



5th Annual International Conference-NANOFORAGRI 2021

Innovations for Future

8th-9th December, 2021 | Hybrid Event (Online + In person),

Venue: TERI-Deakin Nanobiotechnology Centre, TERI, Gurugram, Haryana, India

NANOFORAGRI 2021:

Technology Readiness and Overcoming Regulatory Barriers to Implement Nanotechnology-Enabled Agriculture for Sustainable Future

8th-9th December, 2021

Day 1	8 th December 2021
08:30 AM – 09:30 AM	REGISTRATION
09:00AM – 09:05 AM	OPENING OF NANOFORAGRI - 2021 Welcome – Dr Pushplata Singh, Director, TERI-Deakin Nanobiotechnology Centre (TDNBC), TERI, Gurugram Haryana, India
09:05 AM – 10:15 AM	Session I - Advances in Nano-fertilizers and Nano-pesticides Chair – Prof. David Cahill, Personal Chair, Deakin University, Australia Rapporteur – Dr. Ruchi Agrawal, TDNBC, Gurugram Haryana, India
09:05 AM – 09:20 AM	Keynote Speaker Nanonutrients for crop production and plant protection Dr J C Tarafdar, Former ICAR Emeritus Scientist, Central Arid Zone Research Institute (CAZRI), Jodhpur, India.
09:20 AM – 09:35 AM	Agri Nanomaterials for sustainable agriculture: Advantages and limitations Dr Pushplata Singh, Director, TDNBC, TERI, Gurugram, Haryana, India
09:35 AM – 09:50 AM	Indo-Norway Scientific Collaboration: Activities and Opportunities Dr Maan Singh Sidhu, Science and Technology Counsellor, Royal Norwegian Embassy, New Delhi, India
09:50 AM – 10:05 AM	Efficacy-Biosafety-Toxicity of Nanofertilizers – IFFCO’s Experience Dr Tarunendu Singh, Head (Agriculture Services), IFFCO Sadan, New Delhi, India
10:05 AM – 10:20 AM	Nano-driven Farm Inputs Shri Sagar Kaushik, UPL Limited, Mumbai, India
10:20 AM – 10:30 AM Panel Discussion	Advances in Nano-fertilizers and Nano-pesticides Panelists: Speakers from the session Moderator: Dr Anand Gole, Coromandel International Limited, Hyderabad, India



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10:30 AM – 11:35 AM	INAUGURAL SESSION
10:30 AM – 10:35 AM	Arrival of Dignitaries, Felicitations and Lamp Lighting
10:35 AM – 10:40 AM	Welcome Address Dr Vibha Dhawan, Director General, TERI, India
10:40 AM – 10:45 AM	Keynote Address Dr Namrata Pathak, Technology Mission Division (Nano Mission), Department of Science & Technology, India
10:45 AM – 10:50 AM	Relevance of the Conference Dr A. K. Singh, Director IARI, India
10:50 AM- 10:55 AM	Special Address Dr S.K.Malhotra, Agriculture Commissioner, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture and Farmers Welfare, India
10:55 AM - 11:00 AM	Special Address Prof Julie Owens(Virtual), Deputy Vice-Chancellor Research and Alfred Deakin Professor, Deakin University, Australia
11:00 AM- 11:05 AM	Special Address Prof Bas Baskaran(Virtual), Pro Vice Chancellor International Research Partnerships, Deakin University, Australia
11:05 AM- 11:10 AM	Chief Guest Mr Mathew Johnston, Minister-Counsellor (Education & Research) for South Asia, Australian High Commission, India
11:10 AM- 11:15 AM	Special Address Mr Rakesh Daultabad, MLA, Chairman of Haryana Agro Industries Corporation, India
11:15 AM – 11:20 AM	Dr Rashmi Sharma, Department of Science & Technology, Technology Bhawan, India
11:20 AM – 11:25 AM	Special Address Mr. Kanwal Singh Chauhan, Padma Shri Awardee, Haryana, India
11:25 AM – 11:30 AM	Vote of Thanks Dr Pushplata Singh, Director, TDNBC, TERI, Gurugram, Haryana India

*To be confirmed

11:30 AM – 12:00 AM	HIGH TEA
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12:00 PM – 02:10 PM	Session II – Smart Delivery, Sensing and Precision Engineering
Chair: Prof H.B. Bohidar, TDNBC, TERI, Gurugram, Haryana, India Rapporteur : Dr Rita Choudhary, TDNBC, TERI, Gurugram, Haryana, India	
12:00 PM – 12:15 PM	Nanomaterials for enhanced photosynthesis, drought tolerance and plant protection Prof David Cahill, Personal Chair, Deakin University, Australia
12:15 PM – 12:30 PM	Nanopolymers for agri-input delivery: advances and future outlook Dr Dhruva Jyoti Sarkar, Scientist, ICAR-Central Inland Fisheries Research Institute, Kolkata, India
12:30 PM – 12:45 PM	Development Of Doped Calcium Phosphate Nanofertilizers: From the Chemical Bench to Field Tests Prof Norberto Masciocchi, Università Degli Studi dell'Insubria, Italy
12:45 PM – 01:00 PM	Production And Utilization of Nanocellulose and Nanochitosan for Edible Coating Dr Erwann Guénin, Professor, Université de Technologie de Compiègne, ESCOM, France
01:00 PM – 01:15 PM	Nanomaterials and nanotechnology – enabling technology for a sustainable agriculture future Dr Lingxue Kong, Professor, Institute of Frontier Materials, Deakin University, Australia
01:15 PM – 01:30 PM	Developing Nano-Delivery Systems for Agriculture and Food Applications Prof Neena Mitter, Director, Centre for Horticultural Science at Queensland Alliance for Agriculture and Food Innovation, University of Queensland, Australia
01:30 PM – 01:45 PM	Sensing makes Sense using AI and Nano-range Sensors for Precision Agriculture Dr Arun Banerjee, Team Lead, Reliance Industries Limited, Mumbai, India
01:45 PM – 02:00 PM	Development of an intelligent geo-spatio temporal decision platform for farmer collectives Dr Sarabjot Singh Anand, Co-founder and Chief Data Scientist, TATRAS, New Delhi, India
02:00 PM – 02:10 PM Panel Discussion	Delivery Systems for agrochemicals Panellist: Shri Sagar Kaushik, UPL Limited, Mumbai, India, Dr Manoj Varma, Indian Institute of Science, Bangalore, India, India and Speakers from the Session Moderator: Dr Shruti Shukla, TDNBC, TERI, Gurugram, Haryana, India
02:10 PM – 03:00 PM	LUNCH
03:00 PM – 04:25 PM	Session III : Perceptions amongst farmers, Industries and Field Trials
Chair: Dr Mandira Kochar, TDNBC, TERI, Gurugram, Haryana, India Rapporteur: Dr Palash K Manna, TDNBC, TERI, Gurugram, Haryana, India	
03:00 PM – 03:15 PM	Bio-Agriculture in India-An industry perspective Shri Dhananjay Edakhe, Senior VP-Sales & Marketing (Agri Solutions), Zydex Industries, Pune, India



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03:15 PM – 03:30 PM	Carbon based agriculture nano-technologies- regulatory limitations and ways to overcome Dr P S Vijayakumar, Scientist, INST, Mohali, India
03:30 PM – 03:45 PM	Dr Anand Gole, GM R&D - Fertilizers & Speciality Nutrients, Coromandel International Limited, Secunderabad, Telengana, India
03:45 PM – 04:00 PM	Dr Naresh Prasad, Deputy General Manager, Chambal Fertilizers & Chemicals Limited, Ghaziabad, India
04:00 PM – 04:15 PM	Inspirational talk for agricultural community Mr Kanwal Singh Chauhan, Padma Shri Awardee, Haryana, India
04:15 PM – 04:25 PM Panel Discussion	Perceptions amongst farmers, Industry and Field Trials Panellists: Dr Jim Rookes, Deakin, Australia; Dr Sandeep Lal, IARI, Ms Nidhi Mathur, Investment Professional (Venture Capital), Axilor Ventures, Pvt Ltd, Bengaluru, India; Mr Vipin Saini, CEO-BASAI, Haryana, INDIA Speakers from the Session Moderator: Dr Palash K Manna, TDNBC, TERI, Gurugram, Haryana, India

04:30 PM – 05:30 PM	Oral presentations by young researchers with Award (8 selected presentations)
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<p>Each Presenter will get 5 mins to present in 3 slides each followed by a 3 mins discussion</p>	<ul style="list-style-type: none"> • Preparation and characterization of nanolignins: towards supports for nanocatalysts- Mr Zhao Zhang, Université de Technologie de Compiègne, France • Investigation for eco-safety and transformation of potential Phosphorus based nanofertilisers by using Caenorhabditis elegans as a terrestrial model- Ms. Ayushi Priyam, TDNBC, TERI, Gurugram, Haryana, India • Zinc Nano- fertilization enhances wheat grain yield and zinc concentration- Dr Achchhelal Yadav, ICAR-Indian Agricultural Research Institute, Delhi, India • Effect of galvanotaxic graphene oxide on chloroplast activity: Interaction quantified with Biolayer-Interferometry coupled confocal microscopy- Ms Bandana Kumari, Institute of Nano Science and Technology, Punjab, India • Synthesis of Nano-zeolites as delivery vehicles for nutrients- Ms Ashita Anand, TDNBC, TERI, Gurugram, Haryana, India • Nanomaze Lure: Pheromone Sandwich in Graphene Oxide Interlayers for Sustainable Targeted Pest Control- Ms Mahima Chandel, Institute of Nano Science and Technology, Punjab, India • Influence of essential oils on xanthan gum-based nano-formulated edible film- Mr Nishant Kumar, NIFTEM, Haryana, India • Self- readable Metal Organic Framework based Immuno-probe for detection of Aflatoxin B1- Ms Rashi, Amity University, Uttar Pradesh, India
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06:00 PM onwards	Cocktail & Networking and Banquet Dinner at Retreat Lawns (TERI Gram)
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Day 2	9 th December 2021
09:30 AM – 11:40 AM	Session IV – Regulatory Aspects of Nanotechnology Chair: Dr Pushplata Singh, TDNBC, TERI, Gurugram, Haryana, India Rapporteur: Dr Leena Johny, TDNBC, TERI, Gurugram, Haryana, India
09:30 AM – 09:45 AM	Overview of recent Nanosafety activities for industry in Thailand Dr Waluree Thongkam, Director, Nanosafety Alliance Department, National Nanotechnology Center (NANOTEC), Thailand
09:45 AM – 10:00 AM	Functional Foods and Advances in Nano Delivery Systems Dr C. Anandharamakrishnan, Director, National Institute of Food Technology, Entrepreneurship & Management (NIFTEM), Thanjavur, India
10:00 AM – 10:15 AM	Nanopesticides: Regulatory Evaluation of Environmental Risks Dr Rai S. Kookana, Chief Research Scientist, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
10:15 AM – 10:30 AM	Is there a flip side of Nano? How to limit it? Prof Amit K Dinda, Professor and Chief Coordinator, Centre for Medical Innovation and Entrepreneurship, AIIMS, Delhi, India
10:30 AM – 10:45 AM	Sustainable Nano fertilizers: A "Lab to field" Approach Prof Amitava Mukherjee, Director, Centre for Nanobiotechnology (CNBT), VIT, Vellore, India
10:45 AM – 11:00 AM	'Nano Regulations' - DST Initiatives Dr Namrata Pathak, Associate Head and Scientist, Technology Mission Division (Nano Mission), Department of Science & Technology, New Delhi, India
11:00 AM – 11:15 AM	Effective Co-creation Methods for Developing Nanotechnology Applications Dr Paul Wright, FIUPAC FACTRA Associate Professor in Toxicology and Head of RMIT Nanosafety Research Group, School of Health and Biomedical Sciences, RMIT University, Melbourne, Australia Co-chair of the Asia Nano Forum (ANF) Working Group on Nanosafety & Risk Management President of the Australasian College of Toxicology and Risk Assessment
11:15 AM – 11:30 AM	Interdisciplinary Complexities of implementing Nano Agri-input regulations in Agriculture Mr Vipin Saini, CEO-BASAI, Haryana, India
11:30 AM – 11:40 AM Panel discussion	Regulatory Aspects of Nanotechnology Panellists: Dr Richard Williams, Associate Professor, Deakin University, Australia; Mr A. Kulandaivel, Rallies India Limited, Dr Dhruva Jyoti Sarkar, Scientist, ICAR-Central Inland Fisheries Research Institute; Speakers from the Session Moderator: Dr Aaron Schultz, Deakin University, Australia
11:40 AM – 12:00 PM	Tea Break



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12:00 PM – 01:15 PM	Session V – Advances in seed treatment
Chair : Dr Arvind Kapur, MD, ACSEN HIVEG, Pvt Ltd, Haryana, India Rapporteur: Dr Suneeti Singh, TDNBC, TERI, Gurugram, Haryana, India	
12:00 PM – 12:15 PM	Overview of Engineered Nanomaterials for Seed Quality Enhancement Dr Udaya Bhaskar K., Senior Scientist, Seed Science and Technology, ICAR , MAU, India
12:15 PM – 12:30 PM	Biopolymer- Based Nanofiber Seed Coatings Dr Sandeep Lal, Principal Scientist, Seed Division, IARI, New Delhi, India
12:30 PM – 12:45 PM	Integrating Nanotechnology in Seed Treatment Mrs Ranita Das, Chief Technical Officer-International Business, Geolife Agritech India Pvt. Ltd., Maharashtra, India
12:45 PM - 01:00 PM	Scope of Nano technology in Seed Enhancement Dr Manish Patel, Executive Director, Incotec India Pvt Ltd., Gujarat, India
01:00 PM – 01:15 PM Panel Discussion	Advances in seed treatment Panellists: Dr Gunjan Mukherjee, Additional Director, Institute of Biotechnology, Chandigarh University and Speakers from the Session Moderator: Dr Rita Choudhary, TDNBC, TERI, Gurugram, Haryana, India
01:15 PM – 02:15 PM	Lunch
2:15 PM – 3:25 PM	Session VI – Bio derived nano-Agri input products
Chair : Prof Colin Barrow, Deakin University, Australia Rapporteur: Dr Amritpreet Minhas, TDNBC, TERI, Gurugram, Haryana, India	
2:15 PM – 2:30 PM	Increase Agricultural Productivity Without Chemical Fertilizers / Pesticides, by Boosting Photosynthesis Using a Package of Foliar Nano Nutrients Dr T. Rangarajan, Technical Director, Nualgi Nanobiotech, Bengaluru, India
2:30 PM – 2:45 PM	Bio derived materials for sustainable agriculture, food safety and Human Health Dr Shruti Shukla, Senior Scientist, TDNBC, TERI, Gurugram, Haryana, India
2.45 PM – 3.00 PM	Utilising Nature Biodiversity for the Development of High-Value Bioproducts Dr Munish Puri, Deputy-Director CMBD, College of Medicine and Public Health, Flinders University, Australia
3:15 PM – 3:25 PM Panel Discussion	Bio Derived Nano-Agri Inputs Products Panellists: Mr Dharendra Kumar, Director of Research and Development, Natural Plant Protection Limited, Bangalore, Speakers from the Session Moderator: Dr Mukul Kumar Dubey, Associate Fellow, TDNBC, TERI, Gurugram, Haryana, India
03:30 PM – 04:30 PM	Poster Pitch Presentations By Young Researchers With Award (3 + 2mins; 13 selected posters)
Each Presenter will get 3 mins to present followed by a 2 mins discussion	<ul style="list-style-type: none"> Development of Dairy based Iron-vitamin C Fortified Food Ink- Ms Shweta Rathee, NIFTEM, Haryana, India Microbial metabolites as emerging photosensitizers for solar cell



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application-**Ms Arshi Gupta, TDNBC, TERI, Gurugram, Haryana, India**

• Biodegradation of Fluoroquinolone antibiotics in wastewater by enzymatic treatment with fungal laccase immobilized on magnetic nanoparticles- **Ms Purvi Mathur, TDNBC, TERI, Gurugram, Haryana, India**

• Nano priming of seeds for biotic and abiotic stress management in wheat: Review- **Dr Umesh R. Kamble, ICAR, Haryana, India**

• Endophytic Aspergillus terreus mediated gold nanoparticle: its antimicrobial activity against phytopathogens Fusarium oxysporum and Rhizoctonia solani- **Mr Rahul Chandra Mishra, TDNBC, TERI, Gurugram, Haryana, India**

Fractionation and characterization of rice straw for conversion to agro-based products- **Ms Prabhpreet Kaur, TDNBC, TERI, Gurugram, Haryana, India**

• Behavior of Agriculturally Relevant Iron-Based Nanomaterials in Marine Ecosystem-**Ms Natasha Yadav, TDNBC, TERI, Gurugram, Haryana, India**

• Inhibitory effect of sulfur nanoparticles against fungal disease (Early Blight)-**Ms Anamika Pal, TDNBC, TERI, Gurugram, Haryana, India**

• Production of Biodegradable plastic/polymer by bacteria- **Ms Aksha Dhawan, TDNBC, TERI, Gurugram, Haryana, India**

• Biologically derived nano boron-**Ms Drishti, TDNBC, TERI, Gurugram, Haryana, India**

• Lifecycle analysis of Phosphorus based nanomaterials in marine environment- **Mr Anurag Nath, TDNBC, TERI, Gurugram, Haryana, India**

• Pretreatment Methodologies for the efficient extraction of cellulose from rice straw- **Ms Neha Sharma, TDNBC, TERI, Gurugram, Haryana, India**

• Molybdenum disulphide nanosheets for enhancing photosynthesis in agricultural crops- **Ms Chanchal Mony, TDNBC, TERI, Gurugram, Haryana, India**

Culmination of NanoforAgri

04:30 PM – 05:00 PM

Prof H B Bohidar, Senior Scientist, TDNBC, TERI, Gurugram Haryana, India
Prof Amit Dinda, AIIMS, Delhi, India
Dr Pushplata Singh, Director, TDNBC, TERI, Gurugram Haryana, India

05:00 PM – 05:15 PM

VALEDICTORY SESSION

Presentation of Awards for Best Oral and Poster presentation
Prof H. B. Bohidar, Prof Amit Dinda, Dr Pushplata Singh,
Dr Pallavolu Maheswara Reddy

Vote of Thanks -Dr Palash K. Manna, Senior Scientist, TDNBC, TERI, Gurugram, Haryana, India

05:15 PM - 05:30 PM

High Tea