Bareli

G C Taneja, MGR,
B Sc, DME

A S Bhadauria, DY MGR,
B E (Food Engg & Tech)

Sanjay Kumar Yadav, DY MGR,
B Sc (Phy, Maths), MBA (RD)

NDDB, Bangalore

B S Khanna, GEN MGR,
B Sc (Hons) (Agri & AH), PGDRDM

M S Sayed, DY GEN MGR,
B E (Civil), M E (Env Engg)

P R Shankar Mohan, MGR,
B A (Eco), B L

New Generation Cooperatives

Tadepalligudem

M Govindan, SR MGR,
M A (SW)

A Krithiga, DY MGR,
B Sc (Agri)

Latha Siripurapu, DY MGR,
B Com, PGDBA (Fin)

NDDB, Mumbai

A S Hatekar, SR MGR,
M Sc (Agri)

NDDB, Buldana

Abhay Muley, MGR,
B Tech (DT)

New Generation Cooperatives

Nanded

Satish K Boywar, DY MGR,
B E (Chem)

Niranjan M Karade, DY MGR,
B E (Mech), PGDRM

Indunath Chaudhary,
DY MGR, B Tech (Chem Engg), PGDRM

NDDB Officers

NDDB Cell Office, Patna

A K Srivastava, SCI III,
M Sc (Agri)

M K Rajput, DY MGR, B Sc,
B E (Food Engg & Tech)

Quality Assurance

Narinder Sharma, SR MGR,
M Sc (Dairying), PGDMM

Sunil Bakshi, SR MGR,
M Sc (Dairy Bacteriology)

A K Jain, MGR,
B Sc (DT), M Sc (Dairying)

NDDB, Bangalore

S Mukhopadhyay, SR MGR,
B Tech (Agri Engg), M Tech, (D & F Engg),
PGDRDM

S D Jaisinghani, SR MGR,
B Sc (DT)

Posted at Mother Dairy Delhi

SK Bhalla, SR GEN MGR,
BVSc, M Sc (Dairy Sci), Ph D (Dairy Micro)

Product & Process Development

Samit Dutta, SCI II,
M Sc (Dairy Chem), MBA (Oprn Mgmt)

M G Haridas, SCI I,
B Tech (Dairy Tech), M Sc (Dairying)

Jitender Singh, SCI I,
B Sc, M Sc (Micro), Ph D (Dairy Micro)

Peeyush Pandit, SCI I,
B Tech (Dairy Tech), M Tech (Dairy Tech)

Brijesh D Desai, SCI I,
B Tech (Dairy Tech), M Sc (OR)

Planning

S K Dalal, DY GEN MGR,
BVSc & AH, M Sc (Anim Sci), PGDRDM

R V M Mohan Kumar,
DY GEN MGR, M Sc (Stats), PGDRDM

A Rajasekaran, SR MGR,
M Sc (Agri), PGDRM

Pramod N Menon, MGR,
B Com, MBA (Fin)

Sai Krishna N, MGR,
B Sc (Agri), M Sc (Agri Extn),
Fellow (IRMA)

Ashutosh K Mishra, DY MGR,
B Sc (E&I), PGDBA (Fin)

Sumit Vij, DY MGR,
B Sc (Chem), PGDDM

Kuldeep Borah, DY MGR,
B Sc (Biotech), PGDDM

Rohan Jain, DY MGR,
B Tech (Elect Engg), PGDRM

Nishi K Ranjan, DY MGR,
B Sc (Chem), PGDM

Kahnu C Behera, DY MGR,
B Sc (Agri), PGDRM

Project Coordination Unit

G G Koppa, HEAD - PCU,
B Sc, M Sc (Agri), Fellow, (IRMA)

Human Resource Development

Mohini Tilwani, HEAD-HRD,
B Sc, MLW, LLB, PGD-HRD

Y M Patel, SR MGR,
B Sc (DT)

Rajesh Gupta, SR MGR,
B Sc, MSW

Jaidev Biswas, SR MGR,
B Sc (Hons) (Chem), PGDRD

S B Padhiar, MGR,
B A (Socio)

S S Gill, MGR,
B Sc (Geo), MSW, Ph D (SW),
Dipl (Trg & Dev)

K M Shah, MGR,
B Com, LLB (Gen), LLB (Spl), DTP

Anindita Baidya, MGR,
B Sc (Hons) (Bot), PGDRD

Mohan Chander J, DY MGR,
B E (Mech), M Tech (HRD)

Minal Fredrick Vaz, DY MGR,
B A, MSW

Rutu Prasad Sagariya, DY MGR,
B Sc (Agri), PGDDM

Mohd. Rashid, DY MGR,
B A, PGDDM

BJ Hazarika, DY MGR,
B Sc (Stats), MBA

Sukhada Sharma, DY MGR,
B Sc, M Sc (Genetics), MBA

Thungayya Saliyan, DY MGR,
B A, MSW, PGD-HRM

Mansinh Institute of Training, Mehsana

S N Rewatkar, DY GEN MGR,
B E (Mech), M Tech (D & F Engg)

Bhagyawan, SR MGR,
DME

Sunil Kumar Mehta, MGR,
B Tech (DT), PGDM (Agri Buss)

Regional Demonstration & Training Centre, Erode

D Narayanasamy, PRINCIPAL,
BVSc

TP Aravinth, MGR,
BVSc & AH, MVSc (Vet Micro)

Regional Demonstration & Training Centre, Jalandhar

P K Mehta, SR MGR,
M Sc (Dairying)

N K Saxena, SR MGR,
M Sc (Zoo), Dipl (Fisheries Sci)

Srikant Sahoo, MGR,
B Sc, BVSc, PGDM

Manoj Kumar Gupta, DY MGR,
BVSc & AH, MVSc

Deepak Bhatia, DY MGR,
BVSc & AH, MVSc (Vet Micro)

Regional Demonstration & Training Centre, Siliguri

S K Ray, SR MGR,
B Sc (Agri)

Samata Maji, DY MGR,
BVSc & MVSc (Vety Gynaec & Obst)

Information & Communication Technologies

Salegram Padhee, GEN MGR,
M Sc (Phy), PGDRM

K S Desai, DY GEN MGR,
B E (Mech), PGDBA

M R Mehta, SR MGR,
M Sc (Stats), Dipl (Comp Sci)

S Karounanithy, SYSTEMS ANALYST,
DEE

R K Jadav, MGR,
B Sc (Phy), MCA

Vipul Gondaliya, MGR,
B E (Electronics)

Vijay Bhatt, DY MGR,
B E (CSE), M Tech (CSE)

Rakesh R Maniya, DY MGR,
B E (ECE)

Himmat K Saresa, DY MGR,
B E (IT)

Ravi Kumar V, DY MGR,
B E (CSE)

NDDB, Bangalore

B Senthil Kumar, MGR,
B Sc, MCA, PGDCA

Sectoral Analysis & Studies

T N Datta, DY GEN MGR,
M A (Eco), MRP, Ph D (Eco)

S Mitra, SR MGR,
B Sc (Elect Engg), PGDRM

M Jayakrishna, MGR,
M A (Eco), M Phil (Eco), Ph D (Eco)

J G Shah, MGR,
B E (Elect), MBA, Ph D (Mgmt),
Dipl (Exp Mgmt)

Anil P Patel, MGR,
M Sc (Agri), PGDMM

A K Dixit, DY MGR,
B Sc (Agri), M Sc (Livestock Eco),
Ph D (Agri Eco)

Mena H Pagadhar, ANALYST,
B Sc, MCA

NDDB Officers

V Padmanabha Reddy, DY MGR,
B Sc, M Sc (Geo)

Biswajit Bhattacharjee, DY MGR,
B Sc (Agri), M Sc (Agri Eco)

K B Vedamurthy, DY MGR,
B Sc (Agri), M Sc, Ph D (Dairy Eco)

Mukesh R Patel, DY MGR,
B Sc, M Sc (Agri)

Darsh K Worah, DY MGR,
B Sc (Micro), M Sc (Env Sci), Cert GIS

NDDB, Delhi

Arun Chandhok, MGR,
B Sc, PGD (IRPM), DCS

Arvind Kumar, DY MGR,
B Sc (Agri), M Sc (Agri Mktg & Coopn)

Sarvesh Kumar, DY MGR,
B Sc (Agri & AH), M Sc (Dairy Eco),
Ph D (Dairy Eco)

Ashutosh Singh, DY MGR,
M A (Eco), Ph D (Eco)

NDDB, Bangalore

G C Reddy, SR MGR,
M Sc (Stats), M Phil (Populn Studies)

M N Sathish, MGR,
M Sc (Stats)

Halanayak A L, DY MGR,
B Sc (Agri Mktg & Coopn), M Sc (Agri Eco)

NDDB, Mumbai

Amit K Saha, DY MGR,
B Sc (Agri), M Sc (Dairy Eco),
Ph D (Dairy Eco)

NDDB, Kolkata

Mousumee S (Biswas), SR MGR,
M A (Geog), MRP

Dora Saha, DY MGR,
M Sc (Eco), M Phil (Eco)

Purchase

B Dutta Biswas, SR MGR,
B E (Chem), PGDCE

T S Shah, SR MGR, DME,
B E (Mech), PGDBA

T N Rao, SR MGR,
B Sc, PGDMM, LLB (Spl)

B Sekar, SR MGR,
M Com, PGDMM

H P Rathod, SR MGR,
IDD (DT)

Sougata Bhar, MGR,
B E (Mech)

Nilesh K Patel, DY MGR,
B E (Prodn)

Bhadrasinh J Gohil, DY MGR,
B E (Mech)

NDDB, Mumbai

Amol M Jadhav, DY MGR,
B E (Mech)

Public Relations & Communications

Tapan Jha, HEAD-CORP. COMM,
B A (Hons), MBA (Mktg)

R K Makrandi, GEN MGR,
B Sc (DH)

Abhijit Bhattacharjee, SR MGR,
B Sc, LLB, PGDRD

Basuman Bhattacharya, MGR,
B Sc (Bot), M A (Journalism),
Dipl in Social Comm (Film Making)

Divyaraj R Brahmbhatt, DY MGR,
BA (Eng), PGDBA, MBA (PR)

Engineering Services

O P Nema, DY GEN MGR,
M Tech (D & F Engg)

R S Mandloi, DY GEN MGR,
B E (Civil) Cert (PERT/CPM)

S S Hardaha, SR MGR,
B E (Mech)

P V Nadgouda, SR MGR,
B E (Civil), PGDM (Mktg)

A K Chakraborty, SR MGR,
B Tech (Agri Engg),
M Tech (Industrial Mgmt)

J S Gandhi, SR MGR,
B E (Civil)

V E E Sundar, SR MGR,
B Sc (Applied Sci), AMIE (Elect)

Shashi Kumar, SR MGR,
B Sc (Elect)

G Rajagopal, SR MGR,
B E (Elect)

Santosh Singh, SR MGR,
B Tech (Civil)

S Goswami, SR MGR,
B E (Mech), PGDRDM

B U Solanki, SR MGR,
B E (Civil)

A B Ghosh, SR MGR,
M Tech (D & F Engg)

U B Das, SR MGR,
B E (Mech)

K J J Ahmed, SR MGR,
B E (Elect)

V Srinivas, SR MGR,
B E (Civil)

S Chandrasekhar, SR MGR,
B E (Mech)

S Talukdar, SR MGR,
B E (Mech), MIE

S K Nasa, SR MGR,
B E (Civil)

P K Pundir, SR MGR,
B Tech (Elect)

R S Sisodiya, MGR,
DME

R Soundhararajan, MGR,
AMIE (Mech)

S K Sharma, MGR,
DCE

R B Shah, MGR,
DEE

Gopal K Narang, MGR,
B E (Civil), DIP-MCM

Saumitra Das, MGR,
B E (Civil)

Pradip Layek, DY MGR,
B Tech (Elec)

Rupesh A Darji, DY MGR,
B E (Elect)

Dhaval A Panchal, DY MGR,
B E (Elect)

Kousik Roy, DY MGR,
B Tech (Elec)

Nikesh V More, DY MGR,
B E (ICE)

Vipul L Solanki, DY MGR,
B E (ECE)

Shreyas Jain, DY MGR,
B E (Elect)

Manish Sharma, DY MGR,
B Tech (Elect), MBA (HRD)

Aditya Sharma, DY MGR,
B Tech (Civil), M Tech (CPM)

Javed Iqbal, DY MGR,
B Tech (Civil), M Tech (CPM)

U Sundara Rao, DY MGR,
DEE, B E (EEE)

Dharmendra K Behera, DY MGR,
B E (Mech), MBA (Mktg & Syst),
Dip Printing

Prakash A Makwana, DY MGR,
B E (Elect)

Banas Dairy Project-III, Palanpur

S S Sinha, SR MGR,
B E (Elect)

Chandra Prakash, SR MGR,
B Tech (Mech)

Manoj Gothwal, DY MGR,
B E (Civil)

Bidaj

Dhiraj B Tembhurne,
DY MGR, B E (Civil)

Cattle Feed Plant, Katarva

Bhushan P Kapshikar, DY MGR,
B E (Civil)

Abhishek Gupta, DY MGR,
B E (Mech)

NDDB Officers

Sabar Dairy Project Site, Himatnagar

Shailendra Mishra, MGR,
Dip (Civil Eng & Const Tech)

Shailesh S Joshi, DY MGR,
B E (Mech)

Rohtak Dairy Expansion Project, Rohtak

Sachin Garg, DY MGR,
B E (Elect), PGDBA

NDDB, Bangalore

S B Bose, SR MGR,
B E (Mech), PGDRDM

G S Sarvarayudu, SR MGR,
B Tech (Civil)

Pradeep Veeramachaneni, DY MGR,
B E (Mech), M E (CAD/CAM)

Rabindra K Behera, DY MGR,
B E (Civil)

Channarayapatna Dairy Project, Hassan

Shashikumar B N, SR MGR,
B E (EEE), PGDRDM

Tiruvanamalai Dairy Project, Tiruvanamalai

P Balaji, DY MGR,
B E (Civil)

Yelahanka Dairy Project, Bangalore

Arindam Mallick, DY MGR,
B E (Elect)

Cattle Feed Plant, Hassan

Sudhir Kumar Gangal,
DY MGR, DCE (Civil), B E (Civil)

Bhopal Dairy Project, Bhopal

Amit Shukla, DY MGR,
B E (Civil)

Kolhapur Cattle Feed Plant Expansion Project

K S Patel, MGR,
B E (Civil)

D B Lalchandani, DY MGR,
B E (Mech), PGDIM

NDDB, Kolkata

Biharsharif Project Site, Biharsharif, Nalanda

P Saha, SR MGR,
B Tech (Agri Engg)

S C Surchowdhury, SR MGR,
B E (Elect)

Vinay I Kulkarni, MGR,
B E (Civil)

Jasdev Singh, DY MGR,
B Tech (Elec), M Tech (Power Engg)

Prasanta Bhattacharya, DY MGR,
B E (Civil), PGDBA

Hajipur Dairy Project Site, Hajipur

Anjani Kumar, DY MGR,
B E (Civil)

Manoj Kumar, DY MGR,
B Tech (Manufac Engg)

Animal Breeding

K R Trivedi, GEN MGR,
BVSc & AH, MVSc, Fellow (IIM-B)

M Namjoshi, DY GEN MGR,
MVSc (Anim Brdg)

M U Siddiqui, DY GEN MGR,
BVSc & AH, MVSc (Vety Obst & Gynaec)

D G Raghupathi, SR MGR,
BVSc, PGDRDM

G Kishore, SR MGR,
BVSc, M Sc (Dairying, Ani Gen & Brdg)

M Swaminathan, SR MGR,
BVSc, M Sc (Anim Sci)

R K Srivastava, MGR,
B Sc, PGDCA, CIC

Santosh K Sharma, DY MGR,
BVSc & AH, PGDRM

Ranmal M Ambaliya, DY MGR,
B.E (Comp Engg)

Progeny Testing Project

Ahmedabad

S Gorani, SR MGR,
BVSc, MVSc
(Vety Gynaecology & Obstetrics), PGDMM

N G Nayee, MGR,
BVSc, MVSc (Anim Brdg)

Bangalore

R Kasiraj, DY GEN MGR,
BVSc, FRVCS

L C Nunes, SR MGR,
BVSc

Bikaner

R D Baghel, SR MGR,
BVSc & AH

Meerut

R O Gupta, SR MGR,
MVSc (Med)

V P Bhosale, MGR,
BVSc & AH, MVSc (Med)

Narayan K Nanote, MGR,
Dip in Agri, BVSc & AH

M L Gawande, DY MGR,
BVSc, MVSc (Vet Med)

Mehsana

Parag R Pandya, MGR,
BVSc & AH, MBA (HRM)

Rohtak

Sujit Saha, MGR,
B Sc (Agri), M Sc (Dairying),
Ph D (Ani Gen & Brdg)

Vishal Kumar, DY MGR,
BVSc & AH, MVSc (Vet Sur)

Pondicherry

M Kunju, DY GEN MGR,
BVSc, PGDBA, MBA

V K Upadhyay, SR MGR,
M Sc (Agri)

A Sudhakar, DY MGR,
BVSc, MVSc, Ph D (Ani Brdg)

Animal Health

G K Sharma, GEN MGR,
BVSc & AH, MVSc (Bacteriology)

A V Hari Kumar, MGR,
BVSc & AH, MVSc (Micro)

Indian Immunologicals Limited, Hyderabad

S K Rana, SCI III,
BVSc & AH, MVSc (Micro), Ph D (Micro)

F Mukherjee, SCI III,
BVSc & AH, MVSc (Vety Micro)

Ponnanna N M, SCI I,
B Sc (Agri), M Sc (Micro)

Animal Nutrition

M R Garg, GEN MGR,
M Sc (Anim Nutn), Ph D (Anim Nutn)

A K Garg, SR MGR,
M Sc (Agri)

A K Verma, SR MGR,
B Tech (Agri Engg)

Digvijay Singh, MGR,
M Sc (Agri), Ph D (Agro)

S S Nyamagonda, MGR,
M Sc (Agri)

BM Bhanderi, SCI I,
BVSc, MVSc (Anim Nutn)

Pankaj L Sherasia, SCI I,
BVSc, MVSc (Anim Nutn)

Saikat Samanta, DY MGR,
BVSc & AH, MVSc (Anim Nutn)

Pritam K Saikia, DY MGR,
BVSc & AH, MVSc (Anim Nutn)

Mayank Tandon, DY MGR,
B Sc, M Sc Ag (Anim Nutn),
Ph D (Anim Nutn)

Sachin K Shelke, DY MGR,
BVSc & AH, MVSc, Ph D (Anim Nutn)

NDDB Officers

Dipak Sinha, DY MGR,
BVSc & AH, MVSc, Ph D (Anim Nutn)

Bhupendra T Phondba, DY MGR,
BVSc & AH, MVSc, Ph D (Anim Nutn)

Palanpur

N R Ghosh, DY MGR,
BVSc & AH, M Sc (Anim Nutn)

Pankaj Singh, DY MGR,
M Sc (Agri)

NDDB, Bangalore

Romy Jacob, MGR,
M Sc (Agri)

Chittoor

B V Maheshkumar, MGR,
M Sc (Agri)

Dhaulpur

Rajesh Sharma, MGR,
M Sc (Agri), Ph D (Agro)

Gajraula

T C Gupta, MGR,
B Sc (Hons), M Sc (Agri), Ph D (Agro)

Jagdishpur

Sabyasachi Roy, DY MGR,
B Sc (Agri) Hons, M Sc (Agri Extn Edn),
PGDRD

Centre for Analysis & Learning in Livestock & Food

D K Sharma, DY GEN MGR,
M Sc (Dairy Micro),
Ph D (Dairy Bacteriology)

Rajiv Chawla, SCI III,
B Sc, M Sc (Anim Nutn), Ph D (Anim Nutn)

K Bhattacharya, MGR,
BVSc, MVSc (Micro)

Harshendra Singh, MGR,
B E (Elect & Power Engg), MBA (Mktg)

Kuldeep Agrawal, SCI II,
B Sc, M Sc (Food Tech), Ph D (Food Tech)

S K Gupta, SCI I,
M Sc (Agri)

Swagatika Mishra, SCI I,
B Sc (Bot), M Sc (Micro)

Nandini Sen, SCI I,
B Sc, M Sc (Micro)

Jigar D Kansara, SCI I,
BVSc & AH, MVSc (Ani Breed & Genetics)

Ushma K Soni, SCI I,
B Sc (Biochem), M Sc (Biochem)

Administration

M N Buch, GEN MGR,
B Sc, LLB, MLW

K L Dholakia, SR MGR,
B Sc, LLB

S K Kothari, MGR,
M A (Hindi), PGDM (PM & LW)

Gulshan Kumar Sharma, MGR,
B A, Dipl (Hotel Mgmt)

D C Parmar, DY MGR,
M Com, LLB (Gen), MSW, PGDHRM

R P Dodamani, DY MGR,
B Com, LLB

NDDB, Delhi

Ananthapadmanabhan S N,
SR MGR, B Sc, BGL, PGD (PM & IR),
PGDRDM

NDDB, Mumbai

K R C Pillai, DY MGR,
M A (Eng), PGDPM

Accounts

Y Y Patil, DY GEN MGR,
B Com, LLB, PGDRDM, ICWA (Inter), SAS (Comm)

V K Ladhani, SR MGR,
M Com, SAS (Comm), ICWA (Inter)

S Regupathi, SR MGR,
M Com, ICWA, PGDRDM

C M Jai Shankar, MGR,
B Com, CA (Inter)

Chirag K Sevak, DY MGR,
B Sc (Maths), PGDCA, PGDTP, ICWA

Vinai Gupta, DY MGR,
B Com, ICWA

Kalpeshkumar J Patel, DY MGR,
BBA, M Com, ICWA

Piyush H Patel, DY MGR,
B Sc (Maths), DTL, ICWA

T Subrahmanyam, DY MGR,
B Com, MBA (Fin), ICWA

Vipin Namdeo, DY MGR,
M Com, PGDCA, ICWA

P G Mansuri, DY MGR,
M Com, CA

Legal

P Sri Rama Murthy, SR MGR,
MA, LLM

Venu Samudrala, DY MGR,
LLB

Dairy Projects

Jharkhand Dairy Project, Ranchi

A K Aggarwal, SR MGR,
M Com

Jasbir Singh, SR MGR,
B Tech (Agri Engg),
M Tech (Post Harvest Tech)

B N Singh, SR MGR,
B A, Dipl (Coop Mgmt)

S K Parida, MGR,
B E (Elect)

Supriya Sarkar, MGR,
B Sc, MCA

Darpan Shah, DY MGR,
B Com, MBA

Chaitali Chatterjee, DY MGR,
B A, M A (Comparative Literature)

Vishal Kumar Mishra, DY MGR,
B A, M A (SW)

Ongole Dairy Project, Ongole

T T Vinayagam, MGR,
B E (Agri), PGDRM

On Deputation

Jalgaon Milk Union

R S Lahane, DY GEN MGR,
B Tech (Chem), PGDRM

On Secondment

West Assam Milk Producers' Coop. Union Ltd., Guwahati

M Thakur, SR MGR,
BVSc & AH, MVSc (Surgery)

A Anand, SR MGR,
M Sc (Dairy Eco), Ph D (Dairy Eco)

P K Bagchi, SR MGR,
B E (Mech), PGDRDM

R Majumder, MGR,
B Sc (Agri), PGDRM

Tusar Kanti Patra, MGR,
B Com, ICWA, CA

Suresh Pahadia, DY MGR,
B Tech (Dairy Tech), M Sc (Dairying)

Shantalembi Lisham, DY MGR,
B A (Eng), M A (SW)

Limlenlal Mate, DY MGR,
B Sc, PGDDM

Abbreviations

EXE DIR	: Executive Director
SR GEN MGR	: Senior General Manager
GEN MGR	: General Manager
DY GEN MGR	: Deputy General Manager
SR SCI	: Senior Scientist
SR MGR	: Senior Manager
SCI III	: Scientist III
MGR	: Manager
SCI II	: Scientist II
DY MGR	: Deputy Manager
SCI I	: Scientist I
SAG	: Sabarmati Ashram Gaushala

Design: Corporate Communication Services (I) Pvt Ltd • Photography: Rajendra Shaw • Printed at New Jack Printing Press Pvt Ltd

Acknowledgement

- District Cooperative Milk Producers Unions, Federations and participating State and Union Territory Governments
- Government of India, especially the Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, and the Planning Commission
- Central Institute for Research on Cotton Technology (CIRCOT)
- National Institute of Immunology, New Delhi
- Pramukh Swami Medical College, Karamsad, Gujarat

National Dairy Development Board

Head Office
PB No 40, Anand 388 001
Telephone: (02692) 260148/260149/260160
Fax: (02692) 260157
E-mail: anand@nddb.coop

Offices

PB No 9506, VIII Block,
80 Feet Road, Koramangala,
Bangalore 560 095
Telephone: (080) 25711391/25711392
Fax: (080) 25711168
E-mail: bangalore@nddb.coop

DK Block, Sector II,
Salt Lake City, Kolkata 700 091
Telephone: (033) 23591885/23591886
Fax: (033) 23591883
E-mail: kolkata@nddb.coop

PB No 9074, Western Express Highway, Goregaon (East),
Mumbai 400 063
Telephone: (022) 26856675/26856678
Fax: (022) 26856122
E-mail: mumbai@nddb.coop

Plot No A-3, Sector-1,
Noida 201 301
Telephone: (0120) 4514900
Fax: (0120) 4514957
E-mail: noida@nddb.coop