



NEWSLETTER

**July-September,
2018**

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



**Narendra Mohan
Director**

At last, the sugar industry has at-least started brainstorming on value addition through various routes and production of different kind of sugars as per consumer needs and market requirements. The industry has to develop out of box thinking and diversifications, integrations, value additions are going to be key to success.

The pricing policy for ethanol announced recently ensuring higher prices for Ethanol produced from B Heavy molasses and 100% diversion of sugarcane juice shall go a long way in making sugar industry sustainable. Sugar Industry is required to take advantage of it and financial assistance been offered for Ethanol capacity building. The sugar demand-supply balance through ethanol production is essential for stable sugar prices, value addition and for energy security of the country as well keeping in view the recent issues related to import of crude oil.

Nevertheless, the industry has to think of raw-refined route of sugar production rather than sticking to age old conventional process of plantation white sugar production which has its own limitations for trade in the global markets. The industry is required to understand the importance of selling the sugar as a brand and not in a conventional manner in loose following the age-old practice of marketing through commission agents and traders.

➤ **INTERNATIONAL CONFERENCE:**

1. International Conference on **"Production of Sugar & Sugar Derivatives under Changing Consumer Preferences"** was organized at the institute on 18 to 19th July 2018. More than 300 delegates from USA, UK, Uganda, Sri Lanka, Indonesia, Nepal, Thailand and of our own country participated in the Conference. Presentations were made on production of various types of sugars keeping in view their direct and industrial consumption. In addition to this, presentations were also made on production of low-calorie sweeteners and cane juice preservation.



Shri Ravikant, Secretary (Food & Public Distribution), Government of India gracing the concluding day of the two days International Conference and conferring Sharkarashri to five distinguished alumni of the institute who turned out to be Job Creators rather than Job Seekers and contributing in "Make in India" programme.



➤ **REFRESHER COURSE:**

“Refresher Course - 2018” for sugar industry personnel conducted at the institute from 16th to 20th July 2018 wherein total 86 technical personnel from various sugar industries/organization from different states participated in the course. Lectures on important topics viz. Value Addition, Energy Conservation, Cane Management, Effluent & Environment Management etc. were delivered by the experts. Dr. (Mrs.) Nilima Gupta, Vice Chancellor, CSJM University, Kanpur inaugurated the course.

➤ **GLOBAL TRAINING PROGRAMME:**

Institute conducted three weeks Faculty Development Programme for the technical personnel from Sugar Research Institute, Sri Lanka in July-August 2018. They were imparted theoretical as well as practical training on various aspects of Industrial Fermentation, Distillation and Sugar Processing. In addition to this, knowledge on Effluent Treatment and other Environmental issues was also imparted.



➤ **TRAINING PROGRAMMES ORGANIZED:**

1. Training Programme on “Laboratory Management and Analytical Procedures” by Dr. Rakesh Kumar, Senior Lead Assessor of NABL was conducted for the benefit of staff and students of the institute. Dr. Kumar explained the precautions to be taken while performing the analysis and necessity of maintaining the calibration schedule for various laboratory instruments/equipment. Importance of quality of laboratory chemicals in performing the analysis was also highlighted by him.

2. Customized Training Programme for the technical personnel of M/s Manas Agro Industries was conducted at Nagpur wherein they were detailed on standard operating procedures in a plantation white sugar plant.



Theoretical as well as practical training was imparted to the trainees on various techniques of milling, juice extraction, clarification, evaporation and crystallization etc.

➤ SEMINARS/CONFERENCES ATTENDED:

3. Three training programmes on **"Effluent Treatment Plant Operation & Techniques of Effluent / Waste Water Analysis"** were conducted during the period July to September 2018 for the factory professionals from various states situated in Ganga basin.



4. Four weeks Customized Training Programme for the Graduate Engineer Trainees of M/s EID Parry (India) Ltd., Chennai was conducted at the Institute.

1. Director, NSI, attended the 12th World Congress on "Bio-fuels & Bio-energy" with Prof. D Swain at Zurich, Switzerland.



He also made a presentation on the topic **"Efficient Use of Sugarcane Bio-Energy for Sustainable Sugar Production in India"**.

2. One-day Seminar on **"Production of Sulphurless Raw Sugar followed by Refined Sugar"** was jointly organized by National Sugar Institute & Nirani Sugars Ltd. at Nirani Sugars Ltd. Mudhol, Karnataka.



3. Director, National Sugar Institute inaugurated the Annual Symposium of "Bharatiya Sugar" at Kolhapur on the topic **"Sustainability of the Sugar Industry"**.



4. Director, NSI, attended the 48th Annual Convention of SISSTA at Belagavi Karnataka on 21st-22nd September, 2018 and delivered Parthasarthy Memorial lecture on **"Protocol for by Product Utilization for Value Addition"**. Shri S.K. Trivedi, Asstt. Prof. Sugar Technology & Shri A.K. Shukla, Jr. Technical Officer (Sugar Technology) also attended the Convention.



5. One day National Seminar **"AMIFOST 2018"** was jointly organized with Amity University, Noida, wherein a presentation on **"Sugar-Life-Health & You"** was also made by the institute.

► RESEARCH:

The Institute during the period took up R&D work on the following:

1. **Utilization of Potash Rich ash for production of valuable bio fertilizer**—Boiler ash from Incineration Boilers installed in molasses-based distilleries can be used as carrier for making bio-fertilizer. Bio-fertilizer samples were made using three different carriers viz; Boiler ash from sugar factory boilers, Potash rich ash from incineration boilers of distillery and Activated charcoal.



2. Utilization of bagasse as dietary fiber - Study the characteristics of bagasse for use as a food supplement have been taken up. The raw bagasse samples were subjected to chemical analysis, namely: moisture, total ash, (carbonated and sulphated) total sugars, protein, hemicellulose and cellulose. The same will be repeated for confirmation.



3. Filter Cake to Bio CNG/Compressed Biogas

- With an aim to utilize the filter cake for production of Bio-CNG, different combinations of filter cake, farm yard manure and spent wash were initially tried on laboratory scale. A new set has been prepared by the use of 80% filter cake, 15% FYM with the combination of 5% culture prepared by the previous set-up for bio-gas production. Detailed study for finding the exact rate of biogas generation, gas generation per unit filter cake, scrubbing chemical requirement and quality of gas shall be made.



4. Studies on the feasibility of utilization of sugarcane bagasse as a potential feedstock to access cosmetic ingredients:

Some preliminary work related to access the condensation product between xylose (pure) and acetyl acetone so as to have the authentic sample has been performed. The isolation and characterization of the products is under process.

5. Studies on synthesis of glycosidic surfactants using by-product resources of sugar industry

–Studies have been further taken up so as to enhance the yield of bagasse derived polypentosides based surfactant along with reduction in purification steps involved thereof. The characterization of bagasse & trash derived products obtained during preliminary experimental works performed in a proto type SS pot is under process.

6. Studies on Production/isolation of C5-Sugar Alcohol/Sugar using by-product resources of sugar industry

The studies aim basically at deriving a low-calorie sweetener from bagasse for which isolation of products formed during the optimization of the reaction conditions for the synthesis of xylitol from sugarcane trash has been completed. The isolated compounds are being analyzed for characterization.

7. Studies on pot efficient synthesis of alkyl levulinates (Als) using sugarcane bagasse derived cellulose

– Biomass conversion into useful chemicals, materials and fuels emerged as a promising alternative toward replacing the current production of most of these commodities and specialty products from petroleum feed stocks.

Alkyl levulinate (AL) is as useful as a levulinic acid derivative in many fields, such as medicines, solvent, organic chemistry, fragrance and furthermore it can be directly used as additives for gasoline and diesel, due to its excellent performances, such as high lubricity, flashpoint stability, non-toxic and better flow properties under cold condition. Based on such potential, direct production of alkyl levulinate (AL) from sugarcane bagasse in a catalytic cascade reaction will be evaluated following bio-refinery concept.

8. Mechanical Clarification of Juice - Literature survey is in progress. Based on the available information and with own perceptions, lab trials are being planned which will be carried out in Oct./Nov. 2018.

9. Use of Brine reject in Final Molasses – Brine recovery and disposal of brine reject is an area of concern from environment angle. Such reject has been procured from some of the sugar refineries and analyzed. Brine reject was mixed in final molasses at 4% and 6% ratios and analysis of samples for fermentation efficiency of molasses is in progress.

10. Development of Super Short Retention Time Clarifier- Analytical data as a result of experiments conducted on a prototype at the Experimental Sugar Factory revealed turbidity and colour reduction in the clear juice from the input mixed juice to be around 35% & 20% respectively. Work related to development of modified drawing & design for SSRT clarifier is in progress.

➤ **RESEARCH PAPERS / POSTER PRESENTED / PUBLISHED / SENT FOR PUBLICATION:**

1. “Development of an Effluent Treatment Process for Plantation White Sugar Factories to meet CPCB Requirements” by Neelam Dixit, Amresh Pratap & Narendra Mohan published in the proceedings of 6th Annual Symposium of Bharatiya Sugar, held on 14-15th July 2018 at Kolhapur.

2. “Valorization of Sugarcane Trash as a Potential Raw Material in Formulation of Eco-Friendly Liquid Detergent” by Narendra Mohan, Vishnu P. Srivatsava and Anushka Agarwal published in the proceedings of 64th Annual Convention of The Deccan Sugar Technologists Association held on 28-29th July 2018 at Gandhinagar, Gujarat.

3. “Ethanol Production: Opportunities & Challenges” by Narendra Mohan published in the proceedings of 6th Annual Symposium of Bharatiya Sugar, held on 14-15th July 2018 at Kolhapur.

4. “Sugar Dust Explosion – A Case Study, Prevention & Protection” by Sanjay Chauhan & Jitendra Singh published in Sharkara in April-June 2018.

5. “Isolation of Yeast Strain from Spoilt Sugarcane Juice” by Vinitanjali Banerjee, Santosh Kumar & Narendra Mohan published in proceeding of 76th Annual Convention of Sugar Technologist’s Association of India held on 20th -22nd August 2018 at Indore.

6. “Multi-Level Inverter based Topologies for Sugar Mill Drive Applications” by Anoop Kumar Kanaujia, Sanjiv Kumar & D. Swain published in proceeding of 76th Annual Convention of Sugar Technologist's Association of India held on 20th -22nd August 2018 at Indore.

7. “A Study on Working of Vertical Continuous Pan for Raw Masecuite Boiling” by Narendra Mohan, Ashutosh Bajpai and Subhash Chandra published in proceeding of 76th Annual Convention of Sugar Technologist's Association of India held on 20th -22nd August 2018 at Indore.

8. “Clarification of Intermediate Process Liquors for Improvement in Sugar Quality” by Narendra Mohan, Dr. Ashutosh Bajapi & Mahendra Pratap Singh published in proceeding of 76th Annual Convention of Sugar Technologist's Association of India held on 20th -22nd August 2018 at Indore.

9. “Carbonation of Phosphotation Refinery: A Practical Approach” by Narendra Mohan, Mahendra Yadav & V.P. Singh published in the proceedings of one-day seminar organised by NSI, Kanpur & Nirani Sugar Ltd on 15th September 2018 at Mudhol, Karnataka.

10. “Treatment of Sugar Factory Effluent by A Novel Process” by Amresh P. Singh, Mahendra Kumar Yadav & Narendra Mohan published in proceedings of National Seminar held at Belagavi, Karnataka.

11. “Effluent Generation & Treatment in Indian Sugar Industry” by Mahendra K Yadav, J.P. Srivastava & Narendra Mohan published in proceedings of National Seminar held at Belagavi, Karnataka.

➤ **CONSULTANCY:**

During July-September, 2018 consultancy services were provided to the following:

1	M/s The Kisan Sahakari Chini Mills Ltd., Anoopshahr, Distt. - Bulandshahr, U.P.
2	M/s DSCL Sugar, Hariawan, Distt. - Hardoi, U.P.
3	M/s Chadha Sugars & Industries Pvt. Ltd., Batala, Distt. -Gurdaspur, Punjab.
4	M/s The Kisan Sahakari Chini Mills Ltd., Satha, Distt. - Aligarh, U.P.
5	M/s The Kisan Sahakari Chini Mills Ltd., Kaiamganj, Distt. -Farukkhabad, U.P.
6	M/s Kisan Sahakari Chini Mills Ltd., Nanauta, Distt. -Saharanpur, U.P.
7	M/s Sarjoo Sahakari Chini Mills Ltd., Belrayan, Distt. -Lakhimpur-Kheri, U.P.
8	M/s The Ganga Kisan Sahakari Chini Mills Ltd., Morna, Distt. -Muzaffarnagar, U.P.
9	M/s Rudra-Bilas Kisan Sahakari Chini Mills Ltd., Bilaspur, Distt. -Rampur, U.P.
10	M/s Shrivasti Kisan Sahakari Chini Mills Ltd., Nanpara, Distt. -Bahraich, U.P.
11	M/s Bisalpur Kisan Sahakari Chini Mills Ltd., Bisalpur, Distt. -Pilibhit, U.P.
12	M/s The Kisan Co-operative Sugar Factory Ltd., Sarsawa, Distt. - Saharanpur, U.P.
13	M/s HPCL Lauriya, Distt. -West Champaran, Bihar.
14	M/s Harinagar Sugar Mills Ltd., Harinagar, Distt. -West Champaran, Bihar.

15	M/s The Kisan Sahakari Chini Mills Ltd., Mahmudabad (Oudh), Distt. - Sitapur, U.P.
16	M/s The Kisan Sahakari Chini Mills Ltd., Distt. -Badaun, U.P.
17	M/s Sri Malaprabha Sahakari Sakkare Karkhana, Belagavi, Distt. -Belagaum, Karnataka.
18	M/s U.P. Co-operative Sugar Factories Ltd., Lucknow, U.P.
19	M/s The Haryana Co-operative Sugar Mills Ltd., Bhali, Anandpur, Distt – Rohtak.
20	M/s The Kisan Sahakari Chini Mills Ltd., Gajraula, Distt – Gajraula, U.P.
21	M/s The Sahabad Co-operative Mills Ltd., Sahabad, Distt – Kurukshetra, Haryana.
22	M/s The Bagpat Co-operative Sugar Mills Ltd., Distt – Bagpat, U.P.
23	M/s The Kisan Sahakari Chini Mills Ltd., Tilhar, Distt – Shahjahanpur, U.P.
24	M/s Kisan Sahakari Chini Mills Ltd., Powayan, Distt – Shahjahanpur, U.P.
25	M/s Kichha Sugar Mills Ltd., Kichha, Distt – Nainital, Uttarakhand.
26	M/s Kisan Sahakari Chini Mills Ltd., Semi-Khera, Distt – Bareilly, U.P.
27	M/s SAB Miller India Limited Central Distillery & Brewery Office, Kankarkhera, Meerut, U.P.
28	M/s Doiwala Sugar Company Ltd., Doiwala, Uttarakhand.

29	M/s Dalmia Sugar Mills Ltd., Nigohi, Distt – Shahjahanpur, U.P.
30	M/s The Kisan Sahakari Chini Mills Ltd., Puranpur, Distt – Pilibhit, U.P.
31	M/s Ramala Sahakari Chini Mills Ltd., Ramala, Distt – Bagpat, U. P

➤ **ANALYTICAL SERVICES:**

Analytical services were rendered to following:

1	M/s The Nakodar Co-op Sugar Factory Ltd., Nakodar, Distt- Jalandhar, Punjab.
2	M/s The Seksaria Biswan Sugar Factory Ltd., Distt- Sitapur, U.P.
3	M/s The Ajanala Co-operative Sugar Mills Ltd., Ajanala, Distt- Amritsar, Punjab.
4	M/s Sarjoo Sahakari Chini Mills Ltd., Belrayan, Distt – Lakhimpur-Kheri, U.P.
5	M/s Ramala Sahakari Chini Mills Ltd., Ramala, Distt – Bagpat, U.P.
6	M/s Kisan Sahakari Chini Mills Ltd., Nanauta, Distt – Saharanpur, U.P.
7	M/s The Ganga Kisan Sahakari Chini Mills Ltd., Morna, Distt – Muzaffarnagar, U.P.
8	M/s Shrivasti Sahakari Chini Mills Ltd., Nanpara, Distt – Bahraich, U.P.
9	M/s Kisan Sahakari Chini Mills Ltd., Puranpur, Distt – Pilibhit, U.P.

➤ **EXTENSION LECTURES:**

Under the Aegis of Scientific Society of Council of Student's Activities expert lectures were delivered by many eminent Scientists & Technologists.

1. Shri K. Jagdeesh (Consultant) J.P. Mukherji & Associates Pvt. Ltd., delivered a lecture on "Role of Chemical Control in the Efficient Operation of Plant" on 26th September 2018 at the institute for the benefit of students as well as faculty.



2. Shri Rajeev Gupta (General Manager-Marketing), Jindal Stainless Ltd. Gurgaon, addressed the staff and students on the topic "Stainless Steel Usage in Various Spheres of Life" on 19th September 2018. Students also got a chance to see the demonstration bus and also carry out SS welding.



➤ **OUR OTHER ACTIVITIES:**

1. On 13th August 2018, a blood donation camp was organized at the institute in association with M/s G.S.V.M. Medical College, wherein, 58 units of blood was donated.



2. On 72nd Independence Day, the Director, hoisted the National Flag at the Institute and addressed the staff, students and faculty members. The prizes were also distributed to the winners of various competitions organized during the Swachhta Pakhwada organized earlier.





3. Keeping in view the necessity of Library facilities beyond office hours, library facilities were developed at Hostel No.3 and inaugurated. Shri Param Singh, General Manager (Production), Dalmia Bharat Sugar Mills, Nigohi, Shahjahanpur also graced the occasion.



4. The students of various courses organized a function to celebrate the Fresher's Party on 29th August, 2018. Many activities viz. singing, dance and mono acts etc. were performed by the students. Selection of Mr. & Ms. NSI was also made after several rounds.



5. Campus interview by Daurala Sugar Works, JP Mukherjee & Associates, Dalmia Sugars Ltd., DCM Shri Ram Ltd. (DSCL), Dhampur Sugar Mills Ltd., K M Sugar Mills Ltd. and Uttam Sugars were conducted at the institute & more than 70 students were selected.



6. Interactive session was organized at the institute for 20 nos. IAS & IFS probationers on the topic "Sugar Industry in India-Opportunities & Challenges". Director, NSI and Prof. D. Swain addressed the probationers and presented the overview of the Indian Sugar Industry.



7. Interactive Session for the technical officials of HPCL Biofuels was conducted at Patna to discuss areas for improvement and benchmarking of efficiency parameters.

8. Institute arranged an Orientation Programme for the fresh batch of students admitted during the academic session 2018-19 in various courses conducted by the Institute.



Shri Narendra Mohan, Director addressed the students and stressed upon the need for maintaining disciplines in all sphere of life.

9. The Annual Function of the Scientific Society under the Council of Student's Activities was organized on 26th September, 2018. Model, Poster & other competitions were organized on the topic relating to "Water Conservation" and "Sustainability of Sugar Industry".



10. Annual Sports under the auspicious of Council of Student's Activities were organized from 05th to 18th September, 2018 at the Institute. Overall championship 2018 was won by:

Boys – Kuldeep Shukla (ST 2nd Year)
Girls – Anjali Rajput – (ST 2nd Year)



11. "Vishwakarma Pooja" was organized in the Experimental Sugar Factory, Instrumentation Division & Agricultural Farm on 17th September, 2018.



12. A special cleanliness drive "Swachhta Hi Sewa" was undertaken from 15th September 2018 in and around campus. During the period, essay & painting competitions and

Nukkad Natak were also organized involving staff & students of the institute.



13. संस्थान में दिनांक 1 से 14 सितंबर, 2018 हिंदी पखवाड़ा मनाया गया तथा हिंदी दिवस पर पुरस्कार वितरण समारोह संपन्न हुआ। हिंदी पखवाड़ा के दौरान आयोजित विविध प्रतियोगिताओं में विजेता स्टाफ एवं छात्रों को पुरस्कार से नवाजा गया।

हिन्दी भाषी अधिकारी	डॉ आशुतोष बाजपेई
हिन्दी टिप्पण आलेखन प्रतियोगिता	श्री सन्तोष कुमार त्रिपाठी
हिन्दी निबन्ध प्रतियोगिता	श्री दयाशंकर मिश्रा
हिन्दी निबन्ध प्रतियोगिता (केवल एम.टी.एस. कर्मचारियों के लिए)	हरि नारायण मीना
हिन्दी टंकण प्रतियोगिता	श्री रमाकान्त
हिन्दी व्याख्यान प्रतियोगिता	श्री दयाशंकर मिश्रा
हिन्दी प्रचार-प्रसार प्रतियोगिता	श्री जाहर सिंह
हिन्दी सामान्य ज्ञान प्रश्नोत्तरी प्रतियोगिता	श्री राजीव कुमार
हिन्दी सामान्य ज्ञान प्रश्नोत्तरी प्रतियोगिता (केवल एम.टी.एस. कर्मचारियों के लिए)	श्री हरि नारायण मीना
हिन्दी व्याख्यान	श्री संतोष कुमार त्रिपाठी
हिन्दी निबंध (छात्र)	सुश्री एकता यादव
हिन्दी निबंध (छात्र)	श्री शिखर मिश्रा



14. Meeting of experts' committee for revision of existing Sugar Standards Grades for the season 2018-19 was held at NSI, Kanpur on 26th September, 2018 under the Chairmanship of Director, NSI.



Standards finalized & sales shall commence from 1st October 2018. Details are available on our website [http:// www.nsi.gov.in](http://www.nsi.gov.in)

➤ **OUR FELICITATIONS:**

1. Institute got the “ABP News-National Education Leadership Award” for excellence in teaching and creating institute-industry interface.



2. During the 76thAnnual convention of Sugar Technologist's Association of India, “**Noel Deer Gold Medal**” for best research paper in by-product section was awarded to Prof. Narendra Mohan, Director and Dr. V P Srivastava, Asstt. Professor of Organic Chemistry of the institute.



3. Shri D Swain, Prof. of Sugar Engineering was conferred with “**ISGEC Gold Medal**” for Excellence in Engineering during the 76thAnnual convention of Sugar Technologist's Association of India held at Indore.



4. During the Annual Symposium of the Bharatiya Sugar at Kolhapur, Mr. Mahendra Yadav, Junior Technical Officer of the institute was conferred with “**Best Overall Performance in R&D of the Year Award-National Level**”.

