

NATIONAL SUGAR INSTITUTE

KANPUR-208017(U.P.) INDIA

e-NEWSLETTER



COVID-19 has put pressures on the Indian sugar industry as the domestic sugar consumption and exports took a hit particularly during the early part of this quarter. The ongoing COVID-19 pandemic is expected to affect sugar consumption patterns as there are still curbs on social gatherings and outings. The industry is also facing reduced off-take from beverage and other FMCG companies amid the lockdown. This has even led to fall in domestic & international sugar prices recently. Further to that, the outbreak of COVID-19 & subsequent lockdown reduced the demand for petrol & diesel drastically nationwide resulting in lower off-take from OMCs depot which in turn resulted in reduced procurement by OMCs from sugar millers. With uncertainty looming large as regards COVID-19 and estimated sugar production of 32 MMT during 2020-21, sugar factories are required to adopt suitable business models for pushing ethanol production besides exploring possibilities of producing jaggery, processed and packed under hygienic conditions.

Narendra Mohan
Director



April-
June,
2020

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WEBINARS ORGANIZED:

1. A WEBINAR on **"Impact of COVID 19 on Indian Sugar Industry"** was successfully organized jointly by National Sugar Institute, Kanpur & M/s Shrijee Process Engineering Works Ltd., Maharashtra on 29th April, 2020. Prof. Narendra Mohan, Director delivered the inaugural address emphasizing stress on safe processing and packaging conditions. Galaxy of experts participated and deliberated on the issue. The Webinar concluded with some thought provoking ideas to be adopted as short and long term measures.



2. A WEBINAR on **"Domestic and Industrial Sanitization amidst Pandemic"** was successfully organized by the institute jointly with Christ Church College, Kanpur on 14th May, 2020. This Webinar was intended to provide an insight on the domestic and industrial sanitization at various levels of the

sugarcane value chain with a perspective on the evolving situation, implications and the booster steps required to pull out of this turmoil.

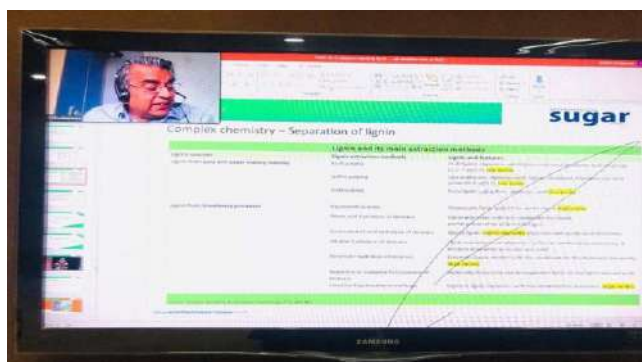


3. A WEBINAR on **"Sugar Market & Consumption Under Covid-19"** was organized by the institute on 16th June, 2020. Mr. Peter De Klerk, Senior Economist International Sugar Organization, UK delivered the key note on highlighting the myth and realities associated with sugar consumption. He also presented scenario as regards sugar consumption and global sugar price amidst pandemic.





4. A on line session was organized by the institute with Mr Arvind Chudasama, Editor, International Sugar Journal, London on the topic **"Exploiting Ligno-cellulosic Feed Stocks for Lignin and Chemicals"** on 4th June, 2020.



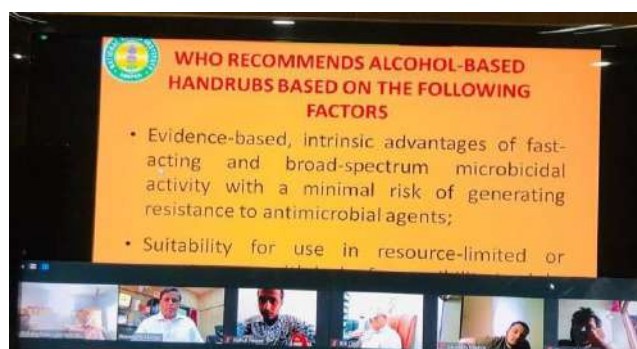
Mr. Chudasama gave a snapshot of R&D being carried out on utilization of lignin for production of plasticizers, aerogels & carbon filter etc.

5. A presentation on **"Re-orienting Technological Approach for Process and Products Diversification to Mitigate Corona Crisis"** was given by Director, NSI in Webinar organized by Indian Institute of Sugarcane Research, Lucknow (IISR) on Sugarcane Sector in Post Covid-19 and way forward on 12th June, 2020.

ONLINE WORKSHOP ORGANIZED:

An online workshop was organized on 9th June, 2020 on the topic **"Sanitizer Production and**

Quality Control" with a view to help the industry to produce sanitizer as per the World Health Organization (WHO) guidelines to fight Covid-19 and also to inspire young entrepreneurs for setting up such units.



ONLINE LECTURE:

1. Director, NSI delivered lecture on **"Sugar and Sweeteners- Processing and Quality Considerations Amidst Pandemic"** during Faculty Development Programme organized by SR Institute of Management and Technology, Lucknow on 19th June, 2020, wherein he focused on cane juice bottling and production of fortified jaggery as immunity booster.

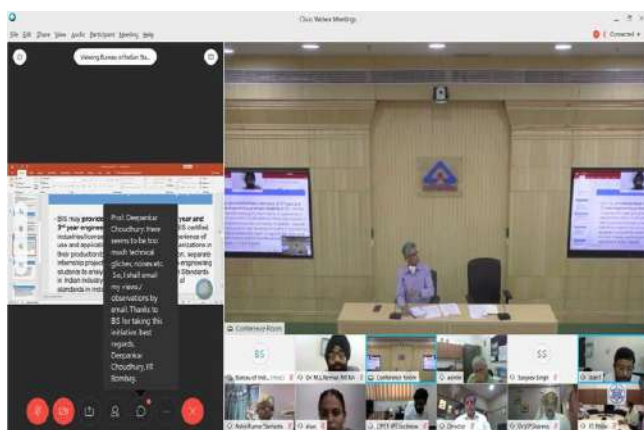




2. A lecture was delivered by Dr. Sudhanshu Mohan in Webinar organized by DG Girls Collage, Kanpur on “**Chemistry of Covid-19 and its Control**” on 7th June, 2020.

BRAIN STORMING SESSION:

Director, NSI participated online in Brain Storming Session conducted by Bureau of Indian Standards, New Delhi (BIS), on the topic “**Integration of Standards in the Curriculum of Technical Education**”. An action plan was prepared for introducing syllabus of standards and standardization in various courses and for creating awareness about the various standards for quality control and consumer protection.



Director, National Sugar Institute informed that it has already taken lead by introducing courses on “**Quality Control**” and formulating newer

standards for **Sulphur-less Sugar, Brown Sugar and Organic Sugar**.

NATIONAL TECHNOLOGY DAY:

National Technology Day was organized at the institute on 11th May, 2020. Technical staff participated and discussions were held on “**Innovations for Clean and Green Sugar Industry**”. Prof. Narendra Mohan, Prof. D. Swain and Dr. Ashutosh Bajpai shared their views about the topic.



COLLABORATIVE RESEARCH:

A Memorandum of Agreement (MoA) was signed between National Sugar Institute, Kanpur and M/s UY Trienviro Pvt. Ltd., Kanpur on 22nd May, 2020 to take up pilot plant studies for developing technologies for condensate treatment so as to convert it as a replacement of fresh as even as potable water.



RESEARCH:

1. Studies on shelf life of cane syrup for production of ethanol – The study has been taken up to assess deterioration patterns in cane syrup upon storage and its impact on ethanol yield. Effect of solid & sugar content and also the storage conditions on syrup quality shall be studied. Efforts shall be made to conduct the study in different agro-climatic zones of the country.



2. 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 preliminary characterization study on raw material obtained after the treatment of bagasse with acid has been completed. The experimental studies related to synthesis of vanillin from bagasse derived lignin will be performed.

3. Studies on access of bio-plastic as polyethylene substitute from sugarcane bagasse - The literature survey has been completed. The work related to sketch plan based on literature survey and compilation of list of required materials is ongoing. The study is aimed at obtaining a valued added product from the by-product of the sugar industry.

4. Studies on the feasibility of utilization of sugarcane bagasse as a potential feedstock to access cosmetic ingredients - During preparation of manuscript for filing patent application, while going through references related to prior arts, some issue related to mass balance of our developed method has been observed. To overcome this problem, some experimental studies on GC & HPLC system have been started. After completing, this study, the cost-benefit analysis shall also be attempted.

5. Studies on pot-efficient synthesis of alkyl levulinates (Als) using sugarcane bagasse derived cellulose - As per plan, the work is related to enhancing the product yield had to be started, but the same could not be performed owing to issues related to lock-downs. However, characterization studies on GC-FID system, were performed, wherein satisfactory results were obtained.

6. Mechanical Clarification of Juice – The study is aimed a pre-clarification of cane juice by adopting centrifugation technique so as produce good quality sugar with lower inputs of processing chemicals. During the second consecutive crushing season, studies were continued to optimize the operational parameters and assess the efficiency.



7. Standardization of method for determination of Preparatory Index: There are several methods in vogue for determination of preparatory index of sugarcane. Data on methods been adopted in various countries and as recommended by ICUMSA etc. has been compiled. Required equipment have been procured for taking up the studies on laboratory scale.



8. Development of Super Short Retention Time Clarifier – Based on the trials conducted at the Experimental Sugar Factory of the

institute during the crushing season 2018-19, certain modifications viz. provision of flash tank, system of clear juice with drawl etc. were carried out and trial was again made during the current crushing season 2019-20. Apparently, the quality of clear juice appeared to be satisfactory in terms of colour and transparency. Analytical data is further being compiled to conclude the studies.

9. Studies on deterioration patterns on different sugars – The study has been aimed to assess the relative deterioration patterns in raw, plantation white and refined sugars under the identical conditions of storage. Sugar samples as collected from various commercial factories were analyzed for parameters such as colour, ash, pol, pH, reducing sugars, SO₂ content, turbidity as per plan of work.



RESEARCH PAPERS/BOOK CHAPTERS:

1. A research paper on **“Bio-Ethanol from Sugar Industry-Our Options”** Narendra Mohan & D. Swain published in ‘Sharkara’ January – March, 2020.
2. A research paper on **“Micronutrient Fortification of Sugar”** by Narendra Mohan, Ashok Kumar Garg & Anushka Agarwal accepted for publication in proceeding of South African Sugar Technologist Association, 2020.
3. A review on **“Bioenergy from Sugar Industry”** by Narendra Mohan, D. Swain &

Anoop Kumar Kanaujia published in International Journal for Scientific Research and Development, Vol. – VIII, Issue 2, 2020.

4. A research paper on **“Techno-economic Process for Producing Superior Quality White & Other Specialty Sugars”** by Narendra Mohan & Prem Shanker Katiyar accepted for publication in forthcoming issue of Sharkara.

5. A research paper on **“Investigations on Microbial-flora Variation in Water Generated at Various Sugar Production Stages** by Seema Paroha and Shikha Singh published in International Journal of Microbiology and Applied Sciences.

6. A research paper on **“Diversity of Micro-flora in Different Combinations of Press-mud for Biogas Production”** by Seema Paroha, Ankita Kachhwaha and Shikha Singh published in International Journal of Microbiology Research.

7. A research paper on **“Sugar Beet-The Potential Feed stocks for Alcohol Production”** by Seema Paroha, Shikha Singh and Alka Gupta published in International Journal of Agriculture Sciences.

8. A concept paper on **“Advances in Sugarcane Industry: By-product Valorization”** by Narendra Mohan & Anushka Agarwal sent for publication as chapter for the book titled ‘Sustainable Food Waste Management: Concepts & Innovation’ to be published by Springer Nature, Singapore.

9. A concept paper on **“Sugar & Sweeteners – Processing and Quality Considerations Amidst Pandemic”** was presented by Director, NSI during the online Faculty Development Programme organized by SRM Group of Management on 19th June 2020.

10. Book chapter on **“Quality of Indian Sugars: Opportunities & Challenges”** by Anushka Agarwal & Narendra Mohan published as chapter in book entitled "Emerging Technologies in Food Science - Focus on the Developing World" by Springer, Singapore, June 2020.

CONSULTANCY:

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

1	M/s Triveni Engineering & Industries Ltd., Unit – Deoband, Saharanpur, U.P.
2	M/s Shree Kedarnath Sugar & Agro Products Ltd., Distt – Bagalkot, Karnataka.
3	M/s Badami Sugars Ltd., Distt – Bagalkot, Karnataka.
4	M/s Gobind Sugar Mills Ltd., Aira, Distt – Kheri, U.P.
5	M/s Dwarikesh Sugar Industries Ltd., Distt – Bijnor, U.P.

ANALYTICAL SERVICES:

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 Dalmia Bharat Sugar & Industries Ltd., Unit – Shri Datta Sakhar Karkhana, Asurle Purle, Kolhapur, Maharashtra.
2	M/s Dalmia Bharat Sugar & Industries Ltd., Unit – Ninaidevi, Maharashtra.
3	M/s Sanitini Bio-products Pvt. Ltd., Andhra Pradesh.

4	M/s The Seksaria Biswan Sugar Factory Ltd., Biswan, Distt – Sitapur, U.P.
5	M/s Dhampur Sugar Mills Ltd., Asmoli, (Distillery division).
6	M/s Parle Biscuits Pvt. Ltd., Parsendi, Distt – Bahraich, U.P.
7	M/s Kisan Sahakari Chini Mills Ltd., Sathion, Distt – Azamgarh, U.P.
8	M/s Gobind Sugar Mills Ltd., Aira, Distt – Kheri, U.P.
9	M/s The Amaravathi Co-operative Sugar Mills Ltd., Krishnapuram, Distt - Tirupur, Tamilnadu.
10	M/s The Salem Co-operative Sugar Mills Ltd., Mohanur, Distt- Namakkal,- Tamilnadu.
11	M/s Ugar Sugars Works Ltd., Distt - Belagavi, Karnataka
12	M/s Daurala Sugar Works Daurala, Distt – Meerut, U.P.
13	M/s K M Sugar Mills Pvt. Ltd., Masodha, Faizabad, U.P.
14	M/s Perambalur Sugar Mills Ltd., Eraiyur, Tamil Nadu
15	M/s Danteshwari Maiya Sahakari Shakkar Karkhana Maryadit, Balod, Chattisgarh

PREPARATION AND SALE OF SUGAR STANDARDS:

Sale of sugar standards for the sugar season 2019-20 commenced from 1st October, 2019. Bureau of Sugar Standards issued 24 Sugar Standard Grades to 05 sugar factories during April-June, 2020.

OUR OTHER ACTIVITIES:

1. Amid lockdown, since the classroom teaching was not possible, classes on virtual platform were conducted during the period so as to maintain the continuity. To facilitate the

students further, a YouTube channel has been created where many videos/lectures of the study material have been uploaded. In addition to it, study material has also been uploaded on the institute website from where it can be retrieved by the students.



2. **Earth Day-2020** was celebrated by the institute on 22nd April, 2020. On the occasion Director emphasized upon conservation of natural resources and minimizing pollution in any form. In support of campaign for environmental protection, tree plantation was organized in the institute campus.



3. Intercropping of sugar beet and sweet sorghum with sugarcane has been taken up at institute farm to assess the productivity and potential of ethanol production along-with sugar during the period. Harvesting of three varieties of sugar beet was taken up at the institute farm during 2019-20 session and it was observed that the weight of beet roots was

in the range of 4 to 5 kg. The average ethanol yield was also estimated up to 90 to 100 liter per ton of beet roots.



4. To combat Covid-19, various precautionary measures as per the guidelines issued in the matter were taken. Side by side, as a social responsibility, institute also took up distribution of sanitary material and food packets either of its own or through district administration. Some such activities had been:

Foot Operated Hand Washing System was constructed and installed at Experimental Sugar Factory (ESF) by the institute on 29th April, 2020, which facilitates washing of hands without touching tap and soap dispenser.



In addition to it, foot mounted sanitizer dispensing system was also developed and installed. Thermal scanning, personal and general sanitization of the institute campus was ensured during the period.



PPE kits, sanitizer and masks were provided to the district administration and also to the front line corona warriors at police stations and district hospital.



Under the auspices of Council of Students' Activities of the Institute, bags of 10 kg food material to the needy families were distributed for direct benefit to the weaker sections of the society on 18th May, 2020.



5. Patent application for **Production of Vitamin-A Fortified Sugar by Co-Crystallization Technique** was filed through National Research Development Council. Laboratory scale trials were carried out by overcoming drawbacks of existing technique of preparing premix and adding to bulk of sugar. Co-crystallization technique resulted in uniform distribution of Vitamin A (15.5-19.5 microgram per gram) and higher shelf life.



6. "World Environment Day" was celebrated at the institute on 5th June 2020 on the theme "Bio-economy of the Sugar Industry". Tree plantation was carried out on this occasion and a poster carrying message for "Environmental Sustainability" of the sugar industry was released.



7. **6th World Yoga Day** was celebrated on 21st June, 2020, the theme of this year was Yoga at home and Yoga with family, reflecting the need to maintain physical fitness which is more important keeping in view the current pandemic.



8. सरकारी कामकाज में राजभाषा के रूप में हिन्दी के प्रति जागरूकता लाने तथा उसके उत्तरोत्तर विकास हेतु संस्थान में 24 जून 2020 को ऑनलाइन हिन्दी कार्यशाला का आयोजन किया गया।