

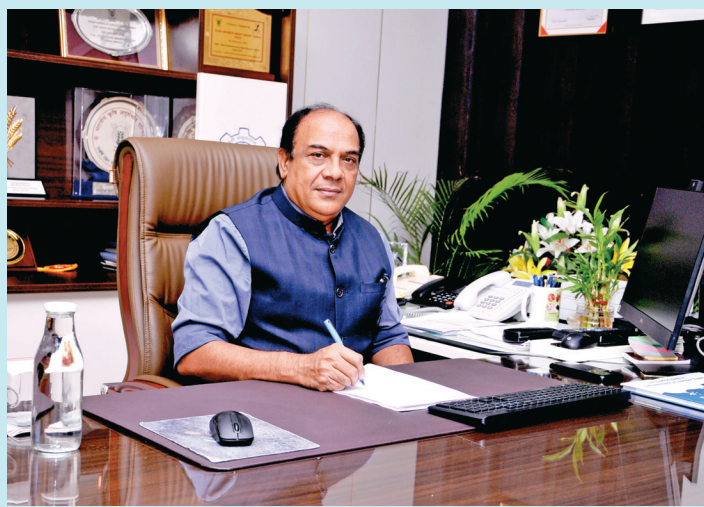
## From the Director's Desk

As a premier institution dedicated to advancing dairy research and education, ICAR-National Dairy Research Institute (ICAR-NDRI) operates through its main campus at Karnal and two strategically located regional stations, Bengaluru in the south and Kalyani in the east, each playing a vital role in fulfilling the Institute's mandate. The Southern Regional Station (SRS) of ICAR-NDRI, Bengaluru, stands as a beacon of progress and excellence in India's dairy sector, with a distinguished legacy stretching over a century.

In fact, the SRS Bengaluru is the mother campus of ICAR-NDRI, having been established in 1923 as the Imperial Institute of Animal Husbandry and Dairying. Notably, it was among the first centers in India to pioneer artificial insemination in cattle and to drive research across all major aspects of dairy production and processing.

The campus has witnessed intermittent rechristening, and in 1936 it introduced the country's first Indian Dairy Diploma (IDD) course. Alumni from this esteemed campus have played influential roles in shaping India's and the world's dairy industries. In 1955, following India's independence, the station became the Southern Regional Station after the shift of NDRI headquarters to Karnal.

Sprawling across 100 acres of land, SRS Bengaluru today boasts robust infrastructure with modern laboratories, a thriving dairy herd, expansive farmland, an experimental dairy plant, a skill development center for farmers, and comprehensive



facilities for students, staff, and guests including hostels, a dispensary, a library, and guest accommodation.

SRS shines in academic excellence, offering undergraduate (B.Tech. in Dairy Technology), postgraduate, and doctoral programs in 11 specialized fields. It serves as a study center for Indira Gandhi National Open University (IGNOU) and catalyzes dairy technology transfer to regional

cooperatives and industries, supporting patents and major research outputs.

Currently, SRS faculty steer 25 research projects 13 in-house and 12 externally funded spanning the frontiers of dairy science. The Atal Incubation Centre, established in 2021 with AIM, NITI Aayog support, fosters dairy-based startups, nurturing the next generation of entrepreneurs. A number of technologies developed at the Center have been commercialized.

With unwavering commitment to excellence, SRS Bengaluru continues to set benchmarks in dairy education, research, and industry partnership strengthening livelihoods while supporting India's vision of "Atmanirbhar Bharat" through innovation and knowledge sharing.

  
 (Dheer Singh)  
 Director,  
 ICAR-NDRI, Karnal

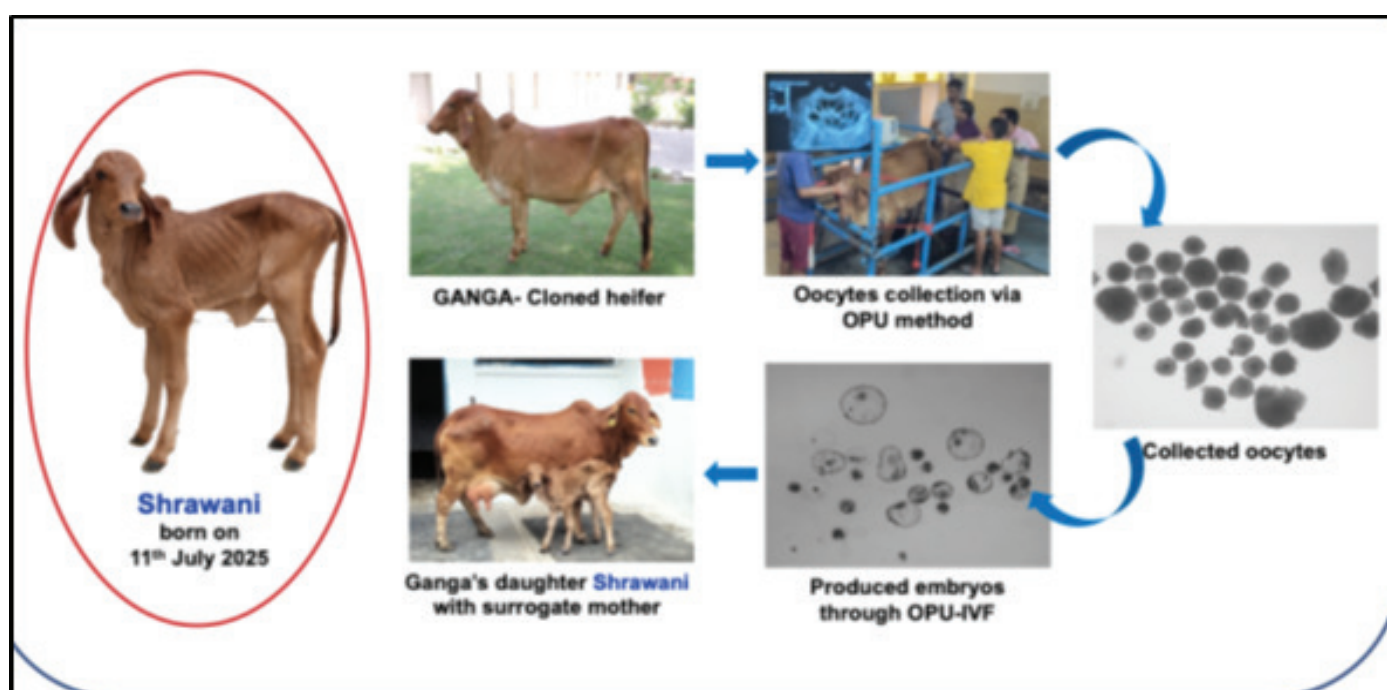
FROM THE DIRECTOR'S DESK	RESEARCH	EVENTS	EXTENSION	HONOURS AND AWARDS	PERSONALIA	राजभाषा एकक	SOUTHERN CAMPUS, BENGALURU	EASTERN CAMPUS, KALYANI
1	2	4	10	13	13	14	16	20

## RESEARCH

### Calf Produced Using Cloned Gir Cows's Eggs

M.K. Singh, Ranjeet Verma, Kartikey Patel, Priyanka Singh, Nitin Tyagi and Naresh Selokar

ICAR–NDRI, Karnal has successfully produced a Gir calf using ovum pick-up and in-vitro fertilization (OPU-IVF) from oocytes (developing eggs) retrieved from a cloned Gir cow marking the first achievement of its kind in the country. This milestone demonstrates the powerful potential of integrating advanced reproductive technologies to rapidly multiply elite indigenous breeds. The Gir calf, born to a Sahiwal surrogate, represents the second generation from an elite donor cow within just 39 months, significantly reducing the conventional breeding interval of 46–50 month.



*Cloning Technology integrated with OPU-IVF for rapid germplasm multiplication*

### Implementation Genomic Selection in Sahiwal Cattle

Vikas Vohra

Genomic selection was successfully implemented in Sahiwal cattle under the Institute Research Project “*Early Identification of Superior Dairy Animals Through Genomic Selection*.” The initiative aimed to improve selection for 305-day milk yield using the single-step Genomic Best Linear Unbiased Prediction (ssGBLUP) method. First-lactation milk yield records and pedigree data spanning from 1957 to 2024 from the Sahiwal herd maintained at ICAR–NDRI, Karnal were used to estimate genomic estimated breeding values (GEBV) for all animals with

a mean accuracy of 43.11%. The ssGBLUP approach enabled the simultaneous use of pedigree, phenotypic, and genomic information. Based on these outcomes, ssGBLUP is recommended for routine genomic evaluation and selection of elite breeding animals in the institutional herd. The integration of genomic information allows more accurate prediction of genetic merit at an early age, thereby reducing generation interval, accelerating genetic gain and improving selection efficiency. Through systematic evaluation and benchmarking, this work successfully established ssGBLUP, recognized as a gold-standard genomic evaluation method and bringing the institutional Sahiwal breeding program in line with internationally established genomic selection practices.



*Genomically selected Sahiwal Bulls*

### Institutional Technology Management Unit

The following technologies developed by the Institute were certified by the Council on the occasion of ICAR'S Foundation Day celebrated on July 16, 2025:

- 1) Strip based test for detection of glucose in milk
- 2) A new rapid test for detection of detergent in milk
- 3) A strip for detection of sodium chloride in milk
- 4) Indigenous probiotic strain lactobacillus fermentum LF1 (MTCC 5689)
- 5) Indigenous probiotic lactobacillus strain Ire120
- 6) Indigenous probiotic strain lactobacillus plantarum LP91 (MTCC 5690)
- 7) Strip based technology for early detection of sub-clinical and clinical mastitis
- 8) Paper strip assay for rapid detection of pesticide residues
- 9) Spore based kit for detection of antibiotic residues in milk at dairy farm
- 10) Paper strip based assay for detection of antibiotic residues in milk

### Detail of Patents Filed: 02

Sl. No.	Title of Patent	Inventors	Application No. and Date of filing
1.	A point of care apparatus, method and kit for detection of bovine pregnancy associated glycoprotein-2	Dr. Sudarshan Kumar, Dr. A. K. Mohanty, Dr. Sushil Kumar, Dr. Rubina Kumari Baithalu, Dr. T. K. Mohanty, Dr. Munna Lal Yadav, Shweta Yadav	202411057694 on July 30, 2025
2.	A device and a method for creating interconnected cell-culture wells in a gel-based structure	Dr. Suneel Kumar Onteru, Dr. Suman Rani, Dr. Ankita Kapri, Dr. Priyanka Patel and Dr. Dheer Singh	202511072929 on July 31, 2025

### Detail of Copyright Filed: 01

Sl. No.	Title of Patent	Inventors	Application No. and Date of filing
1.	CRISPR/Cas Technology: Fundamentals, Applications, and Success Stories in Farm Animals	Dr. Dheer Singh, Dr. Naresh L. Selokar, Dr. Manoj K. Singh, M.S. Chauhan	LD-35139/2025-CO on September 01, 2025

### ITMC Meeting Organized: 02

Institute Technology Management Committee (ITMC) meeting was held under the Chairmanship of Dr. Dheer Singh, Director, ICAR- NDRI, Karnal for discussing IPR issues and technologies to be finalized for commercialization. The 68<sup>th</sup> and 69<sup>th</sup> ITMC meetings were held on July 18, 2025 and September 30, 2025, respectively.



## EVENTS

### Foundation Day

ICAR-NDRI, Karnal celebrated its 103<sup>rd</sup> Foundation Day on July 1, 2025, with a great enthusiasm and commitment towards environmental sustainability. As part of the celebration, a mass Tree Plantation drive was organized within the Institute campus. The celebrations witnessed active participation from students and staff of the institute. Student Council of ICAR-NDRI, Karnal has organized various events on the occasion consisting of a short video competition on 100 years of NDRI was organized, encouraging students to creatively express the glorious journey of the university. An Elocution Contest on the theme “Sustainable Dairy Sector: Challenges and Prospects for NDRI” was held, providing a platform for students to share their insights and ideas. In addition, students from B. Tech., M.Tech., and Ph.D. programs enthusiastically took part in a quiz competition organized to commemorate the Foundation Day. Dr. Dheer Singh, Director, ICAR-NDRI presided over the functions. Dr. Sudhir Gupta, illustrious alumnus of ICAR-NDRI was the guest of honour on the occasion.



*The Director of ICAR-NDRI and the Chief Guest presented certificates to the quiz winners during the Foundation Day celebrations of ICAR-NDRI*



*A view of mass plantation programme under the theme “Eik Ped Maa Ke Nam” on the occasion of Foundation Day of ICAR-NDRI*

### Assessment of National Referral Centre

The NABL-FSSAI integrated assessment of the National Referral Centre on Milk Quality and Safety, ICAR-NDRI, Karnal, was conducted on July 12-13, 2025. The assessment was aimed to evaluate the Centre’s compliance with National and International standards in analytical testing, ensuring accuracy, reliability, and global acceptance of results. The joint evaluation by the National Accreditation Board for Testing and Calibration Laboratories (NABL) and the Food Safety and Standards Authority of India (FSSAI) strengthens the laboratory’s role as a premier institution for milk quality and safety testing in India. During the two-day assessment, experts reviewed laboratory practices, quality management systems, infrastructure, and technical capabilities. Successful completion of this assessment underscores the Centre’s commitment to maintaining excellence in food safety, consumer protection, and support to regulatory bodies. It also enhances ICAR-NDRI’s credibility as a National hub for dairy quality assurance, contributing significantly to India’s food safety ecosystem.

### Meeting of District Development Managers of NABARD

The Bimonthly Structured Meeting (BSM) of District Development Managers (DDMs) of National Bank for Agriculture and Rural Development (NABARD) Rajasthan was held on July 14, 2025 at the ICAR-NDRI, Karnal. The meeting was attended by 34 officials from NABARD Rajasthan, led by Dr. Rajiv Siwach, Chief General Manager (CGM). The officials



were made aware about technologies in milk processing as well as climate resilience developed by ICAR–NDRI. Dr. Dheer Singh, Director, ICAR–NDRI, delivered the Chief Guest address and provided a comprehensive overview of NDRI's legacy and Nationwide footprints of the Institute.



*Dr. Dheer Singh, Director, ICAR-NDRI welcomes Dr. Rajiv Siwach, Chief General Manager, NABARD*

### Visit of Dr. Joseph W. McFadden from Cornell University, USA

A research team from Cornell University, USA, visited ICAR–NDRI, Karnal, on July 27, 2025, to discuss future collaborations with the faculty of the Institute. Both the Institutions will work jointly to enhance milk productivity and reduce methane emissions from livestock. Dr. Joseph W. McFadden, Associate Professor, Department of Animal Science from Cornell University, USA presented his research on accelerating livestock innovations aimed at promoting sustainability and improving milk production

efficiency in India. He acknowledged India's position as a global leader in milk production and highlighted the value of its indigenous breeds, which demonstrate resilience to climate change and diseases. Dr. McFadden expressed keen interest in collaborating with ICAR–NDRI, Karnal, in key research areas such as enhancing milk production, reducing methane emissions, improving efficiency in smallholder dairy systems, efficient manure management, environmental monitoring, and sensor technologies for animal welfare. Dr. Dheer Singh, Director, ICAR–NDRI, Karnal highlighted the institute's pioneering achievements and its vital role in advancing dairy research. Dr. Sachin, Senior Scientist in the Animal Nutrition Division, presented a roadmap for developing a comprehensive feed library and nutritional models of the rumen in collaboration with Cornell University.



*Dr. Dheer Singh, Director, ICAR-NDRI along with Dr. Joseph W. McFadden, Associate Professor from Cornell University, USA*

### Release of the 20<sup>th</sup> Instalment under PM-Kisan Samman Nidhi Yojana

The Honourable Prime Minister released the 20<sup>th</sup> instalment of the PM-Kisan Samman Nidhi Yojana on August 2, 2025 at Varanasi. Sh. Shyam Singh Rana Ji, Hon'ble State Agriculture Minister of Haryana Government attended the special event. He shared detailed insights into the PM-KISAN scheme and broader agricultural initiatives being implemented in the Haryana state. A total of 1100 participants, including farmers, gathered to witness the live telecast of the programme. During his address, the Prime Minister highlighted the significance of agriculture, encouraged farmers to adopt progressive practices and promoted the use of indigenously produced goods. The Chief Guest of the event further inspired the gathering by emphasising various government initiatives designed for the welfare and prosperity of farmers. The programme reinforced the government's commitment to strengthening the agricultural community.





*Glimpses of the on-line event held at ICAR-NDRI during the release of 20<sup>th</sup> instalment of the PM-Kisan Samman Nidhi Yojana*

## MoU signed with CSIR – Central Scientific Instruments Organisation

ICAR-NDRI has signed a memorandum of understanding (MoU) signed with CSIR – Central Scientific Instruments Organisation (CSIO), Chandigarh on August 13, 2025. Dr. Dheer Singh, Director, ICAR-NDRI and Prof. Shantanu Bhattacharya, Director, CSIR-CSIO exchanged the MoU in the presence of the officials of both organizations. The aim of this MoU is to enhance collaboration among both organizations in the area of artificial intelligence, sensor development and utilization of research facilities of each other on mutually agreed terms.



*Dr. Dheer Singh, Director, ICAR-NDRI and Prof. Shantanu Bhattacharya, Director, CSIR-CSIO during the signing of MoU on August 13, 2025*

## Tiranga Yatra

ICAR-NDRI, Karnal organized a spirited *Tiranga Yatra* on August 13, 2025, within the institute premises to honour the legacy of India's freedom struggle. The event was conducted with great enthusiasm, reflecting the patriotic zeal of students, faculty, and staff. The programme was graced by Dr. Dheer Singh, Director ICAR–NDRI, Karnal. Dr. Rajan Sharma, Joint Director (Research), and Dr. A. K. Singh, Joint Director (Academic) motivated the students with their inspiring words. The Chief Hostel Warden, along with faculty members and staff, also actively participated and extended full support. Carrying the National flag with pride, students marched across the campus, raising patriotic



slogans that celebrated freedom, unity, and National integrity. The *Tiranga Yatra* reinforced the message of the “Har Ghar Tiranga” campaign and inspired the NDRI community to uphold the values represented by the National flag.



*Dr. Dheer Singh, Director, ICAR-NDRI leading Tiranga Yatra with officials of the Institute*



### Janjatiya Gaurav Varsh, Prakriti Mahotsav and Dairy Farming

ICAR–NDRI Karnal, in collaboration with Haryana Police Department and Indian Oil Limited, organized a programme titled “*Janjatiya Gaurav Varsh, Prakriti Mahotsav and Dairy Farming*” from August 18 to 24, 2025, at the Institute premises. The inaugural session on August 18, 2025 was graced by Sh. Shatrugit Kapoor, Director General of Police, Haryana, who highlighted the importance of books as a source of knowledge and intellectual growth. Dr. Dheer Singh, Director, ICAR–NDRI, Karnal emphasized the need for environmentally sustainable lifestyles. The programme featured a nature-themed drawing and painting workshop for school students and book exhibitions by renowned publishers, including the National Book Trust of India. The event was further enriched by the presence of senior officials from the Haryana Police, Indian Oil, and the Forest Department.

In addition to literary and academic engagements, a series of cultural and co-curricular activities such as drawing and painting competitions, music, dance,

drama, and debates were conducted to encourage student participation and creativity.

The thematic focus of each day was as follows:

- ♦ August 19, 2025: Road Safety, Women’s Security, and Citizen Responsibility
- ♦ August 20, 2025: Secure Haryana and Duties of Citizens
- ♦ August 21, 2025: *Nasha Mukh Haryana* (Drug-Free Haryana)
- ♦ August 22, 2025: Tree Plantation
- ♦ August 23, 2025: *Atmanirbhar Bharat* (Self-Reliant India) and *Bin Pani Sab Soon* (Water Conservation)
- ♦ August 24, 2025: Environment and Life

The week-long celebration successfully integrated discourses on social responsibility, environmental stewardship, and cultural values with community participation. It served as a platform for knowledge sharing, awareness generation, and the promotion of sustainable lifestyles in alignment with National priorities. A total of 3000 people and school children participated in this event.



*Inaugural view of Janjatiya Gaurav Varsh and Prakriti Mahotsav and Dairy Farming at ICAR-NDRI on August 18, 2025*





## Madagascar Delegation Visited ICAR–NDRI, Karnal

A delegation of 30 senior civil servants from the Republic of Madagascar visited ICAR–NDRI, Karnal, on September 9, 2025 to strengthen bilateral cooperation in agriculture and livestock development. The delegation, representing agriculture and allied sectors, was led by Ramarosandratana Guy, Governor of Alaotra Mangoro Region; Ralaialimalala Sylvain Rodolphe, Mayor of Moramange; and Rakotoarivony Riana, Head of the National School of Administration of Madagascar.



*Dr. Dheer Singh, Director, ICAR- NDRI, Karnal with the delegation of Republic of Madagascar on September 9, 2025*

## National Conference on Milk Functional Foods & Consciousness

A National Conference on “Milk, Functional Foods, and Consciousness” was held on September 27, 2025, at ICAR–NDRI, Karnal, in collaboration with the Bhaktivedanta Institute. The conference brought together scientists, scholars, and practitioners to explore the scientific, cultural, and spiritual dimensions of milk. Dr. Dheer Singh, Director, ICAR-NDRI emphasized the role of food in shaping health and consciousness and the need to integrate traditional wisdom with modern science, while Dr. T. D. Singh, Founder Director, Bhaktivedanta Institute highlighted the global relevance of harmonizing science and spirituality. Sessions covered Indian knowledge systems, mental health, and entrepreneurship, reaffirming milk’s role as a functional food with wider societal relevance.



*A compendium being released during the organization of Conference on Milk Functional Foods & Consciousness on September 27, 2025*

## ENTREPRENEURSHIP DEVELOPMENT, BUSINESS INCUBATION ACTIVITIES AND CONSULTANCY SERVICES

### Agri-Business Incubator/ Technology Business Incubation

#### Entrepreneurial Development Programmes

During the period, two training programmes on Commercial Dairy Farming and one on Milk and Milk Products Processing were conducted benefiting 23 trainees. These programmes aimed at enhancing the skill development in the participants for entrepreneurship development in dairy sector.

Commercial Dairy Farming from July 7 to 12, 2025.

No. of participants: 7



Milk and Milk Products Processing from August 25 to 30, 2025

No. of participants: 8



Commercial Dairy Farming from September 22 to 27, 2025

No. of participants: 8



*Entrepreneurial Development Programmes Organized by Agri-Business Incubator/Technology Business Incubation*

#### Incubation Support Provided by ICAR–NDRI for Dairy Development

- Incubation support MoU was signed with M/s. Farm to Kitchen, Karnal, Haryana for the products “Ghee & Dahi” for a period of six months from August 26, 2025 to February 25, 2026.
- Incubation support MoU was signed with M/s. Shagun Star Dhaba, Gharaunda, Haryana for the product “Extended shelf-life flavoured milk” for a period of six months from September 8, 2025 to March 7, 2026.



## EXTENSION

### Dairy Extension Division

#### Extension Programmes and Visits Organized

- ♦ The eleventh Field Day programme was organized under the 'Farmers FIRST' Project in adopted villages, benefiting around 631 farmers.
- ♦ A training programme on "Value-Added Milk Products" was organized for rural SC women of Furlak village on July 15, 2025, with the participation of 17 women.
- ♦ The PM Kisan Samman Nidhi Programme was held at ICAR-NDRI, Karnal on August 2, 2025, with a total of 235 farmers actively participating from various project-adopted villages.
- ♦ Two Animal Health Camps and ecto-endo parasite control programme were conducted in Chandsamand and Garhi Gujran villages of Karnal, district, during which 217 animals were treated.
- ♦ On August 7, 2025, a Climate Field School was initiated in Padha village, where 22 women farmers were registered. Subsequently, five awareness
- ♦ campaigns on climate-resilient dairy farming practices were organized in Gudda, Padha, and Furlak villages, benefiting a total of 164 farmers.
- ♦ One farmer-scientist interaction meeting was organized at Samora village on Integrated Pest Management (IPM) in paddy and management of dairy animals in monsoon season. A total 20 farmers were participated in the interaction. \
- ♦ A total of 21 agro-advisory messages related to weather forecasting, crop and animal husbandry practices, etc. were sent to Farmers through WhatsApp groups. Advisory services were also provided to the farmers for timely agricultural practices to reduce losses and minimize the input costs.
- ♦ A total of 42 visits, in which 1,887 school students participated (including 933 boys and 954 girls). During these visits, the students were introduced to the Institute's Research achievements and infrastructural facilities.



*Awareness campaigns on climate resilient dairy farming practices in Furlak Village*



*Animal Health Camp at Garhi Gujran village under Farmer First Programme*



*Exposure visit by farmers of Gudda village*



*Awareness campaigns on climate resilient dairy farming practices in Padha Village*





*Exposure visit at ICAR-NDRI, Karnal*



*PM Kisan Samman Nidhi Programme at ICAR-NDRI, Karnal*



*Ecto Parasite Control Programme in FFP Village*



*Training programme on "Value-added milk products"*

## Krishi Vigyan Kendra

### Fish Farmers Day Celebrated

Fish Farmer's day was celebrated on July 10, 2025. Fisheries experts and Fisheries officers addressed fish farmers. In this event, Pradeep A. addressed farmers and described revolutionary invention by Dr. Hiralal Choudary and Dr. K H Alikunhi in the field of Induced Fish Breeding. In this event, 35 participants attended this programme.

### Chaupal Charcha Episode Telecasted

DD Kisan Channel conducted the shooting of a 'Chaupal Charcha' episode at KVK-NDRI, Karnal on July 18, 2025.



*'Chaupal Charcha' episode telecast on DD Kisan Channel*

The episodes were focussed on Natural farming and Integrated Farming. Scientists and KVK experts shared critical inputs and farmers shared their experiences in Natural farming and Integrated Farming. The episodes were telecasted on DD Kisan channel on July 21, 2025.

### World Breast Feeding Day Celebrated

On the occasion of World Breastfeeding Week, Scientist Farmers' Interaction Meets was organised by KVK at Rambha village on August 7, 2025. In this event, Dr. Sonia and Dr. Priyanka described about importance of Breast feeding and nutrition to 50 pregnant and lactating women.



*Pregnant and lactating women being taught about importance of Breastfeeding*



## Field Experience Training for FOCARS

KVK is organised one month Field Experience Training for the FOCARS 114<sup>th</sup> batch probationers of ICAR-NAARM, Hyderabad, from August 11 to September 12, 2025. Total 6 probationers were participated in the training programme.



*Probationers of ICAR-NAARM, Hyderabad being trained at ICAR-NDRI*

## Cleanliness drive Conducted on Parthenium Awareness week

KVK Karnal organized Parthenium Awareness Week from August 16 to August 22, 2025. During the programmes, KVK staff actively participated in cleaning the KVK premises. The event was also celebrated with scientists and students of the Farm Section, where KVK scientists and KVK experts discussed about problems by parthenium plants, precautionary measures to be adopted, and effective management practices such as crop rotation and ploughing methods for weed control. Meanwhile, all participants jointly carried out cleanliness activities in the Farm Section premises.



*Faculty and Students celebrating Parthenium Awareness Week*

Training for Students from College of Galgotia under RAWE Programme

Under Rural Agricultural Work Experience (RAWE) programme, 24 students from College of Agriculture, Galgotia University, Gautam Budh Nagar, Uttarpradesh were trained for 6 weeks from September 1 to October 12, 2025 at KVK-NDRI, Karnal.

Awareness Programme on Crop Residue Management.

KVK Karnal has conducted awareness programme on Crop Residue management at village Bhusali on September 22, 2025. In this event experts emphasised on importance of Crop Residue management and discussed about tools available for efficient management of crop residues to promote sustainable agriculture and control air pollution.



*Dr. Saraswat, In-Charge KVK addressing the gathering*

## District level workshop for review of DSR and Vegetable Cluster Project

KVK Karnal has participated in District level workshop for review of DSR and Vegetable Cluster Project for Promoting Waste and Soil conservation and Crop diversification on September 24, 2025 at Sangoha village. Dr. P K Saraswat addressed 60 participants and spread awareness about Importance of microbial diversity in soil for sustainable agriculture.

## On campus tranings/ exposure visits conducted by KVK

KVK Karnal conducted a series of training programmes covering major topics such as Improved Dairy Techniques and Production Management, Best Management Practices in Aquaculture, Dairy Production and Breeding Management, Improved Goat Farming and Breeding, Milk Processing and Value Addition/Milk Production, Preservation of Seasonal Fruits and Vegetables, and

Training on Vermicompost for Soil Health and Profitable Agriculture. Around 400 farmers benefited from these training programmes, enabling them to adopt improved production and management practices, increase

productivity and profitability, ensure better quality and value addition of farm produce, and promote sustainable and climate-resilient farming systems.

## HONOURS/ AWARDS/ RECOGNITIONS

### NDRI Secured Second Rank in NIRF- 2025

ICAR-NDRI, Karnal has got second position in the National Institutional Ranking Framework (NIRF) 2025 under the 'Agriculture and Allied' category of the Union Ministry of Education for outstanding performance in teaching, research and professional practices, graduation outcomes/ outreach and inclusivity and quality research papers. The award was announced on September 4, 2025 during the India Rankings ceremony in New Delhi. Dr. Dheer Singh, Director, ICAR-NDRI, Karnal received the award from Shri Dharmendra Pradhan, Hon'ble Union Minister of Education.



*Dr. Dheer Singh, Director, ICAR- NDRI receiving NIRF ranking - 2025 award under the 'Agriculture and Allied' category from Shri Dharmendra Pradhan, Hon'ble Union Minister of Education*

## PERSONALIA

### Joining/ Promotions/ Transfers/ Retirements

- ♦ Sh. Ram Avtar, Chief Finance & Account Officer after relieving ICAR-CPCRI, Kasargod, Kerala joined ICAR-NDRI, Karnal on July 17, 2025.
- ♦ Sh. Baldev Singh promoted as Technician(FFT) on July 17, 2025 (FN) at KVK, ICAR-NDRI, Karnal.
- ♦ Sh. Namo Narayan Meena, Technical Officer(W/S) transferred to ICAR-CSWRI, Avikanagar and relieved on July 25, 2025.
- ♦ Dr. VRV Surendranath Naik, CTO (M&PM), STS, ICAR-NDRI, Bengaluru retired on July 31, 2025.
- ♦ Sh. K. Ningaraju, ACTO (FFT), SRS, ICAR-NDRI, Bengaluru retired on July 31, 2025.



- ♦ Sh. Raj pal, Sr. Technician (FFT) DES&M Division, ICAR-NDRI, Karnal retired on July 31, 2025.
- ♦ Sh. M.Muniraj (SSS), SRS, ICAR-NDRI, Bengaluru retired from council's services on July 31, 2025.
- ♦ Shri. Annadhanaya (SSS), SRS, ICAR-NDRI, Bengaluru retired from council's services on July 31, 2025.
- ♦ Ms. Varsha Vihan, STO(L/T), DT Divison transferred to ICAR-CIRG, Makhdoom and relieved on July 31, 2025.
- ♦ Sh. Somenath Dutta, CTO(FFT) ERS, ICAR-NDRI, Kalyani retired on August 31, 2025.
- ♦ Sh. Ramesh Kumar, TO (LT) ICAR-NDRI, Karnal retired on August 31, 2025.

## राजभाषा एकक

### संस्थान राजभाषा कार्यान्वयन समिति की बैठक:

**भाकृअनुप-राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल की राजभाषा कार्यान्वयन समिति की दिनांक अगस्त 5, 2025 को संपन्न हुई 108वीं समीक्षा बैठक का कार्यवृत्त**

डा. धीर सिंह, निदेशक, भाकृअनुप-राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल की अध्यक्षता में संस्थान राजभाषा कार्यान्वयन समिति की जुलाई 1 से सितंबर 30, 2025 तक की तिमाही समीक्षा बैठक दिनांक अगस्त 5, 2025 को अपराह्न 04.30 बजे के साथ संस्थान के पिनाकी कक्ष में आयोजित की गयी। बैठक में संस्थान के 36 पदाधिकारी शामिल हुए।

बैठक के आरंभ में सदस्य-सचिव, श्री धीरज शर्मा ने सभागार में उपस्थिति समिति के अध्यक्ष तथा अन्य सदस्यों का स्वागत किया तथा सभा में निम्नलिखित बिन्दुओं पर विस्तार से चर्चा की गई और निम्नलिखित निर्णय लिए गए।

वार्षिक मूल हिंदी टिप्पणी/व्याख्यान प्रोत्साहन योजना/प्रतियोगिता का आयोजन दिनांक 15 जुलाई 2025 को किया गया। इसमें संस्थान के 09 प्रतिभागियों ने भाग लिया।

**हिन्दी कार्यशाला का आयोजन:** संस्थान के डा. एन.एन. दस्तूर सभागार में दिनांक जुलाई 22, 2025 को (हिन्दी कार्यान्वयन, छमाही रिपोर्ट एवं तिमाही रिपोर्ट कैसे भरें" कार्यशाला) हिन्दी कार्यशाला का आयोजन किया गया जिसमें संस्थान के 41 वैज्ञानिक, अधिकारी एवं कर्मचारी एवं नराकास करनाल के सदस्य कार्यालयों से 47 अधिकारी एवं कर्मचारी शामिल हुए।

**हरियाणा पुलिस एवं एनडीआरआई, करनाल के संयुक्त तत्वावधान में जनजातीय गौरव वर्ष, प्रकृति महोत्सव एवं डेरी फार्मिंग 2025:** हरियाणा पुलिस एवं एनडीआरआई, करनाल के संयुक्त तत्वावधान में जनजातीय गौरव वर्ष, प्रकृति महोत्सव एवं डेरी फार्मिंग 2025 का आयोजन अगस्त 18-24, 2025 तक एनडीआरआई के सुंदरसन सभागार में किया गया।

इस अवसर पर नराकास, करनाल के द्वारा नगर के सदस्य कार्यालयों के अधिकारियों एवं कर्मचारियों हेतु नगर-स्तरीय हिंदी कविता-पाठ/गीत-गायन/कवि सम्मेलन का आयोजन दिनांक 22 अगस्त 2025 को अपराह्न 3:00 बजे से 5:00 बजे तक किया गया।

**नराकास गतिविधियों की जानकारी:** नगर राजभाषा कार्यान्वयन समिति, करनाल के तत्वावधान में नगर स्तरीय प्रतियोगिताओं का आयोजन किया गया। इसके अन्तर्गत दिनांक सितंबर 4, 2025 को हिन्दी श्रुतलेख प्रतियोगिता, दिनांक सितंबर 8, 2025 को हिन्दी शब्दार्थ प्रतियोगिता, दिनांक सितंबर 10, 2025 को कहानी लेखन प्रतियोगिता एवं दिनांक सितंबर 12, 2025 को राजभाषा हिन्दी ज्ञान प्रतियोगिताओं में नराकास, करनाल के सदस्य कार्यालयों के अधिकारियों/कर्मचारियों ने बढ़-चढ़कर हिस्सा लिया।

**हिन्दी दिवस एवं पांचवा अखिल भारतीय राजभाषा सम्मेलन, गांधीनगर, गुजरात:** सितंबर 14-15, 2025 को गांधीनगर, गुजरात में हिन्दी दिवस एवं पांचवा अखिल भारतीय राजभाषा सम्मेलन के दौरान राजभाषा विभाग, गृह मंत्रालय द्वारा अध्यक्ष एवं सदस्य सचिव, नगर राजभाषा कार्यान्वयन समिति, करनाल को वर्ष 2024-25 के दौरान कार्यक्षेत्र संघ की राजभाषा नीति के उल्लेखनीय कार्य-निष्पादन के लिए प्रशंसनीय श्रेणी में सम्मानित किया गया।

## हिंदी दिवस समारोह एवं हिंदी पखवाड़ा-2025

भाकृअनुप-राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल ने दिनांक सितंबर 22, 2025 से हिंदी पखवाड़ा-2025 का आयोजन किया गया। इसका उद्घाटन दिनांक सितंबर 22, 2025 को डा. एन.एन. दस्तूर सभागार में अपराह्न 3.30 बजे किया गया। इस कार्यक्रम की अध्यक्षता संस्थान के निदेशक, डा. धीर सिंह द्वारा की गई। हिंदी पखवाड़ा-2025 के दौरान हिंदी शब्दार्थ प्रतियोगिता का आयोजन किया गया। इसके पश्चात् दिनांक सितंबर 23, 2025 को हिंदी शोध पत्र/पोस्टर प्रदर्शन प्रतियोगिता, दिनांक सितंबर 25, 2025 को हिंदी टंकण प्रतियोगिता, दिनांक सितंबर 26, 2025 को हिन्दी निबंध प्रतियोगिता तथा दिनांक सितंबर 29, 2025 को राजभाषा हिन्दी ज्ञान प्रतियोगिता का आयोजन किया गया जिनमें संस्थान के वैज्ञानिकों, अधिकारियों, कर्मचारियों एवं शोधकर्ता विद्यार्थियों ने बढ़-चढ़कर हिस्सा लिया।



हिंदी दिवस पखवाड़ा-2025 के दौरान दिनांक सितंबर 23, 2025 हिंदी शोधपत्र/पोस्टर प्रदर्शन प्रतियोगिता के दौरान प्रतिभागी अपने पोस्टर की व्याख्या करते हुए



हिंदी दिवस पखवाड़ा-2025 के दौरान दिनांक सितंबर 25, 2025 हिंदी टंकण प्रतियोगिता के दौरान प्रतिभागियों की झलक

## SOUTHERN CAMPUS, BENGALURU

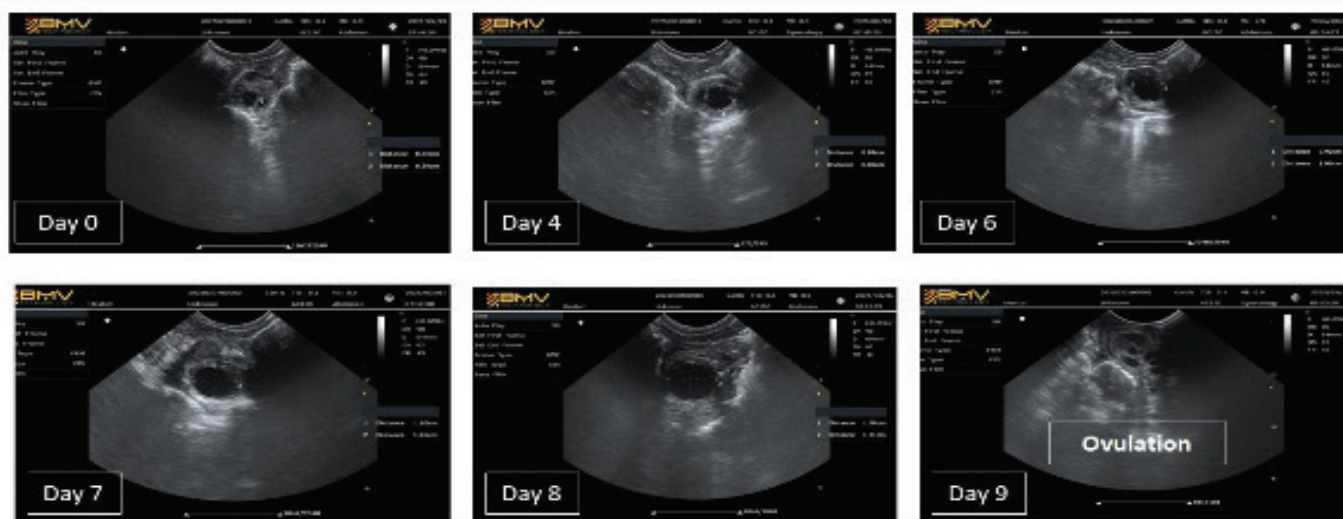
### RESEARCH

#### Letrozole: An Aromatase Inhibitor for Estrus Synchronization in Buffaloes

S. Jeyakumar, Abhonkar Rohit Mahendra, Rubina Kumari Baithalu & Vedomurthy, GV

Estrus synchronization is increasingly important in modern reproductive biotechnology to enhance bovine fertility, creating a need for short-term, cost-effective protocols suitable for field use. Letrozole, a non-steroidal aromatase inhibitor, offers a promising alternative. By reversibly inhibiting aromatase, it reduces estrogen synthesis, delays the preovulatory LH surge, and extends the lifespan or growth of the dominant follicle through increased LH pulse frequency. While Letrozole has been studied in beef cattle, ewes, and goats, limited information exists for buffaloes. This study evaluated its effects on follicular and luteal dynamics in multiparous Murrah buffaloes using an intravaginal Letrozole-sponge delivery system. Letrozole significantly increased dominant follicle size ( $14.7 \pm 0.9$  mm vs.  $12.4 \pm 1.2$  mm). Corpus luteum size, estradiol, progesterone levels, and estrus intensity did not differ significantly. Ovulation (85.7% vs. 57.1%) and pregnancy rates (57.1% vs. 14.3%) were higher in the treated group. The Letrozole + PGF2 $\alpha$  + GnRH protocol appears effective, warranting large-scale field validation.

#### Dominant follicle growth in Letrozole treated buffalo cows



*Series of transvaginal ultrasonographic images showing dominant follicle growth to till ovulation in Letrozole (aromatase inhibitor) treated buffaloes*

#### Purification of GOS Produced from Paneer Whey using Activated Charcoal and Selective Microbial Fermentation

Neha R Petare, Manoj Kumar C.T., Sathish Kumar M.H., Basavaprabhu H.N., Priyanka Singh Rao

Galactooligosaccharides (GOSs) are functional prebiotic oligosaccharides, but their production often leaves impurities such as lactose and monosaccharides. Removing these sugars is essential for applications targeting lactose-intolerant and diabetic consumers. In this study, activated charcoal and selective microbial fermentation were used as cost-effective purification methods. Activated charcoal recovered  $94.64 \pm 0.08\%$  GOSs from the crude mixture. To further reduce residual sugars, fermentation was carried out using *Saccharomyces cerevisiae* (MTCC 170)

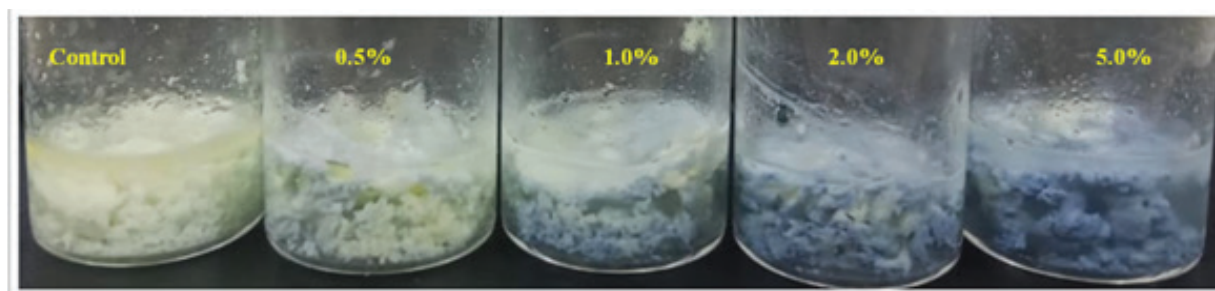


and *Kluyveromyces lactis* (MTCC 4060). *S. cerevisiae* efficiently removed monosaccharides ( $78.6 \pm 0.20\%$ ), while *K. lactis* showed limited lactose reduction but increased GOS content. A sequential approach-activated charcoal treatment followed by fermentation yielded  $76.75 \pm 0.06\%$  GOS recovery with markedly lower monosaccharides ( $19.01 \pm 0.35$ ) and lactose ( $26.48 \pm 0.39\%$ ). Purified GOSs showed the highest prebiotic score ( $0.54 \pm 0.001$ ) for *Lacticaseibacillus rhamnosus*, confirming the effectiveness of this simple purification strategy.

### A Qualitative Test Method to Detect Presence of Milk Powder in Paneer

Sapna Y. Ingole, Laxmana Naik, Priyanka Singh Rao, Rashmi H.M., Devaraja H.C. and F. Magdalene

Paneer is a traditional Indian soft cheese prepared by precipitating heat-treated milk with permitted acidulants. Its market demand has increased due to growing health awareness, vegetarianism, and wider culinary use. Although regulations allow adding milk solids only for milk standardization, reports indicate that some manufacturers use low-quality, nearly expired or expired milk powders to meet demand while claiming the paneer is made from fresh milk. Such practices lead to adulteration and compromise product quality. In this work, a robust qualitative method was developed to detect skim milk powder (SMP) in paneer using the phosphomolybdic acid test. The test showed clear concentration-dependent colour changes, with a visual detection limit of 1% SMP, unaffected by common adulterants, coagulants, or preservatives, ensuring reliable quality assessment.

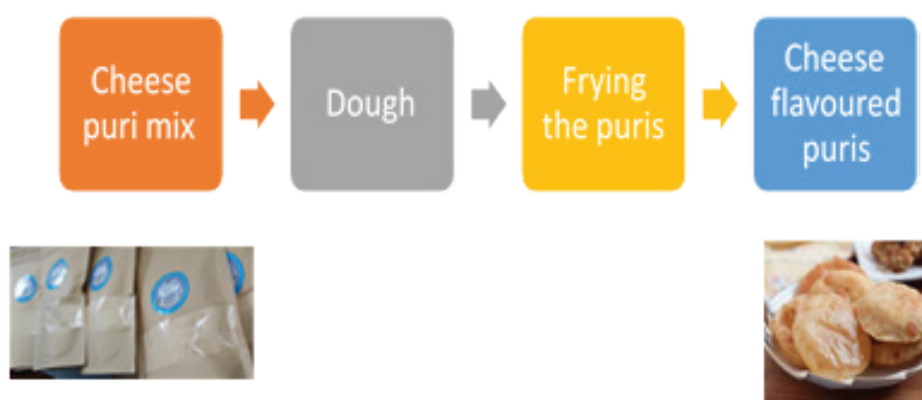


Qualitative test showing the limit of detection for skim milk powder in paneer

### Technology Developed for Cheese Puri Mix

S. Kulkarni, B.V. Balasubramanyam, K. Jayaraj Rao, Monika Sharma, and M.H. Sathish Kumar

Puri is liked by most of the households in the country. But, cheese flavoured puri is not known to consumers. Further, no cheese flavoured ready mix for puri making is available. It is a dry mix that can be used for preparation of puri at home. The mix was developed to provide consumers a cheese flavoured puri which can be eaten directly as a snack or as a regular puri. The innovation of this technology is ready to use mix for making of puri with palatable ripened cheese taste. This ready mix is likely to find acceptance by wide range of consumers across the country.



Flowchart for the preparation of cheese flavoured puri using mix

## Events and Extension Activities

### Skill Development Programme

The training programme on 'Preparation of Ice Cream and Frozen Desserts' was conducted by SRS, ICAR-NDRI, Bengaluru, from July 7 to 11, 2025. A total of 12 participants attended the programme, the majority of whom were budding entrepreneurs with a strong intent to establish their own ventures in the near future. The programme covered comprehensive aspects of ice cream and frozen dessert production, including selection of raw materials and ingredients, formulation and processing of ice cream mix, required equipment, quality control measures, and packaging. Practical demonstrations were conducted to enhance participants' technical understanding and skill development.



*Participants of the training programme on "Preparation of Ice cream and frozen desserts" conducted by Dairy Processing Section*

### Extension activities

SRS, ICAR-NDRI, Bengaluru conducted exposure visits, training programmes, and field-level interventions to promote scientific dairy farming among farmers, farmwomen, farm youth, and students. One-day exposure visits and training under the ATMA scheme were organized for dairy farmers from Tamil Nadu and students from various institutions. An exposure-cum-training programme on Scientific Dairy Management was conducted in eight batches for 157 farmers from Tiruvannamalai, Ramanathapuram, Erode, Pudukkottai, and Vellore districts, along with exposure visits for 129 students on scientific dairy farming and milk processing. On-farm interactive sessions were held in the Farmer First Programme adopted village of Hosadurga, focusing on balanced feeding, infertility management, mastitis control, animal health care, and clean milk production, benefiting 30 participants. Additionally, animal infertility and health camps were organized in the Farmer First Programme villages of Hosadurga and Vasappanadoddi, Kanakapura Taluk, Ramanagara District, where 98 dairy animals were treated for various health and reproductive problems. Visit of Dairy farmers from Tamil Nadu for one day exposure visit and training on 'Dairy farming Practices' under ATMA programme and students from different organizations/institutions.





*Farmers and students participating in exposure visits and training on scientific dairy farming practices*

Under the DST–SCSP programme, a field visit was organized to Gudibande, Chikkaballapur, Karnataka, on July 25, 2025, with the participation of 40 dairy farmers. In addition, a Scientist–Farmers’ Interaction Meet was conducted for 19 extension officials from the Dairy Development Department, Kerala, to facilitate knowledge exchange on scientific dairy farming practices.



*Scientist–Farmer Interaction Meet under the DST–SCSP programme*

## Training/ Workshops/ Seminars/ Symposia/ Conferences Attended

Scientist's Name and Designation	Title of the programme	Period of the Programme
Dr. S. Jeyakumar, Principal Scientist; Dr. Laxmana Naik N, Senior Scientist; Dr. Rashmi, H.M., Senior Scientist; Dr. Vedamurthy, GV, Senior Scientist	Attended workshop on “Understanding IP, its potential and applications in animal science research” at ICAR–NIANP, Bengaluru	August 20, 2025
Dr. Laxmana Naik N, Senior Scientist	Delivered a talk on “Recent advances in detecting adulterants in milk and dairy products” at Dairy Science College, Kalaburgi during One Day National Workshop on Opportunities and Challenges in Quality Assessment of Dairy Products”	August 22, 2025

## Rajbhasha Ekak (राजभाषा एकक)

Hindi Week was celebrated at this campus during September 24 to 30, 2025, where various competitions like extempore, poem reciting, slogan writing and *anthakshari* were organized for staff and students. Following this, Hindi Workshop was organized on September 30, 2025 on the subject “देश को जोड़ने में राजभाषा का योगदान और कार्यान्वयन” / Contribution and implementation of official language in uniting the country and total of about 100 faculties, staff and students participated in the programme. On this occasion of valedictory function prizes were distributed by the Chief Guest to the winner of various events.

## EASTERN CAMPUS, KALYANI

### Empowering Tribal Farmers through Input Distribution, SHG Felicitation and Interaction

On August 22, 2025, ERS, ICAR-NDRI, Kalyani, successfully organized a Tribal Sub Plan (TSP) programme, benefiting more than 160 tribal farmers through the on-campus distribution of sprayers, gumboots, quality seeds, and small agricultural implements to promote scientific agricultural practices and livelihood support. During the event, a productive interaction between scientists and farmers was held, providing beneficiaries with valuable technical guidance and solutions to practical farming challenges. Additionally, seven newly formed Self-Help Groups (SHGs) comprising TSP beneficiaries were felicitated on the occasion in recognition of their collective efforts toward empowerment and self-reliance.



*Inputs being distributed among tribal farmers*

### Training on Scientific Dairy Farming

On July 9, 2025, ERS, ICAR-NDRI, Kalyani organized a one-day training on Scientific Dairy Farming under NABARD and Tribal Sub Plan projects. The programme was attended by 102 farmers, including 63 women, reflecting strong female participation. Training covered balanced feeding, reproductive management, disease prevention, clean milk production, and sustainable practices through interactive sessions and demonstrations. Essential inputs such as mineral mixtures, deworming tablets, fodder seeds, and feeding equipment were distributed, followed by an open interaction with experts.



### Capacity Building on Artificial Insemination and Veterinary First Aid

A 32-day training programme on Artificial Insemination and Veterinary First Aid was conducted from June 17 to July 18, 2023, at ERS, ICAR–NDRI, Kalyani, with NABARD support. The programme trained 23 participants, including six women, mainly nominated by the Animal Resources Development (ARD) Department, Government of West Bengal. The training combined theory and extensive hands-on practice on semen handling, AI techniques, first aid, and herd health management, strengthening field-level reproductive and emergency livestock care services.



*Glimpses of Capacity Building training on Artificial Insemination and Veterinary First Aid organized by Eastern Regional Station, ICAR-NDRI*

### Capacity Building Programme on Kid Nursery and Scientific Goat Farming Practices

A five-day training on Kid Nursery and Scientific Goat Farming Practices was organized at ERS, ICAR–NDRI from August 4–8, 2025, with ITC support. The programme trained 12 participants, mostly women, through interactive sessions and hands-on demonstrations on breeding, feeding, health care, housing, and kid nursery management to improve survival, productivity, and sustainability in goat farming.

### Refresher Training Programme on Scientific Animal Husbandry

A two-day refresher training on Scientific Animal Husbandry was conducted on August 26–27, 2025, at ERS, ICAR–NDRI, Kalyani for staff of Asansol Burdwan Seva Kendra. Eleven participants were trained in modern breeding, feeding, healthcare, and sustainable livestock practices through interactive sessions and practical demonstrations, strengthening their field-level extension activities.

### Scientific Animal Husbandry Training on Rearing Lakhimi Cattle

A scientific animal husbandry training on **Lakhimi cattle** was conducted for 14 farmers from Darrang district, Assam, during September 15–21, 2025. The programme focused on efficient, low-input management of this climate-resilient indigenous breed, known for modest milk yield and strong draught power, promoting sustainable dairy and farm operations in rural Assam.



*A view of trainees participating in a scientific animal husbandry training programme*

## Livestock Development Programme at Dhubri, Assam under NEH Project

A Livestock Development Programme at Dhubri, Assam was organized on September 10, 2025 under the NEH Project in collaboration with KVK, Dhubri. The programme included training, scientist–farmer interaction, and input distribution to 200 farmers, promoting scientific dairy, poultry, goat, and pig farming for improved livelihoods and income generation.



*Input distribution to beneficiaries*

## National Goat Day Celebrated

On the occasion of 'National Goat Day' on July 13, 2025 at Bir Sidhunagar, Kalyani, 114 goats were successfully vaccinated and treated as part of a dedicated animal health camp. The programme also featured an interactive session between scientists and 39 farmers, where practical aspects of goat health management, nutrition, and breeding were discussed to empower farmers with scientific knowledge. Additionally, special interactions were held with local schoolchildren to raise awareness about the importance of animal welfare and livestock farming in rural livelihoods, fostering interest and understanding among the younger generation.

## ICAR-NDRI Foundation Day Celebrated

The ERS, ICAR-NDRI, celebrated its Foundation day of ICAR-NDRI was celebrated on July 1, 2025. A series of activities were organized aimed at promoting environmental consciousness and fostering student participation. The programme included a plantation drive and student competitions such as a marathon, elocution, and quiz. The events encouraged environmental awareness, physical fitness, scientific temper, and enthusiastic student participation.

## Director ICAR-NDRI Interacted with Tribal Farmers at ERS Campus

Dr. Dheer Singh, Director, ICAR–NDRI, Karnal, visited the campus and engaged in an interactive session with tribal farmers on July 04, 2025. The programme witnessed the participation of over 150 tribal farmers from the region. As part of the initiative, the Director distributed registration kits to six newly formed Self-Help Groups (SHGs), which



*A view of inputs distribution among farmers*



were established with the active guidance and support of ERS. The occasion was also graced by Dr. Pradip De, Director, ICAR-ATARI, Zone-V, who encouraged the farmers to adopt scientific practices with technical support from ERS, ICAR-NDRI. To further strengthen livelihoods, paddy seeds and other essential agricultural inputs were distributed to the participating farmers.

### Educational Exposure Visit of Jawahar Navodaya Vidyalaya Students to ERS Campus

An educational exposure visit was organized for 86 students of Jawahar Navodaya Vidyalaya, Kalyani to ERS, ICAR-NDRI, Kalyani on August 28, 2025. The students were introduced to scientific livestock management, feeding practices, and experimental farm operations through guided interactions with ERS faculty, enhancing practical understanding and interest in agricultural sciences.



*Educational exposure to the brilliant students of Jawahar Navodaya Vidyalaya*

### Editorial Board

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