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आज़ादी का
अमृत महोत्सव



National Dairy
Development Board



Annual Report 2021-22

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Members of the Board



Shri Meenesh C Shah

Chairman¹ & Executive Director,
NDDB



Shri Bhuvnesh Kumar⁵

Chairman
Pradeshik Cooperative Dairy
Federation Ltd.
Uttar Pradesh



Smt. N Vijayalaxmi⁶

Chairperson
Bihar State Milk Cooperative
Federation Ltd. (COMFED)
Bihar



Ms. Varsha Joshi

Chairman, NDDB²

Joint Secretary
(Cattle & Dairy Development)³

Additional Secretary
(Cattle & Dairy Development)⁴

Department of Animal Husbandry &
Dairying
Ministry of Fisheries, Animal
Husbandry & Dairying, Government
of India



Shri Shamalbhai B. Patel⁷

Chairman
Gujarat Cooperative Milk Marketing
Federation Ltd.
Gujarat

¹ Additional Charge of Chairman, NDDB with effect from 1 June 2021

² Additional Charge of Chairman, NDDB up to 30 May 2021

³ Up to 6 December 2021

⁴ With effect from 6 December 2021

⁵ Up to 7 May 2021

⁶ With effect from 2 July 2021 till 22 August 2021

⁷ With effect from 11 August 2021

The Year in Retrospect



The milk production in the country continues to increase as it is anticipated to be 223 million tonnes in 2021-22, with a per capita availability of milk at about 445 grams/day.

The dairy sector has proved its resilience yet again in 2021-22 when COVID-19 pandemic was most severe and it successfully protected the livelihood of millions of small and marginal dairy farmers. The milk production in the country continues to increase as it is anticipated to be 223 million tonnes in 2021-22, with a per capita availability of milk at about 445 grams/day.

The milk procurement of the dairy cooperatives increased by 5.5 per cent at 587 Lakh Kg per day in the year 2021-22. While liquid milk sale - registered an increase of 7 per cent at 390 Lakh litres per day.

During the first half of the year, the prices of Skimmed Milk Powder (SMP) hovered around ₹ 200 per kg on account of subdued demand and rising inventory. In addition to low dairy commodity prices, the rising cost of energy, transportation and packaging materials added to the concerns of the dairy sector. Despite the challenging situation, the dairy cooperatives continued to pay an average price of about ₹ 31 per litre to dairy farmers for 4.5 per cent Fat and 8.5 per cent SNF.

During the second half of the year, rising international dairy commodity prices and lucrative export market helped the domestic dairy commodity prices to recover. The favourable export competitiveness of dairy commodities helped export grow by about 78 per cent in 2021-22 as compared to previous year, and touched a value of ₹ 38,150 Million. By end of the year, SMP was traded close to ₹ 300 per kg, while butter was around ₹ 400 per kg.

International Scenario

As per FAO, global milk production was estimated at 928 million tonnes in 2021, an increase of about 1.5 per cent from last year. The growth in milk production in major Asian countries helped the global milk production to sustain its growth.

The international trade during 2021 rose by about 2 per cent to about 88 million tonnes (milk equivalent) over the last year. In milk equivalent terms, China remained the major importer with a share of about 24 per cent in global trade.

During April and July 2021, the international SMP and butter prices declined by 12 per cent and 23 per cent respectively, on account of sluggish trade activities. However, after July 2021, the prices

started increasing due to rising demand from consumers, as well as food processing industries. The international prices of both SMP and butter increased by about 50 per cent by March 2022. Butter touched an all-time high level at about USD 7,000 per tonne in March 2022, while SMP traded around USD 4,500 per tonne.

Inflation appeared to be a major concern for many countries during the year 2021-22. World food prices started increasing, and Russia's invasion of Ukraine and loss of Ukraine's export led to skyrocketing of the global food prices. As per FAO, the global food inflation was about 34 per cent in March 2022, whereas it was about 8 per cent in India during the same period.

NDDB received the *Rajbhasha Kirti – Pratham Puraskar* from Shri Amit Shah, Hon'ble Union Minister of Home Affairs and Cooperation in a ceremony in Delhi. Shri Meenesh Shah, Chairman NDDB received the award.



Dr. Kurien's Birth Centenary Year



Human portrait of Dr. Kurien

- ▶ Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying flagged off Milkobikes - motorcycles with milking machines, launched NDDB-developed web portal for breed multiplication scheme and urban kit organic manure on National Milk Day.

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National Dairy Development Board

November 26 is celebrated as the National Milk Day to commemorate the birth anniversary of Dr. Verghese Kurien, who is known as the father of White Revolution in India. Dr. Kurien, the architect of Operation Flood was instrumental in making India world's largest milk producer, which brought socio-economic transformation of rural households. This year was his birth centenary year. While paying tribute to Dr. Kurien, the dairy fraternity vowed to remain committed to pursue his vision.

The Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India, National Dairy Development Board (NDDDB) and other institutions - Gujarat Cooperative Milk Marketing Federation Ltd. (GCMMF), Kaira Milk Union (Amul Dairy), National Cooperative Dairying Federation of India Ltd. (NCDFI), Institute of Rural Management, Anand (IRMA), Mother Dairy Fruit & Vegetable Pvt Ltd. (MDFVPL), IDMC Ltd, Indian Immunologicals Ltd. (IIL),

NDDDB Dairy Services (NDS) and Anandalaya jointly celebrated 'National Milk Day' to commemorate the birth centenary of Dr. Verghese Kurien on 26 November 2021 at NDDDB, Anand.

During the ceremony, Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry & Dairying conferred the Gopal Ratna Award to the winners of the best dairy farmer rearing indigenous cattle/buffalo breeds, best artificial insemination technician and best Dairy Cooperative Society (DCS)/ Milk Producer Company/ Dairy Farmer Producer Organisation in the country. The award will encourage rearing of indigenous milch breeds and adopting best practices and innovation. IVF Labs at Dhamrod, Gujarat and Hessergatta, Karnataka and Start-up Grand Challenge 2.0 were also inaugurated during the ceremony. The Union Minister flagged off Milkobikes - motorcycles with milking machines, launched NDDB-developed web portal for breed multiplication scheme and urban kit

organic manure on the occasion. A TVC - Doodh Doodh Piyo Glass Full and a tribute film on Dr. Kurien were screened.

The celebration of 100th birth anniversary of Dr. Kurien started with a Walkathon – *KadamForKurien* – with the idea of reaching 200 million footsteps to honour the founder Chairman of NDDDB. The footsteps of people were recorded through *KadamForKurien* app. The Walkathon culminated with the formation of a human portrait of Dr. Kurien.

As part of the centenary celebrations, commemorative exhibitions showcasing the life of Dr. Kurien were organised in all four regional offices of NDDDB. Students from schools/ colleges and the dairy fraternity keenly observed glimpses of the life of a visionary.

Winners of poetry, essay, poster, quiz competitions organised by NDDDB and winner & runner-up of a cricket tournament arranged by GCMMF Ltd in memory of Dr. Kurien were awarded by the Union Minister.

WDS is an annual event of the IDF in which delegates from around the world, including dairy producers, processors, experts, academicians and policy makers exchange ideas on topical issues in science, technology and innovation.

International Dairy Federation – World Dairy Summit 2022, India

The Indian National Committee (INC) of the International Dairy Federation (IDF) and the IDF agreed to host the IDF World Dairy Summit (WDS) – 2022 and related meetings between 9-16 September 2022 at the India Expo Centre and Mart at Greater Noida (Delhi-National Capital Region), India. This was formally announced to the world dairy fraternity during the IDF World Dairy Conference at Copenhagen, Denmark on 10 October 2021 by Chairman, NDDDB who delivered a presentation on the upcoming Summit and rolled out a Summit video. The symbolic IDF WDS Key was handed over to the Chairman, NDDDB by South Africa - the host of the previous Summit planned for 2020, which was later cancelled due to COVID-19 pandemic. The IDF WDS 2022 will be organised after a gap of two years due to the pandemic. India will host a dairy event of this scale after a gap of over 4 decades - the last international dairy event hosted in India was the IDF World Dairy Congress in 1974. WDS is an annual event of the IDF in which delegates from around the world, including dairy producers, processors, experts, academicians and policy makers exchange ideas on topical issues in science, technology and innovation. The theme for the IDF WDS – 2022 is 'Dairy for Nutrition and Livelihood' and it is expected to bring together around 1,500 participants. NDDDB, as the Secretariat of the INC IDF, is coordinating the activities related to the organisation of the Summit.

Gopal Ratna Award 2020-21

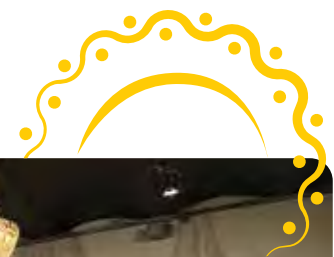
Department of Animal Husbandry and Dairying presented Gopal Ratna Award 2020-21 to various organisations and individuals. The award was to encourage individuals and organisations adopting innovative New Technology Practices for productivity enhancement, conservation of indigenous breed and effective management of Dairy Cooperative. NDDDB facilitated and coordinated in adjudication and promotion of Gopal Ratna Awards 2020-21. The Award ceremony was held on National Milk Day i.e. November 26, 2021 at NDDDB Anand.

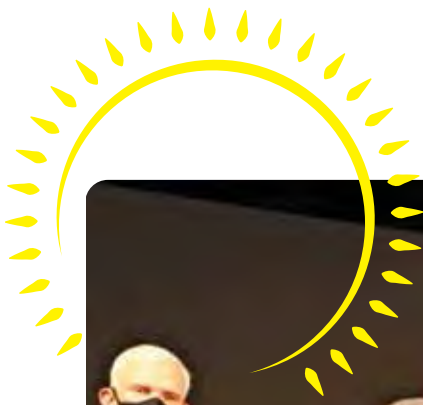
Pashumitra: NDDB call centre

NDDDB has established a call centre, *Pashu Mitra*, where dairy farmers can directly contact experts in NDDDB for their queries related to Animal Health, Animal Breeding, and Animal Nutrition. Majority of the calls

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States outreach of NDDDB call centre during 2021-22





received were for seeking information or guidance on animal health-related issues. Calls were received from 26 states during 2021-22.

Extending the benefit of Pradhan Mantri Shram-Yogi Maandhan (PM-SYM) Scheme

Considering dairy farmers do not have specific social security scheme at national level, NDDB in consultation with Ministry of Labour and Employment (MoLE), Department of Animal Husbandry and Dairying, LIC & CSC provided inputs to the guidelines related to extension of PM-SYM to dairy farmers registered with dairy cooperatives.

NDDB undertook concerted efforts to promote faster enrolments in PM-SYM scheme for dairy farmers.

Dairy development in Assam

At the request of the Hon'ble CM of Assam, NDDB embarked upon the formulation of a comprehensive

dairy development plan for Assam, thereby, enabling the State to become self-sufficient in milk production, procurement, processing and marketing in the next few years. Subsequently, an MoU was signed between Government of Assam and NDDB on January 7, 2022 in Guwahati to set up a joint venture company with 50:50 equity stakes. The joint venture company will enable replicating the success of cooperative dairying in Assam, achieved so far through WAMUL model, by implementing a comprehensive Assam Dairy Development Plan (ADDP) across the State through cluster dairy cooperative unions.

Support to cooperatives during second wave of COVID-19

Dairy cooperatives were supported across the country by facilitating working capital loans under the scheme of SDC and FPO of Government of India. NDDB

continued providing guidance to the dairy cooperatives by issuing advisories to protect the interest of the farmer members. Despite challenging times, dairy cooperatives supported livelihood of farmers by maintaining the procurement price of milk. NDDB provided support to dairy cooperatives on a pro-bono basis in preparation of DPR for receiving assistance under various central/state government schemes. During 2021-22, NDDB assisted Haryana Dairy Development Cooperative Federation Limited (HDDCF), Mathura Milk Union, Shahjahanpur Mahila Milk Union Limited (SHMMUL), Bhilwara Milk Union, Ballabgarh Milk Union, Varanasi Milk Union and the Orissa State Cooperative Milk Producers' Federation Limited (OMFED) in preparation of DPRs.

Awareness workshops by NDDB were attended by around 146 dairy cooperatives, 17 federations, 16 producer companies, Mother Dairy and around 50 private dairies.

Unified Dairy Mark – Conformity Assessment Scheme

Unified Dairy Mark, the logo of Conformity Assessment Scheme was digitally launched by Honourable Prime Minister Shri Narendra Modi on December 23, 2021. As part of the launch event, NDDB organised awareness programmes on the Product–Food Safety Management System–Process certification. The programmes were organised at 32 different locations physically and digitally. The workshops were attended by around 146 dairy cooperatives, 17 federations, 16 producer companies, Mother Dairy and around 50 private dairies. About 1,000 participants attended the programme physically while more than 2,000 viewers attended digitally.

National Dairy Plan, Phase II

After successful completion of the World Bank funded National Dairy Plan Phase I (NDP I), second phase of the National Dairy Plan (NDP II), also referred as National Dairy Support Project (NDSP-II) was conceptualised.

The preliminary project report (PPR) of NDP II has been approved in-principle by Government of India (GoI) and forwarded to the World Bank for consideration.

The proposed project will address key gaps and deficiencies in the dairy sector in the selected states of India and support the sector's transformation towards increased productivity, resilience, and profitability. Under NDP II, focus will be on development and strengthening of cooperative institutions and their marketing activities, promotion of scientific

feeding practices & fodder production/conservation, strengthening dairy business operations through ICT support, and milk quality assurance and safety along with training & capacity building of the dairy farmers and officials of dairy cooperatives. Focus will also be on promoting climate smart projects for greenhouse gas (GHG) mitigation and climate resilience.

In this regard, two identification missions have already been completed and the Project Information Document (PID) for NDP II has been published as the first stage of approval by the World Bank.

Technical Support to Government of India

NDDB continued its support to various regulatory, scientific and advisory bodies like the Department of Animal Husbandry and Dairying (DAHD), Food Safety and Standards Authority of India (FSSAI), Exports Inspection Council of India (EICI) etc. during the year. Support for evaluation of the dairies export worthiness was also provided to the Exports Inspection Agency (EIA) as a panellist. NDDB continued to work closely with the Bureau of Indian Standards (BIS) and provided technical support, through participation in the scientific/technical committees, for updation of the Indian Standards (IS) for milk and milk products. NDDB also worked as the Secretariat of the Indian National Committee (INC) of the International Dairy Federation (IDF) and participated in the relevant meetings of the Codex Alimentarius Commission and its Committees to contribute to development of international food standards.

1,000

participants in awareness programmes on the Product–Food Safety Management System–Process certification organised by NDDB



Encouraging Cooperative Business



In 2021-22, under the scheme - 'Support to Strengthen Marketing Operations of Producer Owned Institutions (POIs)', 16 project proposals with a financial outlay of ₹ 150 Million were approved.

Scheme on Revitalising Promising Milk Producer Owned Institutions

With a view to support promising Producers' Owned Institutions to strengthen their overall business operations to increase their market shares and create self-sustaining institution, NDDB floated a scheme – Revitalising Promising Producers' Owned Institutions. The scheme envisages to provide technical, managerial, and financial assistance to promising POIs. Total outlay of the scheme is ₹ 960 Million, comprising a grant-in-aid of ₹ 360 Million and interest-free secured loan of ₹ 600 Million, for the period of 2022-23 to 2026-27.

Marketing support to the Dairy Cooperatives

In 2021-22, under the scheme - 'Support to Strengthen Marketing Operations of Producer Owned Institutions (POIs)', 16 project proposals with a financial outlay of ₹ 150 Million were approved. NDDB sanctioned grant-in-aid of ₹ 64.5 Million. The project envisages establishment of milk parlours, development of cold chain infrastructure, improvement in sales and distribution network, brand development and training and capacity development of manpower for the beneficiary POIs. As part of the scheme, a sales and distribution consultant has been deployed to provide hand holding support to professionalise the S&D structure of the POIs. Similarly, a professional branding consulting agency has been appointed to help the POIs in implementing various brand building exercises to become a dominant 'Top of the Mind' brand in their operational area. This would include sharp

brand communications, packaging revamp, modernising booths, visibility elements, etc.

During the year, NDDB has supported Varanasi Milk Union to increase sales of milk and milk products. A daily sales reporting system has been put in place for updated real-time information on sales & distribution, monitoring performance of the sales force and channel partners. An action plan has been formulated with time-bound targets and the same is being reviewed. New creatives for products & advertisements have been developed and shared with the milk union.

Manure Management Initiatives

NDDB continued to support the Manure Management Model which not only fulfils clean energy requirement of rural masses but also addresses environment challenges and helps propagate sustainable agriculture practices ensuring improved yield and incomes.

NDDB has established an end-to-end Manure Value Chain in two villages namely Zakariyapura and Mujkuva in Anand, Gujarat. A slurry processing plant is set up to process slurry





offered by biogas owner farmers. Slurry-based organic products are being manufactured in the plant and sold to the farmers and others. During the year, with the support of NDDDB, a new product for urban market by the name of 'Nutri Kit' was launched. The trial of slurry tanker cum applicator was completed and India's first slurry tanker cum applicator was made operational in Anand.

• **CSR funded Manure Management Programme**

NDDDB, through funding support from IOCL, Barauni, and NDDDB Foundation for Nutrition (NFN) completed implementation of the manure management model at Barauni Milk Union (Bihar) and Cuttack Milk Union (Odisha).

• **NDDDB-Sustain Plus Manure Management Programme**

NDDDB, in collaboration with Sustain Plus Energy Foundation (an affiliate of Tata Trusts) implemented manure management initiatives in nine locations across seven states namely, Assam, Jharkhand, Maharashtra, Rajasthan, Sikkim,

Uttar Pradesh and West Bengal. During the year, more than 850 Flexi Biogas Plants were installed at beneficiary household level. Over 40 officers from various Project Implementing Agencies were trained on manure business management and slurry processing operations at Anand. Four Farmer Orientation Programmes were also conducted covering more than 450 women beneficiaries at Bhilwara Milk Union, PEDO Dungarpur, Pune Milk Union, and Kolhapur Milk Union.

• **NDDDB Biogas Programme**

During the year, NDDDB initiated implementation of NDDDB Biogas Programme to continue to financially support the installations of domestic Biogas plants with the help of dairy cooperatives and milk producer companies. In 2021-22, more than 400 beneficiaries were covered for installation of as many domestic Biogas plants of various models and capacities under the scheme. These domestic Biogas plants have not only helped the beneficiary households to save

money on account of fuel costs but also positively impacted the environment.

• **Cluster Biogas Model under GobarDhan scheme**

For implementation of Cluster Biogas Model based on the 'Zakariyapura Model', Government of Gujarat designated NDDDB as 'Main Implementing Agency' to implement the centrally-sponsored scheme GobarDhan in 25 districts of Gujarat. Under this scheme, it has been envisaged to install 100-200 domestic Biogas plants in every district of Gujarat in the first phase. Based on the experience of first phase and depending on the feasibility, Biogas slurry processing system would be developed in the second phase.

NDDDB as the technical partner for GobarDhan Scheme also signed a Service Agreement with Madhya Pradesh Gosamvardhan Board for providing technical and training support for implementation of Manure Management model in the state.

Integrated Farming System

In continuation with our efforts towards augmenting farmer's income, NDDDB established a model of Integrated Farming System (IFS) at its farm in Itola, Anand. The objective of the IFS is to maximise the income of a farming family by combining different enterprises like dairy farming, fishery, poultry farming, duck farming, bee keeping, cultivation of fruit, vegetable, flower, cereals, pulses, oilseeds, fodder, and biogas unit. Through this model, NDDDB is trying to present a remunerative working model for small holder dairy farmer who generally owns 2-3 acres of land and 2-3 dairy animals.

The model will help in showcasing sustainable small holder dairy farming system with round-the-year cash flow, stability of livelihood and nutritional security for a farming family. It will also act as a 'farm school' for other farmers, students and other stakeholders for demonstration and adoption of sustainable practices.

National Beekeeping & Honey Mission

The central sector scheme aims at overall promotion and development of scientific beekeeping in mission mode to achieve the goal of 'Sweet Revolution' in the country by giving thrust on capacity building and trainings, specific focus on women, input support for promotion & production, setting up of Integrated Beekeeping Development Centres (IBDCs), other infrastructure, digitisation/online registration, processing, value addition, market support, etc. & R&D under 3 Mini Missions. As on March 2022, NDDDB have facilitated in organising of 43 training programmes on scientific beekeeping with support of Dairy Cooperatives, Agriculture Universities and other such agencies. Farmers are being oriented on importance of beekeeping in agriculture, horticulture, and forestry along with rampant effect of pollination in enhancing their produce.

Formation and Promotion of Beekeepers FPO Honey Cluster

The central sector scheme stands with a clear strategy and committed resources to form and promote 10,000 new Farmer Producer Organisations (FPOs) in the country with budgetary provision of ₹ 68,650 Million. FPOs are to be developed in produce clusters, wherein agricultural and horticultural produces are grown/ cultivated for leveraging economies of scale and improving market access for members. 'One District

One Product' cluster to promote specialisation and better processing, marketing, branding & export.

Under this Central Sector Scheme, formation & promotion of FPOs are to be done through the Implementing Agencies (IAs). NDDDB have been allocated 26 districts in the country for creation and formation of Honey FPOs and activity of FPO registration, for which the business plan preparation is in process.



Financial Assistance for Dairy Cooperatives



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National Dairy Development Board

NDDB provides financial assistance to Dairy Cooperatives for enhancing their infrastructure for milk processing, feed manufacturing, solar applications in dairy plants and other activities like skill development.

As on 31st March, 2022, under the scheme 'Providing Financial Assistance for Infrastructure Activities, Skill Development and Trainings', projects of Dairy Cooperatives with a total outlay of ₹ 15,676 Million have been sanctioned. During the year 2021-22, long-term financial assistance of ₹ 320 Million was disbursed to Dairy Cooperatives.

As on 31st March, 2022, aggregate working capital facility of ₹ 1,455 Million has been approved to Dairy Cooperatives.

Dairying through Cooperatives – Key to sustainable livelihood

NDDB is the Implementing Agency for the 'Dairying through Cooperatives (DTC)' project - Component B of the National Programme for Dairy Development (NPDD), a Govt. of India scheme.

The total outlay of the Dairying through Cooperatives (DTC) - Component B of NPDD project is ₹ 15,683 Million comprising ₹ 9,246 Million as an ODA loan from Japan International Cooperation Agency (JICA), ₹ 4,755 Million as Government of India's (GoI) contribution as grant and ₹ 1,682 Million as State/Participating Institution's (PI) contribution.

₹320 Million

Financial assistance disbursed to dairy cooperatives



The total outlay of the Dairying through Cooperatives (DTC) - Component B of NPDD project is ₹ 15,683 Million comprising ₹ 9,246 Million as an ODA loan from Japan International Cooperation Agency (JICA), ₹ 4,755 Million as Government of India's (GoI) contribution as grant and ₹ 1,682 Million as State/ Participating Institution's (PI) contribution.

The scheme will cover all the districts in the States of Uttar Pradesh and Bihar.

The components of the project are Strengthening Milk Procurement Infrastructure, Milk Processing Facilities and Manufacturing Facilities (milk and milk products and cattle feed), Support for Marketing Infrastructure, Support for ICT Infrastructure, Productivity Enhancement, Project Monitoring and Studies, Training and Capacity Development.

The project is expected to enhance livelihood options of small and marginal milk producers, improve quality of milk throughout the value chain, strengthen processing infrastructure of participating institutions, increase visibility of cooperative brands in the market and capacity building of manpower.

Under the project, loan to Participating Institutions will be available @ 1.5% p.a.

Milk Unions, Multi State Milk Cooperatives, State Milk Federations, Milk Producer Companies are eligible to participate under the project.

Dairy Processing & Infrastructure Development Fund

NDDB is the Implementing Agency for 'Dairy Processing & Infrastructure Development Fund (DIDF)', a scheme of Government of India (GoI) with the implementation period from 2018-19 to 2022-23. The major

components of the scheme are creation/modernisation/expansion of milk processing infrastructure, manufacturing facilities for value added products, setting-up of chilling infrastructure and electronic milk testing equipment at village level. The scheme has a financial outlay of ₹ 1,11,840 Million comprising ₹ 80,040 Million as loan from National Bank for Agriculture and Rural Development (NABARD), ₹ 20,010 Million as End Borrowers' contribution, ₹ 120 Million to be contributed by Implementing Agencies towards Project Management & Learning, and interest subvention of ₹ 11,670 Million from Government of India to NABARD. The Cooperative Milk Unions, State Cooperative Dairy Federations, Multi-state Milk Cooperatives, Milk Producer Companies and NDDB subsidiaries are the eligible End Borrowers under the scheme.

As on 31st March 2022, 42 projects with an outlay of ₹ 58,249 Million including loan of ₹ 38,059 Million have been approved. During the year 2021-22, loan of ₹ 1393.51 Million were disbursed to POIs, with cumulative disbursement of ₹ 12,710 Million from 2018-19 to 2021-22 under the scheme. The implementation of the approved projects will enhance the milk processing capacities of POIs by 17.30 Million litres per day. As on 31st March 2022, 10 projects have been completed, with creation of milk processing capacity of 5.87 Million litres per day.

Interest Subvention to Producers Owned Institutions for working capital loans

On account of difficulties faced by the Producers' Owned Institutions (POIs) due to COVID-19 pandemic related restrictions, Government of India (GoI) introduced scheme for 'Interest Subvention on working capital loans' during the year 2020-21, with an outlay of ₹ 2,030 Million.

GoI has extended the scheme with an outlay of ₹ 5,000 Million for the period FY 2021-22 to FY 2025-26. The GoI has also released ₹ 1,000 Million during FY 2021-22.

The scheme provides for interest subvention of 2 per cent per annum on working capital loans availed by the eligible PAs from banks and financial institutions. For prompt and timely repayment, additional 2 per cent per annum interest subvention is payable at the end of the loan repayment period. The component of Interest Subvention has been included under the scheme 'Supporting Dairy Cooperatives and Farmer Producer Organisations engaged in dairy activities (SDCFPO)'. The scheme is being implemented through NDDB.

During the year 2021-22, interest subvention amounting to ₹ 440.02 Million has been released to POIs. The scheme enabled the POIs to make regular payments to dairy farmers with the help of interest subvention on working capital loans of ₹ 1,31,380 Million obtained from banks.

Enhancing Productivity

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National Dairy Development Board



Animal Breeding



More than a decade's effort in carrying out field genetic improvement programmes for the important bovine breeds, in different agro-climatic zones of the country, has now placed the goal of genetic improvement on a strong foothold. In addition to contributing towards increasing productivity and superior herd quality, the efforts helped in the development of indigenous breeds and bringing more indigenous population under Artificial Insemination (AI) coverage and systematic performance recording.

This year, the DNA bio banking repository of NDDB for Cattle and Buffalo germplasm surpassed one lakh samples. This repository is a valuable resource for any future DNA-based technologies like Genomic Selection. With growing reference population in various breeds, Genomic Selection has been

implemented on Gir, HF crossbreds, & Jersey crossbreds among cattle breeds and Murrah & Mehsana among buffalo breeds.

For faster multiplication of superior germplasm through Assisted Reproductive Technologies (ARTs) at affordable cost at farmers' doorstep, NDDB provided services and training for Ovum Pick-up and In Vitro Embryo Production (OPU-IVEP) in the country.

National Dairy Development Board initiated following activities with respect to Genomics and Assisted Reproduction Technologies like IVF and ET for enhancing productivity of bovines.

Expanding Reference for Genomic Selection

During 2021-22, a total of 4,736 samples of bulls present at semen stations were collected and

processed for DNA extraction. The samples are being genotyped for estimation of Genomic Breeding Values. Efforts are underway to expand reference population for Genomic Selection by approaching organised herds of important indigenous breeds and put them under performance recording.

In order to create a larger reference population and implement Genomic Selection of important dairy breeds of Cattle and Buffaloes in Gujarat, NDDB entered into collaboration with Gujarat Biotechnology Research Centre (GBRC), Gujarat Cooperative Milk Marketing Federation Ltd (GCMMF) and Anand Agricultural University (AAU).

Global Reference Buffalo Genome:



NDDB successfully completed high quality buffalo genome assemblies {assembly accession: GCA_019923935.1 (NDDB_SH_1) and GCA_019923925.1 (NDDB_DH_1)} in collaboration with United States Department of Agriculture (USDA). Both genome assemblies are annotated and the genomes are complete with gene and protein level features. Buffalo genome NDDB_SH_1 is now assigned as Reference representative (Refseq) genome for Buffalo species (*Bubalus bubalis*) by National Centre for Biotechnology Information (NCBI), USA. Hence, this Murrah buffalo genome shall be used as a global reference genome for all genomics related research of Riverine buffaloes. Latest version of genotyping SNP chip for buffaloes called 'BUFFCHIP' developed in association with BAIF is mapped to NDDB_SH_1. NDDB's buffalo genome - NDDB_SH_1 has been included as reference in UCSC genome browser.



During the year, a total of 752 viable embryos were produced from cattle and buffalo donors. A total of 22 pregnancies were established and 27 calves were born.

Ovum pick-up and In vitro embryo production

Ovum pick-up and In vitro embryo production (OPU-IVEP) has great potential in accelerating genetic improvement of Cattle and Buffalo breeds by increasing the number of progenies from superior germplasm and reducing generation interval. NDDDB's state-of-the-art R&D and training facility in OPU-IVEP continued the efforts towards improving efficiency of the technique, reducing cost of IVF embryos and training larger pool of manpower to disseminate the technology at a faster pace. OPU-IVEP-ET works were initiated in collaboration with Banas Dairy and Amul Dairy in both cattle and buffaloes, where farmers' animals were used either as donors or as recipients. This is paving the path for hub and spoke model of embryo production and transfer, wherein NDDDB OPU-IVEP laboratory would serve as hub for embryo production.

During the year, a total of 752 viable embryos were produced from cattle and buffalo donors. A total of 22 pregnancies were established and 27 calves were born. Efforts towards developing skilled manpower for OPU-IVEP during the year continued. Sixteen veterinarians from different organisations were trained in the technology.

Genetic Improvement Programmes

NDDDB is implementing or facilitating implementation of various important central sector projects sanctioned under Rashtriya Gokul Mission (RGM) schemes of Govt. of India. These projects have been implemented in the field in association with State Livestock Development Boards, Cooperative Milk Federations and Milk Unions, NGOs and NDDDB subsidiaries.

Efforts for producing and disseminating quality genetics by selecting genetically superior bulls and bull mothers by implementing scientific field-based genetic improvement programmes to produce genetically superior young male calves continued during the year. Such male calves are distributed to various semen stations in the country for production of disease-free frozen semen doses.

Progeny Testing (PT) and Pedigree Selection (PS) programmes

Progeny Testing – Identifying bulls of higher genetic merit and subsequently, producing genetically superior male calves by planned breeding of HGM bulls and elite cows through PT projects forms the core of genetic improvement programmes. Under Rashtriya Gokul Mission (RGM) a Govt. of India Scheme, the PT projects for various cattle breeds like Gir, Sahiwal, Jersey, crossbreds of HF (CBHF) and Jersey (CBJY), and buffalo breeds like Murrah and Mehsana are being continued in nine states. During the year, PT projects continued to improvise phenotype recording activities through effective use of online software applications and GPS coordinates for monitoring accuracy of milk recording and breeding activities.



In the year 2021-22, all PT projects together tested 286 bulls, carried out 4.57 lakh test AIs, and have put 59,775 animals under milk recording. Altogether, the PT projects produced 869 young higher genetic merit bulls and these bulls were made available to semen stations for production of frozen semen doses. Bulls free from genetic disorders and infectious

diseases were selected based on their breeding values for milk yield, confirmed parents through DNA-based parentage testing and Karyotyping. Apart from milk yield, Breeding Values for various important traits like fat, SNF, protein yields, open period, age at first calving and type traits are also being estimated. Animal type classification

aids in identifying animals which have right body conformation to support production and reproduction and forms an integral part of PT programmes. Giving weightage to type traits in the selection of animals improves the life time productivity of animals.

Details of PT Projects implemented under RGM scheme are mentioned in the table below:

Sr. No.	State	Name of the EIA	Breed
1	Andhra Pradesh	APLDA	Jersey CB
2	Gujarat	SAG	Murrah
3	Gujarat	SAG	HFCB
4	Gujarat	Mehsana Milk Union	Mehsana
5	Gujarat	Banas Milk Union	Mehsana
6	Gujarat	SAG	Gir
7	Haryana	HLDB	Murrah
8	Himachal Pradesh	HPLDB	Jersey
9	Kerala	KLDB	HFCB
10	Punjab	PLDB	Murrah
11	Punjab	PLDB	Sahiwal
12	Rajasthan	Sri Ganganagar Milk Union	Sahiwal
13	Tamil Nadu	TCMPF	Jersey CB
14	Uttar Pradesh	ABRO	Murrah

Pedigree Selection – Many Cattle and Buffalo breeds having good dairy potential and better adaptability to low input systems, heat tolerance, and disease resistance etc. are available in regions with lesser AI coverage. PS programmes have been implemented with the key aim to initiate field-based development and conservation efforts in the breeding tracts of these breeds by enabling selection of superior animals within the population and then disseminating their genetics to

the larger population of the breeds through building infrastructure for AI delivery. Besides this, the PS projects attempt to bring awareness among the participating farmers on the importance of genetic improvement programmes.

Currently, under RGM, NDDB is implementing 7 PS projects for the development of various indigenous breeds like Harijana, Kankrej, Tharparkar, and Rathi among cattle breeds and Jaffarabadi, Nili-Ravi,

Pandharpuri among buffalo breeds, through 7 EIAs in five states. Additionally, two new PS projects for development of Gaolao cattle and Banni buffalo were approved during 2021-22. Field activities under these projects will be initiated from 2022-23.

During the year, the PS projects altogether carried out 75,995 AIs, inducted 4,357 animals under milk recording, and procured 134 HGM bulls.

Details of PS Projects implemented under RGM are provided in the table below:

Sr. No.	State	Name of the EIA	Breed
1	Gujarat	SAG	Jaffarabadi
2	Gujarat	Banas Milk Union	Kankrej
3	Haryana	HLDB	Haryana
4	Maharashtra	MLDB	Pandharpuri
5	Punjab	PLDB	Nili-Ravi
6	Rajasthan	RLDB	Tharparkar
7	Rajasthan	URMUL Trust	Rathi

National Bovine Genomic Centre for Indigenous Breeds (NBGC-IB)

During 2021-22, a total of 31,353 blood/tissue samples from performance recorded animals and bulls were collected and processed for DNA extraction. 'INDUSCHIP' and 'BUFFCHIP' were used for genotyping a total of 3,677 samples, while High density chip was used to genotype 104 animals. Genomic Breeding Values of bull calves of Gir, HF crossbred, and Jersey crossbred cattle breeds and Murrah & Mehsana buffalo breeds were estimated and shared with the PT projects for more accurate selection.

Import of Bovine Germplasm

To take advantage of the genetic progress made in dairy advanced countries and to give impetus to the existing genetic improvement programme for indigenous breeds, a project has been sanctioned for import superior germplasm of indigenous and exotic breeds (Gir, Red Sindhi, HF and Jersey) under Rashtriya Gokul Mission scheme of Govt. of India. So far, 228 HF bulls have already been imported and distributed to the various semen stations in the country. During this year, a process was initiated to import 40,000 conventional semen doses of Gir bulls from Brazil. Process is also being initiated to import 125 number of Jersey bulls.

Strengthening of ETT/IVF facility at SAG, Bidaj

To produce superior male and female calves through IVF/ET for semen production and herd replacement respectively, a project on strengthening of ET/IVF facility at SAG, Bidaj was implemented by NDDDB under Government of India's RGM scheme. During the year, a total of 983 embryos were produced and 176 embryos were transferred into suitable recipients resulting in 36 pregnancies. The project also recorded birth of 25 calves during the year.

Accelerated Breed Improvement Programme

The Govt. of India, under RGM scheme, sanctioned this project with the objective of making IVF technology affordable and thereby, increasing acceptability of it for propagation of high yielding animals among farmers and also creating an additional income source for farmers by using high yielding animals as donors. NDDDB, as the Principal Implementing Agency of the project, signed a rate agreement with the service providers and requested various implementing agencies (Milk Federations, Milk Unions, Milk Producers Companies, State Livestock Development Boards, State Animal Husbandry Departments) to submit their proposal. Field implementation of the project will be initiated in 2022-23.





635

Number of participants
trained on INAPH through
29 ToT trainings



Accelerated Breed Improvement Programme- Using sex-sorted semen for getting assured pregnancy

With the objective to promote use of sexed/sex-sorted semen for production of female calves with 90 per cent accuracy, Government of India under RGM scheme has sanctioned the project Accelerated Breed Improvement Programme – using sexed semen for getting assured pregnancy. NDDDB will monitor the implementation of the project. NDDDB signed rate agreement with the suppliers of sexed/sex-sorted semen during the year. Field implementation of the project through various implementing agencies will be initiated in 2022-23.

Breed Multiplication Farms

NDDDB also initiated the Breed Multiplication Farm (BMF) under the aegis of RGM. The project aims to develop entrepreneurs for establishing Breed Multiplication farms to produce disease-free high-yielding elite heifers/pregnant heifers/cows of indigenous breeds of Cattle and Buffalo through scientific breeding including sex-sorted semen and IVF technology to make them available to farmers on cost basis. NDDDB has launched a web portal to receive applications for the same.

Support to semen production – Strengthening of existing semen stations

To ensure availability of quality frozen semen doses for AI and create infrastructure of international standard, Government of India under its RGM scheme sanctioned Strengthening of Semen Station project to support existing semen stations of the country. NDDDB is assisting the semen stations in formulation of the project document. Till March 2022, assessment of project proposals received from 12 semen stations were completed and cleared for further submission to DAHD.

Establishment of AI Training institute and Monitoring of AI Network in NER States

To create infrastructure for training of AI technicians in northeastern states (NER), NDDDB, at the request of Assam Livestock Development Agency (ALDA), undertook establishment of an AI training institute at Khanapara, Guwahati. The project is being implemented and is expected to be completed by September 2022. Further, NDDDB is assisting the states in monitoring and supervision of AI network and impart training on INAPH to increase the coverage of AI through MAITRIs (Multi-Purpose AI Technicians) in NER

states. In the year 2021-22 under this project, a total of 8.94 lakh AIs have been carried out. So far, a total of 1,206 MAITRIs have been deployed in the field and 635 participants have been trained on INAPH through 29 ToT trainings.

Project Gir Varanasi

To augment milk production in Varanasi Milkshed of Uttar Pradesh, NDDDB implemented Project Gir Varanasi through NDDDB Dairy services under RGM scheme. Various activities covered under this project are: a) Induction of 450 Gir cattle in a three-year period, b) Establishment of 5,000 IVF pregnancies in the next five years period, and c) Establishment of 2 lakh pregnancies each in cattle and buffaloes using sex-sorted semen.

Animal Nutrition



Ration Balancing Programme

To enhance reach of Ration Balancing Programme (RBP), the NDDB piloted a new low-cost model wherein village-level Self Help Group's (SHG) women members - also known as 'Pashu Sakhis', were engaged to deliver Ration Advisories (RAs) to dairy farmers. The project was implemented with the help of Bhagyoday Community Managed Resource Centre (CMRC), a society that coordinates the activity of SHGs under the aegis of Mahila Arthik Vikas Mahamandal (MAVIM), a Government of Maharashtra enterprise. Under this model, the CMRC is the Nodal Centre, staff of which prepares season-specific RAs and pass it on to 'Pashu Sakhis'. The Pashu Sakhis, in turn, communicate the RAs to the dairy farmers.

A total of 290 animals belonging to about 200 dairy farmers were enrolled in eight villages with the help of 12 Pashu Sakhis. Adoption

of ration advisories by farmers led to improvement in milk yield and fat content by 0.67 kg and 0.5 per cent, respectively.

The NDDB also continued to provide technical assistance in implementing RBP in Vidarbha and Marathwada Dairy Development Project (VMDDP). Under this initiative, about 37,931 animals belonging to 21,299 farmers in 945 villages were covered during the year. RBP impact data revealed an increase in milk by 0.2 kg per day per animal and fat per cent by 0.18 unit, leading to improvement in net daily income of farmer by ₹ 22.94 per day per animal.

Improving milk quality through feed supplement 'Samvridhhi'

NDDB developed a feed supplement named 'Samvridhhi' for improving milk yield and its quality. Various field studies conducted by NDDB have indicated increase in milk yield and

its composition. About 26,300 kg of Samvridhhi was produced and supplied to farmers during the year by Milk Unions/Federations.

Quality Mark for cattle feed and mineral mixture

During the year, two cattle feed plants, belonging to cooperative milk unions/federations of Pune and Uttarakhand, signed Memorandum of Understanding (MoU) with NDDB for implementing 'Quality Mark'. A total of about 18,000 MT of cattle feed and 70 MT of mineral mixture was produced under 'Quality Mark' during the year.

37,931

Animals belonging to 945 villages covered under RBP Programme



Mitigation of greenhouse gas emissions through scientific feeding and manure management practices

Scientific feeding and manure management practices significantly reduce Green House Gas emissions of dairy farms.

Feeding nutritionally balanced rations in the form of Total Mixed Ration (TMR) helps in optimising rumen fermentation and reduces enteric methane emission. A field study conducted in Anand district revealed that feeding of balanced rations in the form of TMR reduced enteric methane emission by 11 per cent in lactating crossbred cows compared to control group (14.51 vs. 16.32 g/kg milk).

Management of manure in anaerobic digestors also help reduce GHG emissions from manure management. NDDDB is supporting farmers to adopt anaerobic digestors (biogas plants) so that manure is converted into biogas for meeting household energy need and slurry produced is used as bio-fertiliser in agriculture. Study revealed that installation of biogas plants reduced GHG emissions from manure management by an average 40 per cent i.e. 931 kg CO₂-equivalent per year (2331 vs. 1400 kg CO₂-eq. per year, before vs. after biogas plant installation). This also resulted in reduction in total farm-gate GHG emissions by 7.2 per cent.

Monitoring level of Aflatoxin B1

To monitor the level of AFB1 in cattle feed and feed raw materials, about 290 samples were collected from different parts of the country during the year. The analysis results indicated higher level of AFB1 in some samples when compared with BIS standards. Considering seasonal variations, the highest concentration of AFB1 was found in late monsoon season (September, October and November). The concentration of AFB1 was found to be on the higher side in maize grain, groundnut meal, rice polish and de-oiled rice bran.

Strengthening of fodder seed multiplication chain

For production of foundation, certified and truthfully labelled seeds, breeder seed of improved varieties with high genetic purity is being used by seed processing plants under dairy cooperatives. During the year, NDDDB coordinated lifting of 25.80 MT of breeder seed (2.45 MT in *Kharif* and 23.35 MT in *Rabi*) from ICAR and agriculture universities, through 15 dairy cooperatives' seed processing plants. Under this programme, numerous newly notified fodder varieties were brought into the seed multiplication chain such as Krishna (Lucerne), OL-1861 (Oat), MFC 09-1 (Cowpea), TSFB 15-8, TSFB 15-4 (Bajra) and TSFM 15-5 (Maize).

Awareness on forage production technologies

To generate awareness among farmers, newly notified fodder varieties of B.N. Hybrid grass, perennial Lucerne, fodder maize, Berseem and Oats were demonstrated in Fodder Demonstration Unit (FDU). Knowledge on good quality silage making techniques, fodder seed production and optimising fodder production from alternate fodder crops such as spine-less cactus, fodder sugarcane, moringa etc. was also passed on to visitors/farmers. Information on important forage production technologies of different fodder crops such as cropping sequences, mixed cropping of fodder cereal/grass crops with legumes, fertiliser & manure management, weed control etc. were discussed and displayed to the farmers. To popularise improved fodder varieties, around 1.78 lakh stem cuttings of Bajra Napier hybrid were supplied to the farmers.

Distribution of certified fodder seed to farmers

To increase the use of certified seeds in fodder cultivation, NDDDB coordinated free distribution of 2,900 MT of fodder seeds to 117 milk unions and producers' companies covering 22 states and one union

territory. Under this seed distribution programme, around 1,800 MT seed of fodder maize (African Tall), 990 MT seed of multi-cut sorghum (CSH 24 MF), 10 MT seed of perennial multi-cut fodder sorghum (CSV 33 MF), 50 MT seed of single cut fodder sorghum (CSV 32 F) and 50 MT seed of fodder bajra (Baif-1) were supplied in the form of minikits (8 lakh) to farmers for fodder cultivation in Zaid and Kharif seasons in 2021.

Certified fodder seed production programme

Under the realigned National Livestock Mission (NLM), certified fodder seed production was taken up through nine dairy cooperatives under 'sub-mission on feed and fodder development' and its activity 'Assistance for quality fodder seed production' to produce about 2,500 MT of foundation and certified seeds. Under this, NDDDB is working closely with dairy cooperatives and providing necessary technical support for production of quality fodder seed.

Development of cost-effective 'Rapid Test Kit'

Screening of cattle feed/feed raw materials for AFB1 is one of the best ways for determining its entry in the cattle feed plants and safeguarding dairy animals against potential contamination. To develop a cost-effective lateral flow device for screening of cattle feed/feed raw materials for AFB1, NDDDB in collaboration with International Crop Research Institute for the Semi-Arid-Tropics (ICRISAT) has initiated a research project with financial assistance from the Biotechnology Industry Research Assistance Council (BIRAC), Government of India.

Animal Health



NDDB has always striven to make dairying a sustainable proposition to the small and marginal farmers by promoting scientific, cost-effective, and holistic animal health strategies. The holistic disease control models help in reducing antibiotic residues in milk, which will go a long way in stalling the emergence of antimicrobial resistance (AMR).

The Information Network for Animal Productivity and Health (INAPH) health module is into the fourth year of deployment in Kolhapur milk union and is now an integral part of the veterinary services delivery system of the union. More than 2.88 lakh cases have been recorded in the system during the year. An analysis of the reports reveal incidences of under related cases at around 30 per cent, followed by digestive issues at 26 per cent and, reproductive issues at 9.5 per cent. During this fiscal, farmers

have spent ₹ 129.96 lakh to avail the veterinary services of the milk union for which animal-wise data is available in the system.

Consultancy on biosecurity and disease control is also being provided by NDDB on a regular basis to bull production areas and semen stations to ensure production of disease-free semen. Animal health appraisals for semen station strengthening under RGM are also being carried out regularly.

NDDB continued to support the one health model of brucellosis in 573 villages covering four districts of Gujarat. As on March 2022, 1,26,966 bovine female calves have been vaccinated and ear tagged and more than five lakh animals have been covered since initiation of the project in April 2013. Besides vaccination, it includes many core

components like animal identification, proper disposal of placenta and aborted material, awareness creation, disinfection, animal isolation etc. These interventions are aimed at limiting the spread of the disease, which is of equal consequence as vaccination. Collaboration with a medical institute has helped create linkages between the animal and human disease. Though it is zoonotic, brucellosis in human remains largely underdiagnosed but it seriously impedes the working capacity of the farmers and other animal husbandry personnel.

The one health model helps in identifying such infected people who are provided the specific treatment regimen, which is unlike any other common bacterial infection, required for brucellosis. A video film on success stories of farmers cured of the disease under the project is

being widely circulated for adequate awareness on the disease. The awareness levels on brucellosis and its control among the farmers has also increased significantly in the project areas. Till date, more than 2,200 stakeholders (farmers and animal health personnel) have been tested and 123 patients with symptoms of brucellosis have been treated and cured, redeeming their health and improving their working capacity significantly.

Mastitis Control Popularisation Project

NDDB expanded its holistic model of mastitis control - the Mastitis Control Popularisation Project (MCP) to include many more ailments and rechristened it as Disease Control through Alternate Methods (DCAM). DCAM has been implemented in 16 milk unions/producer companies across eight states (Kerala, Karnataka, Maharashtra, Gujarat, Punjab, Assam, Andhra Pradesh, and Uttar Pradesh). Surveillance of mastitis pathogens and its antibacterial sensitivity are being carried out in the project areas and appropriate measures are being suggested to rationalise the use of antibiotics and reduce chances of emergence of Antimicrobial Resistance (AMR). Project villages are being monitored for parameters like sub-clinical mastitis (SCM), antibiotic residues, somatic cell counts (SCC), bacterial load and aflatoxin residues in milk. A total of 2,66,638 pooled milk samples of the farmers pouring milk at the Dairy Cooperative Society (DCS) or Milk Pooling Points (MPPs) were tested in 2021-22 by California Mastitis Test (CMT) to assess SCM. Individual animals with SCM were identified by a further level of CMT at the farmers' homestead and those found positive were provided an easy oral regimen costing around ₹ 35/- for a 10-day course. A drastic reduction in the incidences of SCM, and, an

average milk yield increase of one litre per day in affected animals have been recorded with this strategy. Documentation of ethno-veterinary medicines (EVM) for several common ailments, including mastitis, is also being carried out under DCAM. Till March 2022, EVM has intervened in more than 6.75 lakh cases which have been documented from the project areas of which above 2.15 lakh are of mastitis, with an average cure rate of 79 per cent. Transfer of EVM knowledge to the farmer has been evident with the total numbers of cases being reported in milk unions where EVM is being used extensively having reduced significantly as more and more

farmers prefer to adopt EVM to manage common ailments on their own.

Under DCAM, NDDB is also encouraging unions to strengthen their supply chain of EVM by providing grant of up to 30 per cent of the total project cost for setting up EVM production facility. NDDB has allocated ₹ 50 Million towards this for a period of three years from 2021-22. During 2021-22, Sabarkantha and Kaira Milk Union have set up/enhanced EVM production facility under this initiative. Milk unions that have embarked on extensive use of EVM in the field have reduced their medicine purchases, especially antibiotics, significantly.

Success Story

Establishment of EVM formulation plant and supply chain facility at Kaira Milk Union, Anand

NDDB has been popularising Ethnoveterinary Medicine (EVM) for management of common ailments in bovines since 2017. EVM is an efficacious and cost effective and eco-friendly approach that helps the livestock owner to manage many common bovine ailments. NDDB has been propagating EVM in more than 16 milk unions and milk producer companies across India. The dairy board has also decided to encourage milk unions to strengthen the EVM supply chain by helping to set up EVM formulation plants to cover larger number of member producers. Taking a cue from the success of Sabarkantha Milk Union on EVM propagation, Kaira Milk Union, Anand, Gujarat has decided to establish a model EVM formulation plant to cater its entire milk shed area for the benefit of farmers and the union. The EVM plant has been set up in its Cattle Feed Factory premises with a total outlay of more than ₹ 20 Million and a financial grant of ₹ 5.15 Million from NDDB. A total of seven EVM formulations are being produced in this plant and distributed among the member producers. More than 1,800 livestock resource persons have been trained on the EVM concept, formulation preparation and application for managing various bovine ailments. Till date, more than 2 lakh EVM preparations have been supplied to about 28,000 members in its milk shed area. In the long run, these ready-to-use EVM formulations will surely help Kaira Milk Union to reduce antibiotic usage in bovines, produce quality milk, and decrease veterinary visits at the farmers' doorstep.

Research and Development



25



To ensure productivity enhancement of breeds, continuous scientific research and advancements are required. Research efforts at NDDB evaluates various approaches and ones proven beneficial are taken to the field as specific project.

NDDB's R&D laboratory located at Hyderabad is a state-of-the-art research facility involved in applied research related to bovine diseases and disease diagnosis. The laboratory has adopted quality management systems (QMS) of international standards for disease diagnosis and is accredited with ISO/IEC 17025: 2017 (NABL) and ISO 9001:2015 certifications. Further, the

laboratory participates regularly in proficiency testing (PT) programmes offered internationally to ascertain the accuracy and suitability of the test methods adopted for bovine disease diagnosis. Disease screening support to breed improvement agencies continued for the diseases listed in the minimum standard protocol for production of bovine frozen semen. Research efforts were focussed on the development and validation of diagnostic assays, investigation of disease outbreaks, and surveillance and molecular characterisation of aetiological agents that are economically important, zoonotic and of one-health importance.

Disease diagnostic support

A total of 60,400 samples from cattle and buffaloes were screened for bovine brucellosis, infectious bovine rhinotracheitis (IBR), bovine viral diarrhoea (BVD), Johne's disease (JD), bovine genital campylobacteriosis (BGC) and trichomonosis.

The details of the testing done are given in the table below:

S.No.	Disease	Test	No. of samples tested	Type of sample	Species	Percentage positive
1	IBR	Antibody ELISA	15,279	Serum	Cattle and buffalo	15
2	Brucellosis	Antibody ELISA	15,071	Serum	Cattle and buffalo	1.04
3	BVD	Antigen ELISA	7,312	Serum	Cattle and buffalo	0.15
		RT-PCR	107	Serum	Calves <6 months of age	0
4	JD	ELISA	617	Serum	Cattle and buffalo	5
5	BGC & trichomonosis	In vitro culture	1,164	Preputial wash	Cattle and buffalo	0
6	IBR	RT- PCR	19,686	Frozen semen	IBR seropositive bulls	2

The provision of prompt and accurate disease testing support aided semen stations and farms engaged in breed improvement and productivity enhancement programmes in the procurement and maintenance of healthy animals that are free from diseases listed in the Minimum Standards for Production of Bovine frozen semen (MSP).

Quality accreditation and proficiency testing

Accreditation of the laboratory to international standards (ISO 9001:2015 and ISO/IEC 17025:2017) for bovine disease testing were renewed during the year. The QMS for disease testing activities were found to be in conformity with the standards in the annual assessments conducted by the respective accreditation agencies.

The results of IBR and brucellosis screening tests (antibody ELISA) adopted by the laboratory for the samples received from the PT provider (VETQAS, APHA, UK) were in 100 per cent agreement with the results of the PT provider in all the rounds of testing. The PT performance confirms the competency of the laboratory in test performance and accuracy of the test methods.

Whole genome sequencing of *Brucella melitensis* isolated from cattle

Brucellosis, is not only a major disease of dairy cattle but is also zoonotic and of one-health importance. The disease in cattle and buffaloes is mostly caused by *Brucella abortus*, whereas humans and small ruminants (sheep and goat) are mostly infected by *B. melitensis*. However, on surveillance of a herd infected with brucellosis, *B. melitensis* was isolated from a dairy cow with a history of abortion. Whole genome sequencing and *in-silico*, multilocus variable tandem repeat analysis (MLVA) showed that the isolate belonged to genotype 116 of 'East Mediterranean' lineage. Further, phylogenetic analysis revealed that the isolate belonged to Genotype IId and is closely related to a human isolate from Tamil Nadu. The study underscores the need for One-Health approach in the control of brucellosis.

Surveillance of antimicrobial resistance (AMR) in mastitis causing bacteria

The mastitis control popularisation project (MCCPP) being implemented by NDDDB involves scheduled screening of milk samples from the participating unions for the identification of mastitis causing agents and determination of the antibiotic susceptibility. The laboratory processed milk samples (n= 358) collected from subclinical/ clinical mastitis cases for the isolation and identification of causative agents. A total of 549 bacteria were isolated from the samples. Non-aureus *Staphylococci* species were most abundant (33 per cent) followed by *Streptococcus* spp (25 per cent) and *Staphylococcus aureus* (17 per cent).



The antimicrobial resistance (AMR) profile of the bacteria were determined by phenotypic (broth-dilution) and genotypic (PCR) methods. Methicillin resistant *S. aureus* (MRSA) constituted 10 per cent of *S. aureus* causing mastitis. The AMR profile (antibiogram) of the mastitis causing agents was reported to the respective unions for aiding informed and appropriate choice of antibiotics for the treatment.

Sequence and virulence typing of *Klebsiella pneumoniae* (17 nos.) isolated from mastitis cases indicated high-divergence of the isolates and hyper-virulence of 27.5 per cent of the isolates (capsular types– K20, K54). Three well-characterised strains were enlisted as candidate vaccine strains for the development of the much-needed multivalent mastitis vaccine.

Validation of BoHV-1 (DIVA) ELISA for IBR diagnosis

ELISA test developed in-house, for diagnosis of IBR and differentiating infected from vaccinated animals (DIVA) is being validated by the laboratory. The test is based on the recombinant glycoprotein-E (gE) of BoHV-1 and gE specific monoclonal antibody. Validation assays revealed high sensitivity (>99 per cent) and specificity (100 per cent) of the test. Inter-laboratory comparison (ILC) of the test method was undertaken in six reputed laboratories at different locations of the country. ILC involved replicate testing of 80 coded samples twice by the participating laboratories. Analysis of the results show that the assay is highly reproducible (99.58 per cent agreement). The laboratory had also evaluated the accuracy of the test through proficiency testing (PT) with Vetqas, APHA, U.K., thrice during the

year. The test results for the coded samples (18 nos.) was in 100 per cent in agreement with the test results of the PT provider, further confirming the accuracy of the test.

Investigation of outbreaks caused by lumpy skin disease virus

Lumpy skin disease has emerged as a major bovine disease recently causing several outbreaks across India. The laboratory investigated the samples from suspected animals in the LSD outbreak sites of Anand, Kheda, and Sabarkantha districts of Gujarat by real-time PCR assay. Results confirmed the outbreaks. Seven LSD viruses were isolated from the tissue scabs collected from infected cattle. Molecular characterisation of these isolates is underway.

Profiling of zoonotic infectious agents in bovine reproductive disorder

A total of 401 cattle and buffaloes with reported bovine reproductive disorders (abortion, retention of foetal membrane, metritis) were investigated for infection with important zoonotic pathogens viz., *B. abortus*, *Leptospira interrogans*, *Listeria monocytogenes* and *Coxiella burnetii*. Specialised paper-based sampling matrix (FTA® cards) spotted with vaginal discharge or aborted material were tested by molecular assays- either real-time PCR or PCR. The results revealed infection of *Brucella*, *Leptospira* and *Coxiella* in 18.45 per cent, 22.19 per cent and 28.93 per cent cases, respectively. *Listeria* spp. was not detected in any of the samples. The results indicate infection with at least one of the above aetiological agents in 232 animals (57.86 per cent) while infection with more than one bacterial abortifacients were recorded in 45 animals (11.22 per cent). The high prevalence of bacteria with zoonotic potential in cattle and buffaloes with

reproductive disorders prompts the need for One-Health approach in the control of infectious agents causing bovine abortions and reproductive disease.

Biometric identification of bovines

In collaboration with various start-up technology partners, NDDB has started biometric identification of bovines using Artificial Intelligence tools. Primary results indicate around 90% accuracy of identification of cattle or buffalo from Muzzle image once animal muzzle image is stored in the database.

Upgradation of genomic chips

During the year, steps were taken towards unifying genotyping panels that are being used in the country by various organisations. As a first step, genotyping chips 'INDUSCHIP' and 'BUFFCHIP' were upgraded in collaboration with BAIF Development Research Foundation for wider utility and compatibility. Efforts are ongoing to include other organisations like

NIAB and NBAGR in this effort so that genotype data generated across country are compatible and can be easily merged for expanding reference population.

Advancement of IVF technology

Buffalo IVF was standardised at the NDDB laboratory. This saw a very encouraging result in Buffalo IVF, with the production of 42 embryos from 15 OPU sessions. It also resulted in establishing five pregnancies upon transfer of embryos in recipients.

NDDB is making efforts to develop indigenous media for OPU-IVEP-ET which may help in reducing the cost of in-vitro fertilised embryos and increase acceptability of the technology at the field level.

Establishment of forage research voluntary centre

During the year, the NDDB established a voluntary centre at Anand for conducting research trials on selected fodder crops and



development of silage production technologies in collaboration with Indian Grassland & Fodder Research Institute (IGFRI), Jhansi. During the *Kharif* season, a field trial was conducted with five fodder maize varieties, which were harvested at three stages for silage purpose. It was found that highest average green fodder yield (35.86 MT/ha) and dry matter yields (9.34 MT/ha) could be obtained by harvesting fodder maize at dough stage, when dry matter content in fodder is around 26 per cent. Silage pH of maize varieties was observed between 3.5-3.6. Maize varieties such as J-1006, J-1007 and African Tall were found to be superior in terms of green fodder yield, dry matter yield, dry matter content and crude protein content.

Development of silage specific leafy maize hybrids

To address the shortage of quality green fodder during lean periods, dairy farmers are adopting silage making technology. It is observed that due to high grain and starch content, farmers prefer to cultivate maize

hybrids or dual-purpose varieties for silage production. Keeping this in view, the NDDDB has collaborated with Indian Institute of Maize Research (IIMR), Ludhiana for development of exclusive silage specific leafy maize hybrids. Under this programme, around 108 maize hybrids were evaluated of which nine hybrids were found to be promising for silage making.

Bentonite – A cost-effective toxin binder to control Aflatoxin M1 in milk

Feeds and fodder are the major source of aflatoxin M1 (AFM1) contamination in milk – principal hydroxylated metabolite of aflatoxin B1 (AFB1). Approximately, 0.3 to 6.2% of AFB1 is converted into metabolised AFM1 and excreted in milk of dairy animals. To mitigate the issue of AFB1 contamination, NDDDB conducted two in vivo studies to evaluate the effect of supplementing bentonite (a substance for reduction of AFB1 in feeds for ruminants) on excretion of AFM1 in milk.

First study revealed that supplementation of standard bentonite (Sigma-Aldrich) @ 150 g per cow per day reduced excretion of AFM1 in milk by 76 per cent ($P < 0.01$), without affecting dry matter intake (8.7 vs 8.9 kg/day; $P = 0.292$) and milk yield (8.8 vs 8.4 kg/day; $P = 0.307$). The transmission rate of AFM1 from feed to milk was significantly lower (0.42%; $P < 0.01$) in supplemented group, as compared to un-supplemented control group (1.10%).

Second in vivo study revealed that supplementation of commercial bentonite @ 150 g per cow per day reduced excretion of AFM1 in milk by 47% ($P < 0.01$), without affecting dry matter intake (9.08 vs 9.07 kg/day; $P = 0.140$) and milk yield (9.13 vs 8.65 kg/day; $P = 0.526$). The transmission rate of AFM1 from feed to milk was significantly lower (0.75%; $P < 0.01$), as compared to un-supplemented control group (1.17%). Daily supplemental cost of commercial bentonite was less than a rupee per animal. Hence, bentonite can be considered a cost-effective toxin binder for control of AFM1 in milk of dairy animals.



Building an Information Network

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National Dairy Development Board



A comprehensive database pertaining to the dairy and allied sectors is being tracked, compiled, and analysed for informed decision making and policy purposes to benefit the dairy farmers and consumers of the country.

Information building

Internet-based Dairy Information System (IDIS) – a web-enabled national dairy cooperative database system is continued as a platform to collate information related to dairy cooperatives. Officials from over 250 milk unions, marketing dairies, cattle feed plants and milk federations are using this internet-based system. NDDDB continued to track the performance of dairy cooperatives and provided technical and handholding support whenever required.

Studies and surveys

NDDDB carried out a consultancy study for National Hydroelectric Power Corporation (NHPC) Limited to explore dairying as a livelihood option in the downstream areas of Subansiri river in Dhemaji & Lakhimpur districts of Assam. An integrated dairy development plan has been prepared to promote dairying as a sustainable livelihood option in the area. The major activities proposed in the plan are animal induction, formation of village level institutions, milk processing infrastructure, scientific animal feeding and capacity building of the dairy farmers. The financial outlay of the plan has been estimated at about ₹ 520 Million.

In Varanasi, Uttar Pradesh, a survey was conducted to estimate the availability of dung and understand the inclination of farmers to sell dung in a regular and organised manner from the villages near Varanasi Milk

Union dairy plant. The survey found an adequate availability of dung in the surrounding villages that can be utilised as an alternate source of energy for running the dairy plant through biogas.

Domestic biogas plants of small capacity were installed by NDDDB in the backyard of the women farmers in Zakariyapura village of Anand district in Gujarat. An impact analysis was carried out to understand the impact of biogas plants. The study found that the beneficiaries in the project village had completely replaced use of dung cake as cooking fuel and also reduced the use of wood for cooking purposes. Almost 67 per cent of the farmers opined that slurry had helped in improving crop productivity -- by 17 per cent in paddy and 23 per cent in bajra. About 36 per cent of the farmers in the project village reported that they have reduced the use of chemical fertilisers like Urea by 42 per cent and DAP by 13 per cent as against a very little change in the non-project village. Of total additional income accrued due to the intervention, the highest share of the additional income was contributed by sale of slurry (64 per cent) followed by saving in fuel cost (16 per cent) and an increase in crop yield (10 per cent).

Taking cognizance of continuous declining trend in milk procurement, the Bihar State Milk Co-Operative Federation Ltd. (COMFED) requested NDDDB to find out the reasons for it and suggest suitable remedial action. NDDDB undertook the study and proposed recommendations related to improving input services delivery systems at the farmer's level, strengthening village dairy cooperative societies besides having a contingency plan for coping with natural calamities like floods.

Spatial analysis support to milk unions and producer companies

NDDDB has developed GIS Server application and 'Dairy Surveyor' – a GIS enabled Android application for field data collection and visualisation. The applications help the end-users in monitoring milk procurement and sales activities, providing real-time reports, and identifying potential areas for increasing milk procurement and marketing.

NDDDB imparted orientation and trainings to interested milk unions and producer companies for mapping procurement and marketing activities, dairy infrastructure, monitoring field activities and input services.

Under this initiative, Pune Milk Union, Maharashtra has mapped dairy infrastructure and retail booths. The union is monitoring the extent of engagement of field officers and livestock supervisors for planning and appointing the new field staff. The union is also monitoring booth-wise demand of milk and milk products on daily basis and manages their supply accordingly. Similarly, the Vijaya Vishaka Milk Producer Company, Andhra Pradesh digitised village DCS, bulk milk coolers, milk booths, and retail points. The application helps the union in providing cattle insurance to farmers, monitoring cattle death claims, establishing new cattle shed, and identifying the locations for setting up new societies. Likewise, Tirhut Milk Union, Bihar used GIS application for monitoring the ratio of members & non-members pourers, bonus distribution and monitoring the mass deworming & vaccination activities.

Engineering Services

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National Dairy Development Board





NDDB provides consultancy services for execution of projects to dairy cooperatives across the country, creating new processing infrastructure and expanding existing facilities for dairy and cattle feed plants. Services are also being extended for planning, execution and validation of Bio-Safety (BSL) Labs, Animal Vaccine Production Facilities, Animal Experimentation Facility and Frozen Semen Stations. NDDB also undertakes study of existing plants for refurbishing and upgrading infrastructure to improve efficiency, ensuring food safety & to reduce product handling losses.

14 projects were completed during the year which include One Aseptic Packaging station at Bassipathana (Punjab), Two Dairy plants of

50 TLPD capacity each at Deoghar and Sahibganj (Jharkhand), One Product Plant at Jalgaon (Maharashtra), One Cattle Feed Plant at Erode (Tamil Nadu), One Anthrax Vaccine production facility, One Quality Control/Quality Assurance Laboratory with Small Animal Testing Facility at IVPM Ranipet (Tamil Nadu) and Seven IVF/ETT laboratories at various locations throughout the country.

Aseptic Milk Packing Plant at Bassi Pathana, Punjab

This is the first and largest fully automated 'state-of-the-art' Aseptic Milk Packing Plant in Punjab capable of producing 2 LLPD capacity in 500 ml as well as 1,000 ml ultra-heat-treated (UHT) milk packs.

The UHT milk packets produced in this plant are 100 per cent recyclable. Further, no adulteration is possible in these aseptic packs which ensures availability of good quality milk to consumers. The plant was formally inaugurated by Hon'ble Deputy Chief Minister of Punjab in November 2021.

Automated Dairy & Powder Plant, OMFED, Odisha

Automated Liquid Milk Processing (LMP) capacity of 5 LLPD and UHT Plant with Milk Powder manufacturing facility of 20 MTPD capacity established in Odisha.

Advanced automation features with latest dairy library are implemented in LMP to improve and optimise total solid (TS) losses. In November 2021, the Hon'ble Chief Minister of Odisha inaugurated the plant.

The Cattle Feed Plant (CFP) of capacity 150 MTPD at Erode, Tamil Nadu was expanded to double the total production capacity i.e. 300 MTPD.

Dairy Plants in Jharkhand

Dairy plants of capacity 50 TLPD were established in Jharkhand's Deoghar, Sahibganj, and Palamu. These plants are equipped with the provisions to expand their processing capacity to 100 TLPD. These plants are designed with skid-based automation approach to avail benefits of process automation wherever necessary and at the same time making it a cost-effective solution.

Milk Product Plant at Jalgaon, Maharashtra

NDDDB established a milk product plant of capacity 40 TLPD at Jalgaon in Maharashtra. The product range comprises curd, lassi, butter milk, shrikhand, paneer and flavoured milk in glass bottles. The plant was formally inaugurated by Hon'ble Deputy Chief Minister of Maharashtra in December 2021.

Expansion of Cattle Feed Plant in Tamil Nadu

The Cattle Feed Plant (CFP) of capacity 150 MTPD at Erode, Tamil Nadu was expanded to double the total production capacity i.e. 300 MTPD. The plant has been commissioned successfully & handed over to Aavin - Tamil Nadu Cooperative Milk Producers Federation Limited.

Animal Vaccine Production & Small Animal Testing Facility

NDDDB executed the project for Anthrax vaccine production at IVPM, Ranipet, Tamil Nadu. This facility is capable to produce 70 lakh doses per annum and complying with Good Manufacturing Practices (GMP). QA-QC laboratory (BSL-3) for small animal testing has also been set up

for Department of Animal Husbandry & Veterinary Services, Government of Tamil Nadu.

Furthermore, IVF/ETT laboratories have been established for Central Cattle Breeding Farm (CCBF), Department of Animal Husbandry and Dairying, Government of India at seven locations across the country viz. Hessarghatta (Karnataka), Alamadhi (Tamil Nadu), Dhamrod (Gujarat), Suratgarh (Rajasthan), Andeshnagar (Uttar Pradesh), Chiplima (Odisha), Sunabeda (Odisha).





Environmental Sustainability & Green Initiatives

Solar Energy Solutions for Dairy Development

Under Indo-German Solar Energy Partnership Framework, KfW Development Bank, Germany had conducted a study titled 'Feasibility of solar energy generation for dairy processing' with the help of NDDB to ascertain the potential of solar energy usage in dairy sector. KfW, submitted a feasibility report for implementation of CST & Solar PhotoVoltaic (SPV) systems for dairy cooperative society (DCS), Bulk Milk Cooler (BMC), Milk Chilling Centres (MCCs) and Dairy Plants which shall be implemented by NDDB. A workshop was conducted at

NDDB, Anand to brief on the findings of the study and understand the requirements of dairy cooperatives. The dairy cooperatives expressed their interest in adopting various solar energy solutions in their dairy value chain.

A Detailed Project Report (DPR) preparation is in process for the implementation of these projects.

NDDB has provided technical support to install village level off-grid solar milk chilling (Thermal Storage System) at Nityananda and Borbang in Assam. This has resulted in substantial reduction in operational cost for milk chilling.

NDDB has been keen in having an inbuilt component of CST system to generate hot water from solar radiation to utilise in various dairy plant operations.

Currently, two CST projects are under progress, one with a capacity of 10 Lakh Kcal/day at Guwahati, Assam for West Assam Milk Union (WAMUL) and another of 5 Lakh Kcal/day at Sagar, Madhya Pradesh.

Ongoing Projects:

Project	Capacity	Location
Northern Region		
Liquid Milk Plant & Butter Plant	900 TLPD LMP & Butter Plant	Ludhiana, Punjab
Fermented Product Plant	125 TLPD	Jalandhar, Punjab
Bypass Protein Cattle Feed Plant	50 MTPD	Ghania Ke Banger, Punjab
Strengthening and expansion of existing ETP	Expansion up to 20 LLPD	Rohtak, Haryana
Western Region		
New Dairy Plant	500 TLPD	Bhilwara, Rajasthan
Establishment of New ETP Plant (Phase I) and Strengthening and Modification of Existing ETP Plant	20 LLPD	Himmatnagar, Gujarat
Cheese and Whey Drying Plant	20 MTPD Cheddar, 10 MTPD Mozzarella, 16 MTPD Processed Cheese and 45 MTPD whey drying plant	Himmatnagar, Gujarat
IRMA PH IV	Infrastructure Project	Anand, Gujarat
Central Region		
Automated Dairy Plant Expansion	Additional Civil Works-Phase 2	Sagar, Madhya Pradesh
Southern Region		
Ice Cream Plant	10 TLPD expansion to 30 TLPD	Madurai, Tamil Nadu
Automated Dairy Plant Expansion, New Aseptic Packed Milk & Ice Cream Plant	500 TLPD to 800 TLPD LMP, 100 TLPD UHT & 5 TLPD Ice-cream	Hyderabad, Telangana
GMP Warehouse	(Additional Works) – PH II	IVPM, Ranipet, Tamil Nadu
Ice Cream Plant	Expansion from 10 to 20 TLPD	Puducherry
Eastern Region		
Dairy Plant	50 TLPD	Palamu, Jharkhand
Fermented Milk Products & Indigenous Sweet Plant	207 TLPD	Barauni, Bihar
Expansion of Liquid Milk Plant	60 TLPD to 150 TLPD	Guwahati, Assam
Cattle Feed Plant	50 MTPD Bypass Protein & 12 MTPD Mineral Mixture Plant	Changsari, Assam
Artificial Insemination Training Institute (AITI)	-	Guwahati, Assam
State Central Laboratory	-	Hotwar, Jharkhand
Other Projects		
Biogas Plant	4,000 Cu.M / Day	Varanasi, Uttar Pradesh

TLPD-thousand litres per day; TPD-tonnes per day; LPD-Litres per day

Product and Process Development



NDDB develops dairy products, processes and equipment and assists cooperative dairies in product diversification through value addition, and up-gradation of facilities to meet prevailing and future market demand. In view of the trend to shift towards vegetarian diet, a unique texturised dairy-based vegetarian product resembling meat-based nugget in taste, texture, and mouthfeel was developed. Another product developed during the year was an ice cream variant with no added sugar. In place of sugar, stevia - an intense sweetener from natural source - was utilised to impart sweetness in the product. The product is suitable for calorie conscious consumers.

A production line for manufacturing multiple dairy products was developed to support small dairy entrepreneurs.

Research efforts for development of indigenous ready-to-use culture (RUC) continued. A cost-effective fermentation process for three strains of *Streptococcus thermophilus* was upscaled to facilitate commercial production. Three paired formulations of RUC were developed using compatible strains of *Streptococcus thermophilus* to impart robustness when used in commercial setup. NDDB supported Mother Dairy Units at Tirupati and Pilkuwa by supplying freeze-dried cultures for manufacture of mishti dahi.

NDDB carried out trials in laboratory and field with plasma-activated water and ascertained its potential use in maintaining sanitation during dairy operations.

In its efforts to create wealth out of waste, NDDB augmented the process for manufacturing organic manure and bio-liquid. The process of biofertiliser production was refined to ensure efficient separation of solids. The biofertiliser manufacturing equipment was also customised to improve its performance to ensure uniform mixing operation. Further, rationalisation of the quality parameters of bio-digestate purchased as raw material and identification of critical analytical tests and equipment for quality testing of the final products were carried out.

Quality Assurance



Quality Mark, the nationwide initiative on process-certification across the dairy value chain continued during the year. 55 dairies out of 115 applicants have been awarded with the Quality Mark award. Rest 60 dairies, having embarked on food-safety system are in various stages of addressing gaps for the Award of Quality Mark.

Further strengthening the efforts on quality & food safety, NDDB extended assistance to BIS in finalising 'Conformity Assessment Scheme (CAS) for Milk and Milk Products' with a unified logo.

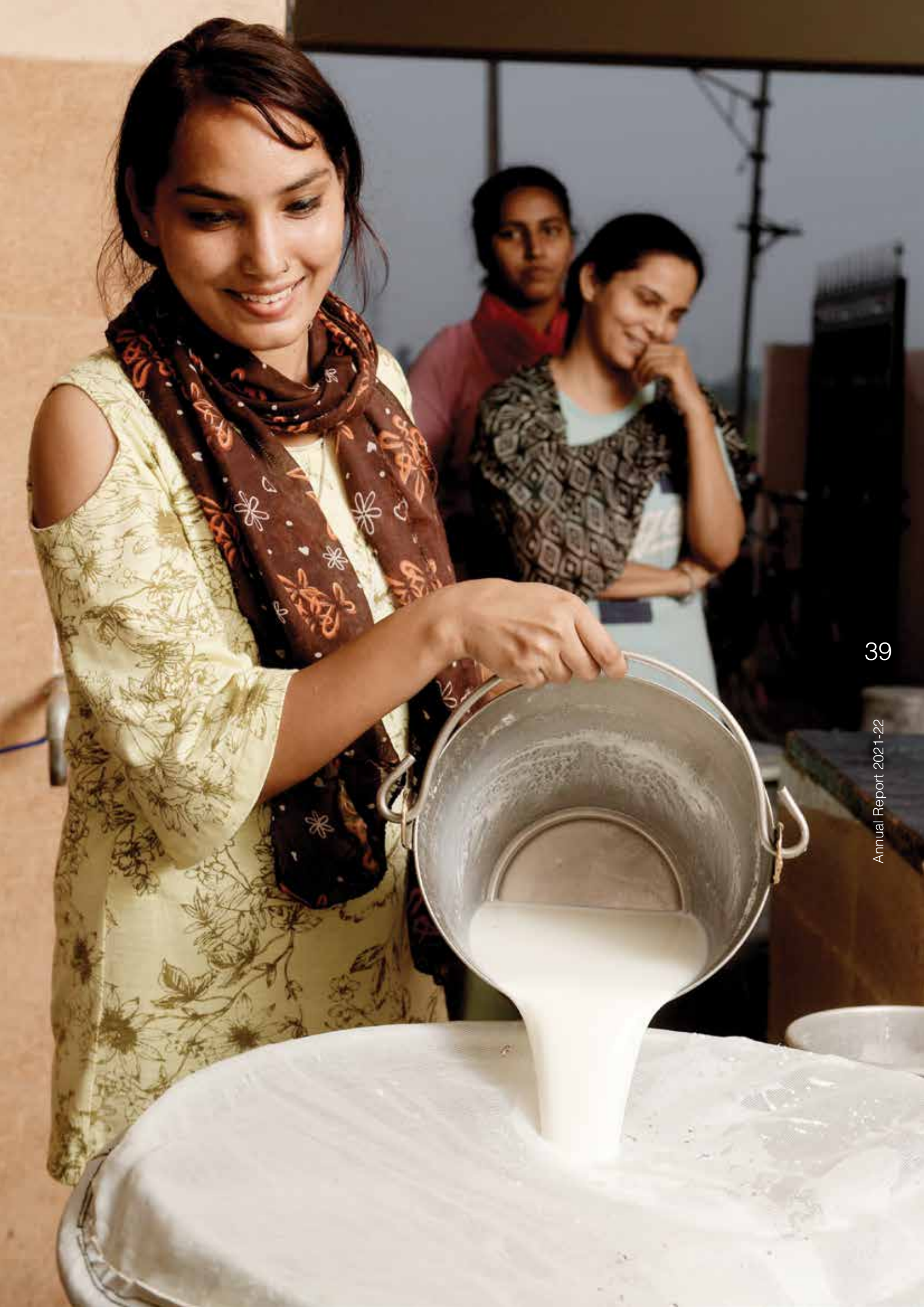
The Dairy Board continued its efforts on creating awareness on the level of contaminants in milk and milk

products, their harmful effects, and the measures/strategies to eliminate/control the contaminants in the milk and milk products. Besides, a module for contaminant mapping of milk and milk products across the country is being developed.

Education and Training continued to be one of the major tools by NDDB bringing about improvement in handling of milk and milk products and ensuring food-safety. Areas of training programme includes Clean-Milk-Production, Quality & Food-Safety Management System, and the Cold-chain for Milk and Milk Products and Food Regulatory aspects.

Need-based studies were undertaken from time to time. The important studies included Manpower Requirement for Delhi Milk Scheme, Quality and Food Safety aspects for preparing Comprehensive Dairy Plan for the State of Sikkim and Varanasi Milk Union.





Information Network for Animal Productivity & Health (INAPH) and National Digital Livestock Mission (NDLM)

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National Dairy Development Board



A digital ecosystem, Information Network for Animal Productivity & Health (INAPH) has been developed by NDDDB for effective implementation and monitoring of productivity enhancement and health management programmes in the country in animal breeding, nutrition and health domains.

Around 70% of dairy animals in India are registered in INAPH with uniquely identified ear-tags with owner details and enables capture of every intervention on animal on real-time basis towards traceability of animal and its products. The use of INAPH has increased exponentially during 2021-22. It has become the backbone for implementation of entire animal husbandry programmes and possess records of around 219 Million of animals belonging to around 73 Million farmers in 36 States/UTs covering 5.59 lakh villages. Major central sector schemes viz. National Animal Disease Control Programme (NADCP) for Foot and Mouth Disease (FMD) and Brucellosis; Nationwide Artificial Insemination Programme (NAIP) and other projects of RGM are being implemented through INAPH.

More recently, new functionalities are being added to INAPH viz. vaccination for sheep, goats, and pigs against FMD, PPR, CSF, etc. Animal treatment functionality along with laboratory module of INAPH in combination with Pashu Seva - call centre of NDDDB, is being used effectively on a pilot basis in the state of Uttarakhand. Recording of diseases, medicines used and issuance of e-prescription to the livestock farmers have emerged as an integrated platform for disease reporting, containment of disease outbreaks and planning for preventive disease control. Various End Implementing Agencies (EIAs) have started using INAPH for monitoring

the performance sex-sorted semen and other breeding initiatives under field conditions. DAHD GoI has also suggested use of INAPH for implementation of another central sector scheme use of Mobile Veterinary Unit (MVU) for providing doorstep services to farmers.

e-GOPALA

For providing much-needed scientific information and input services to the dairy farmers, NDDDB developed a farmer-centric digital application which is available for free download on Google Play Store, as well as can be accessed through Web-based programme. It is available in 12 languages. So far, this application has been registered by 1,30,535 farmers in the country. It has been recorded that on an average 398 farmers access daily to this application with a daily hit of 2,089. e-GOPALA application has also been integrated with the umbrella of GOI's 'UMANG' application.

This App provides details of animals of individual farmer and the real-time information on breeding, nutrition and health status of their animals which are registered in INAPH. Management of nearly 29 common ailments of dairy animals through Ethno-Veterinary Medicine is possible through this application. It provides a digital platform for buying/selling of dairy animals, information on availability of frozen semen, sex-sorted semen, IVF embryos etc. Through e-GOPALA, farmers can directly connect to NDDDB Call Centre for their queries on animal health, nutrition and breeding related issues. Timely alerts are provided to the farmers on due date for vaccination, pregnancy diagnosis, calving etc. Information about various schemes on dairying and animal husbandry are also available through this application.

219 Million

Number of animals across 5.59 lakh villages registered under INAPH



1,30,535

Farmers registered under e-GOPALA



2,089

Daily hit of e-GOPALA (average)



National Digital Livestock Mission

Recognising the significant role of digital platform; DAHD, GoI and NDDDB have been jointly undertaking the development of an end-to-end farmer-centric, technology driven Livestock eco-system on the foundation of existing INAPH application through the programme named as National Digital Livestock Mission (NDLM).

Given the significance of this initiative, some of the best minds in this field have been brought together to design this as a digitally enabling ecosystem including the support from the Office of the Principal Scientific Advisor. M/s Tata Consultancy Services has been hired to build and deploy the core architecture. Software development initiation for NDLM was organised during October 2021 at NDDDB Anand. Dr. Sanjeev Balyan, Hon'ble Minister of State for Fisheries, Animal Husbandry and Dairying, Government of India graced the occasion as the Chief Guest. The blueprint of NDLM was also unveiled by the Hon'ble Minister.

This Livestock system will enable farmers to seamlessly access animal husbandry related input services at their doorsteps. The new system will be cloud-based national ecosystem, not only allowing field staff to enter data using mobile interface but also enabling farmers to digitally access their animal records, seek care for their animals through national call centres with the upgraded mobile application. The front-line workers such as veterinarians and livestock technicians will enhance their abilities to deliver services to farmers ensuring accountability and paper-less transactions.

This system will include robust animal breeding, nutrition, disease reporting and control functionalities with a traceability mechanism. The farmers will be able to effortlessly access the markets, irrespective of their location as a wide-range of stakeholders will be connected in this ecosystem. The bedrock of NDLM will be the unique identification of livestock population linked to farmer identity, enhancing the traceability of animals and animal products for improved domestic and

international trades. The system will not only create high quality data but also will promote analytical methods such as Artificial Intelligence (AI) and Machine Learning (ML) to derive better value from the data like disease prediction, diagnostics, animal management, product traceability, etc.

NDLM has undergone extensive stakeholder consultations including multiple rounds with the states during the ongoing process of designing of the critical modules of the Livestock system. The experience on various components of the Pilot on the NDLM-Livestock in the state of Uttarakhand has been proved to be very useful for designing the Livestock-digital architecture.

Several forward-looking ideas are also linked with NDLM, viz. use of muzzle print of animal for identification, IoT-based sensors for detection of heat or illness of dairy animals and development of on-line trading platform for small ruminants are also being piloted.





CALF Laboratory

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National Dairy Development Board



CALF continues to be a leading multi-disciplinary laboratory in the analysis of milk and milk products, fats and oils, honey, animal feeds, mineral mixture and vitamin premixes, fruits & vegetables, packaged drinking water and various infant food products (as per BIS). It also offers disease diagnosis and genetic analysis of cattle and buffaloes. CALF offers services in Proficiency Testing as per ISO/IEC 17043:2010.

During 2021-22, CALF tested and reported about 39,500 samples for over five lakh parameters for chemical, microbiology, and genetic analysis. The laboratory has taken various initiatives in the last few years by establishing latest infrastructure for food analysis; enhancing the scope of accreditation & recognitions and offering sample collection facility.

During the year, CALF participated in 25 Proficiency Testing (PT)/ Inter Laboratory Comparisons (ILC) programmes (National/International) for 129 parameters. Out of these, CALF successfully qualified in 127 parameters covering a wide variety of matrices like milk products, honey, fruits & vegetables, pulses & cereals, water & beverages, nutritional & bakery products, and spices. In more than 98 per cent of the participated PT tests, the laboratory performance was within the acceptable norms, indicating a successful implementation of the quality control programme.

During the year, CALF Provided trainings to employees of dairy cooperatives and government institutions. It also provided technical inputs to dairy cooperative for setting up a laboratory under the National Programme of Dairy Development (NPDD) of Gol. CALF supported BIS in finalisation of test methods of various parameters of cattle feed, feed ingredients and vitamins and supported Rashtriya Gokul Mission (RGM) project in Parentage verification and disease testing of bovines

CALF is accredited by NABL, Quality Council of India as per ISO 17025: 2017 and 17043: 2010 requirements. The laboratory is recognised by Export Inspection Council, APEDA, BIS for testing of milk, honey, fruits & vegetables as per various Residue Monitoring Plans (RMPs) and BIS standards. CALF is a notified laboratory of FSSAI for testing of milk and milk products, fats and oils, sweetening agent and honey.

The laboratory successfully completed integrated assessment as per ISO 17025: 2017 for NABL, APEDA, EIC and FSSAI for renewal of its accreditation till October 2023. The laboratory has enhanced its scope in Biological and Chemical disciplines from 3,000 to 3,500 parameters.

CALF is a Referral and National Reference Laboratory (NRL) for milk and milk products by FSSAI. Under NRL, CALF has completed the assessment as per ISO 17043:2010 for Proficiency testing (PT) facility. CALF has initiated Proficiency Testing services for food & feed testing laboratories and in-house laboratories of food, feed and dairy industry including cooperatives. During the year, laboratory successfully completed one PT Programme for Compositional Analysis in milk powder. As a part of NRL activity, CALF successfully completed verification of 3 Rapid Analytical Food Testing (RAFT) Kits for FSSAI, New Delhi.



NDDDB Managed Projects

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National Dairy Development Board





West Assam Milk Producers' Cooperative Union Limited

NDDB continued to manage West Assam Milk Producers' Cooperative Union Limited (WAMUL) popularly known as Purabi Dairy. On August 6, 2021, the tripartite agreement for managing WAMUL by NDDB was extended by five years by Government of Assam.

WAMUL is associated with around 22,000 dairy farmers through 485 dairy cooperative societies covering around 1,500 villages that reported an average milk procurement of 42,190 kg per day. During the year, the average milk procurement price paid by WAMUL to its dairy farmers was around ₹ 39 per kg through direct bank transfers.

During the year, WAMUL sold around 69,000 litres per day of packed liquid milk and milk equivalent of products under 'Purabi' brand. WAMUL also launched its full cream milk variant for consumers preferring high fat milk. WAMUL is fortifying all its variants of packed liquid milk with vitamins A & D. The year also saw WAMUL

adopting mobile distribution and robust home delivery approaches to maximise its sales of milk and milk products in view of the movement and market restrictions due to the second wave of the COVID-19 pandemic. During 2021-22, although the markets were adversely impacted in the initial months due to the second wave of pandemic, however, WAMUL managed to attain a sales turnover of around ₹1,510 million (provisional) which is around 24 per cent higher than the sales turnover achieved during financial year 2020-21.

Moreover, during the year, WAMUL paid an additional milk procurement price of around ₹1.40 per kg of milk to its eligible dairy farmers. This year, WAMUL also created an additional bulk milk cooling capacity of 16,000 litres in its area of operations by installing 5 BMC centres that played a significant role in increasing its base of dairy farmers. WAMUL saw a jump of around 60 per cent in the number of functional dairy farmers that were associated with it during 2021-22.

Besides, WAMUL continued to provide various input services such as doorstep Artificial Insemination (AI) delivery, distribution of cattle feed and feed supplements at affordable rates besides arranging field demonstrations, training and capacity building programmes for its dairy farmers.

As on March 2022, WAMUL reported 6,54,024 AIs in over 3,000 villages through a network of 452 mobile AI technicians (MAITs) in the districts falling under Assam Agribusiness and Rural Transformation Project (APART). Moreover, the project reported birth of 2,27,265 calves (of which 1,19,117 are female calves) as on March 2022.

WAMUL also provided Ration Balancing Advisory Services, Ethno-Veterinary Services, Vaccination and other input services.

WAMUL continued with its green energy initiatives such as solar powered automated milk collection systems and instant milk chilling units. WAMUL also implemented a manure management project funded by NDDDB and Sustain Plus Energy Foundation at Maloibari revenue village in Khetri sub-division of Kamrup (Metropolitan) district. The project has assisted WAMUL to install and commission 100 Biogas units each having 2 cubic meter capacity at the individual households of as many women beneficiaries. Further, WAMUL allotted Biogas units of 2 cubic meter capacity with support from NDDDB to its 40 individual dairy farmers in Hojai and Barpeta districts.

WAMUL also took up activities under National Beekeeping and Honey Mission (NBHM), a central sector scheme, wherein 50 identified dairy farmers have been trained as potential beekeepers.

Jharkhand Milk Federation

NDDDB continued to manage the Jharkhand State Cooperative Milk Producers' Federation Limited (JMF). The milk federation achieved daily average milk procurement of about 124.30 TKgPD from more than 24,000 members covering about 2,576 villages. The Federation paid about ₹1,418 million towards milk bill payment through direct bank transfer to the individual bank account of milk producer during the financial year 2021-22. JMF marketed liquid milk averaging 136.28 LLPD during the year. 511 DPMcUs and 98 AMcUs have been installed in village MPPs to enhance and ensure transparent and efficient operations. Construction of three new dairies of 50 TLPD capacity (expandable to 100 TLPD) each at Sarath, Sahebganj, and Palamu has been completed.

JMF, as part of its green initiatives, is also implementing a manure management project funded by NDDDB and Sustain Plus Energy Foundation at Purio, Nari, Changani

and adjoining villages in Bero Block of Ranchi District. The project has assisted JMF to install and commission 100 biogas units each having 2 cubic meter capacity at the individual households of as many women beneficiaries and support in establishing the entire manure value chain from procurement & processing of slurry and marketing of a slurry-based products.

Dairy Development Initiative in Vidarbha & Marathwada Regions of Maharashtra

The Vidarbha and Marathwada Dairy Development Project (VMDDP) was conceived to ensure dairy development among poor dairy farmers of the drought prone and agriculturally distressed areas of Vidarbha and Marathwada of Maharashtra for increasing farm

incomes and providing them with alternate means of livelihood. This project is being jointly implemented by the National Dairy Development Board (NDDDB) - through its subsidiary Mother Dairy Fruit and Vegetable Pvt. Ltd (MDFVPL) - and the Government of Maharashtra (GoM).

Mother Dairy is engaged in providing assured market access to the milk produced by the dairy farmers in these regions. The Animal Husbandry department of the GoM is engaged in organising animal health camps and providing inputs such as high quality milch cattle, cattle feed, fodder, and chaff cutters to the dairy farmers at subsidised prices.





Mother Dairy is procuring milk from nearly 3,000 villages of Vidarbha and Marathwada regions from about 26,500 dairy farmers. An amount of over ₹11,000 Million has been paid by Mother Dairy to the dairy farmers till March 2022 in lieu of the milk received since the inception of the project. It is noteworthy that 100% of these payments are being made directly into the farmers' accounts. The average milk collection currently stands at about 2.36 lakh kg per day and the same is likely to go up with the onset of the flush season.

Mother Dairy is currently operating a Milk Processing Plant in Nagpur with a capacity to pack 1 lakh litres of milk, and 30,000 kg of milk products - such as curd, buttermilk, and Mishti Doi every day. These products along with other products such as Ice Creams, Paneer, Lassi, Milk Shakes, Sweets, Ghee etc. are being marketed in prominent cities and towns of Vidarbha region by Mother Dairy through a network of 'Booths'. Most of these booths are staffed by ex-servicemen of the Indian Armed Forces. Mother Dairy has an agreement with the Director

General (Rehabilitation), Ministry of Defence to this effect. All expenditure related to erecting the booths and their maintenance is borne by Mother Dairy. An assured monetary support of ₹ 15,000 per month is also provided by Mother Dairy to the ex-serviceman manning the booth in case his income from operating the booth is below this amount.

The VMDD project has been successful in imparting a boost to dairying in Vidarbha and Marathwada regions, augmenting dairy farmer incomes and making high quality milk and milk products easily available to the general public.

Management of Varanasi Milk Union

On request from Government of Uttar Pradesh, NDDB took over the management of Varanasi Milk Union on November 1, 2021. NDDB focussed on increasing the market access to more milk producers in the area of its operations, keeping in view sustainability and economic viability of the overall operations of Varanasi Milk Union.

NDDB has conceptualised a large-scale unique model where electrical and thermal energy needs of dairy plants can be sufficed by dung-based power. The foundation stone for this Biogas-based power generation project was laid by Hon'ble Prime Minister, Shri Narendra Modi. The Biogas plant of 4,000 cubic meter is expected to be commission in 2022-23, where about 100 MT of dung will be aggregated per day from local dairy farmers to produce biogas based thermal and electrical energy which shall meet the energy requirement of the dairy plant. Moreover, more than 30 MT Biogas-slurry-based organic fertiliser would be produced per day which will support organic farming in the region and beyond.

The entire project when operational would not only help the Varanasi dairy plant to meet its energy requirements through renewable sources but also help build an additional source of income for the dairy farmers through regular sale of dung.

NDDB Foundation for Nutrition

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National Dairy Development Board



NFN initiated implementation of new Giftmilk programmes at Gadchiroli in Maharashtra, Bhupalpally in Telangana, Varanasi in Uttar Pradesh & Guna in Madhya Pradesh under CSR initiative of Public Sector Enterprises.

NFN continued its existing Giftmilk programme in Gujarat, Tamil Nadu, Telangana, and Maharashtra under the CSR assistance of NDDDB subsidiary organisations – IDMC Ltd, Indian Immunologicals Ltd, and Mother Dairy Fruit & Vegetable Pvt. Ltd (MDFVPL).

NFN initiated implementation of new Giftmilk programmes at Gadchiroli in Maharashtra, Bhupalpally in Telangana, & Guna in Madhya Pradesh under CSR initiative of Public Sector Enterprises like - The Shipping Corporation of India (SCI), Mazagon Dock Shipbuilders Limited (MAZDOCK), NBCC (India) Ltd, Electronics Corporation of India Limited (ECIL) & National Fertilizers Limited (NFL). NFN also initiated Giftmilk programme in Varanasi district under CSR assistance of MDFVPL.

During 2021-22, NFN covered 187 schools and reached out to

32,736 students children distributing 11.89 lakh units of Giftmilk.

The year 2021-22 was also special as NFN crossed the milestone of 100 Lakh Giftmilk Units since inception of its activities in 2016.

NFN celebrated *Rashtriya Poshan Maah* in September 2021 spreading awareness among children and masses about importance of consumption of milk and milk products.

Under the GoGreen initiative of NFN, 100 bio-gas plants were installed at women dairy farmers' households along with central slurry processing unit in Cuttack District of Odisha. The project aimed at popularising the use of biogas by farmers as clean cooking fuel and use of bio-slurry as fertiliser thereby leading to improvement in soil health and generate additional income for the farmers.

187

Number of schools covered under NDDDB Foundation for Nutrition



32,736

Number of children covered under NDDDB Foundation for Nutrition



The project was successfully implemented in partnership with Cuttack Cooperative Milk Producers' Union Limited under CSR assistance of IIL. One additional agreement was executed with the Nilgiris District Cooperative Milk Producers' Union Ltd. for setting up Manure Value Chain covering 120 women farmers at The Nilgiris District of Tamil Nadu.

Developing Human Resources

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National Dairy Development Board



During the year, NDDB conducted various trainings on manure management and slurry processing in which about 100 executives and 580 farmers from Assam, Bihar, Gujarat, Jharkhand, Maharashtra, Odisha, Sikkim and West Bengal participated. The programme offered a clear understanding of the manure value chain and its effect on the farming economy.

NDDB reached out to the dairy stakeholders through its capacity building efforts, both on digital and conventional platforms. The learning ecosystem which evolved during the past years, was extended to include more stakeholders through multiple avenues, to ensure that the process of capacity building continued.

This year, the focus was on capacity building by encouraging and aspiring entrepreneurs towards scientific animal husbandry, dairy-based activities and beekeeping aligned with the vision of augmenting farmers' income.

During the year, seven 'Dairy Entrepreneurship Programmes in Animal Husbandry' were conducted in which 100 participants from various

states participated. Many women participants also attended the two-week long Dairy Entrepreneurship training programmes. Post the training, a few of the participants volunteered to create awareness about scientific dairying in their respective villages.

The women-participation in the Dairy Entrepreneurship Programmes was about 11 per cent and it is expected that more young women will consider dairying as a profitable livelihood in the coming years.

NDDB inked a Memorandum of Understanding (MoU) with National Scheduled Castes Finance and Development Corporation (NSFDC) for training dairy entrepreneurs on a pro-bono basis. Following the MoU,

three programmes were conducted in which 63 participants from MAAHI and AASHA Producer Companies participated.

During the year, NDDB conducted various trainings on manure management and slurry processing in which about 100 executives and 580 farmers from Assam, Bihar, Gujarat, Jharkhand, Maharashtra, Odisha, Sikkim and West Bengal participated. The programme offered a clear understanding of the manure value chain and its effect on the farming economy.

Conventional Training programmes were initiated in July 2022, after few months' gap, as a precaution against COVID-19. It was encouraging to see newly-elected Board of Directors pro-



actively proposing Board Orientation Programme and exposure at the milk capital of India. In the three quarters, Board of Directors of nine milk unions attended the orientation programme and developed an understanding about their role in leading the organisation in its progress.

Under the National Digital Livestock Mission (NDLM) Blueprint, NDDDB conducted various trainings and awareness programmes for various organisations and livestock development boards. More than 1,000 executives attending trainings on both digital and conventional platforms.

An MoU was signed with the Maharashtra Animal & Fishery Sciences University (MAFSU), Nagpur for supporting Micro Training Centres (MTC) in Vidarbha region of Maharashtra. These MTCs shall function as localised learning centres on good animal husbandry practices. Work is in progress in developing the MTCs in collaboration with MAFSU.

NDDDB, through its various training centres and departments conducted

more than 200 training programmes in which about 3,200 milk producers, 1,200 executives (including government officials) and 100 board members participated. One of the board programmes was also conducted digitally due to the travel restrictions posed by the COVID-19 pandemic. The digital media has helped in reaching the learning right into the palms of the milk producers even at the remote corners of the country.

Sessions on scientific dairy animal management and productivity enhancement were conducted throughout the year. The sessions were subsequently uploaded on YouTube and shared through state-wise WhatsApp groups. This helped the sessions reaching to more than 16,000 viewers.

Digital sessions on various subjects related to livelihood enhancement through dairying and other innovations were attended by large numbers and reached up to about 12,800 viewers.

Special programmes on contemporary topics like 'Indian Dairy Industry during COVID-19 - Challenges, Lessons Learned and Way Forward', 'Right work culture is imperative for economic upliftment of dairy farmers', 'How to retain achievement motivation during challenging time' and 'Effective supervisory skills for dairy cooperatives' were conducted to boost the morale of the dairy stakeholders during the challenging COVID-19 times.

Digital sessions on scientific animal management and productivity, livelihood enhancement through dairying & other innovations, motivation, work culture and 'Power of Cooperation' were conducted during the year. The sessions were subsequently uploaded on YouTube and shared through state-wise WhatsApp groups. The programmes reached up to about 45 thousand viewers.



Training programmes conducted during 2021-22

Conventional/in situ training programmes

Sr No	Subject area	No. of programmes	No. of participants
A	Cooperative Services		
	Farmers Induction/Orientation Programme	18	486
	Refresher training for Dairy Cooperative Society Secretary	2	31
	Management Committee Members' Orientation Programme	1	90
	Board Orientation Programme	9	115
B	Dairy Development & Dairy Business	8	185
C	Dairy Entrepreneurship Programme on Animal Rearing	7	100
D	Milk Marketing	2	10
E	National Digital Livestock Mission	4	146
F	Productivity Enhancement		
	Artificial Insemination-Basic	14	290
	Artificial Insemination-Refresher	1	20
	Dairy Animal Management	29	871
	Ovum pick-up and in vitro embryo production and embryo transfer technology	3	12
	Skill Development for Veterinarians	3	66
	Training of Trainers on Ration Balancing Programme	2	30
	Training on Ethno-Veterinary Practices	2	15
G	Quality Assurance & Dairy Plant Management		
	Efficient Utilisation of Electricity, Steam and Chilled water	1	12
	Minimising Milk Solid Losses in Dairy industry	1	10
	Milk processing & packaging	1	9
	Quality and Food Safety for Dairy Plant	1	28
	Operation & maintenance of dairy plant equipment	4	64
	Operation & maintenance of electrical systems	1	13
	Testing of Cattle Feed / Ingredients	1	3
	Training for Food Safety Supervisor under FSSAI	3	56
	Workshop on World Antimicrobial Awareness Week	1	120
	Workshop on Conformity Assessment Scheme	1	1140
H	Geographical Information System Training	4	37
I	NDDDB Dairy Enterprise Resource Planning	20	198
J	Training for Innovations		
	Orientation and training on Scientific Bee Keeping	47	1243
	Training on Manure Value Chain	17	687
	Exposure and training of trainers of Micro Training centre	1	4
	Exposure and training on organic milk production	1	10
K	Other training programmes for milk union personnel		
	Empowering self & organisation	2	41
	Skill Enhancement Programme for Dairy Cooperative Services Consultants	2	47
	Grand Total	214	6,189

Programmes Conducted on digital platform

Sr No	Subject area	No. of programmes	No. of viewers
A	Cooperative Services		
1	Awareness on Government Projects	5	10
2	Cooperative Dairy Business	1	53
3	Dairy Surveyor App	39	110
4	Geographical Information Services	6	27
5	Internet Based Dairy Information System	20	32
6	Indian Dairy Industry in COVID times	1	1860
7	Livelihood enhancement through dairying and other innovations	5	12796
8	Milk Marketing	1	676
9	National Digital Livestock Mission (NDLM)	17	1041
10	NDDDB Dairy Enterprise Resource Planning (NDERP)	153	1064
11	Contemporary subjects for milk union professionals	3	837
12	Power of Cooperation	3	7271
13	Quality Assurance	4	2434
14	Scientific Dairy Animal Management and Productivity Enhancement	35	16326
15	Semen Station Management System	2	89
16	Training on FSSAI for food safety supervisors	7	144
	Grand Total	302	44,770



Manpower Development



Training of NDDB employees during 2021-22

Need-based training programmes on behavioural, technical, and general management areas were conducted for NDDB employees during the year. These training programmes were facilitated in-house as well as through sponsorship of employees to outside training institutions. To sensitise employees to gender issues, workshop on 'Prevention of Sexual Harassment & Gender Sensitivity at Work Place' was also organised for NDDB employees. For capacity building of staff and workers, training on 'Developing Efficiency into Effective Performance' was organised. In all, 585 employees attended the training programmes during the year.

Name of the programme	No. of programme	Nominations	
		Total	SC/ST
Training on 'Requirements of the Standard ISO/IEC 17025:2017 & Internal Auditing' for CALF employees (including Trainees / Jr. Analysts)	01	59	09
Advanced Training on Bee Keeping & Capacity Building	01	07	02
Team Building	01	20	01
Prevention of Sexual Harassment & Gender Sensitivity at Work Place	05	268	39
Change Management	01	18	01
The 7 Habits of Highly Effective People	01	29	08
Training Programme for Staff & Workers – Developing Efficiency to Effective Performance	05	133	21
Other Programmes (employees sponsored at training programmes at outside institutions)	25	51	04
Total		585	85

As part of the initiative taken by the Central Vigilance Commission, NDDB conducted five training programmes for mid-career officers from Public Sector Undertakings (PSUs) and Public Sector Banks (PSBs).

During the year, employee engagement activities such as inspirational video sessions and book reviews, were organised regularly to facilitate exchange of ideas and continuous learning in the organisation. To increase employability of students, NDDB also facilitated internship for 47 students from various institutions during the year.

Sponsorship of officers to Post Graduate Diploma in Rural Management

Support for professional development of officers from dairy cooperatives and producer institutions through their sponsorship to 15 months Executive Post Graduate Diploma in Rural Management (PGDMX (R)) at the Institute of Rural Management, Anand continued during the year. In all, 28 officers from designated organisations were sponsored in the programme during the year.

Training of induction stage and mid-career officers from Public Sector Undertakings and Public Sector Banks

As part of the initiative taken by the Central Vigilance Commission, NDDB conducted five training programmes for mid-career officers from Public Sector Undertakings (PSUs) and Public Sector Banks (PSBs) on the theme 'Leading Organisational Change' and four training programmes for induction stage officers from PSUs/PSBs on the theme 'Developing Future Leaders and Managers' covering a total of 247 officers. Officers from Mazagon Dock Shipbuilders Limited,

Goa Shipyard Limited, Bank of Baroda, and Rashtriya Chemicals and Fertilizers Limited attended the above programmes. The programme included field visit to village involving overnight stay, interaction with farmers and understanding working of various village level institutions. The classroom training included

interactive sessions on leadership, values/ethics, organisation culture, importance of positive attitude, self-development and management. The training programmes received very good feedback from all the participating officers from PSUs/PSBs.

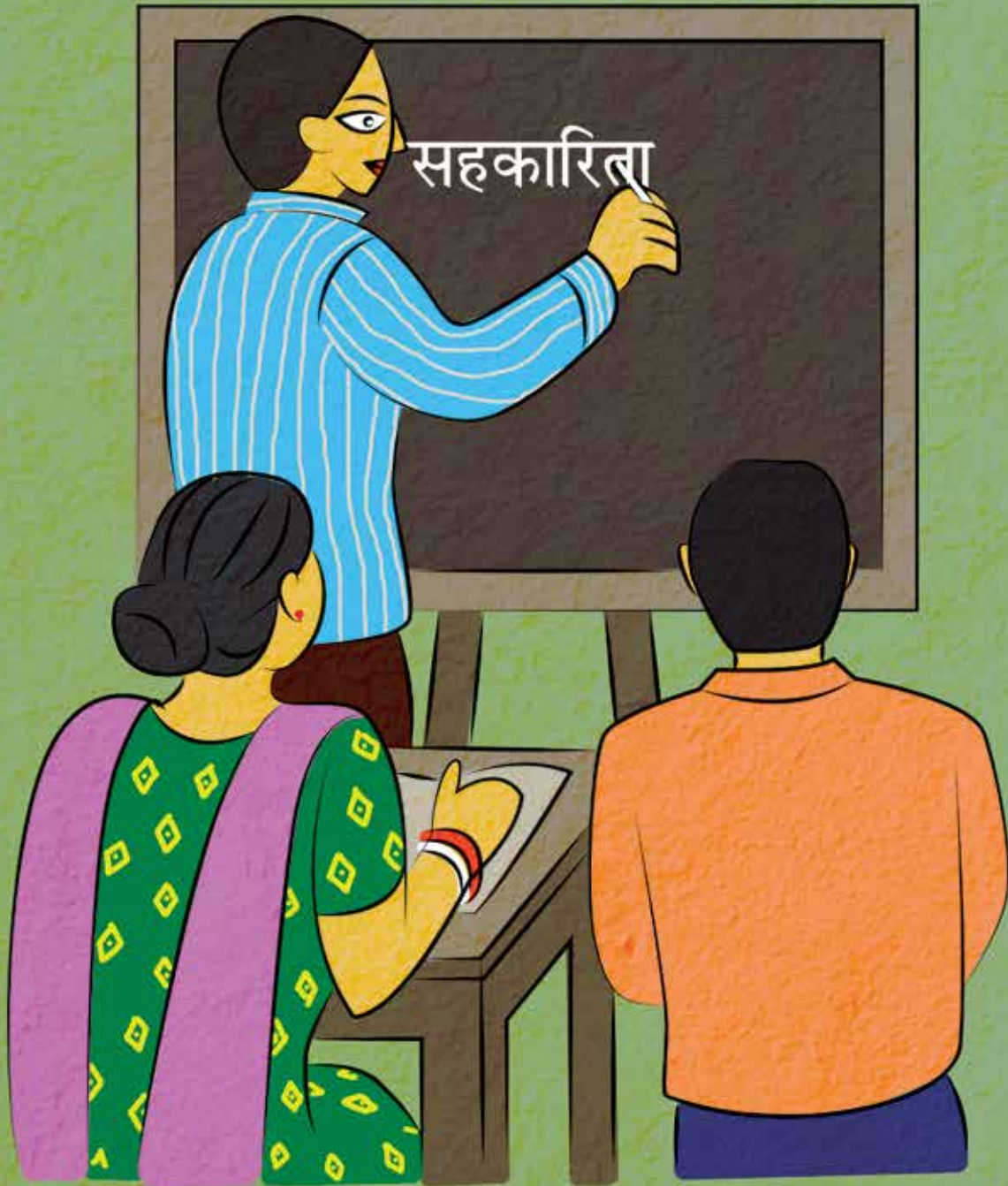
Training of Officers from PSUs/PSBs

No.	Name of the organisation	Programme	No. of participants
1	Mazagon Dock Shipbuilders Limited and Goa Shipyard Limited	Leading Organisational Change	25
2	Mazagon Dock Shipbuilders Limited	Leading Organisational Change	28
3	Mazagon Dock Shipbuilders Limited	Leading Organisational Change	29
4	Mazagon Dock Shipbuilders Limited	Leading Organisational Change	28
5	Bank of Baroda	Leading Organisational Change	32
6	Mazagon Dock Shipbuilders Limited & Rashtriya Chemicals & Fertilizers	Developing Responsible Future Managers & Leaders	30
7	Mazagon Dock Shipbuilders Limited	Developing Responsible Future Managers & Leaders	25
8	Mazagon Dock Shipbuilders Limited	Developing Responsible Future Managers & Leaders	25
9	Mazagon Dock Shipbuilders Limited	Developing Responsible Future Managers & Leaders	25
Total			247

Nine lectures on various themes by well-known speakers were organised as a part of 'Dr. V Kurien Leadership Lecture Series'. Further, poetry, quiz, poster making and essay competitions were also organised as a part of Dr. V Kurien Birth Centenary Celebration, in which many people from dairy cooperatives and producer owned institutions from across the country participated. A rich compilation of anecdotes, experiences and stories were shared by NDDB alumni and leaders who had worked closely with Dr. V Kurien under the title 'Remembering Dr. V Kurien' during the birth centenary celebrations.



Other Activities



Progressive use of Hindi

During the year 2021-22, concerted efforts were made to promote progressive use of Hindi in the day-to-day official work. NDDB's Annual Report, Notes on Parliamentary Committees, Power Point Presentations and other documents were prepared in Hindi. Besides, concrete steps were taken to achieve the targets specified in Annual Programme for 2021-22 issued by the Ministry of Home Affairs, Department of Official Language.

NDDB received the *Rajbhasha Kirti – Pratham Puraskar* from Shri Amit Shah, Hon'ble Union Minister of Home Affairs and Cooperation in a ceremony in Delhi. Shri Meenesh Shah, Chairman NDDB received the award. The Hindi fortnight was organised in all NDDB offices from September 14 to 28 to foster the use of Hindi in office work. A lecture by a prominent Hindi scholar was organised on Hindi Diwas following the COVID-19 guidelines/ protocols, wherein a good number of employees participated. During this programme, a pledge on official language was taken by all employees as per guidelines of Dept. of Official Language, Ministry of Home Affairs, Govt. of India. In addition to this, Hindi competitions like on-the-spot Hindi essay writing, Hindi poetry recitation and Hindi essay writing were organised to create an encouraging atmosphere for the language and promote the use of Hindi.

NDDB has various incentive schemes for promotion of Hindi in office work. One such scheme is Hindi Noting and Drafting Incentive Scheme. As many as 53 employees participated in this scheme and cash incentive amounting to ₹ 1,56,000 was given to the employees 2021-22. Thirteen employees whose children scored 75 per cent and more marks in Hindi in Class 10th and 12th examination, were given a cash prize of ₹ 2,000/- each.

During the year 2021-22, NDDB, Anand continued its association

with Town Official Language Implementation Committee (TOLIC), Anand and actively participated in its online half yearly meetings. NDDB, Anand has been awarded the second prize for excellent performance in Official Language Implementation by TOLIC, Anand for the year 2020-21. Under the aegis of TOLIC, Anand, NDDB organised an online Hindi poetry recitation competition in which a good number of employees of various organisations associated with TOLIC, Anand participated. Besides, NDDB employees contributed Hindi articles, essays, poetries, etc. in 'Ujjawal Anand' magazine published by TOLIC, Anand. Moreover, eight employees of NDDB have been conferred prizes for various online/offline competitions organised under the aegis of TOLIC.

As an initiative, an online Hindi email count system with Hindi Quarterly Progress (QPR) form & Consolidated QPR form has been created to get real-time consolidated data from various groups.

Online trainings on creation of Microsoft quick parts, custom office templates and training on usage of Hindi proof reading & voice typing tool were imparted to employees. In addition to this, various online workshops on the official language were also organised on a quarterly basis to encourage employees to work in Hindi. Further, e-magazine

'Srijan' was published in Hindi on a quarterly basis during the year.

NDDB library has a large collection of books in Hindi. During the year, books in Hindi, amounting to about ₹ 35,500 were added to the library.

All national programmes viz. Republic Day, Independence Day, Gandhi Jayanti, Shastri Jayanti and Dr. Ambedkar Jayanti etc., were organised in Hindi language.

Welfare of SC/ST Employees

Training in technical, functional, and general management areas was facilitated for SC/ST employees during the year. SC/ST officers under Future Leadership Development Programme of NDDB attended training programme on Change Management and Team Building. A total of 85 training nominations for SC/ST employees were processed. Welfare measures for SC/ST employees also continued during the year, including recognition to meritorious children of SC/ST employees for their academic achievements through cash prize and certificates. To encourage academic orientation, NDDB continued to reimburse expenses incurred by SC/ST employees on education as well as books for their children.

All offices of NDDB celebrated Ambedkar Jayanti as a mark of respect to Dr. BR Ambedkar.



Subsidiaries



IDMC Limited



Indian Dairy Machinery Company was established in 1978. It is incorporated as IDMC Limited under the Companies Act, 1956. IDMC offers processing and packaging solutions to its customers across dairy, cattle feed, pharmaceutical and thermal management lines of business under its Metals and Plastics segments. IDMC reported total revenue of ₹ 6,252 million for the year.

During the year, under metals segment, IDMC successfully executed several automated dairy projects for its customers, which included processing plants ranging from 50 TLPD to 5 LLPD milk processing capacity along with manufacturing of milk products such as butter, flavoured milk, and fermented products. IDMC received an order for a continuous Khoa manufacturing facility of 20 metric tonnes per day and bagged an order for an ultra-filtration plant to manufacture whey protein concentrate.

In the Thermal Management segment, several fully automated ammonia refrigeration systems were commissioned during the year. Apart from this, IDMC also installed and commissioned several energy-efficient stainless steel ice silos during the year.

Under the pharmaceutical line of business, a large fermentation project comprising two fermentation lines, each of capacity 100 KL for manufacturing multiple products like Insulin, Immunosuppressant, and Carcinogens is under commissioning. IDMC is also executing another project with fermenters of 55 KL capacity.

IDMC marketed a range of food processing equipment such as milk silos, CIP systems, heaters, chillers, pasteurisers, Continuous Butter Making Machine (CBMM), butter tub filling machine, continuous khoa making machine, ice cream freezers, fruit feeders, cup & cone filling machines, stainless steel sanitary

fittings, sanitary pumps, pneumatic valves, and other flow components to the dairy industry. Other products such as bulk milk coolers and milking machines continued to be well accepted by the customers.

IDMC's R&D centre was successful in developing new products such as butter tub filling machines, Steam Water Mixers, Portable containerised BMC Modules, Mobile milking machines -Milk-o-Bike and new range of plate heat exchangers. The automatic milk sampling system mounted on road milk tankers is also gaining acceptance in the market.

The plastic segment continued to cater to the existing customers through its product offerings of packaging films for liquid milk and milk products such as ghee, curd, buttermilk, high barrier laminates for milk powder and other food products. The company also supplied multilayer films for packaging edible oil and also exported barrier films for packaging Ultra heat treated (UHT) milk.

Indian Immunologicals Limited



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Indian Immunologicals was established by the National Dairy Development Board in 1982. The unit was corporatised as Indian Immunologicals Limited in the year 1999. In the year 2021-22, Indian Immunologicals Limited (IIL) recorded a revenue of ₹ 8,076 million. IIL achieved a growth of 8.8 per cent compared to the previous year. IIL achieved a PBT of ₹ 2,336 million.

Despite COVID-19 related issues, IIL continues to be the largest supplier of Foot and Mouth Disease (FMD) vaccine in the country and has established itself as the largest supplier of human anti-rabies vaccine in the country. IIL has continued to supply Pentavalent vaccine, DPT vaccine, Hepatitis B vaccine to the Ministry of Health's Universal Immunisation Programme (UIP).

At the request of Government of India to augment COVID-19 vaccine manufacturing capacity in the country, IIL was able to produce and supply more than 2 million doses in record time. IIL's efforts were lauded by the government. IIL was also

sanctioned a grant of ₹ 600 million by BIRAC, Department of Biotechnology. Shri Parshottam Rupala, Hon'ble Minister of Fisheries, Animal Husbandry and Dairying handed over the COVID-19 drug substance to Bharat Biotech International Limited to augment vaccine production.

IIL's DSIR approved Research and Development Centre has many exciting candidate vaccines in its pipeline. IIL received marketing approval for its Goat Pox vaccine in December 2021. The Phase 3 clinical trial for Hepatitis A vaccine has been completed successfully and marketing authorisation is expected. The Phase 3 clinical trial for Measles Rubella (MR) combination vaccine has been completed successfully and marketing authorisation is expected.

IIL has successfully implemented automation projects to significantly reduce the packing time thereby making the products available to the customers at the earliest possible time.

IIL is at the forefront of farmer's education and awareness programmes. The company has actively participated in various Krishi Melas in several parts of the country to create awareness amongst farmers. As part of its Corporate Social Responsibility (CSR) initiative, IIL continues to provide health coverage to more than a lakh cattle in Goushalas across the country. IIL has adopted 3 government schools (2 schools in Laxmapur village and one school in Karakapatla village, Telangana state) and has created infrastructure for the well-being of students and provided them with uniforms, school bags, and notebooks. Being a sponsor of the 'Giftmilk', IIL provides students with flavoured milk daily at various government schools in Telangana and Tamil Nadu.

IIL has also provided oxygen generation plant to Telangana Institute of Medical Sciences (TIMS), Hyderabad at a cost of ₹ 10 million as part of its CSR initiative. IIL has also helped in the establishment of Biogas plants to the tune of ₹ 10 million.

Mother Dairy Fruit & Vegetable Private Limited



Mother Dairy Fruit & Vegetable Pvt. Ltd, which was set up in 1974 as Mother Dairy, Delhi, on behalf of Government of India to meet the liquid milk demand of Delhi, was corporatised in the year 2000.

In the year 2021-22, the company achieved a turnover of ₹ 1,25,830 Million, registering an overall value growth of 20 per cent despite COVID-19 related disruptions.

Mother Dairy's Milk Business continued its efforts to service consumer demand and started seeing recovery in the latter part of the year (post September 2021) and, at the national level, registered value growth of 7 per cent over last year. The Milk SBU increased its efforts to reach the consumers by opening exclusive retail outlets. Mother Dairy Points and Kiosks were opened in retail market and residential societies in all regions. Brand building efforts were undertaken across the year through various marketing

interventions and digital marketing. Mother Dairy milk continues to build on the opportunity and has established a strong presence in all the major e-commerce platforms across most markets. Focus on key e-commerce platforms is continuing.

Value-added Dairy Products portfolio clocked a value growth of 12 per cent. The year has seen a myriad of challenges and opportunities. Region-specific focus was given to different channels, including our exclusive booth network, general trade, and e-commerce for driving off-takes. Understanding the need of the quick commerce partners and reaching out to the Gen Z effectively, Mother Dairy has partnered and arranged for daily service to their distribution centres through our own distribution network.

The FY 2021-22 also saw the introduction of many new products/categories including set Yoghurts under Nutrifit Brand, new flavours in Ice Cream Tubs, Flavoured Cheese

Spreads, etc. The Breads portfolio was further strengthened with the addition of whole wheat bread.

Mother Dairy's efforts were appreciated & recognised by the industry and was awarded with The Maddies Gold Award (for Haldi Milk), Digital Crest Award (for Paneer) & Fox Glove Awards (for Haldi Milk, Paneer).

The Edible Oil business, under Dhara brand, has been consistently growing @ CAGR of 25 per cent for a period of last 5 years in topline value with volume @ CAGR of 8 per cent. Edible oil business achieved 42 per cent value growth.

Horticulture turnover grew by 3 per cent during the year. Tomato crop was under stress for the 3rd year in a row in key growing belts of south and east. Seasonal vegetables (especially winter crops) faced very inconsistent and unfavourable weather that impacted their supplies and prices.

Mother Dairy's Research and Development focussed towards delivering safe, healthy and convenient products to meet emerging needs of the consumers. In FY 2021-22, eight of these products were launched in the market. The team also worked on packaging technology platforms to provide better consumer experience,

convenience, and cost optimisation. It developed technologies to deliver environment-friendly packaging and also worked on reduction, reuse and recycle of plastic. These initiatives resulted in reduction of carbon emission amounting to 900 MT, reduction of 400 MT paper and reduction of 125 MT plastic.

Mother Dairy also won the 'Dairy Packaging Company of the Year' Award for the most innovative, convenient, and 100 per cent regulatory compliant packaging.



NDDB Dairy Services



NDDB Dairy Services (NDS) was incorporated in 2009 as a not-for-profit company under Section 8 of the Companies Act to promote producer companies and productivity enhancement services. Also, NDS manages the four largest semen stations in the country - Sabarmati Ashram Gaushala in Bidaj, Ahmedabad (Gujarat), Animal Breeding Centre in Salon, Raebareli (Uttar Pradesh), Alamadhi Semen Station (Tamil Nadu), and Rahuri Semen Station (Maharashtra).

During the year, the four semen stations together produced around 38 million semen doses and sold about 47 million semen doses. With an object to promote the indigenous breeds in the country, about 7.7 million semen doses from 17 different indigenous breeds of cattle and about 13.8 million semen doses from eight different buffalo breeds were sold during the year.

Embryo Transfer activities were carried out in selected recipients of the farmers at their doorsteps

in the states of Maharashtra, Uttar Pradesh, Uttarakhand, Rajasthan, and Jharkhand to produce high genetic merit calves for the farmers. During the year, a total of about 1,700 embryos were produced, out of which around 1,300 were of indigenous breeds.

During the year, NDS also forayed in the induction of high genetic merit animals under the brand 'Superior Animal Genetics-Live' (SAG-Live) with the twin objective of putting an end to the exploitation by middlemen and distress sale of animals by animal breeder farmers and to provide assurance to animal buyer farmers of the genetic potential of the animals.

NDS facilitated induction of around 1,000 high genetic merit animals of Gir, Sahiwal, Murrah, HF, Jersey, and their crossbreds.

While 450 Gir cows were provided under the Project Gir Varanasi being implemented by NDS; another 300 Gir cows were supplied to the

Government of Assam under the Gorukhuti Land Development Project.

In order to raise the skill level and expand the knowledge base of various stakeholders, NDS facilitated refresher training, orientation, and skill-building programmes for the MPCs. Leadership development programmes for the members, orientation programmes for new recruits and refresher training programmes for the existing field teams of the MPCs were also carried out.

NDS also continued its support and assisted all these MPCs in the areas of information technology, marketing of products and productivity enhancement services.

NDS is recognised as one of the National support organisations for Deen Dayal Antyodaya Yojana (DAY-NRLM) by Ministry of Rural Development, Gol. Under agreement with Uttar Pradesh State Rural Livelihood Missions, NDS set up Saamarthya MPC, in Raebareli and

Kashee MPC in Varanasi. During the year, NDS operationalised Kashee MPC by assisting in recruitment and training of professionals and field personnel, obtaining various licenses, and setting up infrastructure for milk procurement and forward linkages. Harit Pradesh MPC in Meerut was also operationalised during the financial year.

Milk Producer Companies

Till date, NDDDB Dairy Services (NDS), the wholly-owned subsidiary of NDDDB, has successfully set up 19 MPCs, out of which, six are being supported under the National Rural Livelihoods Mission (NRLM). Twelve of these 19 MPCs, have an all-women membership and all the producers / directors on their respective boards are women.

Together, these MPCs have around 0.75 million milk producers as members spread across 19,000 villages. 69 per cent of these producers are women and 67 per cent are small holder milk producers. The members of these 19 companies raised around ₹ 1,701.3 million towards share capital. The companies together procured about 32.3 lakh kg of milk per day during 2021-22 and together achieved a gross turnover of ₹ 57,558 million during the year.

These MPCs continued to provide various input goods (Cattle feed, Area specific mineral mixture, Fodder seeds etc.) and services (Artificial Insemination, Dairy Extension) in their operational areas, to improve the milch animal productivity.

About 1,00,000 MT of cattle feed and 500 MT of mineral mixture were supplied to the members of the various MPCs. During the year, about 11 lakh AIs were carried out in the operational areas of these MPCs and to promote antibiotic-free milk, the usage of ethno-veterinary practices was propagated in these MPCs.

MPCs at a glance

Parameters	Total of 19 MPCs
No. of Districts ^{#w}	116
No. of Villages Covered	19,244
No. of Members	7,45,489
Women Membership (%)	69
Small holders (% of Members)*	67
Paid up Share Capital (₹ in Million)	1,701.3
Average Milk Procurement FYTD ('000 kg Per Day)	3,230
Gross Turnover FYTD (₹ in Million)	57,558

: Districts with >=200 Members have been considered for count of Operational District. District count is based on Census 2001/2011 Code.

* : <=3 Milch animals holding households



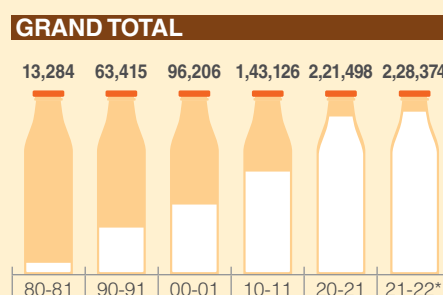
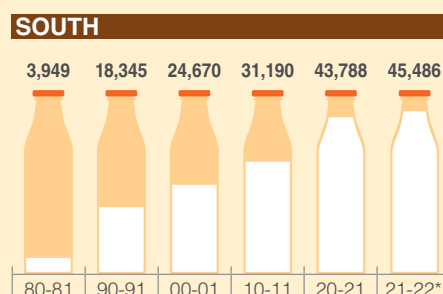
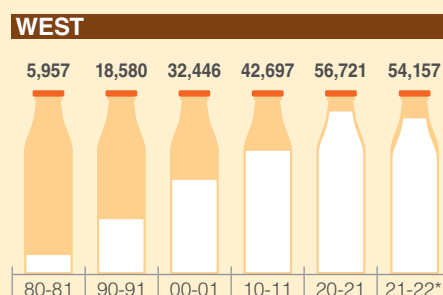
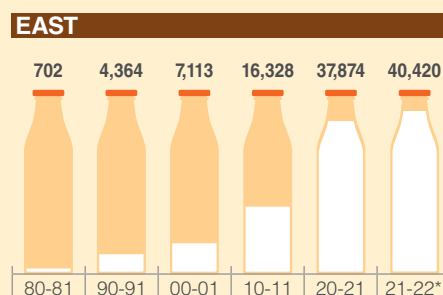
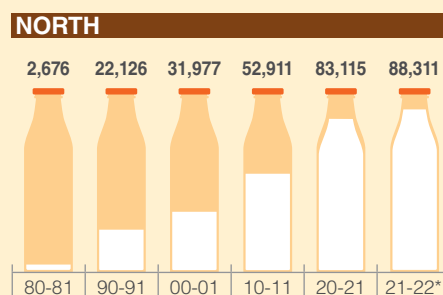
Dairy Cooperatives at a Glance



Dairy Cooperative Societies

(in numbers)[^]

Region / State	80-81	90-91	00-01	10-11	20-21	21-22*
NORTH						
Haryana	505	3,229	3,318	7,019	7,567	7,580
Himachal Pradesh		210	288	740	1,084	1,097
Jammu & Kashmir		105	**	**	896	910
Punjab	490	5,726	6,823	7,069	8,775	8,847
Rajasthan	1,433	4,976	5,900	16,290	20,973	23,280
Uttar Pradesh	248	7,880	15,648	21,793	39,615	42,389
Uttarakhand					4,205	4,208
Regional Total	2,676	22,126	31,977	52,911	83,115	88,311
EAST						
Assam		117	125	155	522	485
Bihar	118	2,060	3,525	9,425	25,798	27,482
Jharkhand				53	769	859
Meghalaya					30	21
Mizoram					42	42
Nagaland		21	74	49	52	52
Odisha		736	1,412	3,256	6,151	6,713
Sikkim		134	174	287	587	648
Tripura		73	84	84	119	133
West Bengal	584	1,223	1,719	3,019	3,804	3,985
Regional Total	702	4,364	7,113	16,328	37,874	40,420
WEST						
Chhattisgarh				757	1,110	1,098
Goa		124	166	178	183	183
Gujarat	4,798	10,056	10,679	14,347	22,134	22,192
Madhya Pradesh	441	3,865	4,877	6,216	10,755	11,192
Maharashtra	718	4,535	16,724	21,199	22,539	19,492
Regional Total	5,957	18,580	32,446	42,697	56,721	54,157
SOUTH						
Andhra Pradesh	298	4,766	4,912	4,971	6,578	7,611
Karnataka	1,267	5,621	8,516	12,372	16,698	17,014
Kerala		1,016	2,781	3,666	3,337	3,378
Tamil Nadu	2,384	6,871	8,369	10,079	10,487	10,540
Telangana					6,581	6,835
Puducherry		71	92	102	107	108
Regional Total	3,949	18,345	24,670	31,190	43,788	45,486
Grand Total	13,284	63,415	96,206	143,126	221,498	228,374



[^] For Dairy Cooperatives it is Organised (cumulative), includes conventional societies and Taluka unions formed earlier. 2020-21 onwards data includes functional MPPs of MPCs & MPIs of MDFVPL

* Provisional

** Not reported

Source: Milk Unions & Federations, NDDB DS & MDFVPL

Producer Members

(in thousands)

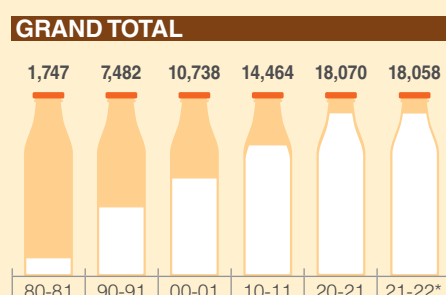
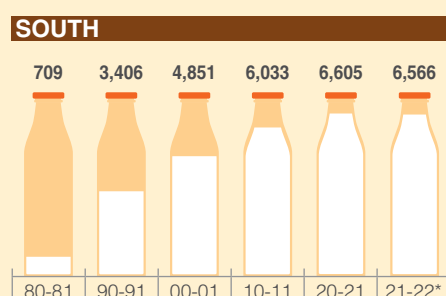
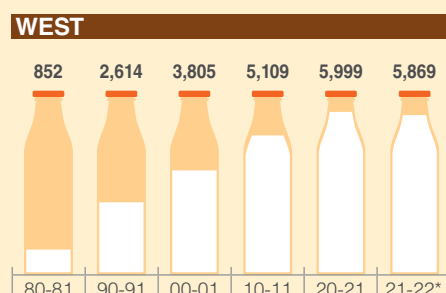
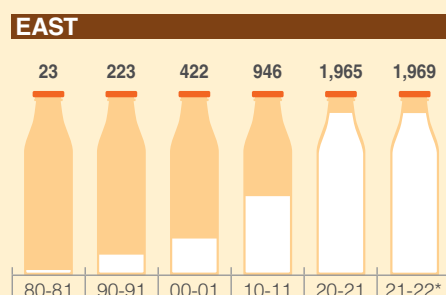
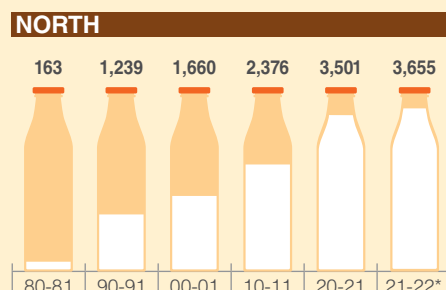
Region / State	80-81	90-91	00-01	10-11	20-21	21-22*
NORTH						
Haryana	39	184	185	313	320	323
Himachal Pradesh		17	20	32	46	47
Jammu & Kashmir		2	**	**	30	40
Punjab	26	304	370	385	428	429
Rajasthan	80	340	436	669	1,030	1,063
Uttar Pradesh	18	392	649	977	1,488	1,593
Uttarakhand					159	159
Regional Total	163	1,239	1,660	2,376	3,501	3,655
EAST						
Assam		2	1	4	34	40
Bihar	3	100	184	523	1,309	1,357
Jharkhand				1	23	24
Meghalaya					1	0.4
Mizoram					1	1
Nagaland		1	3	2	2	2
Odisha		46	111	187	325	299
Sikkim		4	5	10	15	20
Tripura		4	4	6	8	6
West Bengal	20	66	114	213	247	220
Regional Total	23	223	422	946	1,965	1,969
WEST						
Chhattisgarh				31	43	42
Goa		12	18	19	19	19
Gujarat	741	1,612	2,147	2,970	3,740	3,755
Madhya Pradesh	24	150	242	271	373	388
Maharashtra	87	840	1,398	1,818	1,824	1,665
Regional Total	852	2,614	3,805	5,109	5,999	5,869
SOUTH						
Andhra Pradesh	33	561	702	846	667	676
Karnataka	195	1,013	1,528	2,124	2,633	2,589
Kerala		225	637	851	1,025	1,042
Tamil Nadu	481	1,590	1,957	2,176	1,981	1,966
Telangana					258	251
Puducherry		17	27	36	42	42
Regional Total	709	3,406	4,851	6,033	6,605	6,566
Grand Total	1,747	7,482	10,738	14,464	18,070	18,058

* Provisional

** Not reported

2020-21 onwards data includes pouring members of MPCs & MPGs of MDFVPL

Source: Milk Unions & Federations, NDDB DS & MDFVPL



Milk Procurement

Region / State	80-81	90-91	00-01	10-11	20-21	21-22*
NORTH						
Haryana	33	94	276	511	560	515
Himachal Pradesh		14	24	60	92	107
Jammu & Kashmir		11	**	**	92	122
Punjab	75	394	912	1,037	2,189	2,257
Rajasthan	138	364	887	1,629	3,611	3,987
Uttar Pradesh	64	382	791	504	1,318	1,432
Uttarakhand					189	201
Regional Total	310	1,259	2,890	3,741	8,051	8,621
EAST						
Assam		4	3	5	29	42
Bihar	3	95	330	1,091	1,506	1,303
Jharkhand				5	134	153
Meghalaya					14	14
Mizoram					5	4
Nagaland		1	3	2	3	3
Odisha		41	94	276	366	416
Sikkim		4	7	12	40	53
Tripura		3	1	2	7	5
West Bengal	31	52	204	273	203	181
Regional Total	34	200	642	1,666	2,306	2,175
WEST						
Chhattisgarh				25	68	67
Goa		16	32	38	55	55
Gujarat	1,344	3,102	4,567	9,158	25,236	27,134
Madhya Pradesh	68	256	319	588	954	969
Maharashtra	165	1,872	2,979	3,053	3,749	3,861
Regional Total	1,577	5,246	7,897	12,862	30,062	32,087
SOUTH						
Andhra Pradesh	79	763	879	1,371	1,749	2,028
Karnataka	261	917	1,887	3,742	7,879	8,164
Kerala		185	646	688	1,388	1,561
Tamil Nadu	301	1,106	1,618	2,097	3,704	3,562
Telangana					461	460
Puducherry		26	45	35	60	67
Regional Total	641	2,997	5,075	7,932	15,240	15,843
Grand Total	2,562	9,702	16,504	26,202	55,659	58,725

Includes outside State operations

* Provisional

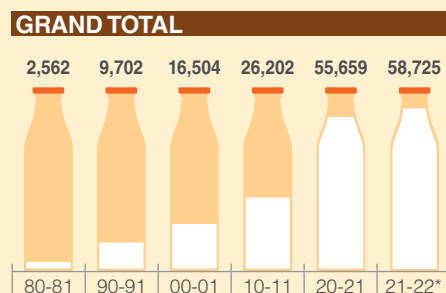
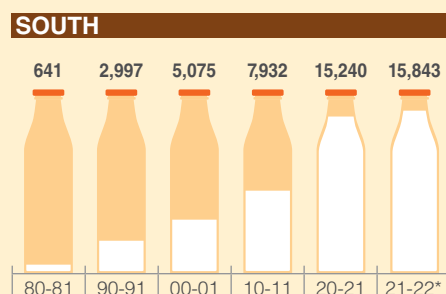
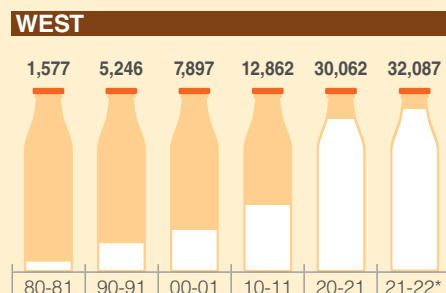
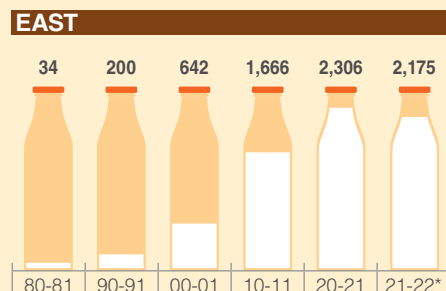
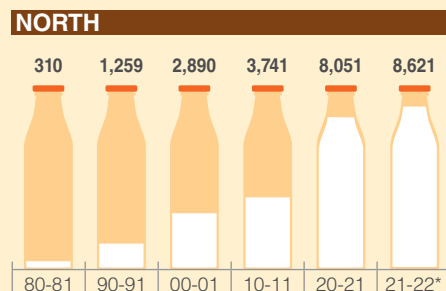
** Not reported

2020-21 on wards data includes procurement of MPCs & MPGs of MDFVPL

Gujarat's total milk procurement in 2021-22 includes 4,240 TKgPD from outside the State and in 2020-21, the corresponding figure was 4,325 TKgPD.

Source: Milk Unions & Federations, NDDB DS & MDFVPL

(in thousand kilograms per day)#



Liquid Milk Marketing

(in thousand litres per day)#

Region / State	80-81	90-91	00-01	10-11	20-21	21-22*
NORTH						
Haryana	2	80	108	362	283	297
Himachal Pradesh		15	20	23	23	22
Jammu & Kashmir		9	**	**	99	98
Punjab	7	139	420	802	1,026	1,124
Rajasthan	12	136	540	1,505	2,131	2,330
Uttar Pradesh	1	326	436	380	1,455	1,699
Uttarakhand					157	157
Delhi	697	1,051	1,524	3,050	6,645	6,943
Regional Total	719	1,756	3,048	6,122	11,819	12,670
EAST						
Assam		10	7	22	59	64
Bihar	8	111	324	454	1,269	1,474
Jharkhand				253	374	418
Meghalaya					13	12
Mizoram					4	4
Nagaland		1	4	3	6	4
Odisha		65	98	290	324	326
Sikkim		5	7	17	44	47
Tripura		6	7	15	9	7
West Bengal	17	26	27	41	83	95
Kolkata	283	526	840	644	1,207	1,307
Regional Total	308	750	1,314	1,739	3,392	3,759
WEST						
Chhattisgarh				34	176	199
Goa		36	83	69	57	58
Gujarat	210	1,052	1,905	3,237	5,663	6,043
Madhya Pradesh	39	279	244	495	800	853
Maharashtra	18	363	1,178	2,023	1,641	1,763
Mumbai	950	1,057	1,390	841	2,650	2,820
Regional Total	1,217	2,787	4,800	6,699	10,986	11,736
SOUTH						
Andhra Pradesh	19	552	733	1,565	1,351	1,357
Karnataka	166	889	1,501	2,661	4,261	4,456
Kerala		223	640	1,092	1,315	1,430
Tamil Nadu	109	405	559	989	1,174	1,305
Telangana					875	932
Puducherry		22	43	93	92	92
Chennai	245	662	725	1,025	1,220	1,311
Regional Total	539	2,753	4,201	7,425	10,286	10,881
Grand Total	2,783	8,046	13,363	21,985	36,484	39,046

Includes Metro Dairies and outside State operations

* Provisional

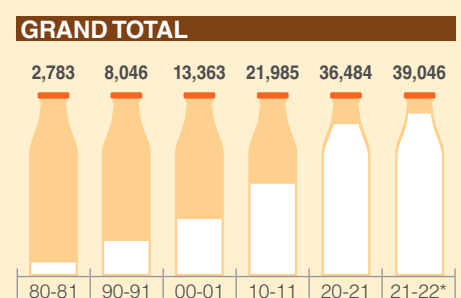
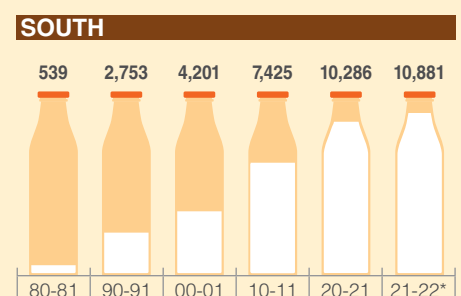
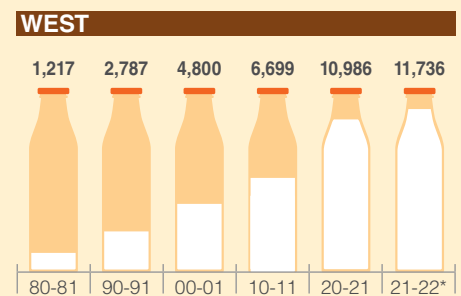
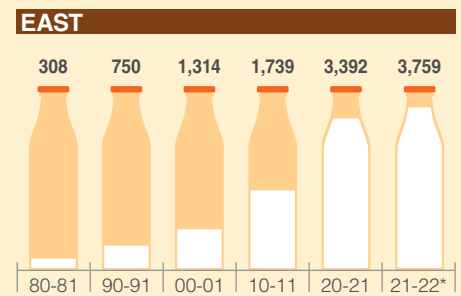
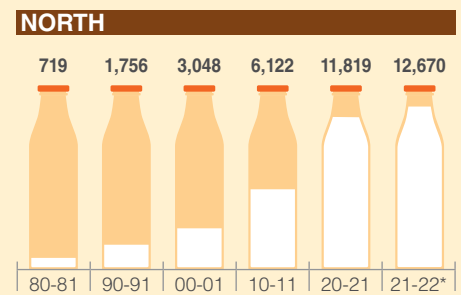
** Not reported

2020-21 onwards data includes sale of MPCs & MDFVPL

Gujarat's total milk marketing in 2021-22 including outside the State stands at 14,436 TLPD and in 2020-21, the corresponding figure was 13,401 TLPD.

In 2010-11, break-up of sale volume by Maharashtra Milk Unions in Mumbai not available

Source: Milk Unions & Federations, NDDB DS & MDFVPL



Dairy Cooperatives' Cold Chain Infrastructure (capacity)*

(March 2022)^

Region / State	BMC (TL)	Chilling Centre (TLPD)	Dairy Plant (TLPD)
NORTH			
Delhi			1,500
Haryana	420	330	7,525
Himachal Pradesh	136	80	100
Jammu & Kashmir	155	202	150
Punjab	2,138	692	2,585
Rajasthan	4,727	780	4,320
Uttar Pradesh	1,788	1,022	4,840
Uttarakhand	64	65	256
Regional Total	9,428	3,171	21,276
EAST			
Assam	52		60
Bihar	2,234	414	3,305
Jharkhand	226		690
Meghalaya	10		50
Mizoram	14		20
Nagaland	2		10
Odisha	893	115	920
Sikkim	44		50
Tripura	13		24
West Bengal	270	124	1,248
Regional Total	3,757	653	6,377
WEST			
Chhattisgarh	100	71	144
Goa	47		110
Gujarat	26,685	6,195	29,715
Madhya Pradesh	1,740	652	1,868
Maharashtra	2,306	2,450	13,530
Regional Total	30,878	9,368	45,367
SOUTH			
Andhra Pradesh	2,509	498	3,205
Karnataka	5,989	3,030	10,790
Kerala	1,625	115	2,485
Tamil Nadu	2,195	1,455	4,613
Telangana	711	363	1,275
Puducherry	65		120
Regional Total	13,094	5,461	22,488
Grand Total	57,156	18,653	95,508

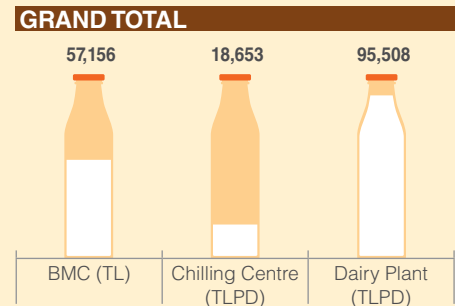
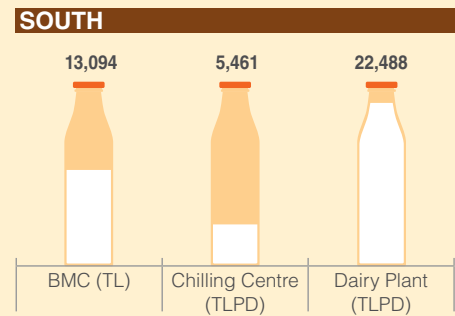
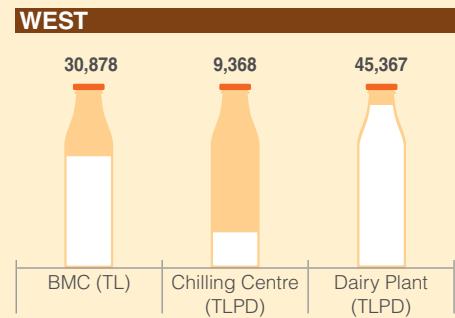
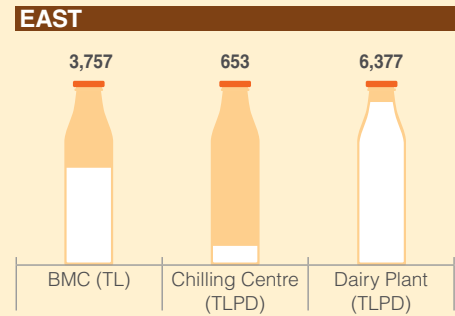
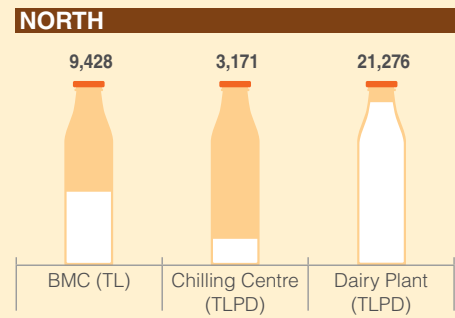
* Provisional

TL: Thousand Litres

TLPD: Thousand Litres Per Day

^ includes infrastructure owned by MPCs & MDFVPL

Source: Milk Unions & Federations, NDDB DS & MDFVPL



Visitors



During 2021-22, NDDDB received 1,136 guests from India and abroad.



Shri Parshottam Rupala, Hon'ble Union Minister of Fisheries, Animal Husbandry and Dairying



Dr. Sanjeev Kumar Balyan, Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying



Shri Vishram Meena, MD, Rajasthan Cooperative Dairy Federation



Shri Arjunsingh Chauhan, Hon'ble minister of Rural Development, Government of Gujarat



Shri Devendra Kumar Singh, Secretary Cooperation, Government of India



Shri Sudhir Garg, Principal Secretary and Shri Ravishankar Gupta, CGM, Pradeshik Cooperative Dairy Federation, Uttar Pradesh

Accounts

kkc & associates llp

Chartered accountants
(formerly Khimji Kunverji & Co LLP)

Independent Auditor's Report

To
The Board of Directors of
National Dairy Development Board

Report on the audit of the Standalone Financial Statements

Opinion

1. We have audited the accompanying standalone financial statements of National Dairy Development Board ("NDDDB"), which comprise the balance sheet as at 31 March 2022, income and expenditure account and the cash flow statement for the year then ended, and notes to the Standalone Financial Statements, including a summary of significant accounting policies and other explanatory information ("Standalone Financial Statements").
2. In our opinion and to the best of our information and according to the explanations given to us, the aforesaid Standalone Financial Statements give the information required by National Dairy Development Board Act, 1987 read with National Dairy Development Board (Administration of Funds, Accounts and Budget) Regulations, 1988 ("the Regulation") and exhibit a true and fair view, in conformity with the Accounting Standards notified by the Institute of Chartered Accountants of India ("ICAI") and accounting principles generally accepted in India, of the state of affairs of the NDDDB as at 31 March 2022 its surplus and its cash flows for the year then ended.

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Basis for Opinion

3. We conducted our audit in accordance with the Standards on Auditing ("SAs") issued by the ICAI. Our responsibilities under those SAs are further described in the Auditor's Responsibilities for the Audit of the Standalone Financial Statements section of our report. We are independent of the NDDDB in accordance with the Code of Ethics issued by the Institute of Chartered Accountants of India ("ICAI") together with the ethical requirements that are relevant to our audit of the Standalone Financial Statements under the provisions of the Regulation, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the Code of Ethics. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on the Standalone Financial Statements.

Other Information

4. The NDDDB's Management and Board of Directors are responsible for the other information. The other information comprises the information included in the Report of Board of Directors and such other disclosures included in NDDDB's annual report but does not include the Standalone Financial Statements and our auditors' report thereon. The Other Information is expected to be made available to us after the date of this auditor's report.
5. Our opinion on the Standalone Financial Statements does not cover the other information and we do not express any form of assurance or conclusion thereon.

kkc & associates llp

Chartered accountants
(formerly Khimji Kunverji & Co LLP)

6. In connection with our audit of the Standalone Financial Statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the Standalone Financial Statements, or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

Management's responsibility for the Standalone Financial Statements

7. Management and Board of Directors of NDDDB are responsible for the preparation of the Standalone Financial Statements in accordance with the Regulation, that give a true and fair view of the financial position, financial performance, and cash flows of NDDDB. This responsibility also includes maintenance of adequate accounting records for safeguarding the assets of the NDDDB and for preventing and detecting frauds and other irregularities; selection and application of appropriate accounting policies, making judgments and estimates that are reasonable and prudent, design, implementation and maintenance of adequate internal financial controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the Standalone Financial Statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.
8. In preparing the Standalone Financial Statements, the Management and Board of Directors are also responsible for assessing the NDDDB's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless Management either intends to liquidate the NDDDB or to cease operations, or has no realistic alternative but to do so.
9. The Board of Directors are also responsible for overseeing NDDDB's financial reporting process.

Auditor's Responsibility for the Audit of the Standalone Financial Statements

10. Our objectives are to obtain reasonable assurance about whether the Standalone Financial Statements, as a whole, are free from material misstatement, whether due to fraud or error and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these Standalone Financial Statements.
11. As part of an audit in accordance with SAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:
 - 11.1 Identify and assess the risks of material misstatement of the Standalone Financial Statements, whether due to fraud or error, to design and perform audit procedures responsive to those risks and obtain audit evidence for material items that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls.

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Chartered accountants
(formerly Khimji Kunverji & Co LLP)

- 11.2 Obtain an understanding of internal control relevant to the audit 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 NDDB's internal control.
- 11.3 Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by Management.
- 11.4 Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the NDDB's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the Standalone Financial Statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the NDDB to cease to continue as a going concern.
- 11.5 Evaluate the overall presentation, structure and content of the Standalone Financial Statements, including the disclosures and whether the Standalone Financial Statements represent the underlying transactions and events in a manner that achieves fair presentation.
- 11.6 Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.
- 11.7 We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

Report on Other Legal and Regulatory Requirements

12. The Balance Sheet and the Income and Expenditure Account of NDDB have been drawn up as per Schedule "I" and Schedule "II" of Chapter II of the Regulation.

As required by the provisions of the Regulation made thereunder, we further report that:

- 12.1 We have sought and obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit.

kkc & associates llp

Chartered accountants
(formerly Khimji Kunverji & Co LLP)

12.2 The transactions of NDDB, which have come to our notice in course of our audit, have been within the powers of the NDDB.

12.3 In our opinion, the Standalone Financial Statement dealt with by this report are in agreement with the books of accounts.

12.4 In our opinion, the Standalone Financial Statements comply with the applicable accounting standards.

For KKC & Associates LLP

Chartered Accountants
(formerly Khimji Kunverji & Co LLP)
Firm Registration Number: 105146W/W100621

Hasmukh B. Dedhia

Partner
ICAI Membership No: 033494
UDIN: 22033494AOHMPB8431

Place: Mumbai
Date: 04 August 2022

Balance Sheet

AS AT 31ST MARCH, 2022

₹ in million

PARTICULARS	ANNEXURE	31.03.2022	31.03.2021
LIABILITIES			
NDDB Funds	I	32,288.49	31,868.88
Secured Loans	II	9,888.03	9,569.32
Current Liabilities and Provisions	III	10,233.00	10,368.95
Deferred Tax Liability	XVI (Note 8)	256.40	273.36
Total		52,665.92	52,080.51
ASSETS			
Cash and Bank Balances	IV	14,452.80	13,870.40
Inventories	V	0.55	1.04
Sundry Debtors		117.50	141.81
Loans, Advances and Other Current Assets	VI	15,046.77	15,966.36
Investments	VII	21,313.81	20,277.98
Property, Plant and Equipment	VIII	1,734.49	1,822.92
Total		52,665.92	52,080.51
Significant Accounting Policies forming part of Financial Statements	XV		
Notes to Accounts forming part of Financial Statements	XVI		

In terms of our report of even date attached.

For KKC & Associates LLP

Chartered Accountants
(formerly Khimji Kunverji & Co LLP)
Firm's Reg No. 105146W/W-100621

Hasmukh B Dedhia

Partner
Membership No. 033494

Place: Mumbai
Date: 04 August 2022

For and on behalf of the Board,

Meenesh C Shah
Chairman & Executive
Director

Place: Anand
Date: 04 August 2022

S Regupathi
SGM (CF&P)

Amit Goel
Deputy Group Head
(Accounts)

Income and Expenditure Account

FOR THE YEAR ENDED 31ST MARCH, 2022

₹ in million

PARTICULARS	ANNEXURE	2021-22	2020-21
INCOME			
Interest		2,592.30	2,780.16
Service Charges	IX	229.77	206.23
Rent and Hire Charges		220.67	212.14
Dividend		310.92	60.41
Other Income	X	87.51	210.76
Total (A)		3,441.17	3,469.70
EXPENDITURE			
Interest and Financial Charges		673.50	731.04
Remuneration and Benefits to Employees	XI	1,101.70	933.27
Administrative Expenses	XII	111.86	86.99
Grants		10.29	16.68
Research and Development		107.14	108.75
Maintenance of Assets	XIII	178.64	196.46
Training expenses		41.65	16.63
Computer expenses		20.73	17.41
Other Expenses	XIV	72.45	52.38
Provision for contingency		250.00	250.00
Depreciation	VIII	187.08	191.17
Total (B)		2,755.04	2,600.78
Surplus during the year before tax (C) = (A - B)		686.13	868.92
Less: Provision for Taxation			
Current Tax		259.30	246.08
Deferred Tax	XVI (Note 8)	(16.95)	37.97
Surplus during the year after tax		443.78	584.87
Less: Appropriations to -			
Special Reserve		32.10	65.53
Balance carried to General Funds		411.68	519.34
Total (D) = (B + C)		3,441.17	3,469.70
Significant Accounting Policies forming part of Financial Statements	XV		
Notes to Accounts forming part of Financial Statements	XVI		

In terms of our report of even date attached.

For KKC & Associates LLP

Chartered Accountants
(formerly Khimji Kunverji & Co LLP)
Firm's Reg No. 105146W/W-100621

Hasmukh B Dedhia

Partner
Membership No. 033494

Place: Mumbai
Date: 04 August 2022

For and on behalf of the Board,

Meenesh C Shah

Chairman & Executive
Director

Place: Anand
Date: 04 August 2022

S Regupathi

SGM (CF&P)

Amit Goel

Deputy Group Head
(Accounts)

Cash Flow Statement

FOR THE YEAR ENDED ON 31ST MARCH, 2022

₹ in million

PARTICULARS	ANNEXURE	2021-22	2020-21
Cash flow from Operating Activities			
Surplus during the year before tax		686.13	868.92
Adjustments for :			
Depreciation		187.08	191.17
Provision for Contingency		250.00	250.00
(Profit)/Loss on sale of investments		(2.43)	(65.92)
Interest income on fixed deposit and bonds considered separately		(1,780.44)	(1,547.19)
Dividend Income considered separately		(310.92)	(60.41)
Excess Provision of PF Trust in FY 2019-20		-	(0.14)
(Profit)/Loss on sale of fixed assets considered separately		(10.49)	(3.55)
Recoupment of depreciation of Grant Assets		(21.31)	(22.00)
Employee Retirement Benefit		151.98	65.60
Interest and financial charges to banks		6.91	48.23
Premium Amortised on Bonds and State Development Loans		43.71	32.63
		(1,485.91)	(1,111.58)
Operating Cash flow before changes in working capital		(799.78)	(242.67)
(Increase)/ Decrease in Inventories		0.49	(0.52)
(Increase)/ Decrease in Sundry Debtors		24.31	81.91
(Increase)/ Decrease in Loans and Advances		960.43	8578.82
Increase/(Decrease) in current liabilities		(537.95)	1580.74
		447.28	10,240.95
Cash flow generated from /(used in) operating activities		(352.50)	9,998.29
Tax refunded / (paid)		(277.31)	(305.55)
Net Cash flow generated from /(used in) operating activities (A)		(629.81)	9,692.74
Cash flow from Investing activities			
Interest Income		1936.64	1859.07
Dividend Income		310.92	60.41
Proceeds from maturity of investments (Bonds)		351.45	2516.90
Purchase of Investments (Shares)			
Purchase of Investments (Bonds and State Development Loans)		(1,428.54)	(6,121.48)
Decrease / (Increase) in FDR's with banks more than 90 days (net)		(1,801.05)	(571.12)
Proceeds from sale of fixed assets		10.58	3.91
Grant received for purchase of Fixed asset/(grant refunded)		(2.86)	-
Purchase of fixed assets		(98.75)	(138.18)
Net cash flow generated from /(used in) investing activities (B)		(721.61)	(2,390.49)
Cash flow from Financing activities			
Proceeds / (Repayment) of borrowed funds		318.71	(4,168.40)
Interest and financial charges to banks		(6.91)	(48.23)
Net cash flow from financing activities (C)		311.80	(4,216.63)
Net Cash flow during the year (A+B+C)		(1,039.62)	3,085.62
Cash and Cash Equivalents at the beginning of the year		3,316.67	231.05
Cash and Cash Equivalents at the end of the year		2,277.05	3,316.67
Balances with Banks:			
In fixed deposits		14,324.53	13,700.88
Less: Deposits with original maturity more than 90 days		12,175.75	10,553.73
		2,148.78	3,147.15
In current accounts		128.24	169.49
Cash and Cheques on hand		0.03	0.03
Total		2,277.05	3,316.67
Significant Accounting Policies forming part of Financial Statements	XV		
Notes to Accounts forming part of Financial Statements	XVI		

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

In terms of our report of even date attached

For KKC & Associates LLP

Chartered Accountants

(formerly Khimji Kunverji & Co LLP)

Firm's Reg No. 105146W/W-100621

For and on behalf of the Board,

Hasmukh B Dedhia

Partner

Membership No. 033494

Place: Mumbai

Date: 04 August 2022

Meenesh C Shah

Chairman & Executive

Director

Place: Anand

Date: 04 August 2022

S Regupathi

SGM (CF&P)

Amit Goel

Deputy Group Head

(Accounts)

NDDB Funds

ANNEXURE - I

₹ in million

PARTICULARS	31.03.2022	31.03.2021
General Reserve (Note a)		
Balance as per last balance sheet	3,559.61	3,559.61
Add: Transferred from Grant for Fixed Assets		
Grant for Fixed Assets (Note b)		
Balance as per last balance sheet	80.57	102.57
Add: Grant received during the year	2.19	-
Less: Grant refunded during the year	5.05	-
Less: Recoupment of depreciation	21.31	22.00
	56.40	80.57
Special Reserve under section 36 (1) (viii) of the Income Tax Act, 1961		
Balance as per last balance sheet	1,562.22	1,496.69
Add: Transfer from Income and Expenditure Account	32.10	65.53
	1,594.32	1,562.22
Income and Expenditure Account		
Balance as per last balance sheet	26,666.48	26,147.14
Add: Surplus after appropriation during the year	411.68	519.34
	27,078.16	26,666.48
Total	32,288.49	31,868.88

Notes:

- To promote, plan and organise programmes for development of dairy and other agriculture based and allied industries and biologicals as per the NDDB Act, 1987.
- In accordance with Accounting Standard - 12 - 'Accounting for Government Grants'

Secured Loans

ANNEXURE - II

₹ in million

PARTICULARS	31.03.2022	31.03.2021
Bank Overdraft (Secured against lien on fixed deposits with Banks)	640.76	5.43
Loan from NABARD (Secured against loan given under DIDF scheme)	9,247.27	9,563.89
Total	9,888.03	9,569.32

Current Liabilities and Provisions

ANNEXURE - III

₹ in million

PARTICULARS	31.03.2022	31.03.2021
a) Current Liabilities		
Advances and deposits	58.07	45.55
Sundry creditors	215.23	166.97
Other Liabilities	150.79	85.45
Net liability on account of Consultancy Project		
Funds received	21,918.80	22,900.59
Add : Due to suppliers for expenses	1,017.06	1,307.88
	22,935.86	24,208.47
Less : Expenditure incurred	19,947.15	20,315.44
Advance to suppliers	117.12	17.74
	2,871.59	3,875.29
Add : Payable to NDDDB (Per contra, Refer Annexure VI)	141.17	198.80
	3,012.76	4,074.09
b) Fund received for Government of India projects		
Balance as per last balance sheet	3,583.16	2,450.74
Fund Received from Govt of India	2,956.86	2,323.95
Add: Interest Accrued	19.64	93.33
Less: Expenditure incurred	2,377.61	1,224.29
Less: Advance to End Implementing Agencies	0.84	60.57
Less: NDLM contribution transfer to Grant	2.19	-
	4,179.02	3,583.16
c) Provisions for :		
Non-performing assets (Refer Note 9 of Annexure XVI)	816.58	1,006.13
General contingency on Standard Assets (Refer Note 9 of Annexure XVI)	51.79	54.30
Contingency (Refer Note 9 of Annexure XVI)	1,497.87	1,055.81
	2,366.24	2,116.24
d) Provisions for :		
Leave encashment (Refer Note 5 of Annexure XVI)	99.27	148.65
Post retirement medical scheme (Refer Note 5 of Annexure XVI)	110.75	111.16
Gratuity (Refer Note 5 of Annexure XVI)	40.85	37.64
VRS monthly benefits	0.02	0.04
	250.89	297.49
Total	10,233.00	10,368.95

Cash and Bank Balances

ANNEXURE - IV

₹ in million

PARTICULARS	31.03.2022	31.03.2021
Balances with Banks		
In fixed deposits	14,324.53	13,700.88
In current accounts	128.24	169.49
	14,452.77	13,870.37
Cash and cheques on hand	0.03	0.03
Total	14,452.80	13,870.40

Note :

Fixed deposits includes

- ₹ 4,613.92 million (Previous Year ₹7,034.07 million) placed with Banks which are under lien for the overdraft facility
- ₹ 610.50 million (Previous Year ₹ 716.40 million) which are under lien in favour of NABARD for the DSRA account opened for loans availed under DIDF scheme
- ₹ 0.05 million (Previous Year ₹ 0.05 million) for Bank Guarantee Margin Money.
- ₹ 3,702.40 million (Previous Year ₹ 3,054.34 million) of fund received for Government of India projects.
- ₹ 506.48 million being NDDDB share in NDLM project earmarked for NDLM Project.

Current accounts includes ₹ 110.55 million (Previous Year ₹ 142.88 million) of fund received for Government of India projects.

Inventories

ANNEXURE - V

₹ in million

PARTICULARS	31.03.2022	31.03.2021
Stores, spares and others	1.67	2.16
Project equipments	3.19	3.19
	4.86	5.35
Less : Provision for obsolescence	4.31	4.31
	0.55	1.04
Total	0.55	1.04

Loans, Advances and Other Current Assets

ANNEXURE - VI

₹ in million

PARTICULARS	31.03.2022	31.03.2021
Loans to cooperatives		
Milk - Secured (refer note a & b below)	10,575.43	10,367.27
Unsecured	48.25	960.78
	10,623.68	11,328.05
Oil (including interest accrued) - Unsecured	805.03	945.03
Loans and advances to subsidiary companies / managed units		
Secured (refer note a & b below)	1,343.96	1,377.63
Unsecured	523.27	529.10
	1,867.23	1,906.73
Loans to employees		
Secured	0.20	0.27
Unsecured	8.02	5.85
	8.22	6.12
Interest accrued on -		
Loans and advances	5.05	4.92
Fixed deposits and investments	636.09	792.28
	641.14	797.20
Advances to suppliers and contractors	22.30	8.44
Recoverable on account of turnkey projects (Per contra, Refer Annexure III)	141.17	198.80
Sundry deposits	17.76	17.33
Income taxes paid (net of provisions)	766.05	748.04
Other receivables	154.19	10.62
Total	15,046.77	15,966.36

Notes :

- Secured loans are secured against the mortgage of assets and/or hypothecation of stocks/assets.
- Secured loans includes ₹ 8,301.42 million (Previous Year ₹ 7,878.55 million) given under DIDF scheme.

Investments

ANNEXURE - VII

₹ in million

PARTICULARS	31.03.2022	31.03.2021
Long term investments (at cost) :		
Equity Shares (unquoted) in subsidiary companies:		
Mother Dairy Fruit and Vegetable Private Limited (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 (NDS)	2,000.00	2,000.00
	4,873.90	4,873.90
Bonds (Quoted) of Government companies, financial institutions and banks (at cost)	11,125.03	11,241.34
(aggregate market value of bonds is ₹11,122.49 million (Previous Year ₹ 11,205.02 million) as at the balance sheet date)		
State Development Loans (Quoted) (at cost)	5,295.98	4,143.84
(aggregate market value of State Development Loans is ₹ 5,387.76 million (Previous Year ₹ 4,297.67 million) as at the balance sheet date)		
Shares (unquoted) in Co-operatives and Federations	19.00	19.00
Less: Provision for diminution in value of investments	0.10	0.10
	18.90	18.90
Total	21,313.81	20,277.98

Property, Plant and Equipment

ANNEXURE - VIII
₹ in million

PARTICULARS	Gross Block (at Cost)			Depreciation			Net Block	
	As at 01.04.2021	Addition	Deduction/ (adjustments)	As at 31.03.2022	As at 01.04.2021	For the year (adjustments)	As at 31.03.2022	As at 31.03.2021
Free Hold Land (Refer Note 1 to 3)	456.45	0.00	0.00	456.45	0.00	0.00	456.45	456.45
Lease Hold Land	64.16	0.00	0.00	64.16	14.55	0.77	48.84	49.61
Buildings and Roads	2,012.53	0.55	0.50	2,012.58	1,178.42	52.13	782.43	834.11
Plant and Machinery	53.82	0.00	0.00	53.82	53.29	0.21	0.32	0.53
Electrical Installations	186.50	4.27	0.48	190.29	136.35	8.69	45.73	50.15
Furniture, Computers and Others Equipments	1,064.91	40.62	11.67	1,093.86	808.51	82.40	214.62	256.40
Software Licence	241.18	17.54	0.00	258.72	214.55	21.67	22.50	26.63
Rail Milk Tankers	371.06	10.60	9.02	372.64	236.97	19.58	125.11	134.09
Vehicles	22.40	1.80	1.20	23.00	19.48	1.63	3.09	2.92
Total	4,473.01	75.38	22.87	4,525.52	2,662.12	187.08	1,699.09	1,810.89
Previous Year	4,355.47	142.75	25.21	4,473.01	2,495.80	191.17	1,810.89	1,859.67
Capital Work in Progress including capital advances							35.40	12.03
Total Fixed Assets							1,734.49	1,822.92

Notes :

- Land for FMD Control Project amounting to ₹ 0.39 million is obtained from Government of Tamil Nadu by alienation.
- 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.
- Land amounting to ₹ 65.98 million at Kannamangala Horticulture Farm received from Agriculture and Horticulture Department, Government of Karnataka is in the Name of the subsidiary company Mother Dairy Fruit and Vegetable Private Limited and transfer of title is pending.

Service Charges

ANNEXURE - IX

₹ in million

PARTICULARS	2021-22	2020-21
Training fees	6.90	1.07
Procurement and technical service fees	112.01	112.65
Testing charges	107.98	90.75
Fees from consultancy and feasibility studies	1.66	0.49
Royalty and process knowhow fees	1.22	1.27
Total	229.77	206.23

Other Income

ANNEXURE - X

₹ in million

PARTICULARS	2021-22	2020-21
Profit on sale of fixed assets (net)	10.49	3.55
Profit on sale of investments	2.43	65.92
Other interest income	31.67	29.82
Excess provision and NPAs written back	2.65	3.69
Recoupment of Depreciation of Grant Assets	21.31	22.00
Miscellaneous income	18.96	85.78
Total	87.51	210.76

Remuneration and Benefits to employees

ANNEXURE - XI

₹ in million

PARTICULARS	2021-22	2020-21
Salaries and Wages (including ex-gratia)	852.48	729.37
Contribution to Provident, Superannuation fund and Gratuity	185.77	116.15
Staff welfare expenses	63.45	87.75
Total	1,101.70	933.27

Remuneration excludes ₹ 24.88 million (Previous year: ₹ 23.95 million) shown as part of Research and Development expenses.

Administrative Expenses

ANNEXURE - XII

₹ in million

PARTICULARS	2021-22	2020-21
Printing and stationery	3.85	3.13
Communication charges	8.68	9.77
Audit fees and expenses (including taxes)		
Audit fees	0.98	0.87
Income Tax audit	0.27	0.27
Goods & service tax audit	0.00	0.21
Fees for other services	0.00	0.00
Out of pocket expenses	0.02	0.01
	1.27	1.36
Legal fees	3.85	4.93
Professional fees	10.90	14.58
Vehicle expenses	2.61	1.67
Recruitment expenses	0.25	0.04
Advertisement expenses	5.69	2.32
Travelling and conveyance expenses	43.35	21.45
Electricity and rent	27.38	24.55
Other administrative expenses	4.03	3.19
Total	111.86	86.99

Maintenance of Assets

ANNEXURE - XIII

₹ in million

PARTICULARS	2021-22	2020-21
Repairs and maintenance		
Buildings	112.31	130.30
Others	55.47	55.54
Rates and taxes	8.45	8.12
Insurance	2.41	2.50
Total	178.64	196.46

Other Expenses

ANNEXURE - XIV

₹ in million

PARTICULARS	2021-22	2020-21
Premium amortisation	43.71	32.64
Prior Period expenditure	0.59	1.68
Other expenditure	28.15	18.06
Total	72.45	52.38

Significant Accounting Policies forming part of financial Statement

ANNEXURE XV

1. Basis of preparation

The financial statements are prepared on accrual basis, using the historical cost convention and Generally Accepted Accounting Principles ("GAAP") in India including accounting standards issued by the Institute of Chartered Accountants of India, as applicable to the Board. The financial statements are presented in Indian Rupees rounded off to the nearest million, unless otherwise stated.

2. Use of Estimates

The preparation of financial statements in conformity with the GAAP requires the management to make estimates and assumptions that affect the reported amounts of assets and liabilities, revenues and expenses and the disclosure of contingent liabilities as at the date of the financial statements. Such estimates and assumptions are based on the Management's evaluation of relevant facts and circumstances as on the date of the financial statements. Management believes that the estimates used in the preparation of the financial statements are prudent and reasonable; however 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 (RBI) for asset classification applicable to "Systemically Important Non-Banking Financial (Non-Deposit Accepting or Holding) Companies Prudential Norms, 2015". Provision for Non-Performing and Standard Assets is made at the rates approved by the Board.

4. Revenue Recognition

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

Interest income on fixed deposits with Bank and investment in Bonds is recognized on a time proportionate 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.

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.

Significant Accounting Policies forming part of financial Statement

ANNEXURE XV

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. Shortfall if any, between the rate prescribed by the Employees' Provident Fund Organisation and actual earnings of National Dairy Development Board Staff Provident Fund Scheme, is contributed by the Board as debit to Income & 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.

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.

The Board has funded its liability towards gratuity by participating in Group Gratuity cum Life Assurance Scheme of Life Insurance Corporation of India

8. Property, Plant & Equipment (PPE) 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 PPE 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 equipment	15.00
Plant and machinery	10.00
Solar equipment	30.00
Furniture	10.00
Vehicles	20.00
Rail milk tankers	10.00

Leasehold Land is amortized over the duration of lease. Depreciation on the assets located on leasehold land shall be at lower of lease duration or useful life of that asset.

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

Significant Accounting Policies forming part of financial Statement

ANNEXURE XV

9. 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 and Expenditure Account.

10. 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 / State Development Loans - at cost of acquisition net of amortised premium, if any.

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

Long term Investments are valued at cost. In case cost price is higher than the face value, the premium is amortised over the remaining period of maturity of the underlying security. Such investments are stated in balance sheet at acquisition price less amortised premium.

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

11. Inventories

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.

12. 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.

13. Accounting for Voluntary Retirement scheme

The cost of voluntary retirement scheme including ex-gratia 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.

14. 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.

Significant Accounting Policies forming part of financial Statement

ANNEXURE XV

15. 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.

16. 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 creates additional provision or makes allocation of exiting contingency provision for possible diminution in value of its asset or for unforeseen events leading to such liability.

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

- At the request of the concerned authorities, the NDDB has been managing West Assam Milk Producers' Co-operative Union Ltd., Jharkhand State Cooperative Milk Producers' Federation Ltd., Shahjahanpur Mahila Dugdh Utpadak Sahakari Sangh Ltd. And Jilha Dudh Utpadak Sahakari Sangh, Varanasi (Varanasi Milk Union). These are separate and independent entities and their accounts are maintained by the respective authorities and audited separately. Further, as per understanding with the concerned authorities, the board is liable to bear the net cash loss while handing over the management of the Varanasi Milk Union only. Necessary provision for cash losses, if any, shall be made at the time of handing over the management at the end of period of MOU with Varanasi Milk Union.
- National Digital Livestock Mission (NDLM) is a project under Rastriya Gokul Mission (RGM) as a joint venture (JV) between Department of Animal Husbandry & Dairying (DAHD) and National Dairy Development Board (NDDB) and a Special Purpose Vehicle ('SPV') will be formed having 50% equity contribution of Gol and NDDB each.

Till the time such SPV is formed, NDLM project revenue and expenditure for (i) NDDB's share is credited/debited respectively to Income & Expenditure Account of NDDB and (ii) for Gol's share, it is adjusted in "Fund received for Government of India projects" of NDDB. As regards NDLM project Capital Expenditure, for (iii) NDDB's share is fully capitalised in the books and depreciation is charged to Income and Expenditure account of NDDB and (iv) for Gol's share, it is transferred to "Grant for fixed assets" and depreciation to that extent is recouped from the same on annual basis. For Capital Work In Progress ('CWIP'), (v) NDDB's share is shown under "CWIP" of NDDB and (vi) of Gol's share, it is shown under the "Fund received for Government of India projects".

3 Contingent Liabilities:

- Principal amount of claims not acknowledged as debt : ₹ 234.95 million (Previous Year : ₹ 232.73 million)
- Guarantees outstanding : ₹ 0.05 million (Previous Year : ₹ 0.05 million)
- Income tax demands (excluding interest and penalty applicable under respective statutory provisions) ₹ 1145.14 million (Previous Year : ₹ 1078.02 million)
- Service tax demands ₹ 916.50 million (Previous Year: ₹ 916.50 million)
- Other Demands

		₹ in million	
PARTICULARS	AUTHORITY	2021-22	2020-21
Settlement of Land dues	Land and Land Reform Department, Siliguri	3.94	3.94
Demand for Municipal Tax for Land at Itola	Taluka Development Officer, Vadodara	4.73	4.73

Demands presented hereinabove at 3.3 to 3.5 have been contested by the Board before appropriate forums. Future cash flows in respect of the same are determinable only on outcome of judgment / decision of the forums where the demands are contested.

4 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 around the Dairy/Agriculture sector which in terms of Accounting Standard-17 on "Segment Reporting" constitute a single reportable segment.

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

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

Employee benefit plans

Defined Contribution Plans

The Company makes Provident Fund and Superannuation Fund contributions to defined contribution plans for qualifying employees. Under the Schemes, the Company is required to contribute a specified percentage of the payroll costs to fund the benefits. The Company recognised ₹ 70.12 million (Year ended 31 March, 2021 ₹64.68 million) for Provident Fund contributions and ₹ 46.51 million (Year ended 31 March, 2021 ₹ 43.20 million) for Superannuation Fund contributions in the Income and Expenditure Account. The contributions payable to these plans by the Company are at rates specified in the rules of the schemes.

Defined Benefit Plans

The Company 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:

Particulars	Year ended 31 March, 2022			Year ended 31 March, 2021		
	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	33.62	0.83	37.89	31.30	-	35.69
Interest cost	30.98	7.50	36.59	30.33	5.47	35.24
Expected return on plan assets	(28.44)	-	(26.56)	(29.78)	-	(27.34)
Actuarial losses/(gains)	32.11	(4.51)	26.44	(23.47)	27.94	(25.11)
Total expense recognised in the Statement of Income and Expenditure	68.27	3.82	74.36	8.38	33.41	18.48
Actual contribution and benefit payments for year						
Actual benefit payments	(43.23)	(4.23)	(32.51)	(28.48)	(3.26)	(25.75)
Actual contributions	65.07	-	123.74	1.96	-	(1.54)
Net asset / (liability) recognised in the Balance Sheet						
Present value of defined benefit obligation	(513.59)	(110.75)	(615.36)	(458.98)	(111.16)	(542.14)
Fair value of plan assets	472.74	-	516.09	421.34	-	393.49
Net asset / (liability) recognised in the Balance Sheet	(40.85)	(110.75)	(99.27)	(37.64)	(111.16)	(148.65)
Change in defined benefit obligations (DBO) during the year						
Present value of DBO at beginning of the year	458.98	111.16	542.14	449.30	81.01	522.08
Current service cost	33.62	0.83	37.89	31.30	-	35.68
Interest cost	30.98	7.50	36.59	30.33	5.47	35.24
Actuarial (gains) / losses	33.24	(4.51)	31.25	(23.47)	27.94	(25.11)
Benefits paid	(43.23)	(4.23)	(32.51)	(28.48)	(3.26)	(25.75)
Present value of DBO at the end of the year	513.59	110.75	615.36	458.98	111.16	542.14

₹ in million

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

₹ in million

Particulars	Year ended 31 March, 2022			Year ended 31 March, 2021		
	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment	Gratuity	Post-Retirement medical benefits schemes (PRMBS)	Leave Encashment
Change in fair value of assets during the year						
Plan assets at beginning of the year	421.34	-	393.49	418.09	-	393.45
Acquisition adjustment	-	-	-	-	-	-
Expected return on plan assets	28.44	-	26.56	29.77	-	27.33
Actual company contributions (Excluding Contribution made by Gratuity Trust/NDDB and charges deducted by LIC)	65.07	-	123.74	1.96	-	(1.54)
Actuarial gain / (loss)	1.12	-	4.81	-	-	-
Benefits paid	(43.23)	-	(32.51)	(28.48)	-	(25.75)
Plan assets at the end of the year	472.74	-	516.09	421.34	-	393.49
Actual return on plan assets	28.44	-	-	29.78	-	-
Composition of the plan assets is as follows:						
Government bonds	-	-	-	50%	-	50%
PSU bonds	-	-	-	45%	-	45%
Equity & Equity related Investments	-	-	-	5%	-	5%
Others	100%	-	100%	0%	-	0%
Actuarial assumptions						
Discount rate	7.00%	7.00%	7.00%	6.75%	6.75%	6.75%
Expected return on plan assets	7.56%	NA	7.28%	7.62%	NA	7.37%
Salary escalation	8.50%	5.00%	8.50%	8.50%	3.00%	8.50%
Attrition	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Medical cost inflation	NA	5.00%	NA	NA	5% FOR B1, 3% FOR B2 & B3	NA
Mortality tables	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) ultimate Mortality Rates	Indian Assured Lives (2012-14) (IALM 2012-14) ultimate Mortality Rates and indian Individual Annuitant's Mortality Table (2012-15)	Indian Assured Lives (2012-14) ultimate Mortality Rates

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

Experience adjustments

₹ in million						
Particulars	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17
Gratuity						
Present value of DBO	513.59	458.98	449.30	389.45	357.02	362.20
Fair value of plan assets	(472.74)	(421.34)	(418.09)	(371.87)	(341.48)	(329.18)
Funded status [Surplus / (Deficit)]	(40.85)	(37.64)	(31.21)	(17.58)	(15.54)	(33.02)
Post-Retirement medical benefits schemes (PRMBS)						
Present value of DBO	110.75	111.16	81.01	69.98	71.19	73.38
Other defined benefit plans (Leave Encashment)						
Present value of DBO	615.36	542.14	522.08	419.02	379.07	366.17
Fair value of plan assets	(516.09)	(393.49)	(393.45)	-	-	-
Funded status [Surplus / (Deficit)]	(99.27)	(148.65)	(128.63)	-	-	-

Particulars	For the year ended 31 March, 2022	For the year ended 31 March, 2021
Actuarial assumptions for long-term compensated absences		
Discount rate	7.00%	6.75%
Expected return on Gratuity plan assets	7.56%	7.62%
Expected return on Leave Encashment plan assets	7.28%	7.37%
Salary escalation	8.50%	8.50%
Attrition	1.00%	1.00%

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.

The contribution expected to be made by the Board during FY 2022-23 has not been ascertained.

6 Disclosure of related party and Transactions with them for the year ended 31st March, 2022 as per Accounting Standard 18

a) Related Party and their relationship

1) Wholly owned subsidiaries

IDMC Limited
 Indian Immunologicals Limited
 Mother Dairy Fruit and Vegetable Private Limited
 NDDB Dairy Services
 Pristine Biologicals (NZ) Limited (wholly owned subsidiary of Indian Immunologicals Limited)

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

The West Assam Milk Producers' Co-operative Union Ltd.
 Animal Breeding Research Organisation (India)
 Anandalaya Education society
 Jharkhand State Cooperative Milk Producers' Federation Ltd.
 Shahjahanpur Mahila Dugdh Utpadak Sahakari Sangh Ltd.
 NDDB Foundation for Nutrition
 Varanasi Dugdh Utpadak Sahakari Sangh Ltd.

3) Key management personnel

Mr. Meenesh Shah Executive Director w.e.f. 02nd May 2019
 Mr. Meenesh Shah Chariman w.e.f 24th June 2021

NATIONAL DAIRY DEVELOPMENT BOARD ("NDDDB" or "the Board")

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

b) Transactions with related parties

(figures in italic represent previous year figures)

Particulars	Interest Income	Purchase of Fixed Assets	Dividend	Rent (Income)	Other income	Grant	Other Expenditure	Current Account Balance outstanding Dr/(Cr)	Loan repaid / Adjusted			Loan Balance outstanding Dr/(Cr)
									Principal	Interest	Disbursed	
Subsidiary Companies												
IDMC Limited	27.59	-	24.29	0.70	0.12	-	3.36	0.03	93.67	6.25	27.59	374.27
	<i>35.03</i>	-	<i>24.29</i>	<i>0.59</i>	<i>0.11</i>	-	<i>0.04</i>	<i>0.05</i>	<i>71.98</i>	<i>11.96</i>	<i>35.03</i>	<i>461.69</i>
Indian Immunologicals Limited	54.51	-	36.00	27.16	0.38	-	3.45	(0.87)	323.32	382.18	54.51	893.28
	<i>67.23</i>	-	<i>36.00</i>	<i>26.65</i>	<i>0.17</i>	-	<i>5.20</i>	<i>5.28</i>	<i>812.75</i>	<i>581.45</i>	<i>67.23</i>	<i>834.41</i>
Mother Dairy Fruit and Vegetable Private Limited	4.71	-	250.00	123.08	3.19	-	-	28.79	504.71	504.71	4.71	-
	<i>140.91</i>	-	-	<i>125.46</i>	<i>3.18</i>	-	-	<i>44.20</i>	<i>4,640.91</i>	<i>1,140.91</i>	<i>140.91</i>	-
NDDDB Dairy Services	-	-	-	6.80	2.14	-	-	1.48	55.40	-	-	473.70
	-	-	-	<i>4.42</i>	<i>0.55</i>	-	-	<i>0.19</i>	<i>40.50</i>	-	-	<i>529.10</i>
Total	86.81	-	310.29	157.74	5.83	-	6.81	29.43	977.10	893.14	86.81	1,741.25
	<i>243.17</i>	-	<i>60.29</i>	<i>157.12</i>	<i>4.01</i>	-	<i>5.24</i>	<i>49.72</i>	<i>5,566.14</i>	<i>1,734.32</i>	<i>243.17</i>	<i>1,825.20</i>
Other Enterprises where management has significant influence over the management												
The West Assam Milk Producers' Co-operative Union Ltd.	0.96	-	-	0.30	1.78	-	0.19	(3.99)	2.14	16.39	0.96	30.77
	<i>1.07</i>	-	-	<i>0.07</i>	<i>0.51</i>	-	<i>0.10</i>	<i>0.45</i>	<i>48.22</i>	<i>42.81</i>	<i>1.07</i>	<i>16.52</i>
Animal Breeding Research Organisation	3.76	-	-	-	3.46	-	-	14.71	23.11	3.76	3.76	45.64
	<i>3.85</i>	-	-	-	<i>3.50</i>	-	-	<i>13.15</i>	<i>8.85</i>	<i>18.85</i>	<i>3.85</i>	<i>65.00</i>
Anandalaya Education Society	-	-	-	(0.88)	-	-	0.04	0.08	-	-	-	-
	-	-	-	<i>0.92</i>	-	-	<i>0.02</i>	<i>0.16</i>	-	-	-	-
Jharkhand State Cooperative Milk Producers' Federation Ltd.	-	-	-	0.09	0.86	-	-	0.83	-	-	-	-
	-	-	-	-	<i>0.13</i>	-	-	<i>(0.07)</i>	-	-	-	-
Varanasi Dugdh Utpadak Sahakari Sangh Ltd.	-	-	-	-	-	-	-	-	49.57	49.57	-	49.57
	-	-	-	-	-	-	-	-	-	-	-	-
Total	4.72	-	-	(0.49)	6.10	-	0.23	11.63	25.25	69.72	4.72	125.98
	<i>4.92</i>	-	-	<i>0.99</i>	<i>4.14</i>	-	<i>0.12</i>	<i>13.69</i>	<i>57.07</i>	<i>61.66</i>	<i>4.92</i>	<i>81.52</i>

₹ in million

₹ in million

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

Remuneration to key management personnel

	₹ in million
Mr. Meenesh Shah	5.67
	<u>4.66</u>
Total	5.67
	<u>4.66</u>

7 Disclosure as per Accounting Standard 19 – ‘Leases’ (Refer Annexure VIII):

Operating lease arrangements entered into by the Board as a Lessor for following assets:

a) Nature of Assets leased

Class of Asset	₹ in million		
	Gross value of assets as at 31st March, 2022	Depreciation for the year	Accumulated Depreciation as at 31st March, 2022
Buildings and Roads#	1633.00	42.57	1035.54
	<i>1629.79</i>	<i>42.92</i>	<i>990.22</i>
Electrical Installations#	30.86	1.00	27.13
	<i>30.86</i>	<i>1.00</i>	<i>26.12</i>
Furniture, fixtures, computers, and office equipment	8.88	0.00	8.88
	<i>7.92</i>	<i>0.10</i>	<i>7.92</i>
Rail Milk Tankers	345.49	16.55	242.30
	<i>348.45</i>	<i>16.89</i>	<i>226.45</i>
Total	2018.23	60.12	1313.85
	<i>2017.02</i>	<i>60.91</i>	<i>1250.71</i>

including staff quarters and cold storage
(Figures in italics represent previous year figures)

These arrangements are cancellable with prior notice to the lessee.

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.

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

8 Deferred tax assets have been recognised as per Accounting Standard 22–‘Accounting for Taxes on Income’. Details are as under:

₹ in million

Particulars	Opening Balance as at 1st April, 2021	Adjustment during the year	Closing Balances at 31st March, 2022
Deferred Tax Assets /(Liability):			
Depreciation	(22.69)	5.69	(17.00)
	<i>(19.84)</i>	<i>(2.85)</i>	<i>(22.69)</i>
Expenditure allowable on payment basis	133.03	18.54	151.57
	<i>152.95</i>	<i>(19.93)</i>	<i>133.02</i>
Gratuity	9.47	0.81	10.28
	<i>7.85</i>	<i>1.62</i>	<i>9.47</i>
Voluntary Retirement Scheme	0.01	0.00	0.01
	<i>0.33</i>	<i>(0.32)</i>	<i>0.01</i>
Special Reserve	(393.18)	(8.08)	(401.26)
	<i>(376.68)</i>	<i>(16.49)</i>	<i>(393.17)</i>
TOTAL	(273.36)	16.96	(256.40)
	<i>(235.39)</i>	<i>(37.97)</i>	<i>(273.36)</i>

(Figures in italic represent previous year figures)

Note:

In line with Reserve Bank of India's (RBI's) Circular No. RBI/2013-14/412 DBOD.No.BP.BC.77/21.04.018/2013-14 dated 20 December 2013, the Board has created Deferred Tax Liability on the Special Reserve under section 36(1) (viii) of the Income Tax Act, 1961.

9 Disclosure as per Accounting Standard 29 – ‘Provisions, Contingent Liabilities and Contingent Assets’ is as follows:

₹ in million

Particulars	Non-Performing Asset (NPA)	General Contingency on Standard Assets	Contingency
Opening balance	1,006.13	54.30	1,055.81
	<i>1,039.59</i>	<i>90.58</i>	<i>736.07</i>
Created during the year from contingency	0.45	-	2.06
	<i>0.34</i>	-	<i>35.94</i>
Created during the year for contingency	-	-	250.00
	-	-	<i>250.00</i>
Reversed/movement during the year	(190.00)	(2.51)	190.00
	<i>(33.80)</i>	<i>(36.28)</i>	<i>33.80</i>
Closing balance	816.58	51.79	1,497.87
	<i>1,006.13</i>	<i>54.30</i>	<i>1,055.81</i>

(Figures in italic represent previous year figures)

Notes to Accounts forming part of the Financial Statement

ANNEXURE XVI

- 10** Based on the information available with board as on 31st March 2022, there were outstanding of ₹ 13.92 million (Previous Year: ₹ 30.07 million) and no overdue to the entities that are classified as Micro and Small Enterprises under the Micro, Small and Medium Enterprises Development Act, 2006.
- 11** Interest includes ₹ 811.86 million (Previous Year ₹ 1,232.97 million) from Loans & Advances and ₹ 1,249.95 million (Previous year ₹ 932.00 million) from long term Investment.
- 12** All dividends are from long-term investments.
- 13** The figures of the previous year have been regrouped/re-arranged wherever necessary.

In terms of our report of even date attached

For KKC & Associates LLP

Chartered Accountants
(formerly Khimji Kunverji & Co LLP)
Firm's Reg No. 105146W/W-100621

For and on behalf of the Board,

Hasmukh B Dedhia

Partner
Membership No. 033494

Meenesh C Shah

Chairman & Executive
Director

S Regupathi

SGM (CF&P)

Amit Goel

Deputy Group Head
(Accounts)

Place: Mumbai

Date: 04 August 2022

Place: Anand

Date: 04 August 2022

NDDB Officers



Head Office, Anand

Chairman & Executive Director

Meenesh C Shah

B Sc (DT), PGDRDM

Chairman's Office

T V Balasubramanyam

SR MGR, B Com, LLB (Gen)

Rajesh Kumar

SR MGR, B A (Eco), PGDRM

Executive Director's Office

V K Ladhani

DY GEN MGR, M Com, SAS (Comm),
ICWA (Inter)

Nikit Bansal

MGR, B Com, CA

Coordination Cell – Government Schemes (CC-GS)

Naveen Kumar

SR MGR, M Sc (Env Sc), M Tech (Env
Sc & Engg), M Sc (Env Mod & Mgmt),
PGDMX-R

Hemali Bharti

MGR, B E (Power Elect.),
MBA (Fin)

Chandrashekhar K Dakhole

MGR, BVSc & AH, MVSc (AN),
PGDM (RM-X)

Innovation & Project Management (IPM) Cell

Niranjan M Karade

SR MGR, B E (Mech), PGDRM

Sandeep Bharti

MGR, B Sc, PGDDM

Mukesh R Patel

MGR, B Sc, M Sc (Agri)

Rajesh Singh

MGR, BCA, PGDM (Mktg & Fin)

K B Pratap

MGR, BIBF (Int Business), PGDDM

Vinay A Patel

MGR, B Tech (Biomed),
MBA (Mktg)

Bhimashankar Shetkar

MGR, B E (Prod), PGDRDM

Prakashkumar A Panchal

MGR, B Tech (DT),
M Sc (ICT-ARD)

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

Rajesh Nair

Director, B Sc, M Sc (Analy Chem),
Ph D (Chem)

Rajiv Chawla

SR SCI, B Sc, M Sc (Anim Nutn),
Ph D (Anim Nutn), MBA (Mktg)

S K Gupta

SCI III, M Sc (Agri)

Swagatika Mishra

SCI II, B Sc (Bot), M Sc (Micro)

Darsh K Worah

MGR, B Sc (Micro),
M Sc (Env Sci), Cert GIS,
PGDM (RM-X)

R P Dodamani

MGR, B Com, LLB

Amol S Khade

SCI II, BVSc & AH, MVSc (Animal
Gen & Breeding)

Dnyaneshwar R Shinde

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

Hriday B Darji

SCI I, B Tech (DT),
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MGR, BVSc & AH, MVSc (AN)

Abbreviations

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

Glossary



AI

- Artificial Insemination

AMR

- Antimicrobial Resistance

APART

- Assam Agribusiness and Rural Transformation Project

ARIAS

- The Assam Rural Infrastructure and Agricultural Services Society

BB

- Bovine Brucellosis

BCP

- Brucellosis Control Programme

BDV

- Bovine Viral Diarrhoea

BGC

- Bovine Genital Campylobacteriosis

BIS

- Bureau of Indian Standards

BMC

- Bulk Milk Cooler

CAC

- Codex Alimentarius Committee

CCBF

- Central Cattle Breeding Farms

CFSP&TI

- Central Frozen Semen Production and Training Institute

CMT

- California Mastitis Test

CRP

- Calf Rearing Programme

CST

- Concentrated Solar Thermal

DAHD

- Department of Animal Husbandry and Dairying

DCS

- Dairy Cooperative Society

DIDF

- Dairy Infrastructure Development Fund

DPMCU

- Data Processor based Milk Collection Units

DPR

- Detailed Project Report

EAP

- Equity Action Plan

EFS

- Extended Frozen Semen

EIAs

- End Implementing Agencies

EIC

- Exports Inspection Council

ESAP

- Environment and Social Action Plan

EVM

- Ethno-Veterinary Medicine

eWG

- e-Working Group

FMD

- Foot and Mouth Disease

FMD-CP

- Foot and Mouth Disease Control Programme

FSSAI

- Food Safety and Standards Authority of India

FoPL

- Front-of-Pack Labelling

FSSAI

- Food Safety and Standards Authority of India

GEBV

- genomic estimated breeding values

GoI

- Government of India

GoM

- Government of Maharashtra

HACCP

- Hazard Analysis Critical Control Point

HGM

- High Genetic Merit

IBR

- Infectious Bovine Rhinotracheitis

ICAR

- Indian Council of Agricultural Research

IDA

- International Development Association

i-DIS

- Internet Based Dairy Information System

IFCN

- International Farm Comparison Network

ILC

- Inter Laboratory Comparisons

INAPH

- Information Network for Animal Productivity and Health

IRMA

- Institute of Rural Management, Anand

IVEP

- In Vitro Embryo Production

JMF

- Jharkhand Milk Federation

Kg

- Kilogram

LCP

- Least Cost Formulation

LKGPD

- Lakh Kilograms Per Day

LLPD

- Lakh Litres Per Day

LRP

- Local Resource Person

MAFSU

- Maharashtra Animal & Fishery Sciences University

MAITs

- Mobile AI Technicians

MCPP

- Mastitis Control Popularisation Project

MDFVPL

- Mother Dairy Fruit & Vegetable Pvt. Ltd.

MPC

- Milk Producer Company

MSP

- Minimum Standard Protocol

MTC

- Micro Training Centres

MTPD

- Metric Tonne Per Day

NADCP

- National Animal Disease Control Programme

NCC

- National Codex Committee

NCDFI

- National Cooperative Dairy Federation of India Ltd

NDP I

- National Dairy Plan 1

NFN

- NDDDB Foundation for Nutrition

NPDD

- National Programme for Dairy Development

NRLM

- National Rural Livelihoods Mission

NSC

- National Steering Committee

OPU

- Ovum Pick-up

PC

- Producer Company

PIP

- Project Implementation Plan

POI

- Producer Owned Institution

PS

- Pedigree Selection

PT

- Progeny Testing

RBP

- Ration Balancing Programme

RGM

- Rashtriya Gokul Mission

RSFP&D

- Regional Stations for Forage Production and Demonstration

SCC

- somatic cell counts

SCM

- Sub-clinical Mastitis

SMP

- Skimmed Milk Powder

SNT

- Serum Neutralisation Test

SOPs

- Standard Operating Procedures

SPCC

- Spill Prevention, Control and Countermeasure

SS

- Semen Stations

SDGs

- Sustainable Development Goals

TLPD

- Thousand Litres per Day

TMR

- Total Mixed Ration

ToT

- Training of Trainers

VBMPS

- Village Based Milk Procurement Systems

VMDDP

- Vidarbha Marathwada Dairy Development Project

WAMUL

- West Assam Milk Producers' Cooperative Union Limited

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 - Government of India, especially the Department of Animal Husbandry, Dairying & Fisheries, Ministry of Fisheries Animal Husbandry & Dairying, Ministry of Agriculture and Farmers' Welfare, Ministry of Cooperation, Ministry of Rural Development, Ministry of Finance, Ministry of Health and Family Welfare, Ministry of Chemicals & Fertilizers, Ministry of JalShakti, Ministry of New and Renewable Energy and the Niti Aayog
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