



NEWSLETTER

October-December, 2020

Visit us at:
<http://www.nsi.gov.in>
Contact: nsikanpur@nic.in

**NATIONAL SUGAR INSTITUTE
KANPUR-208017(U.P.) INDIA**



Crushing operations in sugar factories are now in full swing. Indian sugar industry is although again all set to produce sugar more than domestic consumption but the silver lining is greater diversion of B Heavy molasses and cane juice expected for ethanol production.

This with stable sugar prices and targeted 6.0 million tonnes of sugar export with financial support from government is expected to bring relief to the sugar industry.

However, I reiterate the sugar industry is required to be competitive exploiting unharnessed potential of by-products and through production of special sugars. The distilleries to look for alternate potential techniques of spent wash treatment which besides ensuring ZLD may also yield value added products. For the molasses based distilleries use of carbon di-oxide, bio-gas and potash recovery should be high on agenda.

Wish you all a very happy and prosperous New Year 2021.

**Narendra Mohan
Director**

WEBINARS:

1. Asian Sugar Conference 2020 was organized by the Institute on 8th October, 2020 on virtual platform. More than 250 delegates from Indonesia, Iran, Sri Lanka, Thailand, Nepal, Nigeria, Uganda, Kenya, UAE and Vietnam participated. The conference was inaugurated by Secretary (Food & Public Distribution), Government of India who stressed upon the need for producing sugar as per market requirements and to make sugar industry competitive.



2. राष्ट्रीय शर्करा संस्थान, कानपुर ने भारतीय चीनी मिल्स एसोसिएशन के साथ मिलकर 15 अक्टूबर को एक अत्यंत महत्वपूर्ण विषय “भविष्य के ईंधन की ओर एक कदम (A step Ahead Toward a Future fuel)” पर ऑनलाइन वेबिनार आयोजित किया। कार्यक्रम का प्रारम्भ करते हुये श्री सुधांशु पाण्डेय, सचिव (खाद्य एवं सार्वजनिक वितरण), भारत सरकार ने इस बात पर बल दिया कि भारत में कच्चे तेल की आयात को कम करने के

लिए हमें चरणबद्ध तरीके से पेट्रोल में ईथनोल मिश्रण कार्यक्रम को विस्तारित करना होगा। इसके लिए हमें 2022 तक के लिए निर्धारित 10% मिश्रण के लक्ष्य को 2030 तक बढ़ाकर 20% करना होगा।



INAUGURATION OF NANO GRAIN BASED ETHANOL UNIT:

Commissioning of Nano Grain Based Ethanol has completed during the period and Inauguration of unit was done on 5th November, 2020 at the Institute.





The same has been integrated with Nano Molasses Based Ethanol Unit and this is the first **"Multi Feed Stock Based Ethanol Unit"** of its kind in India.

ONLINE SESSION ORGANIZED:

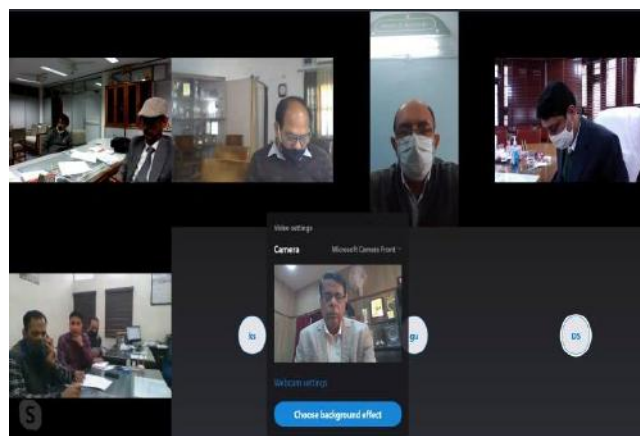
Institute organized online session jointly with ISMA and NFCSF on two important topics, **"Production of Bio-CNG from Filter Cake"** and **"Production of Potash Rich Fertilizer using Incineration Boiler Ash"**. Secretary (Food & Public Distribution), Joint Secretary (Sugar), President, ISMA, Director-General, ISMA and Managing Director, NFCSF graced the occasion. Very informative presentations on the subject matter were made.



ONLINE TRAINING PROGRAMME:

Online training programme on **"Sugar Recovery Improvement"** organized for

technical personnel of Haryana Sugar Federation on 4th December, 2020.



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 experiments related to synthesis of Vanillin from bagasse have been performed by implanting a new catalytic system based on CuSO_4 /Nitrobenzene. The related TLC was developed. The isolation and characterization of the reaction products are in progress.

2. Studies on access of bio-plastic as polyethylene substitute from sugarcane bagasse. The experimental work related to this topic is being taken up as the preliminary work pertaining to data collection and literature survey has been completed.

3. Studies on the feasibility of utilization of sugarcane bagasse as a potential feedstock to access cosmetic ingredients. The laboratory scale experiments have been successfully conducted. Studies indicate economics been in favor, raw material being a cheap source. Draft application for filing patent has been submitted.

4. Studies on pot-efficient synthesis of alkyl levulinates (Als) using sugarcane bagasse derived cellulose. The experiments related to synthesized the methyl-levulinate at 10 g batch scale in triplicate have been carried out. The isolation of the crude product has been completed. The purification by column chromatography and characterization by FT IR is in progress.

5. Studies on Production/isolation of C5 – Sugar Alcohol/Sugar using by-product resources of sugar industry. Dilute base pre-treatment strategy to fractionate xylan, cellulose and lignin components from sugarcane bagasse was carried out. In this line, the experimental works have been carried out at 10 g batch scale in duplicate. The experimental work related to isolation/extraction, purification and characterization of cellulose and lignin from sugarcane bagasse is in progress.

6. Standardization of method for determination Preparatory Index. Study is being taken to assess the role of fibre% and its quality on preparatory index of sugarcane and thus to factorize it while deducing PI. Lab trials of different methods to standardize the preparatory index shall be carried out during the crushing season. The study is for standardization of method among the available various methods.

7. Production of Liquid Sugar from Sweet Sorghum Juice: Studies have been taken up for production of liquid sugar directly from two different varieties of sweet sorghum juice. Initial laboratory trials have been conducted using clarifying agents of vegetable origin and using ion-exchange resins and active carbon.



8. 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. The work plan has been chalked out and system for conducting trials at the Experimental Sugar Factory of the institute is being assembled.

9. Studies on deterioration patterns on different sugars. Sugar samples were analyzed for parameters such as colour, ash, pol, pH, RS, SO₂, turbidity as per plan of work. The study is to be concluded and a paper is planned to be published in some reputed journal.

10. Utilization of Potash Rich ash for production of valuable bio fertilizer. Experiment lay out along with sowing of sugarcane crop at NSI farm got completed. At places of poor germination, gap filling is being done. Prepared bio-fertilizers (*azatobacter* and *PSB*) will be added to assess effect on productivity of sugarcane.

11. Comparative study of Nine varieties of sweet sorghum for production of ethanol yield. Nine Varieties of Sweet Sorghum cultivated at the institute farm were harvested during the period. Their quality is being

evaluated for various biochemical parameters like TRS, RS, ethanol yield, FE etc.



The work has been taken up jointly with Indian Institute of Millets Research, Hyderabad.

TECHNOLOGY DEVELOPMENT/TRANSFER:

1. Technology developed by the institute for production of Fortified Jaggery. It has been produced without use of any chemicals but blended with various immunity boosters.



Technology provided to an entrepreneur by NSI, Kanpur through National Research Development Corporation.

2. To showcase ways and means for value addition, nutritious baked cookies filled with richness of liquid jaggery and goodness of dietary fibre were made from bagasse for healthier life.



RESEARCH PAPERS:

1. A research paper on “Sustainable & Healthier product profile from Indian Sugar Industry-From Commitment to Action” by Narendra Mohan and Anushka Agarwal sent for publication in proceeding of online conference

– 2020 held on 26th October, 2020 on Modernization in Agriculture, Food System & Aqua word organized by Inovine Conferences, Mississippi, Untied States of America.

2. A paper on “**Indian Sugar Scenario**” by Dr. Ashutosh Bajpai was presented in Asian Sugar Conference 2020 organized by the Institute on 8th October, 2020.

3. A paper entitled “**Middle East Sugar Scenario**” by E. Berenjjan and Narendra Mohan was presented in Asian Sugar Conference 2020 organized by the Institute on 8th October, 2020.

4. A paper entitled “**Bio-ethanol from Sugar Industry- Issues & Remedies**” was presented by Prof. Narendra Mohan during the Webinar organized by NSI-ASSCT on 7th November 2020.

5. Dr. (Mrs.) Seema Paroha made a presentation on “**Alternate Bio-sources for E-20 Blending & their Economic Viability**” during the Webinar “A Step Ahead Towards Future Fuel” organized by NSI-ISMA-NFCSF on 15th October 2020.

6. A research paper entitled “**Removal of Suspended Impurities From Mixed Juice by Centrifuge Technique**” by Mohit Kumar, Subhash Chandra, A.K. Garg & Narendra Mohan sent for publication in the proceedings of 50th Golden Jubilee Annual Convention of SISSTA.

7. A research paper entitled “**Vitman - A, Fortification of Sugar - A Novel Approach**” by Narendra Mohan & Anushka Agarwal sent for publication in the proceedings of 50th Golden Jubilee Annual Convention of SISSTA.

8. A research paper entitled “**Bio-energy for Economic & Environmental Sustainability of Sugar Industry**” sent for presentation in

International Conference on Recycling and Waste Management from 29-31 March 2021.

CONSULTANCY:

The consultancy services of the institute suffered significantly due to pandemic and during October - December 2020, consultancy services could be provided only to the following:

1	M/s Haryana State Federation of Co-operative Mills Ltd., Panchkula, Haryana.
2	M/s The Batala Co-op Sugar Mills Ltd., Distt - Gurdaspur, Punjab.
3	M/s Bajaj Hindusthan Ltd., Unit Khambharkhera, Distt- Lakhimpur Kheri, U.P.
4	M/s M/s Panipat Co-op Sugar Mills Ltd., Distt- Panipat, Haryana.
5	M/s Someshwar SSK, Distt- Belgaum, Karnataka.
6	M/s Magadh Sugar & Energy Ltd., Distt- West Champaran, Bihar.
7	M/s L.H. Sugar Factories Ltd., Distt- Pilibhit, U.P.
8	M/s Uttam sugar Mills Ltd., Unit Khaikheri Distt Muzaffarnagar, U.P.
9	M/s Bajaj Hindusthan Sugar Ltd., Unit – Thana Bhawan, Distt – Shamli, U.P.
10	M/s Bajaj Hindusthan Sugar Ltd., Unit – Gagnauli, Distt – Deoband, U.P.
11	M/s Dhanashree Agro Products Pvt. Ltd., Unit – Iqbalpur, Distt – Haridwar, U.K.
12	M/s Parle Biscuits Pvt. Ltd., Distt - Bahraich, U.P.
13	M/s Uttam Sugar Mills Ltd., Distt - Bijnor, U.P.
14	M/s Wave Sugar & Industries Pvt., Ltd., Unit - Dhanaura Distt - Amroha, U.P.
15	M/s Sasa Musa Sugar Works Pvt. Ltd., Distt - Gopalganj, Bihar

16	M/s Balrampur Chini Mills Ltd., Unit – Balrampur, Distt - Balrampur, U.P.
17	M/s Dalmia Bharat Sugar & Ind. Ltd., Unit – Jawaharpur, Distt – Sitapur, U.P.
18	M/s Uttam Sugar Mills Ltd., Unit- Barkatpur, Distt – Bijnor, U.P.
19	M/s Rai Bahadur Narain Singh Mills Ltd., Distt – Haridwar, Uttarakhand.
20	M/s Bajaj Hindusthan Sugar Ltd., Distillery Unit Golagokharnath, Distt – Lakhimpur, U.P.
21	M/s Bajaj Hindusthan Sugar Ltd., Distillery Unit Kinauni, Distt – Meerut, U.P.
22	M/s Bajaj Hindusthan Sugar Ltd., Distillery Unit Rudauli, Distt – Basti, U.P.
23	M/s Triveni Engineering & Ind. Ltd., Unit – Milak Narayanpur, Distt – Rampur, U.P.
24	M/s The Batala Cooperative Sugar Mills Ltd., Batala, Distt – Gurdaspur, Punjab.
25	M/s Bajaj Hindusthan Sugar Ltd., Utraula, Distt – Balrampur, U.P.
26	M/s Bajaj Hindusthan Sugar Ltd., Rudhauri, Distt – Basti, U.P.
27	M/s Bajaj Hindusthan Sugar Ltd., Kundarkhi, Distt – Gonda, U.P.
28	U.P. State Sugar & Cane Development Corporation Ltd., Pipraich, Distt – Gorakhpur, U.P.
29	M/s Dalmia Bharat Sugar & Industries Ltd., Nigohi, Distt – Shahjahanpur, U.P.
30	M/s Majhauria Sugar Industries Pvt. Ltd., Distt – West Champaran, Bihar.
31	M/s Dwarikesh Sugar Industries Ltd., Dwarikesh Puram, Distt – Bijnor, U.P.
32	M/s Balrampur Chini Mills Ltd., Balrampur, Distt – Balrampur, U.P.
33	M/s Triveni Engineering & Industries Ltd., Distt – Muzaffarnagar, U.P.
34	M/s Balrampur Chini Mills Ltd., Unit - Babhnan, Distt – Balrampur, U.P.

35	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., Laksar, Distt – Haridwar, Uttarakhand.
36	M/s Avadh Sugar & Energy Ltd., Hargaon, Distt – Sitapur, U.P.
37	M/s Haryana State Federation of Cooperative Sugar Mills Ltd., Distt – Panchkula, Haryana.
38	M/s Daurala Sugar Works, Daurala, Distt – Meerut, U.P.
39	M/s Govind Sugar Mills Ltd., Aira, Distt – Lakhimpur Kheri, U.P.
40	M/s Triveni Engineering & Industries Ltd., Unit – Sabitgarh, Distt – Bulandshahr, U.P.
41	M/s Dwarikesh Sugar Industries Ltd., Unit – Dwarikesh Nagar, Distt – Bijnor, U.P.
42	M/s The Kaithal Cooperative Sugar Mills Ltd., Kaithal, Distt – Kaithal, Haryana.

ANALYTICAL SERVICES:

Besides analysis of sugar & sugar house products, Ethanol and effluents, institute started offering testing of Ethyl Alcohol based Sanitizer in its sophisticated, most modern NABL accredited analytical laboratory. Analytical services were rendered to following:

1	M/s Bajaj Hindusthan Sugar Ltd., Unit Rudauli Distt - Basti, U.P.
2	M/s A. B. Sugars Ltd., Distt – Hoshiarpur, Punjab.
3	M/s Triveni Engineering & Ind. Ltd., Unit - Khatauli Distt - Muzaffarnagar, U.P.
4	M/s SBI General Insurance Company Ltd., GP Road Indore West, Madhya Pradesh.
5	M/s Balrampur Chini Mills Ltd., Unit – Balrampur, Distt - Balrampur, Uttar Pradesh.
6	M/s Balrampur Chini Mills Ltd., Unit – Tulsipur, Distt – Balrampur, U.P.

7 M/s Balrampur Chini Mills Ltd., Unit – Babhnan, Distt – Balrampur, U.P.

SALE OF SUGAR STANDARDS:

Sale of sugar standard grades commenced from 1st October 2020 for the sugar season 2020-21. Standard grades can be procured online also. The details are available on our website <http://www.nsi.gov.in>.

OUR OTHER ACTIVITIES:

1. Director, NSI acted as expert for selection of General Manager & Deputy General Manager etc. in the sugar units and distilleries of M/s HPCL Biofuels Ltd.



2. संस्थान में दिनांक 27.10.2010 से 02.11.2020 तक “सतर्कता जागरूकता सप्ताह-2019” का आयोजन किया गया तथा दिनांक 27.10.2020 को संस्थानकर्मियों को जागरूकता की शपथ दिलाई गई। इस सप्ताह के दौरान संस्थानकर्मियों एवं छात्रों के लिये निबंध एवं व्याख्यान प्रतियोगितायें आयोजित की गईं।

3. Director, NSI attended the 78th STAI convention 2020 as Guest of Honour and Chaired the session for “Dr. Gundu Rao Memorial Lecture”. He also presented two papers on important topics related to natural sugar production and measures required to be

taken for pushing the ethanol blending programme.

4. A book entitled “Evaporators & Evaporation Techniques” written by Prof. Narendra Mohan, Director, NSI, Kanpur was released during the 78th Annual Convention of STAI by Shri Suresh Rana, Hon’ble Minister of Sugarcane Industries, Government of Uttar Pradesh during the convention.



4. Indonesia seeks NSI support for skill development and sugar productivity enhancement.



Preliminary discussions held with their sugar institute for future collaboration on 18th November, 2020.

5. Director, NSI, addressed "**National Sugar Summit 2020**" organized by Indonesia Sugar Organization, Indonesian Sugarcane Technologist Association, PTT LPP Agro Nusantara, Indonesian Sugar Research Institute and Plantation Polytechnic of LPP. He highlighted role of National Sugar Institute in growth & development of sugar industry in India on 25th November, 2020.



6. A Hindi dictionary comprising technical terms generally used in the sugar industry was published for the benefit of all the stakeholders and to promote Rajbhasha on 31st December, 2020. The dictionary was released by Prof. Neelima Gupta, Vice-Chancellor, CSJM

University, Kanpur. She lauded the institute effort and desired that the dictionary should be enriched by adding more words after taking up the matter with all stakeholders of sugar industry.



7. 150 KLD "Sewage Treatment Plant" based on MBBR Technology commissioned at the institute. The resultant water to be used for horticulture and irrigation purposes. This will lower the utilization of bore-wells and thus helping in conserving natural resource.

