



# NEWSLETTER

**October-December  
2019**

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



During the current crushing season, India's sugar production stood at 4.58 million tonnes till December 15 which is down by about 35 per cent from the similar period of the last crushing season when it was recorded as 7.05 million tonnes. However, Mills in Uttar Pradesh, the country's largest sugar producing state, produced 2.12 million tonnes of the sugar till December 15, up from 1.89 million tonnes in the year-ago period as a result of higher recovery and also due to a week early start of

the operations for the current crushing season. As regards the country as a whole, 406 sugar mill were operational as on December 15, as against 473 mills on the year-ago same day.

The sugar scenario appears to be comparatively better during the current year looking to estimated sugar production of about 26 million tonnes with more diversion of sugar for ethanol production through various routes and expected exports of 6.0 million tonne. Institute while signing MoU with Assiut University, Egypt, also looks forward for many more collaborations with other organizations for collaborative research and extending institute's expertise on various technical matters.

**Wishing you a very happy and prosperous New Year 2020.**

**Narendra Mohan  
Director**

## FOREIGN COLLABORATIONS:

1. A six member Chinese delegation from Guangxi Sugar Industry Development Office, China visited the institute on 11<sup>th</sup> December, 2019. Delegation took keen interest in institute activities and extended invitation to visit Chinese sugar factories for efficiency improvement.



## SEMINAR ORGANIZED/PARTICIPATED:

1. Dr. Ashutosh Bajpai, Prof. Sugar Technology & Dr. Ashok Yadav, Asstt. Prof. Agri. Chemistry attended the Seminar on **“Sugarcane – Is there any alternative?”** along with Prof. Narendra Mohan, Director on 11<sup>th</sup> November, 2019 at IISR, Lucknow.

2. Dr. Ashok Yadav, Asstt. Prof. Agri. Chemistry & Dr. Lokesh Babar, Jr. Scientific Officer Agri. Chemistry attended one-day National Seminar on **“Sugarcane Challenges and Future Strategies for Doubling Farmers Income”** on 11<sup>th</sup> November, 2019 at IISR, Lucknow.

3. Shri Brajesh Singh, Technical Officer (Inst.) & Shri N. K. Venkatesh attended a National Seminar on **“IT Security”** on 29<sup>th</sup> November, 2019 at Kanpur, U.P.

4. Institute participated as event partner in the two days National Seminar on **“Ethanol Production from Different Feed Stocks Including Molasses, Sugarcane Juice, Grain, Sweet Beet and other Cellulosic Materials”** jointly organized by All India Distillers Association (AIDA) on 12<sup>th</sup> & 13<sup>th</sup> December, 2019 at Jaipur. Prof. Narendra Mohan, Director



2. Director visited the STRI Egypt & signed MOU with Assiut University for conducting training programmes/refresher courses for sugar factory personnel in Egypt and carrying out collaborative research at NSI, Kanpur. He also delivered a lecture at "Faculty of Sugar and Integrated Industries Technology" which was attended by faculty, delegates from sugar industry and students.



National Sugar Institute also delivered a lecture on **“Is Sugar beet a Potential Feed Stock for Ethanol Production?”** during the seminar.

5. Director, NSI delivered J P Mukherjee Memorial Lecture during the **65<sup>th</sup> Annual Convention of Deccan Sugar Technologist's Association** on the theme **"Indian Sugar Industry- Beyond Sugar"** held on 1<sup>st</sup> October, 2019 at Pune, Maharashtra.



6. Institute participated in Seminar on **"Ganga Conservation"** organized by Kanpur District Administration at CSJM University, Kanpur on 9<sup>th</sup> December-2019, during which very informative lectures were given on water conservation and measures to be taken for saving the rivers. On this occasion oath was also administered for keeping Holy River Ganga clean.



## RESEARCH:

**1. Utilization of potash rich ash for production of valuable bio fertilizer-** Studies on viability of prepared bio-fertilizers taken up and cost economics is being calculated. Bio-fertilizers (Rhizobium; PSB & Azatobacter ) are also being prepared for new field trials which will be taken up shortly.

**2. Cane juice syrup study for shelf-life and production of alcohol –** The study has been taken up with a view to ascertain the keeping quality of the concentrated juice for production of ethanol. Trials will be conducted shortly using sugar syrup of different purities and solid content.

**3. Studies on the feasibility of utilization of sugarcane bagasse as a potential feedstock to access cosmetic ingredients –** In order to prepare higher quantities of C-Glycosidic

Alcohol to validate the results and estimate the cost of production, the requisite experimental works are ongoing. From the initial experiments, about total 25 gm compound was obtained.

**4. Studies on Production/Isolation of C5-Sugar Alcohol / Sugar using by-product resources of sugar industry** – This is a new research project which has been taken up by the institute and the literature survey is being done to sketch plan and start some experimental work.

**5. Studies on Pot-efficient Synthesis of Alkyl Levulinates (Als) using Sugarcane- Bagasse Derived Cellulose** – The purification of the synthesized compound and its characterization is under progress. The synthesized compound is being analyzed for recording NMR spectra and mass spectrometry towards determination of its structure.

**6. Mechanical Clarification of Juice** – 03 set of experiments have been carried out during the period to validate the results obtained during the initial experiments. Various parameters viz. temperature, spinning time and speed were varied to assess effect on colour and turbidity removal. More experiments shall be carried out to draw conclusion.

**7. Use of Brine-reject in Final Molasses** – Some experiments were carried out to see the effect of mixing of brine reject with final molasses on fermentation efficiency. Further experiments shall be carried out to validate the data.

**8. Development of Super Short Retention Time Clarifier (SSRT)** – Based on the results of experiments achieved during last crushing season, some modifications have been planned

in the design of SSRT. After finalization of the plan, modification of the clarifier is in progress. Civil work of the platform for installing the SSRT is also under progress at Experimental Sugar Factory.

**9. 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-** Some of the sugar factories situated in different agro-climatic zones shall be visited to collect data for newly installed VFD based system on preparatory devices.

#### RESEARCH PAPERS:

1. A research paper entitled “**Innovative Futuristic Approach for Sustainable Sugar Industry**” by Narendra Mohan & Anushka Agarwal published in International Journal of Innovative Science & Research Technology. Volume 4, Issue 11, November – 2019.

2. A research paper entitled “**Sustainability of Sugar Industry in Northern Region – Sugar Production & Beyond**” by Narendra Mohan, Director published in National workshop on “**Sugarcane Challenges and Future Strategies for Doubling Farmers Income**” at IISR, Lucknow.

3. A paper abstract “**Direct Use of Sugarcane Bagasse Derived Hemicellulose Hydrolysis Hydrolysate for the Synthesis of C-glycosyl Derivative by the Lubineau Reaction**” by Dr. V.P. Srivastava, Tushar Mishra & Narendra Mohan sent for 26th ISCB International Conference (ISCB – 2020) to be held from 22<sup>nd</sup> to 24<sup>th</sup> January, 2020 at Nirma University, Ahmadabad, Gujarat.

4. A research paper entitled “**Surfactants in Modern Applications**” by Narendra Mohan published in IJSRD - International Journal for Scientific Research & Development| Vol. 7, Issue 09, Nov. 2019 | ISSN (online): 2321-0613

5. “**A Study on Probable Configurations of Cascaded H-Bridge Multilevel Converters for Slip Power Recovery Application in Sugar Industry**” by Vinay Kumar & Sanjiv Kumar, sent for publication in ICE3 2020 International Conference on Electrical and Electronics Engineering, to be held on 14-15th February, 2020 at MMMUT Gorakhpur, U.P.

6. “**Reduction, Reuse and Recycling of Fresh Water Usage and Mitigation of Effluent Generation in Sugar Industry**” by Vinay Kumar & D. Swain, published in IC WEB BIMSTEC – 2019, held on 14th December, 2019 at Agartala, Tripura.

7. “**Bio-refinery Process for Valorization of Sugarcane Biomass: from Constituents Sugars and Lignols to Value Added Products**” by V.P. Srivastava, Tushar Mihsra & N. Mohan accepted for presentation at the 2nd International Conference and Exhibition on “**Sustainability – Innovation and Diversification in Sugar and Allied Industry**” to be held on 31st January to 2nd February, 2020 at Vasantdada Sugar Institute, Pune, Maharashtra.

8. “**Sugar Beet – A Potential Feed Stock for Ethanol Production**” by Prof. Narendra Mohan published in Sharkara, October – December, 2019.

#### CONSULTANCY:

During October-December, 2019 consultancy services were provided to the following units situated in various parts of the country:

1	M/s K.M. Sugar Mills Ltd., Motinagar, Distt – Faizabad, U.P.
2	M/s Triveni Engineering & Industries Ltd., Unit – Deoband, Distt – Saharanpur, U.P.
3	M/s DCM Shriram Ltd., Unit – Ajbapur, Distt – Lakhimpur-Kheri, U.P.
4	M/s Avadh Sugar & Energy Ltd., Hargoan, Distt – Sitapur, U.P.
5	M/s Triveni Engineering Industries Ltd., Unit – Raninangal, Distt – Moradabad, U.P.
6	M/s Dalmia Bharat Sugar & Industries, Ltd., Unit – Jawaharpur, Distt – Sitapur, U.P.
7	M/s New Swadeshi Sugar Mills Ltd., West Champaran, Bihar.
8	M/s Dalmia Bharat Sugar & Industries Ltd., Unit – Nigohi, Distt – Shahjahanpur, U.P.
9	M/s Triveni Engineering Industries Ltd., Unit – Milak Naryanpur, Distt – Rampur, U.P.
10	M/s Bajaj Hindustan Sugar Ltd., Unit – Kinauni, Distt – Meerut, U.P.
11	M/s Bajaj Hindustan Sugar Ltd., Unit – Golagokarannath, Distt Lakhimpur-Kheri, U.P.
12	M/s Avadh Sugar & Energy Ltd., Unit – Seohara, Distt – Bijnor, U.P.
13	M/s Dalmia Sugar & Industries Ltd., Unit – Ramgarh, Distt – Sitapur, U.P.
14	M/s Triveni Engineering Industries Ltd., Unit – Khatauli, U.P.
15	M/s Naglamal Sugar Complex, Distt – Meerut, U.P.
16	M/s Avadh Sugar & Energy Ltd., Unit – Hargaoan, Distt – Sitapur, U.P.

17	M/s DCM Shriram Ltd., Unit – Rupapur, Distt – Hardoi, U.P.
18	M/s DCM Shriram Ltd., Unit- Loni, Distt – Hardoi, U.P.
19	M/s Uttam Sugars Mills Ltd., Unit – Barkatpur, Distt – Bijnor, U.P.
20	M/s Harinagar Sugar Mills Ltd., West Champaran, Bihar.
21	M/s DCM Shriram, Unit- Hariawan, Distt – Hardoi, U.P.
22	M/s Sugarchem, Mumbai, Maharashtra.
23	M/s HPCL Biofuels, Sagauli, Distt – West Champaran, Bihar.
24	M/s Bidar Kisan Shakhar Karkhana Limited, Distt – Bidar, Karnataka.
25	M/s Shree Halasidhanath Sahakari Sakhar Karkhana, Ltd., Distt – Belagavi, Karnataka.
26	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., Laksar, Distt–Haridwar, Uttarakhand.
27	M/s Balrampur Chini Mills Ltd., Unit – Gularia, Distt – Lakhimpur-Kheri, U.P.
28	M/s Rana Sugars Ltd., Belwara, Distt – Moradabad, U.P.
29	M/s Balrampur Chini Mills Ltd., Unit – Haidergarh, Distt – Barabanki, U.P.
30	M/s Balrampur Chini Mills Ltd., Unit – Maizapur, Distt – Gonda, U.P.
31	M/s Balrampur Chini Mills Ltd., Unit – Mankapur, Distt – Gonda, U.P.
32	M/s Doiwala Sugar Company Ltd., Deharadun, Uttarakhand.
33	M/s DCM Shriram Sugar Industries Ltd., Daurala, Distt – Meerut, U.P.
34	M/s Balrampur Chini Mills Ltd., Balrampur, U.P.

## ANALYTICAL SERVICES:

Analytical services were rendered to following organizations:

1	Directorate General of Supply & Transport, Ministry of Defence.
2	M/s Dalmia Bharat Sugar Mills & Ltd., Distillery, Unit – Nigohi, Distt – Shahjahanpur, U.P.
3	M/s Avadh Sugar & Energy Ltd., Unit – Hargaon, Distt – Sitapur, U.P.
4	M/s Dhampur Sugar Mills Ltd., Unit – Rajpura, Distt – Sambhal, U.P.
5	M/s Magadh Sugar & Energy Ltd., Unit – Hasanpur Sugar Mills Ltd.,
6	M/s The Seksaria Biswan Sugar Factory Ltd., Distt – Sitapur, U.P.
7	M/s Shri Shiv Shakti Khandsari Udyog, Distt - Narsinghpur, M.P.
8	M/s Balrampur Chini Mills Ltd., Unit – Tulsipur, Distt – Balrampur, U.P.

The samples of sugar, molasses and waste waters were analyzed for the desired parameters in the NSI-Analytical Laboratory (NABL Accredited).

The institute has also obtained BIS accreditation for the Analytical Laboratory for analysis of sugar and sugar house products.

## OUR OTHER ACTIVITIES:

1. संस्थान में दिनांक 28.10.2019 से 02.11.2019 तक “सतर्कता जागरूकता सप्ताह-2019” का आयोजन किया गया तथा दिनांक 28.10.2019 को संस्थान-कर्मियों को जागरूकता की शपथ दिलाई गई। इस सप्ताह के दौरान संस्थान-कर्मियों एवं छात्रों के लिये निबंध एवं व्याख्यान प्रतियोगितायें आयोजित की गईं।



2. संस्थान में दिनांक 31-10-2019 को अधिकारियों, कर्मचारियों एवं छात्रों को सरदार बल्लभ भाई पटेल के जन्मतिथि के उपलक्ष्य में एकता दिवस का आयोजन किया गया, जिसमें एकता एवं अखण्डता की शपथ दिलाई गई।



3. राष्ट्रीय शर्करा संस्थान, कानपुर द्वारा गत वर्षों की भाँति इस वर्ष भी अपने वार्षिक खेलकूद संस्थान में आयोजित किये गये। दिनांक 11 अक्टूबर 2019 को आयोजित पुरस्कार वितरण समारोह में विभिन्न प्रतिभागियों (विजेता एवं उप-विजेताओं) को मुख्य अतिथि के रूप में निदेशक, राष्ट्रीय शर्करा संस्थान, कानपुर के द्वारा पुरस्कार से सम्मानित किया गया।



4. संस्थान में दिनांक 26-11-2019 को अधिकारियों, कर्मचारियों एवं छात्रों के द्वारा "संविधान दिवस" पर "प्रस्तावना" पढ़ी गयी।



5. A Farewell party for the final year students of various courses was organized on 2<sup>nd</sup> November, 2019 at the institute. Many cultural activities were organized by the students on this occasion. Director & faculty members wished the final year students a bright & successful carrier ahead.



6. A group of farmers from Madhya Pradesh visited the institute on 21st November, 2019.

7. Seventy students of B.Sc. Agriculture (Hons.) of Rama University visited the institute on 8th November, 2019. They visited various Laboratories, Nano Brewery, Nano Ethanol Unit & Experimental Sugar Factory situated in the institute.

8. Director addressed 85<sup>th</sup> AGM of ISMA conducted on 5<sup>th</sup> December, 2019 and discussed the issues related to ethanol pricing and incidental increase in distillation capacity while using B Heavy molasses and cane juice.



9. Director addressed the 62<sup>nd</sup> AGM of M/s Sahakari Khand Udyog Mandal Ltd., Gandevi, Navsari, Gujarat on economic and environmental sustainability on 20th December, 2019 along with fruitful discussions, Chairman, Managing Director of the factory.



10. Prof. Narendra Mohan, Director attended the Silver Jubilee celebrations of Dalmia Bharat Sugar Mills Ltd., Unit: Ramgarh and addressed the stakeholders of the company on need for diversification and value addition.



Prof. Mohan also felicitated employees of Dalmia Bharat Sugar Mills Ltd. on this occasion.

11. सरकारी कामकाज में राजभाषा के रूप में हिन्दी के प्रति जागरुकता लाने तथा उसके उत्तरोत्तर विकास हेतु संस्थान में 19 दिसम्बर 2019 को हिन्दी कार्यशाला का आयोजन किया गया।

