SHARKARA

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NATIONAL SUGAR INSTITUTE

Department of Food & Public Distribution
Ministry of Consumer Affairs, Food & Public Distribution
Government of India
Kanpur-208017, INDIA
Email : nsikanpur@nic.in
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SHARKARA

VOLUME - 52, No .03

JULY-SEPTEMBER, 2021

It contains……

From Director's Desk…

The quarter, July-September 2021, witnessed multiple academic activities at the institute. After conducting the entrance examination, the academic session 2021-22 at the institute is in full swing.It is heartening to see reputed sugar companies and machinery manufacturers 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 reasonable ethanol prices.

Looking to the ethanol capacity building being projected, there may be challenges about availability of feed stocks in desired quantities at affordable prices, particularly for the standalone units. The competition of flex-fuel vehicles with CNG and Electric Vehicles is also on cards. A close watch is required on changing market requirements and various policy interventions viz. the "Go Electric" policy. As on date, ethanol appears to be the most lucrative option for the sugar industry. The industry is required to innovate and develop more routes for producing other value added products from the by-products of the sugar industry.

Institute organized many webinars, training programmes and an "Executive Development Programme" also for the benefit of the in-service personnel of sugar industry. Institute also organized multiple activities under Aazadi Ka Amrut Mahotsav and shall continue to organize many more in coming months to celebrate 75th 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

OUR PROVISIONS:

WEBINARS ORGANIZED:

1. A webinar on the topic of "**Modern Trends in Automation to Enhance Efficiency of Sugar Factories**" organised by the institute on 9th July 2021. The webinar was inaugurated by Shri S. S. Gangawati, President, Deccan Sugar Technologist Association, Pune. Shri Gangawati in his address emphasised for automation specifically in the areas of Cane Handling, Juice Extraction and Juice Processing. Director NSI also expressed his thoughts on use of modern Instrumentation and Automation techniques for increasing the man machine interaction and reducing the man machine interventions so that the efficiency of the man and machine may be utilised to the maximum possible extents.

Shri Virendra Kumar, Senior Instrument Engineer and Convenor of the Webinar, Shri Atul Kumar Srivastava, Addl. General Manager (Engineering), DCM Shri Ram Ltd. and Mr. Harjeet Singh Bola, Managing Director, IPRO India presented views on technologies being considered for plant Automation. More than 200 delegates from various parts of the country attended the webinar.

2. Under the auspices of "**Aazadi Ka Amrut Mahotsav**", a webinar on the topic "**Grain Based Distilleries: Operation & Economics**" on10th August 2021 was organised by the National Sugar Institute, Kanpur and All India Distillers' Association (AIDA) on hybrid mode i.e. physical as well as online.

Since, World Biofuel Day has been organized on the theme **"Promoion of Bio-Fuel for a better Environment"** during the year and hence, the topic of the webinar is much relevance in pursuit of having more ethanolfrom grains for blending in petrol. In his inaugural address Director NSI mentioned about ethanol being one of the major priorities of 21st Century in India as it has a positive impact on profitability of sugar industry, income of farmers, energy security and on environment. More than 150 delegates participated the webinar from various parts of the country.

3. A webinar on "**Diffusers in Cane Sugar Industry**" on 17th September 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:

राष्ट्रीय शर्करा संस्थान, कानपुर द्वारा 12 से 16 जुलाई 2021 तक पांच दिवसीय ऑनलाइन " **Executive Development Programme** " का आयोजन किया गया। कार्यक्रम का उद्घाटन श्री सुधांशु पांडे, सचिव (खाद्य एवं सार्वजनिक वितरण), भारत सरकार द्वारा किया गया। कार्यक्रम में केन्या से 36 और इंडोनेशियाई चीनी कारखानों के 5 सहित 130 कार्यकारी अधिकारियों ने भाग लिया।

श्री नरेंद्र मोहन ने अपने संबोधन में पारंपरिक डबल-सल्फाइटेशन प्रक्रिया के स्थान पर पर्यावरण-अनुकूल रॉ और रिफाइंड शुगर उत्पादन तकनीक को अपनाने का सुझाव दिया। उन्होने कहा कि डबल-सल्फाइटेशन प्रक्रिया ना केवल भारत के अधिकांश चीनी कारखानों मे प्रचलन मे है बल्कि निकटवर्ती राष्ट्रों के साथ-साथ कई दक्षिण पूर्व एशिया तथा अफ्रीकी देशों मे प्रचलित है। डबल-सल्फाइटेशन प्रक्रिया से उत्पादित चीनी का उपयोग फार्मा इंडस्ट्रीज तथा पेय पदार्थों के निर्माताओं के द्वारा सहजता से नहीं लिया जाता। चीनी के स्वास्थ्य के ऊपर पड़ने वाले दुष्प्रभाव के प्रचार के देखते हुये उन्होंने ऐसी नवीन विधि का विवरण प्रस्तुत किया जिसके माध्यम से प्राकृतिक, कार्बनिक और पोषक तत्वों से युक्त शर्करा (नेचुरल ऑर्गेनिक न्यूट्रिटिव –NON) उपभोक्ताओं के लिए तैयार की जा सकती है। आज के समय में इस प्रकार के स्वास्थ्य वर्धक उत्पादों की बाजार में बहुत मांग है अतः ऐसे उत्पादों से शर्करा उद्योग भी लाभान्वित हो सकता है। जैसा कि देखा गया है चीनी के दाम हमेशा अस्थिर रहते हैं फलतः इसके कीमतों मे निरंतर उतार-चढ़ाव देखा जाता है, साथ ही महामारी एवं कई देशों द्वारा "शुगरटैक्स" लगाए जाने के कारण चीनी की खपत मे वृद्धि प्रभावित हुई है। इसके लिए उन्होने कहा हमें शर्करा उद्योग से निकले अपशिष्ट पदार्थ तथा सह-उत्पाद का उपयोग मूल्य-वर्धित उत्पादों को तैयार करने में करना चाहिए जिससे चीनी उद्योग को आय का अन्य आधार प्राप्त हो सके।

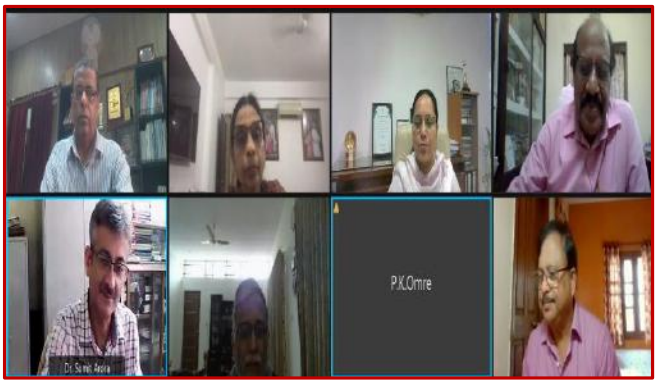
ONLINE SESSION:

Director NSI, Kanpur addressed as online session on "**Digital Harvest of Sugarcane Crop**" on 26th 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 on 6th July 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 were discussed on 30th 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 26th - 27th 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. Lectures were delivered on water management techniques to reduce fresh water consumption & effluent generation, best available techniques (BAT) for effluent treatment, operating parameters for ETP operation, utilization of waste for producing value added products, norms of discharge and standard protocols for analyzing water/waste water/effluent/slop.

4. Anoop Kumar Kanaujia, Asst. Professor (Sugar Engineering) presented report on **"Annual Inspection of Grossly Polluting Industries (Sugar & Distillery Units) 2020-21"** duringtwo days Webinar organized by Central Pollution Control Board (CPCB) and National Ganga River Basin Authority (NGRBA) from 30th September 2021 to 1st October, 2021, wherein he focused on final outcome of Annual Inspections 2020-21 in terms of specific fresh water consumption, specific waste water/ spent wash generation, BOD/COD/SS loading, recent technologies improvised etc.

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 ex-Directors 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. KalpanaVajpeyi & 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:

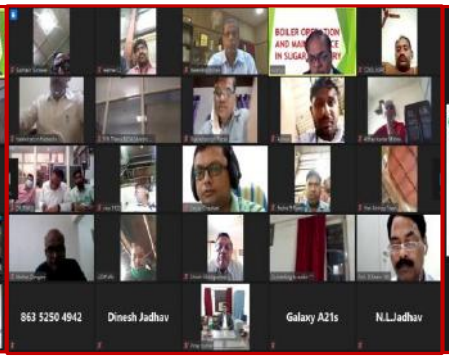
Orientation Programme was organized for the students admitted during academic session 2021-22 at National Sugar Institute, Kanpur on 20th September 2021. Director, Education In-charge, Controller of Examination & Hostel Wardens addressed the students.

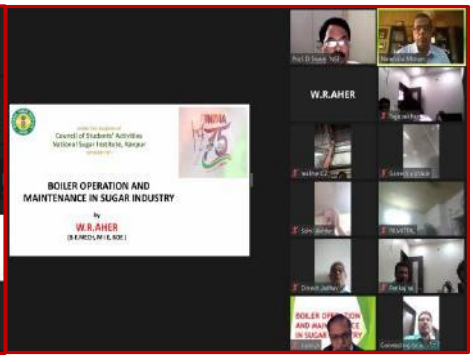

TRAINING PROGRAMME:

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 Phosphatationvs Carbonation, IER vs Active Carbon, use of MVR's and Surface Condensers, power consumption profiles, production of specialty sugars and quality control.


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 27th 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.





OUR RESEARCH AREAS:

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 - Taking the clue from the obtained results from experiments performed previously to isolate the vanillin from bagasse derived lignin, and implemented new oxidation conditions involving a nitroarene for lignin degradation. The laboratory scale experiments @200 mg bagasse derived lignin degradation reaction has been performed under the new oxidation environment.

The separation and detection of vanillin in oxidized reaction mixture is ongoing. The related works such as isolation, identification, separation/purifications of the target compound- vanillin has been performed. The sample is characterized by FTIR and Co-TLC method. The isolated yield of vanillin from bagasse derived lignin is about 3.0% (w/w-wrt to bagasse derived lignin used). The new experiments related to synthesize vanillin from bagasse-based lignin has been carried out to reduce the steps involved in this bio-refinery 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 has been 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 – With quest to implement a chemo catalytic approach involving MgO for lactic acid synthesis from xylose, the experiments related to activation of catalyst has been performed. The obtained active catalyst has been used as a catalyst in the experiment for conversion of xylose to lactic acid. Reactions were performed in Ace pressure tubes. Analysis of the reaction mixture is under progress. Analysis of the reaction mixture performed in Ace pressure tubes has been completed. The formation of desired product was not observed. It is supported by the literature reports in which such type of the reaction is generally facilitated in laboratory pressure reactor. 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 – As per NRDC format, abstract of the draft patent application has been prepared. The preparation of existing state of art and detailed descriptions of the method is under progress. During the preparation of existing state of art, it has been observed that there is some prior art methods reporting the synthesis of methyl levulinate from bio mass. In light of this, we had to study the reported findings in US patent US7153996B2 & others which causes the delay in submission of this draft. It will be submitted soon after modifying our manuscript in light of these finding. The modification in our draft patent manuscript in light of reported findings in US patent US7153996B2 is still ongoing.

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 - The experiments related to synthesis of xylitol and its determination/identification in reaction mixture have performed by using the procured microbial species (P. farinose NCIM 3461; C. Tropicalis NCIM 3119) and bagasse derived hemicellulose, however results obtained under these studies till date are not fruitful in terms of synthesis of xylitol and as such topic is to dropped. 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 biofertilizers on its growth.

6. Comparative study of Nine varieties of sweet sorghum for production of ethanol yield – Five sweet sorghum varieties namely PhuleVasundhara, 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– The study will be made initially on the comparative tests for the effect on polarization of sugar solutions using lead sub-acetate & non lead reagent (Carrez's reagent) at 589 nm. For the purpose, the required non-lead reagent has been indented. Further the study will be carried out on another wavelength. 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:

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 79th 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 79th 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 50th 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 79th 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.

BUREAU OF SUGAR STANDARDS:

राष्ट्रीय शर्करा संस्थान, कानपुर, भारतीय मानक ब्यूरो की ओर से, प्रत्येक चीनी मौसम के लिए देश के पूरे चीनी उद्योग के लिए चीनी मानक ग्रेड तैयार करता है और जारी करता है। ये चीनी मानक ग्रेड गुणवत्ता नियंत्रण की सुविधा और आम उपभोक्ताओं के हितों की रक्षा के लिए जारी किए जाते हैं। इन ग्रेडों के आधार पर चीनी मिलें अपने उत्पाद को उसी के अनुसार चिह्नित करती हैं।

शर्करा मानकों की एक्सपर्ट कमेटी की बैठक प्रोफेसर नरेन्द्र मोहन, निदेशक, राष्ट्रीय शर्करा संस्थान, कानपुर की अध्यक्षता में भारतीय गन्ना अनुसन्धान संस्थान, लखनऊ में सम्पन्न हुई। इस बैठक में भारतीय चीनी मिल संघ, भारतीय मानक ब्यूरो, नेशनल फेडरेशन ऑफ कॉरपरेटिव शुगर फैक्ट्रीज़ एवं भारतीय गन्ना अनुसंधान संस्थान इत्यादि के प्रतिभागियों ने भाग लिया। बैठक में शुगर सीजन 2021-2022 के लिये 7 शर्करा मानकों को स्वीकृति दी गयी जो कि लार्ज, मीडियम, स्माल एवं सुपर स्माल श्रेणी के होंगे और सुपर स्माल को छोड़कर सभी अन्य मानक 30 एवं 31 कलर श्रेणी में उपलब्ध होंगे। जिसमें 31 कलर श्रेणी उत्तम गुणवत्ता की प्रतीक हैं। ये मानक दिनांक 1 अक्टूबर 2021 को बिक्री हेतु जारी किये जाएंगे एवं इनको ऑनलाइन माध्यम से भी प्राप्त किया जा सकेगा।

बैठक में समिति के सदस्यों ने काफी बड़ी संख्याचीनी मिलमें इन मानकों को बिना लिये अपनी चीनी के ग्रेड का निर्धारण किये जाने पर चिन्ता व्यक्त की एवं इस विषय पर खाद्य मंत्रालय को आवश्यक कदम लेने हेतु एक प्रस्ताव भेजने का निर्णय लिया।

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NATIONAL SUGAR INSTITUTE
An ISO 9001-2015 Certified Institute
Ministry of Consumer Affairs, Food & Public Distribution
Department of Food & Public Distribution
(Government of India)

Phone: 0512-2570541, 543
Fax: 0512-2570247
E-mail: nsikanpur@nic.in
Website: http://nsi.gov.in

Kanpur, Dt. 30.09.2021

To,

All Sugar Factories & Other users of Indian Sugar Standards

Dear Sir,

This communication is to intimate you that Sugar Standards issued for the sugar season 2020-21 stands expired on 30th September, 2021. A set of new **Sugar Standards issued for Sugar Season 2021-22** as approved by the **Expert Committee on Sugar Standards** is valid up to **30th September, 2022** & shall be issued by the **Bureau of Sugar Standards, National Sugar Institute, Kanpur** from **01st October, 2021**

As per Gazette of India No.1675 dated 29th August, 2011, every producer of Sugar shall procure or purchase Indian Sugar Standards grades issued for every Sugar Season from Bureau of Sugar Standards, National Sugar Institute, Kanpur in within a period not exceeding sixty days from the date of issue of the circular by the National Sugar Institute, Kanpur and mark the grades on sugar bags, accordingly.

You can procure required Sugar Standards by generating "Sugar Standards Online Procurement" (**SSOP**) form is available at our website or go through **http://nsi.gov.in/sugar_technology.html** & fill it as per your requirements, take printout & send it to the Institute. The salient information related to procurement of **Indian Sugar Standard 2021-22** is given as under:

1.	Sugar Standard grades to be issued	**L-31, L-30, M-31, M-30, S-31, S-30 & SS-31**
2.	Cost of Set of new Sugar Standards containing 07 grades + 03 empty glass bottles+ 02 velvet corks in packing case	Rs. 22,000/- each set
3.	Cost of Single Sugar Standards Grade	Rs. 2800/-each
4.	Cost of Empty Sugar Standard Glass Bottle	Rs. 500/-each
5.	Cost of Packing Case	Rs. 700/-each
6.	Cost of Velvet Cork	Rs. 120/-each
7.	Postal Expenses for by POST demand	Extra as applicable
8.	**ONLINE PAYMENT** can be made through **Bharat-kosh** * & Demand Draft may also be accepted, if online payment is not being processed due to some problem.	In favour of **Director, National Sugar Institute, Kanpur** payable at KANPUR.
9.	Delivery of Indian Sugar Standards	Monday to Friday (10.00 AM to 05.00 PM)
10.	Taxes i.e. GST	**GST Extra (@18%)**, for more details see **SSOP** *

* **for more details visit our website** http://nsi.gov.in .

GST NUMBER IS MANDATORY FOR ALL THE TRANSACTIONS.
*Please provide **GST No.** on your request letter with **SSOP** for purchase of **I.S.S. 2021-22.***

Yours faithfully

(Narendra Mohan)
Director
0512-2988825

Price schedule for the sugar season 2021-22:

1	Sugar Standard Grades to be issued	L-31, L-30, M31, M-30, S-31,S-30 & SS-31
2	Cost of Set of new Sugar Standards containing 07 grades +03 empty glass bottles + 02 velvet corks in packing case	Rs.22,000/= each set
3	Cost of Single Sugar standards Grade	Rs.2800/= each
4	Cost of Empty Sugar Standard Glass Bottle	Rs.500/= each
5	Cost of Packing Case	Rs.700/= each

6	Cost of Velvet Cork	Rs.120/= each
7	Postal Ecpenses for by POST demand	Extra as applicable
8	**ONLINE PAYMENT** can be made through **Bharat-kosh** * & Demand Draft may also be accepted, if online payment is not being processed due to some problem.	In favour of Director, National Sugar Institue, Kanpur payable at Kanpur.
9	Delivery of Indian Sugar Standards	Monday to Friday (10.00 AM to 5.00 PM)
10	Taxes i.e. GST	**GST extra as applicable (@18%)** for more details see **SSOP ***

The institute has taken up revision of various existing BIS standards viz. molasses tanks, raw, plantation white, refined and icing sugar etc. on behalf of Bureau of Indian Standards. BIS standards for some other sugars viz. organic sugar, brown sugar & low sulphur sugar are being drafted in consultation with various stake holders.

Xxxxx

OUR ADVISORY:

Besides conducting teaching and training programmes, carrying out research in relevant field, another main functions of the institute are:

1. To function as a **"Think-tank"** to sugar and allied industry for proposing modernization and trouble free functioning of the process on advisory basis / through Extension Services.

2. To formulate strategies and promotes measures for expansion of capacities, energy conservation, co-product utilization etc. for sugar and allied industries.

3. To assist Govt. of India through technical contribution in policy formulation and control of Sugar Industry.

4. To render assistance to various government organizations in implementation of policies, validations and on associated matters.

5. To extend human resource management services to various government and private organizations.

CONSULTANCY SERVICES:

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 – LakhimpurKheri, 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 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 – Balrampur, U.P.
17	M/s Dalmia Bharat Sugar & Industries Limited, Unit – District – Shahjahanpur, U.P.
18	M/s L.H. Sugar Factories Limited, 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 – Hariawan, District – Hardoi, U.P.
26	M/s Dalmia Bharat Sugar & Industries Limited, Unit – Jawaharpur, District – Sitapur, U.P.
27	M/s The SeksariaBiswan Sugar Factory Limited, District – Sitapur, U.P.
28	M/s UttarkhandSahakari 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 – LakhimpurKheri, U.P.
2	M/s ShravastiKisan Sahkari Chini Mills Ltd., Nanpara, District – LakhimpurKheri, U.P.
3	M/s Dalmia Bharat Sugar & Ind. Ltd., Nigohi, District - District –

	Shahjahanpur, U.P.
4	M/s Rajasthan State Ganganagar Sugar Mills Ltd., District - Sriganganagar(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 – Moradabad, U.P.
9	M/s The Kisan Sahkari Chini Mills Ltd., Hasanpur, District – Amroha, U.P.
10	M/s Balrampur Chini Mills Ltd., Unit – Gularia, District – Lakhimpur, U.P.
11	M/s BisalpurKisan Sahkari Chini Mills Ltd., Bisalpur, District – Pilibhit, U.P.
12	M/s Bureau of Indian Standards, Banglore Branch Office, Karnataka.
13	M/s Kisan Sahkari Chini Mills 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 Sahkari Chini Mills, Sultanpur, U.P.
17	M/s M/s Triveni Engineering & Industries Limited, Unit - Deoband, Saharanpur, U.P.

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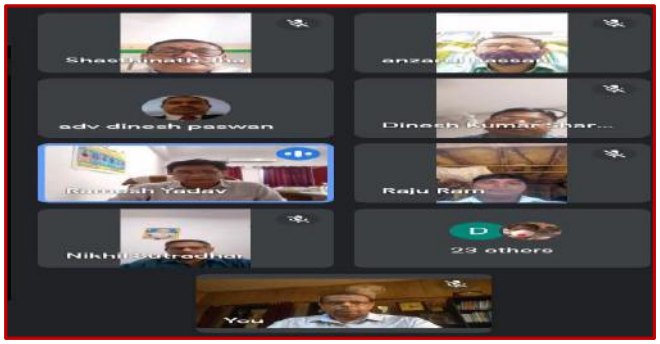
OUR OTHER ACTIVITIES:

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


2. राष्ट्रीय शर्करा संस्थान कानपुर मे उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड द्वारा Ambient Air Quality Monitoring System की स्थापना की गयी है। गुडवत्ता मापने के सयंत्र की स्थापना छात्रावास संख्या 1 मे की गयी है एवं इसका डिस्प्ले संस्थान के मुख्य द्वार के पास जी टी रोड पर लगाया गया है। शहर के इस भाग मे आबादी के तेजी से हो रहे विस्तार को देखते हुए यह आवश्यक प्रतीत हो रहा था की इस क्षेत्र मे प्रदूषण की स्थिति मापने और प्रदर्शित करने की व्यवस्था हो अतः उत्तर प्रदेश प्रदूषण नियंत्रण बोर्ड से प्रस्ताव प्राप्त होते ही संस्थान ने शीघ्र इस कार्य को पूरा करने मे अपना सहयोग दिया।

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

4. NSI joined hands with the MSME Development Institute, Muzaffarpur, Bihar for Industrial Motivational Campaign on "**Transition from Single Use Plastic to Alternate Material**" on 23rd July. NSI to focus on production of compostable crockery, utility items and particle board from sugarcane bagasse.



5. Online Entrance Examination-2021 for admission to various courses conducted by National Sugar Institute, Kanpur was organized on 25th July, 2021 at fourteen centres across the country. Admission process has been completed & classes are being conducted.

6. National Sugar Institute, Kanpur joined hands with Industrial Motivation Campaign with the MSME Development Institute, Cuttack on "**Transition from single use plastic to alternate material**" on 26th July**,** Institute presented the possible usage of sugarcane bagasse as replacement for single use plastic.

7. Director National Sugar Institute, Kanpur visited the M/s Parle Biscuits Pvt. Ltd. (Distillery Division), Bahraich, Uttar Pradesh on 3rd August 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। इस अवसर पर संस्थान के निदेशक प्रो नरेंद्र मोहन ने ध्वजारोहण किया एवं सुरक्षा कर्मियों से सलामी ली। प्रो नरेंद्र मोहन ने इस अवसर पर संस्थान कर्मियों एवं छात्रों को बधाई देते हुए कहा की वह संस्थान को एक वैश्विक संस्थान बनाने मे लगन से काम करें।



संस्थान द्वारा "स्वच्छतामिशन " के अंतर्गत लगन से कार्य करने वाले सफाईकर्मियों को पुरुस्कृत किया गया। साथ ही हिंदी पुस्तकालयको "सबसे स्वच्छविभाग " होने की "स्वछता ट्रॉफी " प्रदान की गयी। छात्रों की क्रिया कलाप परिषद् के तत्वाधान मे एक सांस्कृतिक कार्यक्रम का भी आयोजन किया गया जिसमे सुश्री अलका मिश्रा, सर्व श्री अंसार कुंबरि ,मुकेश श्रीवास्तव एवं राजकुमार सचान ने अपनी कविताओं से संस्थानकर्मियों एवं छात्रों मे जोश भर दिया।

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



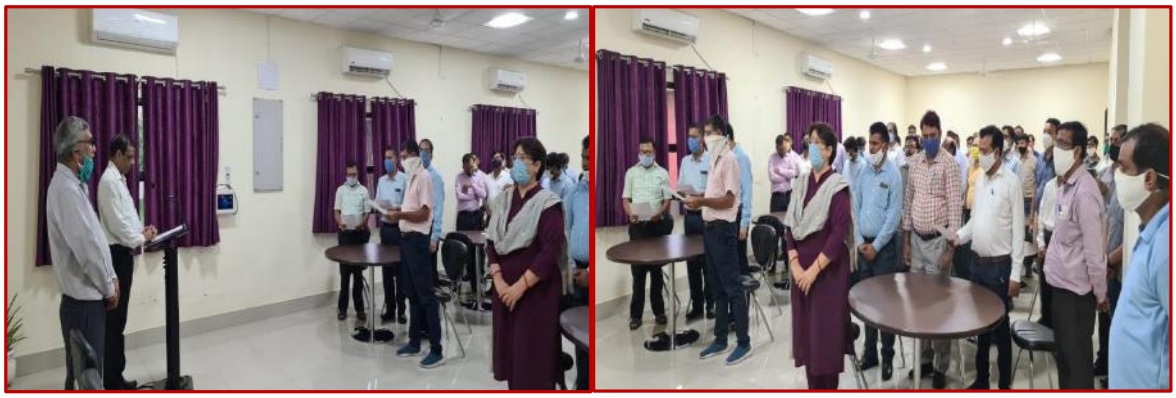
11. Inauguration of "**Interactive Seminar Room**" on 19th August at NSI, Kanpur was carried out by Shri Subodh Kumar Singh, Joint Secretary (Sugar & Administration), Ministry of Consumer Affairs, Food & Public Distribution, Government of India. The Seminar Room is one of its own kind having digital podium, interactive and display screens with sound tracking cameras to identify the participant who raises any question. He also reviewed the working of various departments at institute, to gather knowledge about their working, particularly, research work and efforts to enhance the revenue generation.



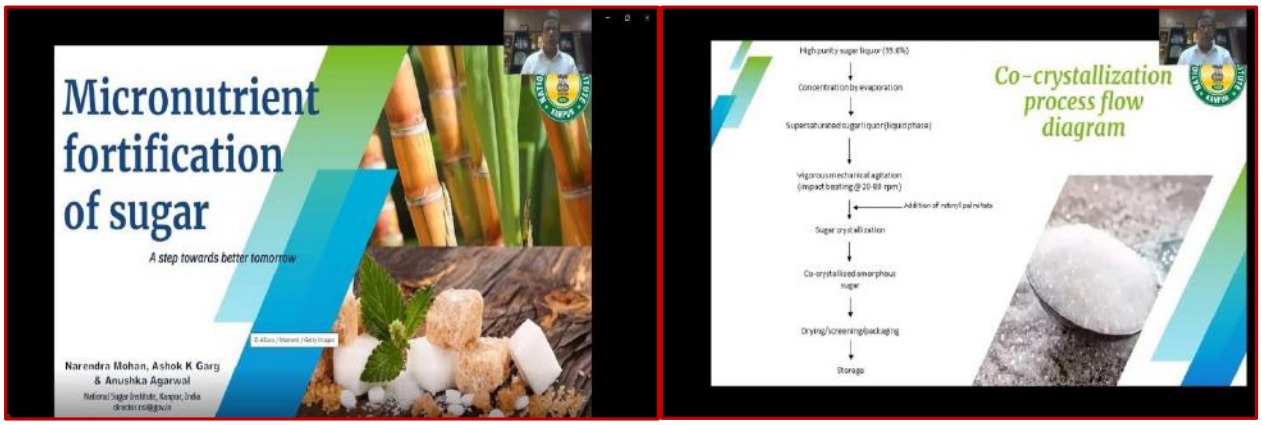
He showed his keen interest to know activities of speciality sugar division and methodology for preparing sugar standards for marketing the sugar in the country. He suggested development and use of Apps for providing solution to various technical problems of sugar, ethanol & allied industries. This can save time, expenditure on travel, quicker solution and thus faster implementation of recommendation.

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 by the Director NSI.



13. Presentation of "**Micronutrient Fortification of Sugar**" on 21st Agust during 2021 South African Sugar Technologists Association (SASTA) Congress by Director, National Sugar Institute, Kanpur.



14. Visit to CFTRI, Mysore on 23rd August. Discussions with Dr. (Mrs.) Sreedevi, Director and other faculty on collaborative working for developing technologies for cane juice preservation, production of dietary fiber and low calorie sweeteners from bagasse and on production of non-chemical jaggery/jaggery products.

15. Visited Bharat Ratna Sir M. Visvesvaraih Sugarcane Research Institute, Mandya, Karnataka on 24th August to discuss 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"** on 28 August by the Imperial Society of Innovative Engineers.


17. Fellowship of National Sugar Institute in Sugar Technology awarded 27th August-2021, to Shri Mahendra Kumar Yadav for his research work **"Production of Refined Sugar from Raw Sugar using Powder Active Carbon as De-colorization Agent"**. Study included optimization of parameters for different input raw sugar quality and desired refined sugar quality. Various combinations of filtration techniques were also tried. He carried out the research work under the guidance of Shri Narendra Mohan, Director, NSI.

18. मुख्य सचिव, उत्तर प्रदेश, की अध्यक्षता मे प्रदेश राज्य परामर्शित गन्ना मूल्य निर्धारण संस्तुति समिति की बैठक मे दिनांक- 01.09.2021 को निदेशक राष्ट्रीय शर्करा संस्थान, कानपुर द्वारा भाग लिया गया।

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

20. 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 7th सितम्बर 2021 को सम्मानित किया गया।

21. संस्थान की अकेडमिक काउंसिल की बैठक संस्थान के निदेशक श्री नरेन्द्र मोहन की अध्यक्षता में दिनांक 10th सितम्बर को 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।

22. भारत सरकार के प्रत्येक कार्यालय मे हिन्दी पखवाड़े के अंतर्गत अधिकारियों एवं कर्मचारियों के प्रेरणास्रोत एवं प्रोत्साहन के उद्देश्य से विभिन्न प्रतियोगिताओं का आयोजन किया जाता है। इस संदर्भ मे संस्थान मे दिनांक 01/09/2021 से 14/09/2021 तक हिन्दी पखवाड़े के अंतर्गत विभिन्न प्रतियोगिताओं का आयोजन किया गया


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

24. राष्ट्रीय शर्करा संस्थान में चल रहे हिंदी पखवाड़े का समापन समारोह दिनांक 15 सितम्बर 2021 को संस्थान के प्रेक्षागार में सम्पन्न हुआ। इस अवसर पर हिंदी पखवाड़े के अन्तर्गत किये गये विभिन्न कार्यक्रमों की समीक्षा की गयी एवं कैसे हिंदी का प्रयोग दैनिक कार्यों में अधिक से अधिक किया जाए उस पर विस्तृत चर्चा की गयी। संस्थान के निदेशक श्री नरेन्द्र मोहन ने इस अवसर पर संस्थान के अधिकारियोंकर्मचारियों एवं विद्यार्थियों को सम् ,बोधित करते हुए कहा कि ,चूंकि अधिकांश चीनी मिलें एवं डिस्टलरी ग्रामीण क्षेत्रों में हैं जहां पर काफी संख्या में ग्रामीण अंचलों से संबंधित हिंदी भाषी व्यक्ति काम करते हैं। अतः यह आवश्यक है कि उद्योग में प्रचलित विभिन्न तकनीकी शब्दों का हिंदी रूपान्तरण किया जाएऐसा करते समय यह ध्यान , रखा जाये कि भाषा कहीं दुरूह न हो। इस अवसर पर संस्थान मे हिंदी पखवाड़े मे आयोजित विभिन्न प्रतियोगिताओं के प्रतिभागियों को पुरुस्कार वितरण किया गया।


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

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

27. Team of National Sugar Institute, Kanpur led by Shri Narendra Mohan, Director was 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.

28. 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. Vanillin is obtained as a chemical compound of the extract of the vanilla bean. But 99% of the vanillin today does not come from the vanilla beans but is produced from other sources. It can be produced in different ways: from a petrochemical raw material called guaiacol, from wood, or from other biomass sources. Today, 15% of the world's production of vanillin comes from lignin which is available in biomass. Organic Chemistry Division of the institute after two years of research work succeeded in producing vanillin from bagasse under the supervision of Dr. Vishnu Prabhakar Srivastava, Assistant Professor Organic Chemistry by a team comprising Dr. Chitra Yadav, Research Assistant and Miss Mamta Shukla, project fellow. The institute has present a research paper during the 79th Annual Convention of The Sugar Technologists Association of India.



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



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HAPPENING IN THE SUGAR INDUSTRY:

The sugar stocks (opening balance):

The sugar stocks (opening balance) in the new season is expected to be around 87 lakh tons. This, when added to 310 lakh tons of expected sugar production, gives a total sugar availability in the country of 397 lakh tons during sugar season- 2021-22.

This will exceed sugar consumption demand (of about 265 lakh tons), by almost 132 lakh tons. After provisioning for normative opening balance for sugar season-2022-23, equivalent to 2.5 months of sugar consumption requirement, we will still be left behind with enough sugar stocks with the mills that will be surplus, and will block liquidity of the mills, unless addressed correctly and on time.

India aims to set up ethanol pump network in 6 months: Gadkari:

The Indian government has been focusing on alternative fuel solutions for quite some time. One of the alternative fuels to petrol and diesel is ethanol. Union road and transport minister Nitin Gadkari has been advocating for the use of ethanol in vehicles. He has appealed to the auto industry to come up with flex-fuel engines.

Centre hikes sugarcane FRP to Rs 290/quintal:

Centre hiked the minimum price that mills have to pay to sugarcane growers, also known as the Fair and Remunerative Price (FRP), by Rs 5 per quintal to Rs 290 a quintal for 2021-22 (October-September) sugar season while ruling out any immediate commensurate increase in the sale price of sugar.

Sops for mills that export and sugar divert it to ethanol:

The Centre on announced an incentive for sugar mills in the form of an additional domestic sales quota to those that export sugar and divert the commodity towards ethanol making, in the new 2021-22 season starting October.

India – Vishwaraj Sugar investing US$54 million for a new sugar + ethanol plant.

Vishwaraj Sugar Industries plans to build a new sugar factory and expand its existing distillery facility at Belgaum in Karnataka with an investment of ₹4 billion (US$53.8 million).

Madagascar – Sugar factory closed in 2014 after riots to reopen.

The Morondava sugar factory in Madagascar is expected to reopen soon. It was announced by the Prime Minister Christian Ntsay during the tour of the factory on 25th September.

Brazil – Robots replaces welders at São Martinho's mills.

The São Martinho Group has deployed Duo Automation's robotic technology at its sugar mills in the country. Duo's patented technology maintains abrasive surface on the mill rollers through welding. This helps to maximize cane juice extraction.

Vietnam launches probe into allegations of dumping of Thai sugar via neihbouring countries.

Vietnam's Ministry of Industry and Trade (MOIT) launched on 21st September an investigation into allegations that sugar originating from Thailand is being imported via neighbouring countries to avoid anti-dumping taxes, its trade ministry said.

पाकिस्तान: सरकार ने चीनी की कीमत प्रति किलो 89.75 रुपये तय की

पाकिस्तान में चीनी की महंगाई पर काबू पाने की कोशिशें लगातार जारी है। अब संघीय चीनी अपीलीय समिति ने चीनी की कीमत **89.75** रुपये प्रति किलो तय करने का फैसला किया है। चीनी मिलों के मालिकों के साथ बातचीत के बाद**,** राष्ट्रीय खाद्य सुरक्षा के संघीय सचिव ने एक वैधानिक नियामक आदेश **(**एसआरओ**)** जारी किया।

4.5 साल की ऊंचाई पर रॉ शुगर के दाम

न्यूज एजेंसी रायटर्स के मुताबिक, दुनिया के सबसे बड़े चीनी व्यापारी अलवीन (Alvean) का मानना है कि आने वाले महीनों में मांग में तेजी आएगी क्योंकि उपभोक्ता देशों ने अपने उपलब्ध स्टॉक का अधिकतर इस्तेमाल कर लिया है।

फिलीपींस: ला नीना के चलते चीनी उत्पादन में मामूली गिरावट की संभावना:

जलवायु परिवर्तन और किसानों के अधिक लाभदायक फसलों की ओर बढ़ने के कारण इस फसल वर्ष में फिलीपींस के स्थानीय चीनी उत्पादन में 2 प्रतिशत की गिरावट आने की उम्मीद है।

Fiji – Sugar industry facing great difficulty in attracting young cane growers.

Enticing new and young sugarcane farmers into the industry amidst the backdrop of an ageing workforce remains one of the most significant issues facing the sector, according to the Fiji Times.

Thailand – Farmers promised over US$30/t for supply of green cane to factories.

Sugar factories under the Thai Sugar Millers Corporation (TSMC) will maintain their guarantee price to buy green sugarcane at THB1,000 (US$30.18) per tonne from farmers in a bid to encourage them to adhere to the government policy and not burn the crop before harvesting, according to local press reports.

Solugen secures US$357 million to produce chemicals from sugar via "chemienzymatic" process.

The biotech start-up Solugen has raised US$357 million from investors to produce substitute petrochemicals from converting sugars into chemicals using both enzyme and chemical catalysts.

Philippines – No sugar exports to USA in 2021/22.

The Philippines will not export sugar this crop year amid expected lower output, according to the Sugar Regulatory Administration (SRA).

Sugar reduction has become a macro health trend Euromonitor's research finds.

There has been a shift in consumer food and dieting priorities; consumers who would previously have focused on fat content or diet are now increasingly looking into sugar reduction, according to Euromonitor research. shortages caused by a currency crisis, according to local press reports.

उत्तर प्रदेश सरकार ने बढ़ाया गन्ना मूल्य

उत्तर प्रदेश सरकार ने गन्ना किसानों को एक बड़ी खुशखबरी दी है। उत्तर प्रदेश के मुख्यमंत्री आदित्यनाथ ने रविवार को गन्ना मूल्य (SAP) में 25 रुपये प्रति क्विंटल की वृद्धि की घोषणा की।

ब्राजील के राष्ट्रपति ने एथेनॉल मिश्रण को कम करने की चेतावनी दी:

ब्राजील के राष्ट्रपति जायर बोलसोनारो ने उच्च गैसोलीन कीमतों के लिए एथेनॉल मिश्रण को दोषी ठहराते हुए यह संकेत दिया कि वह मिश्रण प्रतिशत को कम कर सकते है, जो जैव ईंधन उद्योग के लिए एक बडा झटका साबित हो सकता है। सोशल मीडिया पर अपने साप्ताहिक प्रसारण में बोल्सोनारो ने कहा कि, गैसोलीन में एथेनॉल का स्तर कम होने पर पेट्रोल की कीमत थोड़ी गिर सकती है।

Gabon – 2021/22 sugar output forecast at 80,000 tonnes.

The only sugar factory in the country, SucrerieAfricaine du Gabon (SUCAF-Gabon), is forecasting a 2021/22 sugar output of 80,000 tonnes, according to the company's press release and reported in the local press.

Egypt – Self-sufficiency in sugar production reached 89%.

Egypt has reached 89% self-sufficiency in sugar following increased planting of cane and beet, The Ministry of Supply said on 26th August.

Nigeria – Dangote Sugar to invest US$1 billion to expand sugar production.

Dangote Sugar has announced that it plans to spend US$1bn to expand sugar production, reported Bloomberg.

Brazil – Cane yields in Centre-South drop by 14%.

Preliminary data compiled by the Sugarcane Technology Center (CTC) for the first half of July indicate that cane yield in the current season has dropped by 14% to 68.2 t/ha compared to 79 t in 2021.

India – Sugar stocks set to fall to 4-year low as exports shoot to 7 million tonnes

India's sugar inventories have been depleted by 19% and the country could start the 2021/22 marketing year with lowest the stocks in four years after mills exported a record amount in the current year, according to the Indian Sugar Mills Association (ISMA), reported Reuters.

उत्तर प्रदेश: गन्ने की खेती हुई स्मार्ट, 44 लाख से अधिक किसानों ने डाउनलोड किया E-ganna aap:

किसानों के कल्याण के लिए प्रतिबद्ध उत्तर प्रदेश सरकार गन्ना किसानों का समय पर भुगतान सुनिश्चित करने के साथ-साथ उन्हें तकनीक से जोड़ने के लिए अथक प्रयास कर रही है। किसानों के उत्थान में सरकार के नेतृत्व में निरंतर प्रयासों के परिणामस्वरूप न केवल उनकी आय में वृद्धि हुई है, बल्कि गन्ने की उत्पादकता भी बढ़ गई है।

बांग्लादेश: चीनी मिलों के सामने गन्ने की कमी का डर:

बांग्लादेश में चल रही सभी नौ चीनी मिलों को इस साल गन्ने की कमी का सामना करना पड़ सकता है क्योंकि इस नकदी फसल का कुल खेती क्षेत्र पिछले साल की तुलना बहुत कम हो गया है। बांग्लादेश शुगर एंड फूड इंडस्ट्रीज कॉरपोरेशन ने पिछले साल घाटे में चल रही छह चीनी मिलों का परिचालन बंद करने का फैसला किया था।

वित्तीय निवेश: ओडिशा में तीन एथेनॉल प्लांट को मिली मंजूरी

केंद्र सरकार के एथेनॉल उत्पादन को प्रोत्साहित करने के बाद भारत के कई राज्यों में एथेनॉल उत्पादन के लिए नए निवेश आ रहे है। अब इस सूचि में ओडिशा भी जुड़ गया है।

Nigeria – Only three sugar companies allowed to import sugar.

Nigeria has designated three companies as the country's sole importers of sugar, the Central Bank said, reported Reuters.

India – Over the past 10 years, privatized sugar mills doubled in Maharashtra.

The birthplace of the sugar cooperative in India – Maharashtra state – is witnessing a steady decline, paving the way for private mills. According to local press reports, the trend is informed by financial mismanagement, lack of professional approach and mills becoming a source of finance to cater to ambitions of politicians has been ailing the cooperative sugar mills.

Braskem unveils polyethylene wax made from cane-based ethanol.

Petrochemical company Braskem recently launched the world's first polyethylene (PE) wax made from ethanol produced from sugarcane.

Pakistan – 100,000 tonnes sugar bought from Al Khaleej.

The Trading Corporation of Pakistan (TCP) purchased 100,000 tonnes of white sugar in a tender for the same volume which closed last week, European traders said on 5th July.

महाराष्ट्र में पेराई सत्र शुरू होने से पहले चीनी मिलों द्वारा गन्ना भुगतान में तेजी

महाराष्ट्र में गन्ना पेराई सत्र (2021-22) के 15 अक्टूबर से शुरू होने जा रहा है, उससे पहले चीनी मिलों ने किसानों के लंबित एफआरपी के भुगतान में तेजी लाई है। क्योंकि एफआरपी भुगतान में विफल मिलों को पेराई लाइसेंस लेने में दिक्कतों का सामना करना पड़ सकता है।

NFCSF द्वारा सहकारी चीनी मिलों के लिए 21 पुरस्कारों की घोषणा की:

देश भर के सभी 258 **सहकारी चीनी मिलें और नौ राज्य संघों से युक्त एक शीर्ष निकाय**, **नेशनल फेडरेशन ऑफ को-ऑपरेटिव शुगर फैक्ट्रीज** (NFCSF) **ने** 2021 **में अपने सर्वश्रेष्ठ प्रदर्शन करने वाली सहकारी चीनी मिलों के लिए** 21 **पुरस्कारों की घोषणा की।**

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RESEARCH ARTICLE:

"Standardization of Method for Determination of Preparatory Index"

by

Mohit Kumar, Subhash Chandra & Ashok Kumar Garg

National Sugar Institute
Kanpur, India.

ABSTRACT:

Cane preparation index is an empirical method to determine the percentage of open cells in sugar cane after preparation. It gives as an indication of how well the cane has been prepared for juice extraction. It is important to be able to measure it routinely in the laboratory. A greater degree of breakage of the sugar containing cells results in higher extraction and a lower final bagasse moisture and pol in the both cane milling tandem and cane diffusion. Although cane preparation is so important for juice extraction, unfortunately the measurement of the degree of cane preparation is difficult and existing measures are not always reliable.

There are the basically three methods in vogue in the sugar industry to determine the degree of cane preparation, which are GS 7-3 official ICUMSA method, Modified Aldrich &Rayner by C Henderson & Australian Methods. The methods are totally different from each other. Authors included numbers of experiments on fibrized cane on laboratory and Experimental Sugar Factory of the institute and found significant variationin the results. Present study concludes the comparison of various methods which are in vogue for determination of Preparatory Index in Sugar industry.

Key Words:

Percentage of open cells, Pol percentage of open cell, Displaceability Index, Bulk Density, Mean Particle Size, Extent of breakage of cells, Fibre% cane

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1- Senior Technical Assistant (Sugar Technology)
2. Junior Technical Officer (Sugar Technology)
3. Assistant Professor Sugar Technology

Introduction:

The assessment of preparatory index is a regular practice in the sugar industry because of its direct relation with Milling & Diffuser performance. Method GS 7-3 (1994) (The determination of the Preparation Index of cane by measurement of the extent of the cell rupture) assesses the degree of cane preparation by measuring the extent of rupture of cells in prepared cane, established by mixing the prepared cane and water for a given time and measuring the concentration of dissolved solids in the extract. This is compared with the concentration of dissolved solids in the extract from a wet disintegrator in which it is assumed that all cells are ruptured.

The method of pol % open cells of prepared cane was first used at the Sugar Research Institute in Australia in 1955 to find out the influence of degree of preparation on milling performance. Then, further work was carried out by Payne and Aldrich & Rayner separately in Hawaii and Queensland. At that time the open cell study was related more to the diffusion process than the conventional milling practice. The percentage of broken cells in a prepared cane was therefore defined as the proportion of the total pol in cane which could be leached into an excess of cold water by continuous mixing for 10 min.

Different results of degree of preparation are obtained by applying different methods i.e. ICUMSA & Australian methods etc. There are different designs of tumblers, different quantities of cane and water are used in the sugar industry. Therefore the study was taken up to find out the most feasible/appropriate method for determination of Preparatory Index among the methods available, which are commonly used in sugar industry. One of the methods, which may reveal better and appropriate analysis results for degree of cane preparation, thus may be standardized.

Materials & Methods:

The most common measure is the extent of cell breakage, obtained by tumbling cane and water in a container under standard conditions and comparing the pol or brix of the extract with that achieved in a disintegrator, in which all the cells are ruptured. Preparation Index (PI) is used in South Africa, the displaceability index in Hawaii (Payne 1962) and the Percentage Open Cell (POC) measurement in Australia. All these measurements attempt to assess the degree of preparation by measuring how much of the sugar in cane may be easily washed out from the prepared cane sample. Table no.1 gives an overview of the method discussed herein.

TABLE NO-1

Different Methods of PI Determination				
S. No	**Particular**	**GS 7-3 official ICUMSA Method (PI)***	**Modified Aldrich &Rayner by C Henderson (PPOC)**/Displaceability Index**	**Australian Method (POC)*****
Tumble/Ball Mill	**Weight of Prepared Cane Sample**	500 gm	1000 gm	1000 gm
	Weight of Water	3000 gm	10000 gm	10000 gm
	Sample to water Ratio	01 : 06	01 : 10	01 : 10
	Time	30 min	10 min	10 min
	Extract Analysis	Brix (B_1)	Pol (P1)	Pol (x)
Rapi Pol Extractor/ Wet Disintegrator	**Weight of Prepared Cane Sample**	333 gm	2000 gm	2000 gm
	Weight of Water	2000 gm	6000 gm	6000 gm
	Sample to water Ratio	01 : 06	01 : 03	01 : 03
	Time	20 min	40 min	40 min
	Extract Analysis	Brix (B2)	Pol (P2)	Pol (p)
Ratio (r)		B1 / B2	P1 / P2	x / p
Formula Used		**PI = r x 100**	**K =1000 r/(3.838-0.838 r)**	**K= 1000 x r / [(4-r)-0.0125F*(1-r)]**

(PI)* = Preparatory Index

(PPOC)** = Pol Percentage Open Cell

(POC)*** = Percentage Open Cell

Basic Formula:

Aldrich & Rayner (Australian Method):

(POC) $K = 100\ r\ W_T / [\{C_T(1-r)(1-1.25F/100)\}] + W_D C_T / C_D]$

Where W_T =Weight of water added in tumbler (gm)

W_D = Weight of water added in disintegrator (gm)

C_T = Weight of cane added in tumbler (gm)

C_D = Weight of cane added in disintegrator (gm)

r = Pol Ratio (P1/P2)

F = Fibre %cane

Following methodology was adopted in the present study:-

- Fibrized cane of Laboratory Cane Shredder and *Experimental Sugar Factory* shredded cane was used for this trial.
- Pol (P1, P2, and X, P) was analysed using automatic Saccharimeter MCP 5300 Sucromat.
- Brix (B1 & B2) was analysed using digital brix refractometer.
- Fibre % Cane was analysed using direct method.

Results & Discussion:

PI, PPOC & POC are the most commonly accepted methods used in the industry. It is important to understand the differences between them. There may be many reasons for the different value achieved. The comparative data sheets on the basis of analytical results are as shown as below:

TABLE NO -2

GS 7-3 Official ICUMSA Method					
Date	**Fibre % Cane**	**Brix (B1)**	**Brix (B2)**	**r**	**PI**
14.01.2021	11.50	2.90	3.15	0.92063	92.06
18.02.2021	12.43	2.12	2.97	0.71380	71.38
25.02.2021	13.00	2.33	3.22	0.72360	72.36
03.03.2021	14.20	2.60	3.45	0.75362	75.36
05.03.2021	14.25	2.60	3.46	0.75145	75.14
Average	**13.08**	**2.51**	**3.25**	**0.7726**	**77.26**

TABLE NO-3

Modified Aldrich & Rayner by C Henderson						**Australian Method (POC)**
Date	**Fibre % Cane**	**Pol (P1)**	**Pol (P2)**	**r**	**PPOC**	
14.01.2021	11.50	5.54	17.71	0.31282	87.48	87.17
18.02.2021	12.43	3.40	13.06	0.26034	71.92	71.82
25.02.2021	13.00	3.35	13.17	0.25437	70.17	70.18
03.03.2021	14.20	3.70	14.65	0.25256	69.65	69.87
05.03.2021	14.25	3.16	12.68	0.24921	68.67	69.07
Average	**13.08**	**3.83**	**14.25**	**0.2659**	**73.58**	**73.62**

TABLE NO-4

Summary Sheet					
S. No	**Fibre %Cane**	**ICUMSA-PI**	**Modified Aldrich &Rayner (PPOC)**	**Australian Method-(POC)**	**Sample Drawn from**
1	11.50	92.06	87.48	87.17	Lab Shredder
2	12.43	71.38	71.92	71.82	Experimental Sugar Factory- NSI Kanpur
3	13.00	72.36	70.17	70.18	
4	14.20	75.36	69.65	69.87	
5	14.25	75.14	68.67	69.07	
Average	**13.08**	**77.26**	**73.58**	**73.62**	

From the above table it can be seen that PI (ICUMSA) is fluctuating with fibre % cane, because method for determination of PI (ICUMSA) does not have any relationship with fibre % cane. Whereas in the other methods, the value of PPOC and POC reduces as the fibre % cane increases.

The average value of PI by ICUMSA methods is approx 77.26 & the average value of PPOC & POC by Modified Aldrich & Rayner and Australian methods are approx 73.58 & 73.62. There are the differences by approx 4.0 unit between PI & PPOC, POC.

The calculating method used in calculating POC, PPOC is rigorously correct and the simple ratio used in the PI equation is an approximation. This results in calculating values of PI from ICUMSA method which are too high by about 4.0 units than the PPOC & POC methods.

Since all the methods PI, PPOC & POC have the different sample water ratio and different tumbling & disintegrating time, so for comparing purpose the sample water ratio & tumbling, disintegrating time could be done identical therefore standardization are required to compare all the methods which are given below:

Future work plan for the further study:-

Standardization in Ratio & Time				
S. No.	**Particular**	**GS 7-3 official ICUMSA Method (PI)***	**Modified Aldrich & Rayner by C Henderson (PPOC)**/ Displaceability Index**	**Australian Method (POC)*****
Tumble/Ball Mill	**Weight of Prepared Cane Sample**	500 gm	500 gm	500 gm
	Weight of Water	3000 gm	3000 gm	3000 gm
	Sample to water Ratio	01 : 06	01 : 06	01 : 06
	Time	30 min	30 min	30 min
	Extract Analysis	B_1 or P_1	B_1 or P_1	B_1 or P_1
Rapi Pol Extractor/ Wet Disintegrator	**Weight of Prepared Cane Sample**	333 gm	333 gm	333 gm
	Weight of Water	2000 gm	2000 gm	2000 gm
	Sample to water Ratio	01 : 06	01 : 06	01 : 06
	Time	20 min	20 min	20 min
	Extract Analysis	B_2 or P_2	B_2 or P_2	B_2 or P_2
Ratio (r)		B_1/ B_2 or P_1/P_2	B_1/B_2 or P_1/P_2	B_1/B_2 or P_1/P_2
Formula Used		**PI = r x 100**	**K =600 r/(6.838-0.838 r)**	**K= 600 x r / [(7-r)-0.0125F*(1-r)]**

The formulas of PPOC & POC would be changed due to change in sample water ratio & these formulas of PPOC & POC might be formulated by putting the values of sample & water in basic formula which is already given in this paper. Further study is required to conclude the topic whether one should go for calculating the degree of preparation either on Pol basis or brix basis.

Conclusion:

The existing methods of PI (ICUMSA), POC (Australian) & PPOC (Modified Aldrich & Rayner by C Henderson) are based on entirely different principle and analytical methods. The PI (ICUMSA) method is based on the ratio of dissolve solids (Brix) and there is no any consideration of fibre % cane & colloidal water (BFCW) in the calculation of PI (ICUMSA). Whereas the methods of POC & PPOC are based on pol ratio and POC is calculated on actual fibre & colloidal water (25%), where as the formula of PPOC consider the fibre % cane (13 %) & colloidal water (25%). Therefore the methods used in POC & PPOC appear to be more reliable than the PI (ICUMSA) method. More studies shall be taken up to validate the data and conclude the study.

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ABSTRACTS

Vinasse incineration with bagasse as a supporting fuel by S Awasthi,A Tewari & L Gunasekaran published in International Sugar Journal in July, 2021.

Effluents from molasses-based distilleries called vinasse, spent wash, or slope are highly toxic in nature. It has very high BOD, COD, and low pH. Indian industries have handled this vinasse through bio-composting or bio-methanation, but it still discharges a large quantity of effluent. To minimize effluent discharge and at the same time to effectively utilize the heat potential in vinasse, an alternative is to incinerate it. Incineration can contribute to the steam and power production of factories. Vinasse has a calorific value that is not sufficient to sustain combustion.

Improvements to bagasse combustion by AP Mann published in International Sugar Journal in July, 2021.

Bagasse combustion allows sugarcane factories to be energy self-sufficient and generate additional revenue from electricity export. While bagasse fuel is essentially free for sugarcane factories, the amount of available bagasse depends on the cane-fibre content, and the amount of bagasse required depends on the efficiency of the factory boiler station. Low cane-fibre contents and/or low boiler-station efficiencies will reduce income from electricity export and, in some cases, make it necessary for factories to use auxiliary fuel to maintain throughput (loss of energy self-sufficiency). Factories often have little control over the cane-fibre content, but there are often opportunities for improving.

Investigating losses from green and burnt cane harvesting conditions by P Patane, G Landers, M Thompson, B Nothard, CA Norris&M Olayemi published in International Sugar Journal in July, 2021.

Despite much research into the impact of high harvester pour rates and fan speeds on harvested cane yields, there has been a low adoption of harvesting best practices (HBP) across the industry. Full adoption across the Australian sugarcane industry could increase industry revenue without the need for horizontal expansion (an increase in cane land). To inform the industry of the potential for significant gains, 95 replicated harvesting trials and workshops were undertaken during 2017 and 2018 across 12 sugarcane regions in Queensland and New South Wales.

Evolution of sugar prices in the European Union since the end of sugar quotas: What outcome? by ARTB published in International Sugar Journal in July, 2021.

Four years after the removal of EU sugar quotas and affected by depressed world sugar market prices, things have not turned out as expected in the EU.

This paper analyzes how European prices have evolved since September 2017, highlighting the need for a change in the way sugarbeet agreements are structured to allow for a quicker and more adapted response to fast-changing market conditions.

Fructans have been underestimated in the Louisiana sugarcane industry by Alexa Triplett, Gillian Eggleston, Peter Gaston & David Stewart published in International Sugar Journal in August, 2021.

For over 100 years, sugar technologists around the world have focused on the glucose polysaccharide dextran as the major polysaccharide (dextran also occurs as short-chain oligosaccharides) causing processing problems in both sugarcane and sugar beet factories. Fructans are fructose poly- and oligosaccharides connected by b2→6 and b2→1 glycosidic linkages; however, compared to dextran, the amounts of fructans in factory products are much less known. A large problem has been the lack and/or complexity of a specific analytical method to measure fructans. Using a new enzymatic (research) method that incorporates newly available recombinant enzymes, which is available as a kit.

A factory experiment to assess different shredder-hammer configurations by CH Bakir, T Drury & GA Kent published in International Sugar Journal in August, 2021.

Shredding is critically important to maximising the amount of pol extracted from the supplied cane by the milling tandem or diffuser. Whilst modern shredders typically achieve high levels of preparation (greater than 85 POC (percentage of ruptured or open cells)), they also use considerable energy, have high maintenance costs and produce much noise. An experiment was undertaken at Rocky Point Mill during the 2016, 2017 and 2018 seasons to evaluate the effect of shredder-hammer configuration on shredder performance in terms of POC, windage, noise, hammer wear rates and hammer-tip wear rates.

Assessing the heat-transfer performance, operational strategies, and sucrose losses of falling-film and rising-film evaporators by Omkar P Thaval published in International Sugar Journal in August, 2021.

Efficient operation of the evaporator station is the key to achieving high juice-processing rates and low steam consumption; however, the efficient design of the evaporator also plays an important role. An efficient design should provide a high heat-transfer coefficient (HTC) over an extended period, adequate mixing of the juice in the heating elements, and a short residence time of the juice in the evaporator. The falling-film and rising-film are the two evaporator types (both tubular and plate types) used in the sugar industry.

Water and effluent management in Indian sugar factories: a novel approach by Narendra Mohan,

Mahendra Kumar Yadav & A mresh Pratap Singh published in International Sugar Journal in August, 2021.

This study was undertaken to develop methodologies for reducing fresh-water consumption in cane processing. Currently, this ranges from 50 to as high as 150 L/t of cane. The developed condensate- and water-management system ensures maximum recycling and reuse of different water streams, resulting (except for start-up) in almost no freshwater use and reducing the effluent volume from the current 200-250 to 150-160 L/t of cane. A modification was tested of the existing activated-sludge process for treating the effluent by introducing a sulphate-removal step before the conventional process.

Experience with a lamella juice clarifier in Brazil by Fabio Bellam, M Gokool, M. Getaz&P Rein published in International Sugar Journal in September, 2021.

The operating performance of a lamella clarifier, installed at the Lasa ethanol factory in Brazil, was assessed during the 2020 milling season. The clarifier has been proven to consistently produce a clear juice quality well within acceptable norms. The clarifier has a very low juice residence time, on the order of five minutes, and yet, compared with Lasa's original Rapidorr clarifier which has a retention time of approximately 90 min, it provides superior performance. Measurements of colour, turbidity, purity, and pH were made during the test period.

The SMRI-NIRS technology: development, validation and benefit by SN Walford published in International Sugar Journal in September, 2021.

The Sugar Milling Research Institute NPC (SMRI) has developed a simple to use near-infrared spectroscopy (NIRS) transmission-based analysis method as an alternative to conventional methods for analysis of sugarcane factory stream samples. The technology provides rapid, simultaneous analysis of brix, pol, sucrose, glucose, fructose, conductivity ash, colour and pH for all streams and additionally, dry solids for final molasses and eliminates the need for sample clarification chemicals. The analyte prediction equations were developed using conventional results of samples from 14 South African factories, analysed at SMRI using SANAS/ISO17025 accredited test methods, and NIRS scans of the same samples using.

Mechanical weed control in sugar beet – experiences and outlook by GeroSchlinker published in International Sugar Journal in September, 2021.

Efficient weed control is pre-requisite for high sugar beet yields. Weed control in the EU is achieved by a combination of herbicide applications of two to six times. Due to increasing demand for a lower input of agrochemicals and the ban on important active ingredients, the interest in mechanical weeding in sugar beet production is growing. Various developments inform the

effectiveness with respect to the efficacy of mechanical weeding, the accuracy of hoeing, and the rate at which a field is weeded.

Soil-binding adjuvants can reduce herbicide loss via runoff by EF FillolsAM Davispublished in International Sugar Journal in September, 2021.

Concentrations of a range of pesticides exceed water quality guidelines throughout the year in many fresh and estuarine water bodies of the Great Barrier Reef catchment. To mitigate its impact and maintain its productivity, the Australian sugar industry is looking at innovative options to reduce the movement of herbicides off site. Three oil-based adjuvants (Grounded® applied at 3 L/ha, Atpolan® soil Maxx applied at 0.4 L/ha and Ad-HereTMapplied at 1 L/ha according to their respective labels), a terpene-based adjuvant (Flextend® applied at 1.2 L/ha), and a polyol-based adjuvant (Watermaxx®2 applied at 9.35 L/ha), were tested on bare soil.

Editor

Mihir Mandal
Assistant Professor Sugar of Technology
For & on behalf of:

NATIONAL SUGAR INSTITUTE
Ministry of Consumer Affairs,
Food & Public Distribution
Department of Food & Public
Distribution Kalyanpur,
Kanpur – 208017
Uttar Pradesh (India)

Visit us at http//:nsi.gov.in
Contact:
nsikanpur@nic.in, director.nsi@gov.in
Telephone +91-512-2988825