



50th Dairy Industry Conference

– A Brief Report

50th Dairy Industry Conference (DIC), the Golden Jubilee Edition, organized in Hyderabad after 35 years, brought together industry professionals to discuss global dairy trends, farm innovations, sustainability within the sector, climate change, nutrition, and health with the objective of making India a hub of dairy innovations and solutions. Over 2000 national and international dairy leaders, experts, farmers, processors and producers attended two Memorial Lectures, two Farmers' Sessions, a CEOs' Session, Industry presentations and 12 technical sessions including sessions for young professionals and lead talks. The concurrent Dairy Expo was one of the biggest in recent times spread over 11000 sq mts in 3 exhibition halls in which about 210 business firms showcased their manufacturing and service capabilities. In addition to the delegates, an estimated 5000 trade visitors visited the stalls to know the latest developments and innovations in the farm and processing technologies.

The 50th Dairy Industry Conference, the Golden Jubilee Edition, was organized at Hitex Exhibition Center, Hyderabad, Telangana during March 4-5-6, 2024. The city of Hyderabad witnessed the Conference after 35 long years, the previous one being the 23rd edition in the year 1989. The theme of the 50th DIC was "**Indian Dairying: Innovation and Entrepreneurship**".

Nearly 2000 delegates comprising of Professionals, Experts, Administrators, Researchers, Farmers and

Students from over 30 countries attended the Conference. The concurrent Dairy Expo was one of the biggest in recent times spread over 11000 sq mts in 3 exhibition halls in which about 210 business firms showcased their manufacturing and service capabilities. In addition to the delegates, an estimated 5000 trade visitors visited the stalls to know the latest developments and innovations in the farm and processing technologies.

The preparations for the DIC started almost a year back



Dignitaries at the Inaugural dais after Lighting the Ceremonial Lamp (L to R): Dr. Dheer Singh, Director & Vice Chancellor, National Dairy Research Institute, Karnal; Smt. Chittem Lakshmi, Managing Director, TS Dairy Development Cooperative Federation Ltd.; Dr. R.S. Sodhi, President, IDA; Dr. Meenesh Shah, Chairman, NDDB; Shri C.P. Charles, Secretary General, 50th DIC; Dr. S. Subash, Secretary, IDA (SZ); Hon'ble Dy. Chief Minister Telangana Shri Mallu Bhatti Vikramarka; Hon'ble Agriculture Minister, Telangana Shri Tummala Nageshwara Rao; Shri B.V.K. Reddy, CEO, Dodla Dairy; Mr. Piercristiano Brazzale, President, International Dairy Federation; Shri Ch. Rajeshwar Rao, Chairman, Karimnagar Milk Producer Company Ltd. and Chairman, Telangana Local Chapter of IDA; and Shri Adhar Sinha, Special Chief Secretary - Animal Husbandry, Dairy Development and Fisheries, Telangana.



Hon'ble Agriculture Minister, Telangana, Shri Tummala Nageswara Rao released the **Coffee Table Book** titled "**Dairy Industry Conferences in Retrospective**"

with a core team to plan and execute the program. The stakeholders' sensitization was undertaken through a series of teaser video clippings and two curtain raiser programs organized at Bengaluru and Hyderabad, which made the beginning of this mega event.

The Chief Guest, Hon'ble Deputy Chief Minister, Government Telangana, Shri Mallu Bhatti Vikramarka inaugurated the 50th Dairy Industry Conference in the presence of the Hon'ble Agriculture Minister and Cooperation, Shri Tummala Nageswara Rao. The other dignitaries present on the dais were Mr. Piercristiano Brazzale, President, International Dairy Federation (IDF), Belgium; Dr. Meenesh Shah, Chairman, National Dairy Development Board (NDDDB), Anand; Dr. Dheer Singh, Director and Vice-Chancellor, ICAR-NDRI Deemed University, Karnal; Shri Adhar Sinha, IAS, Special Chief Secretary, Department of Animal Husbandry and Fisheries, Government of Telangana; Smt. Chittem Lakshmi, IAS, Managing Director, Telangana State Dairy Development Corporation, Hyderabad; Dr. R.S. Sodhi, President, Indian Dairy Association; Dr. Satish Kulkarni, Chairman, IDA (South Zone); Shri C.P. Charles, the Secretary General, 50th Dairy Industry Conference; Dr. S. Subash, Secretary, IDA (South Zone); and Shri Ch. Rajeshwara Rao, Chairman, IDA Telangana Chapter. Dr. Meenesh Shah, Chairman, NDDDB delivered the Keynote address.

50th DIC Dairy Expo was inaugurated by the Hon'ble Agriculture Minister, Telangana, Shri Tummala Nageswara Rao.

Dr. Satish Kulkarni rendered the welcome address and Shri Charles briefed about the 50th Dairy Industry Conference. Hon'ble Deputy Chief Minister, Shri Mallu Bhatti Vikramarka released the **Souvenir** of the

Conference and addressed the audience. Hon'ble Agriculture Minister, Shri Tummala Nageswara Rao released the **Coffee Table Book** titled "**Dairy Industry Conferences in Retrospective**" and addressed the audience. A Special Postal Cover of the Department of Posts, Government of India was released by Dr. Meenesh Shah and Dr. Dheer Singh on the occasion. Mr. Piercristiano Brazzale, President, IDF, Belgium; Dr. Dheer Singh, Director and Vice-Chancellor, ICAR-NDRI Deemed University and Shri Ch. Rajeshwara Rao, Chairman, IDA Telangana Chapter addressed the audience during the inaugural session.

In the Platinum Jubilee year of the Association, "**The Life Time Achievement Award**" was introduced and Shri R.G. Chandramogan, Chairman, Hatsun Agro Product Limited was the recipient of this maiden award. Various other awards namely - the Patronship and Fellowship, and the Best Women Dairy Farmers were conferred on the selected professionals/farmers. Dr. S. Subash, Secretary, IDA (SZ) delivered vote of thanks.

The two oration lectures in memory of Dr. Verghese Kurien and Prof. M.R. Srinivasan were delivered, after the inaugural programme. The World Food Prize recipient Dr. Prof. Rattan Lal, Director, CFAES Rattan Lal Centre for Carbon Management and Sequestration, Columbus, USA, delivered Dr. Verghese Kurien Memorial Lecture online on "**Reducing emissions and sequestering Carbon in India's dairy Farms**" while Dr. R.P. Aneja, Professor Emeritus, Sri Sathya Sai University, Puttaparthi, Andhra Pradesh, respectively delivered Professor M.R. Srinivasan Memorial Lecture on the topic "**Innovations in Processing and Marketing of Milk and Milk Products**". Dr. R.S. Sodhi, President, Indian Dairy Association, declared the Poster Session open.



Post-lunch session on the first day, two Farmers' sessions and an Industrial session were held. This was followed by CEO's Panel discussion, which witnessed deliberation of important discussion by some of the industry leaders. There was a Cultural evening depicting the various dance forms of the Telangana State and a National Dance show. This was followed by a gala dinner in the venue.

The second and third days of the Conference focused on technical sessions. Each session comprised of 3-4 speakers moderated by a Chairman and Co-Chairman. The technical sessions are summarized separately along with the recommendations emerging from the discussions.

On the second day evening, a Conclave of Southern State Dairy Ministers was organized and it was addressed by Thiru T. Mano Thangaraj, Minister of Animal Husbandry, Dairy and Fisheries, Government of Tamil Nadu and Shri Ponnala Lakshmaiah, Former IT Minister, the then Unified Andhra Pradesh; and the address of Smt. J Chinchu Rani, Minister for Dairying and Animal Husbandry, Government of Kerala was read by Shri Prem Lal, General Manager, Calicut Dairy, Kerala. During this session, on behalf of IDA, rapporteur thanked all the sponsors and felicitated them with mementos.

The Plenary Session was held on the afternoon of March 6, 2024. The Hon'ble Chief Minister of the State of Telangana Shri Anumula Revantha Reddy sent his address to IDA wherein he emphasized the role of dairying in the Indian economy and the priority and support extended to the farmers of Telangana by the Government. Shri M. Vijaya Bhaskar Reddy, Chairman, Food Committee read the message of the Hon'ble Chief Minister.

Dr. A.K. Srivastava, Vice-Chancellor, Uttar Pradesh Pandit Deen Dayal Upadhyaya Pashu Chikista Vigyan Vishwavidyalaya Evam Go-Anusandhan Sanstah, Mathura, Uttar Pradesh, Chaired the Session and addressed on the role of milk in the nutrition and health of humans in general and children in particular. Dr. Y. Haragopal, Chief General Manager, NABARD, Hyderabad, the Guest of Honor, briefed the activities of the NABARD for dairy development. Dr. Surendra Nath Battula, Chairman, Technical Programme Committee summarized the salient points and recommendations emerged out of the Conference. During the Plenary Session, prizes were distributed to the authors of best papers published in *Indian Dairyman* and *Indian Journal of Dairy Science*. Awards for the best posters presented during the Conference were also distributed. For the

first time, a "Dairy Quiz" competition for the student volunteers was held during the conference and the winners were felicitated.

On behalf of IDA (South Zone) and Telangana Local Chapter, Shri C.P. Charles, Secretary General, 50th DIC thanked all the Committees for their valuable work, which helped in the success of the 50th DIC. He specifically thanked all the Sponsors, Hitex Management, VA Exhibitors, Meety Event Managers, and the caterers for extending all support for successfully organizing the Conference. Outstanding Support from Dodla Dairy and services of Shri B.V.K. Reddy, Shri K. Balakrishna Reddy, Dr. Sai Srinivas, Shri Sai Kiran and Shri M. Vijaya Bhaskar Reddy were highly appreciated.

During the four Poster Sessions, a total 87 papers were presented. Out of the 87 poster papers, 10 were given prizes for the best posters under different categories.

The excerpts of the addresses of the dignitaries are as follows:

SHRI MALLU BHATTI VIKRAMARKA

Hon'ble Deputy Chief Minister of Govt. of Telangana



Hon'ble Deputy Chief Minister of Government Telangana, Shri Mallu Bhatti Vikramarka inaugurated the 50th DIC as Chief Guest. In his address, he emphasized the role of women in the dairy economy and pointed out that the current Telangana Government under the leadership of Chief Minister Revanta Reddy is committed to supporting the growth of

the Dairy Economy with appropriate schemes. He took the opportunity to mention various schemes of the State Government for the economic uplift of farmers.

Hon'ble Deputy Chief Minister said that we should continue to convert unorganized dairy sector into organized one so that the entire dairy sector remain viable at the same time, it can compete with other nations.

He fondly remembered the contributions of the former Prime Ministers Lal Bahadur Shastri and Indira Gandhi. He recalled the role of Dr. V. Kurien - the Milkman of India in implementation of the White Revolution and remembered him with gratitude.

SHRI TUMMALA NAGESWARA RAO

Hon'ble Agriculture Minister, Govt. of Telangana



Hon'ble Agriculture Minister, Shri Tummala Nageshwara Rao declared the Dairy Expo open and visited the various stalls at the Expo. He emphasized the importance of the Dairy Economy in supporting the overall Agriculture Economy and the flow of daily cash to the dairy farmers of the country.

DR. SATISH KULKARNI
Chairman, IDA (South Zone)



Dr. Satish Kulkarni, Chairman, IDA (South Zone) welcomed all for participating in the Golden Jubilee 50th Dairy Industry Conference (DIC) at Hyderabad. He appreciated the Chief Guest Hon'ble Dy Chief Minister Telangana Shri Mallu Bhatti Vikramaraka who agreed to inaugurate the 50th DIC in a very short notice. Dr. Kulkarni also welcomed the

Hon'ble Agriculture Minister, Telangana Sri. Tummala Nageshwara Rao for agreeing to inaugurate the Dairy Exhibition of the event.

Dr. Kulkarni informed the august gathering that this is the 4th time, IDA is organizing DIC in Hyderabad City. Last time, it was held in 1989. In these 35 years, the milk production has increased 4 and half times.

The first DIC was held in 1964 in Bangalore under the Presidentship of the Father of the White Revolution - Dr. V. Kurien. IDA was Indian Dairy Science Association during that time. Dr. Kulkarni shared an interesting statistic with the august gathering that from 1964 to 2024, milk production has increased 14 and half times. A portray of Dr. Kurien was also placed on the dais just to pay tribute and remember him on this auspicious occasion. He further said that the Conference will have 3-days pleasant time with lots of newer ideas and innovations emerging from this event.

DR. R.S. SODHI
President, Indian Dairy Association

Hon'ble Dy. Chief Minister Telangana Shri Mallu Bhatti Vikramaraka; Hon'ble Agriculture Minister Shri Tummala Nageshwara Rao; Dr. Meenesh Shah, Chairman, NDDDB; Mr. Piercristiano Brazzale, President, International Dairy Federation; Dr. Dheer Singh, Director and Vice



Chancellor, National Dairy Research Institute, Karnal; Shri Adhar Sinha, Special Chief Secretary - Animal Husbandry, Dairy Development and Fisheries, Telangana; Smt. Chittem Lakshmi, Managing Director, TS Dairy Development Cooperative Federation Ltd.; Shri C.P. Charles, Secretary General,

50th DIC; Shri Ch. Rajeshwar Rao, Chairman, Karimnagar Milk Producer Company Ltd. and Chairman, Telangana Local Chapter of IDA; My colleagues and Vice Presidents of IDA Shri Ajay Kumar Khosla and Shri Arun Patil and Central Executive Committee (CEC) members of IDA; Dr. R.P. Aneja, former MD, NDDDB and former President of IDA; Shri R.G. Chandramogan, first Lifetime Achievement Awardee of IDA; Board of Directors and MD of all cooperatives and private dairies; milk producers; and Press and Media.

On behalf of CEC of IDA, Dr. Sodhi welcomed all to the 50th DIC. In this Conference we have brought together the whole dairy value chain i.e. milk producers, processors, packaging units, dairy equipment and milk testing manufacturers, marketers, academician, scientists, veterinary science doctors, etc.

He congratulated all the awardees of IDA awards to be presented during the Conference. He thanked the IDA (SZ) and especially the Telangana Local Chapter for organizing this Conference in Hyderabad after 35 years. He informed the participants that 35 years ago in 1989 the per capita milk availability was 164 gm per person only and now it is around 460 gm.

He thanked milk producers of country for making India the highest milk producing country in the world. Nowadays, we are contributing 24% of the world milk production. But you go by milk solids as buffalo milk has 25% more milk solids, we need to add 5% more towards our contribution in world milk production. So overall, the country is contributing 29% or one-third of world milk production. As per the latest data five southern states of India is contributing more than 56% towards poultry industry. We expect the contribution of these states will increasing towards milk production also.

As per the latest data released by Animal Husbandry Department, Govt. of India total Gross Value of dairy sector is 14 lakh crores. Out of it, 10 lakh crores are the milk, 3 lakh crores are the feed and 1 lakh crore is the dung value (bio-fertilizer). So, the volume says that dairy the biggest industry in India.



According to the NSSO latest data of monthly consumption of household in India, food is more than 46% and out of food, spending on milk is the highest. The data says that on an average expenditure on milk is Rs. 375 per month per person. It is highest than any other category of spending. Credit for this goes to milk producers, processors and whole value chain.

Milk and feed prices have remained stable in the last one year. However, the worry part is that the milk procurement prices paid to the farmers in some parts of the North, West and Eastern India is Rs. 4-8 lower than the last year. We must appreciate that the southern states have paid more or less same prices to their farmers, this year too.

International prices of dairy products are going up by 30% in the last 7 months which is a good sign. Keeping in view the growth in population and prosperity of the country, the future of the dairy sector in India is secured. Govt. of India is more concerned about dairy sector and that's why more allocations have been made for the development of dairy sector. Recently Bharat Pashudhan App has launched to integrate dairy animals. It will empower the farmers to be able to access all free and paid livestock related schemes/services.

In the next 7 years, Dr. Sodhi is expecting an investment in dairy processing to the tune of Rs. 60,000 crores; Rs. 40,000 crores in the backward integration i.e. milk collection areas and another Rs. 60,000 crores investment in the new animals. So, a total of Rs. 1.6 lakh crores investment is expected which will generate 72 lakhs new jobs in the country.

We have a big challenges namely, mindset of policy makers, media and average consumers. When the milk prices are increased, normally people report it as inflation and nobody says that it's an increase in the income of milk producers. So we accept that it not inflation but food prosperity. The other important point is that we should try to reduce the cost of processing per kg while maintaining quality of the milk and milk products which will attract interest of the consumers. We need to increase the milk yield per animal by using innovation and improving breed quality and feeding. NDDDB and Govt. of India has taken many steps in this direction. Fake products are also a challenge for us. Recently, a case McDonald using artificial cheese in the name of dairy cheese while preparing pizza was caught by FSSAI. We must be happy that Govt. of India has supported the dairy farmers by not allowing the cheap import of dairy products in the country. Recently, in a meeting of WTO, Govt. has opposed the dumping of imported dairy products in India.

Finally, I humbly request to the industry to reduce the gap between consumer price and price paid to the dairy farmers. We must ensure that at least 70-75% of consumer price should go to the milk producers.

We must always remember that "No farmer, No Food and No Future for the dairy industry".

DR. MEENESH SHAH
Chairman, NDDDB



Dr. Meenesh Shah, Chairman, NDDDB, in his Keynote address listed various innovative approaches being initiated to improve the efficiency in the supply chain. He emphasized the steps being initiated to mitigate the negative impact on the environment due to the dairy development and the strategies to be adopted to grow without any deleterious effects on the environment. Full text of his Keynote address is being published in this issue vide page no. 42-48.

MR. PIERCRISTIANO BRAZZALE
President, International Dairy Federation



Mr. Piercristiano Brazzale, IDF President thanked the Indian Dairy Association for providing the opportunity to address during the inaugural session of 50th DIC. He recalled the successfully organizing the IDF World Dairy Summit 2022 in the National Capital Region of India. He also remembered the outstanding performance of Indian Dairy in the IDF

Dairy Innovation Awards 2022, winning 7 of the 12 categories, including new product and school milk programs. The IDF Dairy Innovation Awards 2023 under the category "Innovation in Women Empowerment in the dairy sector" was also won by an Indian SHG - Shreeja Milk. Mr. Brazzale invited the august gathering to join the First IDF Regional Dairy Conference Asia Pacific 2024, scheduled to take place during June 12-14, 2024 at Kochi, Kerala with a theme on Innovation of the dairy sector with a focus on farmers. Experts from FAO, IDF and other international organizations will deliberate in the Conference.



DR. DHEER SINGH

Director & Vice Chancellor, NDRI, Karnal



Dr. Dheer Singh, Director & Vice Chancellor of the National Dairy Research Institute (NDRI), Karnal, listed the contribution of NDRI through its 100-year journey and appropriate technologies being developed at the Institute. He also said that 70% of dairy farmer are small and marginal having 3-4 animals.

SHRI C.P. CHARLES

Secretary General, 50th DIC



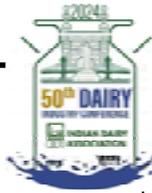
Welcoming the august gathering, dignitaries on the dais and off the dais, Students, Press and Media, Shri C.P. Charles, Secretary General, 50th DIC said that in 1989, IDA had organized DIC in Telangana with a gathering of 500 delegates only. Today our registration has crossed over 1700. Telangana Local Chapter of IDA was

formed in 2023. This is the first assignment for Telangana Local Chapter and I appreciate the courage and enthusiasm of the Chapter.

I appreciate the Shri B.V.K. Reddy, CEO, Dodla Dairy and CEC Member of IDA, who is a motive force behind this Conference. He permitted us to open a Conference Secretariat and use Meeting room at Dodla Dairy Corporate Office for all type of internal meeting for 50th

DIC. The Conference has received a record 11 Platinum Sponsors. He thanked Sponsors for their support as Platinum, Gold and Silver sponsors. Sharing the unique features of the Conference, Shri Charles said that we will have farmer sessions other than 12 Technical Sessions during the event. Around 20 women participants are expected to take part in the technical session of the DIC. A Southern State Dairy Ministers Conclave will be held tomorrow wherein State ministers from different southern states of India are expected to share the milk production scenario of their states. A CEO panel discussion will take place which would focus upon the theme of the Conference *i.e.* "**Innovations and Entrepreneurship in Indian Dairying**". Each participant will address as to how their organization is supporting Indian dairying on Innovations and Entrepreneurship. Another feature of this conference is other than Souvenir, a Coffee Table Book will be released which contains information on the series of DICs organized by IDA. The topics of the technical session have been chosen by experts to cover all the aspect of Indian dairying. There are 210 stalls in the exhibition showcasing the equipment and machineries for start-up and grown-up companies. We thank you V A Exhibition for covering no of exhibitors in this Conference. 50th DIC will address your knowledge thrust through various technical sessions. He thanked team 50th DIC for continuous support. He also thanked Dr. Satish Kulkarni and Dr. R.S. Sodhi, President-IDA for their full support in organizing this event. ■





Keynote Address



DR. MEENESH SHAH

**Chairman
National Dairy Development Board, Anand**

It is indeed a matter of great pride that this year's Dairy Industry Conference in Hyderabad also marks the 50th edition of India's biggest annual dairy industry conference. Each edition has surpassed the last, and I must congratulate IDA for achieving this success. I wish that the next 50 editions will be even more remarkable and impressive and the Dairy Industry Conference (DIC) earns the crown of being one of the most coveted dairy industry conferences as India positions itself to become the Dairy to the World.

It gives me immense pleasure to stand before you and have this opportunity to deliver the Keynote Address today on the theme "**Indian Dairying: Innovation & Entrepreneurship**" at the 50th Dairy Industry Conference here in Hyderabad.

I am sure the Indian Dairy Association must have carefully considered many themes for this year's DIC and has chosen a theme that is in complete consonance with current times. It can be argued that innovation drives entrepreneurship and it is equally true that entrepreneurship also fosters innovation. However, the most important aspect of both innovation and entrepreneurship is that both result in solutions to contemporary challenges, which ultimately helps the

sector grow thereby maximising income opportunities for millions of dairy farmers.

While entrepreneurship, innovation and start-ups are buzzwords today, I can confidently say that our dairy farmers have been true entrepreneurs. With the support of qualified professionals and visionary leaders, they established start-ups, in the form of "dairy cooperatives," that have stood the test of time. The defining characteristic of any entrepreneurial venture is the risk that entails the activity and a hope for profits. Is it not true that the farmers are the biggest risk takers with so many factors that are out of their own control impacting directly their activities, produce and income?

Well, we may not be able to imagine today the kind of risks that the dairy farmers took at the dawn of independence to form dairy cooperatives in Anand, Gujarat that gradually spread across the entire nation. The uncertain environment, absence of angel investors meant that their only seed-capital were courage, resolve and absolute determination. Braving all the ups and downs, some of these start-ups have now completed more than 75 years of existence and their success is in no manner less thrilling and less exciting as showcased brilliantly in the highly acclaimed movie "Manthan" in the 1970's by the renowned Director Shyam Benegal.

Through decades of unrelenting perseverance, these farmer led dairy starts-ups have forever transformed the Indian Dairy landscape. Since the promoters of these dairy cooperatives are farmers themselves, along with the sector, it has also led to unprecedented upliftment of the dairy farmer community. This has empowered them financially and socially, particularly our women dairy farmers. Our Founder Chairman, Dr. Verghese Kurien, the visionary leader had once remarked:

"True development is not the development of land, or of cows; it is the development of men and women."

Thus, innovation & entrepreneurship were introduced to the dairy sector way ahead of time. All our endeavours have been undertaken by keeping dairy farmers central to our work and have been enthused with entrepreneurial spirit. If we recall "Operation Flood", launched in 1970, led to socio economic development of dairy farmers by placing control of the resources they created in their own hands. The bedrock of Operation Flood was village milk producers' cooperatives, which procured milk and provided inputs and services, making modern management and technology available to farmer members.

We have always fostered innovation and found innovative solutions to unique challenges that we have faced in Indian dairying from time to time. From



monetizing gifted commodities for funding the White Revolution to making milk powder from buffalo milk for the first time. We have also evolved our methods from transporting milk in rail tankers to transporting milk through trucks on trains today. Our innovations have included introduction of bulk vending machines to pouched milk, BMCs to rapid chillers, the list goes on. I can assure you that we will continue to tread this path to take the sector forward.

It is a remarkable revolution for a country that has over 1.3 billion people to transform from a milk deficit nation to becoming *Aatmanirbhar* and then emerging as the world's largest milk producing nation.

The saga continued and since the turn of the 21st century, the milk production has increased 3-fold in little over 2 decades. Milk production in India has reached 231 million metric tons in 2022-23 and has been growing at an annual growth rate of around 6%, almost triple the World's average growth. Today, India's share is about 25% of global milk production. Similarly, the Per Capita Availability (PCA) of milk has also reached 0 459 grams per day in 2022-23, which is much more than the world average of about 310 grams per day.

As I had said during the last year's DIC that we are at the cusp of a great transformation to become the Dairy to the World and the time is as opportune as ever for India to take its rightful place in the global dairy arena. Before we explore the opportunities that lie ahead, let me elaborate on some unique features of Indian dairying.

UNIQUE FEATURES OF INDIAN DAIRYING

It is widely known that the dairy cooperatives have played a pivotal role in the success of dairying in India since Independence. The Indian dairy cooperatives have been able to establish one of the most efficient supply chains in the world, ensuring that about 75% of consumer rupee goes back to the farmers. This is the highest globally in all milk supply chains and it is also the highest among all other agriculture commodities in India.

The dairy cooperatives have ensured that dairying remains as an attractive and remunerative livelihood option and a profession of choice. They also continue to provide a steady stream of income to our farmers even in these uncertain climatic conditions when there are increasing instances of crop failures due to either excessive or unseasonal rains or droughts or due to unpredictable change in seasonal patterns. The cooperative dairy structures have been built very painstakingly and as a result, their robustness has stood the test of time. In the past 6-7 decades, the impact it had on socio-economic empowerment in the rural milieu can never be overemphasised.

It all started as a struggle to break free from the clutches of manipulative middleman in Kheda, inspired by the freedom movement. Farmers under the leadership of Sardar Patel, Morarji Desai and Tribhuvandas Patel formed the dairy cooperatives. From humble beginnings in 1946, just before the dawn of Independence, collecting about 250 kilograms from 2 villages, it has today become a network of 2.3 lakh societies collecting about 600 Lakh Kilograms in the country every day, all 365 days. In the current fiscal year 2023-24, the milk procurement by dairy cooperatives has touched an all time high of 740 Lakh Kg per day with the efforts of all stakeholders and I am sure such momentum will be maintained in times to come.

Today, the milk produced in the country is valued at Rs. 9.95 lakh crore. It is the largest agricultural produce by value, even surpassing the combined value of cereals, pulses and sugarcane. It contributes 5% to the national economy and provides employment to 8 crore farmers directly, majority of whom are small and marginal farmers, and landless households.

This small-scale dairying model is also the most sustainable as it does not compete with other resources. Milch animals are mostly fed on agricultural by-products and excesses from kitchen. From a nation in milk deficit to the present, the success of this extraordinary transformation can be attributed to the presence of inter alia 3 major factors.

First our dairy farmers and professionals, second resilient institutional structures, and third enabling policy environment provided by successive governments.

Recognizing the importance of the sector, Government of India first created an independent Ministry of Fisheries, Animal Husbandry and Dairying in May 2019 which was followed by creation of another new Ministry of Cooperation in July 2021. The Ministry has appropriately given the call of "*Sahakar se Samridhi*". These steps have greatly helped in bringing the animal husbandry sector and the cooperatives to the centre of national policies which will have multifarious benefits to the sector in the times to come.

The dairy sector has played a pivotal role in strengthening the four pillars identified by the Government which are Youth, Women Power, Farmers and Poor on which the magnificent monument of developed India can rest. All the four pillars have been the cornerstones of our dairy development missions at the grassroots providing livelihood to the youth and empowering dairy farmers especially women. Greater focus, increased budgetary allocations and a well-planned future vision and roadmap will continue to buttress these pillars and make them stronger in times to come.



Further, Hon'ble Finance Minister, in the Interim Budget 2024-25 has announced that a comprehensive programme for supporting dairy farmers will be formulated. This is a welcome step and we will work shoulder to shoulder with the government for betterment of our dairy farmers.

To achieve the vision of *Amrit Kaal* when we celebrate 100 years of Independence in 2047, synergies need to be created between all stakeholders such as milk producers, the dairy cooperatives, the national level institutions, apex bodies, research institutes, academia, private dairies and entrepreneurs. While, in terms of growth in milk production, the other major milk producing centres are experiencing a stagnation due to various reasons, only India has emerged as a bright spot. We have become the engines of growth in milk production in the World today.

Along with being the largest producer, we are also one of the largest and fastest growing dairy markets in the world. Today our dairy market is worth Rs. 15 lakh crore which is likely to more than double to Rs. 36 lakh crore by 2028. Thus, the prospects in the dairy sector today are better than ever before as such rapid developments give us a fantastic opportunity to be an active partner in this growth story. Entrepreneurship and innovation can play a very important role in realising the dream of India becoming the Dairy to the World.

These factors can act as the cogs in the wheels in propelling the dairy sector in India forward by fostering growth, sustainability, and competitiveness. To sustain the pace of dairy development in the country, it is essential that innovations made across the sub-sectors are focussed and converged towards holistic development of the sector. Now, allow me to elaborate on the key areas for carrying out the innovation and promote the entrepreneurial activities.

INNOVATION IN VARIOUS ASPECTS OF DAIRYING

Improving productivity of animals

Keeping in view the challenges associated with our smallholder dairy system, we have to take innovative approaches for successful implementation of scientific programmes and ensure making dairying an efficient and sustainable proposition. It is becoming more and more important to focus on increasing productivity of milch animals.

The efforts like breed improvement, proper feed management and health care will work in tandem to improve productivity and improve quality of milk and milk production over time.

While breeding programmes will help in producing better animals for future, health and nutritional

interventions would help in exploiting full genetic potential of the animals produced.

NDDDB had initiated field Progeny Testing and Pedigree Selection programmes way back in 1985 for a few economically important breeds of cattle and buffaloes. Understanding the importance, these programmes were extended to all major cattle and buffalo breeds under National Dairy Plan I (NDP I) in collaboration with Milk unions, Livestock Development Boards and Trusts, and subsequently continued under Rashtriya Gokul Mission (RGM) scheme of GoI.

Under these projects, scientific performance recording infrastructure was established in the country to facilitate genetic evaluation. As the success of such field based genetic improvement programmes relies on quality of data recorded, several innovative approaches have been adopted like introduction of GPS enabled Smart Weigh Scale (SWS), use of Dairy Survey app and INAPH/Bharat Pashudhan app to ensure capture of quality and accurate data on real time basis under smallholder dairy production system.

Further, to accelerate genetic progress through early selection of animals, NDDDB took proactive steps to implement Genomic Selection in the country by combining performance records captured in the field and DNA level information. In this process, genotyping chips *i.e.* INDUSCHIP and BUFFCHIP have been developed by NDDDB and selection of young bulls based on Genomic Breeding values (GBV) has been initiated for major cattle and buffalo breeds.

In Vitro Fertilization and Embryo Transfer (IVF-ET), a latest assisted reproductive technology is also being used that helps in faster multiplication of elite bovines. One of the major cost components for IVF is imported culture media. To tackle this issue, NDDDB-Indian Immunologicals (III) has developed indigenous culture media for production of IVF embryos at a much cheaper rate, an endeavour dedicated to *Aatmanirbhar Bharat*. Recently, a Kankej female calf was successfully born from an IVF embryo developed using this media.

Another area of innovation in breeding is sex-sorted semen. With mechanization of agriculture, relevance and utility of male bovine is dwindling and is often a liability to the dairy farmer. However, the cost of sexed semen is still high. We have developed an affordable indigenous technology for the sexing of bovine sperm. As a result, it is expected to significantly reduce the cost of sexed semen doses in the country.

Further, in order to promote availability of disease-free high yielding bovines and encourage entrepreneurship among youths, Government of India sanctioned a project

"Breed Multiplication Farms" under RGM scheme. As an outcome of this project, it is expected that in the near future many entrepreneurs will take up this activity across the country which would not only open up earning stream for youths but also make available highly productive genetically superior quality animals to farmers.

Other avenues for entrepreneurship in breeding front are increasing AI coverage by providing services at farmer's doorstep and developing smart devices to monitor various aspects of animals' reproductive cycles. The improved genetic potential of dairy animals resulting from breed improvement programmes needs to be supported by increasing availability of good quality feed and fodder resources, efficient management of fodder resources while nurturing innovations and entrepreneurship.

Scientific animal feeding is critical to compliment the efforts put-in for productivity enhancement of animals. Scientific feeding practices for calves, encompassing prenatal, neo-natal, and postnatal feeding management of young calves and heifers, holds the key to transform the Indian dairy sector further. Silage making has emerged as a viable solution to deal with seasonal and regional variations in green fodder availability. NDDDB has already demonstrated successful small-scale silage model for DCSs and large-scale model for Milk Unions/ Dairy Federations. Recently, NDDDB has successfully demonstrated technology for converting green paddy crop stubbles into silage. This can contribute to reducing air pollution as it avoids crop residue burning as well as it helps in addressing fodder scarcity in the country to some extent.

Another innovative approach to deliver precision nutrition is development of Total Mixed Ration. NDDDB has introduced silage/green fodder-based '*ready-to-eat packed TMR*', offering the potential to deliver the required nutrients and enhance feed efficiency. TMR feeding has yielded promising results, manifesting in an increase in milk yield thereby boosting net daily income.

Also, NDDDB has demonstrated innovative technology for utilisation of empty pea pods for silage making at Jharkhand Milk Federation. It is a vivid example of converting waste to wealth. Apart from this, there is tremendous scope for utilisation of other vegetable and fruit wastes such as tomato pomace, peels of orange and mango. While some unconventional feed items are already being used, others may require treatment or processing before being fed to animals. Effective utilization of these resources would certainly help in augmenting fodder resources in the country. I am sure taking some cues from these innovations, some entrepreneurs will be willing to take-up some of the

activities and scale them up for the benefit of the dairy farmers and the dairy sector along with creating associated employment as well.

Another important area to improve productivity is to undertake the one-health approach. Food security is increasingly gaining traction when animal and animal products are being discussed. Absence of harmful bacteria, antibiotic and other drug residues, hormones and unwanted foreign matter are some of the major concerns that are being raised while discussing the subject.

A cost-effective innovation that can be applied in dairying is the use of ethno veterinary medicine (EVM). EVM provides a simple, cost-effective and efficacious option to the dairy farmers. It also provides an instant management option wherever the availability of veterinary delivery system is limited. The EVM formulations are being popularized by NDDDB for around 30 commonly occurring ailments in bovines. These have been streamlined and validated by Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) and the Transdisciplinary University (TDU).

The potential for organic dairying through use of traditional knowledge systems like EVM is immense. EVM formulations being promoted by NDDDB can also play an important role in reducing drug usage, especially antibiotics, which will in turn help in stalling antimicrobial resistance (AMR) which is a major emerging public health issue. From the business point of view, it would strongly buttress the initiative of organic farming which could fetch premium prices for the products.

Enhancing the share of value-added dairy products

Demand for milk and dairy products in India is rising due to factors like growing urbanization, increase in population, rise in per capita income, changing lifestyle, food habits, health consciousness, export opportunities, etc.

During the last few years, dairy products such as cheese, ice-cream, paneer, flavoured milk, table butter, curd, lassi and butter milk have been showing impressive growth. In volume terms, the average growth rate of major dairy products is ranging between 15-20% per annum. Higher growth is being witnessed in fresh products (*e.g.*, curd, lassi, flavoured milk, and buttermilk) and innovative products (like A2 milk, probiotic products, and organic products). This trend is not only likely to sustain but increase as India climbs the stairs of world economy and soars towards prosperity.

There is an incredible scope in developing innovative dairy-based products targeted for specific groups of consumers such as infants, young children, elderly,



pregnant women, sports persons or geography-specific. Good understanding of the specific requirements of these populations is needed for innovation of such products. Designing products for malnourished children, diabetics or obese needs consideration of their specific health conditions, necessitating special scientific knowledge and technical skills that encompass nutrition as well as health aspects.

Since the value-added products generate higher margin than the liquid milk, both cooperative and organised private sector have to work innovatively towards increasing the share of value-added products that in turn would help in providing remunerative price on a sustainable basis to dairy farmers.

Increasing India's share in World Trade of milk and milk products

Despite India being the largest milk producer in the world, its share in global dairy market is less than 1 percent. To increase India's share in World dairy trade, a time-bound systematic approach needs to be followed to overcome hurdles, mainly Non-Tariff Measures (NTM), unattractive prices, effective overseas marketing strategies and trust deficit between Indian exporters & overseas buyers.

The major factors hindering the growth in the export of milk and milk products are the uncompetitive prices, prevalence of Foot and Mouth Disease (FMD) and other diseases, lack of traceability to cattle level, various Sanitary & Phytosanitary Measures (SPS), Technical Barriers to Trade (TBT) measures in the foreign market, low visibility of domestic products and ineffective marketing practices, etc.

The Government of India has set up a National Cooperative Exports Limited (NCEL) under Multi-State Cooperative Societies (MSCS) Act, 2002 during January 2023. This Society is focusing on exporting the surpluses available in the Indian cooperative sector by accessing wider markets beyond the geographical contours of the country. It will promote exports through various activities including procurement, storage, processing, marketing, branding, labelling, packaging, certification, research and development, etc. and trading of all types of goods and services produced by cooperative societies.

The aim should be to increase India's share in world dairy exports that can be achieved by following systematic and time-bound approach to alleviate the hindering factors of export promotions.

At the same time, two commodities Lactose and Whey & its products, which have origins in milk are imported in huge quantities in India. This is because the cost of domestic production remains high due to lack of

economies of scale. Therefore, with a ready domestic market, it provides unique opportunity to entrepreneurs to work on these two products, scale-up and ramp up domestic productions so that we are not dependent on imports for these two dairy commodities.

Ensuring quality fodder seeds to dairy farmers

Ensuring quality fodder seeds is crucial for dairy farmers, as the production of the fodder with better yield and nutritional quality directly impacts the economics of the dairy farm and health & productivity of dairy animals.

To ensure the availability of quality fodder seeds, the Government of India has also set up a Bharatiya Beej Sahakari Samiti Limited (BBSSL) under Multi-State Cooperative Societies (MSCS) Act, 2002 during January 2023. This society will focus on making available the quality seeds through the network of the village level cooperatives. There could be various innovative strategies where stakeholders can work together to ensure a consistent supply of high-quality fodder seeds to dairy farmers, contributing to the overall health and productivity of dairy animals and the sustainability of the dairy farm.

Use of ICT in Dairying

Technological advancements are expected to shape the future of dairy industry in several ways. Automation and robotics with indigenous approach will have the potential to increase efficiency, reduce labour costs, and improve animal welfare. Technology will also contribute to better animal health monitoring, improved genetics through artificial insemination, and advancements in nutrition. Additionally, the innovative use of block chain technology will enhance traceability and quality control. The use of open source technology such as OpenERP developed by NDDB would substantially reduce the cost of purchasing or procuring the hardware and/or licences and at the same time help in managing the different activities seamlessly. NDDB ERP was awarded first prize in Research and Development Category of "International Dairy Federation Innovation Award 2022" at World Dairy Summit 2022 for being the most innovative product.

NDDB had developed an Information Network for Animal Productivity & Health (INAPH) - to capture real-time data on breeding, nutrition, and health services delivered at farmer's doorstep, for its PT and PS projects. Later INAPH was adopted as a national database by the Government. Recognising the significant role of digital platform and success of INAPH; DAHD, GoI and NDDB are jointly undertaking the development of an end-to-end farmer-centric, technology driven LiveStack ecosystem on the foundation of existing INAPH application through an ambitious programme named as National Digital Livestock Mission (NDLM). The NDLM will



provide unique identification to livestock population linked to farmer identity and will be the foundation for state and national level livestock programmes thus enhancing the traceability of animals and animal products for improved domestic and international trade. It will create a "farmer centric digital eco-system" through which the farmer can directly obtain services such as veterinary care at their doorstep and knowledge to take care of their livestock.

Other applications developed include Automatic Milk Collection System (AMCS) and e-Gopala which are farmer centric and aimed at improving transparency and providing one stop solutions to dairy farmers. Overall, these technological advancements have the potential to revolutionize the dairy industry.

Reducing the environmental footprint of Dairying

Indian dairy industry is taking various measures to reduce its environmental footprint while maintaining high production levels. Improving feed quality and sourcing raw materials with a lower environmental impact needs to be prioritized. Increasing per animal productivity through better feed utilization and good ensiling procedures contributes to a reduced footprint.

Water usage per litre of milk processed needs to be addressed, and initiatives like rainwater harvesting and wastewater utilization for various purposes need to be propagated and adopted on wider scale. Greater awareness and visible outcomes are needed to enhance environmental practices in the dairy sector.

The global dairy industry is committed to become Carbon Neutral by 2050. A holistic approach comprising of genetic improvement, scientific feeding and animal healthcare management, manure value chain, renewable energy and Carbon offsets/sequestration are envisaged to contribute substantially for making Indian dairy sector Carbon Neutral and would complement the efforts of transforming India to a developed country by 2047. Scientific feeding interventions such as Ration Balancing and TMR have shown potential to mitigate methane emission by 10-15 per cent. However, additional reductions in enteric methane would be possible if appropriate methane inhibitors, feed additives are included in cattle feeds and made available to farmers for direct supplementation to animals. In this way, our dairy sector can address one of the largest hotspots of enteric methane in total emissions of the sector.

Efficient Manure management

As the dairy sector in India is classified as smallholder dairying system, innovation in the management of the dung or manure is a critical aspect of sustainable farming practices. Proper handling and utilization of manure is

essential for increasing the farmers' income and at the same time it helps in maintaining soil fertility, reducing environmental impact, and ensuring the overall sustainability of dairy farming.

NDDDB started working on the innovative models for the efficient management of manure by setting up India's first all women manure cooperative. The cooperative has established end-to-end manure value chain wherein women members have small sized biogas plants of 2 cubic metre. The biogas generated from the small plant suffices the cooking energy need of 6-8 family members, who can utilize the slurry in the farm and sell the surplus slurry to manure cooperative for further conversion into value added organic fertilizers. This cluster model with small biogas plant is now popularly known as 'Zakariyapura Model'. The Zakariyapura Model has been considered in the Gobardhan scheme of Govt. of India and already replicated in 11 locations across 9 states nationwide.

Further, to meet the thermal & electrical energy needs of the entire dairy plant for processing of milk, a cow dung based 100 MT per day biogas plant was setup at Varanasi Milk Union which has raw biogas generation capacity of 4,000 cubic metre per day.

This 'Varanasi Model' is one of its kind centralized model wherein on the one hand farmers are getting price of cow dung along with milk, on the other hand the energy requirements of the dairy plant are being met. Additionally, organic fertiliser is being produced which increases the agriculture productivity and also better the soil health. This Varanasi Model not only promotes the use of green energy but also reduces the processing cost which can be easily replicated by other dairies.

To undertake focused work in biogas and biogas slurry based organic fertilizers, NDDDB has established a wholly owned subsidiary company NDDDB Mrida Ltd. in the year 2022.

It is with great pleasure that I would like to inform that NDDDB, Suzuki R&D Centre India Pvt Ltd. (An affiliate of Suzuki Motor Corporation, Japan) and Banas Dairy have started working on four large scale biogas plants with a capacity of 100 MT of dung per day each. Suzuki will be providing the funding support of Rs. 230 crore, Banas Dairy has provided the land and will handle operations while NDDDB will be providing the technical support.

Hopefully, this new and unique partnership between the dairy and auto sector plays an important role for not just to provide affordable mobility but also for showcasing the future of Indian dairying as environment-friendly and sustainable while becoming the "Dairy to the World".



Taking the manure value chain to the next level, NDDDB, Sustain Plus Energy Foundation (a Tata Trust initiative) and Banas Dairy are working on producing hydrogen from dung for which technology has been conceptualized, developed and trials have been already completed successfully. With this technology along with hydrogen, we are also getting the carbon black as another key output.

Further, phased mandatory blending of compressed biogas in compressed natural gas for transportation and piped natural gas for domestic purposes announced in the recent interim budget are a positive move. Taking a focused approach on efficiently managing manure/dung will be key for achieving sustainability in Dairy sector along with making India *Aatmanirbhar* in terms of fuel and fertilizers.

Training and Development

To enhance knowledge and develop entrepreneurial competencies among youth and dairy farmers, a dairy entrepreneurship programme on animal rearing is being offered by NDDDB. It includes academic modules focused on entrepreneurial topics and practical aspects with hands on practices. More than 350 rural youth have benefited from this training till now.

NDDDB is also the nodal agency for conducting training and capacity building for A-HELP (Accredited Agent for Health and Extension of Livestock Production) across India. So far, about 2,700 *Pashusakhis* have undergone A-HELP training across 8 States.

Improving the energy efficiency of the Dairy plants

In India, according to a study, energy costs comprise about 30% of the overall production cost of dairy products. Integration of boilers with concentrated solar thermal system (CST) helps to reduce the overall operating cost. NDDDB has implemented 17 CST projects with a combined capacity of about 208 lakh Kcal/day across the country. Solar Photo Voltaic (PV) is another best-suited option to capture solar energy and convert it to electrical energy. To promote the installation of Solar PV in dairy projects NDDDB has installed 300 KWp capacity of Solar PV System in Bihar, Gujarat and Karnataka to begin with.

Also, another innovative approach is to utilize agri-waste briquette in multi-fuel boiler. Briquette being carbon neutral is alternative to furnace oil or coal. A few significant installations of briquette fired automated boilers by NDDDB are of capacity 25 TPH tonnage per hour at Sabar Dairy, Gujarat and 10 TPH at Channarayapattana, Karnataka for milk powder plant. I am sure that with such positive environment and support, we can all come together and script history to truly

become the Dairy to the World.

CONCLUDING REMARKS

NDDDB has always been at the forefront of nurturing innovation and propagating entrepreneurial spirit. We will continue to spearhead the sector towards sustainability through innovation and entrepreneurship.

In recent years, winds of change have swept across Indian dairying, driven by technological advancements and innovative practices which are reshaping this sector, propelling it into a new era of sustainability, efficiency, and prosperity. Smart farming techniques, precision nutrition, automatic milking systems, data analytics, and genetic improvement programs are enhancing efficiency and output. As a result the sector is witnessing a great transformation. The adoption of sustainable practices, such as manure value chain, biogas, harnessing solar power, natural and organic farming and reduction in GHG emission reflects a growing awareness of environmental responsibility.

In the current milieu, entrepreneurship can be one of the engines for infusing a lot more innovation into Indian dairying. Start-ups focused on dairy technology, value-added dairy products, research and development, renewable energy and agri-fintech are emerging as key players in the sector. These entrepreneurs are not only creating innovation, economic value but are also generating employment opportunities and fostering a culture of risk-taking and resilience.

I am confident that this magnificent conglomeration of Government support, Cooperative Dairies, Private Dairies and entrepreneurs will surely drive Indian dairying into a new era of growth and sustainability. This will certainly help us achieve the goal of becoming the Dairy to the World. I am sure that the proceedings of the Conference will help in galvanizing all our efforts towards the common goal of spurring rapid growth of the sector along with increasing sustainability.

As we gear up for this transformation, let us also commit ourselves to ensure that the benefits of this revolution reach every corner of our great nation and ultimately benefit the dairy farmers of our country who are also entrepreneurs in their own right. Together, we can build a future where Indian dairying not only meets the needs of the nation but also of the World.

Thank you!