राडेअनुसं समाचार

NDRI News

राष्ट्र के डेरी स्वप्नों को समर्पित
Fulfilling Nation's Dairy Dreams

भाकृअनुप–राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल
ICAR-NATIONAL DAIRY RESEARCH INSTITUTE, KARNAL

www.ndri.res.in

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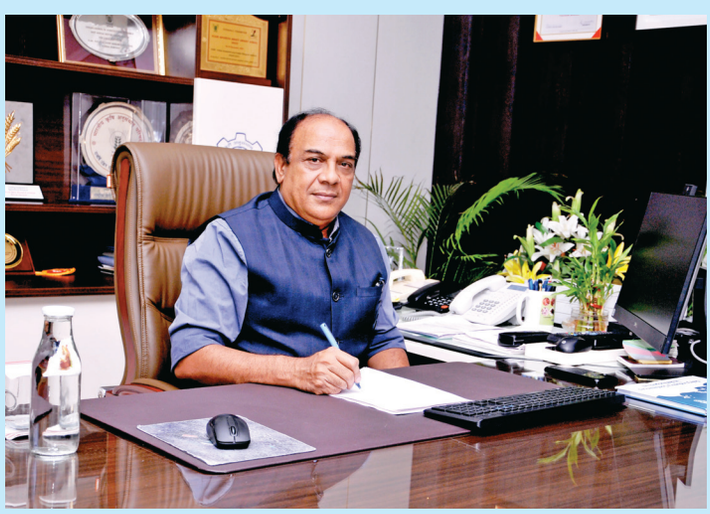
From the Director's Desk



It is with great pride that we reflect on the 24-year journey of the Progeny Testing (PT) program initiated by ICAR-National Dairy Research Institute (ICAR-NDRI), Karnal in 2001. This pioneering initiative has played a pivotal role in enhancing the genetic potential of dairy cattle and buffaloes within a 50 km radius of the Karnal district, Haryana.

The PT program exemplifies our unwavering commitment to science-based livestock improvement. Through structured breeding protocols, robust genetic evaluation methods, and systematic monitoring, we have significantly improved milk productivity, enhanced animal health indicators, and contributed to the economic resilience of dairy farmers in our adopted villages.

To date, 76,417 dairy animals have been identified, tagged, and registered across 25 villages under the PT framework. This meticulous registration enables the accurate maintenance of genealogical records and facilitates the tracking of genetic trends across generations.

During 2024–25, our field teams conducted 5,008 artificial inseminations (AIs) at farmers' doorsteps, ensuring equitable access to superior germplasm. The current herd includes 5,678 registered females, of which 4,505 are breedable. Notably, we deployed 15 Murrah bulls from the 21st Set and 8 from the 22nd Set for AI services, selected on the basis of their superior estimated breeding values (EBVs).

Performance data—including milk yield, reproductive efficiency, and health traits—has been diligently collected for 35,399 animals. This extensive database has enabled the evaluation of 17 sets of Murrah and 2 sets of Sahiwal bulls using advanced statistical tools. Our data-driven selection approach has proven instrumental in identifying and propagating genetically superior sires.

Capacity building remains central to our mission. Regular training programs for farmers and village AI workers have promoted best practices in dairy husbandry, bull calf selection, and record maintenance. These interventions have fostered scientific awareness and elevated the overall standard of livestock management.

Our efforts have yielded tangible outcomes. Participating villages have witnessed a remarkable 40% increase in average lactation yield among Murrah buffaloes. Additionally, the improved marketability of genetically superior animals has opened new income avenues for farmers. A comprehensive study conducted from 2016 to 2021 revealed that long-term participants experienced an average income enhancement of 30.51%, underscoring the program's socio-economic impact.

As we celebrate these accomplishments, we recognize the need for continued innovation and outreach. Future priorities include the expansion of AI and bull evaluation services

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to new regions, the adoption of digital record-keeping systems for real-time data management, and stronger integration of farmers with NDRI breeding centres and milk marketing networks.

The success of the PT program is a testament to the dedication of NDRI scientists, technical staff, and the enthusiastic participation of our farmers. Together, we remain committed to advancing a sustainable and scientifically driven dairy sector that contributes to national prosperity.

(Dheer Singh)
Director & Vice-Chancellor
ICAR-NDRI, Karnal

RESEARCH

Field Progeny Testing Program (Murrah Buffalo)

Vikas Vohra

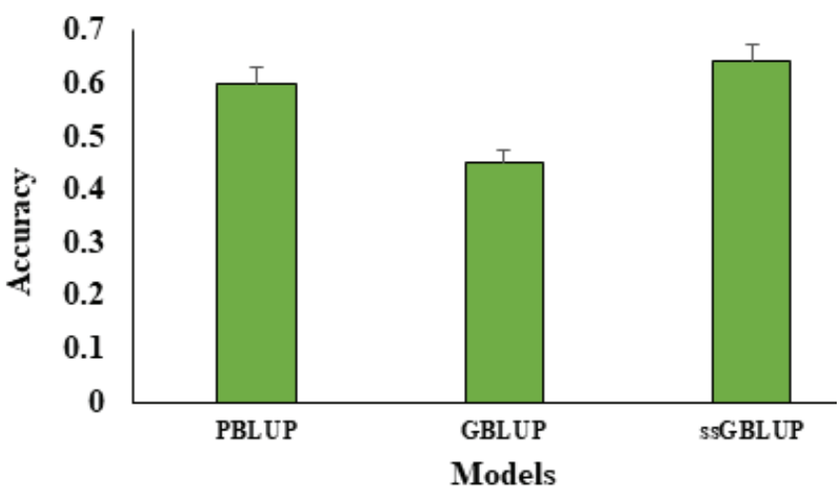
To expand Artificial Insemination (AI) coverage among buffaloes and retain a higher proportion of female progeny through their first lactation, additional farms located near the project area—with relatively large herd sizes (10–15 breedable buffaloes)—were identified and incorporated into the project. During 2024–25, a total of 5,008 AI procedures were carried out on Murrah buffaloes under field conditions, resulting in an overall conception rate of 46.29%. Among the villages participating in the FPT program, the highest conception rate was recorded in Kheriman Singh village at 61.47% (as of January 2025). Efforts to reduce the age at first calving and improve conception rates included balanced feeding through mineral mixture supplementation (provided as an incentive to farmers), timely heat detection, and appropriately timed AI. Progeny identification through ear tagging is ongoing to ensure accurate tracking. In the past year, a total of 1,548 Murrah buffalo calves (911 male and 637 female) were born in farmers' herds. Milk production data from 134 daughters have been recorded for evaluating bull performance under field conditions. During the same period, 15 breeding bulls from the 21st set and 8 breeding bulls from the 22nd set were utilized for AI.

Elite Buffalo Progenies born in the field areas of Karnal district, covered under FPT project on Murrah Buffalo

Genomic prediction model for the Crossbred cattle reared under small holder livestock system is optimized

Rani Alex

Implementing genomic selection in smallholder dairy systems presents significant challenges due to limited genetic connectedness and heterogeneous management practices. This study aimed to optimize genomic evaluation models for crossbred cattle in South India. The dataset comprised 305-day first lactation milk yield (FLMY) records from 17,650 cows collected between 1984 and 2021, along with partial pedigree information and genotypes for 1,004 bulls and 1,568 cows. Genetic evaluations were conducted using a female-only reference population. The estimated heritability for milk production was 0.32 ± 0.03, based on REML analysis. Our findings suggest that prediction models must account for all possible sources of variation and model them accurately, particularly in field conditions characterized by small herd sizes per owner and incomplete pedigree information. The accuracy of breeding value prediction reached 0.65 using the single-step genomic best linear unbiased prediction (ssGBLUP) model for crossbred cattle in Kerala. In the context of crossbred cattle breeding programs constrained by limited resources and incomplete pedigree data, we recommend the routine use of the ssGBLUP model for genomic evaluation and the selection of superior candidates to ensure the effective implementation of genomic selection strategies.



Average estimated accuracy for genomic prediction of breeding values obtained by REML- based models for 305-DMY in crossbred cattle

Assessing lemongrass and palmarosa grass residues as newer feed resource for dairy animals

Jannat Saini, Kamal Gandhi & Goutam Mondal

The feasibility of utilizing alternative feed resources must be evaluated for sustainable livestock production in the context of food security, climate change, and greenhouse gas emission mitigation. This study aimed to assess the nutritional value of lemongrass and palmarosa grass residues remaining after oil extraction, which are typically discarded as waste and contribute to environmental pollution. Fifteen lactating Sahiwal cows were randomly assigned to three groups—control, lemongrass residue (LGR), and palmarosa grass residue (PGR) - with five animals in each group, following a randomized block design. The control group received a diet comprising a concentrate mixture, green maize, and wheat straw, while in the LGR and PGR groups, 50% of the wheat straw was replaced with the respective grass residues. Nutrient intake, apparent digestibility, enteric methane emissions, and plasma concentrations of glucose, hepatic enzymes, and total protein did not differ significantly among the treatment groups. Similarly, no significant differences ($P > 0.05$) were observed in milk yield, milk composition, or 4% fat-corrected milk yield. The milk fatty acid profile—including total saturated fatty acids, total monounsaturated fatty acids, total polyunsaturated fatty acids, and total unsaturated fatty acids—also showed no significant variation among the groups. These findings indicate that lemongrass and palmarosa grass residues can replace up to 50% of wheat straw in the diets of lactating Sahiwal cows without adversely affecting digestibility, methane emissions, or production performance. Therefore, these residues may be considered promising alternative feed resources, potentially helping to mitigate dry fodder shortages in the dairy sector.

Institutional Technology Management Unit

Detail of Patents Filed during Jan-March 2025: 06

Sl. No	Title of Patent	Inventors	Application Number & Date of filing
1.	Media and method for detection of shigella species by three stage assay	Raghu H.V., Harshitha P.R., Aishwarya M, Shilpa Vij and Diwas Pradhan	202511002406 Filed on 10.01.2025
2.	Spore based paper strip sensor for detection of aflatoxin B1 in food and feed	Raghu H.V., Priya Kalyan, Srishti Patel, Naresh Kumar and Rajan Sharma	202511002407 Filed on 10.01.2025
3.	An in vitro assay for assessing the Aflatoxin M1 toxicity in a sample	Suneel Kumar Onteru, Ankita Kapri, Sanjay Sharma, Suman Rani, Priyanka Patel and Dheer Singh	202511012695 Filed on 14.02.2025
4.	A bull sperm RNA transcript panel for bull fertility prediction, methods and uses	Arumugam Kumaresan, Manish Kumar Sinha, Shivanagouda Patil, Ebenezer Samuel King J., Tirtha Kumar Datta, Rakesh Kumar, Ayyasamy Manimaran, Sakthivel Jeyakumar, Kerekoppa Puttaiah and Bhatta Ramesha	202511022146 Filed on 12.03.2025
5.	Fusion protein comprising cathelicidin and *Escherichia coli* endolysin	Jai Kumar Kaushik and Neha	202511022856 Filed on 13.03.2025
6.	A process for milk protein stabilized nanoencapsulated curcumin dried formulation	Rajesh Kumar, Kaviya P., Parvesh, G. Poojitha, Shaik Abdul Hussain, Rajan Sharma and Bimlesh Mann	202511028031 Filed on 25.03.2025

Detail of Copyright Filed during Jan-March 2025: 02

Sl. No.	Copyright Title	Author and Co Author	Dairy No. & Date of filing
1.	वैज्ञानिक विधि से पशुपालन	Nishant Kumar, Sachin Kumar, Ramesh Chandra and Rakesh Kumar	6262/2025-CO/L Filed on 23.02.2025
2.	Atlas of Socio-climatic Risk and Hotspots of Dairy Production System in Indo-Gangetic Plains of India	Sanjit Maiti, Siddhesh Zade, Amitava Panja, Sanchita Garai and Gopal Sankhala	15162/2025-CO/L Filed on 21.04.2025

Detail of Technologies Commercialization during Jan-March 2025: 09

ICAR-NDRI, Karnal organized a '*Technology Commercialization and MoU Exchange Ceremony*' on March 26, 2025, with Mr. Ajit Patel, Managing Director, Everest Instruments Pvt. Ltd., Ahmedabad, and Dr. Praveen Malik, CEO, Agrinnovate India Ltd., New Delhi. Following nine technologies have been commercialized to Everest Instruments Pvt. Ltd., Ahmedabad, Gujarat through Aginnovate India Ltd.

1) A new strip-based test for detection of neutralizers in milk
2) A new strip-based test for detection of urea in milk
3) Strip based test for detection of glucose in milk
4) Strip based test for detection of hydrogen peroxide in milk
5) Strip based test for detection of maltodextrin in milk
6) A strip-based test for detection of sucrose in milk
7) Strip for detection of sodium chloride in milk
8) Strip based technology for early detection of sub-clinical and clinical Mastitis
9) Detection of sorbitol in milk using paper-based discs

Commercialization of 09 ICAR-NDRI technologies to Everest Instruments Pvt. Ltd., Ahmedabad, Gujarat on 26.03.2025

EVENTS

- The Centre of Advanced Faculty Training (CAFT) in Animal Genetics and Breeding conducted its 37th National Training Program on "*Applying Genomic Models in Prediction of Breeding Value Using BLUPF90 Software*" from January 10–30, 2025, at NDRI, Karnal. Twenty-four participants from across India engaged in advanced topics including genomic selection, transcriptomics, epigenomics, metabolomics, and proteomics.

Inauguration of 37th National Training Program on 'Applying Genomic Models in Prediction of Breeding Value Using BLUPF90 Software' at ICAR-NDRI, Karnal during January 10–30, 2025

- Quinquennial Review Team (QRT) comprising of Dr. S.L. Goswami, Former Vice Chancellor, Banda University of Agriculture and Technology, Banda (Uttar Pradesh) & Former Director, NAARM, Hyderabad (Chairman) and the following members, Dr. Umesh Rai, Vice-Chancellor, University of Jammu; Dr. R.K. Sethi, Former Director, CIRB, Hisar; Dr. H.N. Mishra, Emeritus Professor, Department of Agricultural and Food Engineering, IIT, Kharagpur; Mr. Ajay Kumar Khosla, Former Executive Director, Mother Dairy & NDDB Dairy Services; Dr. Ravinder Malhotra, Former Principal Scientist, Dairy Economics, Statistics and Management, Karnal; and Dr. Suneel Onteru, Principal Scientist & Head, Animal Biochemistry Division, ICAR-NDRI. Karnal (Member Secretary) visited ICAR-NDRI, Karnal during January 14-18, 2025 at Main Campus, ICAR-NDRI, Karnal.

QRT Chairman Dr. S.L. Goswami along with Dr. Dheer Singh, Director, ICAR-NDRI and other QRT members visiting livestock research center at ICAR-NDRI on January 15, 2025

- ICAR-NDRI's Dairy Extension Division organized a three-week winter school on "*Advances in Socio-Climatological Dimensions of Climate Resilient Agriculture*" during February 6–26, 2025),

sponsored by ICAR's Agricultural Education Division. Thirteen scientists from various ICAR institutes participated, focusing on socio-economic impacts of climate change, advanced methodologies, and fostering knowledge exchange through lectures, workshops, and field visits.

Faculty and participants of winter school on 'Advances in Socio-Climatological Dimensions of Climate Resilient Agriculture' at ICAR-NDRI, Karnal during February 6–26, 2025

- The Livestock Production Management Division conducted an ICAR-sponsored winter school on "*Doubling Income of Dairy Farmers through Reproductive Management*" from February 6–26, 2025, at ICAR-NDRI, Karnal. Twenty-two participants from 11 states attended 62 lectures covering reproductive efficiency, advanced diagnostic techniques, semen quality, breeding, and dairy economics.

Faculty and participants of winter school on 'Doubling Income of Dairy Farmers through Reproductive Management' at, ICAR-NDRI, Karnal during February 6–26, 2025

- The Dairy Extension Division, ICAR-NDRI, organized a workshop on "*Extension Approaches for Climate Resilient Dairy Farming*" on February 12, 2025, funded by National Agricultural Science Fund. Attended by 80 stakeholders, the workshop identified 25 climate-resilient practices and validated a dairy farm school module aimed at enhancing resilience among smallholder dairy farmers in the Indo-Gangetic Plain region.

Inauguration of workshop on 'Extension Approaches for Climate Resilient Dairy Farming' organized by Dairy Extension Division, ICAR-NDRI, Karnal on February 12, 2025

- On February 9, 2025, Dr. Himanshu Pathak, DARE Secretary and ICAR DG, laid the foundation stone for a training-seminar hall at ICAR-NDRI's Krishi Vigyan Kendra, Karnal, under the corporate social responsibility scheme of Indian Agricultural Insurance Company Ltd. (IAICL) at Krishi Vigyan Kendra (KVK), ICAR-NDRI, Karnal. Emphasizing KVKs' role in disseminating agricultural technologies, Dr. Dheer Singh informed that over 20,000 farmers, extension officers, and students visit. Guests included Dr. M. S. Chauhan, Vice-Chancellor, GBPUAT, Pantnagar and Dr. C. Srinivas Rao, Director, ICAR-IARI, New Delhi.

Dr Himanshu Pathak laid the Foundation stone for training hall at KVK NDRI, Karnal on February 9, 2025

- The ICAR-North Zone Sports Tournament was held at ICAR-NDRI, Karnal from February 2–5, 2025. Inaugurated by Dr. Raghavendra Bhatta, Deputy Director General (Animal Science), ICAR the event hosted 911 participants from 24 ICAR institutes. Featuring diverse track, field, and indoor games, the tournament concluded with ICAR-NDRI emerging as overall champion. Dr. Dheer Singh, Director-ICAR-NDRI emphasized health and sportsmanship during the closing ceremony.

Dr. Raghavendra Bhatta, DDG (AS), ICAR inaugurated the ICAR-North Zone Sports Tournament-2024 during February 2–5, 2025.

- A three-day National Dairy Mela and Agri Expo was organized on 27th February – 1st March 2025 to showcase the latest research achievements as well as technological knowhow of NDRI. Dr. Rajbir Singh, Deputy Director General (Agricultural Extension), ICAR, New Delhi inaugurated this mega event. More than 40,000 farmers from Haryana, Punjab, Uttar Pradesh, Rajasthan, Himachal Pradesh, Bengal, Bihar, Madhya Pradesh and Northeastern states etc and 2000 school children visited this mega event. Further, 108 institutes/organization/ companies/progressive farmers exhibited their latest research output and products particularly on livestock feed and medicines, dairy machinery and innovative dairy products etc. A total of 196 dairy animals comprised of major breeds like Holstein, Jersy, Murrah, Sahiwal, Tharparker, Gir, Harianaetc were participating in 26 categories of different live competitions on milk production and beauty contest. Besides, paneer making and animal milking competitions were organized for rural women dairy farmers. Highest milk yield was recorded under different milk production competition categories as HF Cross-87.74 Kg; Murrah-28.866 Kg; Gir – 20.636 Kg; Sahiwal-19.027 Kg, Haryana-16.464 Kg, Tharparkar-17.565 Kg. This year a new session was organized to promote dairy-entrepreneurship and start-up among the rural youth. In this session, all the developed technologies of ICAR-NDRI, Karnal were presented and discussed. To attract the talented mind in dairy education, a session on career prospect of dairy education was also organized for the school children. In this mega event, special emphasis was given on promotion of livestock insurance among the dairy farmers with the help Agricultural Insurance Company.

Inauguration of National Dairy Mela and Agri Expo organized by ICAR-NDRI, Karnal during February 27 –March 1, 2025

- ICAR-NDRI, Karnal celebrated International Women's Day on March 8, 2025, featuring Dr. Sarika Gupta as chief guest. She emphasized women's rights and legal safeguards. Dr. Dheer Singh, Vice-Chancellor and Director, NDRI Karnal, honored three women achievers and highlighted that over 50% of NDRI students are women. The event, part of academic fortnight, saw participation from more than 750 scientists, faculty, and students.

Participants celebration of International Women Day on March 8, 2025 at, ICAR-NDRI, Karnal

- Dr. Ch. Srinivasan Rao, Vice-Chancellor and Director, ICAR-IARI, delivered the Dr. K. K. Iya Memorial Oration at ICAR-NDRI on March 10, 2025. Emphasizing the "One Health" approach, he highlighted the interconnectedness of soil, environment, crops, animals, and humans. Over 550 participants attended the event, which included felicitation and addresses by senior officials during the academic fortnight celebrations.

Dr. Ch. Srinivasan Rao, Vice-Chancellor and Director, ICAR-IARI, delivering Dr. K. K. Iya Memorial Oration at ICAR-NDRI on March 10, 2025

- Dr. Sanjay Kumar, Chairman of ASRB, delivered the Dr. D. Sundaresan Memorial Oration at ICAR-NDRI on March 11, 2025, highlighting India's $151 billion bio-economy and its global leadership in biopharma, bio-agriculture, and sustainability. The event, part of academic fortnight, saw over 500 attendees. Dr. Kumar was felicitated by Dr. Dheer Singh, with remarks from senior NDRI faculty.

Dr. Sanjay Kumar, Chairman of ASRB, delivering Dr. D. Sundaresan Memorial Oration at ICAR-NDRI on March 11, 2025

- Dr. Dr. Raghavendra Bhatta, Deputy Director General (Animal Science), ICAR delivered Dr. NN Dastur Memorial Oration at ICAR-NDRI on March 14, 2025. Dr. Bhatta delivered the lecture on "New Paradigms in Livestock Feeding and Management under changing climate". He emphasised that Govt. of India is committed to make India net-zero by 2047 and animal scientists have to work to achieve the same.

Dr. Dr. Raghavendra Bhatta, Deputy Director General (Animal Science), ICAR being felicitated by Dr. Dheer Singh, Director ICAR-NDRI on the occasion of Dastur Memorial Oration on March 14, 2025

- A Training-cum-Workshop on "*Enhancement of Competency and Work Efficiency in Organization*" was held at ICAR-NDRI, Karnal during January 20–22, 2025 for multi-tasking staff. Twenty-six participants received hands-on training in lab practices, equipment maintenance, stress management, and service rules, with exposure visits to the central library, Extension Education Institute, Nilokheri, and Goshala to understand practical aspects of their roles.

Faculty and participants of training cum workshop on 'Enhancement of Competency and Work Efficiency in Organization' at, ICAR-NDRI, Karnal during January 20–22, 2025

EXTENSION

- An awareness program on "*Natural Farming – Turmeric Cultivation*" was organized at KVK NDRI, Karnal, on February 11, 2025. The event featured Dr. Arora as the Chief Guest, who delivered an insightful lecture on turmeric farming practices. A total of 44 participants attended the program, engaging actively in discussions aimed at promoting sustainable and natural farming methods.

Awareness program on 'Natural Farming – Turmeric Cultivation' was organized at KVK NDRI, Karnal, on February 11, 2025

- KVK NDRI Karnal organized an exhibition in the three-day National Dairy Mela and Agri Expo (February 27–March 1, 2025), where experts disseminated key information on natural farming, fisheries, beekeeping, dairy farming, and crop residue management to participating farmers.

Farmers-Scientist interaction at KVK exhibition stall on February 28, 2025 during 'National Dairy Mela and Agri Expo' at NDRI Karnal

- KVK NDRI, Karnal, in collaboration with the National Service Scheme (NSS) unit of Dyal Singh College, Karnal, organized a '*Prabhat Pheri*' on Crop Residue Management in Dabri village on March 5, 2025, where 50 students joined and an expert delivered a technical lecture.
- KVK NDRI, Karnal conducted a "*Field Day*" on March 6, 2025, at Gondar village, showcasing wheat and mustard varieties (Radhika, CS 60) to 20 farmers, scientists, students, and staff.

A 'Field Day' on Mustard crop was organized by KVK NDRI, Karnal on March 6, 2025 at Gondar village

- A "*Harvest Mela*" was organized by KVK NDRI on March 11, 2025, at Jundla village, where 15 farmers and farm women learned about new mustard varieties, Radhika and CS 60, through expert lectures.

A 'Harvest Mela' organized by KVK NDRI, Karnal on March 11, 2025 at Jundla village

'Prabhat Pheri' on Crop Residue Management in the Dabri village organized by KVK NDRI, Karnal on March 5, 2025

- KVK NDRI, Karnal organized a poster-making competition at Dyal Singh College on March 18, 2025, promoting crop residue management. Thirty-two students participated, and a lecture on relevant machinery was delivered.
- During January - March 2025, KVK NDRI, Karnal organized 08 training program and given training to more than 300 farmers related to animal nutrition, vermicomposting, milk production and animal breeding.

HONOURS/ AWARDS/ RECOGNITIONS

Names	Award received/ Honours/ Recognitions	Organization	Event & date	Place
Deepak, Manoj Kumar C.T., Supreetha S., Sathish Kumar M.H., Jayaraj Rao K., and Priyanka Singh Rao	Second Best poster presentation award	Indian Dairy Association, New Delhi	southern dairy summit organized by IDA-south zone during 9-11 January, 2025	Bengaluru
Goutam Mondal	Fellow award	Animal Nutrition Association, Izatnagar	World Animal Nutrition Conference during January 21-23, 2025	Nagpur
Nilkanth Pawar, Richa Singh, Sumit Arora, Rajan Sharma and Heena Kauser	First prize in poster presentation	NAAS, New Delhi & GBPUAT, Pantnagar	XVII Agricultural Science Congress during February 20-22, 2025	Pantnagar
Animesh Patel, Manisha and A. K Dang	First prize in poster presentation	Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut, Uttar Pradesh	16th Biennial Conference of the Association of Public Health Veterinarians and National Symposium on Translating One Health into Action in Combating Emerging Diseases, Drug Resistance and Ensuring Food Safety under Changing Climatic Scenario during February 20-21, 2025	Meerut

S. Jeyakumar	Best Poster Presentation	Indian Society for the Study of Reproduction and Fertility, Jaipur	International Conference on Reproductive Biomedicine: Integrating Basic and Biological and Applied Research into Clinical Practice for Human Welfare during February 14 to 16, 2025	Jaipur
Sushil Kumar Sharma, D. N. Das, Jayesh Vyas, Devanna, Madhuri A. Kamble and Mukund A. Katatalware	best Poster presentation	The Society for Conservation of Domestic Animal Biodiversity, Karnal	Technological Advancement and Their Application for Management of Native Animal Genetic Resources (AnGR)" and the XXII Annual Convention of Society for Conservation Domestic Animal Biodiversity (SOCDAB) during January 21- 22, 2025	Bengaluru

PERSONALIA

Permission granted to the following Scientific/ Technical/ Administrative Staff for attending Workshop/ Seminar/ Symposia/ Conference/ Training during the period January to March, 2025:

Name & Designation	Period	Title of the event	Venue
Dr. S. S. Lathwal, Principal Scientist Dr. Arindam Dhali Dr. S. Subash Dr. S. Jeyakumar Dr. A. Manimaran Dr. Priyanka Singh Rao Dr. D. N. Das Dr. Sathish Kumar, MH Dr. Vedamurthy, GV Dr. P. Heartwinamala Dhass Dr. Menon Rekha Ravindra Dr. F. Magdaline Eljeeva Emerald Dr. Laxmana Naik.N. Dr. Rashmi H.M. Dr. Basavaprabhu Dr. M. Sivaram	January 9-11, 2025	Southern Dairy Summit	Bengaluru, Karnataka
Dr. A. K. Samanta, PS Dr. Sachin Kumar, Scientist Dr. Nitin Tyagi, PS Dr. Goutam Mondal, PS Dr. Chander Datt, PS Dr. A. K. Mishra, PS	January 20-22, 2025	World Animal Nutrition Conference (WANACON-2025)	Animal and Fishery Science University, Nagpur
Sh. Biswajit Sen, Scientist	January, 21 to February 10, 2025	Winter school training on 'Applications of Deep Learning in Agriculture using Python'	ICAR-IASRI, New Delhi

Dr. Pradyuman Barnwal, PS Er. Ankit Deep, Scientist	January 28-29, 2025	XXIV Annual workshop of AICRP on MAH	MPUAT, Udaipur
Dr. Writdhama Prasad, Scientist	February 13, 2025	Delivered a lecture on 'Processing and value addition in Ghee' (online)	NIFTEM, Kundli
Dr. S. K. Onteru, PS Dr. Rubina K. Baithalu, Sr. Scientist Dr. S. Jeyakumar, Principal Scientist (ARGO)	February 14-16, 2025	International Conference on Reproductive Biomedicine: Integrating Basic Biological and Applied Research into Clinical Practice for Human Welfare and 35th Annual Meeting of the Indian Society for the Study of Reproduction and Fertility Conference	RIC (Rajasthan International Centre) Jaipur
Dr. Pawan Singh, PS Dr. Pradyuman Barnwal, PS Dr. Rakesh Kumar, PS Dr. Sohan Vir Singh, PS Dr. Richa Singh, Scientist Dr. Rubina K. Baithalu, Sr. Scientist Dr. Raghu H.V., Sr. Scientist Dr. Sachin Kumar, Scientist Dr. Pradip Behare, Scientist Dr. Ashis K. Samanta, PS Dr. Indu Devi, Scientist Dr. Gautam Mondal, PS Dr. Heena Sharma, Scientist Dr. Deep Narayan, PS Dr. Yogesh Khetra, Sr. Scientist Mr. Gaurav Deshwal, Scientist Dr. Anurag Saxena, PS	February 20-22, 2025	XVII Agricultural Science Congress (ASC-2025)	NAAS, GBPUAT, Pantnagar
Dr. Diwas Pradhan, Scientist	February 22-23, 2025	15th India Probiotic Symposium and present the Research Abstract	PGIMER, Chandigarh
Dr. Bharati Pandey, Scientist	February 25-26, 2025	International Conference and pre-conference workshop on Metabolomics and Lipidomics	IIT Bombay
Dr. Ashok Santra, PS	February 26-28, 2025	National conference on 'Precision livestock management technology towards strengthening farming efficiency and animal welfare'	Rajasthan College of Agriculture, Udaipur, Rajasthan
Dr. Santanu Banik, PS	February 28 to March 3, 2025	14th National Symposium on Coastal Agriculture: 'Harnessing Fragile Coastal Ecosystem for Food and Environmental Security'	ICAR-CRIJAF, Barrack pore, West Bengal
Dr. Raghu H.V., Sr. Scientist	March 5-7, 2025	National Conference on 'Indian Society for Sheep and Goat Production and Utilization on 'Transforming Small Ruminant Production: Empowering Precision Farming and Genomic Innovations for Enhanced Productivity and Sustainable Development'	ICAR-CIRG, Makhdoom, Farah (Post), Mathura (U.P.).

Dr. Rajan Sharma, PS Dr. Sohan Vir Singh, PS Dr. Pradip Behare, Scientist	March 6-8, 2025	51st Dairy Industry Conference: 'Indian Dairying - Global Growth; Local Strength"	Samrat Ashoka International Convention Centre, Patna, Bihar
Dr. Sachin Kumar, Scientist Dr. M. K. Singh, Sr. Scientist Dr. Sachinandan De, National Fellow	March 8-9, 2025	XXII National Academy of Veterinary Sciences (I) Convocation - cum - Scientific Convention on 'Challenges and priorities for optimal production of livestock, poultry, healthcare and nutrition of pets'	Veterinary College, KVAFSU, Hebbal, Bengaluru
Dr. Sangita Ganguly, Scientist	March 8-10, 2025	Global Conference on Innovations to Impact: Gender Transformative Approach for Sustainable Agri-Food Systems (online)	ICAR-CIWA, Bhubaneswar

Joining/ Promotions/ Transfers/ Retirements

- Shri. Asif Miyan promoted as Senior Technical Officer w.e.f. February 4, 2025.
- Shri. Mahadevi, MTS retired on February 28, 2025 from active services of ICAR.
- Shri. H. Sateesh, MTS expired after a brief period of illness on March 9, 2025.

राजभाषा एकक

संस्थान राजभाषा कार्यान्वयन समिति की बैठक

भाकृअनुप–राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल की राजभाषा कार्यान्वयन समिति की दिनांक 28.03.2025 को संपन्न हुई 106वीं समीक्षा बैठक का कार्यवृत्त

डा. धीर सिंह, निदेशक, भाकृअनुप–राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल की अध्यक्षता में संस्थान राजभाषा कार्यान्वयन समिति की 1 जनवरी से 31 मार्च, 2025 तक की 106वीं तिमाही समीक्षा बैठक दिनांक 28.03.2025 को अपराह्न 2.00 बजे के साथ संस्थान के पिनाकी में आयोजित की गयी। बैठक में संस्थान के 23 वरिष्ठ पदाधिकारी शामिल हुए।

बैठक के आरंभ में सदस्य–सचिव, श्री धीरज शर्मा ने सभागार में समिति के अध्यक्ष तथा अन्य सदस्यों का स्वागत किया तथा सभा में संसदीय राजभाषा समिति द्वारा प्रेषित की गई निरीक्षण प्रश्नावली एवं दिनांक 18.12.2025 को आयोजित राजभाषा की पिछली तिमाही बैठक के कार्यवृत्त पर प्राप्त कार्रवाई रिपोर्ट पर चर्चा की गई और निर्णय लिए गए।

हिन्दी कार्यशाला का आयोजन

भाकृअनुप–केन्द्रीय आलू अनुसंधान संस्थान, शिमला द्वारा दिनांक 11.03.2025 को जूम मीटिंग द्वारा 'राजभाषा कार्यान्वयन एवं संसदीय राजभाषा प्रश्नावली' विषय पर कार्यशाला का आयोजन संस्थान के श्री धीरज शर्मा, संयुक्त निदेशक (राजभाषा) द्वारा व्याख्यान दिया गया जिसमें राष्ट्रीय डेरी अनुसंधान संस्थान, करनाल एवं केन्द्रीय आलू अनुसंधान संस्थान, शिमला के अधिकारी शामिल हुए।

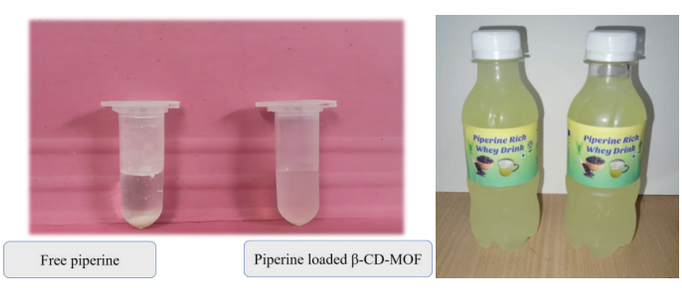
SOUTHERN CAMPUS, BENGALURU

Research

Piperine encapsulated in metal organic frameworks used for the preparation of functional whey beverage

Manoj Kumar C.T., Sathish Kumar M.H., Laxmana Naik N., Rashmi H.M.

Piperine is a phytochemical that often exhibits poor water solubility and stability. Encapsulation of piperine within β-CD-MOF significantly improved its solubility, a critical factor for enhancing its functional properties and bioavailability. It was incorporated into a whey beverage at a concentration of 5 mg/100 mL to enhance its functional value. The fortified whey beverage exhibited high antioxidant activity (15.02 ± 0.36 µM TEAC/g). Sensory evaluation indicated that the fortified samples possessed moderate spiciness, pungency, and favorable overall acceptability.



Piperine encapsulated functional whey beverage

Zn-curcumin nanoconjugate for therapeutic management of subclinical mastitis in dairy cattle

A. Manimaran, A. Kumaresan, D. Rajendran, M. Sivaram, S. Jeyakumar and D N. Das

Oral supplementation of Zn–curcumin nanoconjugate in cows affected by subclinical mastitis resulted in a significant reduction in California Mastitis Test (CMT) scores, milk somatic cell count (SCC), and Staphylococcus spp. colony-forming units (CFU/mL), along with an increase in solids-not-fat (SNF) content compared to non-supplemented cows. The Zn–curcumin nanoconjugate demonstrated greater stability and antimicrobial activity than curcumin alone. Its supplementation significantly reduced intramammary infections and inflammation, potentially through NF-κB-mediated modulation of cytokine expression, thereby enhancing udder immunity.

Development of a prototype reactor for thermochemical conversion of cow dung biomass

Dr. Amita Vairat Dinkar, Er. Sudipta Mondal, Dr. P. Heartwin Amaladhas, Dr. Menon Rekha Ravindra, Dr. Mukund Kataktalware

A torrefaction reactor with a 20 L capacity was designed and fabricated for the thermochemical conversion of cow dung and biomass into biochar. The closed reactor consists of a reaction chamber equipped with a central perforated pipe for gas flushing during the conversion process. The system is integrated with a condenser unit and accessories for monitoring and measuring pressure in the headspace of the reaction vessel, along with temperature sensors connected to a thermostatic control. The unit operates automatically via a custom-designed control panel programmed to regulate the operating parameters. The reactor has been successfully tested for converting cattle dung into biochar at temperatures ranging from 250–300 °C. Ultimate analysis of the torrefied biomass showed a 40–45%

Prototype Reactor for Thermochemical Conversion

increase in carbon content compared to untreated dried dung. Biochar, a carbon-rich material, has versatile applications including energy production, use as a prebiotic in animal feed, as a sustainable ingredient in the chemical industry, as a filtration substrate in wastewater treatment, and as a soil amendment.

Events

Visit of Quinquennial Review Team (QRT) to Southern Regional Station of ICAR-NDRI, Bengaluru

The QRT team for 2018–2023, chaired by Dr. S. L. Goswami and comprising distinguished members, visited the Southern Regional Station (SRS) of ICAR-NDRI, Bengaluru, from January 31 to February 1, 2025. Accompanied by ICAR-NDRI leadership, the team interacted with faculty and emphasized the station's pivotal role in dairy research for Southern India. Discussions highlighted the need to conserve local breeds, promote innovations, and strengthen funding through entrepreneurship. The team also released new dairy products and visited various research and training facilities.

Glimpses of the visit of QRT team to SRS of ICAR-NDRI during January 31, 2025 - February 1, 2025

- Orientation program for the newly reported master's and doctoral students at SRS of ICAR was conducted on January 20, 2025. During the program students and faculty introduction was held. Besides, each section Incharge briefed about their section activities and students' achievements.
- Three students from Department of Food Technology have undergone training at dairy processing and technology.
- A Winter School on "Milk Derived High Value Bioactive Compounds" was held from January 31 to February 20, 2025, at SRS-NDRI, Bengaluru, with 24 participants from SAUs and ICAR institutes. The program featured 39 theory and 16 practical sessions, including four guest lectures, focusing on innovative processing methods for isolating and preserving bioactive compounds.

Participants of ICAR sponsored Winter School program with Dr. Dheer Singh, Vice Chancellor and Director, ICAR-NDRI, Karnal, Dr. S. S. Mann, Chairman, Mann Ventures and Dr. Rajan Sharma, Joint Director (Research), ICAR-NDRI, Karnal on January 31, 2025

Extension

- Under the ATMA program, a total of 180 farmers from Tamil Nadu and 30 farmers from Karnataka visited the campus and participated in a one-day training-cum-exposure program on Scientific Dairy Cattle Management on March 19-20, 2025.
- A total of 368 students from various educational institutions visited the campus for exposure and to gain technical knowledge on dairying and milk processing.

EASTERN CAMPUS, KALYANI

Research

Effect of dietary nitrogen source on growth and feed efficiency in growing calves

P. Patir, A. Santra, D.K. Mandal, M. Mondal, S.K. Das and S. Banik

A slow-release non protein nitrogen product, mPro®, was fed to the growing calves to observe its efficacy for replacing urea completely and oil cake partially. Growing Jersey crossbred calves were fed three different iso-nitrogenous diets: concentrate mixture containing mustard oil cake (G1 group); mustard oil cake partially replaced with 1% feed-grade urea (G2 group); and mustard oil cake partially replaced with 1.2% mPro® (G3 group). Daily DMI was similar while, daily body weight gain and feed conversion efficiency were higher ($p<$ 0.05) in calves fed mPro® (G3 group). The DMI per kg body weight gain was 6.9, 7.2, and 6.2 kg, while TDNI per kg body weight gain was 4.4, 4.6, and 4.0 kg in the G1, G2, and G3 groups, respectively. It was concluded that mPro® may be used to replace feed-grade urea completely or oil cake partially in ruminant diets for reducing feed costs and improving growth performance.

Mitigating Arsenic Toxicity in Young Goats: Effects of Vitamin E and *Saccharomyces cerevisiae* on Feed Intake, Carcass Quality, Tissue Mineral Profiles, and Potential Human Health Risks

D. Satapathy, T. K. Dutta, A. Chatterjee, S. K. Yadav and A. Mohammad

This study investigated the protective effects of vitamin E, yeast culture (*Saccharomyces cerevisiae*), and their combination against arsenic toxicity in young Black Bengal goats. Thirty male kids were randomly assigned to five dietary treatment groups for 20 weeks. Arsenic

(50 ppm) was included in all diets except the control, with vitamin E (250 IU/kg feed) and/or yeast (4×10^9 CFU/day) supplementation. Arsenic exposure significantly decreased feed dry matter and crude protein intake ($p < 0.01$), while supplementation mitigated these effects and significantly reduced blood arsenic levels ($p < 0.001$). Arsenic accumulated in the liver, kidneys, and testes, with vitamin E—alone or combined with yeast—effectively reducing tissue deposition. Yeast alone showed limited efficacy. Liver copper concentration was negatively correlated with arsenic ($p < 0.008$). Despite partial mitigation, arsenic residues in edible tissues exceeded safety limits, posing potential carcinogenic risk. Vitamin E, especially with yeast, showed promise in alleviating arsenic toxicity.

Visit of QRT team in ERS, Kalyani of ICAR-NDRI, Karnal

A Quinquennial Review Team, led by Dr. S. L. Goswami, visited ICAR-NDRI ERS Kalyani to assess its 2018–2023 progress during January 28-30, 2025. The team praised innovations in mastitis detection and precision dairy farming, acknowledged outreach impact, and urged multidisciplinary research, industry collaboration, infrastructure upgrades, and digital training to enhance sustainable dairy development and support farmer livelihoods through improved productivity.

Glimpses of the visit of QRT team to ERS of ICAR-NDRI during January 28-30, 2025

Extension

- The Eastern Regional Station (ERS) of ICAR-NDRI participated in the '*National Natural Fibre Festival 2025*' at ICAR-NINFET, Kolkata during January 2-4, 2025, showcasing innovations like mineral mixtures, milk replacers, and sustainable practices. Hon'ble Minister Shri Giriraj Singh appreciated their contributions. The event fostered collaboration between dairy and textile sectors, promoting eco-friendly livestock management and rural development through integrated sustainable solutions.

Hon'ble Minister Shri Giriraj Singh interacted with Scientist from ERS, ICAR-NDRI, Karnal at ICAR-NINFET, Kolkata during January 2-4, 2025

- On January 8, 2025, the ERS of ICAR-NDRI organized an animal health camp during a rural exhibition in Alukaranbarh, West Bengal. A multidisciplinary team provided veterinary services—vaccination, deworming, and check-ups—while educating farmers on modern livestock practices, disease prevention, and nutrition. The initiative addressed local animal health needs and promoted scientific awareness among the rural farming community.
- As part of its outreach efforts, ICAR-NDRI's Eastern Regional Station participated in the '*Eastern Zone Regional Agricultural Fair 2024–25*' at ICAR-CRRI, Cuttack. From February 27 to March 1, 2025, it showcased innovative dairy and agricultural technologies through an exhibition stall, attracting farmers, researchers, and extension personnel, and facilitating valuable interactions on sustainable regional development.

- The ERS of ICAR-NDRI, Karnal, in collaboration with KVK Namsai, organized a scientist–farmer interaction on scientific livestock rearing at Namsai, Arunachal Pradesh, on February 6, 2025. Eighty farmers participated. Awareness was created on pig and poultry management, and livestock inputs were distributed. Scientists also visited farms, offering on-spot guidance under the ongoing NEH project.

Glimpses of scientist–farmer interaction and input distribution at Namsai, Arunachal Pradesh, on February 6, 2025

- A three-day NABARD-funded training on "*Scientific Dairy Farming*" was held from March 4–6, 2025, benefiting 75 farmers from Birbhum and Nadia. Covering breeding, nutrition, health, and sustainability, the program enhanced participants' practical knowledge in modern dairy practices to improve livestock productivity and profitability in rural communities.

Scientist and Participants in training on 'Scientific Dairy Farming' during March 4–6, 2025 at ERS of ICAR-NDRI, Karnal

- The ERS of ICAR-NDRI, Karnal, in collaboration with KVK Dhubri, organized a livestock-based livelihood improvement program for NEH farmers on March 5, 2025, in Dhubri, Assam. Activities included training, input distribution, and interaction. Around 200 farmers benefited from inputs like chicks, feed, and equipment to promote scientific livestock rearing practices.

Distribution of the input to the farmers at Dubri (Assam) on March 5, 2025

- On March 11, 2025, ICAR-NDRI's ERS organized an input distribution camp at KVK-Burdwan, providing 1,500 ducklings, feed, and equipment to 70 ST farmers, alongside training to enhance their duck farming practices and support sustainable livelihood development.
- On March 12, 2025, the ERS of ICAR-NDRI, Karnal organized an input distribution camp in Kankutia village, distributing poultry, feed, and equipment to 60 scheduled tribe farmers, followed by a scientist-farmer session offering technical guidance on livestock and agricultural management.

Scientist distributing the input to the farmers at Kankutia village on March 12, 2025

- On March 18, 2025, an input distribution program organized by the ERS of ICAR-NDRI, Karnal in its premises to support 180 tribal farmers through livestock, farm inputs, implements, and training. The initiative aimed to enhance livestock-based livelihoods, promote diversified farming, and encourage sustainable agricultural practices through expert guidance.

Distribution of the input to the farmers at ERS Kalyani on March 18, 2025

- On March 22, 2025, ICAR-NDRI's Eastern Regional Station, Kalyani, organized a scientist-farmer interaction at CAU, Imphal, Manipur, promoting scientific pig and poultry rearing. Fifty-one farmers participated. Inputs like piglets, feed, and medicines were distributed, and scientists conducted on-site visits under the institute's ongoing NEH project.

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