

# NATIONAL SUGAR INSTITUTE, KANPUR – 208017, INDIA



Academic session 2021-22 at the institute is in full swing with sugar companies already conducting recruitment drive through Placement Cell of the institute. The overall scenario appears to be enthusiastic for the sugar industry as well due to higher and steady sugar prices and ethanol, the game changer. Looking to the ethanol capacity building being projected, there may be challenges about availability of feed stocks in desired quantities at affordable prices. The competition of flex-fuel vehicles with CNG and Electric Vehicles is also on cards. As on date, ethanol appears to be the most lucrative option for the sugar industry.

Institute organized many activities under Aazadi Ka Amrut Mahotsav and to organize many more in coming months to celebrate 75<sup>th</sup> year of country's independence. I call upon all of you to join us during various such event for which information shall be sent from time to time.

Wishing a trouble free and successful crushing season ahead.

Narendra Mohan Director



Julv – September 2021

**NEWS LET** 

#### WEBINARS ORGANIZED:

1. A webinar on the topic of **"Modern Trends in Automation to Enhance Efficiency of Sugar Factories"** organised by the institute on 9<sup>th</sup> July 2021. The webinar was graced by Shri S. S. Gangawati, President, Deccan Sugar Technologist Association, Pune and more than 200 delegates from various parts of the country attended the same.



2. Under the auspices of "**Aazadi Ka Amrut Mahotsav**", a webinar on the topic "**Grain Based Distilleries: Operation & Economics**" was organised by the National Sugar Institute, Kanpur and All India Distillers' Association (AIDA) on World Biofuel Day 10th August 2021. More than 150 delegates participated the webinar from various parts of the country.



3. A webinar on "**Diffusers in Cane Sugar Industry**" was organized by National Sugar Institute, Kanpur. Eminent Speakers from India and Australia made their presentations. Various aspects of cane and bagasse diffusion same discussed. More than 150 delegates participated in the webinar from different part of the India along with foreign delegates.



#### **EXECUTIVE DEVELOPMENT PROGRAM:**

Five day online **"Executive Development Programme"** was organized by National Sugar Institute, Kanpur from 12<sup>th</sup> to 16<sup>th</sup> July 2021. The programme was inaugurated by Shri Sudhanshu Pandey, Secretary (Food & Public Distribution), Government of India. The programme was attended by 130 Executives including 36 from Kenya and 5 from Indonesian sugar factories.





### **TRAINING PROGRAMME:**

Two days training programme was conducted by National Sugar Institute, Kanpur on "Sugar Refining Process" for the factories of M/s Balrampur Chini Mills Ltd. Group was organised at Lucknow on 27th-28th September 2021. Discussions was carried out on Phosphatation vs Carbonation, IER vs Active Carbon, use of MVR's and Surface Condensers, power consumption profiles, production of specialty sugars and quality control.



#### **ONLINE SESSION:**

Director NSI, Kanpur addressed as online session on "**Digital Harvest of Sugarcane Crop**" on 26<sup>th</sup> July 2021. Technological interventions for better estimation of health of crop and resultant yield were discussed.



## **ONLINE MEETING:**

1. An online meeting was held between National Sugar Institute, Kanpur officials and Executive Secretary, Nigerian Sugar Development Council to work out details for monitoring sugar projects in Nigeria by NSI, Kanpur under their Backward Integration Programme.



2. Director, National Sugar Institute, Kanpur attended an online meeting of FSSAI Panel on Sweets, Confectionary, Sweeteners, Sugar and Honey. Matters regarding revision of few standards and formulation of new one's viz. palm, coconut and liquid jaggery, edible molasses and high fructose corn syrup was discussed on 30<sup>th</sup> July 2021.



3. An Online training programme on **"Effluent Treatment Plant Operation and Analysis of Effluent in Sugar Factories & Distilleries"** was organised by National Sugar Institute, Kanpur on 26<sup>th</sup> - 27<sup>th</sup> August 2021. About 100 officials from sugar factories and distilleries situated in UP, Maharashtra, Karnataka, Bihar, Haryana & Punjab participated in the programme. Officers from Central Pollution Control Board (CPCB) also participated in the training programme.



## **TEACHERS DAY CELEBRATED:**

Under the auspices of **"Azaadi Ka Amrut Mahotsav", "Teachers Day"** was celebrated at National Sugar Institute on the 5th September 2021, by felicitating exDirectors Prof. R.B. Nigam, Prof. R.K. Vaish, Prof. S.K. Gupta and Dr. R.P, Shukla and also Professor Dr. P.K. Agarwal) of the institute.





Besides them. women teachers Dr. Kalpana Vajpeyi & Dr. Kiran Singh who did their Ph. D work at the institute and later on took up teaching at other institutions or colleges were also felicitated. Shri Suresh Rana, Hon'ble Minister of Sugarcane Development & Sugar Industries and Smt. Nilima Katiyar, Hon'ble Minister, Higher Education, Science & Technology, U.P. Government graced the occasion as Chief Guest and Guest of Honour respectively. On this occasion, a "Model Room" at the institute was also inaugurated where models of equipment used by the sugar industry in 1930's and those being used at present have been kept.



## **ORIENTATION PROGRAMME:**

Orientation Programme was organized for the students admitted during academic session 2021-22 National at Sugar Institute, Kanpur on 20th September 2021. Director, Education In-charge, Controller of Examination & Hostel Wardens addressed the students.



### **EXPERT LECTURE**:

1. Under the auspices of "Aazadi Ka Amrut Mahotsav", an expert lecture delivered by Mr. W R Aher on topic of "Boiler Operation & Maintenance in Sugar Industry" which was organized by National Sugar Institute, Kanpur on 27<sup>th</sup> July 2021. He detailed the configuration of various type of boilers, importance of high pressure and high temperature cycles and importance of feed water treatment.



#### RESEARCH

1. Studies on isolation of Lignin from sugar industry based biomass and development of the process for the conversion of derived lignin and fermentable sugar to Value-added **product** - The new experiments related to synthesize vanillin from bagasse-based lignin has been carried out to reduce the involved in this bio-refinery steps concept. The results obtained from these executed experiments are encouraging and vanillin can be obtained from bagasse in two stage pre-treatments. A manuscript summarizing our preliminary findings been has prepared and submitted to Hon. Director, this will be submitted to Sugar Tech Journal.

2. Studies on synthesis of lactic acid from sugarcane bagasse hemi cellulose – Recent literature on this topic has been surveyed. The experimental works will be resumed as soon as our existing laboratory equipment becomes functional.

3. Studies on pot-efficient synthesis of alkyl-levulinates (Als) using sugarcane bagasse derived cellulose – The modification in our draft patent manuscript in light of reported findings in US patent US7153996B2 is still ongoing and is likely to be completed in third week of October 2021.

4. To study the impact on performance of mechanically coupled twin induction motor drives for Shredder/Fibrizer having unequal sharing of load and to design & develop dedicated drive for the application - Phase Shift Transformer has been received. Its parameters are being studied. Two induction motors are received and parameters have been studied. Other hardware i.e. rectifier, inverter etc. is awaited & action shall be taken further upon receipt.

5. Utilization of Potash Rich ash for production of valuable bio fertilizer – Field experiment on sugarcane crop is ongoing so as to assess the effects of bio-fertilizers on its growth.

6. Comparative study of Nine varieties of sweet sorghum for production of ethanol yield – Five sweet sorghum varieties namely Phule Vasundhara, CSH 22SS, SSV 84, SSV 74 and ICSSH-28 performed better as compared to other varieties. So these varieties are sown in NSI Farm and after harvest they will be tested for ethanol production.



7. Comparative study on polarization by using lead, non-lead, non-lead clarificants and NIR polarimetry– Procurement of reagent Carrez I & Carrez II required for experiment of research work is under progress. To carry out the further research work procurement of polarimeter workable on 589 & 880 nm is being made.

## **RESEARCH PAPERS/BOOK CHAPTERS:**

1. A research paper entitled **"Natural Low Calorie Liquid Sugar from Sweet Sorghum – Commitment Toward Healthier Lifestyle"** by Narendra Mohan, Anushka Agarwal & Shruti Shukla, has been sent for publication in the 79<sup>th</sup> Annual Convention of STAI, 2021.

2. A research paper entitled **"A Different Approach Towards Controlling pH at Juice Clarification"** by Subhash Chandra, Virendra Kumar, and Narendra Mohan has been sent for publication in the 79<sup>th</sup> Annual Convention of STAI.

3. A research paper entitled **"Bio-Ethanol** from Sugar Industry- The Tool for Survival" by Narendra Mohan, has been sent for publication in the DSTA convention.

4. A research paper entitled **"Vitamin A Fortification of Sugar-A Step Towards Better Tomorrow"** by Narendra Mohan, Ashok Kumar Garg & Anushka Agarwal, has been presented in SASTA congress 2021.

5. A research paper entitled **"Electric** drives for cane preparation: A critical review of conventional system and the recent developments" by Vinay Kumar has been sent for publication in annual convention of SISTA. 6. A research paper entitled **"Vitamin A** fortification of sugar – A novel approach", by Narendra Mohan & Anushka Agarwal has been published in proceedings of SISSTA's 50<sup>th</sup> Golden Jubilee Annual Convention 2021.

7. A research paper entitled **"Trial of condensate polishing unit for sugar factories"** by Vanishtha Shukla, Sudhanshu Mohan, Sunil Bhate and Narendra Mohan has been sent for publication in the 79<sup>th</sup> Annual Convention of STAI, 2021.

8. A research paper **"Standardization of Method for Determination of Preparatory Index"** by Mohit Kumar, Subhas Chandra & Ashok Kumar Garg, has been published in **"SHARKARA"** (July – September, 2021) of National Sugar Institute, Kanpur.

# **CONSULTANCY:**

The consultancy services of the institute were provided to the following units on various technical matters relating to diversion of B Heavy molasses/syrup, validation of ETP's, preparation of DPR's, validation of no increase in pollution loads in ethanol units upon enhancement in capacity etc.

1	M/s Parle Biscuits Pvt. Ltd.,
	(Distillery division), District –
	Bahraich, U.P.
2	M/s Balrampur Chini Mills Ltd.,
	Babhnan (Chemical division),
	District – Gonda, U.P.
3	M/s DCM Shriram Ltd., Unit –
	Ajbapur (Distillery), District –
	Lakhimpur Kheri, U.P.

4	M/s Parle Biscuits Pvt. Ltd.,
	Parsendi (Distillery), District –
	Bahraich, U.P.
5	M/s Naglamal Sugar Complex
	(Distillery division), Naglamal,
	District – Meerut, U.P.
6	M/s DCM Shriram Ltd., Unit –
	Hariawan, District – Hardoi, U.P.
7	M/s Dhampur Sugar Mills Ltd.,
	Unit – Meerganj, District – Bareilly,
	U.P.
8	M/s Dhampur Sugar Mills Ltd.,
	Unit – Asmoli, District – Sambhal,
	U.P.
9	M/s The Karnal Co-operative Sugar
10	Mills Ltd., Karnal, Haryana
10	M/s Tikaula Sugar Mills Ltd., Distillery Unit, District –
	Muzaffarnagar, U.P.
11	M/s Avadh Sugar& Energy, Unit –
	Hargaon, District – Sitapur, U.P.
12	M/s Govind Sugar Mills Ltd., Aira,
	District – Lakhimpur, U.P.
13	M/s Kesar Enterprises Ltd., Unit –
	Baheri, District – Bareilly, U.P.
14	M/s Parle Biscuits Pvt. Ltd.,
	Parsendi, District – Bahraich, U.P.
15	M/s Sri Jyoti Renewable Energy
	Pvt. Ltd., Bhiwani, Haryana
16	M/s Balrampur Chini Mills Limited,
	Unit – Baalrampur, District –
1.7	Balrampur, U.P.
17	M/s Dalmia Bharat Sugar &
	Industries Limited, Unit – District –
18	Shahjahanpur, U.P. M/s L.H. Sugar Factories Limited,
10	Distillery Division, District –
	Pilibhit, U.P.
19	M/s Upper Doab Sugar Mills,
	District – Shamli, U.P.

20	M/s Kisan Sahkari Chini Mills
	Limited, Najibabad, District –
	Bijnor, U.P.
21	M/s Uttam Sugar Mills Limited,
	Unit – Libberheri, District –
	Haridwar, Uttarkhand
22	M/s Manas Agro Industries &
	Infrastructure Limited, Nagpur,
	Maharashtra.
23	M/s SBEC Sugar Limited,
	Malakpur, District – Bagpat, U.P.
24	M/s Sona Sati Organics Private
	Limited, Distillery Division, District
	– Gopalganj, U.P.
25	M/s DCM Shriram Limited, Unit –
06	Hariawan, District – Hardoi, U.P.
26	M/s Dalmia Bharat Sugar &
	Industries Limited, Unit – Jawaharpur, District – Sitapur, U.P.
27	M/s The Seksaria Biswan Sugar
2.	Factory Limited, District – Sitapur,
	U.P.
28	M/s Uttarkhand Sahakari Chini
	Mills Sangh Limited, Dehradun,
	Uttarakhand.
29	M/s J.H.V. Sugar Limited, District -
	Maharajganj, U.P.
30	M/s Majhaulia Sugar Industries
	Private Limited, District – West
	Champaran, Bihar.
31	M/s The Kisan Sahkari Chini Mills
	Limited, Sathiaon, District –
	Azamgarh, U.P.

## **ANALYTICAL SERVICES:**

Besides analysis of sugar & sugar house products, Ethanol and effluents etc. Institute started offering 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 also taken up during the period. Analytical services were rendered to following:

1	M/s Sarjoo Sahkari Chini Mills Ltd.,
	Belrayan, District – Lakhimpur
	Kheri, U.P.
2	M/s Shravasti Kisan Sahkari Chini
	Mills Ltd., Nanpara, District –
	Lakhimpur Kheri, U.P.
3	M/s Dalmia Bharat Sugar & Ind.
	Ltd., Nigohi, District - District -
4	Shahjahanpur, U.P. M/s Rajasthan State Ganganagar
4	Sugar Mills Ltd., District - Sriganga
	nagar (Rajasthan)
5	M/s Dalmia Bharat Sugar & Ind.
	Ltd., Jawaharpur, District – Sitapur,
	U.P.
6	M/s Bureau of Indian Standards,
	Bhopal Branch Office, M.P.
7	M/s Parle Biscuits Pvt. Ltd.,
	Parsendi, District – Bahraich, U.P.
8	M/s Triveni Engineering & Ind. Ltd.,
	Unit – Raninangal, District –
9	Moradabad, U.P. M/s The Kisan Sahkari Chini Mills
9	Ltd., Hasanpur, District – Amroha,
	U.P.
10	M/s Balrampur Chini Mills Ltd.,
	Unit – Gularia, District –
	Lakhimpur, U.P.
11	M/s Bisalpur Kisan Sahkari Chini
	Mills Ltd., Bisalpur, District –
10	Pilibhit, U.P.
12	M/s Bureau of Indian Standards, Banglore Branch Office, Karnataka
13	Banglore Branch Office, Karnataka. M/s Kisan Sahkari Chini Mills
13	Limited, Unit – Ghosi, Mau, U.P.
14	M/s The Kisan Sahkari Chini Mills
	Limited, Nadehi, Uttarakhand.

15	M/s Triveni Engineering &
	Industries Limited, Unit- Khatauli,
	U.P.
16	M/s The Kisan Sahkari Chini Mills,
	Sultanpur, U.P.
17	M/s M/s Triveni Engineering &
	Industries Limited, Unit - Deoband,
	Saharanpur, U.P.

## **OUR OTHER ACTIVITIES:**

1. Director, National Sugar Institute, Kanpur inaugurated "**Specialty Sugar Division**" at M/s Dalmia Bharat Sugar Industries Ltd., Nigohi, Shahjahanpur on 1<sup>st</sup> July 2021. The factory has started the production of white sugar consumer packs, brown sugar and icing sugar etc.



2. Online Entrance Examination-2021 for admission to various courses conducted by National Sugar Institute, Kanpur was

organized on 25<sup>th</sup> July, 2021 at fourteen centres across the country. Admission process has been completed & classes are being conducted.



3.राष्ट्रीय शर्करा संस्थान, कानपुर द्वारा उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड के सहयोग से हवा की गुड़वत्ता (क्वालिटी) मापने हेतु सयंत्र (Ambient Air Quality Monitoring System) की स्थापना की गयी।



4. Under the "**Swachhta Activities**" institute distributed dust bins, cloth bags, sanitizer and masks in Kasturba Gandhi Higher Secondary School, Nawabganj, Kanpur on 11<sup>th</sup> July 2021.



5. National Sugar Institute, Kanpur joined Industrial Motivation Campaign launched by the MSME Development Institute, Cuttack on "**Transition from single use plastic to alternate material**", Institute presented the possible usage of sugarcane bagasse as replacement for single use plastic.



6. NSI joined hands with the MSME Development Institute, Muzaffarpur, Bihar for Industrial Motivational Campaign on "Transition from Single Use Plastic to Alternate Material". NSI stressed to focus on production of compostable crockery, utility items and particle board from sugarcane bagasse.



7. Director National Sugar Institute, Kanpur visited the M/s Parle Biscuits Pvt. Ltd. (Distillery Division), Bahraich, Uttar Pradesh to validate increase in plant capacity under B Heavy molasses use. Tree plantation was also carried out by the NSI team in the premises of distillery.



8. Institute carried out campaign for staffs and officers to participation in the event related to singing National Anthem & uploading it on website https://www.rashtragaan.in.

9. राष्ट्रीय शर्करा संस्थान, कानपुर मे स्वतंत्रता दिवस पूरे उत्साह के साथ मनाया गया। संस्थान द्वारा "स्वच्छता मिशन" के अंतर्गत लगन से कार्य करने वाले सफाई कर्मियों को पुरुस्कृत किया गया। साथ ही हिंदी पुस्तकालय को "सबसे स्वच्छ विभाग " होने की "स्वछता ट्रॉफी " प्रदान की गयी। एक सांस्कृतिक कार्यक्रमका भी आयोजन किया गया जिसमे सुश्री अलका मिश्रा, सर्व श्री अंसार कुंबरि, मुकेश श्रीवास्तव एवं राज कुमार सचान ने अपनी कविताओं से संस्थान कर्मियों एवं छात्रों मे जोश भर दिया।





10. Under the Auspices of Aazadi Ka Amrut Mahotsav, "**Fit India Freedom Run 2.0**" was organized at National Sugar Institute, Kanpur on 17<sup>th</sup> August 2021. During the event, staff members, officers and enthusiastic students of various courses participated.





11. Inauguration of "**Interactive Seminar Room**" at NSI, Kanpur was carried out by Shri Subodh Kumar Singh, Joint Secretary (Sugar & Administration), Govt. of India. He also reviewed the working of various departments at institute.





12. In the memory of Ex-Prime Minister of India, Late Shri Rajiv Gandhi, "**Sadhbhawna Diwas**" was organized at the National Sugar Institute, Kanpur on 20th August 2021. On this occasion, a "**Sadhbhawna Shapath**" was administered to the institute staff.



13. Presentation of "**Micronutrient Fortification of Sugar**" during 2021 South African Sugar Technologists Association (SASTA) Congress by Director, National Sugar Institute, Kanpur.



14. Director NSI, Kanpur visited to CFTRI, Mysore. Discussion were made with Dr. (Mrs.) Sreedevi, Director and other faculty on collaborative working for developing technologies for cane juice preservation, production of dietary fibre and low calorie sweeteners from bagasse and on production of non-chemical jaggery/jaggery products.



15. Director NSI, Kanpur visited Bharat Ratna Sir M. Visvesvaraih Sugarcane Research Institute, Mandya, Karnataka and discussed on utilizing available infrastructure for conducting training programmes for enhancing farm & factory productivities in Southern Karnataka.



16. Prof. Narendra Mohan, Director, National Sugar Institute, Kanpur has been conferred with **"Best Director of the Year 2020-21 Award"** by the Imperial Society of Innovative Engineers.



17. मुख्य सचिव, उत्तर प्रदेश, की अध्यक्षता मे प्रदेश राज्य परामर्शित गन्ना मूल्य निर्धारण संस्तुति समिति की बैठक मे निदेशक राष्ट्रीय शर्करा संस्थान, कानपुर द्वारा भाग लिया गया।



18. Director, National Sugar Institute, Kanpur, interacted with ANI news Channel on production of bakery and confectionary products using jaggery and dietary fibre made from bagasse on 4th September 2021.

19. राष्ट्रीय शर्करा संस्थान के निदेशक श्री नरेन्द्र मोहन को सेन्टर फॉर एजुकेशन ग्रोथ एवं रिसर्च (सी.ई.जी.आर.), नई दिल्ली के द्वारा" एग्जेम्पलरी अकेडमिक लीडर ऑफ द ईयर 2021" के अवार्ड से वर्चुअल राष्ट्रीय शिक्षा गौरव पुरस्कार समारोह दिनांक 7<sup>th</sup> सितम्बर 2021 को सम्मानित किया गया।



20. संस्थान की अकेडमिक काउंसिल की बैठक संस्थान के निदेशक श्री नरेन्द्र मोहन की अध्यक्षता में दिनांक 10<sup>th</sup> सितम्बरको सम्पन्न हुई।

बैठक में लिये गये निर्णय के अनुसार, संस्थान के एल्कोहॉल टेक्नोलॉजी एवं शुगर इन्जीनियरिंग के पाठ्यक्रमों में आगामी शैक्षिक वर्ष 2022-23 की सीटे बढ़ायी जाने का निर्णय लिया गया।



21. राजभाषा को बढावा देने के लिए, हिंदी (राजभाषा) पखवाड़ा के अंतर्गत राष्ट्रीय शर्करा संस्थान में शपथ ग्रहण कार्यक्रम दिनाँक 11<sup>th</sup> सितम्बर 2021 को आयोजित किया गया।



22. राष्ट्रीय शर्करा संस्थान में हिंदी पखवाड़े में आयोजित दिनांक 15<sup>th</sup> सितम्बर 2021 को विभिन्न प्रतियोगिताओं के सन्दर्भ में पुरुस्कार वितरण समारोह आयोजित किया गया।



23. National Sugar Institute, Kanpur joined hands with "Vigyan Bharti" for taking forward "A Science Movement with Swadeshi Spirit" on dated 16th September 2021.





27. National Sugar Institute, Kanpur developed a process for production of "Vanillin" utilizing lignin constituent of sugar mill bagasse. Vanillin is used as a flavoring agent for "**Vanilla flavor**". Ice cream and chocolate industry together comprises 75% of the market for Vanillin as a flavoring agent.



28. First phase of campus placement commenced at National Sugar Institute, Kanpur. Firstly, M/s Balrampur Chini Mills Ltd. conducted written test followed by interviews on 25th September 2021.



24. राष्ट्रीय शर्करा संस्थान में विश्वकर्मा जयंती संस्थान के यन्त्र एवं प्रायोगिक शर्करा प्रयोगशाला में मनाई गयी। संस्थान के निदेशक एवं अन्य कर्मियों ने इस अवसर हवन एवं भगवान् विश्वकर्मा की आरती समारोह में भाग लिया।



25.शर्करा मानकों की एक्सपर्ट कमेटी की बैठक प्रो. नरेन्द्रमोहन, निदेशक, राष्ट्रीय शर्करा संस्थान, कानपुर की अध्यक्षता में सम्पन्न दिनांक 21<sup>st</sup> सितम्बर 2021 को हुयी। चीनी सत्र 2021-22 के लिये सात शर्करा मानकों को स्वीकृति (लार्ज, मीडियम, स्माल,सुपर स्मालश्रेणी) दी गयी।सभी मानकों का वितरण दिनांक 1<sup>st</sup> अक्टूबर 2021 से आरम्भ हो जायेगा।



26. Team of National Sugar Institute, Kanpur led by Shri Narendra Mohan, Director visited M/s Oudh Sugar Mills Ltd., Hargaon, Sitapur on dated 23rd September 2021 to validate no increase in pollution load due to operation of distillery on B Heavy molasses at higher capacity.