

एन डी आर आई

NDRI

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Fulfilling Nation's Dairy Dreams

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ICAR-National Dairy Research Institute, Karnal

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From the Director's Desk



In India, about 43 per cent of Science, Technology, Engineering and Mathematics (STEM) graduates are women, which is the highest in the world. However, it is a matter of great concern that the share of women in STEM jobs is a mere 14 percent. The possible reasons behind low participation of women in STEM jobs range from their being social stereotypes to safety related issues at their workplace. Despite the best efforts on the part of the Government of India to provide equal opportunities to women at the professional front, inherent social mind set and the additional load of household responsibilities further hinder their career progression. Realizing this disparity, Department of Science and Technology (DST) under the aegis of the WISE-KIRAN Division has launched an initiative by the name- Gender Advancement for Transforming Institutions (GATI). GATI aims to nudge institutions of higher education and research towards

In this issue	From Director's Desk	Research	Events	Extension Activities	Honours and Awards	Personalia	राज भाषा एकक	Southern Campus, Bengaluru	Eastern Campus, Kalyani
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supporting diversity, inclusion and the full spectrum of talent for their own success and progression. In particular, it aspires to create an enabling environment for equal participation of women in the disciplines of Science, Technology, Engineering, Medicine and Mathematics (STEMM) at all levels, addressing deep-rooted problems. With the launch of GATI, India joins the list of International Gender Equality Charters such as Athena Swan (Scientific Women's Academic Network) in UK and Ireland; SAGE (Science in Australia Gender Equity) Athena Swan in Australia; SEA Change (STEM Equity Achievement Change) in US and Dimensions in Canada.

It is a matter of immense pleasure and honour and a proud moment for ICAR-National Dairy Research Institute, Karnal to be selected as one of the pilot Institutes for this very timely initiative of DST. With this, NDRI is also one amongst the top 30 institutions selected pan India through a competitive proposal call, which was advertised in November, 2020. With the initiation of the GATI program at NDRI, the Institute aims towards the betterment of working environment and empowerment of faculty, staff and students, especially women. As a first step, the Institute has been organizing various gender sensitization events during the past few months. Some of these events include logo designing competition, felicitation of women scientists who published research papers in high impact journals for motivating them to do even better and also organisation of webinars on the occasion of National Science Day and International Women's Day. Further, the remarkable feature of these webinars was that out of the six speakers invited so far, five were women researchers and academicians holding positions of great repute.

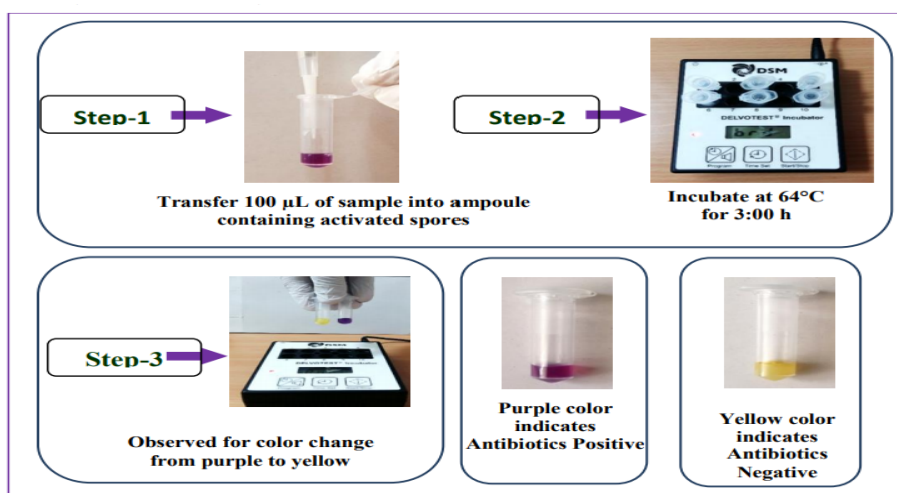
The problem pertaining to this disparity of men and women in the scientific Institutions in terms of the job opportunities as well as career progression needs to be addressed at societal as well as at the policy and institutional level. We, at NDRI, are committed to design gender sensitive policies and infrastructure to bridge the gender divide. We tenaciously believe that increased participation of women in science and agriculture including dairying, as well as decision making and policy making is a sine-quo-non for sustainable development of both science and society.

(Dr. M.S. Chauhan)
Director

RESEARCH

Technology Transfer- Spore Based Kit for Detection of Antibiotic Residues in Milk at Dairy Farm

ICAR-NDRI has developed spore based concept for rapid screening of antibiotics under field conditions for its application at various stages in dairy food chain to address the health concern of antimicrobial resistance due to usage of antibiotics. The technology was licensed to five different entrepreneurs/ dairy industry including two license(s) executed in last month to M/S Schreiber Dynamix Dairies Pvt. Ltd., Baramai Maharashtra on August 31, 2021 and M/S Tirumala Milk Products Private Limited (TMPL), Chennai on October 14, 2021. Technology is helping the stakeholders in complying FSSAI standards and supply of safe milk to consumers.



Kit for Detection of Antibiotic Residues in Milk at Dairy Farm

Unique gene sequences identified

A team under the leadership of Dr. G.R. Gowane identified a total of 59 novel gene sequences, which were submitted to NCBI genebank, under the DST-SERB project on Fitness Black Box: Deciphering the Ovar-MHC Variability in sheep breeds of India.

Sl. No.	Gene and Germplasm/ Breed	Accession Nos.	No. of Sequences
1)	DRB1 variability in Chokla, Madras Red and Marwari Sheep	OK169377 to OK169389	12
2)	DQA2 variability in Avishaan, Garole, Kheri and Kendrapara Sheep	OK169390 to OK169393	4
3)	DQA2 variability in Nali x Rambouillet and Sonadi x Corriedale Sheep	OK169394 to OK169398	5
4)	DQA2 variability in Harnali and Munjal Sheep	OK169399 to OK169407	8
5)	DQA2 variability in Madgyal and Sangamneri Sheep	OK169408 to OK169414	6
6)	DQA2 variability in Magra, Muzaffarnagri and Poonchi Sheep	OK169415 to OK169419	5
7)	DQA1 variability in Nali x Rambouillet, Sonadi x Corriedale and Kendrapara Sheep	OK169420 to OK169438	19

New Projects Initiated

- 1) A Consultancy project work “Validation study on the Milkochill for instant chilling of milk” (project cost: Rs. 3,38,964/-) with M/s PROMPT INNOVATIONS PRIVATE LIMITED, Ahmedabad (Gujarat) has been received and the consultant team is Dr. P. Barnwal, Er. Ankit Deep, Dr. Rajan Sharma and Dr. S.S. Lathwal.
- 2) ICAR-NDRI, Karnal has been selected by CPCB (Central Pollution Control Board) for the inspection of 15-GPIs (Grossly Polluting Industries) under the project “GPI inspection by technical institutes in main stem states of river Ganga and Yamuna”. The project is funded by CPCB, Ministry of Environment, Forest & Climate Change with a sanctioned project cost of Rs. 7,30,125/-. Dr. Chitrnanayak, PS, DE Division is the NODAL OFFICER and Dr PS Minz, Sr.Sci., DE Division is Co-PI of the project.

EVENTS

International Webinar on Genomic Dairy Cattle Breeding in Developed Countries- with a view to its application in India

Animal Genetics & Breeding Division, ICAR-National Dairy Research Institute organized on September 20, 2021 an international webinar in commemoration of India's 75 years of Independence and *Azadi Ka Amrit Mahotsav* on the topic “Genomic Dairy Cattle Breeding in Developed Countries - with a view to its application in India” under IDP-NAHEP programme of ICAR.

Dr. M. S. Chauhan, Director of the Institute and the Chief Patron inaugurated the webinar. Prof. Bernt Guldbrandtsen from the University of Copenhagen was the Speaker on the occasion. He gave a presentation on the pros and cons of the genomic selection of dairy cattle in the developed countries and explained its possible utilization for dairy development programme in our country, which was followed by an interactive and detailed discussion session. Dr. Sabyasachi Mukherjee, convenor of the webinar delivered vote of thanks. A strong audience of 111 participants from post-graduate students, scientific faculty from ICAR-NDRI as well as other ICAR Institutes was the testimony to the success of this international webinar.

Webinar on “Gandhian Philosophy and Current Scenario of Agriculture”

Division of Dairy Economics, Statistics and Management organised a webinar on the topic “Gandhian Philosophy and Current Scenario of Agriculture” on October 2, 2021 to mark the anniversary of Father of the Nation. Prof. Sudhir Singh, a well-known academician and Professor, Department of Political Science, Dyal Singh College, University of Delhi, New Delhi was the guest speaker. Dr. Manmohan Singh Chauhan, Director, ICAR-NDRI presided over the function. He apprised the participants about the rich history of NDRI and its relation with Mahatma Gandhi Ji and Pandit Madan Mohan Malviyaji. Prof. Sudhir Singh informed about the principles of Gandhi our philosophy viz. Swachhta, Seva and Shanti and their relevance in the modern world. He informed the participants that Mahatma Gandhi firmly believed that prosperity of agriculture and farmers should pave the way for economic prosperity of the country. The lecture was followed by an interactive session. There were over 100 participants in the event including Head of the Divisions, Section In-charges, Scientists, and students of NDRI.



National Training programme on “Chemical and Microbiological Quality Assessment of Milk and Milk products” under IDP-NAHEP

National Training programme on “Chemical and Microbiological Quality Assessment of Milk and Milk products” was organized at ICAR-National Dairy Research Institute, Karnal under IDP-NAHEP from October 6 to 26, 2021. Dr. Dheer Singh, Joint Director (Research), NDRI inaugurated the training programme. He said that the training programme plays an important role in bringing up the qualitative improvement and to update the dairy personnel with latest knowledge in the novel analytical techniques. Laboratory testing of a food product is an important process to rule out the possibility of any biological or chemical hazard in a food. Dr. R.R.B. Singh, Joint Director (Academics), ICAR-NDRI, Karnal said that this training programme has been designed to cater to the needs of personnel working in quality control labs of dairy and food industry. The training included 17 lectures-cum-practical from Dairy Chemistry Division and around 20 lectures-cum-practical from Dairy Microbiology Division. The curriculum for this training programme was carefully developed to include a variety of sophisticated techniques and new ways for ensuring the quality and safety of dairy foods. A total of 23 participants including thirteen from industry and nine from academics attended this training programme.



Webinar on “Agro-Environmental Ethics”

Division of Dairy Economics, Statistics and Management organized a webinar on the topic “Agro-Environmental Ethics” on October 7, 2021 by as a part of Azadi ka Amrit Mahotsav. Prof. Ramesh Chandra Sinha, a well-known academician and Chairman, Indian Council of Philosophical Research (ICPR), New Delhi was invited as the guest speaker. Prof. Sinha emphasized that in the era of climate change, economy and environmental conservation should go hand in hand. He suggested introducing a course on Agro-Environmental Ethics in Agricultural Universities which shall help in sensitizing the students. Dr. M.S. Chauhan, Hon. Director & VC, NDRI and Dr. Dheer Singh, JD (Research), NDRI joined as panelists and shared their views. There were over 70 participants in the event including Head of the Divisions, Section In-charges, Scientists of NDRI/ Other institutes, and students of NDRI.

National Training Programme Upskilling of Extension Professionals in Scientific Dairying

ICAR-National Dairy Research Institute, Karnal organised a “National Training Programme on “Upskilling of Extension professionals in scientific dairying” under Development Action Plan for Schedules Caste (DAPSC) during October 21 to 30, 2021. About 12 trainees from Uttar Pradesh, Jammu & Kashmir and Haryana participated. Dr. M.S. Chauhan, Director, NDRI while delivering the valedictory address highlighted the role of dairy sector in doubling the farmer’s income and possible contribution of extension functionaries in enhancing the income and profitability of farmers. He said that continuous upgrading of knowledge and skill is very essential for greater work performance at field level. Dr. K. Ponnusamy the Course Director highlighted the achievements of the training programme and the exposure of trainees to extension programmes of NDRI such as Dairy education at farmers door, farmers farm school, live fodder museum and women empowerment lab.



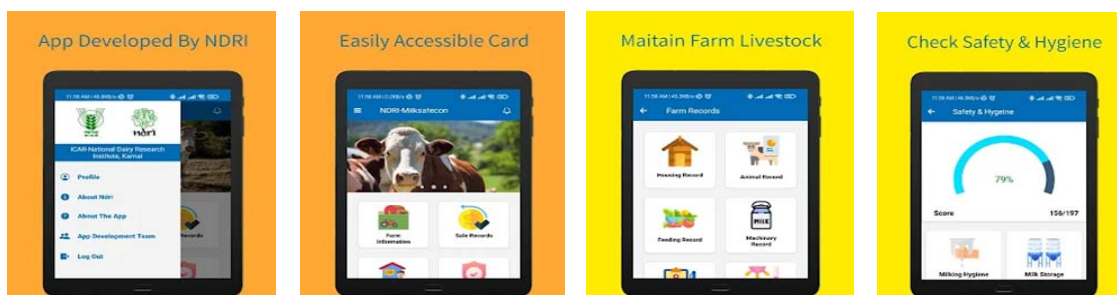
National Webinar on “Engineering Self-reliance in Dairy Industry”

ICAR-NDRI organized a National Webinar on the theme “Engineering Self-reliance in Dairy Industry” on October 23, 2021 through virtual mode. The Webinar was organized in collaboration with Indian Dairy Engineers Association (IDEA). There were four invited lectures delivered by eminent scientists and speakers from industry. Dr. P. Barnwal and Dr Chitranayak coordinated the webinar as Convenor and Co-convenor, respectively. Er. S.C. Aggarwal, President IDEA & Former Additional Managing Director, MILKFED, Punjab; Dr. I.K.

Sawhney, Vice-President IDEA, Former Emeritus Scientist & Former Head, Dairy Engineering Division, ICAR- NDRI, Karnal; Er. R. K. Chugh, Vice-President IDEA & Ex-Chief General Manager, Haryana Milk Federation, Haryana expressed their views on the theme of seminar. On the behalf of the chief guest, Dr. Dheer Singh, Joint Director (Research) presided over the webinar and delivered the presidential address. About 100 participants attended the webinar from different parts of the country.

Release of MobileApp“Milksafecon”

Milksafecon—an Android mobile based application for Dairy Farmers, developed by Dairy Economics, Statistics and Management Division under ICAR-NIAP project on ‘Policy Imperatives for Promoting Value Chain of Agricultural Commodities’ was released by the Honorable Secretary (DARE) and Director General (ICAR) on the occasion of National Milk Day (November 26, 2021). Farmers can keep their dairy farm records systematically, download reports on cost of milk production, milk sale records, AI & Vaccination records, food safety and hygiene status, as and when required. The Milksafecon app is available on Google play store and can be downloaded at: <https://play.google.com/store/apps/details?id=com.indutech.dairyapp>



Milk Day Celebrations

ICAR-National Dairy Research Institute, Karnal organized the ‘National Milk Day’ by conducting a webinar on “Sustainable Development in Dairy Sector-Clean Milk Production” on November 26, 2021 to commemorate the birth centenary of the Father of White Revolution and the Milk Man of India Dr. Verghese Kurien. Dr. Trilochan Mohapatra secretary of the Department of Agricultural Research and Education (DARE) and the Director General of the Indian Council of Agricultural Research, the Chief Guest, stressed upon the importance of sustainability in dairying and launched a Mobile App “MILKSAFECON” for clean milk production. He recalled the efforts of Dr. Verghese Kurien for building the cooperative movement in dairy sector by roping in the smallholders. Govt. Assistance and inclusion of women were also vital factors for dairy development in India. He urged the scientists for developing an action plan on what strategies are required to be taken up for increasing the share of India in international milk market. Dr. Mohapatra appreciated the 11.5 times increase in milk production in India since 1951 though low productivity of dairy animals still remains an important concern.

Dr. A. K. Singh, DDG (Agricultural Extension), the Guest of Honour, emphasized on the importance of the campaign conducted by NDRI to enhance awareness of the public. He advised that all KVKs should include this aspect in their training programmes, specially the training programmes for women dairy farmers. Dr. B. N. Tripathi, DDG (Animal Sciences), the Guest of

Honour, highlighted that India's share in milk export needs to be improved. Farmers need to be motivated towards clean milk production and human health consciousness. Dr. M. S. Chauhan, Director and Vice Chancellor, NDRI, in his presidential address, stressed upon the importance of clean milk production and how NDRI has been engaged in developing technologies to detect adulteration in milk. The webinar was attended by nearly 1500 participants and simultaneously telecast on You Tube, face book and groups of farmers in KVKs and dairy entrepreneurs. During the interaction sessions, various experts shared important tips with the farmers on clean milk production techniques to make them aware and motivate them to adopt clean milk production practices.

The theme of the webinar was introduced by Dr. Gopal Sankhala, the Organizing Secretary and the vote of thanks was delivered by Dr. Sanjit Maiti, the Co-organizing Secretary of the webinar. The webinar was attended by Directors of ICAR Institutes, ATARI Directors, Dr. Dheer Singh, JD(R) and Dr. R.R.B. Singh, JD (A), KVK Coordinators and other scientists.



Focused Group Discussions (FGDs) of members of Dairy Collectives in Saurashtra-Kutch region of Gujarat

Division of Dairy Economics, Statistics and Management organized Focused Group Discussions (FGDs) by involving the members of Dairy Collectives (Dairy Cooperatives and Farmer Producer Company) in different villages of Saurashtra and Kutch area of Gujarat during December 8 to 10, 2021. The main purpose of FGDs was to assess the satisfaction level of the members and also to understand their expectations from the dairy collective. Around 12-15 dairy farmers participated in each FGD. The cooperative societies were providing veterinary services,

technical guidance, AI services, scholarships and personal insurance to the member farmer while Producer Company was providing concentrate and dairy products after value addition at lower prices. Likewise, dairy cooperatives were providing comparatively higher annual bonus while Producer Company was paying slightly higher price to their members. Dairy farmers were found to be satisfied with the services and benefits of membership. However, the farmers believe that loan for dairy farming is not easily available so dairy collectives may have provisions and provide guidance for availing credit for purchase of animals, construction of dairy shed etc. They also feel that certification facilities can be provided for hygienic and safe milk while trainings can be imparted on animal management practices for improving milk yield and for maintaining larger herd size.



International Webinar on "Exploration of genomic data: Applications in livestock and beyond"

Animal Genetics and Breeding Division of ICAR-NDRI, Karnal organized another International Webinar entitled *"Exploration of genomic data: Applications in livestock and beyond"* on December 16, 2021, commemorating India's 75 years of Independence and *Azadi Ka Amrit Mahotsav* under IDP-NAHEP programme of ICAR.

Dr. Gábor Mészáros, Associate Professor for Population Genomics and Animal Breeding at the Division of Livestock Sciences, at University of Natural Resources and Life Sciences, Vienna (BOKU), Austria delivered the talk. He gave a presentation regarding the exploration of genomic data for the better selection of dairy cattle – how these are implemented in the developed countries of the world and its utilization under Indian context.

The webinar received audience from not only India but also foreign countries like Belgium, USA, UK, Eritrea and Pakistan.



Awareness Camp on DNA chip (IndiGau)

ICAR-NDRI under the research collaboration with DBT-NIAB, Hyderabad, organized a Farmer's Awareness camp in Kheri Man Singh village of Karnal on December 12, 2021.

Dr. A.K. Rawat, Consultant, Department of Biotechnology, New Delhi and Dr. Subeer Majumdar, Former Director, NIAB, Hyderabad graced the occasion as Chief Guests. An interactive workshop was held on the occasion with the aim to get the feedback of farmers on the recently launched DNA chip 'IndiGau'. About 80 farmers participated in the program and 40kg mineral mixture was distributed to the progressive farmers. A lunch for farmers was hosted by DBT-NIAB. Dr. Vikas Vohra, PS, AGB Division acted as a convener for the camp.



Orientation Programme

Orientation Programme for the newly admitted first year students during the academic session 2021-2022 was held on December 29, 2021 at Dr. D. Sundaresan Auditorium of ICAR-National Dairy Research Institute, Karnal. A total of 247 students including 32 B. Tech, 125 Masters and 90 Ph.D. students have joined in the academic session of 2021-2022. Joint Director (Academics), Dr. R.R.B. Singh congratulated the students for getting admission at NDRI, which is the No. 1 Agricultural University in India. The students were apprised about the various academic activities and examination pattern. This was followed by introduction to various divisions by the respective Head of Departments. The students were advised to strictly maintain discipline and follow the Corona guidelines and protocol.



Fit India Freedom Run-2.0

Programme of Fit India Freedom Run-2.0 Azadi ka amrit Mohotsav was held at ICAR-NDRI, Karnal. Dr. M.S. Chauhan, Director and Vice Chancellor, ICAR-NDRI launched the programme with the aim to encourage people to take up fitness activities like running and sports in their daily lives in order to get freedom from laziness, obesity, stress, anxiety and diseases. Running helps maintain mental and physical stability. About 150 staff members and students participated in the event.



EXTENSION ACTIVITIES

Extension activities organized

Promotion of dairy farmers of Uttarakhand

Animal Genetics and Breeding Division organized a three-day field program under the project “Productivity enhancement in Hill Cattle (Badri) conserved by SC, ST and other communities of Uttarakhand” from October 21 to 23, 2021 in the village-Talabanas, District Pauri Garhwal, Uttarakhand. Under this program, about 120 farmers participated and they were appraised about the care and management of dairy animals. Each farmer was provided with a kit bag containing general-purpose medicines for common ailments of dairy animals namely, Calcium supplement, de-wormers, Ticks and Minerals etc. A liquid nitrogen container, an AI insemination Gun along with 20 kg mineral mixture was provided to the Gaumukh Gaushala, Village-Tallabana, Pauri Garhwal (Uttarakhand).



Buffalo Calf Rallies

Under the Network Project on Buffalo Improvement (Field Progeny testing Unit, Murrah buffalo) two Calf Rally competitions were organized successfully at village Kheri Mansingh, Karnal on November 29, 2021 and at village Sheikhpura, Karnal on December 6, 2021. Seventy six calves up to one year of age participated in the rally. Participating calves were born following test mating inseminations, and duly identified with project tags and registered under NPBI participated in the Calf Rally, which was under 3 categories 0-3 months old, 4-6 months and 7-12 months. Prizes were awarded to best breed calves under different age categories. Forty eight calves participated in this competition, and about 300 kg mineral mixture was also distributed to all participating farmers who attended this program.



Dairy Extension

Special Swachhta Campaign

ICAR-National Dairy Research Institute, Karnal organized a Special Swachhta Campaign at Karan Lake on October 26, 2021. About 200 faculty and students of NDRI alongwith staff of Karan Lake actively participated by dividing into three groups and covered the whole lake premises. The face masks printed with NDRI logo were distributed to all the visitors and participants. The faculty educated the tourists and visitors about cleanliness, non-use of single use plastics, non-spitting on the road and public places, putting the water bottles and other wastes in dust bins, wearing face masks while going out and in public places and adhering to all Covid-19 guidelines. Dr Dheer Singh, the Joint Director (Research) while addressing the participants emphasized the maintenance of cleanliness in perpetuity. The campaign was coordinated by Dr K. Ponnusamy, Nodal Officer, Swachh Bharat Abhiyan, NDRI, Karnal.



डीजी, आईसीएआर ने विभिन्न आईसीएआर संस्थानों के 5,000 वैज्ञानिकों के साथ बातचीत की

संवाद की शुरुआत में, डीजी, भारतीय कृषि अनुसंधान परिषद और सचिव डेयर, डॉ. त्रिलोचन महापात्र द्वारा आईसीएआर की उपलब्धियों पर एक झलक की प्रस्तुति दी गई। डीजी ने बताया कि आईसीएआर भारत के माननीय प्रधानमंत्री के मार्गदर्शन में काम कर रहा है और बताया कि बायोफोर्टिफाइड फसलों, जलवायु लचीलापन प्रौद्योगिकियों और उच्च पोषक तत्व सामग्री और जैविक तनाव प्रबंधन क्षेत्रों पर काम करने की आवश्यकता है। उन्होंने आईसीएआर प्रौद्योगिकियों के आर्थिक प्रभाव पर प्रकाश डाला और बताया कि आईसीएआर प्रौद्योगिकियों द्वारा उत्पन्न कुल आर्थिक लाभ रु. 100493.4 करोड़ और बासमती चावल 2018-19 में 32806 करोड़ रुपये के मूल्य के साथ शीर्ष धावक हैं। गेहूं का उत्पादन 109.52 मिलियन टन हो गया है और दालों का आयात कम हो गया है। भारत में चीनी क्रांति, उत्तर प्रदेश और उत्तरी राज्यों में क्षेत्रफल बढ़कर 80% हो गया है, चीनी मिलों ने 18027 करोड़ रुपये की कमाई की है, जबकि किसान प्रति वर्ष 512239 प्रति वर्ष 227.2 क्विंटल कमा रहे थे। इन सभी पहलुओं से हमारे देश में कुपोषण को खत्म करने में मदद मिलेगी।

उन्होंने आगे बताया कि प्रौद्योगिकी विकसित करने के लिए विज्ञान के जीनोमिक्स का उपयोग किया गया है। 3 नस्लों के कुत्तों सहित 40 नई पशुधन और कुक्कुट नस्लों को अधिसूचित किया गया है। लगभग 50 टीकेधनैदानिक किट विकसित किए जा चुके हैं। 2 सजावटी मछली प्रजातियों और 3 समुद्री मछली प्रजनन और बीज उत्पादन के लिए प्रजनन प्रोटोकॉल विकसित किए गए हैं। कई कृषि उपकरणों के साथ प्राकृतिक संसाधन प्रबंधन ऊर्ध्वाधर कृषि मॉड्यूल विकसित किए गए हैं। उन्होंने आगे कहा कि कृषि विज्ञान केंद्र द्वारा कृषि शिक्षा और लैब टू लैंड आउटरीच सर्वोच्च प्राथमिकता पर है।

पिछले कुछ वर्षों के दौरान आईसीएआर ने जीन स्टीवर्डशिप अवार्ड, किंग भूमिबोर्ड डिजिटल इंडिया अवार्ड जैसे कई प्रतिष्ठित पुरस्कार जीते हैं। अब सभी आईसीएआर संस्थानों में ई.ऑफिस लागू कर दिया गया है और देश 75वें वर्ष के उपलक्ष्य में आजादी का अमृत महोत्सव मना रहा है।

इसके बाद वैज्ञानिकों द्वारा प्रश्न उत्तर सत्र का आयोजन किया गया। सभी उप महानिदेशकों ने विभिन्न प्रभागों द्वारा निभाई गई भूमिका पर भी प्रकाश डाला। डीडीजी, पशु विज्ञान, डॉ. बी.एन. त्रिपाठी ने सभी पशु वैज्ञानिकों से कहा कि वे हमारी लगातार बढ़ती आबादी के लिए अधिक प्रोटीन उपलब्ध कराएं। उन्होंने कहा कि पशुधन और मुर्गी पालन में नए रोगजनकों के उभरने पर रोक के साथ-साथ दूध और मांस उत्पादन की गुणवत्ता में सुधार करने की आवश्यकता है। साथ ही पशुधन उत्पादन को बढ़ाने के लिए नई जीनोमिक और प्रजनन तकनीक विकसित करने की आवश्यकता है। विचार-विमर्श के अंत में डीजी ने युवा वैज्ञानिकों को आगे आकर कृषि उत्पादन में देश का नेतृत्व करने को कहा। उन्होंने सभी वैज्ञानिकों को किसानों के साथ बातचीत करने के लिए विभिन्न डिजिटल प्लेटफॉर्म को मजबूत करने और सस्ती और किसान अनुकूल तकनीक बनाने की भी आवश्यकता पर जोर दिया।

Swachhta Pakhwada Campaign

ICAR-National Dairy Research Institute, Karnal organized Swachhta Pakhwada from December 16 to 31 2021. Various activities including taking pledge, organizing farmers interaction meets, celebration of Kisan Diwas, competition for school children and college students, campaign on crop residue management.



Cleaning of tourist places, disposal of pending files, stock taking of solid waste management, selection of clean division, sections and residential quarters were organized on daily basis. Dr Manmohan Singh Chauhan, the Director and Vice-Chancellor of NDRI while felicitating the best performers urged the neighbors to learn and keep their premises as neat and clean. Clean environment is the basis of healthier life and sound mind. Swachhta Pakhwada is an occasion to create awareness and further motivate the good performers and highlight the achievements of clean India. This initiative started by our Hon'ble Prime Minister in 2014 is likely to change the face of our nation as vibrant living place. The programme was coordinated by Dr K. Ponnusamy, Nodal Officer, Swachh Bharat Abhiyan.

Villagers and School Children Sensitized about Environmental Practices

Awareness campaign was organized in Deepo Janeshwar village on October 16, 2021. This program was organized in the school courtyard of the village. Dr. BS Meena while welcoming the participants explained the good practices to be followed from Morning to evening for children which would keep them safe and healthy. Dr. K. Ponnusamy discussed the swachh Bharat abhiyan activities being organized by NDRI from October 2 to 31, 2021. Dr. Archana Verma discussed in detail about the health and diet of the girl students in particular. Dr. H.R. Meena briefed the about stable burning management including manure and fodder preparation. Dr. A.K. Roy emphasized on clean milk production practices. The participants were also exposed to video presentation about NDRI technologies, compost making from straw and preparation of compost from Kitchen waste. The facemasks were distributed to all the participants and the scientists answered the queries raised by the participants. Lastly Head master of School Mr. Vijay Kumar thanked NDRI and farmers for their active participation in the programme.

Villagers sensitised on cleanliness for healthier living

ICAR-National Dairy Research Institute, Karnal organised a special swachhta campaign in Subri villages on October 9, 2021. Before starting the campaign, villagers were sensitised about maintaining clean and hygienic environment and lead a stress free healthy life. In the campaign women, girls, boys and male family members as well as scientists and students of NDRI actively participated in the cleaning of streets, roads and common premises in the village. During the discussions, the information was provided on health, nutrition, sanitation and various local herbal preparations as a remedy for various ailments. Later scientists visited the farmers' doors and examined the shelter, feeding and health management practices of dairy animals followed by the farmers. Remedial measures were suggested to queries related to reproductive problems of dairy animals, marketing of milk, various health issues of dairy animals were given. Farmers were also encouraged to form producer companies and link with urban consumers directly to realise the better price for their produces. Programme was coordinated by Dr. K.Ponnusamy, Dr. B.S.Meena, Dr. Chander Dutt, Kaushal Kumar and students of NDRI.

Krishi Vigyan Kendra

- KVK organized Mahila Kisan Diwas on October 15, 2021 at KVK campus. The chief guest of the function was Dr. Dheer Singh, Joint Director (Research), NDRI, Karnal. KVK experts delivered lectures on different aspects of women empowerment. In this program 86 farm women participated.



- KVK organized World Food Day on October 16, 2021 at village-Kamalpur Rodan. KVK experts delivered lectures on balanced diet, bio-fortified crop varieties and minimum use of pesticides. In this program 73 farmers participated.



- KVK participated in DD KISAN program on Soil Health Card and Farmer Producer Organization on November 17, 2021 at village-Mehamadpur. The recorded programme was telecast on December 7 & 14, 2021.



- World Soil Health Day 2021 (Halt soil salinization, boost soil productivity) was celebrated on December 5, 2021. In this event 115 farmers and farm women participated. Soil health card were given to the farmers.



- PM's interactive program on Natural farming was telecast live as a part of 'Pre-vibrant Gujarat Summit' on December 16, 2021. The online telecast of the event took place in KVK, in which 152 farmers/ farmwomen participated.



- Kisan Mela on the theme Crop Residue Management was organized at KVK on December 23, 2021. Director, ICAR-NDRI was the chief guest of this event. A total no of 325 Farmers/farmwomen from different villages of the district participated. Inauguration of Automatic Weather Station (AWS) also took place in the presence of JDR, ICAR-NDRI.



Distinguished Visitors

- ADG (Agricultural Extension) Dr. Randhir Singh visited KVK, Karnal on October 26, 2021. He interacted with all KVK staff and also visited different demonstration units.



- Visit of Dr Rajbir Singh, Director, ICAR-ATARI, Ludhiana to CRM demonstrated fields of KVK was held at village Nabhipur. In this event 25 farmers of the village participated. An interactive session was also held to create awareness on Crop Residue Management.



The other activities of KVK during the reported period are:

Sl. No.	Activities	Place	Number of farmers/ farm women/ youth	Date
1)	Drawing competition and elocution competition against crop Residue burning (CRB) and Crop Residue Management (CRM)	Kendriya Vidyalaya, Karnal	145	12-11-2021
		Govt Senior Sec School, Nilokheri	92	27-11-2021
2)	Parbhat Pheri against Crop residue burning	Village-Nabhipur	98	17-11-2021
		Village- Phurlak	142	23-11-2021
3)	Jal Shakti Abhiyan	Village-Kamalpur Rodan	32	06-10-2021
		Vill-Bhenikhurd	22	12-10-2021
		Vill-Kamalpur Rodan	25	19-10-2021
		KVK	85	18-11-2021
4)	Swachtha Campaign	Village-Kamalpur Rodan	37	06-10-2021
		Vill-Bhenikhurd	68	12-10-2021

		KVK Karnal	40	27-10-2021
		KVK Karnal	30	29-12-/2021
5)	Awareness against CRB and/ or CRM and field visit	Kamalpur Rodan	37	06-10-2021
		Jowar Majra	25	07-10-2021
		Bhenikhurd	22	12-10-2021
		Khulwheri	10	14-10-2021
		Vill-Gagsina	107	15-10-2021
		Vill-Kamalpur Rodan	73	16-10-2021
		Vill-Nabhipur	12	24-10-2021
		Rasin	40	18-11-2021
		Kamalpur Rodan	12	07-12-2021
6)	Method demonstration on PUSA decomposer, machineries	Khulweri	10	14-10-2021
		Phurlak	15	02-11-2021
		Nabhipur	15	02-11-2021
7)	Field visit	Kulwheri	6	08-12-2021



Kendriya Vidyalaya, Karnal



Vill-Nabhipur, Karnal



Swachtha Campaign

Off-Campus Training

Sl. No.	Title of training	Place	Number of farmers/ farm women/youth	Date
1)	Off-campus training on weed management in Rabi crop	Kamalpur Rodan	12	07-12-2021
2)	Off-campus training on plant protection in Rabi crop	Rasin	40	18-11-2021

On-Campus Training at KVK

Sl. No.	Activities	Number of farmers/ farm women/ youth	Date
1)	मधुमक्खी पालन	35	25-10-2021 to 28-10-2021
2)	मत्स्य पालन प्रशिक्षण कार्यक्रम	38	15-11-2021 to 18-11-2021
3)	वैज्ञानिक विधि से बकरी पालन में प्रशिक्षण	15	27-12-2021 to 31-12-2021
4)	वैज्ञानिक विधि से पशुपालन में प्रशिक्षण	19	15-11-2021 to 19-11-2021
		29	06-12-2021 to 10-12-2021
5)	डेरी प्रसंस्करण प्रशिक्षण कार्यक्रम	17	01-12-2021 to 05-12-2021

Frontline Demonstrations (FLDs/OFTs)

- 1) **Oilseeds and pulses:** KVK, ICAR-NDRI organized FLDs in various villages of Karnal district to encourage farmers to grow oilseeds and pulses,. During the Rabi season 2021-22, total 103 FLDs of mustard variety Pusa Mustard 32, RH-725 and RH-761 in 41.2 Ha area and 30 FLDs on gram variety HC-5 and HC-7 in 10 ha area were laid under irrigated conditions to generate the data.
- 2) **Crop (Wheat):** During the Rabi season, 2021-22, 28 FLDs on wheat variety DBW-187 and DBW-303 were conducted in 8 ha area of different villages in Karnal district to generate data on the newly released wheat variety with crop residue management technique.
- 3) **Crop (Garlic):** During the Rabi season 2021-22, total 4 FLDs on Garlic varieties i.e. Yamuna Safed-8 were laid in 0.25 ha area under irrigated condition to generate the data of newly released wheat varieties.

Activities on (CFLDs)

Sl. No.	Activities	Place	Number of farmers/ farm women/youth	Date
1)	FLD Mustard field visit	Kamalpur Rodan	06	07-12-2021
		Khulweri	04	08-12-2021
2)	FLD gram field visit organized	Phurlak	12	23-11-2021

No of Farmers Visited Krishi Vigyan Kendra during exposure visits

State	Numbers of Farmers	Date
Uttarakhand (Lalkuaa)	25	02-12-2021
Rajasthan (Sikar)	65	02-12-2021
Rajasthan	40	04-12-2021
Uttar Pradesh	25	10-12-2021
Gujarat	50	13-12-2021
Rajasthan	50	18-12-2021
ICAR-CSSRI, Karnal	80	27-12-2021
Gujarat	50	28-12-2021

HONOURS AND AWARDS

- Dr. Gopal Gowane, Senior Scientist, AG&B Division attended 'First breeding value estimation committee' as ICAR nominee for Rashtriya Gokul Mission at NDDB, Anand on December 17, 2021.

- Bharti Deshmukh, Archana Verma, Ishwar Dayal Gupta and Neeraj Kashyap received **Best Oral Paper Award** for the paper “Identification of Single Nucleotide Polymorphisms in SPAG11 Gene and their association with Fertility Traits in Murrah Bulls” (Theme-2: Breeding and Genetics) in the National Symposium of Indian Society for Buffalo Development held at GADVASU Ludhiana during December 10 to 11, 2021.
- S. Chhotaray, Vikas Vohra, G.R. Gowane, Rani Alex, A. Mukherjee, Archana Verma and S.M. Deb received **Best Poster Presentation Award** for the paper "GWAS in Indian buffalo unmasks novel genes for lactation" (Theme-2: Breeding and Genetics) in the National Symposium of Indian Society for Buffalo Development held at GADVASU, Ludhiana during December 10 to 11, 2021.
- S. Chhotaray, Vikas Vohra, G.R. Gowane, Rani Alex, A. Mukherjee, Archana Verma and S.M. Deb received **Best Poster Presentation Award** for the paper for the paper "GWAS unravels novel genes for lactation yield and persistency in Murrah buffalo" in the National Conference of ‘Indian Society for Animal Genetics & Breeding’ on "Animal Breeding Strategies in the Era of Genomics and Phenomics" held at ICAR-NBAGR, Karnal during December 17 to 18, 2021.
- Pooja Joshi, Archana Verma, Rani Alex, I.D. Gupta, Destaw Worku and G.R. Gowane received **Best Poster Presentation Award** for the poster “Estimation of co(variance) components for growth traits in Murrah buffaloes” in Technical Session I during National Conference of ‘Indian Society for Animal Genetics & Breeding’ on "Animal Breeding Strategies in the Era of Genomics and Phenomics" held at ICAR-NBAGR, Karnal during December 17 to 18, 2021.
- Nidhi Sukhija, Anoop Anand Malik, Kousalya Devi M, Jayakumar Sivalingam and Archana Verma received **Best Poster Presentation Award** for the poster “Adaptational Consequences of Selective Sweeps in Gir and Tharparkar cattle” in Technical Session II during National Conference of ‘Indian Society for Animal Genetics & Breeding’ on "Animal Breeding Strategies in the Era of Genomics and Phenomics" held at ICAR-NBAGR, Karnal during December 17 to 18, 2021.
- Shivam Bhardwaj, Sanjeev Singh, Indrajit Ganguly, A. K. Bhatia and S.P. Dixit received **Second Best Poster Presentation Award** for the poster presentation ”Deciphering Genomic Basis of Local Adaptation of Native Indian Cattle (*Bos indicus*) Breeds using Landscape Genomics” in Technical Session IV during National Conference of ‘Indian Society for Animal Genetics & Breeding’ on "Animal Breeding Strategies in the Era of Genomics and Phenomics" held at ICAR-NBAGR, Karnal during December 17 to 18, 2021.

PERSONALIA

Joining/ Appointments/ Promotions

- The following Sr. Scientists were promoted to the post of Principal Scientists w.e.f. the date mentioned against each:

SN	Name	Date of Promotion
1)	Dr. Ashutosh	June 3, 2009
2)	Dr. F. Magdaline Eljeeva, Emerald	October 31, 2020
3)	Dr. Chitranayak	November 8, 2020

- Consequent upon his transfer vide Council's Office Order No. Admn.6-2/2018-Estt.I dated September 29, 2021 and after having been relieved of his duties from ICAR-Indian Institute of Wheat & Barley Research, Karnal, Sh. Gajanand Yadav, SAO joined his duties in the forenoon of October 8, 2021 at ICAR-NDRI, Karnal.
- Consequent upon his promotion to the post of SAO and his posting at ICAR-NDRI, Karnal vide Council's Office Order No. Admn.3-2/2021-Estt.I dated October 13, 2021, subsequent relieving of his duties from ICAR-Central Institute for Research on Buffaloes, Sirsa Road, Hisar (Haryana), Sh. Ravinder, joined his duties to the post of SAO in the forenoon of October 14, 2021 at ICAR-NDRI, Karnal.
- Consequent upon his promotion to the post of SF&AO and his posting at ICAR-NDRI, Karnal vide Council's Office Order No. Admn.17-3/2015-Estt.I dated October 13, 2021, subsequent relieving of his duties from ICAR-Indian Institute of Wheat & Barley Research, Karnal-132001; Sh. Jagdish Chander joined his duties to the post of SF&AO in the forenoon of October 14, 2021 at this Institute.
- The following Assistants were promoted to the post of AAO under Promotion Quota at ICAR-NDRI, Karnal with effect from October 25, 2021 (AN):

SN	Name
1)	Mr. Raj Kumar
2)	Mr. Chiranjee Lal
3)	Mr. Babu Lal Meena

Transfers/ Retirements/ Relieving

- Dr. Asit Das, PS, Animal Nutrition was transferred from this Institute to ICAR-IVRI, Bareilly vide Council's order dated September 24, 2021 and relieved from this Institute w.e.f. October 27, 2021.
- Dr. Rajalaxmi Behera, Scientist, AG&B, was transferred from ERS-ICAR-NDRI, Kalyani DPR, RS, Bhubaneswar vide Council's order dated September 24, 2021 and relieved from this Institute w.e.f. September 30, 2021.
- Consequent upon his promotion to the post of AO and transfer from ICAR-NDRI, Karnal to ICAR-CSSRI, Karnal vide Council's Office Order F.No. Admn.3-1/2021-Estt.I dated November 3, 2021, Sh. Brahm Parkash, AAO was relieved in the afternoon of November 5, 2021 from this Institute.

- Consequent upon his promotion to the post of AO vide Council's Office Order F.No. Admn.3-1/2021-Estt.I dated November 3, 2021, Sh. Rajbir, AAO joined his duties to the post of AO at this Institute.

Additional Responsibility

- Dr. A.K. Mishra, PS & Acting Head, LPM was entrusted the responsibilities of Chairman, LRC Committee w.e.f. October 6, 2021.
- Sh. G.G. Harakangi, CAO (SG) and I/c JD(A)&R was nominated to act as Member, Institute Deputation Committee (IDC) in place of Sh. Vivek Purwar, CAO w.e.f. October 28, 2021.
- Sh. Ravinder, SAO was nominated to act as Convener, Institute Deputation Committee (IDC) in place of Sh. Ram Niwas Panchal, Former AO w.e.f. October 28, 2021.
- Dr. Rajesh Bajaj, PS, DC Division was entrusted the responsibilities to act as Chairman, Proprietary Item Committee in place of Dr. Dheer Singh, Joint Director (Research) w.e.f. November 11, 2021.
- Dr. Manoj Kumar Singh, Scientist, ABTC was entrusted the responsibilities to act as Liaison Officer (OBC) w.e.f. November 17, 2021.
- Dr. Dheer Singh, Joint Director (Research) was entrusted the responsibilities to act as Chairman of the Committee for verification/ validation of applications against various posts advertised by the ASRB.
- Dr. Suneel Kumar Onteru, PS, ABC was nominated to act as Member, Proprietary Item Committee in place of Dr. Rajesh Bajaj, PS, DC Division w.e.f. November 30, 2021.
- Consequent upon the relieving of Sh. D.D. Verma, Comptroller from this Institute, Sh. Jagdish Chander, SF&AO was nominated in place of Sh. D.D. Verma in all Committees.

PERMISSION GRANTED TO THE FOLLOWING SCIENTIFIC STAFF FOR ATTENDING WORKSHOP/ SEMINAR/ SYMPOSIA/ CONFERENCE/ TRAINING DURING THE PERIOD OCTOBER, 2021 to DECEMBER, 2021

Name & Designation	Discipline	Title of the Training	Organized by	Period
Dr. Rakesh Kumar, PS	Agronomy	International Conference on Moringa.	Pariyakulam, Tamilnadu	October 6-8, 2021
Dr. Archana Verma, PS	AG&B	Two days online Management Development programme (MDP) on "Management & Leadership Dev. Programme".	Institute of Rural Management Anand (IRMA), Gujarat	October 21-22, 2021
Sh. Kunal Kalra, SFAO	Audit	Online Training Programme on "Train the Trainers".	ASCI, Hyderabad	October 25-29, 2021
Dr. Rajeev Kapila, PS	ABC	"Directors/ Divisional Heads/ Chief Scientists/ Senior Scientists Policy for Science and Science for Policies".	Ministry of Science and Technology, Govt. of India.	October 25-29, 2021

Dr. Bimlesh Mann, PS	DC	Delivered a lecture on "Migration of Chemical Additives from Food Packaging Materials-New Generation contaminants" in the International Conference on "Convergence of Technology and Policy for Sustainable Meat Production".	Association of Meat Scientists & Technologies (AMST) and Meat Technology Unit (MTU), Kerala Veterinary and Animal Sciences University (KVASU)	October 26-28, 2021
Dr. Nitin Tyagi, PS	AN	Training cum Workshop on "livestock methane emission assessment, impact and amelioration strategies".	ICAR-NIANP Bangalore.	October 26-28, 2021
Dr. K.P. Ramesha, PS	Head, SRS, Bangalore	A talk on "Breeds of cows and Buffaloes of Karnataka" to be broadcast on Rajyotsava Day.	Radio Talk	November 1, 2021
Sh. Dhiraj Sharma, Dy. Director	Official Language	दो दिवसीय व्यापार केन्द्र अखिल भारतीय राजभाषा सम्मेलन।	वाराणसी	November 13-14, 2021
Dr. A. K. Singh, PS	DT	Delivered a presentation on "Value Chain Dairy Foods: Consumer attitude and Acceptability".	BHU, Varanasi	November 13-16, 2021
Dr. T.K. Mohanty, PS	LPM	Delivered a lecture in the technical session in the XV Agricultural Science Congress.	BHU, Varansi	November 13-16, 2021
Dr. Sachin Kumar, Scientist	AN	Presented the paper in the "XV Agricultural Science Congress & ASC Expo".	NAAS and IAS, Banaras Hindu University, Varanasi	November 13-16, 2021
Dr. Nitin Tyagi, PS	AN	XV Agriculture Science Congress.	BHU, Varanasi	November 13-16, 2021
Dr. Rajani Kumar Paul, Scientist	ABC		under DST Project	
Dr. Sanjit Maiti, Senior Scientist	Dairy Extension	Workshop on "Researchable ideas and methods: Improving competency of social scientists" under the 5 th Faculty Development Program of IDP-NAHEP.	CAU, Imphal	November 15-20, 2021
Dr. Meena Malik, Professor (English)	PME	51 st Annual Conference of ELTAI- A four Day Virtual Conference.	GLA, Mathura	November 20-21 & 27-28, 2021
Dr. Vairat Amita Dinkar, Scientist	DE	55 th Annual Convention of Indian Society of Agricultural Engineers on Challenges and Technological Solutions for Ensuring Food, Water and Energy Security and International Symposium on Emerging Trends in Agricultural Engineering Education, Research & Extn.	Patna, Bihar	November 23-25, 2021
Dr. Sanjeev Kumar, Scientist	Agromony	Delivered a lecture in the 5 th International Agronomy Congress Agri. Innovations to	PJTSAU, Hyderabad	November 23-25, 2021

		Combat Food and Nutrition Challenges.		
Dr. Chitranayak, Senior Scientist	DE	International Symposium on “Emerging Trends in Agricultural Engineering Education and Extension”.	Patna, Bihar	November 23-25, 2021
Dr. (Mrs.) Hima John, Scientist				
Dr. Asutosh, PS	AP	5 th International Agronomy Congress.	PJTSAU, Hyderabad	November 23-27, 2021
Sh. Rakesh Kumar, Asstt. Director	Official Language	राजभाषा विभाग, गृह मंत्रालय, भारत सरकार के द्वारा दिनांक 27.11.2021 को आयोजित किए गए उत्तर क्षेत्र 1 तथा 2 के एक दिवसीय क्षेत्रीय राजभाषा सम्मेलन एवं पुरस्कार वितरण समारोह में नगर राजभाषा कार्यान्वयन समिति, करनाल के सदस्य सचिव के रूप में शामिल होने हेतु।	चन्द्र शेखर आजाद कृषि (कैलाश भवन सभागार) विश्वविद्यालय एवं प्रौद्योगिकी, कानपुर, उत्तर प्रदेश	November 27, 2021
Dr. Ajmer Singh, PS	DES&M	81 st Annual Conference of Indian Society of Agricultural Economics.	Shri Mata Vaishno Devi University Katra, J & K	December 1-3, 2021
Dr. A. K. Dixit, PS				
Dr. B. S. Chandel, PS				
Dr. Sangita Ganguly, Scientist	DT	Two week training on General Management Programme for Women Scientists.	College of India (ASCI), Hyderabad	December 6-17, 2021
Dr. K.P. Ramesha, PS	Head, SRS, Bangalore	Chaired the Technical session on "Dr. Kurien's Vision on Milk Processing" during the Birth Centenary Celebrations of Dr. Verghese Kurien.	Indian Dairy Association (South Zone) at Hotel Abu Sarover Protico, Chennai	December 8, 2021
Dr. Bimlesh Mann, PS	DC	Acted as Chairman in Technical Session (Theme VI: Milk, Meat and their Value Addition) in the National Symposium on "Scientific Interventions to address challenges for Sustainable Buffalo Production".	College of Veterinary Science (Ludhiana), Guru Angad Dev Veterinary and Animal Sciences University (GADVASU)	December 10-11, 2021
Dr. Vikas Vohra, PS	AG&B	Acted as lead speaker for the technical session in the National Symposium on “Scientific Interventions to address challenges for Sustainable Buffalo Production”.	GADVASU, Ludhiana	December 10-11, 2021
Dr. Sudarshan Kumar, Senior Scientist	ABTC	Presented the paper in the session during the Symposium on “Scientific Interventions to address challenges for Sustainable Buffalo Production”.	GADVASU, Ludhiana	December 10-11, 2021
Dr. M.L. Kamboj, PS	LPM	National Symposium on "Scientific interventions to address challenges for sustainable buffalo production”.	GADVASU, Ludhiana	December 10-11, 2021
Dr. Rubina K. Baithalu, Scientist	LPM			
Dr. Manoj Kumar Singh, Senior Scientist	ABTC			
Dr. Naresh Selokar,	ABTC			

Scientist				
Dr. Pawan Singh, PS	ABRC			
Dr. Chander Datt, PS	AN	Delivered oral presentation.	GADVASU, Ludhiana	December 10-12, 2021
Dr. Goutam Mondal, PS				
Dr. G. R. Gowane, Senior Scientist	AG&B	Presented a paper on Annual Conference	Avikanagar	December 13-14, 2021
Dr. Raman Malik, PS	AN	Management Development programmes on Leadership Development.	ICAR-NAARM, Hyderabad	December 13-24, 2021
Dr. Hardev Ram, Scientist	FP	International Conference.	SKRAU, Bikaner	December 13-15, 2021
Dr. K.P. Ramesha, PS	Head, SRS, Bangalore	Delivered a talk on the activities of SRS of ICAR-NDRI for the benefit of Researchers, Farmers & others.	All India Radio studio, Bangalore	December 16, 2021
Dr. Naresh Selokar, Scientist	ABTC	National Conference on "Animal Breeding Strategies in the Era of Genomics and Phenomics".	ICAR-NBAGR, Karnal	December 17-18, 2021
Dr. Manoj K. Singh, Sr. Scientist	ABTC			
Dr. Suneel Kumar Onteru, PS	ABC	Lead talk on "Prospective of functional markers for postpartum anestrus in Murrah buffaloes" during one of the scientific session on "Functional genomics for trait specific characterization and value addition in livestock and poultry".	ICAR-NBAGR, Karnal	December 17-18, 2021
Dr. Archana Verma, PS	AG&B			
Dr. Sohanvir Singh, PS	AP	Delivered a lead lecture on the topic "Heat Stress: Impact and ameliorative measures for adaptation and animal welfare during the National Seminar".	College of Veterinary Science and AH, ANDU&T, Ayodhya	December 17-18, 2021
Dr. Pradip Behre, Scientist	DM	10 th International Conference on Fermented Foods, Health Status and Social Well-being.	Univ. of Res. Council Univ. of Peradeniya, Sri Lanka.	December 17-18, 2021
Dr. K.P. Ramesha, PS	Head, SRS, Bangalore	Delivered Dr. C.M. Singh Memorial Birth Centenary Year Lecture.	Virtual mode	December 30, 2021

राज भाषा एकक

संस्थान राजभाषा कार्यान्वयन समिति की तिमाही बैठक

डा. एम.एस. चौहान, निदेशक की अध्यक्षता में संस्थान राजभाषा कार्यान्वयन समिति की 93^{वीं} तिमाही समीक्षा बैठक दिनांक 30.12.2021 को अपराह्न 3.00 बजे से कोविड संबंधी निर्देशों की पालना के साथ संस्थान के पिनाकी हॉल में आयोजित की गयी। इस बैठक में किसानों को अनुसंधान से संबंधित जानकारी तथा प्रशिक्षण संबंधी सामग्री आदि हिंदी एवं मातृभाषा/ क्षेत्रीय भाषा में उपलब्ध कराए जाने, भारत सरकार के वैज्ञानिक एवं तकनीकी शब्दावली आयोग द्वारा प्रकाशित प्रशासनिक शब्दकोश की 200

प्रतियां संस्थान बजट से खरीदने, राजभाषा अधिनियम 1963 के धारा 3(3) के अंतर्गत आने वाले सभी दस्तावेजों को द्विभाषीय रूप में जारी करने, संस्थान की सभी सेवा-पुस्तिकाओं, रजिस्ट्रों आदि में अनिवार्य रूप से हिंदी में ही प्रविष्टियां किए जाने, राजभाषा नियम 1976 के नियम 5 के तहत हिंदी में प्राप्त पत्रों के उत्तर अनिवार्य रूप से हिंदी में दिए जाने, नवागन्तुक पात्र अधिकारियों एवं कर्मचारियों को संस्थान प्रमुख के हस्ताक्षर से व्यक्तिशः आदेश जारी किए जाने, संस्थान की वेबसाइट पर उपलब्ध दस्तावेजों को द्विभाषिक रूप में अद्यतन करने, सभी साइन बोर्ड, बैनर, मोहरें, फाइलों के नाम, रजिस्ट्रों के नाम, सूचना पट्ट, वाहनों पर लिखी बातें, पत्र शीर्ष, विजिटिंग कार्ड आदि सभी सामग्री द्विभाषिक जारी किया जाना सुनिश्चित करने, संस्थान की वेबसाइट एवं ई-ऑफिस पोर्टल पर द्विभाषिक दस्तावेज अपलोड करने, संस्थान के द्वारा प्रकाशित न्यूजलेटर, लीफलेट, फोल्डर आदि अनिवार्य रूप से द्विभाषिक रूप में मुद्रित करवाने एवं भारत सरकार के राजभाषा विभाग के वार्षिक कार्यक्रम में दिए गए न्यूनतम लक्ष्यों को अर्जित करने की दिशा में प्रयास करने का निर्णय लिया गया।



संस्थान राजभाषा कार्यान्वयन समिति की तिमाही बैठक

राजभाषा हिन्दी उल्लास महोत्सव एवं वार्षिक पुरस्कार वितरण समारोह

संस्थान में हिन्दी दिवस से प्रारंभ करके दि. 14.09.2021 से 9.12.2021 तक की अवधि में राजभाषा हिन्दी उल्लास महोत्सव का कोविड संबंधी निर्देशों के मद्देनजर आयोजन किया गया। इस महोत्सव के दौरान हिन्दी टंकण परीक्षा (16.09.2021), हिन्दी श्रुत लेखन प्रतियोगिता (18.09.2021), हिन्दी निबंध लेखन प्रतियोगिता (21.09.2021), हिन्दी टिप्पण/ आलेखन प्रतियोगिता (23.09.2021), नगर-स्तरीय हिन्दी भाषण प्रतियोगिता (5.10.2021-पूर्वाह्न) एवं वैज्ञानिकों तथा विद्यार्थियों के लिए हिन्दी शोध पत्र पोस्टर प्रदर्शन प्रतियोगिता (5.10.2021-अपराह्न) का आयोजन किया गया। संस्थान के द्वारा दिनांक 10.12.2021 को आयोजित किए गए वार्षिक राजभाषा पुरस्कार वितरण समारोह में उक्त महोत्सव के दौरान आयोजित प्रतियोगिताओं के विजेताओं के साथ-साथ वार्षिक हिन्दी मूल हिन्दी टिप्पण आलेखन प्रतियोगिता (2019-2020), वार्षिक हिन्दी ईमेल प्रोत्साहन प्रतियोगिता (2020-21), अधिकारियों की वार्षिक हिन्दी डिक्शन प्रतियोगिता (2020-21), वैज्ञानिक एवं तकनीकी हिन्दी लेखन प्रोत्साहन योजना के विजेताओं को संस्थान प्रमुख के द्वारा प्रमाण-पत्रों से सम्मानित किया गया।

हिन्दी कार्यशाला का आयोजन

राजभाषा एकक के द्वारा दिनांक 31.12.2021 को राजभाषा हिंदी: समस्याएं एवं समाधानश् विषय पर हिन्दी कार्यशाला का आयोजन किया गया जिसमें संस्थान के 12 कर्मचारियों ने भाग लिया।

नगरस्तरीय राजभाषा गतिविधियां

नगर राजभाषा कार्यान्वयन समिति, करनाल के अध्यक्षीय कार्यालय के रूप में संस्थान के द्वारा दिनांक 22.11.2021 को नगरस्तरीय छमाही समीक्षा बैठक का डा. एम.एस. चौहान, निदेशक, राडेअनुसं, करनाल की अध्यक्षता में संस्थान के डा. एन. एन. दस्तूर सभागार में आयोजन किया गया। इस बैठक में समिति के 46 सदस्य कार्यालयों के कार्यालय प्रमुखों एवं प्राधिकृत अधिकारियों ने भाग लिया।

SOUTHERN CAMPUS, BENGALURU

Research Highlights

Development of vitamin B₁₂ rich ready to reconstitute milk–cereal based composite nutrimix

Devaraja HC, Monika Sharma, Sathish Kumar MH and AnjalKatiyar

Vitamin B₁₂ (B₁₂) plays an important role in human body in building healthy neural system, formation of red blood corpuscles, synthesis of DNA and normal brain function. Natural occurrence of B₁₂ is restricted to foods of animal origin viz. meat, fish and eggs. Indian population, with largely vegetarian food habit, is more prone to harbor deficiency of B₁₂. Hence, affordable and sustainable dietary sources of B₁₂ are needed to be developed to ensure sufficient intake of B₁₂. Ready to use foods and premixes are widely accepted by the population of all age groups and they could be most ideal vehicle to assist in nutritional rehabilitation of essential nutrients. The fermentation medium composed of higher levels of cereal malt and dried milk solids recorded highest B₁₂ content of 40.15mg/100 g. The optimization of vitamin B₁₂ rich composite nutrimix was carried out using fermented mass (50-70%), cereal malt (20-30%) and sugar (10-20%). The formulation with 50.32% fermented mass, 29.68% cereal malt and 20% sugar produced sensorially superior product with good reconstitution properties. The developed ready to reconstitute nutrimix recorded Vit. B₁₂ content of 18mg/100g, 13.5% protein and 2.19% fat.



Fig.: Vitamin B₁₂ rich composite nutrimix

Cow Ghee Enriched with Natural Polyphenols for Enhanced Antioxidant activity

Shivli Jha, Laxmana Naik N., Priyanka Singh Rao, Sathish Kumar M.H., and K. Jayaraj Rao

Ghee is a clarified milk fat. Chemically it is a complex lipid of glycerides, free fatty acids, phospholipids, sterols, fat soluble vitamins, and many other minor constituents. Ghee as a prominent ingredient; can be used in almost any food application in which a fat source is needed since the ghee imparts excellent flavour and superior mouth feel. Ghee is also being used in Ayurveda, for making herbal formulations. Ghee can be stored for 4-6 months, but spoilage may occur during prolonged storage due to autoxidation of lipid. The use of synthetic antioxidants is

prohibited by the regulatory bodies because of their toxicity and carcinogenic effects on the consumer.

Traditional knowledge and few studies have shown that natural herbs and spices can be used as source of antioxidants. Therefore, in this work, an inventive methodology for producing combination of herbs and spices as natural ingredients was optimized for addition to ghee. The optimized ingredients when added in the process, resulted in higher infusion to the ghee and also improved its sensory quality (in terms of color, texture and flavor). This methodology resulted in significant increase in the total phenolic content (159.9 mg Gallic acid equivalent /g ghee); thereby it enhanced the antioxidant activity (approx. 4 times higher than the control ghee) and improved the shelf life. It was also studied that the addition of these ingredients had no effect on the physicochemical and analytical parameters of ghee, and this ghee can be sold as proprietary food.



Extension Activities

Advisory Services: Advisory service was rendered to 107 of the clientele during personal visits to the institute, phone and mail enquiries. The profile of technical advice comprised recommended feeding modules for cross-bred cows, small-scale production and marketing of cattle feed, maintenance of dairy units, technology of milk products and regulatory guidelines for product manufacture for marketing overseas.

Exhibition Participation: Participated in the Krishi Mela 2021 organized by University of Agricultural Sciences, at GKVK Campus, Bangalore from November 11 to 14, 2021. NDRI Stall depicted key focus areas of improved green fodder production, indigenous breeds of Southern Region, Quality Milk Production and Milk Products of SRS, to benefit the visiting



farming community. The event was well-attended by farmers, farm women and farm youth, progressive farmers, entrepreneurs, students of schools & colleges, research scholars and general public and visit profile to NDRI stall was around 5000 clientele per/ day.

On-Farm Outreach Programme: Organized FLDs on commercial fodder crops in Karisandra and Hunasikote villages Malur Block of Kolar district under DAPSC project to encourage the farmers to grow improved and high yielding varieties of cereal and leguminous fodder crops. A total 70 SC farmers-beneficiaries were covered through institute's interventions.

Sl. No.	Fodder Crops	Area covered (acres)	Yield obtained tonnes/acre/cut (as on October, 2021)
1)	Super Napier/ Dharwad Hybrid Napier (Sampoorna) stem cuttings	10	8
2)	Maize (African Tall)	50	2
3)	Sorghum (CoFS31)	60	2
4)	Lucerne (RL88)	20	3
5)	Hedge Lucerne	20	3
6)	Stylo Grass (Hamata)	20	3

Field Exposure cum Orientation Programme: A programme was organized on October 2, 2021, for the progressive farmer trainees of the training programme on 'Entrepreneurship Development in Dairying' organized by AIC Foundation of SRS: ICAR-NDRI & ICAR-ATARI, Bengaluru at SRS of NDRI. A Guest Lecture by the Subject Matter Specialist was delivered to the trainee farmers on, 'Shelter & Fodder Management' on October 3, 2021.



Azadi-ka-Amrit Mahotsav: As a part of celebration of 75 years of India's Independence Celebrations, an 'Farmers Interaction Meeting' and 'Swachhata Campaign and Cleanliness Drive in Villages' under special Swachhata campaign (October 2 to 31, 2021) was organized on October 26, 2021 (Tuesday) for the benefit of SC farmers in the adopted villages of Kolar District, Karnataka State, under DAPSC funded project. During the programme, more than 50 dairy farmers actively participated in the interaction meeting and various queries of the farmers were addressed during the meeting.

Kisan Diwas & 'Swachhata Pakhwada: These programmes were organised on December 23, 2021 in Karisandra, adopted village under DAPSC funded project. Expert talk on Scientific Feeding of Dairy Animals and Improved Practices for Clean Milk were provided followed by distribution of mineral mixture and the programme was well attended by fifty-five farm beneficiaries.

Farmer First Programme: During the period under report, under Farmer FIRST Programme of ICAR-IIHR and SRS of ICAR-NDRI, follow-up of institute interventions, monitoring and feedback interactions were carried out in the adopted villages. Technical advice on balanced feeding, mastitis management and improved green fodder production was provided and corrective measures for the field level problems expressed by the beneficiaries.

Events Organized

KMF & ICAR-NDRI Interaction workshop for exploring technology transfer for new dairy products

An interaction workshop between SRS of ICAR-NDRI, Bengaluru and Karnataka Milk Federation (KMF), Bengaluru was held at KMF Central Office on November 11, 2021. The workshop was attended by fifty officials from various milk unions under KMF. The SRS-ICAR-NDRI scientists presented various technologies developed by them, namely; fruit yoghurt, functional butter, flavoured milk, curd and butter fortified with omega-3 fatty acid, shelf stable smoothies, malted millet beverage mix, payasam mixes and functional ghee. Interaction session was also conducted to clarify the doubts. Sri. B.C. Sateesh, Managing Director of KMF appreciated the efforts of ICAR-NDRI scientists for presenting their new technologies and products which were liked by the participants of the workshop. The MD informed that KMF is keen to buy technologies from NDRI and urged the scientists to work on those products, which will utilise significant quantities of cheese, paneer, SMP and whey because KMF is facing problem of dealing with excess of them. The meet evoked a good response from the attendees who showed interest in purchasing the technologies. Dr H.C. Devaraja, Scientist, SRS-ICAR-NDRI, Bengaluru and Mr B.V. Dharmendra, Joint Director (QA), KMF, Bengaluru coordinated the event.



AWARDS

- Kamaraj Elango, Arumugam Kumaresan, Ankur Sharma, Pradeep Nag, Mani Arul Prakash, Manish Kumar Sinha, AyyasamyManimaran, Ebenezer Samuel King John Peter, Sakthivel Jeyakumar, SellappanSelvaraju, Kerekoppa P. Ramesha and Tirtha K. Datta received Dr.G.B.Singh Memorial Award from the Indian Society for Study of Animal Reproduction for the best scientific article entitled “Sub-fertility in crossbred bulls: deciphering testicular level transcriptomic alterations between zebu (*Bos indicus*) and crossbred (*Bos taurus* x *Bos indicus*) bulls” published in BMC Genomics journal.
- Kathan Raval, Ph D student of Dr.A. Kumaresan received Best Young Scientist Award for his paper “RNA Sequencing Unveils Alteration in Gene Expression Involved in Important Biological Processes Related to Fertility in Crossbred Bull Semen with High DNA Damage” in the International Symposium on “Novel knowledge, Innovative practices and Research in Theriogenology-2021” held at CVAS, Mannuthy, Thrissur, Kerala during December 27-29, 2021.

- Pradeep Nag, Ph D student of Dr.A. Kumaresan received Best Research Paper Award for his paper “DNA fragmentation is associated with alterations in sperm phenome and oviduct binding ability in cattle” in the International Symposium on “Novel knowledge, Innovative practices and Research in Theriogenology-2021” held at CVAS, Mannuthy, Thrissur, Kerala during December 27-29, 2021.
- Nilendu Paul, Ph D student of Dr.A. Kumaresan received Best Poster Award for his work “Nanopurification of bull semen for enrichment of functionally competent spermatozoa” in the International Symposium on “Novel knowledge, Innovative practices and Research in Theriogenology-2021” held at CVAS, Mannuthy, Thrissur, Kerala during December 27-29, 2021.
- Ms. Babita Kathayat, Ph.D. (Agricultural Economics), students of DES&M Division, working under guidance of Dr. Anil Kumar Dixit has recived Uma Lele Mentor Fellowship for Women (a grant of \$ 5000) to support research collaboration.

JOINING

- Dr. Shivaswamy G P, Scientist (Agricultural Economics), joined SRS of ICAR-NDRI, Bengaluru on October 4, 2021 on his transfer from ICAR-IASRI, New Delhi.

EASTERN CAMPUS, KALYANI

Research

Effect of bypass fat supplementation on body weight, blood glucose and NEFA levels in dairy heifers

M. Karunakaran, Kinkar Debbarma, M. Mondal, A. Mandal and S. K. Das

The study was conducted on 12 prepubertal heifers of above 16 months of age. Heifers were divided into two groups viz. Control (C) without bypass fat supplementation and Treatment (T) with bypass fat supplementation @50 g/day/head for a period of 150 days. The body weight of the heifers in both the groups were measured and recorded at 15 days interval throughout the trial period. The live body weight was similar ($P>0.05$) at the start of trial and increased gradually in both the groups. The live body weight ranged from 180.25 ± 10.54 to 231.83 ± 17.18 kg and 188.83 ± 11.25 to 251.50 ± 11.94 kg in control and treatment group, respectively during the trial period. The live body weight increased along with increasing age in both the groups throughout the trial period (Fig. 1). The overall mean body weight during the 150 days trial period was significantly higher ($P<0.05$) in treatment (220.47 ± 5.85 kg) group than in control (209.34 ± 4.95 kg) group. There was no significant ($P>0.05$) difference in final body weight at the end of trial period between control (231.83 ± 17.18 kg) and treatment (251.5 ± 11.94 kg) group. The average daily weight gain during the 150 day trial period was insignificantly ($P>0.05$) higher in treatment group (417.78 ± 18.65 g/day) than in control group (343.89 ± 47.94 g/day). The difference in body weight at which heifers attain puberty was insignificant between treatment (240.67 ± 14.62 kg) and control groups (216.5 ± 5.5 kg).

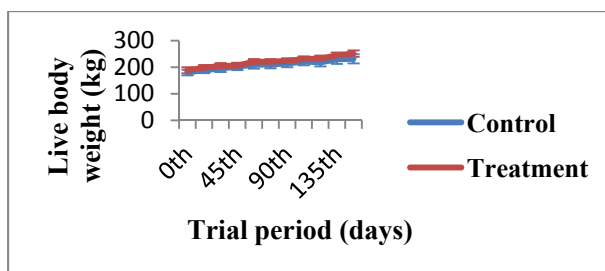


Fig. 1 Live body weight (kg) of heifers during trial period (Mean \pm SEM)

Plasma samples of experimental heifers were analysed at 15 days interval for blood glucose and NEFA levels during the trial period by spectrophotometry from the sample animals from each group. The blood glucose level ranged from 56.27 ± 12.93 to 75.97 ± 02.67 mg/dL and 64.99 ± 00.11 to 80.53 ± 00.06 mg/dL in control and treatment group respectively. The mean blood glucose during 150 day trial period was significantly ($P < 0.01$) higher in treatment group (72.04 ± 1.81 mg/dL) than in control group (66.98 ± 1.65 mg/dL). The blood plasma NEFA level kept fluctuating in both the groups throughout the trial period and it ranged from 169.88 ± 65.38 to 393.50 ± 12.25 μ mol/L and 117.50 ± 02.75 to 369.75 ± 38.50 μ mol/L in control and treatment group respectively. The mean blood NEFA level during 150 day trial period was similar ($P > 0.05$) in both treatment group (267.92 ± 23.26 μ mol/L) and control group (268.76 ± 21.23 μ mol/L) and didn't differed significantly (Fig. 2).

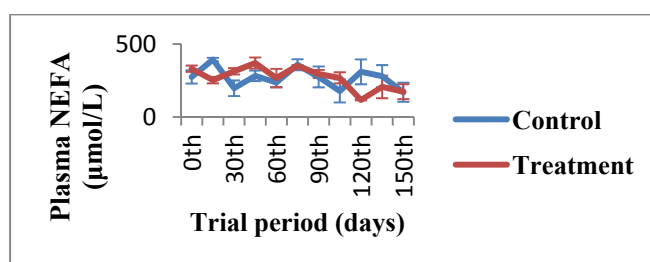


Fig.2 Plasma NEFA (μ mol/L) during trial period in experimental heifers (Mean \pm SEM)

Major Activities Organized under TSP

Front Line Demonstration of Mustard Crop Initiated

One programmed under 'TSP' was organized on November 2, 2021 in Banamalipara village of Nadia district of West Bengal State. The programme was organized jointly by KVK (Additional) Nadia and Eastern Regional Station of ICAR-National Dairy Research Institute. The programme was started with the interaction with progressive farmers about package of practices also farmers queries were addressed and sensitizing them about the cultivation of mustard seeds. Various inputs including seeds, chemical fertilizers, seeds treatment material were distributed among tribal farmers for cultivation. A total of 64 farmers were selected from tribal community for conducting Front Line Demonstration of mustard crop under TSP.



Organisation of Scientist-Farmers Interaction Session cum Input Distribution

One scientists-farmers interaction session cum input distribution camp was organized on October 11, 2021, under TSP project at ERS of ICAR-NDRI campus. In the program, a total of 55 tribal farmers and farm women got benefit under the project. A total of 40 farmers got 80 goat kids (2 goat kids each farmers) and 15 tribal farmers got 30 piglets (2 piglets each farmers). Apart from these, all the farmers got 50kg of animal feed. Veterinary medicines and mineral mixture were also distributed among the farming community. Each farmer got 1kg of mineral mixture and veterinary medicines were also distributed. Tribal farmers got firsthand experience about scientific animal husbandry practices through the interaction with the Scientists and Technical officers of ICAR-NDRI. Tribal farmers were encouraged to rear livestock in a scientific way so that their livelihood can be secured in the long run. Tribal farmers were hugely motivated and they ensured Scientists and Technical officers of the Institute that they will rear these animals in a scientific manner.



Awareness Campaign cum Kisan Gosthi Organised under ‘Special Swachhta Campaign’

One programme under ‘Special Swachhta Campaign’ was organized on October 12, 2021 in South Chandamari village of Nadia district of West Bengal State. The programme was organized jointly by KVK (Additional) Nadia and Eastern Regional Station of ICAR-National Dairy Research Institute. Scientists and Technical officers of the station actively participated in the programme. The programme was



started with the interaction with progressive farmers and sensitizing them about the maintenance of general cleanliness. One procession with local farmers and school children was taken out with banners and placards to sensitize the farming community about the importance of cleanliness and maintaining hygiene at the household level. Visit to farmers' doorstep was organized to motivate the farmers in adopting general cleanliness measures. Treatment facility for livestock was provided by the visiting team members and suggestions for better animal husbandry practices were also given to the farming community. School children were very much enthusiastic about the campaign and they were also sensitized about the Covid appropriate behavior.

Animal health camp cum Kisan Gosthi organized under SCSP

One 'Animal health camp cum *Kisan Gosthi*' was organized on November 11, 2021 under 'Scheduled Caste Sub Plan' project in South Chandamari village of Nadia district of West Bengal State. The programme was organized jointly by KVK (Additional) Nadia and Eastern Regional Station of ICAR-National Dairy Research Institute. Scientists and Technical officer of the station actively participated in the programme. The programme was started with the



interaction with dairy farmers about the importance of vaccination and time-bound treatment of the livestock. Tips and suggestions were also given to the farmers regarding the care and management of different livestock. A total of 99 cows, 39 calves and 21 goats were vaccinated during the event. Livestock were vaccinated against 'Foot and mouth Diseases', 'Hemorrhagic septicaemia', 'Black Quarter' and PPR. In the event 40kg mineral mixtures were distributed among the farmers belonging to SC community. The farmers appreciated the initiative and thanked the team for their effort and promised for their cooperation and involvement in future also.

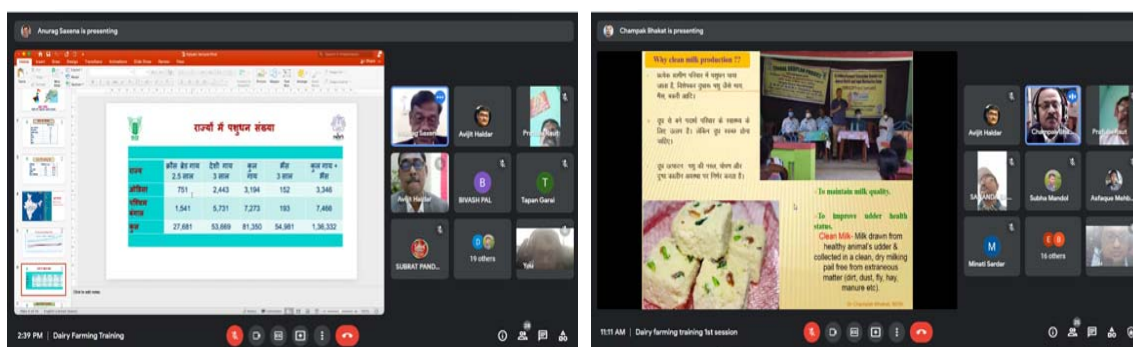
Input Distribution Camp Organized under SCSP

On-campus visit cum awareness programme for tribal farmers was organized on December 23, 2021. In the programme farmers were sensitized about the importance of animal husbandry in nutritional security and importance of gender equality in agriculture. During the programme, demonstration of different management practices pertaining to maintenance of cleanliness in the animal farm was explained to the farming community. Another input distribution cum awareness programme was organised on December 24, 2021. In the programme goats and livestock feed was distributed among 25 farmers.



Five Day Online Training on 'Scientific Dairy Farming for Sustainable Economic Security'

Eastern Regional Station of ICAR- National Dairy Research Institute and ICAR- Agricultural Technology Application Research Institute, Kolkata jointly organized 'Five days online training' on 'Scientific Dairy Farming for Sustainable Economic Security' for the progressive farmers from West Bengal and Odisha during December 6 to 10, 2021. In the training programme, a total of 16 lectures were delivered by the Scientists from ICAR-National Dairy Research Institute, ICAR-Indian Veterinary Research Institute and expert from NABARD. A total of 74 participants including 11 Subject Matter Specialists from KVK system attended in the training programme.



Different Activities Organized under NEH project

Activities Organized in East Sikkim District

ICAR-NDRI, ERS, Kalyani, West Bengal organized two days programme on "Livelihood Improvement NEH Farmers through Livestock Interventions" at Sanjong village of East Sikkim District (Sikkim) during November 10 to 11, 2021 under NDRI-NEH Project Component in collaboration with ICAR Research Complex for NEH Region, Gangtok, Sikkim. Scientists of ERS-NDRI (Dr. T. K. Dutta, Dr. S. K. Das, Dr. C. Bhakat, Dr A. Chatterjee, Dr. M. Mondal) participated in the programme. A *Scientists-Farmers' Interaction-cum-Training* (off-campus) programme was conducted in the morning session. 100 beneficiary NEH farmers participated in the *Scientists-Farmers' Interaction-cum-Training* session. Hill farmers were motivated to adopt scientific rearing of their livestock/poultry to make it as profitable business. Some need based inputs were distributed to 40 hill farmers (40 chicks, 2 poultry feeders, 2 waterers, 1kg mineral mixture and supplement per beneficiary poultry farmer) as a component of direct benefits transfer under the NEH project. 50 cattle farmers were provided 50kg cattle feed/farmer along with mineral mixture (1kg/farmer) and supplement. 70kg pig feed/farmer along with mineral

mixture (1kg/farmer) and supplements were also distributed among 20 beneficiary pig farmers. A total of 2000 Banaraja chicks, 2250kg poultry feed, 80 poultry feeders, 80 waterers, 100kg mineral mixture, 2500kg cattle feed, 1400kg of pig feed and 100 jars (3lit each) of supplements (Calposvet) were distributed to 100 beneficiary hill farmers. All these inputs were distributed to beneficiary hill farmers of Sikkim to help them to rear poultry birds, dairy cattle and pigs more scientifically and it is expected for higher economic gain by the practicing and resource poor hill farmers.



Activities Organized in Arunachal Pradesh

The Eastern Regional Station of ICAR-National Dairy Research Institute in collaboration with Krishi Vigyan Kendra (KVK), Namsai has organized one ‘Scientists-farmers interaction session cum input distribution programme’ on December 15, 2021 to improve the livelihood of farmers with the concept of agri-allied activities. The village-level programme was carried out by the financial support of NEH project component of ICAR-NDRI and the major thrust of the project was to improve the livelihood of the farming community from the North–Eastern region of the country through livestock based interventions. The visiting team (Dr. S. K. Das, Principal scientist, Dr. Asif Mohammad, Senior scientist and Dr. Amitava Ghosh, Chief Technical Officer), Scientists from KVK also also interacted with the farmers. In the programme 38 piglets, 19 q of pig feed, 1000 no. of poultry birds, 10 q of poultry feed, 80kg of mineral mixture etc. were distributed among the farmers. Efficient utilization of scientific technologies pertaining to animal husbandry was also demonstrated to the farmers.



Activities Organized in Tripura

ERS of NDRI organized scientist farmers Interaction session at Salema, District: Dhalai, Tripura in collaboration with Dhalai KVK on December 21, 2021 under ongoing NEH Project.

Discussions were made on scientific livestock/goat rearing. Inputs such as goats, poultry birds, animal feeds, mineral mixture, and medicine were distributed among beneficiaries. Chairman of *panchayat samati* and chairman of block advisory committee also participated in the programme. 65 farmers were present in this programme. 25 Black Bengal female goats were distributed among 25 farmers and 850 chicks were distributed among 45 farmers. Moreover, 2000kg chick starter feed, 1250kg goat feed, 130kg mineral mixture, dewormer, medicine etc were distributed among farmers.

Activities in Assam

ICAR-NDRI, ERS, Kalyani (WB) organized two days programme on “Livelihood Improvement NEH Farmers through Livestock Interventions” at Jhargram village of Morigoan District (Assam) during December 21 to 22, 2021 under NDRI-NEH Project Component. The programme was conducted in collaboration with KVK, Morigoan dist (AAU). Survey of surrounding villages, a Scientists-Farmers' Interaction and a Training programme was conducted during December 21 to 22, 2021. A Total of 94 NEH farmers participated in the Scientists-Farmers' Interaction-cum-Training session. Some need based inputs were distributed to 64 farmers (40 goats, 60 mineral mix packets, 100 bags feed and essential vet medicines).

On-line Training Programme for Sikkim Farmers

Eastern Regional Station of ICAR- National Dairy Research Institute has organized one online training on ‘Scientific Poultry Farming in Hill region of Sikkim’ on December 23, 2021, for the poultry farmers from Sikkim. The programme was jointly organized in collaboration with ICAR- Research Complex for NEH region, Sikkim Centre. In the training programme, a total of 52 farmers participated. Different aspects of poultry farming like poultry nutrition, housing management and health care aspects were covered under the programme.



Observation of National summit on Agro and Food processing with Focus on “Natural Farming”

ICAR-NDRI, ERS, Kalyani (WB) observed three days (December 14 to 16, 2021) National summit on Agro and Food processing with focus on “Natural Farming”. On December 14, 2021, a total of 42 farmers from Banamalipara and Ichhapur villages and on December 15, 2021, a total of 39 farmers from 3 blocks (Kalyani, Chakdah, Ranaghat-I) attended. On December 16, 2021, a total of 91 farmers from different villages (Banamalipara, Ichhapur, Phulia Nidhkur, Nakashipara, Nandighat, Chandamari, Bir-shidhu nagar) attended the honorable Prime Minister's lecture on natural farming. A farmer interaction meet in all the 3 days was conducted by ERS, NDRI and KVK (Nadia- additional).

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