



NEWSLETTER

OCTOBER TO DECEMBER 2024

National Sugar Institute

An ISO 9001:2008 Certified Institute
Ministry of Consumer Affairs, Food & Public Distribution
Department of Food & Public Distribution
Government of India
Kanpur – 208 017 (UP) India



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Artificial Intelligence (AI) and Machine Learning (ML) are transforming industries worldwide, and the sugar and allied sectors are no exceptions. These advanced technologies are being leveraged to optimize various processes, enhance productivity and improve sustainability within the industry.

In sugar production, AI and ML algorithms can predict optimal harvesting times by analyzing weather patterns, soil conditions, and plant health, thus increasing yields and minimizing waste. Furthermore, AI-powered automation is used in refining processes, ensuring better quality control and reducing human error. Predictive maintenance, powered by machine learning, allows for early detection of equipment failures, minimizing downtime and extending the lifespan of machinery.

In addition to production processes, AI and ML are making strides in supply chain management. By forecasting demand, these technologies can optimize inventory, reduce costs, and ensure the timely delivery of products. In terms of sustainability, AI models are helping in reducing energy consumption and waste and promoting eco-friendly practices in the industry.

As the sugar and allied industries continue to evolve, the integration of AI and ML holds great promise for enhancing operational efficiency, economic growth and profitability, paving the way for smarter, more resilient agricultural practices.

The institute is planning to introduce cutting-edge programs in emerging fields such as artificial intelligence, renewable energy and biotechnology. The state-of-the-art tissue culture Lab is under construction and inaugurated by the Hon'ble Minister of State for Consumer Affairs Food & Public Distribution, Smt. Nimbuben Jayantibhai Bambhaniya to support interdisciplinary projects. Further, upgrading campus facilities with smart classrooms, advanced technology, Institute ERP, E-office, Sparrow, E-Hrms and E-Bill etc.

Wishing everyone a very happy & prosperous New Year 2025

Dr. Seema Paroha
Director

89th FOUNDATION DAY CELEBRATION

The National Sugar Institute (NSI), Kanpur, proudly celebrated its 89th Foundation Day on 4th October, 2024 with great enthusiasm and recognition of contributions from various stakeholders in the sugar industry. The event was marked by the presence of the **Hon'ble Minister of State for Consumer Affairs, Food, and Public Distribution, Smt. Nimuben Jayantibhai Bambhaniya**, along with senior officials including the Shri Sangeet, Director, Department of Food and Public Distribution (DFPD), and Dr. Seema Paroha, Director of NSI, Kanpur.



The event aimed to recognize and honour the outstanding contributions of farmers, industry technocrats, and other key stakeholders who have played a pivotal role in the growth and modernization of the Indian sugar industry.

The distinguished technocrats were awarded the **“Sharkarashree” award**, and distinguished farmers were awarded the **“Progressive Farmer Award”** by the Hon'ble MoS.

The Hon'ble MoS also laid the foundation



stone of the Tissue Culture Lab at the institute.

NATIONAL SEMINAR

1. One-day seminar on “Indian Sugar Quality & BIS Standards” jointly organized by National Sugar Institute, Kanpur & Bureau of Indian Standards on 18th October 2024 at “Sharkara Shaudh”, National Sugar Institute, Kanpur. The seminar was attended by a large number of representatives from various sugar-producing states. Dr. Seema Paroha, Director, NSI, Kanpur, in her address, emphasized standardizing sugar standards and encouraging the sugar industry to produce good quality sugar.



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2. Three officers, Shri VP Singh, JTO, Shri Brajesh Singh, TO(IE) & Shri Subhash Chandra, JTO and four technical assistants, Shri AP Singh, STA, Shri Mohit Singh, STA, Ms Divya Patel, Young



Professional and Shri MP Singh, STA from the institute participated in Krishi Bharat-2024, one of the most significant agricultural/ technological events held in Lucknow from 15-18 November 2024, where the institute showcased the various value-added products, technologies & other important research activities.

56th ADVISORY BOARD MEETING

Shri Aswani Srivastava, Joint Secretary (Sugar) Government of India, chaired the 56th Advisory Board meeting on 15th November 2024 and discussed agenda items and various activities of the National Sugar Institute, Kanpur. Shri Aswani Srivastava, along with the Joint Secretary



(DSVO and S & R), also inaugurated the smart classroom for an enhanced learning experience.

Members of the advisory board also visited various laboratories, classrooms, ESF, BSS, speciality sugar division, etc. and took a keen interest in the present research activities of the institute. They also took an important step towards a greener, more sustainable future with tree plantation at NSI.



RESEARCH ACTIVITIES

1. Comparative Study on Polarization by using Lead, Non-lead Clarificant and NIR Polarimetry.
2. Melt Carbonation Process and its Comparison with Phosphatation Process.
3. Standardization of Raw Sugar as Natural Crystal Sugar for Direct Human Consumption.
4. Development of Environment-Friendly Bio-lubricants (with HBTU Kanpur)
5. Reduction of Transmission losses due to the Reduction Gears in Mill Drives by using Low-Speed High-Torque Synchronous Motors.
6. Boiler RO/DM Water Heating by Concentrated Solar Thermal (CST) System.
7. Evaluation of Sweet Sorghum Genotypes for their Adaptability and Biofuel Production in the Central Plain Zone of U.P.
8. Balanced Fertilizer Use for Maximum Economic Yield of Sugar Beet and Sustainable Soil Health.
9. Comparative study of MOP and Distillery K for Maximization of Mung Bean Yield and Soil Sustainability.
10. To assess the use of various PDM pallets collected from different factories on selected crops.
11. "Collaborative study on the use of sweet sorghum and grain sorghum as an alternative for bioethanol production" with M/s Advanta Seeds, Hyderabad.
12. Investigation of Biochemical Characteristics impact on the Storage Techniques of Sugar beet.
13. Investigation of Process of Sugar Manufacturing in Northern/ Southern Region.
14. Production of Ethanol from Sweet Sorghum varieties.
15. Production of Ethanol from Sugar Beet varieties.
16. Implementation of IOT at ESF and its study.
17. Study of CBM and Industry 4.0 for the Sugar Industry.
18. ICUMSA Study on determination of SO₂ Content in collected samples.

RESEARCH PAPERS/ PRESENTATIONS

1. A paper entitled "Assessment of Developed Temperature Tolerant Yeast Strains for Fermentation Efficiency" by Seema Paroha, Ananthalexmi, Shubhi Bhagwat, Anjali Yadav and Sonali Nigam has been accepted to publish in the NAAS-rated and Web of Science journal.
2. A paper entitled "Indian Sugar Quality and Consumers Requirement" by Vivek Pratap Singh in the one-day National Seminar Jointly organized by NSI, Kanpur and BIS, New Delhi at NSI Kanpur.
3. A paper titled "Development of Alcohol Tolerant Yeast Strains from Natural and Commercial Medium and their Assessment of Fermentation Efficiency" by Dr. Ananthalakshmi Ranganathan, published in Indian Journal of Pure and Applied Biosciences – Volume 12, Issue 4.
4. A paper titled "Reduction of Plant Downtime on behalf of Mill Roller Shaft Failure-A case study" by Sanjay Chauhan is sent for publication in Sharkara Journal.
5. A paper titled "Assessment of Developed Temperature Tolerant Yeast Strains for Fermentation Efficiency" by Dr Ananthalakshmi Ranganathan, published in Indian Journal of Natural Sciences – Volume 15, Issue 87.
6. A paper titled "A Novel Multi-level SVPWM Scheme for High Power Induction Motor Drive Applications", sent for the 1st IEEE International Conference on Smart & Sustainable Developments in Electrical

Engineering (SSDEE-2025) at IIT (ISM), Dhanbad.

7. A paper titled "An Improved Electric Drive for Sugarcane Preparation Machines" by Vinay Kumar, Sanjiv Kumar & Seema Paroha is submitted for the XXXII ISSCT Centennial Congress 2025.

MoU SIGNED

A Memorandum of Understanding (MoU) was signed between National Sugar Institute, Kanpur, and Diftech Technologies Pvt. Ltd, New Delhi, on 11th November 2024 to foster collaboration and advance research in the field of sugar technology, i.e. the innovative research on carbonation process by designing 'NSI design carbonation reactor or carbonate precipitator.



This strategic partnership marks a significant step forward in leveraging joint expertise and resources to address key challenges and drive innovative solutions.

PATENT

The innovative work, carried out in the Bio-chemistry division of National Sugar

Institute, Kanpur, by Prof. Seema Paroha & team, for which the patent was filed in 2019, has been officially recognized, and the patent was awarded on 14th December 2024 for "A Method and System for Production of Compressed Biogas from Sugar Mill Filter Cake". This valuable, eco-friendly source of compressed biogas by this technology will offer a sustainable solution for energy needs while promoting a cleaner environment.



AWARDS

Dr. Seema Paroha, Director, NSI, Kanpur, Dr. Ashok Kumar, Assistant Professor (Agriculture Chemistry), Dr. Lokesh Babar, JSO (Agriculture Chemistry) and Shri Tejpal Verma, STA got the Best Paper Award for their paper entitled "Soil, Water and Energy Management for Sustainable Agriculture and Livelihood Security" presented at National Conference organized by Chandra Shekhar Azad University of Agriculture and Technology, Kanpur during 18th – 20th October 2024.

CONSULTANCY SERVICES

On the requests from the various sugar factories, ethanol & other allied units , consultancy services of the institute were

provided, on various technical matters relating to diversion of B-Heavy molasses/syrup, validation of ETPs, preparation of DPRs, validation of no increase in pollution loads in ethanol units upon enhancement in capacity etc. which are listed below –

Sl. No.	Factory Name
1	M/s DCM Shriram Ltd., Unit-Ajbapur, Lakhimpurkheri, U.P.
2	M/s Kisan Sahkari Chini Mills Ltd., Unit – Morna, Distt – Muzaffarnagar, U.P.
3	M/s Uttam Sugar Mills Ltd., Unit-Barkatpur, U.P.
4	M/s Dalmia Bharat Sugar Industries Ltd. Unit-Baghauli, Sitapur, U.P.
5	M/s Triveni Engineering & Industries Ltd., Unit – Chandanpur, U.P.
6	M/s Triveni Engineering & Industries Ltd., Unit – Deoband, Saharanpur, U.P.
7	M/s Triveni Engineering & Industries Ltd., Unit – Khatauli, Muzaffarnagar, U.P.
8	M/s Saraswati Sugar Mill, Yamuna Nagar, (Distillery Unit), Haryana, U.P.
9	M/s UP State Sugar co-orporation Ltd. Gomti Nagar, Lucknow, U.P.

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10	<i>M/s Uttam Sugar Mills Ltd., Unit-Khaikheri, U.P.</i>
11	<i>M/s Advanta Enterprises Ltd. Hyderabad, Telangana.</i>
12	<i>M/s Balrampur Chini Mills Ltd. Unit-Maizapur, Gonda, U.P.</i>
13	<i>M/s Triveni Engineering & Industries Ltd., Unit – Rani Nagal, Moradabad, U.P.</i>
14	<i>M/s Triveni Engineering & Industries Ltd., Unit – Sabitgarh, Bulandsahar, U.P..</i>
15	<i>M/s Balrampur Chini Mills Ltd. Unit-Bhabhnan (Chemical Division), Gonda, U.P.</i>
16	<i>M/s Balrampur Chini Mills Ltd. Unit-Bhabhnan (Sugar Division), Gonda, U.P.</i>
17	<i>M/s Magadh Sugar & Energy Ltd., Unit- Hasanpur Sugar Mills, West Champaran, Bihar</i>
18	<i>M/s Balrampur Chini Mills Ltd. Unit-Akabarapur, U.P.</i>
19	<i>M/s Balrampur Chini Mills Ltd. Unit-Gularia, Lakhimpur Kheri, U.P.</i>
20	<i>M/s Zuari Industries Ltd., Unit – Gobind Sugar Mills. Aira, Lakhimpur Kheri, U.P.</i>
21	<i>M/s Dhampur Bio-organic Ltd., Distillery Division, Asmoli, Sambhal, U.P.</i>

22	<i>M/s Balrampur Chini Mills Ltd. Unit-Kumbhi, Lakhimpur Kheri, U.P.</i>
23	<i>M/s Naglamal Sugar Complex, Meerut, U.P.</i>
24	<i>M/s Avadh Sugar & Energy Ltd., Distillery Division, Seohara, Bijnor, U.P.</i>
25	<i>M/s Dalmia Bharat Sugar Industries Ltd. Unit-Ramgarh, Sitapur, U.P.</i>
26	<i>M/s Bindals Papers Mills Ltd. (Sugar Unit) Changipur, U.P.</i>
27	<i>M/s Uttam Sugar Mills Ltd., Unit-Libberheri, U.P.</i>
28	<i>M/s Bajaj Hindusthan Ltd. Unit-Kinauni, U.P.</i>
29	<i>M/s PBS Food Chandpur, Bijnor, U.P.</i>
30	<i>M/s Trault Bioenergy Ltd. Unit-02, Distillery Division, Jankhandi, Karnataka.</i>
31	<i>M/s Trault Bioenergy Ltd. Unit-03, Distillery Division, Bagalkot, Karnataka.</i>
32	<i>M/s Trault Bioenergy Ltd. Unit-01, Distillery Division, Mudhol, Karnataka.</i>
33	<i>M/s K.M. Sugar, Ayodhya, U.P.</i>
34	<i>M/s Kisan Sahakari Chini Mills Ltd. Unit- Kaimganj, U.P.</i>

M/s Triveni Engineering & Industries Ltd., Unit - Milaknarayanpur, U.P.

In addition to the above consultancy services, 34 nos. sugar & Khandsari/Jaggery units were also visited for a third-party inspection allotted by CPCB.

ANALYTICAL SERVICES:

Besides the analysis of sugar & sugar house products, ethanol and effluents, etc., the Institute also offers testing of Ethyl Alcohol based Sanitizer in its sophisticated, most modern NABL accredited analytical laboratory and other laboratories of the institute. Testing of bagasse for determination of GCV and lime for various constituents was also taken up during the period. Analytical services were rendered to following:

Sl. No.	Factory Name
1	<i>M/s baramati Agro Ltd., Pune, Maharashtra.</i>
2	<i>M/s Zuari Industries ltd, Unit-Gobind Sugar Mills – Aira.</i>
3	<i>M/s The Kisan Sahkari Chini Mills Ltd., Satha, Aligarh, U.P.</i>
4	<i>M/s The Kisan Sahkari Chini Mills Ltd., Badaun, U.P.</i>
5	<i>M/s Sri Behari Ji Cattle Feeds Pvt. Ltd., Kanpur Dehat, U.P.</i>

6 *M/s Rudra Bilas Kisan Sahkari Chini Mills Ltd., Rampur, U.P.*

7 *M/s Dhampur Bio-organics Ltd, Mansurpur, U.P.*

8 *M/s Dhampur Bio-organics Ltd, Meerganj, Bareilly, U.P.*

9 *M/s Balrampur Chini Mills Ltd., Unit-Balrampur, U.P.*

OTHER HAPPENINGS/ DEVELOPMENTS:

- राष्ट्रीय शर्करा संस्थान, कानपुर द्वारा गत वर्षों की भाँति इस वर्ष भी **वार्षिक खेलकूद क्रियाकलाप** संस्थान में आयोजित किये गये।

स्पोर्ट्स एक्टिविटीज के प्रेसिडेंट डॉ. विनय कुमार एवं वाइस प्रेसिडेंट श्री प्रेम शंकर कटियार ने विभिन्न खेल आयोजित कराए जिनमें छात्र-छात्राओं ने बढ़चढ़ कर हिस्सा लिया।



दिनांक 06.10.2024 को आयोजित पुरस्कार वितरण समारोह में विभिन्न प्रतिभागियों को डॉ. सीमा परोहा, निदेशक ने विजेताओं को पुरस्कार प्रोत्साहित किया।

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2. राष्ट्रीय शर्करा संस्थान, कानपुर द्वारा स्वच्छता पखवाड़ा मनाया गया। इस उपलक्ष में 02 अक्टूबर 2024 को कल्याणपुर स्थित प्रसिद्ध आशा देवी मंदिर में सफाई अभियान चलाया गया तथा मंदिर संचालको को सफाई सम्बंधित सामग्रियां भी दी गई।



1. Dr. Seema Paroha, Director, NSI, Kanpur, along with Dr. Ashok Kumar, Assistant Professor (Agriculture Chemistry), visited ICAR - IISR, Lucknow, on 8th October 2024 and discussed with its technological parameters. Both institutes joined hands to conduct trials focusing on sugarcane-sugar beet inter-cropping.
4. देश में एथेनॉल उत्पादन को बढ़ाने के उद्देश्य से चुकंदर

एवं शरद कालीन गन्ने के साथ चुकंदर की अंतः खेती का ट्रायल का शुभारंभ डॉ सीमा परोहा, निदेशक राष्ट्रीय शर्करा संस्थान, कानपुर एवं डॉ आर विश्वनाथन, निदेशक, भारतीय गन्ना अनुसंधान, लखनऊ द्वारा मेसर्स डालमिया भारत शुगर एण्ड इण्डस्ट्रीज लिमिटेड, रामगढ़ एवं मेसर्स दि सक्सरिया बीसवां शुगर फैक्ट्री लिमिटेड, बीसवां के फार्म पर गन्ना किसानों के साथ दिनांक 15.10.2024 को किया गया।



5. National Sugar Institute participated in the mega exhibition "सशक्त राजस्थान," which was organized at Abu Road District Sirohi & Rajasthan on 16th, 17th & 18th October 2024 under the



parliamentary constituency of Hon'ble Member of Parliament] Lok Sabha] Shri Lumbaram ji-



The exhibition has been organized to showcase the different government activities being carried out through the different institutions at the national level. NSI, Kanpur placed the stall to showcase the journey of the Sugar Industry from only one product of sugar to diversified products, which are going to improve the financial health of the sugar industry, which in turn has impacted the payment of sugarcane prices to farmers by the millers.

6. A meeting of FAD-2, Bureau of Indian Standards, New Delhi, was held on 17th October 2024 at the National Sugar



Institute, Kanpur, on hybrid mode under the chairmanship of the Director, NSI Kanpur, for revising the existing sugar standards.

7. Students from Axis College, Kanpur, visited various laboratories, Grain Based Ethanol Unit, Special Sugar



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Division and Experimental Sugar Factory of NSI, Kanpur to get first-hand knowledge about unit operation and management on 25th October 2024.

8. NSI Kanpur joined hands with ICAR-Indian Institute of Sugarcane Research, Lucknow, for a collaborative research project on sugar beet. The objective of this project is to enhance the productivity of sugar beet, increase ethanol production potential, and focus on the autumn sugarcane intercropping system.
9. Shri Aswani Srivastava, Joint Secretary (Sugar), along with Shri Sangeet, Joint Secretary (DSVO and S & R), released the book entitled "Nature's Playbook" written by Dr Seema Paroha, Dr Ananthalakshmi R. and Dr Divya Patel. Shri Aswani Srivastava, along with the Joint Secretary (DSVO and S & R), also inaugurated the smart classroom for an enhanced learning experience. Members of the advisory board also visited various laboratories, classrooms, ESF, BSS, speciality sugar division, etc. and took a keen interest in the present research activities of the institute. They also took an important



10. NSI, Kanpur, participated in Krishi Bharat-2024, one of the most significant agricultural/technological events held in Lucknow during 15-18 November 2024, where the institute showed the various value-added products, technologies & other important research activities.
11. Dr Seema Paroha, Director, National Sugar Institute, Kanpur, attended a meeting held on 19th November 2024, at the ministry under the chairmanship of the Secretary, DFPD, regarding various activities carried out at NSI, Kanpur.
12. राष्ट्रीय शर्करा संस्थान कानपुर में संयुक्त रूप से एन. एस.आई. कानपुर एवं एडवांटा इंटरप्राइजेज लि. के मध्य



चल रहे प्रोजेक्ट के अंतर्गत संस्थान के पि फार्म में मिठी स्वीट चरी से इथेनॉल उत्पादन हेतु संस्थान में स्थित शर्करा प्रयोगशाला में 21 नवंबर, 2024 को वॉयलर पूजन का कार्यक्रम संपन्न हुआ। शर्करा प्रयोगशाला में 26-28 नवंबर, 2024 तक मिठी चरी की पेराई की गई।



13. राष्ट्रीय शर्करा संस्थान, कानपुर में 22 नवंबर, 2024 को पारस हॉस्पिटल द्वारा एक दिवसीय स्वास्थ्य शिविर का आयोजन किया गया। इस स्वास्थ्य शिविर में संस्थान के छात्रों, कर्मचारियों एवं अधिकारियों ने उत्साहपूर्वक भाग लिया और अपना स्वास्थ्य परीक्षण करवाया।



14. राष्ट्रीय शर्करा संस्थान, कानपुर में दिनांक 25 नवंबर, 2024 को आई.आई.एम.आर., हैदराबाद की निदेशक डॉ. तारा सत्यवती एवं वरिष्ठ वैज्ञानिक डॉ. उमाकांत ने संस्थान की निदेशक प्रो. सीमा परोहा के साथ संस्थान की नैनो ब्रेअरी में मिलेट से पोषक बियर बनाने की प्रक्रिया का अवलोकन किया।



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15. NSI Kanpur organized an educational tour for the students of the DSPMM course on 29th November 2024. This enriching experience provided a fantastic opportunity to delve into various aspects of the sugar industry.
16. On the occasion of the alumni meeting of the 1974 batch of sugar technologists on completion of their 50th anniversary year, Kavi Sammelan was organized under the aegis of NSI Old Boy Association at National Sugar Institute, Kanpur on 25th November 2024.



17. NSI, Kanpur and IISR, Lucknow, are working together to showcase the potential of sugar beet to farmers. It is important to focus on both the economic and environmental benefits

of sugar beets.



For this, a demonstration on field trials was carried out at M/s K M Sugar mill farm on 03rd December 2024 and at M/s Balrampur Chini Mills Ltd., Haidergarh farm on 23rd December 2024.



18. Dr. Govindraj, Director of Sugarcane Breeding Institute, Coimbatore, visited National Sugar Institute, Kanpur, on 13th

December 2024 and had a glimpse of ongoing research activities at the institute. The Director of NSI, Kanpur and S B I, Coimbatore, had a fruitful discussion on the possible collaboration between the institutes in their respective expertise.



19. हिन्दी के क्षेत्र में उत्कृष्ट कार्य करने के लिए राजभाषा विभाग, गृह मंत्रालय द्वारा NSI कानपुर को तृतीय पुरस्कार देने की घोषणा की गई है।

20. संस्थान के नई कॉलोनी स्थित एन ए रमैया स्टेडियम में



राष्ट्रीय शर्करा संस्थान कानपुर और एन एल के एकेडमी मंधना के संयुक्त तत्वावधान में 23 दिसंबर 2024 को एक चित्रकला प्रतियोगिता का आयोजन किया गया। इसमें 60 से अधिक बच्चों ने प्रतिभागिता कर पुरस्कार एवं शील्ड जीता।

21. The GIS/Drone survey of the institute is being conducted to capture detailed aerial images and data on Institute's premises and also to provide mapping, monitoring and analysing the infrastructure, landscaping & facilities so as to have systematic development of the Institute.

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INFRASTRUCTURE DEVELOPMENTAL ACTIVITIES:

1. The three main infrastructural developmental works, viz. The setting-up of the tissue culture lab, Centralized Mess and New Hostel is in progress, and the advice/directions received from the ministry in the matter are being implemented.
2. Director, NSI and Prof. Debopam Das, IITK had a meeting at DFPD with DS(SA), JS (Sugar) and Secretary to have a discussion over revamping of the institute.
3. Director, NSI, SAO, Prof. D Das and Prof. R Jindal, IITK had a meeting (virtual) with DS(SA) & JS (Sugar) to have a discussion over various models in India regarding Institute of National Importance