SHARKARA

JANUARY – MARCH 2023
VOLUME : 54, No. 05

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
Visit us at :http://nsi.gov.in
Follow us :

SHARKARA

VOLUME - 54, No .05

JANUARY – MARCH 2023

It contains……..

From Director's Desk…

The sugar production during the current sugar season 2022-23 is estimated to be lower than the last season 2021-22. As on 15th March 2023, only 336 sugar factories have been in operation as compared to 438 sugar factories on the same day in 2022. With an estimated diversion of 45 MMT, the net sugar production during the current year is estimated to be around 34 MMT. Maharashtra is likely to remain at top with a sugar production of 11.4 MMT followed by Uttar Pradesh with around 10.4 MMT of sugar production.

Despite increase in area under sugarcane cultivation, sugar production in Uttar Pradesh to remain almost unchanged primarily due to lower sugar recovery due to the dominant sugarcane variety, Co 0238, effected by red rot.

On the ethanol front, as on 19th March 2023, out of the contracted quantity of 4990 million liters, the oil marketing companies received about 1629 million liters of ethanol, corresponding to about 11.56% blending. Out of the total ethanol supplied, about 884 million liters and 465 million liters came through sugarcane juice/syrup and B Heavy molasses route with grain based ethanol units contributing about 260 million liters.

Institute faculty remained busy and visited many sugar producing states to render technical advice on various important matters viz. lower sugar recovery, higher non sugar content in juices, energy conservation, technical audit of sugar and distilleries and also to validate process of diversion of sugar and effluent treatment.

Delegates from many countries viz. USA, France, Nigeria, Philippines, Cuba, Surinam, Belgium, Uganda and Germany etc. during their pre and post ISSCT Congress tour also visited institute to study it's activities for possible collaborative work in future.

During the period institute also conducted Customized Training Programmes for the technical personnel from M/s PT PG Rajawali Unit-I, Indonesia and M/s Sunti Golden Estate Ltd., Nigeria. Further, institute also organized an International Conference jointly with Assiut University at Luxor, Egypt which was attended by more than 300 delegates from various sugar producing countries.

I have the pleasure to inform you that during the financial year 2022-23, institute earned highest ever revenue to the extent of Rs. 64 million up by Rs. 11 million from the last financial year 2021-22. With many activities already planned, I hope that institute will remain more vibrant during the next financial year 2023-24.

(Narendra Mohan)
Director

♣ OUR PROVISIONS:

♣ ONE DAY NATIONAL SEMINAR ORGANIZED:

National Sugar Institute, Kanpur organized one day National seminar on **"Safety Protocol for Sugar Industry"** on 18th January 2023. Deputy Director (Medical) and Head Ministry of Labour and Employment, Kanpur, Dr. Arkaprabhu Sau, while addressing on risk and hazards, highlighted physical, chemical, biological, mechanical and psychological risk factors which prevailed in sugar industry. Director, NSI laid emphasis on **"Safety First"** to avoid any loss of man and material.

Large no. of delegates from various sugar producing states joined the seminar. Presentations were made on safety protocols to be implemented.

♣ ONE-WEEK TRAINING PROGRAMME ORGANIZED:

National Sugar Institute, Kanpur organized one-week training programme for the Excise Chemical Examiners of Bihar State on analysis of alcohols and molasses at the institute which was completed on 13th January 2023. The training was considered essential by the state government after the hooch tragedy in Bihar. The Bihar State Officials were made aware about the principles involved in determination of alcohol% and other components of IMFL and Country Liquor. While they were given details of various markers for identifying adulteration, they were given hands on training in the institute laboratories.

♣ TRAINING PROGRAMME FOR INDONESIAN OFFICIALS:

The training programme for the technical officers of PT PG Rajawali Group of Sugar Factories, Indonesia was organized at National Sugar Institute, Kanpur during the second week of March 2023. The programme was attended by twenty senior officers including Director (Operations) and Heads of Production, Engineering and Quality Control. Know-how was imparted to the participants on energy conservation, efficiency improvement, quality control and on producing value added products to enhance income streams for making the sugar units viable.

During the training programme, apart from theoretical training, practical exposure was also provided to the participants in the nearby sugar factory.



♣ INTERNATIONAL CONFERENCE ORGANIZED:

10th international conference on **"Sugar & Integrated industries"** was organized jointly by National Sugar Institute, Kanpur and Assiut University, Egypt from 12th-14th February 2023 at Luxor, Egypt. The conference was attended by more than 200 delegates from India, Egypt, America, France, Germany, Nigeria, Austria, Brazil and other countries. Presentations on multiple topics related to water management, sugarcane and sugar beet agronomy, beet juice preservation, energy conservation and by-product utilization were made during the conference.

Director, NSI Kanpur addressing the meet as the Conference Chairman discussed the changes in business model to be practiced by the sugar industry. He stressed on innovations and added that only innovative process and products can make sugar industry competitive, viable and sustainable.

♣ VISIT OF OFFICIALS OF DEPARTMENT OF FOOD & PUBLIC DISTRIBUTION TO THE INSTITUTE:

Fifteen Assistant Section Officers of Department of Food & Public Distribution visited National Sugar Institute, Kanpur for undertaking Field Exposure on 28th March 2023. During the interactive sessions and visit to various divisions, knowledge was imparted to them about sugar and ethanol production, by-production utilization and way forward.



♣ RESEARCH WORK:

1. **Studies on Sweet Sorghum bagasse value addition:** After purification of SSB components, experiment to synthesize vanillin from lignin has been completed. Purification of extracted vanillin from Sweet Sorghum Bagasse derived lignin has been completed. An yield of about 0.9% w/w of dry SSB was obtained.

2. **Comparative study of five varieties of sweet sorghum for production & ethanol yield:** Combined report of Agriculture & Biochemistry Division prepared during the month. Studies indicate yield of five sweet sorghum verities tested at the institute to be 40 to 50 tonnes/hectare with maximum ethanol yield of 45 litter/ton. Further studies shall be taken up during the next harvest.

3. **Cane juice syrup study for shelf-life and production of alcohol:** Syrup Samples were collected from three different factories viz; M/s Dalmia Bharat Sugar & Ind. Ltd., Unit – Jawaharpur, M/s Dalmia Bharat Sugar & Ind. Ltd. Unit - Nigohi, & M/s DCM Shriram Ltd. Unit – Ajbapur. After recording initial parameters like brix, Pol, purity & TRS etc., the samples are kept at room temperature in Biochemistry laboratory to assess the shelf life of the syrup. No changes were recorded in one month of storage in TRS & brix.

4. **Study of Sugar beet lines for ethanol production:** Six sugar beet germplasm lines, viz., IISR Comp 1, LS 6, LKC HB, LKC 2020, LKC LB, LKC 2006 have been sown by agriculture division and will be harvested in the month of April. Thereafter these different sugar beet varieties will be evaluated for yield, sugar content, ethanol production potential upon harvest and for other parameters.

5. **Study of B Heavy molasses for different parameters for use as edible molasses:** Analysis report of centrifuged B heavy molasses samples from out sourced agency is awaited. Analysis of 02 B heavy molasses samples (before and after centrifugation) collected from refined sugar plant is in progress for various parameters including heavy metals.

6. **Production of Invert syrup directly from sugarcane juice:** Initial trials on production of medium invert syrup directly from sugarcane juice were carried out at laboratory level. Presently, such kind of invert syrup is produced using sugar as raw material. The process involves in situ purification of sugarcane juice without addition of any chemicals. Different techniques of high level filtration and inversion are being tried. Samples of such invert syrup were analyzed for quality parameters, such as, Brix, Purity, TRS, Colour etc. and shelf life periodically. The study shall be extended on different sugarcane varieties with use of natural clarificants to improve quality of the final liquid sugar.

7. **Production of Low Glycemic Index Sugar:** The so produced medium invert liquid sugar was divided in two groups in order to produce Low G.l. sugar. For this Monk Fruit extract (98 % purity) & Stevia extract (99 % purity) were selected to be dosed to the sugar to produce Low GI sugar. To further calculate the G.I. value of the produced sugar a mathematical approach has been adopted which is carried out jointly with HBTU. For the same approach, GOPOD kit along with its chemicals have been received and some are under process of procurement. The calculation and formulation process for determining G.I. value is under process.

8. **Production of Bio-Char from sweet sorghum bagasse:** After successful trials of Bio-char made from sugarcane bagasse, studies have taken up for production of Bio-char from sweet sorghum bagasse. The optimization of efficiency of prepared bio-char, at 550^0C for 60 minutes in a fixed reaction condition is going on, using sugar syrup/melt OF 65^0 brix with different doses of bio-char (SSBAC). Preliminary result indicate colour removal to the extent of 70-75 % in the sugar melt. However, more trials are being conducted to validate the results and work out cost economics comparing the same with powdered active carbon.

9. **Conversion of wastewater into usable water through Bioremediation Technique:** Water hyacinth has been tried for the treatment of waste waters under Phytoremediation technique. Trials are being conducted on above technique for treatment of condensates to improve their quality for use as raw water or even as potable water. In future trials shall also be taken up for the purification of effluents using bio-filter and water hyacinth along with tertiary treatment units.

10. **Shelf life study of press mud / filter cake upon storage:** 10 samples of press mud collected from various geographical locations such as UP, Bihar, Haryana and Chhattisgarh and were stored keeping the environment as a replica of what is at the factory front. 20 samples of each factory (10 BLANK + 10 TREATED) have been analysed for pH, Total Solids (moisture content), Ash content, Total volatile solids (TVS), Lignin and Total Convertible Volatile Solids (TCVS) on monthly basis. The studies have been taken up jointly with M/s Praj Industries Ltd.

♣ RESEARCH PAPER:

1. A research paper entitled **"An Improved Electric Drive for Sugarcane Preparatory Devices"** by Vinay Kumar, D Swain, Narendra Mohan sent for publication in 95th SASTA Congress to be held at Durban, South Africa from 15th – 17th August 2023.

2. A research paper entitled **"Measure to Reduce Consumption of Process Chemicals in Sugar Factories"** by S. K. Trivedi & Narendra Mohan, sent for publication in National Federation of Co-operative Sugar Factories Limited.

3. A research paper entitled **"Augmentation of Alcohol Based Hand Sanitizer Production Capacities in India- A Success Story"** by Narendra Mohan & Vishnu Prabahakar Srivastava, sent for publication in SHARKARA (January – March 2023) of National Sugar Institute, Kanpur.

4. A research paper entitled **"Problems and Challenges for Sugarcane farmers in Northern India / Sub-Tropical India- A case study"** by Anshika Pandey, Sharad Babu, Lokesh Babar, Ashok Kumar and Narendra Mohan published in Indian Sugar Journal, February 2023.

******

♣ SALE OF SUGAR STANDARDS:

Sale of sugar standard grades commenced from 1st October 2022 for the sugar season 2022-23. Standard grades can be procured online also. Institute has sold 1100 samples to 232 sugar factories up to March 2023. The details with respect to online procurement of standards are available on our website *http://www.nsi.gov.in*

Price schedule for the sugar season 2022-23:

संख्या / F. No. BSS /ISS /2022-23 /01
राष्ट्रीय शर्करा संस्थान
NATIONAL SUGAR INSTITUTE
आई. एस. ओ. ९००१-२००५ प्रमानित संस्थान
An ISO 9001:2015 Certified Institute
उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय,
Ministry of Consumer Affairs, Food & Public Distribution
(खाद्य एवं सार्वजनिक वितरण विभाग)
Department of Food & Public Distribution
(भारत सरकार)
Government of India

कल्यानपुर, कानपुर
Kalyanpur, Kanpur
दिनांक/ Dated - 30/09/2022

सेवा मे,

सभी शर्करा उद्योग एवं अन्य शर्करा मानक उपयोगकर्ता

महोदय,

यह पत्र आपको इस आशय से प्रेषित है कि सत्र २०२१-२२ के शर्करा मानक की समय सीमा दिनांक ३० **सितंबर**, २०२२ को समाप्त हो रही है । अतः सत्र २०२२-२३ के लिए विशेषज्ञ समिति द्वारा अनुमोदित एवं दिनांक ३० **सितंबर**, २०२३ तक के लिए मान्य नये शर्करा मानक, राष्ट्रीय शर्करा संस्थान, कानपुर स्थित शर्करा मानक ब्यूरो द्वारा दिनांक ०१ **अक्तूबर**, २०२२ से जारी किये जायेंगे ।

भारत सरकार के राजपत्र संख्या 1675, दिनांक 29 अगस्त 2011, के अनुसार प्रत्येक शर्करा उत्पादक उद्योग के लिए भारतीय शर्करा मानक, राष्ट्रीय शर्करा संस्थान, कानपुर स्थित शर्करा मानक ब्यूरो से प्रत्येक शर्करा सत्र के लिए नया शर्करा मानक खरीदना अनिवार्य है, यह अवधि इस आशय मे जारी राष्ट्रीय शर्करा संस्थान, कानपुर के परिपत्र के प्रकाशन के 60 दिनों के अंदर खरीदा जाना चाहिए एवं संबन्धित मानक शर्करा के बोरियों पर दर्ज होनी चाहिए ।

अतः को ऑनलाइन खरीदने का फार्म **SSOP** के माध्यम से भी, हमारे वेबसाइट **http://nsi.gov.in/sugartechnology.html** मे दर्ज दिशा निर्देशों के अनुरुप भरकर भेज सकते हैं । **नये सत्र** २०२२-२३ से संबन्धित भारतीय शर्करा मानक के खरीद की मुख्य सूचनाएँ निम्नवत हैं:

1.	शर्करा मानक जिसे जारी किया जाना है	**एल-31,एल-30,एम-31,एम-30,एस-31,एस-30 एवं एसएस-31**
2.	शर्करा मानक सेट का मूल्य जिसमे ०७ बोड + ०२ खाली काँच की बोतल + ०२ वेल्वेट कॉर्क एवं पैकिंग के डिब्बे का मूल्य शामिल है	प्रत्येक सेट का मूल्य रुपया २५,०००/- मात्र
3.	एकल शर्करा मानक बोड का मूल्य	प्रत्येक रुपया ३३००/- मात्र
4.	खाली शर्करा मानक बोतल का मूल्य	प्रत्येक रुपया ५५०/- मात्र
5.	पैकिंग के डिब्बे का मूल्य	प्रत्येक रुपया ७५०/- मात्र
6.	वेल्वेट कॉर्क का मूल्य	प्रत्येक रुपया १२५/- मात्र
7.	डाक द्वारा मंगए जाने पर डाक खर्च	(अतिरिक्त) लागत मूल्य
8.	भुगतान	भारतीय शर्करा मानक २०२२-२३ के लिए भुगतान केवल भारतकोष के माध्यम से स्वीकृत होगे, भारतकोष से भुगतान **न होने** पर डिमांड ड्राफ्ट के रूप मे भुगतान स्वीकार किया जायगा ।
9.	शर्करा मानको के वितरन का समय	सोमवार से शुक्रवार (10.00 बजे पूर्वाहन से 05.00 बजे अपराहन तक)
10.	कर (GST)	(18%) की दर से GST शुल्क अतिरिक्त, अधिक विवरण के लिए हमारे वेबसाइट **http://nsi.gov.in** पर **SSOP** संबंधी सूचना देखे ।

•**प्रत्येक लेन-देन सम्बंधी रसीद मे GST संख्या दर्ज होना अत्यंत अनिवार्य है।** अतः आपसे आग्रह है कि कृपया अपने **SSOP** (शर्करा मानक की ऑनलाइन खरीदने का फार्म) अथवा **नये सत्र** २०२२-२३ के **I.S.S.** (भारतीय शर्करा मानक) आवेदन मे **GST** संख्या अवश्य दर्ज करें।

भवदीय,
(अशोक के. गर्ग)
सहायक अध्यापक शर्करा शिल्प

******

♣ 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:

Request for availing consultancy services of the institute were received and also provided to various sugar factories ethanol & other allied 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 and to conduct technical audit etc.

1	M/s Avadh Sugar & Energy Ltd., Unit – Rosa Sugar Works, Shahjahanpur, U.P.
2	M/s Doon Valley Distillers Kuanwala, Dehradun, U.K.
3	M/s Magadh Sugar & Energy Ltd., Unit – Bharat Sugar mills, Sidhwalia, Bihar
4	M/s Tikaula Sugar Mills Ltd., Unit – Tikuaula, Muzaffarnagar, U.P.
5	M/s Balrampur Chini Mills Ltd., Sugar Unit – Babhnan, Gonda, U.P.
6	M/s Aska Sugar Mills Ltd., Ganjam, Odisha
7	M/s M.R. Krishnamurthy Co-Op. Sugar Mills Ltd., Sethiathope, Tamil Nadu
8	M/s Rai Bahadur Narain Singh Sugar Mills, Laksar, U.P.
9	M/s Balrampur Chini Mills Ltd., Sugar Unit – Maizapur, Gonda, U.P.
10	M/s The Kallakurichi Co-operative Sugar Mills Ltd., Kallakurichi, Tamilnadu
11	M/s EID Parry (India) Limited, Andhra Pradesh
12	M/s Dalmia Bharat Sugar Mill Ltd., Unit –Ramgarh, Sitapur, U.P.
13	M/s Dhampur Sugar Mills Ltd., Unit – Dhampur, Bijnor, U.P.
14	M/s Simbhaoli Sugars Ltd., Unit – Chilwaria, Bahraich, U.P.
15	M/s Balrampur Chini Mills Ltd., Chemical Division, Balrampur, U.P.
16	M/s Bajaj Hindusthan Sugar Ltd., Unit – Gangnauli, Shahjahanpur, U.P.
17	M/s Majhaulia Sugar Industries Pvt. Ltd., Distillery Division, W. Champaran, Bihar
18	M/s Daurala Sugar Works (A unit of DCM Shriram Ind. Ltd.), Daurala, Meerut, U.P.
19	M/s U.P. State Sugar Corporation Ltd., Lucknow, U.P.
20	M/s HAFED Sugar Mill Assandh, Karnal, Haryana

21	M/s Tiruttani Cooperative Sugar Mills Ltd., Tamilnadu
22	M/s Bajaj Hindusthan Sugar Ltd., Unit – Gola Gokharnath, Lakhimpur, U.P.
23	M/s Sarswati Sugar Mills , Sugar Unit - Yamunanagar, Haryana
24	M/s KLE Academy of Higher research, Belgavi, Karnataka
25	M/s Tamil Nadu cooperative sugar federation, Nandanam, Chennai
26	M/s Bajaj Hindusthan Sugar Ltd., Sugar Unit - Budhana, Muzaffarnagar, U.P.
27	M/s Uttam Sugar mills Ltd., Unit - Shaharanpur U.P.
28	M/s Simbhaoli Sugar Ltd., Unit- Brijnathpur, Happur, U.P.
29	M/s Mawana Sugar Mills Ltd, Unit – Mawana, Meerut, U.P.
30	M/s Dhampur Sugar Mills, Unit - Rajpura, Sambhal, U.P.
31	M/s DCM Shriram Ltd., Sugar Unit-Loni, Hardoi, U.P.
32	M/s Uttam Sugar Mills Ltd., Unit- Shermau, Saharanpur, U.P.
33	M/s Dalmia Bharat Sugar & Industries Ltd., Unit- Jawahapur, Sitapur, U.P.
34	M/s HPCL Biofuels, Unit- Lauria, West Champaran, Bihar
35	M/s Dhampur Biofuels Ltd, Unit- Asmoli, Sambhal, U.P.
36	M/s Balrampur Chini Mills Ltd., Sugar Unit- Balarampur, Balrampur, U.P.
37	M/s DCM Shriram Ltd., Sugar Unit- Ajabapur, LakhimpurKheri, U.P.
38	M/s Shervani Sugar Syndicate Ltd., Kasganj, U.P.
39	M/s Dhmapur Biofuels Ltd., Sugar Unit- Meerganj, Bareilly U.P
40	M/s The Aska coperative Sugar Industry, Ganjam, Odisha
41	M/s The Ganga KisanSahkari Chini Mills Ltd, Sugar Unit – Muzaffarnagar, U.P.
42	M/s Magadh Sugar & Energy Ltd., Unit- Narkatiaganj, West Champaran, Bihar
43	M/s The Kallakuruchi Sugar Mills Ltd., Kallakuruchi, Tamil Nadu
44	M/s D. S. 7 M. R. Krishnamurthy Coop. Sugar Mills Ltd., Cuddalore, Tamil Nadu
45	M/s The Karnal Co-operative Sugar Mills Ltd., Karnal, Haryana
46	M/s The Kisan Sahkari Chini Mills Ltd. Distillery Unit- Kaimganj, Farrukhabad, U.P.
47	M/s Wave Industries Pvt. Ltd., Unit- Dhanaura, JyotibaPhule Nagar, U.P.
48	M/s Trualt Bioenergy Ltd., Unit- Distillery Division Kulali Cross, Mudhol, Karnataka
49	M/s Kareli Sugar Mills Pvt. Ltd., Unit- Kareli, Narsinghpur, MP
50	M/s Dhampur Bio Organics, Unit- Mansurpur, Muzaffarnagar, U.P.
51	M/s Sri Someshwar Sahkari Karkhane Niyamit, Siddasamudar, Karnataka
52	M/s Office of Excise Chemical Examiner, Patana, Bihar
53	M/s U.P. Co.operative Sugar Factories Federation Ltd., Lucknow, U.P.
54	M/s Wave Distillery & Breweries Ltd., Ambedpura, Aligarh, U.P.
55	M/s The Kaithal Cooperative Sugar Mills Ltd, Unit- Kaithal, Dist.- Kaithal, Haryana
56	M/s Simbhaoli Sugar Mills Ltd., Unit- Simbhaoli, Gaziabad, U.P.
57	M/s Parle Biscuits Pvt. Ltd., Unit- Parsendi, Baharaich, U.P.
58	M/s Upper Doab Sugar Mills Ltd., Unit of Sri Shadi Lal enterprises, Shamli, U.P.
59	M/s Triveni Energy & Industries Ltd., Unit- Khatuali, Muzaffarnagar, U.P.
60	M/s Bajaj Hindustan Sugar Mills Ltd., Unit- Palia Kalan, Lakhimpur Kheri, U.P.
61	M/s Indian Sucrose Ltd., Mukerian, Distt.- Hoshiarpur, Punjab
62	M/s Gobind Sugar Mills, Aira (A Division of Zuari Industries), Lakhimpur Kheri, U.P.
63	M/s Praj Industries Ltd., Hinjewadi, Pune, Maharashtra

64	M/s Dalmia Bharat Sugar & Ind. Ltd., Unit – Nigohi, Shahjahanpur, U.P.

♣ ANALYTICAL SERVICES:

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

1	M/s The Ganga KisanSahakari Chini Mills Ltd, Unit- Morna, Muzaffarnagar, U.P.
2	M/s Dhampur Bio Organics Ltd, Unit -Mansupur, Muzaffarnagar, U.P.
3	M/s Kisan Sahkari Chini Mills Ltd, Unit- Semikhera, Bareilly, U.P.
4	M/s The Kisan Sahkari Chini Mills Ltd, Unit- Kaimganj, Farrukhabad, U.P.
5	M/s Magadh Sugar & Energy Ltd, Unit- Narkatiaganj, West Champaran, Bihar
6	M/s Bajaj Hindustan Sugar Ltd, Unit- Gangnauli, Saharanpur, U.P.
7	M/s The KisanSahkari Chini Mills Ltd., Unit-Mahmudabad (Oudh), U.P.
8	M/s Doon Valley Distillery, Dehradun, U.K.
9	M/s Magadh Sugar & Energy Ltd., Unit- New Swadeshi, West Champaran, Bihar
10	M/s HPCL Biofuels Ltd., Unit- Sugauli, East Champaran, Bihar
11	M/s The Kisan Sahkari Chini mills Ltd., Saharanpur U.P.
12	M/s KSCM Ltd., Unit- Powayan, Shahjahanpur, U.P.
13	M/s HPCL Bio-Fuels, Unit- Lauriya, West Champaran, Bihar
14	M/s Wave Sugars Industries Ltd., Unit- Bijnor, U.P.
15	M/s The Nakodar Coop. Sugar Mills Ltd., Unit- Nakodar, Jalandhar, Punjab
16	M/s The KSCM Ltd., Unit- Sathiaon, Azamgarh, U.P.
17	M/s The SeksariaBiswan Sugar Factory, Sitapur, U.P.
18	M/s Dhampur Biofuels Ltd, Sugar Unit- Asmoli, Sambhal, U.P.
19	M/s Dhampur Biofuels Ltd., Sugar Unit- Meerganj, Bareilly, U.P
20	M/s Triveni Industries Ltd., Sugar Unit – Khatauli, Muzaffarnagar, U.P.
21	M/s Triveni Engineering & Industries Ltd., Sugar Unit- Chandanpur, Amroha, U.P.
22	M/s Balrampur Chini Mills Ltd., Sugar Unit – Akbarpur, Ambedkarnagar, U.P.
23	M/s Bajaj Hindusthan Sugar Ltd., Sugar Unit – Maqsoodapur, Shahjahanpur, U.P.
24	M/s Triveni Engineering & Industries Ltd., Sugar Unit- Sabitgarh, Bulandshahar, U.P.
25	M/s LH Sugar Factory Ltd., Sugar Unit- Pilibhit, Pilibhit, U.P.
26	M/s Magadh Sugar & Ind. Ltd., Sidhawalia, (Unit of Bharat Sugar Mills), Gopalganj, Bihar
27	M/s Avadh Sugar & Energy Ltd., Sugar Unit – Seohara, Bijnor, U.P.
28	M/s Magadh Sugar & Energy Ltd., Sugar Unit- Narkatiaganj, West Champaran, Bihar
29	M/s Kisan Sahkari Chini Mills Ltd, Unit- Sultanpur, U.P.
30	M/s Magadh Sugar Works & Energy Ltd., Unit- Sidhawalia, Gopalganj, Bihar
31	M/s Triveni Engineering & Industries Ltd, Unit- Raninangal, Moradabad, U.P.
32	M/s Dhampuri District Cooperative Sugars Mills Ltd., Dhampuri, Tamil Nadu

33	M/s Shri ShantTukaramSahkariSakkarKarkhana, Pune, Maharashtra
34	M/s Magadh Sugar & Energy Ltd., Unit- Hasanpur, Samastipur, Bihar
35	M/s GM Sugar & Energy Ltd., Khangur, Karnataka
36	M/s Avadh Sugar Energy Ltd., Unit- Rosa, Sahjahapur, U.P.
37	M/s Balrampur Chini Mills Ltd., Unit- Balrampur, Distt.- Balrampur, U.P.
38	M/s Gobind Sugars Mills Ltd., Unit- Aira Estate, LakhimpurKheri, U.P.
39	M/s Rana Sugar Mills Ltd., Moradabad, U.P.

♣ OUR OTHER ACTIVITIES:

1. National Sugar Institute, Kanpur continued its **"Swachhata Campaign"** within and beyond institute campus. Focusing of one personal hygiene, distribution of toothpaste, tooth brush, bath soap and towels was made by institute to the students of junior classes at Ram Krishna Mission. The students were also educated on importance of personal hygiene.

2. National Sugar Institute, Kanpur developed low cost and environment friendly technology for treatment of waste waters from sugar industry. The technology developed uses water hyacinths to purify the water employing phytoremediation principle in combination with tertiary treatment units.

3. National Sugar Institute, Kanpur helped M/s Wave Sugar Industries Ltd., Unit – Dhanaura Mandi to conceptualize and operate their Integrated Sugar Refinery with 30% on cane steam consumption using **"Mechanical Vapour Recompression System"** & carrying out other modifications including installation of Filtrate Clarification System.

4. Director, National Sugar Institute, Kanpur, delivered lecture on the topic **"Towards Self Reliance for Sustainability of Indian Sugar Industry- Re-orienting towards Health & Energy"** on 2nd February 2023 at Belagavi organized by M/s Shiv Shakti Sugars Ltd. under the auspices of KLE Group, and presented views on production of **"Healthier Sugars", "Green Energy" and other "Value Added Products".**

5. Statue of **Swami Vivekananda** unveiled at National Sugar Institute, Kanpur by Swami Atmashradhananda, Head, Ramkrishna Mission Ashram, Kanpur on 7th February 2023. Teachings of Swami Vivekananda have also been displayed around the statue to spread them among the students and staff.

6. Director, National Sugar Institute, Kanpur was honored for his exemplary contribution to sugar industry by **"UP Sugar Mills Association"** on the occasion of 120 years of sugar industry in Uttar Pradesh.


7. Director National Sugar Institute, Kanpur & other faculty members of the institute attended the XXXI- ISSCT Congress at Hyderabad which was being attended by over 500 delegates from 38 countries. Director, NSI presented paper on **"Bio-ethanol- The Savior of Indian Sugar Industry"** on 20th February 2023 & addressed Plenary Session of XXXI ISSCT Congress was held at Hyderabad on the topic **"Importance of Diversification & Integrations in Indian Sugar Industry"**


8. Director National Sugar Institute, Kanpur conferred **"Excellence Award"** during the XXXI Congress of International Society of Sugar Cane Technologists held at Hyderabad from 20th - 23rd February 2023. The award was given by Dr. Jean Claud Autrey, General Secretary, and International Society of Sugar Cane Technologists.

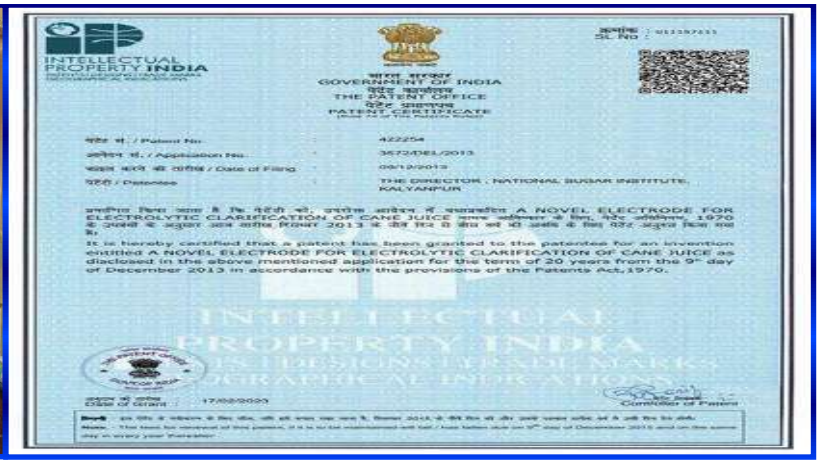

9. **"Swachhata Pakhwada"** was organized at National Sugar institute, Kanpur from 16th-28th February 2023 to create awareness amongst students. During the Pakhwada students of primary school were made aware about the importance of **"Personal Hygiene"** and distribution of tooth brush, tooth paste and soaps etc. by the institute. Institute also organized

"Tree plantation" & conducted "Essay Comptetion" for the students of institute under the Swachhata Pakhwada activities.


10. Director, National Sugar Institute, Kanpur had a meeting on 25th February 2023, with Shri Charan Jeath Singh, Hon'ble Minister for Sugar Industry & Multi Ethnic Affair, Fiji for conducting customized training programmes for their in-service sugar industry personnel. He had meetings with officials of other countries, Cuba, Belgium, Germany and Phillipines etc. on collaborative work.



11. National Sugar Institute, Kanpur got another patent for developing technology for "**Electrolytic Clarification of Sugarcane Juice"** using the conducting polymer electrode. The technology has been developed by Dr. Sudhanshu Mohan, Scientific Officer of Physical Chemistry division. He developed novel electrode and used special type of cell, having a thin layer of poly pyrrole on the surface of graphite.

12. **"NATIONAL SCIENCE DAY-2023"** was celebrated at the National Sugar Institute, Kanpur, on the theme **"Global Science for Global Well Being"** on 28th February 2023.

13. National Sugar Institute, Kanpur organized a brain storming session to celebrate **"Women's Week"** under the theme **"Innovation and technology"** for gender equality on 6th March, 2023. Members of **"Jyoti Mahila Samiti"** and **"Khushhal Betiyan, Khushhal Samaaj"** were felicitated for their extraordinary work for helping the girls of weaker sections and making them self dependable.

14. हिंदी महोत्सव के दौरान राष्ट्रीय शर्करा संस्थान को राजभाषा नीति के उत्कृष्ट कार्यान्वयन के लिए दिनांक 13 मार्च 2023 को **"प्रथम पुरुस्कार"**, सचिव (खाद्य एवं सार्वजनिक वितरण) भारत सरकार द्वारा प्रदान किया गया।

15. Director, NSI, Kanpur, attended function organized by Regional Agmark Laboratory as Chief Guest on the occasion of **"International Consumer Rights Day"** on 15th March 2023.

Addressed on the theme **"Empowering Consumers through clean energy transition"**. Role of Sugar Industry and contribution of N.S.I. was also highlighted.


16. Maize is going to become an important crop in pursuit of boosting ethanol production. So for the benefit of the farmers, booklets on disease and pest management in Maize crop were released by National Sugar Institute, Kanpur on 23rd March 2023. Booklets on potential new sugarcane varieties and disease & pest management in sugarcane crop were also released.

17. संस्थान की राजभाषा कार्यान्वन समिति की त्रैमासिक बैठक दिनांक 17 मार्च 2023 को संपन्न हुयी जिसमें हिंदी भाषा को बढ़ावा देने के विषय में वार्ता की गयी।


18. Republic Day Celebrated at National Sugar Institute, Kanpur. On this day, awards were given to the winners of competitions held during "Swachhta Pakhwara", "Vigilance Awareness Week" and "Hindi Pakhwara". Director, NSI took the guard of honor and addressed the staff and students.



19. Statue of **"Goddess of Knowledge-Maa Saraswati"** unveiled at the institute on Republic Day by the Director, NSI.



20. Renovated Laboratory for **"Alcohol Technology"** course was inaugurated on 27th March 2023 by Shri Narendra Mohan, Director, NSI and Ms. Jyotsna Gupta, Deputy Secretary (Administration) Government of India.


XXXXXX

♣ HAPPENING IN THE SUGAR INDUSTRY:

Karnataka: Mysore Petro Chemicals plans to set up ethanol unit:
In a bid to boost ethanol production in India, Mysore Petro Chemicals is mulling to set up a grain-based ethanol unit with a capacity of 400 klpd (Kilo Litres Per Day) at Hegasanahalli village in Raichur district of Karnataka.

UP govt to equip 77 cooperative sugar mill societies with tractors:
The Uttar Pradesh government will be providing heavy-duty tractors of 50 to 55 horsepower to 77 cooperative and sugar mill societies to help them mechanize the cane cultivation operations, reports The Times of India.

Farmers demand to hike cane price to Rs 450 per quintal:
Saharanpur, Uttar Pradesh: Sugarcane farmers under the banner of Bhartiya Kisan Union Tomar group have demanded the government to hike sugarcane price to Rs 450 per quintal, reports Live Hindustan.

Farmers have choice of three new cane varieties:
Roorki: The most popular sugarcane variety 0238 has been more prone to the red rot disease which has increased the worry of sugarcane farmers. The variety is more prone to red rot from last year. Sugar mills have banned the crushing of cane infected with red rot.

Farmers urge Governor to intervene on sugarcane price issue:
Mysuru: Sugarcane farmers under the banner of Karnataka Rajya Raitha Sangha (KRRS) met Governor Thaawarchand Gehlot and urged him to intervene for a higher State Advisory Price (SAP) for sugarcane, reports The Hindu.

एथेनॉल से चलने वाली कार भविष्य की कार है- मुख्यमंत्री योगी आदित्यनाथ ::
उत्तर प्रदेश शुगर मिल्स एसोसिएशन ने शुक्रवार को यहां इंदिरा गांधी प्रतिष्ठान में आयोजित एक औपचारिक समारोह में चीनी उद्योग के 120 साल पूरे होने का जश्न मनाया। समारोह की अध्यक्षता मुख्यमंत्री योगी आदित्यनाथ ने की। एसोसिएशन के सदस्यों ने कहा कि देवरिया जिले के प्रतापपुर क्षेत्र में चीनी मिल प्रदेश में स्थापित होने वाली पहली चीनी मिल है। इस अवसर पर, मुख्यमंत्री ने टोयोटा मोटर्स द्वारा प्रदर्शित एथेनॉल ईंधन कारों के दो ब्रांडों का अनावरण किया और इसे भविष्य की कारें कहा। गन्ना मंत्री लक्ष्मी नारायण चौधरी और उनके डिप्टी संजय सिंह गंगवार भी मौजूद थे।

Government committed to reviving closed sugar mills: Chief Minister Nitish Kumar:
Chief Minister Nitish Kumar said that the state government is committed to the welfare of the sugarcane farmers and will take steps to revive the closed sugar mills, reports PTI.

Sugar mills should produce ethanol directly from sugarcane juice, says Nitin Gadkari:
Private and cooperative sugar mills should produce ethanol directly from cane juice, appealed Union Road, Transport and Highway minister Nitin Gadkari, reports UniIndia. Addressing a function at Ashta in Sangli district, Gadkari appealed to the sugar mills to increase ethanol production as it is becoming the fuel of the future.

Dr. Bakshi Ram gets Padma Shri award:
Gurugram-based agro scientist has been chosen for the Padma Shri award for his work in the field of sugarcane sector and developing high-yielding variety. Dr. Bakshi Ram has played a major role in developing the sugarcane variety CO-0238 which occupies over 70% of the sugarcane area in Northern India.

Assam's biorefinery unit will produce bioethanol from bamboo by October:
According to the Rameswar Teli, Minister of State for Petroleum and Natural Gas, the country's first biorefinery unit for producing bioethanol from bamboo is expected to be ready in Assam by October, reports The Hindu.

Red rot attacks sugarcane crops in Parsa and Bara regions of Nepal:
Parsa: Sugarcane crops in Parsa and Bara region have been affected by the red rot resulting in the lowering of income of the farmers in the region, reports Kathmandu Post.

Akhilesh Yadav attacks UP government over pending cane dues:
Lucknow: Sugarcane farmers are not getting the cane dues in time, said Samajwadi Party president Akhilesh Yadav, reports Hindustan Times. He has released a press statement stating that the state government is not taking care of the farmers.

Molasses business becomes brisk as winter begins in Nepal:
Kathmandu [Nepal], January 4 (ANI): With the fall in mercury, Nepal prepares to celebrate the season with the sweetener, molasses. As the season kicks in, Anish Maharjan and his family members and workers gets busier than usual.

छत्तीसगढ़ का पहला 'पीपीपी' एथेनॉल प्लांट अप्रैल में शुरू होने की उम्मीद:
रायपुर छत्तीसगढ़ के कवर्धा : में इस साल अप्रैल से एथेनॉल प्लांट शुरू होने की उम्मीद है, और पीपीपी मॉडल पर बनने वाला यह प्रदेश का पहला एथेनॉल प्लांट होगा। राज्य सरकार के मुताबिक भोरमदेव चीनी मिल के पास स्थित प्लांट में शुरू में प्रतिदिन 80 किलो लीटर एथेनॉल का उत्पादन किया जाएगा। इसके लिए ग्लोबल टेंडर के बाद भोरमदेव कोऑपरेटिव शुगर फैक्ट्री और एनकेजे बायोफ्यूल के बीच करार हुआ है।

Nigeria increasing revenue through sugar production:
Nigeria is successfully increasing its revenue by focusing on the production of sugar.The 10-year sugar master plan that continued from the 2012-22 period helped the country save $350 million in foreign reserves annually and generated 110,000 direct and indirect jobs in the sugar sector.

Sugar output in Philippines likely to be lower in 2023: SRA:
Sugar output in the Philippines for the ongoing crop year is likely to be lower than estimates, said the Sugar Regulatory Administration (SRA) board and stated that the shortfall will be addressed by importing the required amount of sugar, reports Reuters.

Ethanol utilization in Brazil likely to increase by 5.4% in 2023: StoneX:
Sugarcane production in Brazil is likely to increase this year with more cars using ethanol than last year, said broker and analyst StoneX, reports Reuters. As per the report of StoneX, biofuel use in Brazil is likely to grow 5.4% from 2022 to 16.4 billion liters.

Brazil to produce six billion liters of corn ethanol in 2023/2024:
Sao Paulo: For the 2023/24 season Brazil is expected to produce six billion liters of corn ethanol, an increase of 36.7% over the last season, said trade group Unem, reports Nasdaq. As per the data, ethanol production using corn in Brazil continues to increase even during the economic downturn during the pandemic as the demand for cleaner alternative fuel increases.

EU sugar output forecast cut by S&P Global for 2023/24:
London: The forecast for 2022/23 sugar output in the European Union plus the United Kingdom has been cut by 570,000 tonnes to 16.8 million by the S&P Global Commodity citing the reason for the ban on pesticides, reports Reuters. It still expects growth of 1 million tonnes versus the 2022/23 sugar crop.

गांव में एथेनॉल पंप लगे तो बदल सकती है पूरी अर्थव्यवस्था: नितिन गडकरी:
केंद्रीय सड़क और परिवहन मंत्री नितिन गडकरी ने को उत्तर प्रदेश के मुख्यमंत्री योगी आदित्यनाथ की राज्य की कृषि और उद्योग में सुधार के प्रयासों के लिए प्रशंसा की और कहा कि योगी आदित्यनाथ की दृष्टि उत्तर प्रदेश लोगों की धारणा को बदल देगी।

Pakistan: Sugar hoarded in 8000 bags recovered:
Muzaffargarh, Pakistan: In a joint raid launched by the local administration and a special branch at a private godown, the teams recovered at least 8,000 bags of sugar.

टोयोटा इंडिया और ISMA मिलकर ऑटोमोटिव उद्योग में एथेनॉल इस्तेमाल को बढ़ावा देंगे:
लखनऊ: टोयोटा किर्लोस्कर मोटर ने देश में एथेनॉल इस्तेमाल को बढ़ावा देने और जागरूकता पैदा करने के लिए इंडियन शुगर मिल्स एसोसिएशन (ISMA) के साथ एक समझौता ज्ञापन (MoU) पर हस्ताक्षर किए। उत्तर प्रदेश राज्य में पहली चीनी मिल की स्थापना के 120 साल पूरे होने पर एक समारोह में उत्तर प्रदेश के मुख्यमंत्री योगी आदित्यनाथ, अन्य प्रमुख सरकारी अधिकारियों और गणमान्य व्यक्तियों की उपस्थिति में समझौता ज्ञापन का आदान-प्रदान किया गया। इस अवसर पर वरिष्ठ उपाध्यक्ष और मुख्य संचार अधिकारी सुदीप एस. दलवी उपस्थित थे। इवेंट में, ओईएम ने अपने फ्लेक्सी-फ्यूल मजबूत हाइब्रिड इलेक्ट्रिक वाहन के साथ-साथ एक अनुभवात्मक ड्राइव का प्रदर्शन किया।

अमेरिकी सीनेटर चाहते है पूरे वर्ष एथेनॉल के उच्च मिश्रण के साथ गैसोलीन की बिक्री की अनुमति:
वाशिंगटन : अमेरिकी सीनेटरों ने मंगलवार को एक द्विदलीय विधेयक को फिर से पेश किया, जिसमे पूरे वर्ष एथेनॉल के उच्च मिश्रण के साथ गैसोलीन की बिक्री की अनुमति मांगी है। नेब्रास्का से रिपब्लिकन सीनेटर देब फिशर और मिनेसोटा से डेमोक्रेटिक सीनेटर एमी क्लोबूचर का तर्क है कि, E15 की विस्तारित बिक्री, या 15 प्रतिशत एथेनॉल युक्त ईंधन, गैसोलीन की कीमतों में कमी लाएगा और विदेशी तेल पर अमेरिकी निर्भरता को कम करेगा। E15 की साल भर की बिक्री जैव ईंधन उद्योग और मकई किसानों द्वारा लंबे समय से मांगी गई है, जो बढ़े हुए बाजार से लाभान्वित होंगे।

देश में एथेनॉल पंप लगाने की नीति पर काम शुरू: नितिन गडकरी:
नई दिल्ली: सीआईआई द्वारा आयोजित जैव-ऊर्जा शिखर सम्मेलन में बोलते हुए केंद्रीय सड़क परिवहन और राजमार्ग मंत्री नितिन गडकरी ने कहा, केंद्र सरकार देश में एथेनॉल पंप स्थापित करने की नीति पर काम कर रहा है। मैं 15 दिनों में पेट्रोलियम मंत्री से मिलूंगा ताकि एथेनॉल पंप स्थापित करने के लिए नीति बनाई जा सके। उन्होंने कहा, देश में एथेनॉल उत्पादन क्षमता बहुत बड़ी है और बांग्लादेश से भी इसकी मांग है।

भारत अपने E20 लक्ष्य की ओर तेजी से अग्रेसर:
नई दिल्ली : भारत ने बेंगलुरु में 'इंडिया एनर्जी वीक' में E20 पायलट प्रोजेक्ट लॉन्च किया, जिसके तहत पेट्रोल के साथ 20% एथेनॉल मिश्रित किया जायेगा। चले जानते है एथेनॉल सम्मिश्रण और भारत E20 लक्ष्य हासिल करने की तेजी से बढ़ रहा है।एथिल अल्कोहल या इथेनॉल (C2H5OH) एक जैव ईंधन है ,जो स्वाभाविक रूप से चीनी को किण्वित करके बनाया जाता है। जबकि यह ज्यादातर गन्ने से चीनी निकालकर प्राप्त किया जाता है।इसके उत्पादन के लिए खाद्यान्न जैसे अन्य कार्बनिक पदार्थ का भी उपयोग किया जा सकता है।

भारत ऊर्जा सप्ताह में डूएल्ट बायोएनर्जी द्वारा जैव ईंधन क्षेत्र के लिए नए मानक स्थापित:
नई दिल्ली : प्रधान मंत्री नरेंद्र मोदी ने हाल ही में बेंगलुरु में भारत ऊर्जा सप्ताह 2023 के दौरान राष्ट्र के लिए महत्वाकांक्षी ई20 एथेनॉल सम्मिश्रण लक्ष्य का प्रारंभ किया। यह निर्णय भारत के नवीकरणीय ऊर्जा क्षेत्र के लिए एक प्रमुख मील का पत्थर है और इसका अर्थव्यवस्था, किसानों और पर्यावरण पर व्यापक सकारात्मक प्रभाव पड़ेगा।

उत्तर प्रदेश के गन्ना किसानों हेतु 05 नई गन्ना किस्में स्वीकृत:
दिनॉक 25 जनवरी 2023 को गन्ना आयुक्त कार्यालय, डॉलीबाग, लखनऊ में प्रदेश के आयुक्त, गन्ना एवं चीनी, श्री संजय आर. भूसरेड्डी की अध्यक्षता में बीज गन्ना एवं गन्ना किस्म स्वीकृति उप समिति की बैठक आयोजित हुई। बैठक में उ.प्र. गन्ना शोध परिषद्, शाहजहॉपुर द्वारा विकसित मध्य देर से पकने वाली किस्में को.शा. 16233 एवं को.शा.15233 के आंकड़ें प्रस्तुत किये गये। प्रस्तुत आंकड़ों पर अध्यक्ष एवं समिति के सभी सदस्यों द्वारा गहन विचार-विमर्श के बाद सर्वसम्मति से इन दोनों किस्मों को व्यावसायिक खेती हेतु सम्पूर्ण उ.प्र. के लिए स्वीकृत किया गया। को.शा. 16233 की औसत उपज 87.65 टन प्रति हेक्टेअर तथा पोल इन केन औसत 14.07 प्रतिशत है। को.शा.15233 की औसत उपज 93.48 टन प्रति हेक्टेअर तथा पोल इन केन औसत 13.85 प्रतिशत है।

छत्तीसगढ़ का पहला 'पीपीपी' एथेनॉल प्लांट अप्रैल में शुरू होने की उम्मीद:

रायपुर: छत्तीसगढ़ के कवर्धा में इस साल अप्रैल से एथेनॉल प्लांट शुरू होने की उम्मीद है, और पीपीपी मॉडल पर बनने वाला यह प्रदेश का पहला एथेनॉल प्लांट होगा। राज्य सरकार के मुताबिक भोरमदेव चीनी मिल के पास स्थित प्लांट में शुरू में प्रतिदिन 80 किलो लीटर एथेनॉल का उत्पादन किया जाएगा। इसके लिए ग्लोबल टेंडर के बाद भोरमदेव कोऑपरेटिव शुगर फैक्ट्री और एनकेजे बायोफ्यूल के बीच करार हुआ है।

महाराष्ट्र में सूखे की संभावना: उपमुख्यमंत्री ने कैबिनेट को किया अलर्ट:
मुंबई : द इंडियन एक्सप्रेस में प्रकाशित खबर के मुताबिक, महाराष्ट्र के उपमुख्यमंत्री देवेंद्र फडणवीस ने राज्य में सूखे की संभावना जताई है। मंगलवार को कैबिनेट की बैठक में फडणवीस ने कहा कि, इस साल प्रशांत महासागर में अल नीनो की घटना विकसित होने की संभावना है, जो मानसून की बारिश को प्रभावित कर सकती है। मानसून की बारिश को प्रभावित होने से राज्य में सूखे की स्थिति बन सकती है। फडणवीस की टिप्पणी पानी की उपलब्धता के साथ-साथ सूखे के कारण कृषि पर संभावित प्रभाव को कम करने के लिए प्रशासन को अलर्ट करने के लिए की गई है।

एथेनॉल-मिश्रित पेट्रोल से20,000 करोड़ से अधिक की विदेशी मुद्रा की बचत:
एथेनॉल आपूर्ति वर्ष 2021-22 (दिसंबर 2021 से नवंबर 2022) के दौरान पेट्रोल में एथेनॉल सम्मिश्रण से विदेशी मुद्रा में 20,000 करोड़ से अधिक की बचत हुई है। राज्यसभा में केंद्रीय पेट्रोलियम और प्राकृतिक गैस राज्य मंत्री द्वारा उपलब्ध कराए गए आंकड़ों के अनुसार, सार्वजनिक क्षेत्र की तेल विपणन कंपनियों ने 2021-22 के दौरान एथेनॉल सम्मिश्रण के कारण 433.6 करोड़ लीटर पेट्रोल की बचत की है।

उत्तर प्रदेश के एथेनॉल उत्पादन में बढोतरी:
लखनऊ: पिछले एक साल में अक्षय ईंधन का उत्पादन करने वाली डिस्टिलरीज बडी संख्या% के कारण चालू वित्त वर्ष के दौरान उत्तर प्रदेश का एथेनॉल उत्पादन 135 करोड़ लीटर के आंकड़े को पार करने की संभावना है। आपको बता दे की, केंद्र सरकार द्वारा निर्धारित 10% एथेनॉल सम्मिश्रण लक्ष्य हासिल करने वाला उत्तर प्रदेश पहला राज्य है। पिछले वित्त (वर्ष(2021-22) के दौरान राज्य में डिस्टिलरीज ने 97 करोड़ लीटर एथेनॉल का उत्पादन किया था।

XXXXXX

♣ **RESEARCH ARTICLE:**

AUGMENTATION OF ALCOHOL BASED HAND SANITIZER PRODUCTION CAPACITIES IN INDIA- A SUCCESS STORY

by

Narendra Mohan[#] & Vishnu Prabhakar Srivastava[*]

*# National Sugar Institute, Kanpur, India, * University of Allahabad, Prayagraj, India*

E-mail :director.nsi@gov.in

Abstract

The emergence of the novel virus, SARS-CoV-2 (COVID-19), posed unprecedented challenges to publichealth around the world. At the time of its spread, strategies to deal with COVID-19 were purely supportive and preventative,aimed at reducing transmission. An effective and simple method for reducing transmission of infections inpublic or healthcare settings was considered to be hand hygiene. With the spread of COVID-19, people across the globe continued purchasing record amounts of hand hygience products, including soap and hand sanitizers. One of the precautionary measures during the COVID-19 pandemic was to use an alcohol-based hand sanitizer frequently to disinfect hands offering a viable alternative where water sources were unreliable or insufficient. The WHO and Government of Indiatook initiatives to make people aware of hand hygiene and the risks associated with not maintaining the hygiene level of hands during this period. Since, the demand was enormous in comparison to production facilities, the paper provides details of action taken by Department of Food & Public Distribution (DFPD), Government of India on the process of producing, distributing the alcohol-based hand sanitizer across the country during the COVID-19 pandemic.

KEYWORDS: Hand hygiene; SARS-CoV-2; COVID-19; Resource-Limited Setting, Ethanol

Introduction:

The emergence of novel pathogens, bacterial or viral, has always posed serious challenges to public health around the globe. One of these dangerous pathogens is "severe acute respiratory syndrome coronavirus 2" or SARS-CoV-2, more commonly known for causing coronavirus disease 2019 or COVID-19, which was declared a global pandemic by the World Health Organization in early 2020. Reported to be having its origin at China, the emergence of this pandemic rose to an extent of global public health concern and led to extensive use of hand disinfectants given its contagious nature. Studies suggested that SARS-CoV-2 could persist and remain infectious on surfaces for up to several days. One of the study revealed that transmission of SARS-CoV-2 was possible in the form of aerosol and fomite, and the virus could remain viable and infectious in aerosols for hours and on surfaces up to several days, depending on the inoculum shed.

Hence, it was found essential to interrupt the transmission chain of the virus through contact isolation and strict infection control tools. Apart from maintaining social distancing following face masks, appropriate hand hygiene was considered to be of utmost importance as hands contaminated from direct contact with patients, accelerated the transmission and spreading of the disease. The

studies on SARS-CoV outbreak settings showed that providing efficient hand washing facilities reduced transmission. Given the dangers imposed by this disease, based on WHO recommendations, Ministry of Health in India promoted and encouraged hand hygiene through handwashing or use of hand sanitizer (1-5).

Types of Hand Sanitizers, ingredients, efficacy, mechanism of action and recommended formulation:

Hand sanitizer can generally be categorized into two groups: alcohol-based (ABHS) or alcohol-free (NABHS) (Figure 1).

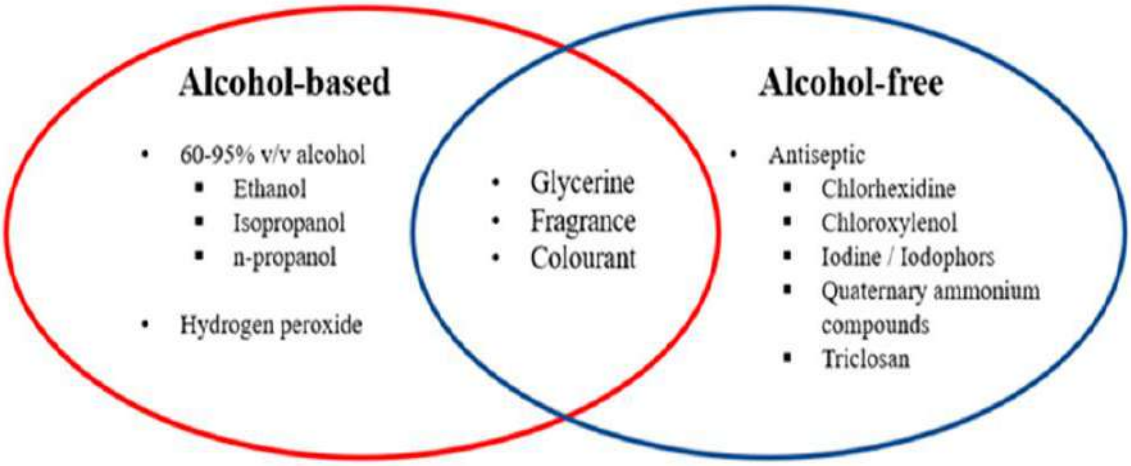


Figure 1: List of alcohol, non-alcohol compounds, and commonly used excipients in hand sanitizers.

The common mode of delivering the active ingredient in hand sanitizers, whether ABHS or NABHS, is liquid, foams, gels,and sprays (6).

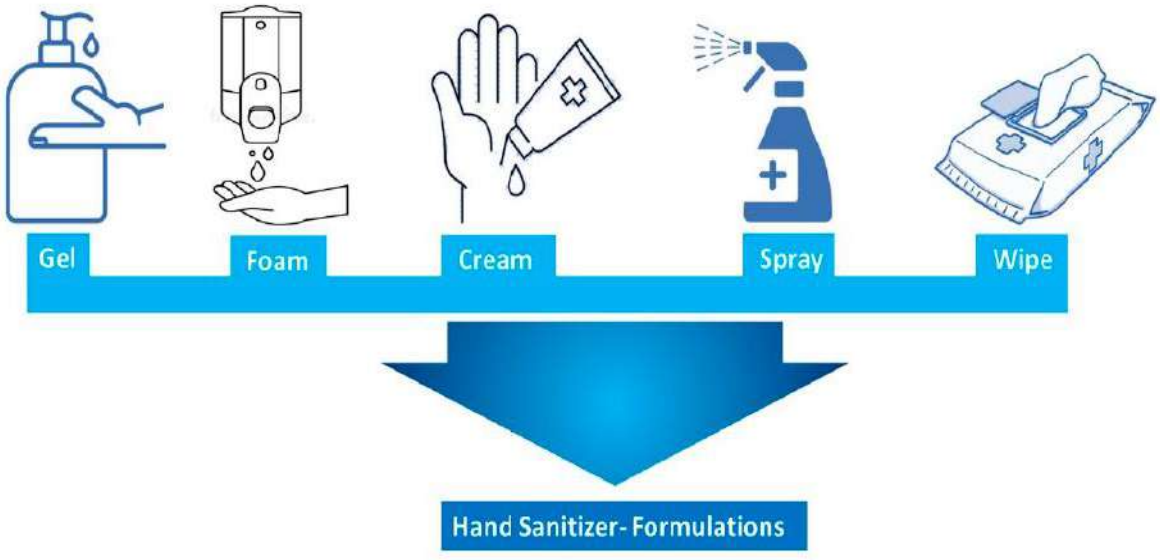


Figure 2: Various types of hand sanitizer dosage forms

There is limited research in literature on comparing the efficacy of various sanitizer delivery systems on virucidal efficacy. The reported studies suggest that there could be some varying differences in efficacy due to the method of mechanical friction that could contribute tophysical removal of pathogens, but it needs further study to compare the efficacy between the various hand sanitizer delivery systems. The most common primary active ingredient of NABHS, benzalkonium chloride, a quaternary ammonium, is a commonly used disinfectant. Disinfectants with benzalkonium chloride are generally less irritating than those with alcohol, though more recent evidence suggests it may cause contact dermatitis more often than previously thought. Although ABHS are less user-friendly on skin than NABHS, ABHS predominate in health care settings given their low cost and efficacy of reducing infectious transmission.

Hand sanitizer preparations containing alcohol can include alcohol (ethanol), isopropyl alcohol, n-propanol, or a combination of these, water, as well as excipients and humectants. Solutions containing alcohols between 60% and 95% in volume are most prevalent and effective. Humectants are included to prevent skin dehydration and excipients help stabilize the product as well as prolong the time needed for the evaporation of alcohol, thereby increasing its biocidal activity. Alcohols have broad-spectrum antimicrobial activity against most vegetative forms of bacteria (including Mycobacterium tuberculosis), fungi, and enveloped viruses (human immunodeficiency virus [HIV] and herpes simplex virus). However, they are ineffective against bacterial spores that are found most commonly in raw materials. The addition of hydrogen peroxide (3%) may be a solution to this issue.Keeping hands clean is a fundamental and essential step to avoid getting sick while limiting the transmission of germs to others. The hand washing is recommended with soap and water whenever possible as it remarkably reduces the amount of all types of microbes and dirt on the skin surface.

Both the soaps and alcohol-based sanitizers work by dissolving the lipid membranes (viral envelope) of microbes, thereby inactivating them. Thus, the sanitizer serves as an alternative when the soap and water are not readily available. While less is known regarding the specific mechanism of action of alcohols agents against viruses compared to bacteria, it is understood that ethanol has a broader and stronger virucidal activity than propanol's or isopropanol. In fact, concentration of ethanol in the range 60-85% has shown to be highly effective against enveloped viruses and thus is effective against the majority of clinically relevant viruses.

In both healthcare and community settings, ethanol-based hand sanitizers have become a popular alternative to the traditional hand washing with soap and water. Ethanol-based hand sanitizers have been utilized as an effective alternative to hand washing to prevent the spread of bacterial and viral infections, making it one of the essential protocols in decreasing healthcare burden.WHO recommended ethanol-based sanitizer formulationscomprises ethanol 80% v/v, glycerol 1.45% v/v, hydrogen peroxide (H_2O_2) 0.125% v/v. And in order to make one liter hand sanitizer, one has to pour following ingredients into a 1000 ml graduated flask followed by top up the flask to 1000 ml with distilled water or water that has been boiled and cooled; shake the flask gently to mix the content:

a. ethanol 96% v/v, 833.3 ml; b. H_2O_2 3%, 41.7 ml; c. glycerol 98%,14.5 ml

When the concentration of ethanol in the starting ingredient is not exact, the calculation should be adjusted accordingly to ensure a final concentration of at least 80% ethanol. The amount of ethanol needed is to be calculated by using the following equation:

$$\frac{(\text{final \% alcohol}) \times (\text{final volume of preparation})}{(\text{starting \% alcohol})} = \text{volume of starting ingredient required}$$

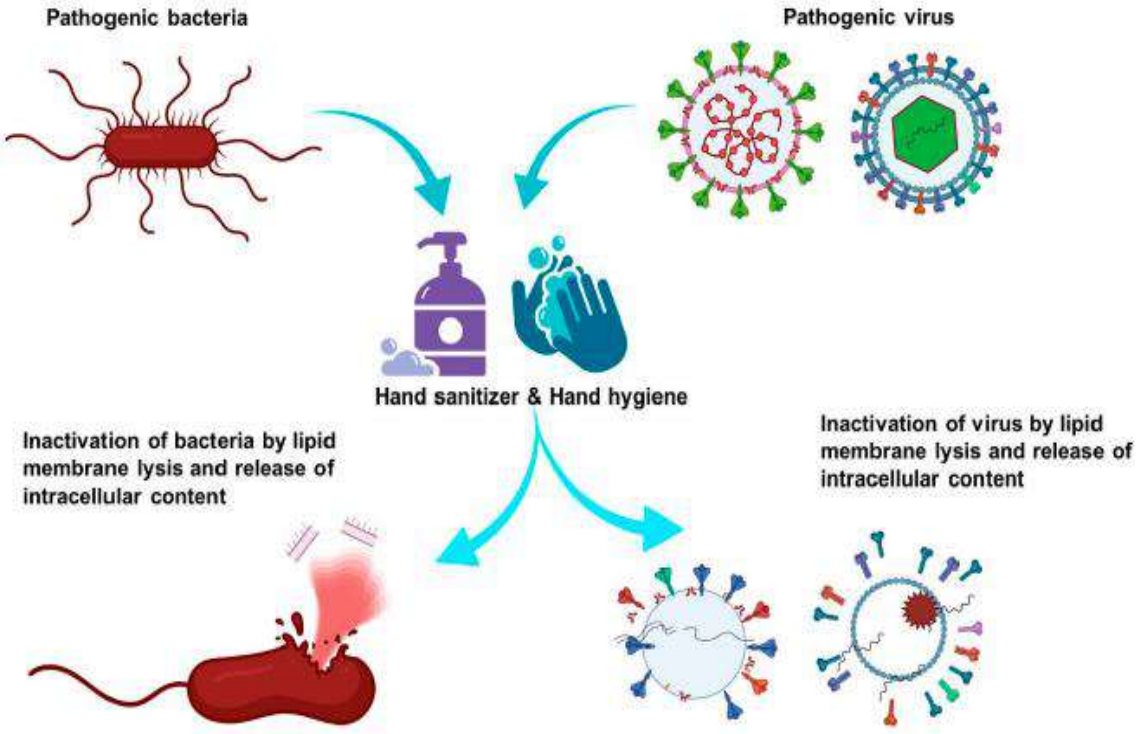


Figure 3: Illustration of alcohols antiviral mechanism.

Implementation of Ethanol Based Hand Sanitizer Production:

In India, as coronavirus threat spread, the demand for hand sanitizers sharply increased. At the very start of the Covid pandemic i.e. in March 2020, it became very clear that the alcohol based hand sanitizer was going to play a pivotal role in the fight against Covid-19. However, it was also noted with concern that the production capacity of alcohol based hand sanitizer in India was almost negligible and would not be able to cater the huge upcoming demand. The price of alcohol based hand sanitizer in the market was ruling as high as Rs 700 only for 500 ml of the bottle and even at this high rate the sanitizer was not available in required quantities. Prior to Covid-19, the annual sale of hand sanitizers was only about 10 lakh litre per annum and was mainly used in the hospitals.

Keeping in view the immediate requirement of augmentation of ethanol/ethyl alcohol based sanitizer production capacity in a very short span of time and being nodal department for the production of ethanol under Ethanol Blended with Petrol (EBP) programme, the Committee of Secretaries (CoS) entrusted the task of immediate augmentation of sanitizer production capacity to Department of Food & Public Distribution (DFPD), Government of India.Once the task was entrusted, a meeting was immediately convened in DFPD under the Chairmanship of Joint Secretary (Sugar) with Sugar Mill Associations, Distillery Associations and Medical Equipment Manufacturer Associations to assess the requirements and bottlenecks in the production of hand sanitizer and to prepare a road map to

ensure smooth movement of raw material required for the production of sanitizer, as the whole country was under lockdown and movement of vehicles was highly restricted.

For production of hand sanitizer as per WHO standards(7-8), ethyl alcohol was the main constituent of hand sanitizer and being a state subject, it was under the purview of the state governments. For better synergy and coordination, Excise Commissioners/Food and Drug Authorities/Cane Commissioners of the State Governments were contacted personally and were apprised of the gravity of the situation and were taken on-board. To ensure the adequate availability of Ethyl Alcohol/ Ethanol to the manufacturers of hand sanitizer, all the State Governments/UT Administrations were requested to issue licenses to the distilleries for manufacturing hand sanitizers. It was also requested that if sufficient quantity of Ethyl Alcohol/ Ethanol or hand sanitizer was not available in that particular state, then adjoining states / UTs may be approached to ensure adequate quantity of hand sanitizer to the public and hospitals.

States were advised by the Government of India to give all necessary permissions without delay. States were also requested to waive the excise duty on ethanol/ethyl alcohol used for the purpose of making sanitizers. To ensure the sufficient availability of sanitizer in State and Central Government Hospitals and States were requested to negotiate with distilleries for supply of sanitizer in bulk to the hospitals at low rates. States were requested to dispense with the formalities for starting production of sanitizers and were requested to consider providing post facto approval for such permissions/formalities. Industry was also requested to provide hand sanitizer to state run hospitals, farmers, public places etc. at free of cost under CSR.

State Governments/ UT Administrations were also requested to exempt raw material production for hand sanitizers/ ethanol, including packing material from lockdown/ transport. To facilitate the State Governments, the contact details of office bearers of Indian Sugar Mills Association, All India Distillers Association, Association of Indian Medical Device Industry and other Associations were shared. Details of distilleries / other units, which were granted licenses for the manufacturer of sanitizer, were shared regularly with the state Governments and other stake holders so that they can remain updated. States were regularly requested to grant license to more and more distilleries. States were also requested to rope in deodorant manufacturing units, so that manufacturing of hand sanitizer can be boosted.

With the collective efforts of DFPD & State Governments along with Sugar Mill Associations, All India Distillery Associations, 912 distilleries/independent manufacturers were accorded permissions to produce hand sanitizer. To ensure availability of raw material being used for hand sanitizers, vide notification dated 19.03.2020, raw materials used for manufacture of hand sanitizer were declared as essential commodity. To ensure the availability of sanitizer at affordable rates, the retail prices of hand sanitizer were also fixed by DoCA vide Notification dated 21.03.2020. Due to these timely interventions, the rate of sanitizer came down heavily and started selling as low as Rs 150 per litre.

As a result of the collective efforts of DFPD/State Governments, the production capacity of hand sanitizer was enhanced from meagre 10 lakh litre per annum to more than 30 lakh litre per day in such a short span of time. Then, India also exporting hand sanitizer to other countries.

Education- Role of National Sugar Institute:

It was considered essential to educate the entrepreneurs and upcoming sanitizer producing units on various aspects of sanitizer production and quality control. Thus, an online workshop was organized by National Sugar Institute, Kanpur, 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. The training also included quality control procedures focusing pre-production analysis of raw material and post production analysis of produced sanitizer.

The institute also established the analytical facilities for testing ethanol based hand sanitizer and large number of ethanol based hand sanitizer samples received from different manufactures were analysed in the laboratory. This helped the sanitizer producers in quality control and providing sanitizers as per WHO standards.

Successes, Challenges and Lessons Learned:

The policing interventions and campaign taken up by the Central & State Governments, various sugar and alcohol producing organizations, NGO's etc. increased the hand hygiene compliance across various segments of the society. The success to control the Covid-19 was ascribed to availability of hand sanitizer, as hand hygiene compliance increased with the use of hand sanitizer rather than hand washing. By augmenting required supplies, publicity & trainings, an environment was created for using hand sanitizers. The regular monitoring through feedback on "Response to Covid-19" by the Government of India also enabled success of hand sanitizer. To monitor the progress and to remove hindrances in real time, social media platforms were used extensively.

During the lockdowns, ensuring availability of hand sanitizers at every place was a challenge. To ensure sufficient availability of sanitizer at all times in all parts of the country, Department of Food & Public Distribution, Government of India coordinated with all the Chief Secretaries/Administrators of States/UTs and requested them to further augment market linkages of hand sanitizer from distilleries and other units to wholesalers/retailers. With continuous feedbacks and coordination with industry and Government, reach of sanitizer to all parts of the country was ensured.

The distilleries also took real ownership of the project related to production of hand sanitizer and their distribution. Utilizing readily available WHO guidelines, undertaking training programme on virtual platform and incorporating the same, all contributed to the success of programme. However, the intervention required some initial cost with respect to purchase of bottles and dispensers and also required machinery particularly filling & sealing machines.

Due to the efforts made, within few months, production of sanitizer was enhanced considerably and the availability of sanitizer was not a problem in India. However, it was observed that though the sanitizer in bulk is available in plenty but its availability in small bottles / dispensers was still posing a problem. To overcome the problem of bottling, states were requested to accord necessary permissions, so that other industries can purchase sanitizer in bulk and bottle it as per the requirement. All the State Governments were also requested to explore the possibility of roping in bottle manufacturers, including deodorant manufacturers, to address the shortage of sanitizer bottles/ pumps.

Conclusion:

With the extraordinary efforts made by the Government, Sugar & Ethanol Industry and all other concerned, the production of hand sanitizer was made cost effective and feasible to integrate into existing operations. Development of production capacities, facilities for distribution, quality control and education, all was exemplary considering the testing times during the outbreak of pandemic.

References:

1. Coronavirus disease 2019 (COVID-19) Situation Report-101. 2020. Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200430-sitrep-101-covid-19.pdf?sfvrsn=2ba4e093_2. Accessed July 10,2020.
2. Pittet D, Allegranzi B, Boyce J. The World Health Organization guidelines on hand hygiene in health care and their consensus recommendations. Infect Control HospEpidemiol. 2009; 30: 611–622.
3. Greenaway RE, Ormandy K, Fellows C, Hollowood T. Impact of hand sanitizer format (gel/foam/liquid) and dose amount on its sensory properties and acceptability for improving hand hygiene compliance. J Hosp Infect. 2018;100: 195–201.
4. Centers for Disease Control and Prevention. Prevention of Coronavirus Disease 2019 (COVID-19). Available online: https://www.cdc.gov/coronavirus/2019-ncov/prepare/prevention.html (accessed on 8 May 2020).
5. Centers for Disease Control and Prevention. Chemical Disinfectants—Guideline for Disinfection and Sterilization in Healthcare Facilities; Centers for Disease Control and Prevention: Atlanta, GA, USA, 2016.
6. Gold, N.A.; Avva, U. Alcohol Sanitizer; StatPearls Publishing: St. Petersburg, FL, USA, 2018.
7. WHO (2010) Guide to Local Production: WHO-Recommended Handrub Formulations. Patient Safety, a World Alliance for Safer Health Care. 1-9.
8. World Health Organization. Guide To Local Production: Who-Recommended HandrubFormulations;World Health Organisation: Geneva, Switzerland, 2015.

******

♣ ABSTRACTS:

Bioenergy from Filter Cake by Sanjay Awasthi, Dr. Seema Proha & Narendra Mohan, Indian Sugar– January 2023

The most important environment challenge faced by the world is management of the waste that is generated from various agro processing industries. Now-a-day's emphasis is given on minimization of waste and revenue generation through by-product value addition. With the depleting natural resource and the increasing demand for green and clean energy is gaining momentum, there is indeed a need to look for positive alternatives that maintains the ecosystems balance and also the need of the humans without affecting the natural resources. One such rational approach towards sustainability is adoption of bio-energy systems with a vision to save fossils energy.

Problems and Challenges for Sugarcane farmers in Northern India / Sub – Tropical India -: A case study by Anshika Pandey, Sharad Babu, Lokesh Babar, *Ashok Kumar & Narendra Mohan National Sugar Institute, Kanpur, Indian Sugar – February 2023

Sugar is the second largest agro-based industry in India only next to textiles and play a very important role in the Indian economy. The industry provides employment to skilled and semi- skilled workers mostly from rural areas. Farmers at times face many problems regarding their payment and recently the dominant variety Co 0238 has got infected at their fields with insects i.e top borer and early shoot borer and most destructive disease "red rot". There is greater need for development of newer varieties and also to educate the farmers for carring out sugarcane cultivation in a scientific manner to circumvent the situation & to reduce the cost of cultivation as well.

Financial Impact of Extraneous Matter on Supply of Sugarcane to Mills by B.K. Yadav, Chief General Manager – Balrampur Chini Mills Ltd., Unit-Haidergarh, Distt.-Barabanki, Indian Sugar– January 2023

Sugarcane is a perishable raw material for sugar industry and highly susceptible to microbial contamination, it's quality start deteriorating quickly after it is harvest in the field resulting in substantial rise of dextran and gums which are harmful from process point of view. Cane juice is also an ideal media for growth of micro-organisms at atmospheric temperature. The extraneous matter reduces the crushing capacity, sucrose content and interferes with the processing of sugar factory.

Profitability and environmental implications of practice changes driven by soil health in Central and Northern Queensland, by B Nothard, C Connolly, H Bakir, M Poggio, M Thompson, MA Renouf , INTERNATIONAL SUGAR JOURNAL, JAN 2023

This work explores the economic and environmental benefits of adopting practice changes to manage soil health by examining a wider scope of practice changes related to soil health in the Herbert, Burdekin and Mackay regions. It expands on previous evaluations that considered Smartcane's Best Management Practice changes in the Wet Tropics. Economic, biophysical and farm management data before and after the practice changes were supplied by three growers from these regions.

Sampling, sample handling and sample preparation of raw sugar, white sugar, speciality sugars and plantation white sugar, by Alan Mead, INTERNATIONAL SUGAR JOURNAL, JAN 2023

Good sampling methods can reduce the sampling error, bad increase it; the contribution of sampling error to what is perceived to be analytical error is as important as any error in the analyses themselves. The ICUMSA® Referee for Sampling, Sample Handling and Sample Preparation has conducted a three-stage study to establish new sampling guidelines for crystalline and liquid sugars. The paper is a shortened version of his report for the ICUMSA® Proceedings 2021, prepared and published by Verlag Dr. Albert Bartens, detailing an experimental layout aiming to obtain an optimised way of preparing test samples from laboratory samples.

Assessment of pH control strategies to minimise sucrose losses during juice evaporation in raw sugar manufacture, by Chalani Marasinghege, DW Rackemann, WOS Doherty, INTERNATIONAL SUGAR JOURNAL, JAN 2023

During juice evaporation, sucrose loss can occur due to degradation reactions catalysed by heat, pH and other juice components. The impacts of heat and juice quality can be controlled through process and equipment design. Potential pH control strategies for juice were assessed to minimise sucrose degradation and the subsequent impacts on downstream processing during the sugar manufacturing process. These strategies were: (1) the use of reagents to improve the buffering capacity of the juice; (2) the use of neutralising alkanolamines; and (3) online pH adjustment during juice evaporation to minimise pH drop.

Projected sugar surplus in 2022/23 is growing , by FO Licht GmbH, INTERNATIONAL SUGAR JOURNAL, JAN 2023

As the world was emerging from the Covid-19 pandemic earlier this year, it was thrown off course by the Russian invasion of Ukraine. Geopolitical instability and conflicts now remain a top concern as the greatest risk to global growth over the next 12 months. Production costs are rising. We are in a totally new world, and companies are going to have to reconfigure how they think about their operations. Against this backdrop, the global sugar industry, invariably sucked in the vortex of the storm will have to manage.

Bioinformatics for sugar industry: Metabolic potentials of microorganisms in sugarcane mill mud, by Anthony G. Hay, Brayan Vilanova, Christopher Derito, Minori Uchimiya, INTERNATIONAL SUGAR JOURNAL, FEB 2023

Sugarcane mill/press mud is a nutrient-dense source of organic carbon, nitrogen, and phosphorus that is pasteurized during sugar processing. Those characteristics fit the desired product specifications for biofertilizers and biostimulants. This study reports on the predicted metabolic potential of microorganisms in sugarcane mill mud and bagasse compared to those of laboratory and industrial composts. Metabolic functions were inferred from marker (16S rRNA) gene sequence data to predict the potential gene content of the uncultured microbial community using the software PICRUSt.

Understanding the impact of improved wetting rates on the performance of Malalane mill's first and second effect evaporators, By HNP Stolz, M Wessels, INTERNATIONAL SUGAR JOURNAL, FEB 2023

The high V1 demand from the back-end refinery and striving to be more energy-efficient has initiated an investigation into the evaporator performance of the Malalane sugar mill. Numerous factors, such as sufficient steam pressure, evaporator tube cleanliness and heat transfer area, impact an evaporator's performance. However, with the wetting rates of the first-effect vessels being as low as 20 kg/h/tube, it was obvious that this problem needed to be solved first. Research has shown that an increased wetting rate improves the heat transfer coefficient, the specific evaporation rate and, therefore, the overall performance of the evaporator station.

The next-generation cane-fibre analyser, by C Henderson, DJ Patrick, E Arzaghi, GA Kent, INTERNATIONAL SUGAR JOURNAL, FEB 2023

Cane-fibre analysis plays an important role in the cane-payment system in Australia. The relationship between brix in first-expressed juice and brix in cane and the relationship between pol in first-expressed juice and pol in cane are affected by the cane-fibre content. As a result, Australian raw-sugar factories conduct cane-fibre analysis each day through the crushing season. Since the early 1990s, cane-fibre analysis has been mainly undertaken using the SRI can fibre machine.

Sugar taxes come under scrutiny as governments fight inflation, by S&P Global Commodity Insights, INTERNATIONAL SUGAR JOURNAL, FEB 2023

The increased prevalence of obesity over the past two decades in the West, in particular, has exercised policymakers. In the US, the sugar consumption trend has been downwards over the same period, as has been the case in developed economies. While a positive correlation between sugar consumption and obesity is only apparent when sugar is overconsumed, it is equally clear to nutrition researchers that obesity is a multifactorial disease.

Editor

Mahendra Kumar Yadav
Junior Technical Officer (Sugar 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