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Narendra Mohan
Director

Expressing concerns over rising cane price arrears which have reached Rs. 15,000 crores the Government of India has issued directions to state governments to direct

➤ HON'BLE PRESIDENT AWARDS INSTITUTE DIRECTOR

Prof. Narendra Mohan, Director received award from Hon'ble President of India for "*Excellence in Science*" during the International Conference Agricon 2018.



sugar factories to clear the cane dues & consider taking action against defaulting sugar factories. On the other hand, sugar prices in whole sale markets registered decline despite government decision on export of 2.0 million tonnes of sugar following abundant availability of stocks on relentless arrivals from sugar mills

As I have been emphasizing repeatedly the sugar factories are required to reduce their dependency only on sugar by creating value addition through diversification as with 80-90 % of the total revenue coming from sugar , such situation is difficult to handle. Factories have to look forward towards conversion of conventional sugar plants into Bio-refineries along with branding of Indian sugars.

Hon'ble President of India who inaugurated the conference also visited institute stall and



took keen interest to know about the institute activities with regards to teaching /training programmes and consultancy services.

➤ INSTITUTE GETS AWARD FOR ITS CONTRIBUTION:

राष्ट्रीय शर्करा संस्थान, कानपुर को “Global Education Leadership Award-2017” से सिक्किम के पूर्व राज्यपाल श्री वाल्मीकि प्रसाद सिंह पूर्व (आईएस) के द्वारा दिनांक २३ फरवरी 2018 को संसद क्लब, नई दिल्ली में नवाजा गया। संस्थान को यह पुरस्कार शर्करा प्रौद्योगिकी के क्षेत्र में विशिष्ट अनुसंधान एवं रोजगारोन्मुखी विकास कार्य करने तथा शिक्षा एवं परामर्श के क्षेत्र में विशेष योगदानके लिये दिया गया है।



➤ SECRETARY (FOOD & PUBLIC DISTRIBUTION) VISITED INSTITUTE:

Shri Ravikant, Secretary (Food & Public Distribution) and Shri S. Panda, Joint Secretary (Sugar & Admn), Government of India, visited Institute on 23rd January, 2018 to review the working & plan for future activities.



During the visit, Secretary (Food & Public Distribution) laid the foundation stone of Training Center and Hostel cum Guest House.

He visited institute's various laboratories and released “Yeast Strains” developed by Biochemistry division of the Institute. He also observed the working of Bio-CNG and “Electro-coagulation pilot plant unit for waste water treatment”.



➤ SEMINARS / WORKSHOPS / CONFRENCES ORGANISED / ATTENDED:

1. Institute participated in the International Conference & Agri Expo 2018 on “Sustainability of Smallholder Agriculture in Developing Countries under Changing Climatic Scenario” organize The Society of Agricultural Professionals & University of Agriculture & Technology from 14-17th February 2018, at Kanpur.



2. Dr. V.P. Srivastava, Asstt. Prof. of Organic Chemistry attended the 22nd Chemical Research Society of India (CRSI) National Symposium in Chemistry, organized by, Pt.

Ravi Shankar Shukla University Raipur, Chhattisgarh from February 2-4th, 2018 at School of Studies in Chemistry. During the Symposium, Dr. Srivastava presented a research paper on “Pot-Efficient Synthesis of a Renewable Surfactant using Sugarcane derived Lignocellulosic Biomass”.

3. Shri S. K. Trivedi, Asstt. Prof. Sugar Technology and Shri Vinay Kumar, Asstt. Prof. Sugar Engineering attended one day workshop on “Patent capacity building program on Basic of IPR, Foreign patent filling, EPO tools, filling procedures and deliberations on drafting” organized by SIDBI Innovation and Incubation Center, Kanpur, IIT Kanpur in association with European Business Technology Center (EBTC) and the European Patent Office (EPO) on 3rd February, 2018 at IIT, Kanpur.

4. Dr. V.P. Srivastava, Asstt. Prof. of Organic Chemistry attended National Food Conference on Agriculture and Technology Innovations for “Nutritional Security-NFC 2018” held on 9-10th February, 2018 at Centre of Food Technology, University of Allahabad, U.P. & presented a poster on “Alternative Sweeteners as sugar substitute: incentive, influence & innovation”.

5. One day meet on Ethanol Production and Incineration boiler based co-generation units in molasses based distilleries organized jointly by NSI and Cogen India on 15th March, 2018 at Lucknow.



Shri J. P. Srivastava presented a paper on “Indian Molasses based Distillery: Ethanol & Power Export Potential” during the conference.

6. Prof. Narendra Mohan, Director and Shri D. Swain, Prof. Sugar Engineering attended the IAPSIT-2018 held at Udon Thani, Thailand from 6-9th March, 2018. Director, NSI delivered a key note address on “Green Energy from Sugar Industry” during the conference. Two more papers were presented during the conference.



7. Prof. Narendra Mohan, Director, upon invitation visited Sugar Research Institute,



Ahvaz, Iran. Discussions were held with Sugar Research Institute officials for collaborative research work and development of the Sugar Research Institute at Iran. He also visited few factories to have a first look into the technical efficiencies of the plants for improvement.



8. One day workshop/views sharing session on draft Charter for sugar factories situated in river Ganga Basin was organized by NSI on 23rd March, 2018 at NSI, Kanpur.



9. Dr. Vishnu Prabhakar Srivastava, Asstt. Professo Organic Chemistry attended a short course at IIT, Kanpur of duration 6 days from February 26 to March 03, 2018 on "Re-

inventing fly ash into near-whitened material for generating white polymer composites: Technological Advancements" as a part of "Global Initiative of Academic Network (GIAN) Course, sponsored by MHRD India and AICTE.

➤ RESEARCH:

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

1. Mushroom cultivation from different lignocellulosic substrates- To explore possibilities of utilization of bagasse as substrate for mushroom cultivation, studies have been taken up which shall be extended further using other lignocellulosic substrates. A repeat set of *Pleurotus sajor caju* (taking the same combinations of substrates) was inoculated with spawn. Initial analysis of raw materials was carried out and good mycelial growth was observed after 14 days in all the bags. The samples were analysed for protein, carbohydrate, hemicellulose, cellulose and lignin contents after 7 and 14 days. The work has been completed and it was observed that the yield of mushrooms on various substrates ranged from 75 to 85%.



2. Isolation and purification of yeast strains from saccharine materials and their performance for fermentative production

of alcohol-The yeast strain isolated from spoiled sugar cane juice produced best results when diluted molasses was fermented by this strain with a fermentation value of 91.7% was assessed. The yeast isolated from rotten grapes also produced good results. The three strains were subjected to treatment with alcohol from 10-15% in order to optimize them for high alcohol concentration. Good growth was seen upto 12% alcohol concentration on YEPD medium but the performance onto molasses medium was not satisfactory (at 30° C).



3. Alcohol fermentation by immobilized yeast cells - After literature survey, a preliminary set was prepared using yeast cells impregnated in the alginate beads and the performance of this set was evaluated on to molasses medium in order to achieve better yield of alcohol in less time and better reusability. The yeast cells entrapped in alginate beads at a concentration of 6:12 (ratio g) gave very good results and it has already been used upto 5 cycles and the performance has been more or less consistent with FE value of around 90% with alcohol content in wash was around 8.5% with an initial sugar of around 14.5%.

4. Bio CNG from Press mud- With an aim to utilize the press mud for production of Bio-CNG, different combinations of press mud,

farm, yard manure and spent wash were tried on laboratory scale. Overall gas formation patterns in ten selected treatments were studied with the help of gas analyzer. Physico-chemical analysis of the slurry of combinations giving better results is in progress. Analysis of bio-manure residue obtained after the production of biogas for inorganic constituents, organic nitrogen and phosphorus has been completed. Trials on pilot plant are being carried out and results awaited.



5. Studies on clarification of cane juice with bagasse derived bio char- The study has been taken up with an aim to utilize the bagasse fly ash in combination with bio char to check its clarification efficiency on cane juice and other sugar liquors. Several experiments have been performed to establish the optimum condition for utilizing fly ash as clarifying aid in sugar cane juice clarification. Based on these experiments, upto 20 % reduction in colour and upto 40 % reduction in turbidity of clarified cane juice using bagasse fly ash as clarifying aid was observed.

6. Studies on synthesis of glycosidic surfactants using by-product resources of sugar industry - Studies have been taken up further so as to enhance the yield of bagasse derived polypentosides based surfactant along with reducing the purification steps involved thereof. Synthesis of bagasse derived

glycosidic surfactant towards validating the method by procuring the bagasse from three sugar factories has been carried out.

Additionally, an attempt has been made to synthesize glycosidic surfactant utilizing sugarcane trash as source of hemi-cellulosic sugar. The isolation and characterization of the products is under process.

7. Preservation of Sugarcane juice involving Pulsed Electric Field technique (PEF)-With aim to develop a process for sugarcane juice preservation, The PEF technique is proposed to be tried on laboratory scale. The procurement of the required chemicals and other materials-experimental set up is under process.

8. Studies on Production/isolation of C5-Sugar Alcohol/Sugar using by-product resources of sugar industry-The studies aimed basically deriving a low calorie sweetener from bagasse for which an up to date literature survey on the topic has been completed.

Determination of pentosane percent in sugarcane trash as well as bagasse has been made. Isolation and characterization of xylan from sugarcane trash as well as bagasse is under process.

9. Improvement in Sugar Quality by clarification of intermediate boiling house products-In order to improve sugar quality laboratory experiments were conducted in two commercial sugar factories carrying out physico-chemical clarification of intermediate process liquors e.g. A light, melt, A heavy etc. Results are being complied & inference will be drawn there after. Samples of various intermediate molasses have also been

collected from two more commercial sugar factories. Analysis of the samples is under progress.

10. Trials with Super Short Retention Time Clarifier.-Trials with prototype of SSRT Clarifier were carried out in February, 2018 at Experimental Sugar Factory of the institute. Analysis was also done for comparison of its clear juice quantity with that obtained from conventional clarifier. Analysis of data obtained is in progress. Preliminary results indicated that quality of clear juice from SSRT Clarifier was more or less equivalent to the clear juice obtained from conventional clarifier.



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

1. **“Pot-efficient synthesis of renewable surfactant using sugarcane derived lignocellulosic biomass”** by Narendra Mohan, Vishnu Prabhakar Srivastava and Anushka Agarwal presented as poster in 22nd Chemical Research Society of India (CRSI) National Symposium in Chemistry, held on February 2-4, 2018 at School of Studies in Chemistry, Pt. Ravi Shankar Shukla University Raipur, Chhattisgarh.

2. **“Alternative Sweeteners as sugar substitute: incentive, influence &**

innovation” by Narendra Mohan, Vishnu Prabhakar Srivastava and Anushka Agarwal presented as a Poster in “ National Food Conference on Agriculture and Technology Innovations for Nutritional Security-NFC 2018” held from 9-10th February, 2018 at Centre of Food Technology, University of Allahabad, U.P.

3. **“New Technique for Effluent Treatment in Sulphitation Sugar Factories”** by Narendra Mohan & A. Bajpai sent for publication in Annual Conference of South African Sugar Technologist Association, Durban, South Africa to be held in August, 2018.

4. **“Indian Molasses based Distillery: Ethanol & Power Export Potential”** by J.P. Srivastava, A.K. Kanaujia & S. Chauhan presented during the conference jointly organized by NSI and Co-gen India at Lucknow On 15th March 2018.

➤ **DISTINGUISHED VISITORS:**

1. Mr. Kitti Choonhawong, President, Thailand Society of Sugarcane Technologists, visited the institute and had a look various laboratories and other facilities of the institute. He took keen interest in research work aspired forward for a possible tie up for conducting collaborative research work.



2. Dr. Mahendra Prasad, Former Director, NSI Kanpur visited the institute on 21st March, 2018. He visited institute’s various laboratories and many useful tips was given by him for conducting R&D work on some unexplored areas.



3. Dr. A Salim Sajid, Ex. Chemical Engineer delivered a very interactive & useful lecture for the benefit of the students on 19th January 2018, where the students got a chance to learn many practical aspects of various unit operations in a sugar factory.



4. The participants of International Conference Agricon-2018 visited the institute on 15th February, 2018 They visited various laboratories, nano brewery, nano ethanol unit and Experimental Sugar Factory etc.



5. Shri Devendra Singh “Bhole Singh” Hon’ble Member of Parliament from Akbarpur constituency and Shri Arun Pathak, MLC visited the institute on 1st March, 2018. They visited many newly developed facilities viz.

Analytical Laboratory & Ethanol Laboratory at the institute.



➤ **CONSULTANCY:**

During January-March, 2018 consultancy services were provided to the following:

1.	M/s Tikaula Sugar Mills Ltd., Distt-Muzaffarnagar, U.P.
2.	M/s Dwarikesh Sugar Industries Ltd., Dwarikeshpuram, Bundki, Distt- Bijnor, U.P.
3.	M/s Dwarikesh Sugar Industries Ltd., Dwarikeshnagar, Bundki, Distt- Bijnor, U.P.
4.	M/s Dalmia Bharat Sugar Industries Ltd., Unit-Nigohi, Distt-Shahjhanpur, U.P.
5.	M/s Uttam Sugar Mills Ltd., Libberheri, Distt-Haridwar, Uttarakhand.
6.	M/s Dhampur Sugar Mills, Dhampur, Distt- Bijnor, U.P.
7.	M/s K.M. Sugar Mills Ltd., Motinagar, Faizabad, U.P.
8.	M/s Uttam Sugar Mills Ltd., Barkatpur, Distt- Bijnor, U.P.
9.	M/s L.H. Sugar Factories Pvt. Ltd., Saukara, Distt- Pilibhit, U.P.
10.	M/s Tikaula Distillery, Distt-Muzaffarnagar, U.P.

11.	M/s Saraiya Sugar Mills Ltd. Sardarnagar, Gorakhpur, U.P.
12.	M/s Lord Distillery Ltd., Shadiabad, Ghazipur, U.P.
13.	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., Laksar, Distt- Haridwar, Uttarakhand.
14.	M/s R. B. N. S. Distillery, Laksar, Distt- Haridwar, Uttarakhand.
15.	M/s Triveni Engineering & Industries Ltd., Unit-Sabitgarh, Distt- Bulandshahr, U.P.
16.	M/s Hari Nagar Sugar Mills Ltd., West Champaran, Bihar.
17.	M/s Dalmia Bharat Sugar Industries Ltd., Unit-Nigohi, Distt-Shahjhanpur, U.P.
18.	M/s Wave Industries Pvt. Ltd., unit-Bijnor, Distt- Bijnor, U.P.
19.	M/s Wave Industries Pvt. Ltd., unit-Dhanaura Mandi, Distt- Amroha , U.P.
20.	M/s Wave Industries Pvt. Ltd., unit-Bulandshahr, Distt- Bulandshahr, U.P.
21.	M/s PBS Food Pvt. Ltd., unit- Chandpur, Distt- Bijnor, U.P.
22.	M/s Dewan Sugar Ltd., Distt- Moradabad, U.P.
23.	M/s Shamli Distillery & Chemical works, Unit of Sir Shadilal, Distt- Shamli, U.P.
24.	M/s Neoli Sugar Factory, Distt- Kasganj, U.P.
25.	M/s Sonipat Co-operative Sugar Mills Ltd., Sonipat, Haryana.
26.	M/s Triveni Engg. & Industries Ltd., Sugar, Unit- Milaknarayan, Distt- Rampur, U.P.

27.	M/s Rudra- Bilas KSCM Ltd., Bilaspur, Rampur, U.P.
28.	M/s Nanglamal Sugar Complex ,Distillery Division, unit of Mawana Sugars Ltd., Distt- Meerut, U.P.
29.	M/s Nanglamal Sugar Complex, unit of Mawana Sugars Ltd., Distt- Meerut, U.P.
30.	M/s Balrampur Chini Mills Ltd., Unit-Balrampur Distillery, Distt- Balrampur, U.P.
31.	M/s The Kisan Sahkari Chini Mills Sathion, Distt- Azamgarh, U.P.
32.	M/s Dalmia Chini Mills Ltd., Jawahapur, Ramkote, Distt- Sitapur, U.P.
33.	M/s Dhampur Sugar Mills Ltd., Asmoli, Distt- Sambhal, U.P.
34.	M/s Dalmia Bharat Sugar Industries Ltd., Nigohi, Distt- Hardoi, U.P.
35.	M/s Dalmia Bharat Sugar Industries Ltd., Ramgarh, Distt- Sitapur, U.P.
36.	M/s PBS Food Pvt., Ltd., Chandpur, Distt- Bijnor, U.P.
37.	M/s Wave Industries Pvt., Ltd., Unit-Saharanpur, U.P.
38.	M/s Wave Industries Pvt., Ltd., Unit-Bijnor, U.P.
39.	M/s Wave Industries Pvt., Ltd., Unit-Bulandshahr, U.P.
40.	M/s Wave Industries Pvt., Ltd., Unit-Amroha, U.P.
41.	M/s Balrampur Chini Mills Ltd., Unit-Babhnan Distillery, Distt- Gonda, U.P.
42.	M/s Dhampur Sugar Mills Ltd., Unit-Dhampur, Distt- Bijnor, U.P.

43.	M/s Triveni Engineering & Industries Ltd., Chandanpur, Distt- J.P. Nagar, U.P.
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➤ **ANALYTICAL SERVICES:**

Analytical services were rendered to following:

1.	M/s Shravasti Kisan Sahkari Chini Mills Ltd., Nanpara, Distt- Bahraich, U.P.
2.	M/s The Kisan Sahkari Chini Mills Ltd., Shahjahanpur, U.P.
3.	M/s The Kisan Sahkari Chini Mills Ltd., Sathiaon, Distt- Azamgarh, U.P
4.	M/s Daurala Sugar Works, Daurala, Distt- Meerut, U.P.
5.	M/s The Kisan Sahkari Chini Mills Ltd., Nazibabad, Bijnor, U.P.
6.	M/s The Nawanshahar Co-operative Sugar Mills Ltd., Nawanshahar, Distt- Shahid Bhagat Singh Nagar, Punjab.
7.	M/s Uttam Sugar Mills Ltd., unit- Barkatpur, U.P.
8.	M/s The Kisan Sahkari Chini Mills Ltd.,Tilhar, Shahjahanpur, U.P.
9.	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., Laksar, Uttarakhand
10.	M/s The Kisan Sahkari Chini Mills Ltd., Kaimganj, Farrukhabad, U.P.
11.	M/s Shanti Sugar Industries, Kareem Nagar, Distt- Bijnor, U.P.
12.	M/s Rajasthan State Ganganagar Sugar Mills Ltd., Rajasthan.
13.	M/s Harinagar Sugar Mills Ltd., Harinagar, West-Champaran, Bihar.
14.	M/s Uttam Sugar Mills Ltd., Unit- Shermau, Distt- Saharanpur, U.P.
15.	M/s Seksaria Biswan Sugar Factory Ltd., Distt- Sitapur, U.P.

16.	M/s Balrampur Chini Mills Ltd., Unit- Haidergarh, Distt- Barabanki, U.P.
17.	M/s The Shahabad Co-operative Sugar Mills Ltd., Shahabad, Distt- Kurushetra, Haryana.
18.	M/s Uttam Sugar Mills Ltd., Unit- Barkatpur,, Distt- Bijnor, U.P.

➤ **NEW YEAR CELEBRATED:**

New Year get-together function was organized observed at the institute on 7th January, 2018. Many distinguished alumni also graced the occasion.



➤ **REPUBLIC DAY:**

The Institute celebrated 69th Republic Day on 26th January, 2018. On this occasion, Prof Narendra Mohan, Director hoisted the National Flag and took the salute from the security guards.



He called upon the staff and students to work together in making NSI clean and green campus. Discipline, dedication and attitude, these are three key factors for achieving success in life, he added on the occasion, winners of various competition held during Swachta & Hindi Pakhwada were also awarded.

➤ **EXPERIMENTAL SUGAR FACTORY:**

“Boiler Pooja” performed, on 24th January, 2018 with firing of boiler. Mill Pooja performed on 29th January, 2018 for the crushing season 2017-18 at ESF.



Crushing operation in the Experimental Sugar Factory closed on 9th March, 2018.

➤ **PREPARATION & SALE OF SUGAR STANDARD GRADES:**

To facilitate grading and marketing of Plantation White Sugar, Bureau of Sugar Standards issued 131 Sugar Standard Grades

to 23 Sugar factories during the period January-March 2018.



➤ **SWACHHTA PAKHWADA:**

Swachhta Pakhwada was organized from 16th to 28th February, 2018. During the Swachhta Pakhwada various activities such as “Drawing Competition, Nukkad Natak, Eassy & Poem competition were organized. In which staff and students enthusiastically participated.





➤ हिंदीकार्यशाला:

सरकारी कामकाज में राजभाषा के रूप में हिन्दी के प्रति जागरूकता लाने तथा उसके उत्तरोत्तर विकास हेतु संस्थान में 16मार्च 2018 ,को हिन्दी कार्यशाला का आयोजन किया गयाजिसमें संस्थान ,के निदेशक ने सभी विभागाध्यक्षों को निदेशितकिया कि सभी अपने अधीनस्थ कर्मचारियों को हिन्दी में कार्य करने को प्रेरित करें जिससे कि राजभाषा विभाग के निर्देश का पालन सुनिश्चित किया जा सके।



➤ INDUSTRIAL VISIT:

Students of Pradhan Mantri Kaushal Kendra (PMKK) Skill Development Centre, Kanpur visited institute on 22nd March, 2018.



They visited various laboratories, Nano brewery, Nano Ethanol Unit and Experimental Sugar Factory situated in the institute. Information regarding courses conducted by the institute and job prospects was given to the students.



➤ WI-FI CAMPUS:

Institute campus has been converted into a Wi-Fi campus now. The facility has been developed for the entire academic area, institute hostels, Experimental Sugar Factory and other places where it is essentially required.

