National Dairy Development Board

ANNUAL REPORT
2013 • 2014

CONTENTS

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(As on 31 March 2014)

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Chairman

Dr. Amrita Patel*
Chairman

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Joint Secretary
(Cattle & Dairy Development)
Department of Animal Husbandry,
Dairying & Fisheries
Ministry of Agriculture
Government of India

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Expert

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Rajasthan Co-operative
Dairy Federation Ltd.
Jaipur

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Maharashtra Rajya Sahakari Dudh
Mahasangh Maryadit
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Chairman
Karnataka Co-operative Milk
Producers' Federation Ltd.
Bangalore

Shri Dilip Rath
Managing Director

Shri Sangram Chaudhary
Executive Director

**Till February 2014*
***Till February 2014*
**** Till April 2013*

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

JALGAON JILHA SAHAKARI DUDH UTPADAK SANGH MARYADIT, JALGAON

Shri Sangram R. Chaudhary
Chairman

Dr. SK Dalal
Member

Shri Anil S. Hatekar
Member

Shri SN Patil
Co-opted Member

Smt. Geeta S. Chaudhari
Co-opted Member

Smt. AA Barhate
Co-opted Member

Shri RS Patil
Co-opted Member

Shri MM Patil
Co-opted Member

Shri RS Lahane
Invitee

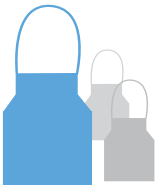
Shri Manoj Limaye
Member-Convenor

Shri Pranab Mukherjee, President of India presented the Indira Gandhi Rajbhasha Puraskar to Dr. Amrita Patel, former Chairman of NDDB

THE YEAR IN RETROSPECT

India continued to be the largest milk producing nation in 2013-14 with an anticipated milk production of 137.6 million tonnes. The country's share in world milk production stands at 18 per cent.

INDIA CONTINUED TO BE THE **LARGEST MILK PRODUCING NATION** IN 2013-14



137.6

MILLION TONNES MILK PRODUCTION

18

PER CENT, THE COUNTRY'S SHARE IN WORLD MILK PRODUCTION

DOMESTIC DAIRY SCENE

India continued to be the largest milk producing nation in the world, with milk production anticipated to be 137.6 million tonnes in 2013-14 – an increase by about 3.9 per cent over the previous year. The estimated per capita availability of milk increased to 302 grams per day which is more than the world average of 294 grams per day. Per capita availability of milk in developed countries is estimated at 831 grams per day and in Asia the same is estimated at 186 grams per day.

The dairy cooperatives procured about 12.5 million tonnes of milk as compared to 12.2 million tonnes in the previous year, registering a growth of 2.5 per cent. Liquid milk marketing by the cooperatives stood at 11 million tonnes as compared to 10.4 million tonnes in the previous year – an increase of about 5.8 per cent.

The wholesale price indices of fodder and cotton seed oil cakes increased by more than 10 per cent during the year. To offset the high input cost for milk production the cooperatives paid a higher procurement price to milk producers.

THE INTERNATIONAL DAIRY SITUATION

FAO reported 0.7 per cent increase in milk production from 762 million tonnes in 2012 to 767 million tonnes in 2013. International prices of dairy commodities which were relatively high during the early part of the financial year, declined during middle of the year but increased substantially by the end of the year.

With reduced availability of milk powder stocks due to drought in Oceania, price of milk powder registered an increase of more than 40 per cent during the year as compared to previous year. Taking advantage of high prices and low stock levels, India exported about 0.17 million tonnes of milk powder, including milk powder equivalent of casein.

STRENGTHENING COOPERATIVE BUSINESS

NDDB CONTINUES TO SUPPORT COOPERATIVE STRUCTURES AT EVERY LEVEL AND ASSIST DAIRY COOPERATIVES AND OTHER PRODUCER COMPANIES TO REMAIN COMPETITIVE IN THE MARKET, THROUGH BETTER GOVERNANCE AND MANAGEMENT.

Community milking parlour a "boon" for women dairy farmers

4.38

MILLION WOMEN MEMBERS IN DAIRY COOPERATIVES ACROSS THE COUNTRY AS ON MARCH 2014

NDDB's commitment to provide sustainable livelihoods to millions of small and marginal dairy farmers through strengthening of dairy cooperatives continued. Various training and capacity building programmes were organised for milk producers on improved practices in dairying and better animal management. To create a pool of trained professional manpower to manage the dairy cooperatives, union personnel were trained on fair and transparent techniques in milk procurement, principles of cooperation, development of extension skills and business appreciation.

Improvement of governance in cooperatives remains high on the priorities of NDDB. Board members from different milk unions of the country were oriented to help improve governance of their cooperatives.

Active participation of women in all spheres of dairy cooperative business and governance is central to dairy development in the country. Women were encouraged to take up leadership roles in the management committee of Dairy Cooperative Societies (DCS) and boards of milk unions. During 2013-14, the number of all-women DCS increased to 26,700 registering an annual growth of 10 per cent. As on March 2014, there were 4.38 million women members in dairy cooperatives across the country.

During the year, the cooperative milk unions covered about 0.16 million village dairy cooperative societies with a cumulative membership of 15.4 million milk producers.

The cooperative milk unions procured an average of 34.2 million kg of milk per day compared to 33.5 million kg in the previous year recording a growth of about 2.1 per cent. The sales of liquid milk reached 29.4 million litres per day, showing a growth of 5.8 per cent over the previous year.

SOCIAL & ECONOMIC IMPACT THROUGH DAIRYING

Dairy cooperatives in India have strived to provide better returns to milk producers from milk production, through their efforts in reducing costs and improving efficiencies along the supply chain. Apart from providing linkage to the consumer market, they have also provided services for productivity enhancement in the areas of animal breeding and nutrition alongwith efforts in building capacity of producers.

By pooling small quantities – as little as one litre of milk from millions of milk producers and providing an assured market at a competitive price for the milk collected, dairy cooperatives owned and controlled by milk producers have provided livelihood opportunities to rural households and helped avoid exploitation from opportunistic middlemen. With cash flows becoming more regular and reliable, milk production is changing from being a subsidiary economic activity to a major economic activity for many rural households and in some cases the main source of income.

Institutions owned by milk producers have facilitated their

IN ARAVALI REGION, MILK PROCUREMENT OF NEWLY FORMED WOMEN DCS AT VADRI HAS INCREASED FROM **69.8 KG TO 184.8 KG** PER DAY AFTER 111 WOMEN MEMBERS ENROLLED IN DCS AND ASSUMED THE RESPONSIBILITY OF MANAGING DCS

members gain access to poverty-reduction programmes such as easy credit and subsidies to purchase dairy animals etc. which have helped landless and marginal households acquire income generating productive assets. Increased production of milk has also improved nutritional status of the rural people through greater retention of milk for household consumption.

Involvement of women milk producers in the affairs of dairy cooperatives merits greater attention to promote inclusive growth in dairying. Despite their substantial role in milk production, women's participation in cooperatives are limited due to prevailing social norms and a patriarchal family system in many parts of India. Even today the women membership in dairy cooperatives across India is only about 30 per cent. Women's involvement in governance of dairy cooperatives continue to be limited.

Where women were involved in dairy cooperatives, they have benefited in following ways:

- Increased their confidence in articulating needs and concerns
- Improved their ability to play a greater role in decision making
- Enhanced sense of self-reliance in economic aspects including contributing to the education of their children
- Increased opportunities for social interaction and knowledge sharing

NDDB's focus on enhancing women's leadership skills, promoting thrift and credit groups as well as health, education and economic activities that contribute to women's empowerment through women DCS continued during the year.

CASE STUDIES

Women Dairy Cooperative Society, Vadri, Dist: Sabarkantha, Gujarat

Vadri village in Aravali region is a tribal village populated by Dungri Grasia tribe. The tribe rears cattle but has never been able to sell milk due to lack of access to the market. Under National Dairy Plan Phase I (NDP-I), an all-women DCS was organised and 111 women members were enrolled in the DCS. The women assumed the responsibility of managing the DCS and milk procurement has increased from 69.8 kg to 184.8 kg per day. Tinaben Kabjibai, a member of the society says, "Earlier I used to work as a daily labour and earn ₹ 3,000/- per month but the income was irregular. I have now taken to dairying and earn up to ₹ 6,000/- per month and simultaneously I can spend more time with my family."

Dairy Cooperative Society, Lammey, Dist: Ludhiana, Punjab

Agriculture is the primary occupation of the people in Lammey village of Ludhiana district. Residents of the village keep high yielding breeds of buffaloes and cattle. Fodder availability is also abundant. Despite favourable conditions, the producers used to sell surplus milk at a low price of ₹ 14 per kg.

The village was covered under NDP-I. The new DCS started functioning from September, 2012 with 13 members and daily milk collection of 70 kg. In order to spread awareness and increase membership, an awareness camp was organised in the village. Participation of women in the DCS was also encouraged.

Increased awareness and transparency led to an increase in membership of the society to 43 and milk procurement to 425 kg per day.

Women of Vadri village pouring milk at a newly formed DCS under VBMPS

MANJIT KAUR,

A MEMBER OF THE LAMMEY DCS, POINTS OUT, "EARLIER, WE WERE FORCED TO SELL COW MILK AT A PRICE OF ₹ 14 PER KG. BUT, AFTER WE BECAME MEMBERS OF THE SOCIETY, WE GET AROUND ₹ 22 PER KG OF MILK."

MANAGEMENT OF DAIRY COOPERATIVES

Jalgaon Milk Union

NDDB continued to manage the operations of Jalgaon Milk Union. During the year, Jalgaon Milk Union procured 1,78,000 kg of milk per day through more than 800 DCS with liquid milk marketing of about 1,75,000 litres per day. Besides milk, Jalgaon Milk Union manufactures and markets *ghee*, *paneer*, *shrikhand*, curd and butter milk. During the year, Jalgaon Milk Union posted a turnover of about ₹ 2,800 million. The cattle feed plant of Jalgaon Milk Union produces 278 MT of cattle feed per month.

During the year, the union performed around 48,000 Artificial Inseminations (AIs) and about 10,000 animals were vaccinated and given de-wormer. The union conducted more than 700 training programmes that benefited more than 12,500 producers. Seventy five programmes were conducted for Women's Dairy Cooperative Leadership Programme (WDCLP) to benefit more than 4,000 women and 325 women thrift groups were organised.

West Assam Cooperative Milk Union Ltd.

NDDB continued to manage West Assam Cooperative Milk Union Ltd. (WAMUL). During the year, NDDB formulated the Assam Dairy Development (ADD) Plan with a total outlay of ₹ 565.02 million, which was submitted to the Government of Assam by WAMUL. The plan will be implemented with technical support from NDDB. Government of Assam has conveyed its in-principle approval for implementation of the Plan. The World Bank has agreed to partially fund the plan by providing ₹ 330 million till December 2015. WAMUL has initiated a network of Mobile Artificial Insemination Technicians (MAITs) in Assam under the ADD Plan. Fifty MAITs underwent a basic AI training programme at NDDB's Regional Demonstration and Training Centre situated at Siliguri.

During the year, the union registered an average milk procurement of 23,462 kg per day with a peak procurement of 30,700 kg per day compared to an average milk procurement of 15,200 kg per day during 2012-13, an increase of 54 per cent.

The milk was procured from 111 milk producers' institutions/ dairy cooperative societies with a total membership of over 3,000 milk producers.

With sales growth of about three per cent, the union marketed an average of 38,400 litres per day under the union's brand 'Purabi' in Guwahati and adjoining districts of the state through more than 1,780 retail outlets. The year also saw the union attaining sales growth for *paneer*, sweet curd, plain curd and *lassi* over the last year. The turnover of the union grew by 27 per cent to ₹ 539.8 million compared to ₹ 462.6 million in the previous year.

3,351

VILLAGES WERE COVERED WITH ADDITIONAL MEMBERSHIP OF 1,77,507 PRODUCERS UNDER NDP-I.

Jharkhand State Cooperative Milk Producers' Federation Ltd. (JCMF)

Government of Jharkhand expressed the need to take immediate measures to revitalise the dairy cooperatives in the state in the interest of milk producers. Considering the role of NDDB in providing financial and technical support to producer-owned, professionally managed institutions for dairy development in the country, Government of Jharkhand, requested NDDB to take over the management of the newly formed Jharkhand State Cooperative Milk Producers' Federation Ltd. (JCMF) and work towards dairy development in the state.

NDDB and Department of Animal Husbandry, Dairying & Fisheries, Government of Jharkhand signed a Memorandum of Understanding (MoU) in March 2014 for assuming management of the newly formed federation for a period of five years. The federation will take up dairy development activities in Jharkhand in a phased manner from April 2014.

ASSISTANCE TO COOPERATIVES

Launched by the Government of India in 2000, the scheme 'Assistance to Cooperatives' has been providing assistance as grant-in-aid to loss making dairy unions/ federations based on revival plans prepared with the assistance of NDDB to help them become viable. Under the scheme, plans for 42 milk unions have been approved with an aggregate outlay of ₹ 2,896 million. Till March 2014, rehabilitation assistance of ₹ 2,528 million was released to the unions.

The rehabilitation period of seven years is over with respect to 27 unions. Of these, 12 unions have achieved positive net worth while seven unions are earning profits but have not yet achieved positive net worth. Eight unions continue to incur losses and have a negative net worth.

Of the remaining 15 unions, 11 are likely to achieve positive net worth before the completion of the rehabilitation period of seven years.

STRENGTHENING VILLAGE BASED MILK PROCUREMENT SYSTEMS

Village based milk procurement systems (VBMPS) is one of the three major components of the National Dairy Plan Phase-I (NDP-I), which is being implemented by NDDB. It is aimed at strengthening the procurement infrastructure and bringing more fairness and transparency in milk procurement transactions through IT based systems. In order to expand coverage and to enable milk producers have greater market access, village level infrastructure for milk collection including, bulk milk cooler, data processor-based milk collection unit, automated milk collection unit, milk cans and milk collection accessories are being provided. By March 2014, 58 sub-project plans (SPPs) were approved with a total outlay of ₹ 4,265.75 million, which included grant assistance of ₹ 2,719.91 million and remaining ₹ 1,545.84 million as contribution from End Implementing Agencies (EIAs). An amount of about ₹ 683.87 million was disbursed against the approved plans and implementation of SPPs initiated. The approved sub-projects are spread across 12 states and expected to cover more than 18,000 villages. About 5.4 lakh new members are expected to be enrolled in these sub-projects. By March 2014, around 3,351 villages were covered with additional membership of 1,77,507 producers.

Special attention is being given for extensive coverage of tribal dominated areas and including more small holders and women through the dairy cooperative societies. All the participating milk unions have been advised to encourage women membership and organise maximum number of all-women DCS.

Achievement of substantial implementation progress in SPPs by some of the EIAs, have prompted them to submit supplementary plans. Based on eligibility, such plans are also being considered under NDP-I.

NDDB AND DEPARTMENT OF AHD&F, GOVERNMENT OF JHARKHAND SIGNED A MEMORANDUM OF UNDERSTANDING (MOU) IN MARCH 2014 FOR ASSUMING **MANAGEMENT OF THE NEWLY FORMED FEDERATION** FOR A PERIOD OF FIVE YEARS.

NDDB DAIRY SERVICES INITIATED THE PROCESS OF INCORPORATION OF **THREE MORE MILK PRODUCER COMPANIES** IN PUNJAB, ANDHRA PRADESH AND UTTAR PRADESH.

MILK PRODUCER COMPANIES

The two milk producer companies – Paayas in Rajasthan and Maahi in Gujarat, incorporated with facilitation from NDDB Dairy Services, a wholly owned subsidiary of NDDB, achieved an average milk procurement of about 9,00,000 kg per day during the year. About 1,00,000 producer members, including nearly 55 per cent of small and marginal producers, contributed about ₹ 325 million towards the share capital of these producer companies. These companies expect to pay a dividend of about 10 per cent to the producer members for the year 2013-14.

Being producer centric organisations, large number of village contact groups and member relation groups were set up to ensure effective two way communication between the producer members and the companies.

Productivity enhancement activities were initiated during the year for the delivery of cattle feed, mineral mixture etc. to the members. About 300 Local Resource Persons (LRPs) were identified and trained in the villages to undertake the Ration Balancing Programme (RBP) under NDP-I. Further, about 300 AI technicians were selected and trained to provide AI services to the producers of which about 45 have already been deployed.

Both the producer companies marketed milk and milk products under their own brand names. The total sale of liquid milk was around 300 thousand litres per day.

Two innovative programmes were initiated by the milk producer companies. The “Rural School Children Awareness Programme” is aimed at building awareness about nutritional importance of milk and the role played by the producer companies in promoting dairying in the villages. The “Rural Youth Awareness Programme” focuses on encouraging rural youth to take up dairying as an occupation. Training/orientation programmes were also conducted for managers/facilitators of the companies and the *sahayaks* operating the milk pooling points in the villages.

Towards the end of the year, NDDB Dairy Services initiated the process of incorporation of three more milk producer companies in Punjab, Andhra Pradesh and Uttar Pradesh.

ENHANCING PRODUCTIVITY

ENHANCING PRODUCTIVITY OF DAIRY ANIMALS CONTINUED TO BE A MAJOR FOCUS AREA AT NDDB. PRODUCING SUPERIOR, HEALTHY AND FERTILE PROGENY TO INCREASE MILK PRODUCTION THROUGH GENETIC SELECTION IS A MAJOR CHALLENGE. SUPERIOR PROGENY HAS TO SATISFY THE NEEDS OF DAIRY FARMERS IN TERMS OF EASE IN MANAGEMENT, LONGEVITY, SUSTAINABLE MILK PRODUCTION AND HIGHER EARNINGS.

ANIMAL BREEDING

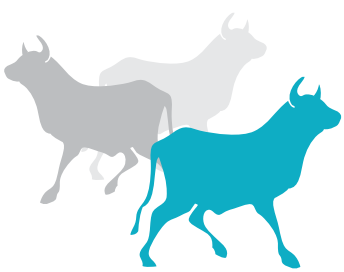
High levels of productivity in dairy animals can be achieved primarily through continuous use of genetically superior bulls produced through scientifically designed selection programmes and by bringing a larger proportion of breedable animals under Artificial Insemination.

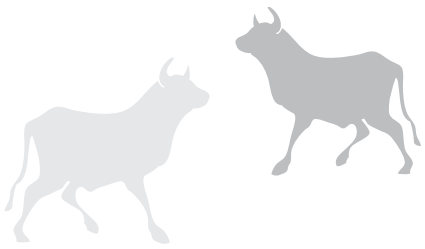
Sire Evaluation and production of High Genetic Merit bulls

For the genetic improvement of important breeds of dairy animals, implementation of sub-project plans for production of High Genetic Merit (HGM) bulls through Progeny Testing and Pedigree Selection programme were initiated by selected End Implementing Agencies.

Till date, 13 Progeny Testing projects for production of High Genetic Merit bulls of different breeds namely, Holstein Friesian (HF), Cross-bred HF, Cross-bred Jersey cattle and *Murrah* and *Mehsana* buffaloes have been sanctioned under NDP-I. These projects are expected to make available around 2,000 bulls to A and B graded semen stations across the country. The total estimated outlay of these projects is around ₹ 2,380.86 million. These projects together had put 252 additional bulls under evaluation during the year, taking the total number of bulls under evaluation to 362. Approximately, 32,000 daughters born through test Artificial Inseminations (AI) were registered during the year. One hundred seventy one bull calves born through nominated AI were procured after confirmation of parentage and disease testing of both the calf and the dam for Tuberculosis, Johne's Disease and Brucellosis. Eighty High Genetic Merit bulls produced and reared under these programmes were made available for distribution to semen stations.

NDDB'S FOCUS REMAINED ON DEVELOPING **IMPORTANT INDIGENOUS** BREEDS.





Kankrej – a high yielding indigenous breed

Indigenous breed development

Six sub-projects from four states with an estimated outlay of ₹ 379.24 million have been approved for bull production through pedigree selection for development and conservation of indigenous breeds of cattle and buffalo in their native tract, namely, *Kankrej, Hariana, Rathi* and *Gir* breeds of cattle and *Jaffarabadi* and *Pandharpuri* breeds of buffalo. These sub-projects are expected to make available around 360 bulls to semen stations across the country.

The programmes, implemented through a total of 149 AI centres covering 438 villages, carried out 28,459 inseminations. Seven bull calves born through nominated AI were procured after confirmation of parentage and disease testing of both the calf and the dam for Tuberculosis, Johne's Disease and Brucellosis.

NDDB's efforts to preserve indigenous breeds of cattle and buffaloes 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, Jaffrabadi, Pandharpuri* and *Toda*.

Production of bulls of exotic breeds through transfer of imported embryos

To meet immediate demand of bulls of exotic breeds, viz. Jersey and HF, import of High Genetic Merit HF and Jersey bulls for frozen semen production programme has been envisaged under NDP-I.

To take advantage of genetic improvement happening in advanced dairy nations and ensure availability of bulls of these exotic breeds for semen production in future, a sub-project proposal for import of 2,400 embryos for production of breeding bulls has been sanctioned under NDP-I. Four participating agencies having skilled manpower and infrastructure namely, Sabarmati Ashram Gaushala (SAG), Bhartiya Agro Industries Foundation (BAIF), Uttarakhand Livestock Development Board (ULDB) and Paschim Banga Go Sampad Bikas Sanstha (PBGSBS) have been identified for using the imported embryos for production of bulls of exotic breeds.

Information Network for Animal Productivity and Health (INAPH)

The use of INAPH was expanded to cover 57 projects including Progeny Testing, Pedigree Selection and Ration Balancing Programmes spread across 90 districts in 13 states. About 2.64 million animals, belonging to 0.96 million farmers spread across 9,363 villages, were ear-tagged for unique identification.

Frozen semen production and AI delivery

Sabarmati Ashram Gaushala (SAG), Bidaj, Animal Breeding Centre (ABC), Salon, and Rohtak Semen Station, together produced around 19 million frozen semen doses during the year. Another eight semen stations in the cooperative sector produced around 14 million semen doses.

During the year, the cooperative dairy unions together performed around 13.3 million AIs through 18,000 field AI centres covering some 54,200 villages.

For strengthening semen stations under NDP-I, 19 sub-project proposals with a total financial outlay of around ₹ 2,115.38 million have been sanctioned so far. Annual semen production in these semen stations is expected to be 85 million doses by the end of the project period.

Workshop on Genetic Improvement of Cattle & Buffaloes

The National Dairy Development Board organised an international workshop on Genetic Improvement of Cattle & Buffaloes under the National Dairy Plan at Anand during September 2013.

The objective of the workshop was to learn from the experiences of international experts from various countries where such programmes have been under implementation for a long time. Such learning would be useful to equip the project leaders implementing Progeny Testing/ Pedigree Selection programmes under NDP-I, with knowledge on the best global practices that are relevant under Indian conditions and can be adopted to improve the standards and quality of the programme.

A total of 80 professionals participated in the workshop, including national and international experts from the field of animal genetics, breeding and bio-security and the project coordinators from various dairy cooperatives, state livestock development boards, NGOs, trusts, implementing Progeny Testing/Pedigree Selection projects under NDP-I.

An important recommendation of the workshop was to introduce "Genomics" to identify and select superior bulls for breeding purpose. In line with the recommendation, NDDB has signed a MoU with Aarhus University, Denmark to acquire technical know-how and apply genomics for selection of breeding bulls.

Trainers' training programme on typing of dairy animals

Milk production over the lifespan of dairy animals is highly correlated with some of their body conformation traits. NDDB hired the services of a foreign technical expert to finalise such traits, and organised a trainers' training programme.

DURING THE YEAR, DAIRY COOPERATIVES TOGETHER **PERFORMED AROUND 13.3 MILLION AIs THROUGH 18,000 FIELD AI CENTRES** COVERING ABOUT 54,200 VILLAGES.

Balanced ration also helps in improving the immune status of animals

ANIMAL NUTRITION

Efforts for providing ration balancing advisory services at farmers' doorstep, using locally available feed resources and area specific mineral mixtures continued during the year, which helped in improving productivity of dairy animals. Initiatives for enhancing green fodder production from the available land and securing available bio-mass from the farmers' field also continued.

Ration Balancing Advisory Services

Large scale implementation of Ration Balancing Programme (RBP), under NDP-I, initiated during the previous year continued during 2013-14. Sub-project plans (SPPs) on RBP worth ₹ 763.19 million were approved for 18 End Implementing Agencies (EIAs). In total, 34 SPPs from 32 milk unions and two producer companies covering 12 states with a financial outlay of ₹ 1,201.18 million were sanctioned.

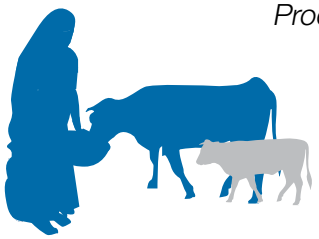
RBP training was imparted to 67 technical officers, trainers and animal nutritionists from 22 milk unions and two producer companies. So far, 128 officers, including five women, have been trained on RBP implementation. Training on INAPH software was arranged for 13 information technology officers to understand its functionalities and troubleshooting aspects.

The trained officers imparted training to the identified Local Resource Persons (LRPs) in the respective EIAs. During the year, 2,079 LRPs were trained in 19 milk unions and two producer companies covering nine states. Out of total LRPs trained, 18 per cent were women, 14 per cent SC/ST and 56 per cent were small holders.

A total of 1,563 LRPs started providing ration balancing advisory services to 52,210 milk producers in about 1,500 villages covering more than 70,000 milch animals in 21 EIAs. Banaskantha Milk Union also extended RBP services to 59 progressive farmers under the farm consultancy, of which 34 trained farmers started using RBP software in 19 villages. ***Balanced ration led to an increase in average daily milk yield of 0.2 kg and milk fat by 0.16 per cent. Cost of feeding reduced by ₹ 1.92 per kg of milk and the average net daily income increased by about ₹ 27 per animal.***

To motivate them, good performing LRPs were identified and felicitated in regional review meetings at Chandigarh, Bengaluru, Sabarkantha and Anand.

Production of area specific mineral mixture using different mineral salts



EIAs SOLD 2,064.73 MT OF CERTIFIED /TRUTHFULLY LABELLED SEEDS OF **IMPROVED FODDER VARIETIES** TO THE FARMERS UNDER NDP-I.

Production of specialised feeds and area specific mineral mixtures

NDDB encouraged many cattle feed plants, under the dairy cooperatives,to initiate production of calf starter, feed for buffaloes and feed for high yielding animals. During the year, a bypass protein plant of 50 MT per day capacity was set up at cattle feed plant, Patna for treating different protein meals and

production of bypass protein feed. Two mineral mixture plants of 12 MT per day capacity were also set up in Himmatnagar for Sabarkantha Milk Union and Amdalavalasa for Vishaka Dairy for production of area specific mineral mixture. A total of 21 dairy cooperatives have started production of area specific mineral mixture for improved productivity. Use of copper, zinc, manganese and chromium chelates for better bio-availability was also recommended.

Plant for production of bypass fat supplement

High yielding animals lose body weight after calving as energy intake is less than the requirement to meet the demand for milk production. Majority of field animals, especially high yielding ones, suffer from negative energy balance, which reduces not only milk production but also reproduction efficiency. To improve energy status and reproduction efficiency, NDDB successfully standardised the production process of calcium salts of long chain fatty acids and plant design for commercial production of bypass fat. A bypass fat plant of six MT per day capacity was set up at cattle feed plant, Katarva for the production of bypass fat supplement using palm fatty acid distillate (PFAD).

Feed formulation software for cattle feed plants

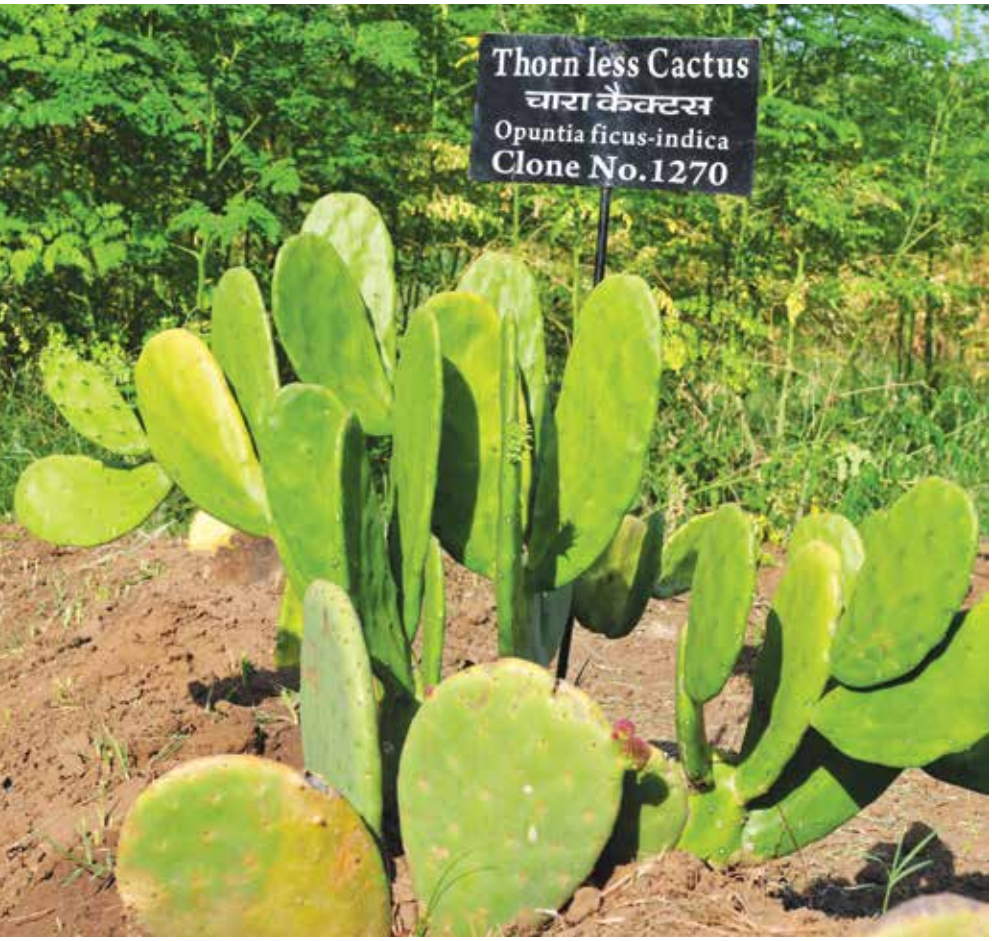
To produce feed at the lowest possible costs, cattle feed plants (CFPs) need to derive an appropriate feed formulation. NDDB had been assisting Quality Control (QC) officers by providing training on developing least cost feed (LCF) formulation, using MS-DOS based LCF software. NDDB has now developed a Windows based LCF software, which is more user friendly. A workshop for QC officers and purchase managers of CFPs in Gujarat, Maharashtra, Madhya Pradesh, Punjab, Jharkhand, Bihar, Odisha and Uttarakhand was organised at NDDB, Anand. During the workshop, 38 QC officers and purchase managers were trained on the use of LCF software for deriving least cost feed formulation and assessing the maximum purchase price of raw materials.

A bypass fat plant for production of bypass fat supplement

Green fodder production enhancement

Under NDP-I, 11 new SPPs on fodder development in seven states were approved with a total outlay of ₹ 168 million including two fodder seed processing plants at Kota and Bellary. Fifty four officers from 21 EIAs were trained on "Fodder Production and Conservation" at NDDB, Anand, 10 officers from five EIAs were trained on "Advanced Training on Seed Production Technology in Fodder Crops" at Directorate of Seed Research (DSR), Mau, Uttar Pradesh and 12 officers were exposed on "International Course on Fodder Production" at Centre for Development Innovation, Wageningen UR, The Netherlands. EIAs sold 2,064.73 MT of certified /truthfully labelled seeds of improved fodder varieties to the farmers under NDP-I. About 120 silage demonstrations were organised by the EIAs in selected villages to popularise conservation of green fodder in the form of silage for feeding during deficit/ lean season.

During the year, 9.63 MT of breeder seed of improved varieties of fodder crops was obtained from the Indian Council of Agricultural Research/ Agricultural Universities and supplied to dairy cooperatives. In turn dairy cooperatives put the breeder seed of maize, sorghum, berseem, lucerne, oats, cowpea, pearl millet and cluster bean in the seed multiplication chain.



Thorn-less cactus – a source of fodder for arid and semi-arid zones

Dairy cooperatives organised the production and marketing of 5,340 MT certified/truthfully labelled seeds of high-yielding improved varieties of fodder crops. Fodder seed processing plant at Mithila Milk Union, Samastipur was commissioned during the year.

Large number of farmers and officers from milk unions / EIAs were exposed at fodder demonstration unit, Anand on high yielding improved varieties/ hybrids of annual and perennial fodder crops for enhancing green fodder yield and conserving surplus green fodder in the form of silage. Newly developed multi-cut varieties of sorghum (Pusa Chari 615) and pearl millet (BAIF Bajra 1 & GFB- 1) with potential to provide nutritious and palatable green fodder during summer and

Field demonstration of auto straw pick up balers

kharif season, a new variety of oats (NDO-1) with suitability to grow under saline conditions and a dual purpose cowpea variety (UPC 625) with white colour seed were demonstrated to farmers. The yield potential of green fodder from improved fodder beet varieties (Jamon, JK Kuber, Monro and Cagnote) was also demonstrated to visiting farmers. Fodder production trial were conducted for thorn-less cactus suitable for arid /semi-arid area and drum stick (*Moringa oleifera*).

Crop residue management

As usage of bio-mass picker machines can help reduce field wastage of crop residues, various straw harvesting and bio-mass picker mowers were introduced in various milk sheds under NDP-I.

The range of fodder bio-mass pick up machines introduced in different milk sheds covered following two major categories of mowers:

- Combine prevention mowers ensuring high speed labour free harvesting of crops at ground level so as to get 100 per cent straw while harvesting grains:
  - Auto reaper binders
  - Auto reaper liners
  - Simple reapers for dwarf & tall crop bio-mass varieties
- Straw recovery mowers used after grain picking having options for auto trailer loading, crop spreading, swathing, auto chopping and auto baling.

Multi-purpose mowers are capable of harvesting green fodder and save straw. They are compatible with crop storage methods like high speed silage making, sun drying etc. and are being propagated in milk sheds. Eleven SPPs for demonstration of mowers and pick up devices in various milk unions in seven states were approved. During the year 45 sets of mowers and pick up devices were introduced in various milk unions.

Construction of village level bunkers for organised storage of dry fodder of 50 MT capacity was initiated at nine locations. Planning and design work pertaining to straw enrichment and densification plant at Shri Ganganagar - Hanumangarh was completed.

ANIMAL HEALTH

NDDB has been striving to deal with issues of disease control and bio-security by taking up pilot projects for creating models and also suggesting implementation designs for enhancing bio-security in bull production areas and, in and around semen stations. NDDB also facilitates the process of dialogue between various stakeholders in order to formulate the best strategies for disease control.

With an objective to create a control model, a pilot project on brucellosis control was initiated by NDDB in April 2013 in three settings, namely, (i) village level (ii) ring vaccination zone around a semen station and, (iii) organised farm. The project focuses on calf hood vaccination of female calves between four to eight months of age, identification of vaccinates through ear-tagging, sero-monitoring to assess immune response and testing of herd and individual animals to identify positive villages and animals respectively. The pilot project also gives impetus to awareness creation on the disease and the control measures to be adopted by the farmers in suspect cases of brucellosis.

The field level activities of the project are being implemented by the Kutch Navnirman Abhiyan (KNNA) in the district of Kutch, Gujarat, where 250 villages are expected to be covered by the end of the project; in the ring vaccination zone by Sabarmati Ashram Gaushala, Bidaj, Gujarat, encompassing around 50 villages and, in a farm by NDDB R&D, Hyderabad, having a herd strength of around 500. NDDB is providing technical and financial support to the project.

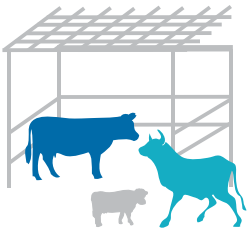
The programme is for a period of five years with a total outlay of ₹ 16.90 million with NDDB contributing ₹ 10.49 million.

As on March 2014, 4,449 cattle and buffalo calves between four to eight months of age have been vaccinated since the commencement of the programme in April 2013. The project involves ear-tagging of all the vaccinated calves with a 12 digit unique number and capturing all the data related to each vaccinated animal in the Information Network for Animal Productivity and Health (INAPH).

Bio-security in bull production areas and semen stations

In order to ensure that High Genetic Merit bull calves are not lost due to diseases prevalent in our country, especially in the bull production areas, an implementation design suggesting the activities to be undertaken, namely, vaccination for various diseases, schedule of vaccination, sero-monitoring,

A female buffalo calf being ear-tagged after brucella vaccination



NDDB HAS BEEN STRIVING TO DEAL WITH ISSUES OF DISEASE CONTROL AND BIO-SECURITY BY TAKING UP **PILOT PROJECTS FOR CREATING MODELS**

ear-tagging, co-ordination and reporting, estimated number of animals to be vaccinated against each disease etc. was provided to the nine states where 11 Progeny Testing (PT) and five Pedigree Selection (PS) projects are in place. Most of the states now have a system in place to coordinate and monitor animal health activities in the bull production areas through district and/or state level coordination committees.

In addition, adequate animal health and testing protocols for the field, pre-quarantine and quarantine stations in the bull production project areas have also been formulated to ensure that only disease free male calves enter the genetic improvement programme.

In the process of strengthening 19 semen stations in 12 states under NDP-I, the bio-security protocols of these semen stations have been critically reviewed and appropriate suggestions have been provided to minimise probability of infections entering, lingering or leaving the semen station. Modifications in the work flows of the semen processing laboratories have also been proposed in most of the semen stations to reduce the chances of contamination by introducing the concept of clean and unclean areas, proper workflow etc.

In order to minimise the threat of infection in the semen stations, an implementation design covering all the villages in 10 km radius of the semen station was suggested to the states. Noting the importance of such a measure, most of the states have now put in place a coordination mechanism to manage the animal health activities around 10 km radius of semen stations.

A comprehensive bio-security draft document encompassing all the activities related to bio-security in a semen station has also been forwarded to Department of Animal Husbandry, Dairying & Fisheries for finalisation.

Workshop on brucellosis

A workshop was organised at NDDB, Anand, to deliberate upon and formulate technical guidelines for brucellosis vaccination in the field, including type of vaccine to be used and protocols to be followed for vaccination etc. in which experts from veterinary colleges, officials from DADF and directors of animal husbandry from different states participated. Important recommendations were put forth regarding vaccine, vaccination, awareness creation, testing etc. which is of significance to the bull production areas and more so while looking at the larger perspective of disease control.

RESEARCH & DEVELOPMENT

IN PURSUIT OF EVOLVING ACCURATE AND RAPID DIAGNOSTIC METHODS FOR BOVINE DISEASES, NDDB'S R&D UNIT IS INVOLVED IN THE STANDARDISATION OF NOVEL DIAGNOSTIC PROCEDURES AND ALSO DEVELOPMENT OF NEW POINT-OF-CARE TESTS FOR USE IN THE FIELD. THE R&D TEAM ALSO PROVIDES DIAGNOSTIC SERVICES TO SEMEN STATIONS AND CARRIES OUT SERO-MONITORING FOR SOME OF THE DISEASE CONTROL PROGRAMMES BEING IMPLEMENTED BY NDDB.

ANIMAL VACCINES AND DIAGNOSTICS

To understand the efficacy of calf hood vaccination in controlling brucellosis at farm level, female calves in an organised dairy herd in Telangana were immunised with standard dose of *Brucella abortus* S19 vaccine (BRUVAX). Following vaccination, 67 per cent calves exhibited post-vaccinal antibody response which was detectable by ELISA till 150 days post vaccination. NDDB's R&D laboratory continued diagnosis of bovine brucellosis. On randomly collected samples from cattle and buffaloes, 8.47 per cent of 2,125 serum samples, 8.57 per cent of 175 specimens from aborted animals and 30.77 per cent out of 273 other clinical samples were found positive for brucellosis by serology, cultural isolation and real-time PCR, respectively. Clinical specimens collected from suspected cases of brucellosis are a bio-hazard and require special attention in packing and transport for dispatch to the diagnostic laboratory, since brucellosis causing organisms can also spread the disease to human beings. Application of clinical material to FTA® card renders it non-hazardous and safe, by inactivating the organism. The specimen fixed on the FTA® card can be used for molecular diagnosis of brucellosis.

As screening of bulls in semen stations against bovine genital campylobacteriosis (BGC) is mandatory as per Minimum Standard Protocol (MSP), the laboratory has standardised the diagnosis of BGC. *Campylobacter fetus venerealis* (CFV) is reported to be responsible for around 90 per cent of abortions caused by BGC. The CVF is used as positive control in diagnostic test and is difficult to maintain under *in vitro* conditions. In order to overcome this, situation studies were conducted to analyse the suitability of liquid nitrogen (LN2) for long term storage of reference strains of CVF. Studies indicated storage of CFV in LN2 is a better option in terms of viability as compared to storage at –20°C and –70°C. A real-time PCR technique for identification of CFV has been standardised and validated for diagnosis of BGC. This test can precisely detect CFV as low as equivalent to five cells per reaction in spiked bovine semen samples. All 100 frozen semen samples when screened by the validated PCR turned negative for CFV.

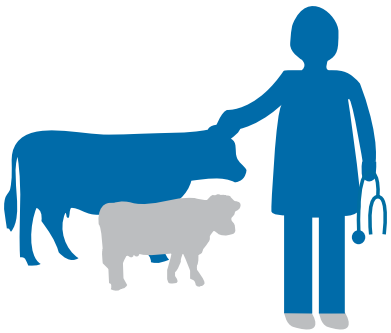
The Office International des Epizooties (OIE) has recently suggested whole blood Interferon Gamma Release Assay (IGRA) as an ancillary confirmatory test to screen herds against bovine tuberculosis. The fusion protein ESAT6 and CFP10 had been described to be specific for *Mycobacterium bovis* that mostly causes bovine tuberculosis. The laboratory produced the fusion protein and used it as stimulating antigen in an IGRA. Standardisation and validation of the IGRA was conducted on tuberculin negative and positive herd. IGRA showed good agreement (κ=0.78) to the standard single intra-dermal tuberculin test. Further studies on field evaluation of IGRA have been planned on a large number of animals.

Screening against infectious bovine rhinotracheitis (IBR) of bulls in semen stations, animals in PS/PT projects and screening of frozen semen remain one of the strategic

assignment towards the control of spread of the virus. Around 49.7 per cent out of 853 cattle and buffaloes tested were found serologically positive for IBR. A total of 3,114 frozen semen batches produced from IBR sero-positive bulls were tested and 3.92 per cent turned positive for BHV-1 by real-time PCR. For rapid diagnosis of IBR by detecting BHV-1 genome in clinical samples, a loop-mediated isothermal amplification protocol (LAMP) targeting gB gene of the virus was standardised. Test sensitivity was determined using the positive control plasmid as well as genomic DNA from the virus. Evaluation of this test is under progress, by screening the known positive frozen semen batches (real-time PCR positive).

On a limited study, both cattle and buffaloes were found to be positive for bovine virus diarrhoea virus (BVDV) tested by antigen and antibody ELISAs, indicating the magnitude of the problem presently existing in semen stations. Further studies on a large number of animals are in progress for formulating suitable testing protocol towards restraining the diseases in the semen stations. For rapid diagnosis of BVD infection by loop-mediated isothermal amplification protocol (LAMP) and real-time PCR, assay positive control was developed using the 5'UTR synthetic construct of BVDV virus. Primers sets targeting 5'UTR regions were evaluated in LAMP for their suitability. Evaluation of LAMP assay for screening BVDV in clinical samples is in progress.

Pilot scale production of straw based feed pellets



COMMERCIAL PRODUCTION OF THE SUPPLEMENT BY INDIAN IMMUNOLOGICALS LTD., HYDERABAD COMMENCED AT ITS CATTLE FEED PLANT, RAJKOT, UNDER THE BRAND NAME **"NANDI BULL SUPPLEMENT".**

The laboratory continued to undertake Foot and Mouth Disease (FMD) post-vaccinal antibody assay for sero-monitoring in NDDB managed farms and providing appropriate advice on re-vaccination and disease control.

ANIMAL NUTRITION

Feed supplement for enhancing semen production in breeding bulls

Various research institutes and state agriculture/veterinary universities have conducted considerable research on different aspects of livestock, but hardly any systematic long term study has been undertaken on breeding bulls to improve quality and quantity of semen production. Average semen production in exotic bulls (HF) under Indian conditions is about 35,000 doses per annum, whereas, it is approximately 50,000 doses per annum in developed nations. Thus, there appears to be ample scope for improving semen production per bull under Indian conditions of feeding and management. Considering the shortage of progeny tested and pedigreed bulls in the country, it is important to examine this, not only in exotic bulls but in bulls of indigenous breeds including buffalo bulls. In view of this, a supplement for bulls containing chelated minerals, coated vitamins and herbal additives was developed and tested by conducting a series of feeding trials on bulls of different breeds.

Feeding trials were organised for one full year at ABC, Salon and SAG, Bidaj, on 50 breeding bulls at each of the farms. One feeding trial was also conducted at BAIF's bull station in Uruli-Kanchan, Pune for a period of six months on nine breeding bulls. On feeding the supplement @ 250 grams per bull per day, it was possible to increase about 400 semen doses per bull per month. In addition, there was also improvement in the integrity of sperm plasma membrane and proportion of semen with intact acrosome. Commercial production of the supplement by Indian Immunologicals Ltd., Hyderabad commenced at its cattle feed plant, Rajkot, under the brand name "Nandi Bull Supplement".

Linseed based protected supplement as a source of omega fatty acids in milk

Linseed contains high levels of α-linolenic acid (omega-3 fatty acid) ranging between 52 per cent to 63 per cent and about 16 per cent of α-linoleic acid (omega-6 fatty acid), which are considered as healthy fatty acids. These omega fatty acids have also been shown to influence the reproduction efficiency of dairy animals. If these fatty acids are fed in protected form, their level could be elevated in milk and may have improved reproduction efficiency in cows and buffaloes. In view of this,

a linseed oil and soybean oil seed based supplement was produced and tested on twenty cross-bred cows yielding 16-20 kg milk per animal per day. The animals were divided into two groups of 10 each, based on milk yield, fat per centage and stage of lactation. Animals in control group were fed unprotected supplement (60:40 linseed: soybean) @ 750 grams per animal per day, whereas, animals in experimental group were fed the same quantity of supplement in protected form. There was significant improvement in levels of omega-3 (0.33 vs. 1.44 per cent), omega-6 (1.63 vs. 2.35 per cent) and conjugated linoleic acid (0.17 vs. 0.68 per cent) in milk of cows fed with protected supplement as compared to those fed with unprotected supplement. More such trials will be conducted before taking up commercial production of the supplement.

Straw based feed pellets

Despite shortage, lignified bio-mass such as cotton stalks, soybean and mustard straws are burnt in different parts of the country. Lignified bio-mass can be easily crushed and used for making feed pellets. These pellets can be transported and stored at strategic locations and used during scarcity or during natural calamity as a complete ration. In view of this, straw based feed pellets using 50 per cent cotton stalks and 50 per cent concentrate feed ingredients were prepared on a pilot scale and tested on lactating cows. Straw based feed pellets were found to be palatable to dairy animals and the daily feeding cost reduced significantly in animals fed on cotton stalk based feed pellets. Feeding trials using soybean and mustard straws would also be conducted for palatability and economic analysis, before their large scale use.

Effect of feeding a balanced ration on SNF content of milk

The impact of ration balancing on Solids-Not-Fat (SNF) content of milk was studied. After about six weeks of feeding a balanced ration to HF cows in Bhagalpur district of Bihar, average daily milk yield increased from 8.6 to 9.6 kg, milk fat increased from 3.8 to 4.5 per cent and SNF content increased from 7.8 to 8.5 per cent. In addition, there was reduction in daily feeding cost by ₹ 0.50 per kg of milk. The study demonstrated that feeding a balanced ration not only helped in improving milk production and reducing the feeding cost, but also resulted in improving the SNF content of milk in cross-bred animals. Thus, large scale use of balanced feeding can help in improving SNF content of milk. Similar study will be undertaken in Kerala for cross-bred cows having problem of low SNF in milk.

Manufacturing enriched straw based feed pellets

Methane measurement using Gas Chromatograph in breath samples collected in canisters from field animals

Reducing enteric methane emission and feed energy loss

In ruminants, methane is emitted as a result of enteric fermentation leading to loss of 4-12 per cent of gross energy intake. Enteric methane emission has an impact on global warming, as well as is a loss of feed energy to production system, part of the energy ingested as feed is lost in the form of methane instead of being assimilated by animals and used for production. To quantify the effect of feeding a balanced ration on enteric methane emission and feed energy loss, NDDB undertook a methane emission measurement study in milch animals. A field study on 35 early lactating cross-bred cows was conducted in Bangalore district of Karnataka. Methane emission was measured using SF_6 tracer technique, before feeding a balanced ration. Thereafter, ration of individual cows was balanced and fed for 30 days. After feeding a balanced ration, methane emission was again measured. Feeding a balanced ration increased milk yield by 3.6 per cent and reduced methane emission (g/ kg milk yield) by 17.7 per cent. Energy loss as methane (% of gross energy) was reduced from 7.3 to 7.0 on feeding a balanced ration.

Microbial nitrogen supply – An indicator of efficiency of rumen function

Microbial nitrogen supply to the duodenum is an important indicator of efficiency of rumen function. Supply of adequate nutrients increases excretion of urinary purine derivatives, synthesis of rumen microbial nitrogen and enhances the supply of protein post-ruminally to support production. An inverse relationship between microbial nitrogen production and methane emission has been reported. In present study, feeding a balanced ration improved the intestinal flow of microbial nitrogen (g/day) from 131.6 to 180.2, whereas, methane emission (g/day) reduced from 258.7 to 221 in lactating cows.

Correlation between *in vivo* and *in vitro* methods for estimation of methane emission

Methane emission was measured on lactating cows (n=7) and buffaloes (n=21), using SF_6 tracer technique in Ropar district of Punjab. Methane emission results were compared with *in vitro* gas production technique for methane emission measurement. Individual

samples of feed ingredients fed to animals under study were collected and used to formulate total mixed rations (TMRs), to simulate actual feeding conditions. 54 TMR samples were used to measure methane emission by *in vitro* gas production technique. The study revealed that there is no significant correlation between *in vitro* and *in vivo* methods of methane measurement. More such trials are being planned on similar lines.

Bio-marker method for methane measurement

Faecal archaeol concentration is used as a lipid biomarker for predicting methane production in ruminants. There is a positive correlation between the concentration of faecal archaeol and methane production in the rumen. In a study in Ropar district, faecal samples from cows (n=7) and buffaloes (n=21) were collected, before and after feeding a balanced ration. All the samples were extracted for total lipids and analysed for archaeol concentration, using Gas Chromatograph. Study indicated that feeding a balanced ration reduced faecal archaeol (mg/kg faecal DM) by 16 and 18 per cent in cows and buffaloes, respectively.

Product and Process Development

A new flavour variant of frozen dessert was developed and its shelf life is being studied. Work on improving the process of *shrikhand* making has been successfully done at the laboratory level, and trial at dairy level is being planned.

Work is in progress for developing probiotic *mishti doi*, direct-vat-set *dahi* cultures, and improvement in the flavour of plain *dahi*.

NDDB is in the quest for developing new ways to combat adulteration in milk, and has developed a simple method for detecting a common adulterant in milk, which can be performed even at the field level without using any hazardous chemical.

New chemical formulations for cleaning bulk milk coolers are being tested. These formulations are expected to be cost effective compared to the common brands available in the market.

Technical support was extended to Dimapur milk union for launching *lassi* in a new pack size. Lyophilized dahi cultures were supplied to Dimapur and Mulkanoor milk unions on their request.

Two of our cultures have been deposited with MTCC (Microbial Type Culture Collection), IMTECH (Institute of Microbial Technology), Chandigarh and unique accession numbers have been obtained.

Checking the efficacy of newly developed chemical formulation in cold cleaning of bulk cooler


Jupiter

BUILDING AN INFORMATION NETWORK

NDDB SUPPORTS AN INTERNET-BASED DAIRY INFORMATION SYSTEM THROUGH WHICH DAIRY COOPERATIVES INFORMATION IS COLLECTED, ANALYSED AND INSIGHTS ARE PROVIDED TO FACILITATE DECISION MAKING.

Use of technology for timely data collection

INFORMATION BUILDING

NDDB organised refresher training for management information system (MIS) officers of milk unions, cattle feed plants, dairies and federations to enhance skill and competency for accurate and timely reporting of data through an internet based Dairy Information System (i-DIS). About 80 MIS personnel from Maharashtra and Gujarat participated in these refresher trainings. NDDB also provided need-based on-site training to newly appointed MIS officers.

NDDB provides monthly updates on milk procurement, milk marketing, retail prices of milk sold by the cooperatives in important markets alongwith updates on cattle feed ingredient prices, feed and fodder prices collected from various published and unpublished sources and also a panel of milk producers across the country.

STUDY TO EVALUATE COMPLIANCE OF SOPs IN AI DELIVERY SYSTEM AND INFORMATION FLOW

Many milk unions in the country do not adhere to major SOPs while providing AI service to farmers. Any attempt to improve the efficiency of AI has to be based on an understanding of the most important causes for success/failure in field condition under each specific production system. Given the above background, a study focussing mainly on two aspects - compliance of SOPs and information flow relating to AI delivery system was carried out in Kolar milk shed area covering Kolar and Chikkabalapur districts with a view to gaining better insights and understanding; and enabling valuable inputs for the implementing authorities to improve the present AI delivery system.

ESTIMATION OF MILK PRODUCTION AND MARKETABLE SURPLUS IN TWO DISTRICTS OF ANDHRA PRADESH

A survey was conducted in two districts of Chittoor and Anantapur districts of Andhra Pradesh by canvassing 2.4 lakh rural households in 364 villages to assess potential for dairy development. The survey found that 38 per cent of rural households in Chittoor and 25 per cent in Anantapur districts owned milch animals respectively. The district of Chittoor showed relatively better dairy husbandry practices with average marketable surplus of 950 litres a day per village in comparison to 535 litres per day of Anantapur. The penetration of the organised sector in milk collection was higher at 90 per cent in Chittoor compared to 70 per cent of Anantapur.

DESK RESEARCH

The National Academy of Agricultural Research and Management (NAARM), Hyderabad organised a one week advanced data analysis training involving about 25 officers of NDDB in Statistical Analysis and Systems (SAS Statistical software) in Anand which received encouraging responses from the participants.

The NSSO data of Nutritional Intake in India (NSS 66th Round, 2012) was analysed in detail and it was found that there was slow and steady decline in consumption of calories and protein while fat consumption has been increasing both in rural and urban areas.

Desk research on understanding the relationship between agricultural land holding and animal holding, as available from the Agricultural Census data of 2012-13, showed that among rural households, more than 43 per cent keep adult buffaloes and 23 per cent keep adult cattle. The average bovine per operational holding is estimated at 2.48 and the average size of bovine holding increases with increase in the size of operational holding. The Agricultural Census data also showed that small and marginal holdings account for 70 per cent of bovines, 76 per cent of goats and 76 per cent of sheep ownership.

Analysis of rural wages during pre and post MNREGA periods showed a marked variation between the two periods. While during pre-MNREGA periods the annual average increase in wage rate was around 5-6 per cent per annum, during post MNREGA periods it showed an increase of more than 10 per cent per annum.

A desk study was carried out to assess the impact of NDDB's flagship training programme—Farmers' Orientation Program (FOP) covering 220 farmers from nine states. The study found that FOP increased the awareness of farmers about their roles & rights in dairy cooperatives and management of dairy animals significantly.

NDDB brought out a publication on Dairying in Gujarat – A Statistical Profile 2013, first in the series to be published for all major milk producing states. This included trends in human demographics, animal population and production; inputs for enhancement of productivity such as breeding, health and nutrition; and Government expenditure, alongwith supporting resources. The objective of this publication is to provide a detailed presentation of various parameters, underlying factors, and their inter-linkages so as to enable effective planning and implementation of development interventions. Similar profiles of other major states will be published in the ensuing year.

NDDB BROUGHT OUT A PUBLICATION ON DAIRYING IN GUJARAT – A STATISTICAL PROFILE 2013, **FIRST IN THE SERIES TO BE PUBLISHED** FOR ALL MAJOR MILK PRODUCING STATES.

An interaction with the members of a management committee of women DCS in Odisha

2,556

WOMEN MILK PRODUCERS PARTICIPATED IN TRAINING COMPARED TO 1,509 IN THE PREVIOUS YEAR.

255

NDDB EMPLOYEES UNDERWENT TRAINING DURING THE YEAR

DEVELOPING HUMAN RESOURCES

NDDB TRAINING INITIATIVES ARE FOCUSSED ON BUILDING PROFESSIONAL COMPETENCE FOR THE DAIRY INDUSTRY.

NDDB continued its efforts towards strengthening the human resource for the implementation of NDP-I. Milk producers were exposed to modern methods of productivity enhancement, quality assurance and democratic control of their institutions, mainly through field visits and demonstrations. Need based trainings were provided to milk union personnel to enable them carry out extension services and efficient dairy plant operations.

During the year, over 2,124 executives were trained under NDP-I. Women participation in training increased to 2,556 women milk producers compared to 1,509 in the previous year.

Training in AI, dairy animal management etc. were conducted at the regional training centres, whereas technical training for dairy plant management, energy conservation are being conducted at NDDB, Anand. Studies were conducted at RDTC Erode, Siliguri and NDDB, Anand for measuring training effectiveness.

During the year, training efforts were focused on need based technical trainings. Training programmes on data analysis using SAS software, orientation on functioning of dairy cooperatives, cooperative governance and business and communication skills were conducted for NDDB officers. A Project Management training based on the requirements of the engineers of NDDB was organised during the year. These trainings were facilitated through tie ups with the reputed training institutions, in-house programmes and through sponsorship of employees to training programmes at reputed management and training institutions. In all, 255 NDDB employees underwent training during the year.

The year also saw facilitation of three exhaustive 10 day induction programme for 50 inductees involving field visits, film shows, presentations and panel discussions. During the year, lectures were organised on contemporary and self-development themes. The table below gives information about the training programmes organised during the year.

TRAINING PROGRAMMES

Name of the Programme	No. of Programmes	No. of Participants
A. Cooperative Services		
Farmer Orientation Programme	102	3,705
Farmer Induction Programme	33	1,136
Customised Farmer Orientation Programme	1	23
Board of Directors Orientation Programme	16	183
Training for P&I executives	34	736
New supervisors training on Producer Relationship Management (PRM)	6	154
Training of Trainers on Business and Producer Relationship Management (PRM)	2	42
Total	**194**	**5,979**
B. Productivity Systems		
Training on Ration Balancing module of Information Network for Animal Productivity and Health (INAPH) software (Duration: One day)	1	7
Technical officers & trainers training on Rational Balancing Programme	7	77
Orientation on Progeny Testing (PT) & Pedigree Selection (PS)	5	45
Orientation on fodder production and conservation practices	3	54
Customised programme for Animal Health	3	44
Artificial Insemination (Basic)	22	519
Artificial Insemination (Refresher)	15	390
Resource Person Training	15	412
Dairy Animal Management	37	905
Fodder Seed Production	17	345
Total	**125**	**2,798**
C. Quality Assurance		
Clean milk production	12	302
Training in cytogenetics & molecular genetics	1	3
Training in analytical techniques in microbiology	1	1
Technical analysis for feed & feed ingredients	2	10
Training in HPLC, NIR, UV spectrophotometer	1	2
Internship Training to Dept. of Home Science students, SPU	1	4
Customised AMCU (Automatic Milk Collection Unit) & BMC (Bulk Milk Cooler) - for ensuring good quality milk	1	26
Hygiene and sanitation- a scientific GHP approach for dairy plants	1	13
Enhance profitability by economising milk solids loss	1	11
In-Situ or Custom made	3	37
Advanced technology in milk procurement	1	8
Operation & Maintenance of dairy equipment and management	2	49
Total	**27**	**466**
D. Sectoral Analysis and Studies		
Internet based Dairy Information System (i-DIS)	61	190
GIS training	1	19
Total	**62**	**209**

Name of the Programme	No. of Programmes	No. of Participants
E. Other training programmes		
Orientation on World Bank procurement procedure	8	223
Sub-project plan performance monitoring and reporting solutions through Enterprise Project Management (EPM)	3	54
Training on environmental & social aspects under NDP-I	2	57
Total	**13**	**334**
Grand Total	**421**	**9,786**

TRAINING OF NDDB MANPOWER

Name of the Programme	No. of Programmes	Participants	
		Total	SC/ST
Project Management	03	63	04
Data Analysis using SAS Software	01	20	01
Orientation programme on functioning of Dairy cooperatives	02	12	01
Cooperative Business and Governance	01	13	03
Communication Skills	01	14	06
MS Excel & PowerPoint	01	21	01
Workshop on Reservation Policy for SC/ST	01	09	01
Training programme for Guest House Staff	02	09	02
Training programme for drivers on “Road safety, safe driving and preventive maintenance”	02	11	05
Other programmes (sponsorship of employees at outside institutions	28	83	05
Total		**255**	**29**

Session on BMC operations and maintenance in progress

ENGINEERING PROJECTS

NDDB CONTINUED TO PROVIDE CONSULTANCY SERVICES FOR EXECUTION OF PROJECTS TO MILK UNIONS ACROSS THE COUNTRY, CREATING NEW PROCESSING INFRASTRUCTURE AND EXPANDING EXISTING FACILITIES FOR DAIRY AND CATTLE FEED PLANTS. SERVICES WERE ALSO EXTENDED TO EXECUTE BIO-SECURITY LABS AND SEMEN STATIONS.

Milk packaging station, Hassan

Eight projects were completed during the year. These included a fully automated powder plant of 30 TPD and aseptic packaging station for milk and fruit juice at Bihar Sharif (Bihar); expansion of four dairy plants - 150 to 300 Thousand Litres Per Day (TLPD) at Mysore, 250 to 400 TLPD at Mandya,100 to 325 TLPD at Tumkur (Phase I) and 120 to 300 TLPD at Hassan (Phase I) (all 4 in Karnataka) and expansion of three cattle feed plants - 150 to 300 Tonnes Per Day (TPD) at Jodhpur, 150 to 300 TPD at Nadbai (both in Rajasthan) and 100 to 200 TPD at Ghania-ke-Bangar (Punjab).

NDDB maintained its emphasis to provide cost effective and state-of-the-art technology for setting up energy efficient dairy & cattle feed plants for milk unions and federations.

In order to improve efficiencies, the infrastructure studies of existing plants have been conducted to assess the requirements and recommend upgradation of facilities. During the year, studies for dairy plants were undertaken in 8 plants in Punjab, 3 in Maharashtra, 2 in Karnataka and 1 in Andhra Pradesh as well as one existing cattle feed plant in Andhra Pradesh.

8

PROJECTS WERE COMPLETED DURING THE YEAR.

30 TPD POWDER PLANT AND 100 TLPD ASEPTIC PACKAGING STATION

NDDB completed the second phase of state-of-the-art project at Bihar Sharif with commissioning of 30 TPD automated powder plant and an aseptic packaging station for milk and fruit juices in various pack sizes. The plant has a fully automatic processing unit with low milk handling losses and water consumption alongwith energy efficient refrigeration plant.

The powder plant has the facility to manufacture and pack skimmed milk powder, whole milk powder and dairy whitener in bulk and retail packs. Separate processing and packaging lines have been provided to process and pack milk and fruit juices in aseptic packs.

CHEESE & WHEY POWDER PLANT

NDDB is providing consultancy services to Banas Milk Union, Palanpur for setting up a fully automated cheese and whey drying plant with associated utilities at an estimated cost of ₹ 4,500 million. The project is scheduled to be completed by April 2016.

The plant has been designed with continuous manufacturing line with state-of-the-art technology to produce 30 TPD cheddar cheese, 24 TPD processed cheese, 20 TPD mozzarella cheese and 45 TPD demineralized whey / skimmed milk powder.

The plant has a common 'Cheese Master' to manufacture Cheddar as well as Mozzarella cheese. The equipment is also suitable to manufacture Mozzarella cheese with culture or acid plus culture method.

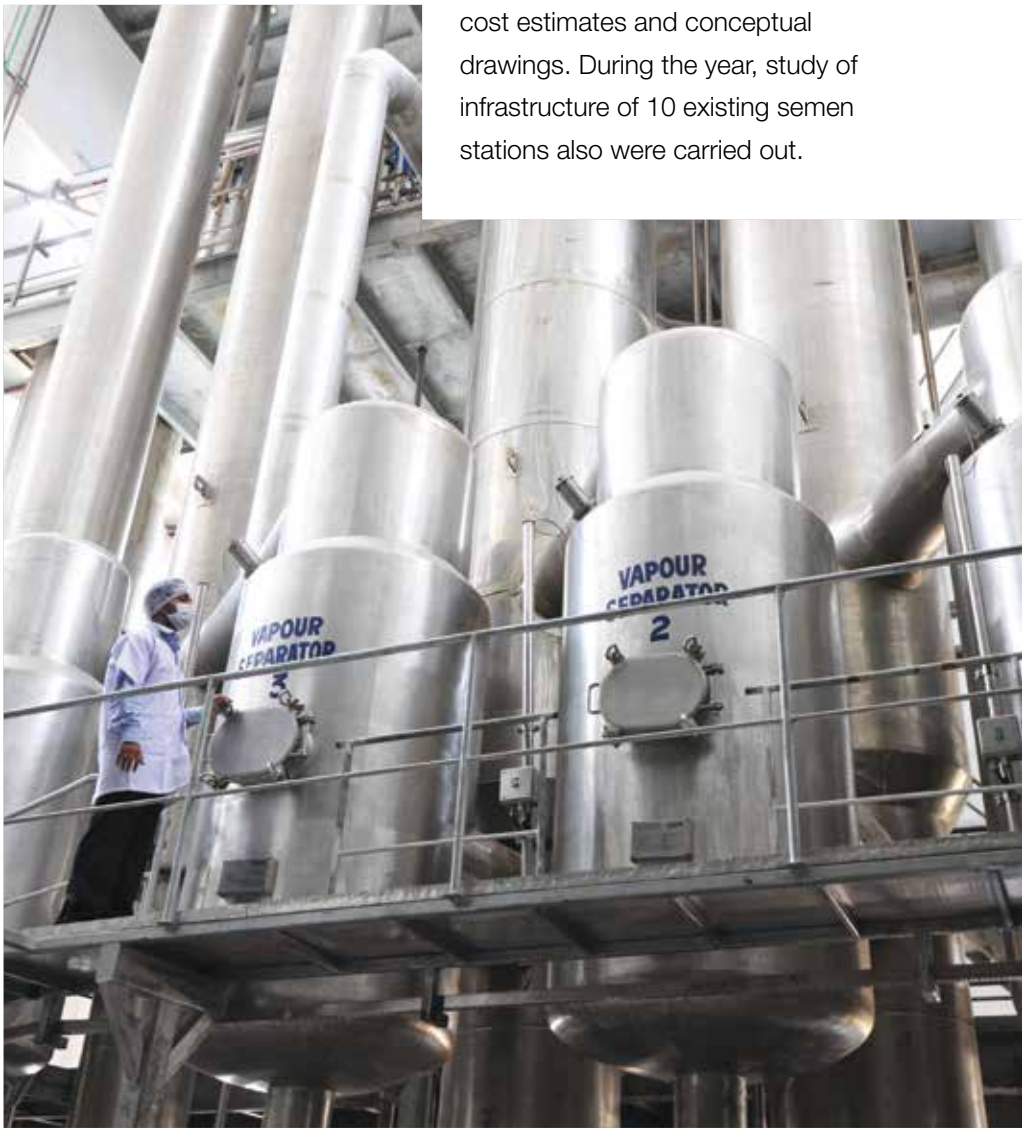
A fully automated storage and retrieval system has been designed to facilitate the loading, traceability and withdrawal of Cheddar cheese of required ageing.

The whey powder plant has been designed to handle the sweet and acid whey received from Cheddar cheese/ Mozzarella cheese/ *paneer*. The whey powder plant is also suitable to manufacture skimmed milk powder.

SEMEN STATIONS

NDDB also provides consultancy services for designing of new semen stations. Two semen stations, each with a capacity of 10 million semen doses per annum are being established by NDDB Dairy Services at Alamadi (Tamil Nadu) and Rahuri (Maharashtra).

NDDB plays a significant role in providing engineering inputs and assessment of the plans submitted for strengthening of existing semen stations under NDP-I. The services include the assessment of existing facility, design for up-gradation of the infrastructure with cost estimates and conceptual drawings. During the year, study of infrastructure of 10 existing semen stations also were carried out.



Fully automated powder plant, Bihar Sharif

WASTE WATER TREATMENT FOR BULK MILK CHILLING UNITS

NDDB has analysed the waste water parameters generated from the cleaning operations of 5 KL capacity Bulk Milk Chilling Units (BMCU). Testing of the waste water revealed that the organic parameters namely, the BOD & COD exceeds the statutory limits for discharge and hence, needs a suitable treatment plant. Technical interactions with service providers in this field, resulted in conceptualising & design of a suitable skid mounted packaged type biological treatment system based on Sequential Batch reactor suitable for batch type operations in BMCU. As an R&D project, a compact packaged type waste water treatment plant of 500 litres per day capacity is developed and installed at BMCU Sayla, a unit of Maahi in Gujarat. This unit is recently commissioned and the performance of the treatment plant is encouraging. The treated waste water is being used for gardening within the plant premises.

BIO-SECURE LABS

Setting up of Bio-safety Laboratories is a specialised and complex task necessitating an integrated approach in planning and execution. NDDB commissioned one of its kind mobile laboratory for SAG, Bidaj, with clean room facility in a van for collecting and testing semen at the field.

Automated refrigeration plant, Mysore

Major projects under implementation are

- International Centre for Foot and Mouth Disease (ICFMD), Bhubaneswar Civil work for a BSL3+ laboratory & animal experiment facility for Indian Council for Agricultural Research (ICAR) to conduct research in the area of Foot and Mouth Disease is in progress.
- Laboratory and Infrastructure for ICAR – A BSL2 facility is being created for handling pathogens at National Institute of Veterinary Epidemiology and Disease Informatics at Bengaluru. The project is at an advanced stage of execution.
- Clean Room Laboratory at Tamil Nadu Veterinary and Animal Sciences University – The R&D facility for cell culture and hybridoma is being created for Translation Research Platform for Veterinary Biological for Animal Health at Tamil Nadu Veterinary and Animal Sciences University, Chennai. The planning and procurement has been completed for the project.

PROJECTS UNDER PLANNING

- A 100 TLPD dairy plant at Perambalur, Tamil Nadu
- A product dairy (Ice cream and *paneer*) plant at Ambattur, Chennai
- A 30 TPD fully automated powder plant alongwith expansion of milk processing capacity from 400 to 700 TLPD at Channarayapatna, Karnataka
- A cattle feed plant of 300 TPD at Ramanagara, Karnataka
- A fully automated 600 TLPD dairy with 30 TPD powder plant and facilities to produce indigenous milk products at Mysore, Karnataka
- A fully automated 200 TLPD dairy with aseptic packaging station for milk and facilities to produce indigenous milk products at Chamrajnagar, Karnataka

ONGOING PROJECTS

Project	Capacity	Location
Northern Region		
Mohali Dairy Expansion	100 to 500 TLPD	Mohali, Chandigarh
Cattle Feed Plant Expansion	200 to 300 TPD	Khanna, Punjab
Cattle Feed Plant Expansion	150 to 300 TPD	Bikaner, Rajasthan
Cattle Feed Plant Expansion	150 to 300 TPD	Ajmer, Rajasthan
Western Region		
Cheese and *Paneer* Plant	30 TPD cheese / 25 TPD *paneer*	Banaskantha, Gujarat
Powder Plant	100 TPD	Banaskantha, Gujarat
Dairy Plant Expansion	175 – 600 TLPD	Rajkot, Gujarat
Dairy Plant	200 TLPD	Bharuch , Gujarat
Dairy Plant Expansion	150 to 250 TLPD	Bhopal, Madhya Pradesh
Infrastructure Expansion of IRMA		Anand, Gujarat
Semen Station	10 million doses/ annum	Rahuri, Maharashtra
Eastern Region		
Cattle Feed plant	150 TPD	Cuttack, Odisha.
International centre for Foot and Mouth Disease (FMD) (BSL-3+)		Bhubaneswar, Odisha.
Southern Region		
Dairy plant Expansion Phase II	100 – 325 TLPD	Tumkur, Karnataka
Dairy Plant Expansion Phase II	120 – 300 TLPD	Hassan, Karnataka
Product Dairy		Bengaluru, Karnataka
Dairy Plant	200 – 300 TLPD	Hosakote, Karnataka
Dairy with Milk Powder Plant	250 TLPD dairy / 20 TPD pp	Thiruvannamalai, Tamil Nadu
Semen Station	10 million doses/ annum	Alamadi, Tamil Nadu
Bio-Security laboratory (BSL-2)		Bengaluru, Karnataka
Clean Room Laboratory		Chennai

TLPD – thousand litres per day | TPD – tonnes per day | pp – Powder Plant

Interior of a bio-secure mobile van

THE NATIONAL DAIRY PLAN

The National Dairy Plan Phase I (NDP-I) is being implemented by National Dairy Development Board (NDDB) through End Implementing Agencies (EIAs) to help increase productivity of milch animals and thereby increase milk production to meet the rapidly growing demand for milk and to help provide rural milk producers with greater access to the organised milk processing sector. The project is a scientifically planned multi-state initiative with focus on 14 major milk producing states.

The NDP-I will put in place scientific and systematic processes which in the long run would put India firmly on the path of improving the genetics of milk producing animals in a consistent manner. It will enable prudent use of the country's scarce natural resources; help reduce methane emissions; improve the quality of milk; help strengthen regulatory and policy measures to provide an enabling environment for the growth of dairying; and ultimately, benefit small holder milk producers who are the bedrock of India's milk production system.

SUB-PROJECT APPROVALS

During the year, 86 sub-projects were approved for implementation which includes five projects under Project Management and Learning. Till March 2014, 171 sub-projects from 87 EIAs covering 15 states have been approved with a total outlay of ₹ 11,463.36 million which includes nine projects of Project Management and Learning. Out of the total approvals ₹ 9,917.52 million would be grant assistance and ₹ 1,545.84 million would be contributed by the EIAs.

Activity-wise approved sub-projects are as mentioned below:

Activity	Nos. of Approved SPPs	Amount in ₹ Million		
		Grant Assistance	EIA Contribution	Total Outlay
Animal Breeding Activities	**41**	**5,399.87**	**0.00**	**5,399.87**
Progeny Testing Programme	13	2,380.86	0.00	2,380.86
Pedigree Selection Programme	6	379.24	0.00	379.24
Strengthening of Semen Stations	19	2,115.38	0.00	2,115.38
Import of Embryos	1	161.78	0.00	161.78
Pilot AI Delivery Services	2	362.60	0.00	362.60
Animal Nutrition Activities	**63**	**1,606.23**	**0.00**	**1,606.23**
Ration Balancing Programme	34	1,201.18	0.00	1,201.18
Fodder Development Programme	29	405.05	0.00	405.05
Village Based Milk Procurement System	**58**	**2,719.91**	**1,545.84**	**4,265.75**
Sub Total	**162**	**9,726.02**	**1,545.84**	**11,271.85**
Project Management & Learning	9	191.51	0.00	191.51
Total	**171**	**9,917.52**	**1,545.84**	**11,463.36**

Dairying – a source of livelihood

Till March 2014, ₹ 2,667.94 million was provided by Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, out of which ₹ 2,045.48 million has been released as imprest advance to EIAs and expenditure towards Project Management and Learning Activities. Till March 2014, ₹ 1,082.80 million has been utilised by the project of which ₹ 193.15 million is EIA's contribution.

ANIMAL BREEDING ACTIVITIES

Intervention	Objective
Bull Production Programme	To produce and supply disease free High Genetic Merit (HGM) bulls of different breeds to Semen Stations for production of high quality disease free semen doses
• Progeny Testing Programme	Improving the genetic merit of major dairy breeds of cattle and buffalo
• Pedigree Selection Programme	Conserving and promoting indigenous breeds of cattle and buffalo in their native tracts to improve their genetic merit.
• Import of Bulls/ Equivalent Embryos	To meet the initial demand of semen doses of pure Jersey and Holstein Friesian breeds
Strengthening of Semen Stations	To expand and upgrade the existing semen stations to meet the increasing demand for frozen semen doses for Artificial Insemination across the country
Pilot AI Delivery Services	Setting up a pilot model for viable doorstep AI Delivery services

Progeny Testing Programme

During the year, four sub-projects were approved and cumulatively 13 sub-projects from nine states have been approved under Progeny Testing programme. The approved sub-projects are expected to make available more than 2,000 bulls to semen stations across the country cumulatively by end of the project period. The breeds covered under Progeny Testing programme are cattle breeds of Pure Holstein Friesian, Cross-bred Holstein Friesian, Cross-bred Jersey and buffalo breeds of *Mehsana* and *Murrah*.

Empowering women through dairying

State	Breeds Covered	End Implementing Agency
Andhra Pradesh	CB Jersey	Andhra Pradesh Livestock Development Agency
Gujarat	Murrah	Sabarmati Ashram Gaushala
	CB HF	Sabarmati Ashram Gaushala
	Mehsana	Banaskantha Milk Union
	Mehsana	Mehsana Milk Union
Haryana	Murrah	Haryana Livestock Development Board
Karnataka	HF	Karnataka Milk Federation
Kerala	CB HF	Kerala Livestock Development Board
Punjab	Murrah	Punjab Livestock Development Board
Tamil Nadu	CB Jersey	Tamil Nadu Cooperative Milk Producers' Federation Limited
Uttar Pradesh	Murrah	Animal Breeding Research Organisation
	CB HF	BAIF Development Research Foundation
Uttarakhand	CB HF	Uttarakhand Livestock Development Board

Till March 2014, 80 High Genetic Merit male calves have been made available for distribution and 91 additional bull calves are available in quarantine station.

Pedigree Selection Programme Focussed On Indigenous Breeds

During 2013-14, two sub-projects were approved and cumulatively six sub-projects from four states have been approved. The approved sub-projects are expected to make available about 360 bulls to semen stations across the country by end of the project period. The breeds covered under Pedigree Selection programme are cattle breeds of *Gir, Kankrej, Hariana, Rathi* and *buffalo* breeds of *Jaffarabadi* and *Pandharpuri*.

State	Breeds Covered	End Implementing Agency
Gujarat	Kankrej	Banaskantha Milk Union
	Jaffarabadi	Sabarmati Ashram Gaushala
	Gir	Sabarmati Ashram Gaushala
Haryana	Hariana	Haryana Livestock Development Board
Maharashtra	Pandharpuri	Maharashtra Livestock Development Board
Rajasthan	Rathi	URMUL Trust

Till March 2014, 7 bull calves were procured after confirmation of parentage and disease testing.

Strengthening Semen Stations

During the year, eight sub-projects were approved and cumulatively till March 2014, 19 sub-projects from 12 states have been approved for upgrading and expanding frozen semen production facilities of 'A' or 'B' graded semen stations. These semen stations together are expected to produce more than 85 million disease free semen doses per annum in 2016-17.

State	Semen Station	End Implementing Agency
Andhra Pradesh	Banavasi	Andhra Pradesh Livestock Development Agency
	Karimnagar	Andhra Pradesh Livestock Development Agency
Gujarat	SAG Bidaj	Sabarmati Ashram Gaushala
	Jagudan	Mehsana Milk Union
	Ode	Amul Research & Development Association, Anand
	Patan	Gujarat Livestock Development Board
Karnataka	Nandini Sperm Station	Karnataka Milk Federation
	CFSP&TI	CFSP&TI
Kerala	Mattupatty	Kerala Livestock Development Board
	Dhoni	Kerala Livestock Development Board
Madhya Pradesh	Bhadbhada	MP State Livestock and Poultry Development Corporation
Maharashtra	Urulikanchan	BAIF Development Research Foundation
Punjab	Nabha	Punjab Livestock Development Board
Rajasthan	Bassi	Rajasthan Cooperative Dairy Federation
Tamil Nadu	DLF Ooty	Tamil Nadu Livestock Development Agency
Uttar Pradesh	ABC Salon	Animal Breeding Research Organisation
Uttarakhand	Rishikesh	Uttarakhand Livestock Development Board
West Bengal	Haringhata	Paschim Banga Go-Sampad Bikash Sanstha
	Salboni	Paschim Banga Go-Sampad Bikash Sanstha

During the year 2013-14, 19 'A' and 'B' graded semen stations approved under NDP-I produced around 55 million semen doses.

IMPORT OF BULLS/ EQUIVALENT EMBRYOS

A proposal for import of 2,400 embryos of HF and Jersey breeds has been approved and the contract has been awarded for supply of 480 embryos. Four participating agencies experienced in bovine embryo transfer have been identified for production of bull calves from imported embryos and their recipient herds are being screened for disease status. Simultaneously, efforts are being made to import bulls/bull calves of HF and Jersey breeds.

PILOT AI DELIVERY SERVICES

To set up viable model for AI delivery services to operate in a financially self-sustainable manner, two sub-projects of Paayas and Maahi Milk Producer Companies have been approved. Under this pilot model, trained Mobile AI Technicians (MAITs) would carry out AI by following SOPs and would gradually cover full cost for AI. The approved sub-projects would cover 4,868 villages through 730 Mobile AI technicians during the project period.

Semen processing

State	End Implementing Agency
Gujarat	Maahi Milk Producer Company Ltd.
Rajasthan	Paayas Milk Producer Company Ltd.

The project implementation began in the last quarter of 2013-14 and 188 villages have been covered through 30 Mobile AI technicians.

ANIMAL NUTRITION ACTIVITIES

Intervention	Objective
Ration Balancing Programme	To formulate least cost balanced ration at farmer's door step by local resource person in user friendly software (INAPH), developed by NDDB using locally available feed resources so as to ensure that milch animals produce milk commensurate with their genetic potential
Fodder Development Programme	To have field demonstrations of mowers, bio-mass bunkers, silage making etc. to farmers for adoption and promotion of certified/ truthfully labelled fodder seeds

Ration Balancing Programme

During the year, 18 sub-projects were approved and cumulatively 34 sub-projects from 12 states have been approved. These sub-projects are expected to cover about 14,000 villages through local resource persons covering more than 11 lakh milch animals by end of the project period.

Formulating a balanced ration

State	End Implementing Agency
Andhra Pradesh	Guntur Milk Union*
	Krishna Milk Union
	Mulukanoor Women Mutually Aided Milk Producers' Union
Bihar	Vikramshila (Bhagalpur) Milk Union
	Tirhut (Mujaffarpur) Milk Union
	Barauni Milk Union
Gujarat	Banaskantha Milk Union
	Mehsana Milk Union
	Sabarkantha Milk Union
	Surat Milk Union
	Panchmahal Milk Union
	Maahi Milk Producer Company Ltd.
Haryana	Sirsa Milk Union
Karnataka	Bengaluru Milk Union
	Kolar Milk Union
	Mysore Milk Union
Kerala	Malabar Milk Union
	Thiruvananthapuram Milk Union
	Ernakulam Milk Union
Madhya Pradesh	Bhopal Milk Union
Maharashtra	Kolhapur Milk Union
	Solapur Milk Union
	Pune Milk Union
Odisha	Samaleswari Milk Union
Punjab	Ropar Milk Union
	Ludhiana Milk Union
	Jalandhar (Doaba) Milk Union
Rajasthan	Ganganagar Milk Union
	Bhilwara Milk Union
	Paayas Milk Producer Company Ltd.
	Pali Milk Union
	Udaipur Milk Union
Uttar Pradesh	Lucknow Milk Union
	Meerut Milk Union (Gangol)

*Converted to Producer Company in June 2013.

Till March 2014, more than 70,000 milch animals have been covered under ration balancing advisory services in about 1,500 villages, which has resulted in reduction of about 11 per cent in cost of feeding per kg of milk.

Fodder Development Programme

During the year, 11 sub-projects were approved and cumulatively till March 2014, 29 sub-projects covering 12 states have been approved. These projects provide support for setting up of five new seed processing plants, one crop residue enrichment and densification plant, 985 demonstrations for silage making, 318 demonstrations for use of mowers and 60 demonstrations for use of bio-mass bunkers.

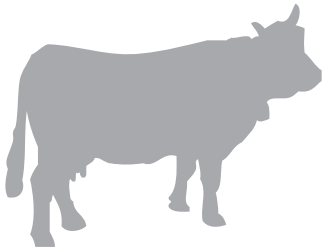
State	End Implementing Agency
Andhra Pradesh	Guntur Milk Union*
	Krishna Milk Union
	Mulukanoor Women Mutually Aided Milk Producers' Union
Bihar	Vaishal Patliputra (Patna) Milk Union
Gujarat	Sabarkantha Milk Union
	Surat Milk Union
	Maahi Milk Producer Company Ltd.
	Banaskantha Milk Union
Haryana	Sirsa Milk Union
Karnataka	Kolar Milk Union
	Bengaluru Milk Union
	Raichur-Bellary Milk Union
Madhya Pradesh	Indore Milk Union
Maharashtra	Kolhapur Milk Union
	Solapur Milk Union
	Baramati Milk Union
	Pune Milk Union
	Rajarambapu Milk Union
	Agriculture Development Trust (KVK), Baramati
Odisha	Samaleswari Milk Union
Punjab	Jalandhar (Doaba) Milk Union
	Ropar Milk Union
Rajasthan	Bhilwara Milk Union
	Ganganagar Milk Union
	Paayas Milk Producer Company Ltd.
	Kota Milk Union
	Chittorgarh Milk Union
Uttar Pradesh	Lucknow Milk Union
West Bengal	Bhagirathi Milk Union

*Converted to Producer Company in June 2013.

Till March 2014, about 90 mower demonstrations and over 120 silage making demonstrations have been organised. Civil works for bio-mass bunkers, fodder seed processing plants and crop residue enrichment and densification plant have been initiated.

Straw collection rake for faster sun drying of succulent bio-mass

TILL MARCH 2014,
171 SUB-PROJECTS WERE APPROVED UNDER NDP-I.



VILLAGE BASED MILK PROCUREMENT SYSTEM

Intervention	Objective
Village Based Milk Procurement System	To expand coverage and to enable milk producers to have greater market access by investing in village level infrastructure and to collection of milk in a fair and transparent manner

During 2013-14, 35 sub-projects were approved and cumulatively 58 sub-projects from 12 states have been approved. The approved sub-projects are expected to cover more than 18,000 villages and enrol about 5.4 lakh new members.

Women are the primary and major contributors to dairying

Linking cooperatives to market

State	End Implementing Agency
Andhra Pradesh	Krishna Milk Union
	Guntur Milk Union*
	Mulukanoor Women Mutually Aided Milk Producers' Union
Gujarat	Panchmahal Milk Union
	Sabarkantha Milk Union
	Rajkot Milk Union
	Banaskantha Milk Union
	Maahi Milk Producer Company Ltd.
	Bharuch Milk Union
Haryana	Sirsa Milk Union
Karnataka	Kolar Milk Union
	Mysore Milk Union
	Bengaluru Milk Union
	Hassan Milk Union
	Mandya Milk Union
	Tumkur Milk Union
	Shimoga Milk Union
	Dakshina Kannada Milk Union
	Dharwad Milk Union
Kerala	Malabar Milk Union
	Ernakulam Milk Union
	Thiruvananthapuram Milk Union
Madhya Pradesh	Bhopal Milk Union
	Indore Milk Union
Maharashtra	Aurangabad Milk Union
	Jalgaon Milk Union
	Pune Milk Union
	Rajarambapu Milk Union

State	End Implementing Agency
Maharashtra	Sangamner Milk Union
	Shivamrut Milk Union
	Kolhapur Milk Union
	Sangli Milk Union (Vasant Dada)
	Bhandara Milk Union
	Beed Milk Union
	Latur Milk Union
	Solapur Milk Union
Odisha	Cuttack Milk Union
	Samaleswari Milk Union
Punjab	Ludhiana Milk Union
	Ropar Milk Union
	Jalandhar (Doaba) Milk Union
Rajasthan	Bhilwara Milk Union
	Paayas Milk Producer Company Ltd.
	Jalore-Sirohi Milk Union
	Kota Milk Union
	Udaipur Milk Union
	Chittorgarh Milk Union
	Pali Milk Union
	Jaipur Milk Union
Uttar Pradesh	Lucknow Milk Union
	Meerut Milk Union (Gangol)
	Bijnore Milk Union
	Farrukhabad Milk Union
	Ambedkarnagar Milk Union
West Bengal	Bhagirathi Milk Union
	Icchamati Milk Union
	Kishan Milk Union
	Kangsaboti Milk Union

*Converted to Producer Company in June 2013.

Till March 2014, 3,351 additional number of villages have been covered or strengthened and more than 1.77 lakh additional milk producers have been organised or enrolled.

PROJECT MANAGEMENT AND LEARNING

Intervention	Objective
ICT Based Management Information System	To put in place Management Information System for integration, monitoring, analysis and reporting of information obtained during course of implementation of sub-projects
Learning and Evaluation	To facilitate learning and its documentation, capacity building, operationalising monitoring and feedback mechanism, engagement of external agencies to carry out evaluation studies, audit, special studies, quality assurance etc.

During the year, five sub-projects were approved and cumulatively till March 2014, nine sub-projects have been approved. To monitor the progress of the approved projects various ICT systems have been developed and operationalised namely,

- Enterprise Project Management (EPM),
- Information Network for Animal Productivity & Health (INAPH),
- Procurement MIS (ProcMIS) and
- Grievance Redressal System (GRS).

More than 250 officers from EIAs were oriented through NDP-I induction programme comprising of procurement management, finance management, MIS applications, environment and social management.

State-wise sub-project implementation review meeting are being organised in the first fortnight of every alternate month. These meetings would be hosted by EIAs/ milk unions implementing VBMPS, RBP and FD sub-projects by turn.

Regular field visits are being undertaken by the monitoring officers nominated for each sub-projects to monitor progress and provide implementation support to EIAs.

Regional review meeting were organised by NDDB to review the progress made, identify challenges, highlight success and work out the future action plan. These regional review meetings were attended by secretaries of state animal husbandry department, managing directors of federations, chief executive officers, project coordinators of concerned EIAs and NDDB officers. These regional review meetings provide an opportunity to EIAs to come together, share experience and learn from each other.

BASELINE STUDY

The baseline study report of NDP-I, conducted by the external monitoring and evaluation agency was finalised and shared with the World Bank.

The next stage of survey for the first annual round was initiated by this agency. In addition to monitoring the Project Development Objectives level indicators of NDP-I, women empowerment through dairying has been identified as the main theme for this round of survey. Data collection for the present survey has been completed.

REGULAR FIELD VISITS ARE BEING UNDERTAKEN BY THE MONITORING OFFICERS NOMINATED FOR EACH SUB-PROJECTS TO **MONITOR PROGRESS** AND PROVIDE IMPLEMENTATION SUPPORT TO EIAs.

TRAINING AND CAPACITY BUILDING

During the year, various training and capacity building programmes were organised for farmers, field functionaries and EIA personnel to upgrade the knowledge base and the skill sets required for successful implementation of the sub-projects.

The details of training and capacity building programmes organised by NDDB are as mentioned below:

Village resource persons being trained on ration balancing

Particulars	Component	2013-14	Cumulative till date
Farmer Induction	Village Based Milk Procurement System	880	1,044
Farmers Orientation		1,190	1,735
Board Orientation		118	160
Business Appreciation		507	609
Training of Trainers		42	66
New Supervisors Training		126	156
World bank guidelines induction		259	523
Sub-total		**3,122**	**4,293**
Training of Technical Officers on RBP	Ration Balancing Programme	67	128
Training of Information Technology on RBP		7	13
Sub-total		**74**	**141**
Fodder production & conservation practices	Fodder Development	41	84
Sub-total		**41**	**84**
Orientation to AIOs	Progeny Testing	2	11
Orientation to Project Coordinators		8	11
Orientation to District Coordinators		5	14
Orientation to Calf Rearing In-charges		2	2
Sub-total		**17**	**38**
Orientation to Project Coordinators	Pedigree Selection	3	3
Orientation to Area Coordinators		4	4
Sub-total		**7**	**7**
Total		**3,261**	**4,563**

The details of training and capacity building programmes organised by End Implementing Agencies are as mentioned below:

Particulars	Component	2013-14	Cumulative till date
New DCS Secretaries training	Village based Milk Procurement System	291	291
Existing DCS Secretaries		671	671
Clean Milk Production		14,369	14,369
Sub-total		**15,331**	**15,331**
LRP trainings	Ration Balancing Programme	1,108	1,248
Sub-total		**1,108**	**1,248**
Seed production technology	Fodder Development	10	10
Sub-total		**10**	**10**
Orientation/refresher to AI	Progeny Testing	373	373
Orientation/refresher to Milk Recorders		108	108
Orientation/refresher to Supervisors		50	50
Orientation/refresher on DEOs		2	2
Sub-total		**533**	**533**
Orientation/Refresher on AI on MAIT	Pedigree Selection	7	7
Orientation/refresher on MAIT		11	11
Sub-total		**18**	**18**
Laboratory techniques for QCO	Strengthening of Semen Station	7	7
Modern cryopreservation technology for QCO & VO		7	7
Bull breeding Soundness for QCO & VO		13	13
Lab techniques for Lab technicians		8	8
Orientation of Lab attendant		21	21
Orientation of Bull attendant		43	43
ISO first aid and safety works		213	213
Sub-total		**312**	**312**
Total		**17,312**	**17,452**

ENVIRONMENT AND SOCIAL MANAGEMENT MEASURES

The project focusses on inclusion of women, schedule caste, schedule tribe and small holders beneficiaries and functionaries. Considering that women in rural households play a significant role in livestock sector by carrying out most of the operations, to enhance women's participation, the focus is to cover more women members and try to organise new/ revive Dairy Cooperative Societies (DCS) as all-women DCS.

During preparation of the sub-projects, necessary consultations and disclosures are being carried out to identify environment and social issues and mechanisms for its enhancement/ mitigation. In all, the training programmes social and environment concerns which may arise because of sub-project implementation and corresponding mitigation measures are discussed and addressed.

SUCCESS STORY

Bangalore Milk Union has taken a step forward to support women's empowerment in dairying through Ration Balancing Programme (RBP) under NDP-I. To provide doorstep advisory services on balanced ration to milk producers through an ICT based application, it has trained 78 Local Resource persons of which 46 are women. Manikya, a women LRP of Gadda Danayaka Halli of Devanahalli taluka, Bangalore district states "After becoming an LRP I now have a steady income without going outside the village to look for work and have money to spend on education of my children". She visits about 3-4 households each day for recording the feeding practices of milch animals owned by the farmers of the village and advises them on how to balance the ration with locally available feed resources without increasing the cost of feeding.

CASE STUDY ON RBP IN MALABAR REGION OF KERALA

Ration balancing programme (RBP) was initiated in Malabar region of Kerala. One hundred and seven local resource persons (LRPs) have been trained, of which 83 are women. Till date, 103 LRPs have been deployed in 86 villages to provide ration balancing advisory services to 4,820 farmers covering 6,176 animals. The programme has led to an increase in average milk yield by 0.37 kg, average fat content by 0.2 per cent and daily feeding cost reduced by ₹ 21 per animal. Besides project's assistance of ₹ 1,500 and union support of ₹ 1,000 per month, LRPs are getting additional remuneration of approximately ₹ 700 per month through the sale of feed ingredients and mineral mixture. The programme has helped in enhancing the net income of milk producers.

CENTRE FOR ANALYSIS AND LEARNING IN LIVESTOCK AND FOOD (CALF)

CALF CONTINUOUSLY UPGRADES ANALYTICAL AND TECHNICAL SKILLS STRIVING FOR RECOGNITION BY NATIONAL AND INTERNATIONAL BODIES. THE ACCREDITATION OF CALF FOR THE CHEMICAL AND BIOLOGICAL ANALYSIS BY THE NATIONAL ACCREDITATION BOARD FOR CALIBRATION AND TESTING LABORATORIES IS A STEP TO REACH GREATER HEIGHTS.

6,800 & 3,700

TESTS WERE CONDUCTED FOR SERUM BRUCELLA AND SERUM IBR, RESPECTIVELY.

In its pursuit for excellence and in accordance with the quality policy of CALF, the laboratory has been upgrading and improving its facilities and systems on a regular basis. Since its inception, the laboratory has been working towards putting in place the best practices followed at the national and international level, generating data for robust quality control for the methods to enhance the accuracy of test results.

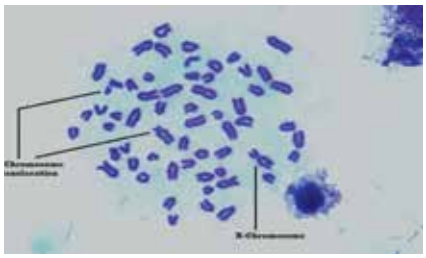
The laboratory has been accredited for conducting Biological and Chemical tests by the National Accreditation Board for Calibration and Testing Laboratory, DST in accordance with the ISO/ IEC 17025:2005. The scope of accreditation covers the analysis of milk and dairy products, feed and feed ingredients, mineral mixture/ salts, vitamin premixes and water for food process industry.

CALF continually assesses its analytical competence by participating in the Proficiency Test (PT) programmes conducted at the national or international level. During the year, the laboratory participated in the PT conducted by FAPAS & FEPAS (Food Analysis and Performance Assessment Scheme, the UK and Food Examination Performance Assessment Scheme, the UK) in areas of composition, vitamin analysis, minerals and food pathogen. The laboratory obtained a 'z-score' of -/+ 2 which is satisfactory.

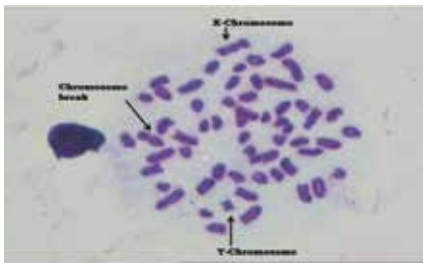
CALF continued to support NDP-I through its intervention in the ration balancing programme, parentage verification, screening of genetic disorders and the animal diseases.

During the year, 350 sires were genotyped and DNA fragment based parentage verification was conducted for approximatetly 2,000 families. Five hundred and seven animals were screened for the four types of genetic disorders (BLAD, DUMPS, Factor XI and Citrullineamia) of economic importance to dairying.

In the animal health area, over seven thousand frozen semen doses were screened during the year for IBR virus, while 6,800 and 3,700 tests were conducted for Serum Brucella and Serum IBR, respectively.



Chromosomal translocation of Y chromosome

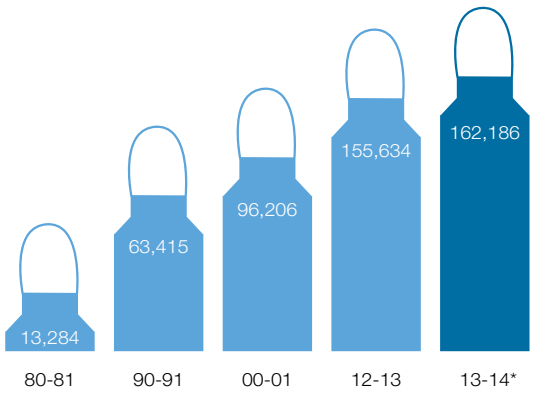


Chromosomal break loss of genetic information

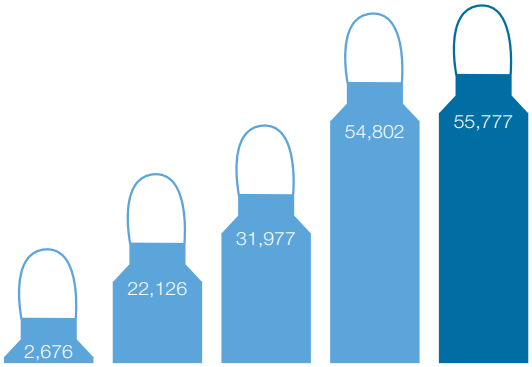
DAIRY COOPERATIVES AT A GLANCE

DAIRY COOPERATIVE SOCIETIES
(In numbers+)

Total

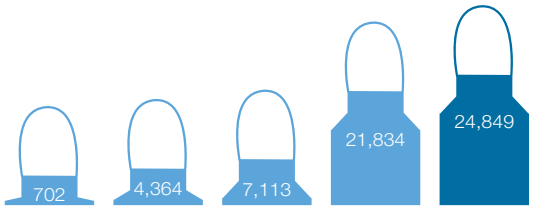


North



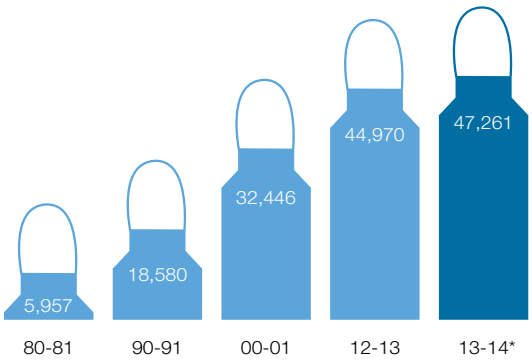
NORTH	80-81	90-91	00-01	12-13	13-14*
Haryana	505	3,229	3,318	7,050	7,092
Himachal Pradesh		210	288	807	813
Jammu & Kashmir		105	**	**	**
Punjab	490	5,726	6,823	7,393	7,541
Rajasthan^	1,433	4,976	5,900	16,482	16,953
Uttar Pradesh	248	7,880	15,648	23,070	23,378

East



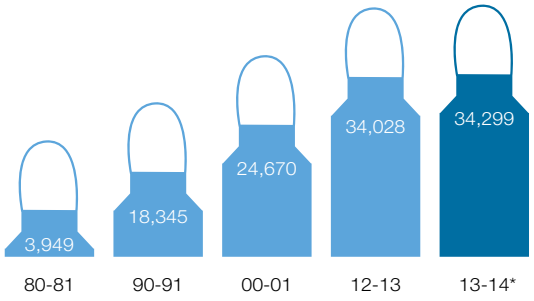
EAST	80-81	90-91	00-01	12-13	13-14*
Assam		117	125	226	249
Bihar	118	2,060	3,525	12,928	15,653
Jharkhand				57	58
Nagaland		21	74	51	51
Odisha		736	1,412	5,093	5,155
Sikkim		134	174	307	307
Tripura		73	84	92	92
West Bengal	584	1,223	1,719	3,080	3,284

West



WEST	80-81	90-91	00-01	12-13	13-14*
Chhattisgarh				934	1,024
Goa		124	166	178	180
Gujarat	4,798	10,056	10,679	15,112	17,025
Madhya Pradesh	441	3,865	4,877	7,029	7,491
Maharashtra	718	4,535	16,724	21,717	21,541

South

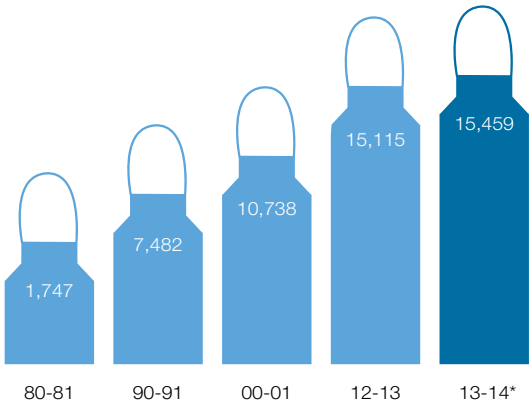


SOUTH	80-81	90-91	00-01	12-13	13-14*
Andhra Pradesh	298	4,766	4,912	5,314	5,593
Karnataka	1,267	5,621	8,516	13,527	13,772
Kerala		1,016	2,781	3,750	3,789
Tamil Nadu	2,384	6,871	8,369	11,334	11,043
Puducherry		71	92	103	102

+ Organised (cumulative), includes conventional societies and Taluka unions formed earlier
^ DCS includes registered and collection centers proposed for registration and their membership since 2009-10.
* Provisional ** Not reported

PRODUCER MEMBERS
(In thousands+)

Total



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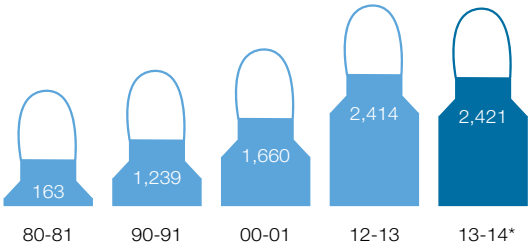
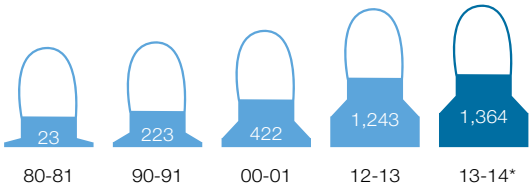


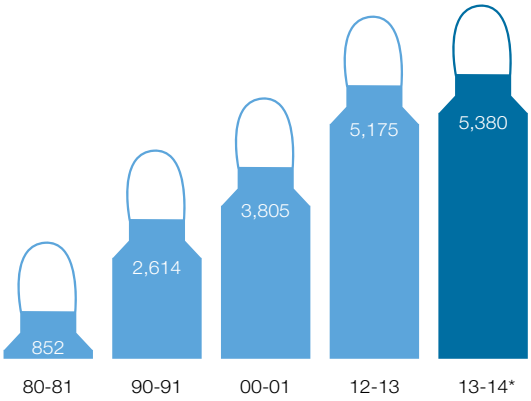
NORTH	80-81	90-91	00-01	12-13	13-14*
Haryana	39	184	185	310	318
Himachal Pradesh		17	20	34	35
Jammu & Kashmir		2	**	**	**
Punjab	26	304	370	402	410
Rajasthan	80	340	436	701	703
Uttar Pradesh	18	392	649	967	955

East



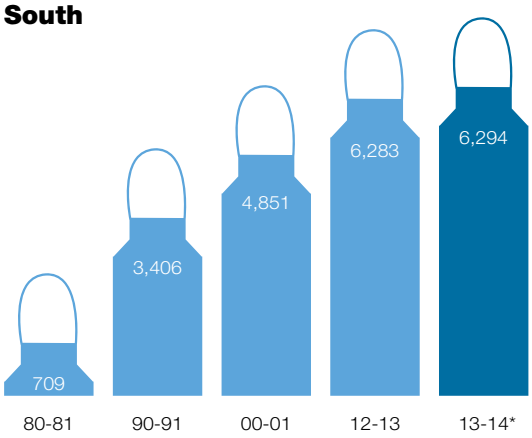
EAST	80-81	90-91	00-01	12-13	13-14*
Assam		2	1	7	9
Bihar	3	100	184	736	842
Jharkhand				1	1
Nagaland		1	3	2	2
Odisha		46	111	260	267
Sikkim		4	5	10	10
Tripura		4	4	6	6
West Bengal	20	66	114	221	227

West



WEST	80-81	90-91	00-01	12-13	13-14*
Chhattisgarh				37	41
Goa		12	18	19	19
Gujarat	741	1,612	2,147	3,041	3,234
Madhya Pradesh	24	150	242	280	286
Maharashtra	87	840	1,398	1,798	1,800

South

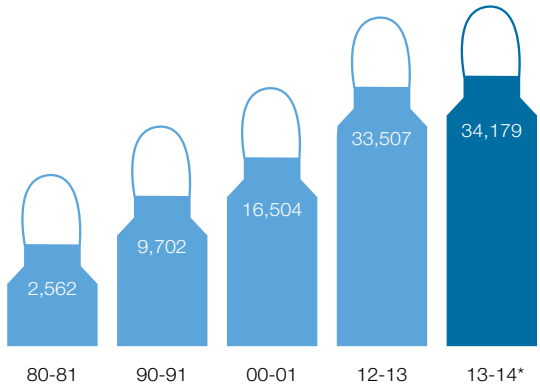


SOUTH	80-81	90-91	00-01	12-13	13-14*
Andhra Pradesh	33	561	702	857	859
Karnataka	195	1,013	1,528	2,274	2,297
Kerala		225	637	876	898
Tamil Nadu	481	1,590	1,957	2,238	2,202
Puducherry		17	27	38	38

+ Organised (cumulative), includes conventional societies and Taluka unions formed earlier
* Provisional ** Not reported

MILK PROCUREMENT+
(In thousand kilograms per day)

Total



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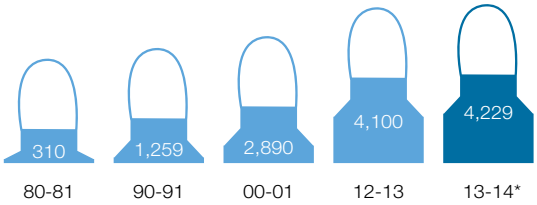
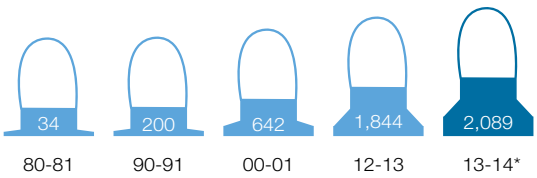


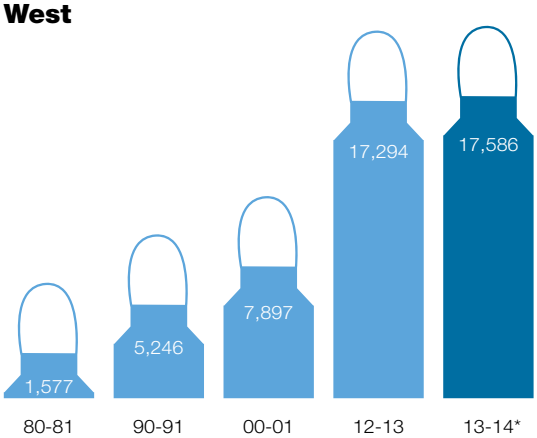
NORTH	80-81	90-91	00-01	12-13	13-14*
Haryana	33	94	276	381	398
Himachal Pradesh		14	24	71	61
Jammu & Kashmir		11	**	**	**
Punjab	75	394	912	1,231	1,152
Rajasthan	138	364	887	1,931	2,245
Uttar Pradesh	64	382	791	486	373

East



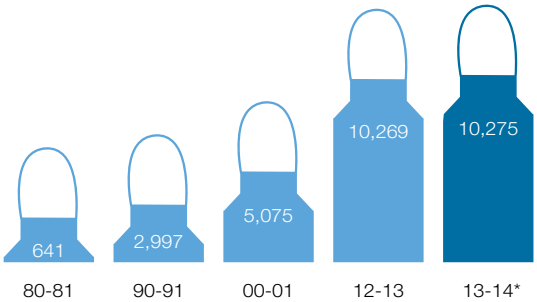
EAST	80-81	90-91	00-01	12-13	13-14*
Assam		4	3	15	23
Bihar	3	95	330	1,244	1,485
Jharkhand				6	9
Nagaland		1	3	2	2
Odisha		41	94	381	390
Sikkim		4	7	13	15
Tripura		3	1	3	4
West Bengal	31	52	204	180	161

West



WEST	80-81	90-91	00-01	12-13	13-14*
Chhattisgarh				37	43
Goa			16	32	45	63
Gujarat	1,344	3,102	4,567	13,095	13,572
Madhya Pradesh	68	256	319	799	825
Maharashtra	165	1,872	2,979	3,318	3,083

South

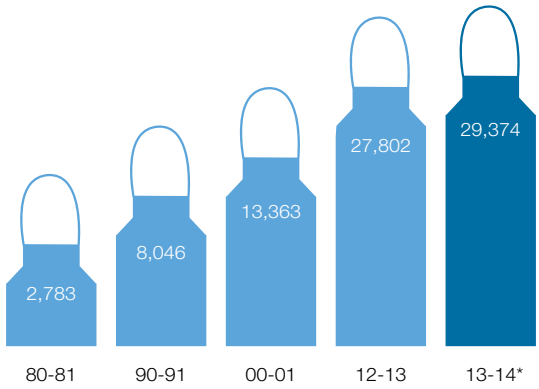


SOUTH	80-81	90-91	00-01	12-13	13-14*
Andhra Pradesh	79	763	879	1,951	1,730
Karnataka	261	917	1,887	4,907	5,161
Kerala		185	646	888	963
Tamil Nadu	301	1,106	1,618	2,491	2,385
Puducherry		26	45	32	36

+ Includes Cooperatives outside state operations
* Provisional ** Not reported

LIQUID MILK MARKETING+
(In thousand litres per day)

Total



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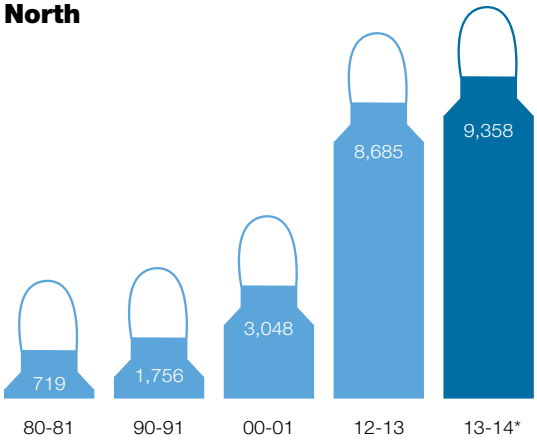
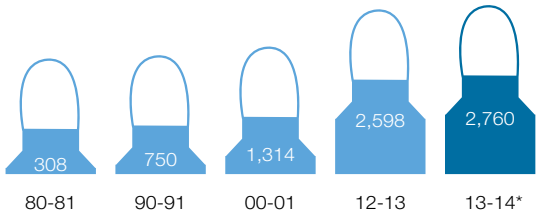


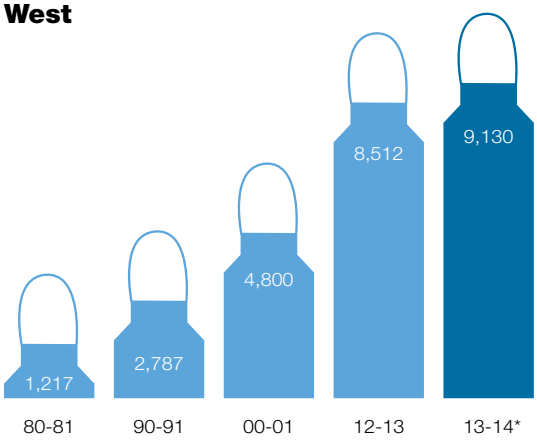
NORTH	80-81	90-91	00-01	12-13	13-14*
Haryana	2	80	108	369	373
Himachal Pradesh		15	20	20	18
Jammu & Kashmir		9	**	**	**
Punjab	7	139	420	861	928
Rajasthan	12	136	540	1,724	1,885
Uttar Pradesh	1	326	436	636	662
DELHI	697	1,051	1,524	5,075	5,492

East



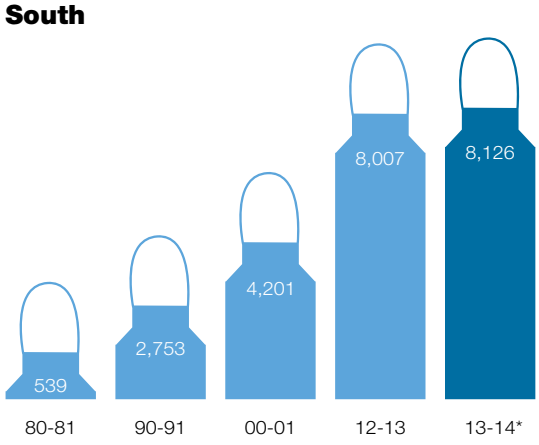
EAST	80-81	90-91	00-01	12-13	13-14*
Assam		10	7	37	38
Bihar	8	111	324	605	703
Jharkhand				286	306
Nagaland		1	4	3	3
Odisha		65	98	444	461
Sikkim		5	7	24	27
Tripura		6	7	12	11
West Bengal	17	26	27	46	42
KOLKATA	283	526	840	1,141	1,169

West



WEST	80-81	90-91	00-01	12-13	13-14*
Chhattisgarh				95	107
Goa		36	83	67	71
Gujarat	210	1,052	1,905	3,836	4,190
Madhya Pradesh	39	279	244	648	732
Maharashtra	18	363	1,178	2,173	2,258
MUMBAI	950	1,057	1,390	1,693	1,772

South



SOUTH	80-81	90-91	00-01	12-13	13-14*
Andhra Pradesh	19	552	733	1,698	1,719
Karnataka	166	889	1,501	2,991	2,998
Kerala		223	640	1,188	1,189
Tamil Nadu	109	405	559	982	1,018
Puducherry		22	43	103	106
CHENNAI	245	662	725	1,045	1,096

+ Cooperatives (State) & Metro dairies and include outside state operations
* Provisional ** Not reported

OTHER ACTIVITIES

PROGRESSIVE USE OF HINDI

Concerted efforts were made during the year to promote Hindi in official work. NDDB's Annual Report, website and other documents were translated and published in Hindi. Content for '*Parikrama*' – NDDB's visitor centre was also translated in Hindi. In addition to this, steps were taken to implement the official language policy.

With a view to create awareness among the employees to use Hindi in official work and to increase its progressive use, Hindi fortnight was organised in all the NDDB offices during September, 2013.

Various competitions such as essay, translation and general knowledge were organised in Hindi. A large number of employees participated in these competitions and cash awards were distributed to the successful candidates. Employees from organisations affiliated to Town Official Language Implementation Committee (Undertaking) Vadodara were invited to participate in the general knowledge competition and were given cash awards. Those who could not win cash prize were given books in Hindi as a token of recognition for their participation.

NDDB has introduced various incentive schemes for promotion of Hindi in the official work. One such scheme is Hindi noting and drafting incentive scheme. Twenty five employees participated in this scheme and were awarded with cash incentives. Besides, 12 employees, whose children scored 75 per cent marks or more in Hindi in Class 10th and 12th standard examination, were given cash prize of ₹ 1,000 each.

NDDB library has good number of books in Hindi. During the year, an expenditure of ₹ 2,21,036 was incurred on purchase of Hindi books.

NDDB is a member of the Town Official Language Implementation Committee (TOLIC), Vadodara and actively participates in its half yearly meetings and other activities. Recognising NDDB's efforts in promoting Hindi in the office work, TOLIC, Vadodara awarded NDDB the second prize during 2012-2013. The President of India, Shri Pranab Mukherjee, awarded the Indira Gandhi Rajbhasha Puraskar to Chairman, NDDB for its commendable effort in the implementation of the official language on the occasion of Hindi Diwas at Vigyan Bhavan on September 14, 2013. The organisation was awarded second prize from among organisations in the entire 'B' region.

National programmes, such as Republic Day, Independence Day, Gandhi Jayanti and Ambedkar Jayanti were conducted in Hindi.

Ambedkar Jyanti celebrated at NDDB, Anand

Independence day celebration

WELFARE OF SC/ST EMPLOYEES

Focus on development of SC/ST employees through welfare and capacity building measures continued during the year. SC/ST employees were nominated for different training programmes at premier institutions for skill development and to familiarize them with recent developments in the field. During the year, 29 SC/ST employees were imparted training through in-house training and sponsorship to other organisations. SC/ ST employees were reimbursed expenses incurred on education as well as books for their children. Meritorious children of SC/ST employees were awarded cash prizes and certificates for achieving academic proficiency during the year.

AMBEDKAR JAYANTI WAS CELEBRATED IN ALL OFFICES OF NDDB WHEREIN DISTINGUISHED SPEAKERS SHARED THEIR THOUGHTS ON THE LIFE AND CONTRIBUTIONS OF DR. AMBEDKAR.

PLANNED ACTIVITIES FOR 2014-15

SUPPORT TO COOPERATIVES

During 2014-15, National Dairy Development Board will continue to a) assist dairy cooperatives develop robust governance and management systems, b) increase involvement of women in dairy cooperatives c) manage West Assam Milk Union Limited, Jharkhand Federation and Jalgaon Milk Union.

Appraisals would be conducted for projects to create/expand milk processing and feed/feed supplement manufacturing facilities with an outlay of about ₹ 350 crore and proposals for working capital loan of about ₹ 40 crore to dairy cooperatives in 2014-15.

A study to estimate milk production and marketable surplus in 10 districts of Jharkhand State to expand the operations of the Jharkhand Dairy Federation and a study to prepare a village level milk procurement plan in nine districts of Vidarbha and Marathwada regions of Maharashtra is proposed to be carried out in 2014-15.

ENHANCING PRODUCTIVITY

NDDB will continue its efforts in supporting improved productivity through scientific breeding and feeding, disease control and health care services.

ANIMAL BREEDING

During 2014-15, revision of the "Minimum Standards for production of Bovine Frozen Semen" based on feedback from stakeholders and steps to be taken to address the rate of rejection among cross-bred bulls meant for frozen semen production would be initiated.

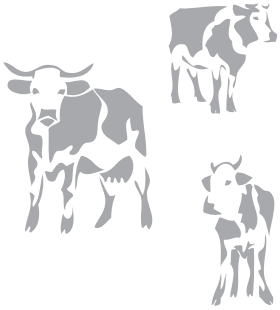
Towards standardising and establishing Genomic Selection methodologies for various cattle and buffalo breeds in India, collection of samples for DNA extraction from all the performance-recorded animals in a phased manner would be initiated.

ANIMAL NUTRITION

A collaborative project on tissue culture of thorn-less cactus and demonstration of new varieties of fodder crops would be initiated. Feeding trials on straw based feed pellets, vitamin-E and selenium based supplement, glycine based copper, zinc and manganese chelates and study on impact of feeding a balanced ration on Solids-Not-Fat (SNF) content in milk will be undertaken. Effect of feeding bypass protein supplement on methane emission reduction and different metabolic profile would also be studied. Technical assistance for setting up bypass protein, mineral mixture and bypass fat plants to the dairy cooperatives will continue.

ANIMAL HEALTH

During 2014-15, NDDB will continue to support a) brucella control project, b) improve bio-security in projects for Pedigree Selection/



INDIGENOUS BREED DEVELOPMENT WILL **CONTINUE TO RECEIVE PRIORITY** DURING THE YEAR.

Women are encouraged to become active members of dairy cooperatives

Progeny Testing, Embryo Transfer and semen stations, c) implement pilot projects for IBR and mastitis control in select locales and d) promote the Animal Health module of INAPH software.

RESEARCH & DEVELOPMENT

NDDB's R&D unit plans to strengthen its diagnostic facilities for all the sexually transmitted diseases in the MSP for frozen semen in order to provide reliable and prompt disease diagnostic services and also increase its capacity for FMD sero-monitoring in 2014-15.

ENGINEERING PROJECTS

During 2014-15, 16 projects are scheduled to be completed. They include: a) Seven dairy plants at Rajkot and Bharuch, Hosakote Hassan Ph. II and Tumkur Ph. II, Mohali, and Bhopal b) Two powder plants at Banaskantha and Thiruvanamalai c) Two product plants at Bengaluru and Peramblur d) Three Cattle Feed Plants at Khanna, Bikaner and Ajmer. e) One Animal Disease Monitoring and Surveillance (BSL2 Lab) for ICAR at Bangalore f) One clean room for cell culture and Hybridoma at Translation Research Platform for TANUVAS Chennai. Execution of agreements and pre-project works related to BSL4 Laboratory for HSADL (ICAR), Bhopal and Animal Houses for ICAR at NIAN-Bangalore, IVAR – Izzat-nagar, PDP Hyderabad are also expected to be done in 2014-15.

NATIONAL DAIRY PLAN

Eighty nine new sub-projects with an estimated outlay of ₹ 450 crore are planned to be approved in 2014-15, with focus on more number of sub-projects from the states having less coverage under NDP-I.

In 2014-15, special studies on women empowerment, inclusion of schedule caste and tribal population, impact of Ration Balancing Programme would be taken up to assess the impact of NDP-I interventions.

Information Network for Animal Productivity and Health (INAPH) would be migrated to Windows 8 Platform with feature enhancements and Ration Balancing Module on Android Based Tablets during 2014-15.

SUBSIDIARIES

Silos under construction at IDMC

IDMC LTD

IDMC's vision is to be a customer focused leading engineering and flexible packaging solutions provider to the dairy food processing and pharmaceutical sectors in an ethical and environment friendly manner.

During 2013-14, IDMC completed the supply, installation, testing and commissioning of six dairy projects, an indigenously developed Continuous Butter Making Machine (CBMM) for white butter, a cattle feed expansion project, 10 refrigeration and air conditioning plants including one in Yemen, an evaporation and drying plant and a project for a butter re-worker. IDMC continued to market a range of food processing equipment such as pasteurizers, homogenizers, ice cream freezers, bulk milk coolers (BMCs) and products such as tankages, fermenters, pumps, valves and fittings.

IDMC continued design and development of equipment and launched a new series of indigenous lobe pumps, deep fryers, mixed proof valves, flow modulating valves, CBMM and low cost BMCs.

IDMC's plastics division continued to manufacture and market poly film in its HACCP certified plant, for use in packing liquid milk and laminates for packing edible oils and other food products.

During 2013-14, IDMC achieved a turnover of ₹ 425.96 crore.

INDIAN IMMUNOLOGICALS LTD

Indian Immunologicals Ltd (IIL) continues to lead in the domestic animal vaccines and animal health markets. During 2013-14, IIL's Foot and Mouth Disease (FMD) vaccine - Raksha Ovac, continues to be the largest selling veterinary brand in India with sales of ₹ 134.8 crore. IIL's flagship human vaccine product 'Abhayrab' recorded sales of ₹ 133.3 crore. Abhay TOX (Tetanus Toxoid), Abhay TAG (Diptheria, Pertussis and Tetanus) and other vaccines catering to the requirements of the Ministry of Health's Universal Immunisation Programme (UIP) recorded a cumulative sales of ₹ 57.2 crore.

IIL intends to launch new animal vaccines for Blue tongue virus and Classical swine fever and a superior combination canine vaccine. It is also expanding its portfolio of prophylactic, therapeutic and nutraceutical products in the animal health market. In the human health market, IIL invested in a new manufacturing facility for manufacture of combination paediatric vaccines and plans to create a new facility for manufacture of cGMP clinical material.

As part of its social initiatives, IIL donated Mineral Mixture worth ₹ 65 lakh for drought relief in Maharashtra in June 2013 and two lakh doses of FMD vaccine worth about ₹ 10 lakh for the Uttarakhand Relief Campaign in July 2013. IIL also continues to maintain and operate the Open Air Prison in Gachibowli, Hyderabad in collaboration with the State Prisons Department.

The sales turnover of the Company increased by 8 per cent to reach ₹ 442.8 crore during the year.

MOTHER DAIRY FRUIT AND VEGETABLE PRIVATE LIMITED

Mother Dairy Fruit and Vegetable Private Limited's (MDFVPL) business segments include liquid milk, dairy products, edible oils and horticulture. The liquid milk business includes Bulk Vended Milk (BVM) and Poly Pack Milk (PPM). While sales of PPM in the National Capital Region (NCR) and other markets increased by 13 per cent over the previous year, sales of BVM (mainly sold in NCR) were almost at par with previous year due to high availability of loose milk in the market and the increasing customers preference for convenience in having milk delivered at home.

MDFVPL strengthened its position in the business of dairy products, edible oil and horticulture business. In 2013-14, sales of dairy products grew by 24 per cent to about ₹ 764.18 crore, sales of edible oils grew by 10 per cent to about ₹ 737 crore and sales of horticulture business grew by 19 per cent to about ₹ 635 crore.

MDFVPL focused on quality of fruit in its strategy to drive growth in the fresh fruit category. To promote chemical free ripened mangoes, a safe fruit campaign with the concept of "Khud Pakao Surakshit Aam Khao" entered its third year.

MDFVPL's exports volume grew by 5 per cent with Fruit pulp, SMP, UHT milk, Ice Cream, Dhara Edible Oil, Frozen Vegetables being exported to Middle East and Far East Asian Countries.

The Company achieved a total sales turnover of about ₹ 6,379.20 crore registering a growth of 11.6 per cent as compared to the previous year.

NDDB DAIRY SERVICES

NDDB Dairy Services (NDS) was incorporated in 2009 as a not for profit company under section 25 of Companies Act, 1956, to function as a delivery arm of NDDB for field operations relating to promoting producer organisations and productivity services.

During 2013-14, NDS helped conduct about 40 training programmes and workshops to strengthen good governance in Maahi Milk Producer Company in Gujarat and Paayas Milk Producer Company in Rajasthan. NDS also facilitated training of about 300 Local Resource Persons (LRP's) in villages to undertake Ration Balancing Programmes and 300 AI technicians to provide AI services to the producers. Action has been initiated to setup Producer Companies in Andhra Pradesh, Punjab, Uttar Pradesh and Maharashtra.

NDS is currently managing the two largest semen stations in the country – SAG, Bidaj and ABC, Salon which together produced over 18 million frozen semen doses (FSD) during 2013-14. Work was also initiated by NDS to establish two more semen stations in Tamil Nadu and Maharashtra, each having a capacity to produce 10 million FSD's annually.

A Safal store

VISITORS

DURING 2013-14, NDDB RECEIVED 2,221 VISITORS FROM INDIA AND ABROAD.

Overseas visitors came from Australia, Bangladesh, Columbia, Costa-Rica, Iran, Japan, Kenya, Liberia, Malawi, Mauritius, Namibia, Nepal, Oman, Thailand, Uganda, the United Kingdom, the United States of America, Venezuela and Yemen.

Dr. Abdul Rahman, President, Commonwealth Veterinary Association (CVA) & Mr Mike Baker, CEO, World Society for the Protection of Animals (WSPA), the United Kingdom

Mr Jangbahadoorsing Iswardeo Mola Roopchand Seetaram, Hon'ble Minister of Business, Enterprise and Cooperative, Government of Mauritius

Mr Lal Mani Joshi, Secretary, MoCPA, Government of Nepal

Ms Rahma Hamood Said Al-Harthi, AES, Ministry of Agriculture, Sultanate of Oman

Shri Anup Kumar Thakur, Secretary, Animal Husbandry, Dairying & Fisheries, Government of India, New Delhi

Mrs Katureebe Koburungi Mary Bernadette, Chairperson, DDA, Ministry of Agriculture, AH & Fisheries, Government of Uganda

ACCOUNTS

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Chartered Accountants
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Independent Auditors' Report

To The Board of Directors of National Dairy Development Board

Report on the Financial Statements

We have audited the accompanying financial statements of **National Dairy Development Board** ("the Board") which comprise of Balance Sheet as at 31st March, 2014, the Income and Expenditure Account and also the Cash Flow Statement for the year then ended, and a summary of Significant Accounting Policies and Notes to Accounts.

Management's responsibility for the Financial Statements

The Board's management is responsible for the preparation of these financial statements that give a true and fair view of the financial position, financial performance and cash flows of the Board in accordance with generally accepted accounting principles in India including Accounting Standards as issued by the Institute of Chartered Accountants of India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements, based on our audit. We conducted our audit in accordance with Standards on Auditing issued by the Institute of Chartered Accountants of India. Those standards require that we comply with the ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and the disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risks assessments, the auditor considers the internal controls relevant to the Board's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of the Board's internal control. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of the accounting estimates made by the Management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion and to the best of our information and according to the explanations given to us, the aforesaid financial statements 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 31 March, 2014.

(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 flow for the year ended on that date.

Other Reporting Matters We report that:

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

(ii) Proper books of account as required by law have been kept by the Board, so far as it 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.

For Deloitte Haskins and Sells LLP
Chartered Accountants
Firm's Registration No. 117366W/W-100018

Kalpesh J. Mehta
Partner
Membership No. 048791

Place: Anand
Date: July 7, 2014

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

Balance Sheet as at 31 March, 2014

₹ in million

	Annexure	31.03.2014	31.03.2013
LIABILITIES			
NDDB Funds			
General Funds	I	26,153.42	25,184.46
Secured Loans	II	540.90	957.04
Current Liabilities and Provisions	III	6,690.49	7,264.12
Total		**33,384.81**	**33,405.62**
ASSETS			
Cash and Bank Balances	IV	9,391.79	6,406.76
Inventories	V	1.60	4,024.46
Sundry Debtors		20.39	243.17
Loans, Advances and Other Current Assets	VI	14,289.42	13,005.15
Investments	VII	7,528.98	7,382.14
Fixed Assets	VIII	1,948.16	2,132.09
Deferred Tax Assets	XVII (Note 9 and 10)	204.47	211.85
Total		**33,384.81**	**33,405.62**
Significant Accounting Policies	XVI		
Notes to Accounts forming part of Financial Statements	XVII		

In terms of our report of even date attached.

For Deloitte Haskins & Sells LLP
Chartered Accountants

Kalpesh J. Mehta
Partner
Membership No. 048791
Firm Reg. No. 117366W /W-100018

Y Y Patil
General Manager
(Accounts)

For and on behalf of the Board,

Dilip Rath
Managing Director

T Nanda Kumar
Chairman

Anand, 7th July, 2014

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

Income and Expenditure Account
for the year ended 31 March, 2014

₹ in million

PARTICULARS	Annexure	2013-2014	2012-2013
INCOME			
Interest		1,694.82	1,187.85
Service Charges	IX	70.67	125.44
Sales	XVII (Note 12)	4,252.54	1,512.84
Rent		150.22	161.55
Dividend		163.50	10.80
Other Income	X	488.58	516.87
Total (A)		**6,820.33**	**3,515.35**
EXPENDITURE			
Interest and Financial Charges		131.02	120.97
Remuneration and Benefits to Employees	XI	472.89	474.57
Cost of Materials Sold	XII	4,090.94	1,660.18
Administrative Expenses	XIII	135.77	151.19
Grants		31.17	33.24
Research and Development		85.31	97.81
Maintenance of Assets	XIV	144.90	118.26
Other Expenses	XV	71.71	71.43
Bad Debts Written off		422.49	119.20
Depreciation		256.63	265.91
Total (B)		**5,842.83**	**3,112.76**
Surplus during the year before tax (A - B)		**977.50**	**402.59**
Less: Provision for Taxation			
Deferred Tax		7.38	16.99
Income Tax		-	-
Wealth Tax		0.80	0.78
Surplus during the year after tax		**969.32**	**384.82**
Less: Appropriations			
Special Reserve		90.30	62.11
Balance carried to General Funds		879.02	322.71
Total		**6,820.33**	**3,515.35**
Significant Accounting Policies	XVI		
Notes to Accounts forming part of Financial Statements	XVII		

In terms of our report of even date attached.

For Deloitte Haskins & Sells LLP
Chartered Accountants

For and on behalf of the Board,

Kalpesh J. Mehta	**Y Y Patil**	**Dilip Rath**	**T Nanda Kumar**
Partner	General Manager	Managing Director	Chairman
Membership No. 048791	(Accounts)		
Firm Reg. No. 117366W /W-100018			

Anand, 7th July, 2014

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

Cash Flow Statement for the year ended 31 March, 2014

₹ in million

PARTICULARS	ANNEXURE		2013-14	2012-13
Surplus during the year			977.50	402.59
Adjustments for :				
Depreciation		256.63		265.91
(Write back) / Provision for inventory obsolescence		(0.37)		-
(Profit) / Loss on sale of investments		10.81		(3.11)
Interest income on fixed deposit considered separaterly		(1,019.24)		(693.16)
Dividend Income		(163.50)		(10.80)
(Profit)/Loss on sale of fixed assets considered separately		(3.10)		5.46
Write off of CWIP		-		0.30
Employee Retirement Benefit		(1.69)		51.71
Excess Provision of Non-Performing Assets (NPA) written back		(458.84)		(470.37)
Interest and financial charges to banks		(4.04)		(6.51)
Bad debts written off		422.49		119.20
			(960.85)	(741.37)
Operating Cash flow before changes in working capital			**16.65**	**(338.78)**
(Increase) / Decrease in Inventories		4,023.28		1,412.77
Decrease / (Increase) in Sundry Debtors		222.78		(223.03)
Decrease / (Increase) in Loans and Advances		(1,560.11)		(948.58)
Tax refunded/(paid)		(112.94)		(65.70)
Increase in General / Project Fund (excluding excess of income over expenditure)		-		(4.41)
Increase / (Decrease) in current liabilities		126.29		220.75
			2,699.30	391.80
Net cash flow generated/(used) in operating activities (A)			**2,715.95**	**53.02**
Investing activities				
Interest income		745.30		693.16
Dividend income		163.50		10.80
Proceeds from maturity of investments (Bonds)		1,139.77		659.00
Purchase of Investments(Bonds)		(1,297.41)		-
Decrease / (Increase) in FDR's with banks more than 90 days (net)		(2,047.64)		(1,870.96)
Proceeds from sale of fixed assets		92.29		56.76
Purchase of fixed assets		(162.26)		(86.06)
Net cash flow generated / (used) in investing activities (B)			**(1,366.45)**	**(537.30)**

Financing activities				
Repayment of borrowed funds		(416.15)		415.81
Interest and financial charges to banks		4.04		6.51
Net cash flow from financing activities (C)			**(412.11)**	**422.32**
Net Cash flow during the year (A+B+C)			**937.39**	**(61.96)**
Cash and Cash Equivalents at the beginning of the year			**7.30**	**69.26**
Cash and Cash Equivalents at the end of the year			**944.69**	**7.30**
Cash and Cash Equivalent				
Balances with Banks:				
In fixed deposits		9,384.95		6,401.18
Less:Deposits with maturity more than 90 days		8,447.10		6,399.46
			937.85	1.72
In current accounts			6.12	5.36
Cash and Cheques on hand			0.72	0.22
Total			**944.69**	**7.30**
Significant Accounting Policies	XVI			
Notes to Accounts forming part of Financial Statements	XVII			

Note: Cash Flow Statement has been prepared under the "Indirect Method" as set out in Accounting Standard - 3 on Cash Flow Statemets.

In terms of our report of even date attached.

For Deloitte Haskins & Sells LLP
Chartered Accountants

Kalpesh J. Mehta
Partner
Membership No. 048791
Firm Reg. No. 117366W /W-100018

Y Y Patil
General Manager
(Accounts)

For and on behalf of the Board,

Dilip Rath
Managing Director

T Nanda Kumar
Chairman

Anand, 7th July, 2014

General Funds

ANNEXURE I

₹ in million

		31.03.2014	31.03.2013
General Reserve (Note a)			
Balance as per last balance sheet	3,885.63		3,841.04
Add : Transferred from Grants from Government of India	-		44.59
		3,885.63	**3,885.63**
Grant for Fixed Assets (Note b)			
Balance as per last balance sheet	10.94		11.30
Less: Recoupment of depreciation (Refer Note 4 of Annexure VIII)	0.36		0.36
		10.58	**10.94**
Special Reserve under section 36 (1) (viii) of the Income-tax Act, 1961 (Refer Note 10)			
Balance as per last balance sheet	611.98		549.87
Add: Transfer from Income and Expenditure Account	90.30		62.11
		702.28	**611.98**
Grants from Government of India (Note c)			
For Dairy Development Centre	-		44.59
Less : Transferred to General Reserve	-		44.59
For Sabarmati Ashram Gaushala, Bidaj	-		4.41
Less : Assets created and transferred	-		4.41
		-	-
Income and Expenditure Account			
Balance as per last balance sheet	20,675.91		20,353.20
Add: Surplus after appropriation during the year	879.02		322.71
		21,554.93	**20,675.91**
Total		**26,153.42**	**25,184.46**

Note :

a. To promote, plan and organise programmes for development of dairy and other agriculture based industries as per the NDDB Act, 1987.

b. In accordance with Accounting Standard - 12 on Accounting for Government Grants.

c. Received prior to 12.10.1987, the date on which NDDB was incorporated as a Body Corporate.

Secured Loans

ANNEXURE II

₹ in million

		31.03.2014	31.03.2013
Bank Overdraft (Secured against lien on fixed deposits with Banks)		540.90	957.04
Total		540.90	957.04

Current Liabilities and Provisions

ANNEXURE III

₹ in million

		31.03.2014	31.03.2013
a) Current Liabilities			
Advances and deposits		20.08	23.73
Sundry creditors		177.07	238.41
Net liability on account of Turnkey Project			
Funds received	11,364.81		8,838.07
Add: Due to suppliers for expenses	839.73		706.83
	12,204.54		9,544.90
Less : Expenditure incurred	10,421.20		7,982.11
	1,783.34		1,562.79
Add : Payable to NDDB (Per contra, Refer ANNEXURE VI)	52.32		66.04
		1,835.66	**1,628.83**
		2,032.81	**1,890.97**
b) Provisions for			
Non-performing assets	3,492.62		4,190.87
General contingency on Standard Assets	23.29		31.59
Contingency	580.99		560.78
		4,096.90	**4,783.24**
c) Provisions for :			
Leave encashment	187.85		181.85
Post retirement medical scheme	66.22		78.71
Gratuity	4.80		-
VRS monthly benefits	84.38		111.84
Wealth tax	0.80		0.78
		344.05	**373.18**
Provisions (net of taxes paid)		**216.73**	**216.73**
Total		**6,690.49**	**7,264.12**

Note :

Sundry creditors include ₹ 12.85 million (Previous Year: ₹ 64.45 million) of funds received from Government of India for Assistance to Co-operative Projects.

Cash and Bank Balances

ANNEXURE IV

₹ in million

		31.03.2014	31.03.2013
Balances with Banks			
In fixed deposits (Note a and b)	9,384.95		6,401.18
In current accounts	6.12		5.36
		9,391.07	6,406.54
Cash and cheques on hand		0.72	0.22
Total		**9,391.79**	**6,406.76**

Notes :

a. Fixed deposits includes ₹ 12.85 million (Previous Year: ₹ 64.45 million) of funds received from Government of India for Assistance to Co-operative Projects pending utilisation.

b. Fixed deposits includes ₹ 2,217.70 million (Previous Year ₹ 1,319.10 million) placed with Banks which are under lien for the Overdraft facility.

Inventories
ANNEXURE V

₹ in million

		31.03.2014	31.03.2013
Dairy commodities	-		4,023.23
Stores, spares and others	17.59		17.17
Project equipment	14.80		15.27
	32.39		**32.44**
Less : Provision for obsolescence	30.79		31.21
		1.60	**1.23**
Total		**1.60**	**4,024.46**

Loans, Advances and Other Current Assets
ANNEXURE VI

₹ in million

		31.03.2014	31.03.2013
Loans to cooperatives			
Milk - Secured	6,613.50		4,676.66
Unsecured	178.95		247.72
		6,792.45	4,924.38
Oil - Unsecured		1,426.82	1,950.48
Loans and advances to subsidiary companies / managed units			
Secured	2,292.14		2,156.90
Unsecured	205.59		678.97
		2,497.73	2,835.87
Loans to employees			
Secured	2.64		3.38
Unsecured	7.04		5.38
		9.68	8.76
Interest accrued			
Loans and advances	1,946.31		2,089.58
Investments	406.39		132.45
		2,352.70	2,222.03
Advances to suppliers and contractors		3.73	13.28
Recoverable on account of turnkey projects			
(Per contra, Refer Annexure III)		52.32	66.04
Sundry deposits		11.35	17.70
Income Taxes paid (net of provisions)		867.27	934.32
Tax refunds admitted as due		179.21	-
Prepaid Gratuity		-	2.08
Other advances		96.16	30.21
Total		**14,289.42**	**13,005.15**

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

Investments

ANNEXURE VII

₹ in million

		31.03.2014	31.03.2013
Long term investments:			
Equity Shares (unquoted) in subsidiary companies:			
Mother Dairy Fruit & Vegetable Pvt. Ltd. (MDFVPL)	2,500.00		2,500.00
IDMC Limited (IDMC)	283.90		283.90
Indian Immunologicals Limited (IIL)	90.00		90.00
NDDB Dairy Services Limited (NDSL)	2,000.00		2,000.00
		4,873.90	4,873.90
Bonds in:			
Government companies, financial institutions and banks		2,654.18	2,507.34
Shares (unquoted) in Co-operatives and Federations	1.00		1.00
Less: Provision for diminution in value of investments	0.10		0.10
		0.90	0.90
Total		**7,528.98**	**7,382.14**

Fixed Assets (Refer Note 8)

ANNEXURE VIII

₹ in million

Particulars	Gross Block (at Cost)				Depreciation				Net Block	
	As at 01.04.2013	Additions	Deductions/ (adjustments)	As at 31.03.2014	As at 01.04.2013	For the year	Deductions/ (adjustments)	As at 31.03.2014	As at 31.03.2014	As at 31.03.2013
Freehold Land	451.17	-	-	451.17	-	-	-	-	451.17	451.17
Leasehold Land	64.16	-	-	64.16	8.53	0.75	-	9.28	54.88	55.63
Building and Roads	1,849.70	11.65	0.04	1,861.31	779.73	52.42	0.02	832.13	1,029.18	1,069.97
Plant and Machinery	384.40	1.03	-	385.43	310.52	32.33	-	342.85	42.58	73.88
Electrical Installations and Air Conditioning	295.92	15.41	35.66	275.67	175.01	19.85	20.31	174.55	101.12	120.91
Furniture, Fixtures Computer, Software and Equipment	1,585.02	112.77	246.56	1,451.23	1,239.40	149.90	172.74	1,216.56	234.67	345.63
Rail Milk Tankers	217.83	-	-	217.83	217.83	-	-	217.83	-	-
Vehicles	24.49	3.26	0.74	27.01	21.32	1.74	0.74	22.32	4.69	3.17
Total	**4,872.69**	**144.12**	**283.00**	**4,733.81**	**2,752.34**	**256.99**	**193.81**	**2,815.52**	**1,918.29**	**2,120.36**
Previous Year	4,965.99	80.78	174.07	4,872.69	2,597.91	266.27	111.85	2,752.34	2,120.36	
Capital Work in Progress									29.87	11.73
Total fixed assets									**1,948.16**	**2,132.09**

Notes:

1. Land for FMD Control Project amounting to ₹ 0.39 million 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 amounting to ₹ 65.98 million 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 Fruit & Vegetable Pvt. Ltd., the transfer of title in respect of the leasehold land is pending.
4. Depreciation for the year includes prior period depreciation amounting to ₹ NIL (31.03.2013: ₹ 0.20 Million) and excludes depreciation ₹ 0.36 million (Previous year : ₹ 0.36 million) on account of recoupment from grants received

Service Charges

ANNEXURE - IX

₹ in million

	2013-2014	2012-2013
Training fees	2.82	4.19
Management fees	1.51	1.71
Procurement and technical service fees	60.98	116.90
Fees from consultancy and feasibility studies	3.63	0.15
Royalty and process knowhow fees	1.73	2.49
Total	**70.67**	**125.44**

Other Income

ANNEXURE - X

₹ in million

	2013-2014	2012-2013
Miscellaneous income	28.69	63.05
Profit on sale of fixed assets (net)	3.10	-
Profit on sales of investments (net)	-	3.11
Excess provision and NPAs written back	456.79	450.71
Total	**488.58**	**516.87**

Remuneration and benefits to employees

ANNEXURE - XI

₹ in million

	2013-2014	2012-2013
Salaries and Wages (including ex-gratia, VRS payments and retainership fees)	371.02	360.85
Contribution to Provident, Superannuation fund and Gratuity	79.96	79.06
Staff welfare expenses	21.91	34.66
Total	**472.89**	**474.57**

Remuneration excludes ₹ 9.32 million (Previous year : ₹ 7.21 million) shown as part of Research and Development expenses.

Cost of Materials Sold

ANNEXURE - XII

₹ in million

	2013-2014	2012-2013
Opening Stock	4,023.23	5,435.01
Purchases	-	-
Expenses (net)	67.71	248.40
Less : Closing Stock	-	4,023.23
Total	**4,090.94**	**1,660.18**

Administrative Expenses
ANNEXURE - XIII

₹ in million

		2013-2014	2012-2013
Printing and stationery		3.55	4.15
Communication charges		8.21	6.61
Audit fees and expenses (including service tax)			
Audit fees	0.67		0.67
Tax audit	0.22		0.22
Out of pocket expenses	0.03		0.25
		0.92	1.14
Legal fees		0.84	0.62
Professional fees (Note 4 of Annexure XVII)		31.39	11.22
Vehicle expenses		3.72	3.72
Recruitment expenses		1.06	2.88
Advertisement expenses		7.19	13.92
Launch of National Dairy Plan - I		-	29.35
Travelling and conveyance expenses		48.58	44.03
Electricity and rent		26.50	30.41
Other administrative expenses		3.81	3.14
Total		**135.77**	**151.19**

Maintenance of Assets
ANNEXURE - XIV

₹ in million

	2013-2014	2012-2013
Repairs and maintenance	129.48	108.64
Electricity and rent	13.76	8.36
Insurance	1.66	1.26
Total	**144.90**	**118.26**

Other Expenses
ANNEXURE - XV

₹ in million

	2013-2014	2012-2013
Training expenses	21.88	12.78
Computer expenses	12.17	17.46
Capital Work-in-progress written off	-	0.30
Loss on sale of fixed assets (net)	-	5.46
Loss on sale of investment (net)	10.81	-
Expenditure on memorial activities related to founder Chairman of NDDB	-	14.76
Other expenditure	26.85	20.67
Total	**71.71**	**71.43**

National Dairy Development Board ("NDDB" "the Board")

Significant Accounting Policies Forming Part of Financial Statement

ANNEXURE XVI

1. Method of Accounting

The financial statements are prepared on accrual basis, using the historical cost convention and generally accepted accounting principles in India including accounting standards issued by the Institute of Chartered Accountants of India, as applicable to the Board.

2. Use of Estimates

The preparation of financial statements in conformity with the Generally Accepted Accounting Principles in India which requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, revenues and expenses and the disclosure of contingent liabilities. Such estimates and assumptions are based on the Management's evaluation of relevant facts and circumstances as on the date of the financial statements. The actual outcome may diverge from this estimate which is recognized prospectively in the current and future periods. Any changes in such estimates are recognized prospectively in current and future period.

3. Asset Classification and Provisioning

NDDB being a Public Financial Institution follows the guidelines of Reserve Bank of India for asset classification. Provision for Non Performing Assets is made at the rates approved by the Board.

4. Revenue Recognition

Interest income on standard assets in accordance with guidelines is recognized on accrual basis. Interest income from non-performing assets classified in conformity with the guidelines is accounted on cash basis.

Income from Services to co-operatives etc. is recognized on proportionate completion basis and in accordance with the terms of relevant agreement.

Sale of milk commodities is accounted for on transfer of substantial risk and rewards, which is on dispatch of the commodities from the warehouse.

Dividend income is accounted for when unconditional right to receive income is established.

Other income is recognized when there is no uncertainty as to its ultimate collectability.

5. Grants

a. Grants relating to fixed assets are initially credited to Grant for Fixed Assets under the General Fund. This amount is recognized in the Income and Expenditure Account on a systematic basis over the useful life of such fixed asset as a recoupment of depreciation on such assets.

b. Revenue grants received during the year are recognized in the Income and Expenditure Account.

c. Grants received for specific projects are credited to the Project Funds and is utilized by disbursements for these projects are made.

6. Research and Development Expenditure

Research and Development Expenditure (other than cost of fixed assets acquired) are charged as expenses in the year in which they are incurred. Fixed assets used for the Research and Development purpose with alternate use is depreciated over its useful life based on the Board's policy.

7. Employee Benefits

a. Defined Contribution Plan: Contribution to Provident Fund and Superannuation Fund is made at a predetermined rate and is charged to Income and Expenditure account.

b. Defined Benefit Plans: The Board's liabilities towards gratuity, compensated absences and post-retirement medical benefit schemes are determined using the projected unit credit method which considers each period of service giving rise to an additional unit of benefit entitlement and measures each unit separately to build up final obligation. Actuarial gains and losses based on actuarial valuation done by the independent actuary carried out annually are recognized immediately in the Income and Expenditure account as income or expense. Obligation is measured at the present value of estimated future cash flows using a discounted rate that is determined by reference to the market yields at the Balance sheet date on the Government bonds where the currency and terms of Governments bonds are consistent with the currency and estimated terms of defined benefit obligation.

c. Compensated absences: The Board has a scheme for compensated absences benefit for employees, the liability for which is determined on the basis of an actuarial valuation carried out at the end of the year.

Further, the Board has participated in Group Gratuity cum Life Assurance Scheme of Life Insurance Corporation of India.

8. Fixed Assets and Depreciation

Tangible fixed assets are carried at cost less depreciation and impairment loss. Cost comprises of purchase price, import duties and other non-refundable taxes or levies and any directly attributable costs to bring the asset ready for its intended use.

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 capitalization and no depreciation is charged in the year of disposal. Each asset costing ₹ 10,000 or less is depreciated at 100 percent in the year of purchase. Depreciation rates, as approved by the Board, for various classes of assets are as under:

Assets	Rate (in %)
Factory buildings, Godown and Roads	4.00
Other buildings	2.50
Cold storage	15.00
Electrical installation	5.00
Computers (including software)	33.33
Office and Lab equipments	15.00
Plant and machinery	10.00
Solar equipment	30.00
Furniture	10.00
Vehicles	20.00
Rail milk tankers	10.00

Capital assets under installation / construction are stated in Balance Sheet as "Capital Work in Progress".

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 - at cost of acquisition.

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 over the maturity period. Discount on purchase of these investments is recognised in the year of realisation.

Provision for any diminution other than temporary in value of investments is made in the year in which such diminution is assessed.

10. Inventory

Inventories including stores and project equipment are valued at cost or net realizable value whichever is lower, cost being worked out on first-in-first-out basis. 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 are carried at historical cost.

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

12. Accounting for Voluntary Retirement scheme

The cost of voluntary retirement scheme including exgratia is charged to the Income and Expenditure Account in the period of separation of employees. A provision for Monthly Benefit Scheme is made for the employees opting for the voluntary retirement scheme in the period of separation of employees and the same is adjusted against the payments made.

13. Taxes on Income

Current tax is the amount payable on the taxable income for the year as determined in accordance with the provisions of the Income Tax Act, 1961.

Deferred Tax is recognized on timing differences, being the differences between the taxable income and the accounting income that originate in one period and are capable of reversal in one or more subsequent periods.

Deferred Tax Assets in respect of unabsorbed depreciation and carry forward losses are recognized if there is a virtual certainty that there will be sufficient future taxable income available to set-off such tax losses. Other deferred tax assets are recognized when there is reasonable certainty that there will be sufficient future taxable income to realize such assets.

14. Leases

Lease arrangements where the risks and rewards incidental 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

The carrying value of assets at each Balance Sheet date is reviewed for impairment of assets. If any indication of such impairment exists, the recoverable amount of such asset is estimated and impairment is recognized, if the carrying amount of these assets exceeds the recoverable amount. The recoverable amount is greater of net selling price and their value in use. Value in use is arrived at by discounting their future cash flows to their present value based on appropriate discount factor. When there is indication that an impairment loss recognized for an asset in prior accounting periods no longer exists or may have decreased such reversal of impairment loss is recognized in Income & Expenditure Account.

16. Intangible Assets

Intangible assets are stated at cost less accumulated amortization.

17. Provisions and Contingencies

A provision is recognized when the Board has a present obligation as a result of past events and it is probable that an outflow of resources will be required to settle the obligation, in respect of which a reliable estimate can be made. Provisions (excluding retirement benefits) are not discounted to their present value and are determined based on the estimate required to settle the obligation at the Balance Sheet date. These are reviewed at each Balance Sheet date and are adjusted to reflect the current best estimates. Contingent liabilities are disclosed in Notes to Accounts.

The Board created provisions in respect of loans and other assets prior to the year 2001-02. Based on the movement in underlying assets for which such provision was created, Board reallocates / write back, such provisions based on identified events. Accordingly, the Board had made allocation of contingency provision for possible diminution in value of its asset or for unforeseen events leading to such liability

Notes to Accounts Forming Part of Financial Statement

ANNEXURE XVII

1 At the request of the concerned authorities, the NDDB has been managing the Jalgaon Jilha Sahakari Dudh Utpadak Sangh Maryadit and West Assam Milk Producers' Co-operative Union Ltd. These are separate and independent entities and their accounts are audited separately.

2 Contingent Liabilities:

2.1. Principal amount of claims not acknowledged as debt : ₹ 343.39 million (Previous Year : ₹ 344.20 million)

2.2. Guarantees outstanding :₹ 0.05 million (Previous Year : ₹ 0.05 million)

2.3. Income Tax demands pending before various appeal forums ₹ 1,007.05 million (Previous Year : ₹ 499.87 million)

2.4. Service Tax Demands pending before Tribual ₹ 547.19 million (Previous Year : NIL)

2.5. Other Demands

₹ in millions

Particulars	Authority	2013-14	2012-13
Settlement of Land dues	Land and Land Reform Department, Siliguri	0.39	0.39
Interest Demand on delayed payment of municipal taxes	Collector, Mumbai Suburban	1.71	1.71
Combined Effluent Treatment Plant (CETP) charges, Ground Rent and Maintenance Charges	Delhi State Industrial and Infrastructure Development Corporation Limited, Narela	2.51	-
Ground Rent	Delhi State Industrial and Infrastructure Development Corporation Limited, Narela	-	7.10

Above demands have been contested by the Board before appropriate forums.

3 Funding for National Dairy Plan – I (NDP-I) is through a line of credit from International Development Association, which along with the share of Government of India, flows from the budget of Department of Animal Husbandry, Dairying and Fisheries to the Project Management Unit (PMU) in NDDB as "Grant-in-aid for onward distribution to the End Implementation Agencies". A separate bank account is being maintained for receipt of funds. Separate Project accounts are being maintained for NDP-I funds which are audited by the statutory auditors of NDDB.

4 Professional fees include ₹ 1.90 million (Previous Year: ₹ 2.10 million) paid to the firm in which one of the partner of the audit firm is a partner.

5 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.

6 Related Party Disclosure

a) Related Parties and their relationship (as identified by the Management)

1) Subsidiaries

IDMC Limited
Indian Immunologicals Limited
Mother Dairy Fruit and Vegetable Private Limited
NDDB Dairy Services Limited

2) Other enterprises where management has significant influence over the management

The West Assam Milk Producers Co-op Union Ltd
Animal Breeding Research Organisation
Anandalaya Education society

3) Key management personnel

Dr. Amrita Patel (till 26th February, 2014)	Chairman
Mr. T Nanda Kumar (w.e.f 27th February, 2014)	Chairman
Mr. Dilip Rath	Managing Director
Mr. Sangram Chaudhri	Executive Director

b) Transactions with the related parties during the year ended 31st March, 2014 and balances outstanding as at 31st March, 2014

(figures in Italic represent previous year figures)

(₹ in million)

Particulars	Interest Income	Purchase of Other Items	Dividend	Rent (Income)	Grant	Sale of Fixed Assets	Sale of Dairy Commodities	Sale of Other Items	Other income	Other Expenditure	Current Account Balance outstanding Dr/(Cr)	Loan Disbursed	Loan repaid / Adjusted		Loan Balance outstanding Dr/(Cr)
													Principle	Interest	
Subsidiary Companies															
IDMC Limited	69.59	-	-	1.91	-	-	-	0.37	0.31	0.75	0.13	270.00	582.88	67.19	688.58
	76.78	-	-	*1.87*	*20.00*	-	-	-	*0.18*	*1.71*	*(19.96)*	*500.00*	*277.21*	*71.89*	*1,001.46*
Indian Immunologicals Limited	62.41	-	13.50	22.40	-	-	-	-	0.07	-	(13.69)	73.20	196.32	49.93	778.62
	57.21	*0.18*	*10.80*	*22.33*	-	-	-	-	*0.07*	-	*(2.19)*	*150.00*	*55.06*	*47.98*	*901.71*
Mother Dairy Fruit and Vegetable Private Limited	41.46	-	150.00	96.97	-	-	3,183.78	-	0.53	62.04	62.00	573.33	580.55	-	855.59
	36.38	-	-	*109.42*	-	-	*731.57*	-	*2.52*	*113.14*	*9.88*	*3.26*	*336.54*	*0.49*	*862.81*
NDDB Dairy Services Limited	1.59	-	-	1.40	-	0.18	-	-	3.71	1.20	3.72	180.11	56.40	-	125.22
	-	-	-	*1.36*	-	-	-	-	*0.12*	-	*(0.24)*	-	-	-	-
Total	**175.05**	**-**	**163.50**	**122.68**	**-**	**0.18**	**3,183.78**	**0.37**	**4.62**	**63.99**	**52.16**	**1,096.64**	**1,416.15**	**117.12**	**2,448.01**
	170.37	***0.18***	***10.80***	***134.98***	***20.00***	-	***731.57***	-	***2.89***	***114.85***	***(12.51)***	***653.26***	***668.81***	***120.36***	***2,765.98***
Other enterprises where management has significant influence over the management															
The West Assam Milk Producers Co-op Union Ltd	2.31	-	-	-	-	-	51.00	-	0.06	-	0.01	56.23	72.67	2.31	28.71
	0.87	-	-	-	-	-	*32.66*	-	*0.03*	-	*0.01*	*50.00*	*24.69*	*0.87*	*45.14*
Animal Breeding Research Organisation	-	-	-	-	0.03	-	-	0.25	8.12	-	1.00	-	-	-	-
	-	-	-	-	-	-	-	*1.83*	*4.82*	-	*1.82*	-	*1.09*	-	
Anandalaya Education society	-	-	-	0.56	-	-	-	-	0.02	-	0.23	-	-	-	-
	-	-	-	*0.49*	-	-	-	-	*0.06*	-	*0.09*	-	-	-	-
Total	**2.31**	**-**	**-**	**0.56**	**0.03**	**-**	**51.00**	**0.25**	**8.20**	**-**	**1.24**	**56.23**	**72.67**	**2.31**	**28.71**
	0.87	-	-	***0.49***	-	-	***32.66***	***1.83***	***4.91***	-	***1.92***	***50.00***	***25.78***	***0.87***	***45.14***

Remuneration to key management personnel

Dr. Amrita Patel	1.79
	1.83
Mr. T Nanda Kumar	0.15
	-
Mr. Dilip Rath	2.32
	1.87
Mr. Sangram Chaudhri	2.54
	2.02
Total	6.80
	5.72

7 **Disclosure as per Accounting Standard 15 (Revised 2005) regarding Employee Benefits is as under:**

Employee Benefit Plans

Defined Contribution Plans

The Board makes Provident Fund and Superannuation Fund contributions to defined contribution plans for qualifying employees. Under the Schemes, the Board is required to contribute a specified percentage of the payroll costs to fund the benefits. Provident Fund Contributions are made to a Trust administered by the Board. The Board recognised ₹ 36.18 millions (Previous year: ₹ 31.31 millions) for Provident Fund contributions and ₹ 23.96 millions (Previous year: ₹ 20.58 millions) for Superannuation Fund contributions in Income and Expenditure Account. The contributions payable to these plans by the Board are at rates specified in the rules of the schemes.

Defined Benefit Plans

The Board offers the following employee benefit schemes to its employees:

i. Gratuity

ii. Post-Retirement medical benefits schemes (PRMBS)

iii. Leave Encashment

The following table sets out the funded status of the defined benefit schemes and the amount recognised in the financial statements:

₹ in millions

Particulars	Year ended 31 March, 2014			Year ended 31 March, 2013		
	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment
Components of employer expense						
Current service cost	6.70	-	11.13	2.23	-	11.86
Interest cost	16.75	6.49	15.00	14.20	6.24	12.03
Expected return on plan assets	(18.83)	-	-	(16.74)	-	-
Actuarial losses/(gains)	15.21	(16.04)	(4.22)	30.42	5.70	27.35
Total expense recognised in the Income and Expenditure Account	**19.83**	**(9.55)**	**21.91**	**30.11**	**11.94**	**51.24**
Actual contribution and benefit payments for year						
Actual benefit payments	(19.20)	(2.94)	(15.91)	(6.70)	(4.59)	(6.89)
Actual contributions	12.96	-	-	15.42	-	-
Net asset / (liability) recognised in the Balance Sheet						
Present value of defined benefit obligation	(222.51)	(66.22)	(187.85)	(203.05)	(78.71)	(181.85)
Fair value of plan assets	217.71	-	-	205.13	-	-
Net asset / (liability) recognised in the Balance Sheet	**(4.80)**	**(66.22)**	**(187.85)**	**2.08**	**(78.71)**	**(181.85)**
Change in defined benefit obligations (DBO) during the year						
Present value of DBO at beginning of the year	203.05	78.71	181.85	162.31	71.36	137.49
Current service cost	6.70	-	11.13	2.23	-	11.86
Interest cost	16.75	6.49	15.00	14.20	6.24	12.03
Actuarial (gains) / losses	15.21	(16.04)	(4.22)	31.01	5.70	27.35
Benefits paid	(19.20)	(2.94)	(15.91)	(6.70)	(4.59)	(6.89)

Present value of DBO at the end of the year	**222.51**	**66.22**	**187.85**	**203.05**	**78.71**	**181.85**
Change in fair value of assets during the year						
Plan assets at beginning of the year	205.13	-	-	179.06	-	-
Acquisition adjustment	-	-	-	-	-	-
Expected return on plan assets	18.83	-	-	16.74	-	-
Actual company contributions (excluding Contribution made by Gratuity Trust and charges deducted by LIC)	12.95	-	-	15.44	-	-
Actuarial gain / (loss)	-	-	-	0.59	-	-
Benefits paid	(19.20)	-	-	(6.70)	-	-
Plan assets at the end of the year	**217.71**	**-**	**-**	**205.13**	**-**	**-**
Actual return on plan assets	18.83	-	-	17.33	-	-
Composition of the plan assets is as follows:						
Government bonds	20%	-	-	20%	-	-
PSU bonds	20%	-	-	20%	-	-
Equity mutual funds	-	-	-	-	-	-
Others	60%	-	-	60%	-	-
Actuarial assumptions						
Discount rate	9.25%	9.25%	9.25%	8.25%	8.25%	8.25%
Expected return on plan assets	9.00%	-	-	9.45%	-	-
Salary escalation	8.50%	3.00%	8.50%	8.00%	2.50%	8.00%
Attrition	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Medical cost inflation	-	5.00%	-	-	5.00%	-
Mortality tables	Indian Assured Lives (2006-08) ultimate Mortality Rates	Indian Assured Lives (2006-08) ultimate Mortality Rates and LIC (1994-96) ultimate Mortality Rates	Indian Assured Lives (2006-08) ultimate Mortality Rates	LIC (1994-96) ultimate Mortality Rates	LIC Assured Life (1994-96) ultimate Mortality Rates	LIC (1994-96) ultimate Mortality Rates

The discount rate is based on the prevailing market yields of Government of India securities as at the Balance Sheet date for the estimated term of the obligations.

The estimate of future salary increases considered, takes into account the inflation, seniority, promotion, increments and other relevant factors.

Experience adjustments

₹ in millions

	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010
Gratuity					
Present value of DBO	222.51	203.05	162.30	144.89	235.36
Fair value of plan assets	(217.71)	(205.13)	(179.06)	(159.90)	(264.50)
Funded status [Surplus / (Deficit)]	(4.80)	2.08	16.76	15.01	29.14
Post-Retirement Medical Benefits Scheme (PRMBS)					
Present value of DBO	66.22	78.71	71.36	65.03	56.76
Other defined benefit plans (Leave Encashment)					
Present value of DBO	187.85	181.85	137.49	121.94	181.97

The estimate of future salary increases considered, takes into account the inflation, seniority, promotion, increments and other relevant factors.

The contribution expected to be made by the Board during FY 2014-15 has not been ascertained.

8 Disclosure as per Accounting Standard 19 regarding Leased Assets (Refer Annexure VIII):

Operating leasing arrangements entered into by the Board as a Lessor:

a) Nature of Assets leased

₹ in millions

Class of Asset	Gross value of assets at 31st March, 2014	Depreciation for the year	Accumulated Depreciation as at 31st March, 2014
Buildings and Roads#	1,629.97 *1,626.56*	46.03 *46.63*	706.31 *660.28*
Electrical Installations#	180.25 *130.60*	4.60 *5.33*	47.64 *54.35*
Plant & Machinery	317.93 *317.93*	31.73 *31.73*	279.08 *247.35*
Furniture, fixtures, computers, software and office equipment	730.15 *994.51*	77.02 *111.72*	663.40 *766.01*
Rail Milk Tankers	196.84 *200.39*	- -	196.84 *200.39*
Vehicles	0.43 *0.44*	- -	0.43 *0.44*
Total	**2,983.57** ***3,270.43***	**159.38** ***195.41***	**1,893.70** ***1,928.82***

include staff quarters and cold storage

(Figures in *italics* represent previous year figures)

b) Initial Direct cost relating to leasing arrangements is charged to Income and Expenditure account 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.

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 millions

Particulars	Opening Balance as at 1st April, 2013	Adjustment during the year	Closing Balance at 31st March, 2014
Deferred Tax Assets :			
Depreciation	69.81 *67.52*	10.51 *2.29*	80.32 *69.81*
Expenditure allowable on payment basis	55.09 *38.86*	12.22 *16.22*	67.31 *55.08*
Gratuity	--- ---	1.63 ---	1.63 ---
Voluntary Retirement Scheme	86.95 *122.46*	(31.74) *(35.50)*	55.21 *86.96*
Total	**211.85** ***228.84***	**(7.38)** ***(16.99)***	**204.47** ***211.85***

(Figures in *italic* represent previous year figures)

10 The Board has no intention to make withdrawal from the Special Reserve created and maintained under section 36(1)(viii) of the Income-tax Act, 1961, the Special Reserve created and maintained is not capable of being reversed and thus it becomes a permanent difference. The Board does not create any deferred tax liability on the said reserve in accordance with the clarification of the Accounting Standard Board of the Institute of Chartered Accountants of India.

11 There is no impairment loss to be recognized in the financial statements as of 31st March, 2014 in terms of Accounting Standard 28 - Impairment of Assets.

12 The Board is not generally involved in sales activity. However at the insistence of the Central Government, it had imported Dairy Commodities during the financial years 2010-11 and 2011-12. All unsold inventories of dairy commodities as at the beginning of current year were sold during the year.

13 As approved by the Board, the Banas Oil Plant was handed back debt free to the Sri Banaskantha Zilla Telibia Utpadak Sahakari Sangh Ltd, resulting in writing off of ₹ 422.49 million to the Income and Expenditure Account during the year.

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

₹ in millions

Particulars	Non-Performing Asset (NPA)	General Contingency on Standard Assets	Contingency
Opening balance	4,190.87 *4,444.63*	31.59 *498.74*	560.78 *345.00*
Write-off of interest receivable	(229.55) *(54.42)*	- -	- -
Amount transferred*	(11.91) *(1.32)*	(8.30) *(214.46)*	20.21 *215.78*
Reversed during the year	(456.79) *(198.02)*	- *(252.69)*	- -
Closing balance	**3,492.62** ***4,190.87***	**23.29** ***31.59***	**580.99** ***560.78***

(Figures in *italic* represent previous year figures)

*General Contingency provision / NPA provision in excess of regulatory requirement is transferred to Contingency Provision during the year.

15 There is no taxable income as per provisions of Income Tax Act and accordingly no provision has been made for Income tax.

16 The figures of the previous year have been regrouped / re-arranged wherever necessary.

In terms of our report of even date attached.

For Deloitte Haskins & Sells LLP
Chartered Accountants

For and on behalf of the Board,

Kalpesh J. Mehta
Partner
Membership No. 048791
Firm Reg. No. 117366W /W-100018

Y Y Patil
General Manager
(Accounts)

Dilip Rath
Managing Director

T Nanda Kumar
Chairman

Anand, 7th July, 2014

NDDB OFFICERS

NDDB Officers

Head Office, Anand

Chairman & Chief Executive
T Nanda Kumar, M Sc (Phy), IAS (Retd.)

Managing Director
Dilip Rath, M A (Eco), M Sc (Eco)

Executive Director
Sangram Chaudhary, EXE DIR, M Sc, PGDRM

Chief Executive's Office

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

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

Project Finance & Appraisal

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

K Manek, SR MGR, B Com, AICWA

P C Patnaik, SR MGR, M Com

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

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

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

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

Sneha Kumar, DY MGR, B Tech (DT), PGDM (Mktg & Fin)

Chandan Singh, DY MGR, B Sc (Zoo), PGDM (Mktg & Fin)

Rohan B Buch, DY MGR, B Com, MBA (Fin)

Harsh Vardhan, DY MGR, B Tech (Electro), PGDM (Fin)

Cooperative Services

NDDB, Anand
M C Shah, DY GEN MGR, B Sc (DT), PGDRDM

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

Dhanraj Sahani, MGR, MBA (Mktg), DPCS

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

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

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

Milan Kumar Mishra, DY MGR, B Com, PGDDM

Sandeep Bharti, DY MGR, B Sc, PGDDM

Priyadarshini Das, DY MGR, B Sc (Genetics), PGDRM

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

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

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

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

NDDB, Kolkata
Sajal Biswas, DY GEN MGR, B Sc (DT), PGDIM

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

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

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

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

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

NDDB Office, Aurangabad
Abhay Muley, MGR, B Tech (DT)

NDDB Office, Bhopal
Seema Mathur, MGR, M A (Eng)

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

NDDB Office, Chandigarh
S K Attri, MGR, B Tech (DT)

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

NDDB Office, Chennai
A Krithiga, MGR, B Sc (Agri)

NDDB Office, Hyderabad
Latha Siripurapu, MGR, B Com, PGDBA (Fin)

NDDB Office, Jaipur
Pretesh Joshi, DY MGR, B E (Mech), PGDRM

NDDB Office, Lucknow
Mohd Rashid, DY MGR B A, PGDDM

NDDB Office, Trivandrum
M Govindan, SR MGR, M A (SW)

Quality Assurance

NDDB, Delhi
Sunil Bakshi, DY GEN MGR, M Sc (Dairy Bacteriology)

Narinder Sharma, DY GEN MGR, M Sc (Dairying), PGDMM

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

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

Product & Process Development

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

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

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

Manojkumar B Solanki, SCI I, B Tech (DT), M Tech (Dairy Chem)

Sougata Das, SCI I, B Tech (DT), M Sc (Dairy Micro)

Harendra P Singh, SCI I, B Tech (DT), M Sc (Dairy Chem)

NDDB Officers

Planning

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

Nishi K Ranjan, DY MGR
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BCA, PGDM (Mktg & Fin)

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BMS, PGDRM

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Reeti, DY MGR
B Sc (Zoo), PGDM (Fin & Mktg)

Coordination & Monitoring Cell

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M Sc (Env Mod & Mgmt)

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B A (Sociology), M A (Sociology),
Ph D (Sociology), MBA

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M Com, CA, CS

Human Resource Development

Soumesh Roy, GEN MGR,
M A (Eco), Dip In Pers Mgmt,
Dip in Trng & Dev

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

S D Jaisinghani, SR MGR,
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B Sc, MSW

Jaidev Biswas, SR MGR
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S B Padhiar, MGR, B A (Socio)
S S Gill, MGR, B Sc (Geo), MSW,
Ph D (SW), Dipl (Trg & Dev)

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LLB (Spl), DTP

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B E (Mech), M Tech (HRD)

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DY MGR, B A, M A (SW)

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B A, MSW, PGD-HRM

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M A (Dev Admn)

Bhimashankar Shetkar, DY MGR,
B E (Prod), PGDRDM

Hitendrasinh Rathod, DY MGR,
DEE

Mansinh Institute of Training, Mehsana
Bhagyawan, SR MGR,
DME

Regional Demonstration & Training Centre, Erode
D Narayanasamy, PRINCIPAL,
BVSc

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

Regional Demonstration & Training Centre, Jalandhar
R D Baghel, SR MGR,
BVSc & AH

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

Manoj Kumar Gupta, DY MGR,
BVSc & AH, MVSc (Vet Micro)

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D Pharm, BVSc & AH, MBA

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S K Ray, DY GEN MGR,
B Sc (Agri)

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B A, M A (Comparative Literature)

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

Kamlesh Prasad, DY MGR, DMLT, B Sc,
BVSc & AH

Information & Communication Technologies

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B E (Mech), PGDBA

Niraj Prakash Garg, DY GEN MGR,
B Tech (DT), PGDRM

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Vipul Gondaliya, MGR,
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B E (IT)

Anil M Adroja, DY MGR,
B E (IT)

Ashok Kumar Sahani, DY MGR,
B E (CSE)

Sectoral Analysis & Studies

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

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

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

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B Sc (Elect Engg), PGDRM

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

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

Anil P Patel, MGR,
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Arvind Kumar, MGR,
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Mena H Paghadar, MGR,
B Sc, MCA

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B Sc (Agri), PGDDM

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B Sc (Agri), M Sc (Agri Eco)

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B Sc (Micro), M Sc (Env Sci), Cert GIS

Vinay A Patel, DY MGR,
B Tech (Biomed), MBA (Mktg)

Ayush Kumar, DY MGR,
B Tech (Genetic Engg), PGDM

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BCA, PGDM (HR & Mktg)

NDDB, Bangalore

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

M N Sathish, MGR,
M Sc (Stats)

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

NDDB, Noida

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

Sarvesh Kumar, DY MGR,
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M Sc (Dairy Eco), Ph D (Dairy Eco)

Ashutosh Singh, DY MGR,
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NDDB, Kolkata

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BBA, PGDM

NDDB, Mumbai

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

Jithin H Kaimal, DY MGR,
BBA, MBA

Purchase

O P Sachan, GEN MGR,
B Tech (Chem), MBA (FIN)

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

Nitin M Shinkar, DY GEN MGR,
B E (Metall), MPBA (O & M Mgmt)

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B E (Mech), PGDBA

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

B Sekar, SR MGR,
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DME, B E (Mech)

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Amol M Jadhav, DY MGR,
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Dip in Ind Engg, B E (Manuf),
PGDBA (Opern Mgmt)

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DY MGR, B E (Prod), PGD (Opern Mgmt)

Public Relations & Communications

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LLB, PGDRD

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

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MBA (PR)

NDDB Officers

Engineering Services

S N Singhal, GEN MGR,
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S S Hardaha, DY GEN MGR,
B E (Mech)

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

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B Tech (Agri Engg),
M Tech (Industrial Mgmt)

Shashi Kumar, DY GEN MGR,
B Sc (Elect)

G Rajagopal, DY GEN 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)

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

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

V Srinivas, SR MGR,
B E (Civil)

S Chandrasekhar, SR MGR,
B E (Mech)

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

Chandra Prakash, SR MGR,
B Tech (Mech)

R S Sisodiya, MGR,
DME

R Soundhararajan, MGR,
AMIE (Mech)

S K Sharma, MGR,
DCE

R B Shah, MGR,
DEE

K S Patel, MGR,
B E (Civil)

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

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B E (Civil)

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B E (Inst & Cont Engg)

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B E (ECE)

Manish Sharma, DY MGR,
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DY MGR, B E (Mech), MBA (Mktg & Syst)

Prakash A Makwana, DY MGR,
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Banas Dairy Project-III, Palanpur
S S Sinha, SR MGR,
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Bharuch Dairy Project Site, Bharuch
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Bhushan P Kapshikar, DY MGR, B E (Civil)

Bhopal Dairy Expansion Project, Bhopal
Satendra Singh Gurjar, DY MGR,
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Biharsharif Project Site, Biharsharif, Nalanda
P Saha, DY GEN MGR,
B Tech (Agri Engg)

Pradip Layek, DY MGR,
B Tech (Elect)

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

Cattle Feed Plant, Ajmer
A S Bhadauria, MGR,
B E (Food Engg & Tech)

Cattle Feed Plant, Khanna
Dhiraj B Tembhurne,
DY MGR, B E (Civil)

Cattle Feed Plant Expansion Project, Bikaner
Gaurav Singh, DY MGR,
B Tech (Civil)

Cattle Feed Plant Expansion Project, Jodhpur
Mihir B Bagaria, MGR,
DCE, B E (Civil), MBA (Fin)

Balbir Sharma, DY MGR,
DEE, B Tech (Elect)

Cattle Feed Plant Expansion Project, Nadbhai
Jay Nagar, DY MGR,
B E (Civil)

Hassan Dairy Expansion Project, Hassan
U Sundara Rao, DY MGR,
DEE, B Tech (EEE)

Ganesh Mohan Shenoy, DY MGR, DCE,
B E (Civil)

Hosakote Dairy Project, Hosakote
Sandipkumar P Patel, DY MGR,
B E (Civil), M Tech (Civil)

IRMA Project
Tarak Rajani, DY MGR,
B E (Civil)

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

Mandya Dairy Expansion Project, Mandya
Jasbir Singh, SR MGR,
B Tech (Agri Engg),
M Tech (Post Harvest Tech)

NDDB Officers

Mohali Dairy Expansion Project, Mohali
S K Nasa, SR MGR,
B E (Civil)

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

Manoj Kumar, DY MGR
B Tech (Mech Engg)

Rajkot Dairy Expansion Project, Rajkot
Shreyas Jain, DY MGR,
B E (Elect)

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B Tech (Civil), M Tech (CPM)

Tiruvanamalai Dairy Project, Tiruvanamalai
V E E Sundar, DY GEN MGR,
B Sc (Applied Sci), AMIE (Elect)

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Tumkur Dairy Expansion Project, Tumkur
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NDDB, Bangalore

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Product Block Project, Bangalore Dairy, Bangalore
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Rabindra K Behera, DY MGR
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J S Gandhi, DY GEN MGR,
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Shashikumar B N, SR MGR,
B E (EEE), PGDRDM

PSKVSM Kumar, SR MGR,
B E (Electrical)

ICFMD, ICAR Project
Bhubaneswar
Bibhu Prasad Jena, MGR,
B E (Civil)

Animal Breeding

R Kasiraj, GEN MGR,
BVSc, FRVCS

M U Siddiqui, DY GEN MGR,
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BVSc, MVSc (Med)

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MVSc (Vety Gynecology & Obstetrics),
PGDMM

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CIC, MCA

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BVSc & AH, PGDRM

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Ranmal M Ambaliya, DY MGR,
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BVSc, MVSc (Animal Gen & Breeding)

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NDDB Office, Chandigarh

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Progeny Testing Project
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Meerut
V P Bhosale, MGR,
BVSc & AH, MVSc (Med)

Narayan K Nanote, MGR,
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B Vasanth Naik, DY MGR,
B Tech (CS & IT), M Tech (CSE)

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

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

Animal Health

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

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

K Bhattacharya, SR MGR,
BVSc, MVSc (Micro)

Pankaj Dutta, DY MGR,
BVSc & AH, MVSc (Micro)

Shroff Sagar I, DY MGR,
BVSc & AH, MVSc (Micro)

NDDB Officers

Indian Immunologicals Limited, Hyderabad

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

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

Animal Nutrition

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

A K Garg, DY GEN MGR, M Sc (Agri)

A K Verma, DY GEN MGR, B Tech (Agri Engg)

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

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

Romy Jacob, MGR, M Sc (Agri)

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

S S Nyamagonda, MGR, M Sc (Agro)

B M Bhanderi, SCI II, BVSc, MVSc (Anim Nutn), Ph D (Anim Nutn)

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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

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