



NEWSLETTER

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



The measures taken by the central government raising MSP of sugar from ₹ 29 per kg to ₹ 31 per kg and sanction of soft loans of ₹ 10,570 crore is likely to help the sugar industry in clearing their cane dues. Some state governments have also taken steps to improve the liquidity position of stressed sugar mills. With production of sugar expected to be lower this season corresponding to last year, diversion of sugar to ethanol through B-heavy molasses & cane juice route and expected 5.0 million tonnes of sugar export, the sugar prices are expected to remain firm or in-fact may move up.

Ethanol is expected to remain in lime light as seen from large member of applications received for seeking financial assistance for expansion of existing units, for ZLD compliance & for setting up green field projects. The ethanol blending is estimated to touch 7.2 percent in 2018-19 as record 237 million liters of supplies have been contracted. It is a significant rise from the blending rate of 4.22 percent achieved in 2017-18.

As I always emphasize upon, for the Indian sugar industry still there is long way to go to achieve economic sustainability and it should definitely look at conversion of sugar factories into bio-refineries in a phased manner.

**Narendra Mohan
(Director)**

➤ SEMINAR ORGANIZED:

1. One day seminar on "Ethanol: Policy, Productivity & Profitability" organized by National Sugar Institute on 28th February 2019 at New Delhi was inaugurated by Shri Vijay Goel, Chairman, Dhampur Sugar Mills Ltd. Director, National Sugar Institute made opening & introductory remarks on the topic. Shri D. Swain, Prof. Sugar Engineering, Dr. (Mrs.) Seema Paroha, Prof. Bio Chemistry and Shri Vinay Kumar, Asstt. Prof. Sugar Engineering also attended the seminar.



The seminar was concluded with a message to develop distilleries working on multiple feed stocks, benchmarking of the performance parameters & focusing on developing newer technologies to achieve ZLD.

2. Director, National Sugar Institute inaugurated one day seminar on the topic "Mill Performance Improvement - A review" organized by J. P. Mukherji & Associates Pvt. Ltd., Pune jointly with Lal Bahadur Shastri Ganna Kisan Sansthan, Lucknow on 30th March, 2019. Shri D. Swain, Prof. Sugar Engineering, Shri Vinay Kumar, Asstt. Prof. Sugar Engineering, Shri Anoop kumar Kanaujia, Asstt. Prof. Sugar Engineering & Shri P Prashant also attended the seminar.



➤ AWARD & BOOK RELEASE:

Director, National Sugar Institute was conferred with "Lifetime Achievement Award" & his book entitled "An Insight to Sugar Manufacture" was also released during the International Conference "SUGARCON 2019" held at Lucknow, U.P. from 16-19th February 2019.



➤ WORKSHOP ATTENDED :

Director, National Sugar Institute attended the workshop on “Compressed Bio Gas (CBG) – an Opportunity for the Sugar Industry” organized by Ministry of Petroleum and Natural Gas jointly with ISMA 21st January, 2019. He also made an innovative presentation on production of “Bio CNG from Filter Cake”. Dr. (Mrs.) Seema Paroha, Prof. Biochemistry also attended the workshop.



➤ FOREIGN DELEGATION:

High level delegation from Nigeria visited various laboratories, classrooms, factory, farm and hostels taking keen interest in the present activities of the institute. They also desired to seek institute’s assistance for setting up a sugar institute at Nigeria & on various other technical aspects of sugar production.



➤ RESEARCH:

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. Field trials of various treatments using these bio fertilizers are in progress. Sowing of crop *urad* has been done as per the selected treatments at the institute farm.



2. Utilization of bagasse as dietary fiber- Studies on characteristics of bagasse as a food supplement initiated. Bagasse sample obtained from juicer machine was analyzed for its 1. Moisture content & Ash content 2. Composition (cellulose, hemicelluloses, lignin).



3. Physical properties (swelling power, solubility index, water absorption capacity, oil absorption capacity, bulk density) before and after chemical treatment.

3. Bio-CNG from Filter Cake– With an aim to utilize the filter cake for production of Bio-CNG, different combinations filter cake, farm yard manure and spent wash were initially tried on laboratory scale & then a small pilot plant was developed. New set for “Production of Bio-CNG from Filter cake” has been set up. Initial trials indicate production of 1 kg Bio-CNG from about 30 kgs filter cake.



Previously different chemicals like NaOH, KOH, lime water were used for scrubbing of gases evolved during production of methane. In the new set of experiments, water scrubbing was also tried for the purpose of gas scrubbing.

Results revealed that with water scrubbing, only 15-20 percent of pure methane was obtained indicating that purity levels were less as compared to lime water which gave 85 to 95 % pure methane.

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

– Study aims at valorization of pentose sugars of bagasse. The synthesis & isolation of target compound from bagasse derived xylose solution has been completed. The purification and its characterization is on-going. The outcome of the study is expected to explore a new area of utilization of bagasse i.e. for producing cosmetic ingredients.

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. Current research activities focus on scaling up the developed process and to find out the production cost estimates. Two new sets of reactions (on 100 gm scale @ sugarcane bagasse dry weight) are being used to validate the results. Further studies are in progress.

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.

- i. The initially isolated compounds are being analyzed for characterization.
- ii. The isolation of xylose as hydrolysate from sugarcane-trash has been carried out.

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

With an aim to isolate cellulose (to be used as starting material) from bagasse, experiments have been carried out to fractionate hemicelluloses and lignin (three steps process). The step first (hemicelluloses extraction) has been completed.



8. Mechanical clarification of juice – This research work has been taken up with a view to minimize use of chemicals for production of white sugar. Experiments were conducted with application of different flocculent doses & centrifugation times. Encouraging results have been observed with respect to colour and turbidity removal & further experiments with cane juice & analysis of data obtained is being carried out.

9. Use of brine reject in final molasses – Brine recovery and disposal of brine reject is an area of concern from environment angle. Fresh sample of brine reject and molasses were procured and further experiments are being conducted to assess the effect of brine reject on molasses quality upon storage. Its effect on fermentability of the molasses is also under study.

10. Super short retention time clarifier – With an aim to reduced retention time in clarifier modified design having inclined surfaces for mud settling has been developed.

Preliminary trials on pilot scale were conducted successfully and the quality of clear juice was found at par or even better than the clear juice from conventional clarifier. Further trial will be carried out with some modifications in the design.



➤ RESEARCH PAPERS:

1. “Sustainability of Sugar Industry – Sugar Production and Beyond by Narendra Mohan was presented in Sugarcon-2019 held at IISR, Lucknow from 16-19th February, 2019.

2. “Sugarcane as Energy cane, an Enormous Source of Bioenergy” by Narendra Mohan & D. Swain have been accepted for presentation in International Conference on Biofuels and Bioenergy to be held at San Francisco, CA, USA from 29th April to 01st May, 2019.

3. “Effect of Potassium Application on Nutrient Uptake, Yield and Quality of Sugarcane & Sustainable Soil Health” by Narendra Mohan, Ashok Kumar & Lokesh Babar published in International Journal of

Green Farming volume - 10 no.1 page - 105-107.

4. “Biomass Energy for Economic & Environmental Sustainability in India” by Narendra Mohan & Anoop Kumar Kanaujia published in Sugar Technology-An International Journal of Sugar Crops and related industries.

5. “Experiences with B- Heavy Molasses Diversion for Ethanol Production” by Narendra Mohan, D. Swain & Dr. Seema Paroha presented during Technical Seminar organized by All India Distiller’s Association on 7 - 8th February, 2019 at New Delhi.

6. “Sugar Production to Meet Consumer Preferences” by Narendra Mohan presented during “Sugarcon-2019” on 16-19th February, 2019 at IISR, Lucknow, U.P.

7. “Techno Economic Viability of Ethanol Production from B- Heavy Route” by Narendra Mohan, D. Swain & Dr. Seema Paroha presented during national seminar jointly organized by NSI- NFSC on “Ethanol- Policy, Productivity & Profitability on 28th Feb, 2019 at New Delhi.

8. “Mill Efficiency Improvement” by D. Swain presented during seminar organized by J. P. Mukherji & Associates Pvt. Ltd., Pune jointly with Lal Bahadur Shastri Ganna Kisan Sansthan on 30th March, 2019 at Lucknow, U.P.

9. “Efficient Milling” by D. Swain presented during seminar organized by J. P. Mukherji & Associates Pvt. Ltd., Pune on 28th March, 2019 at Meerut, U.P.

➤ CONSULTANCY:

During January-March 2019 consultancy services were provided to the following:

1.	M/s DSCL Sugar, Rupapur, Distt – Hardoi, U.P.
2.	M/s L.H. Sugar Factory, Distt – Piliphit, U.P.
3.	M/s Harinagar Sugar Mills Ltd., West Champaran, Bihar.
4.	M/s Mawana Sugar Works, Mawana, Distt – Meerut, U.P.
5.	M/s Dalmia Sugar Mills Ltd., Ninai Devi, Distt – Kolhapur, Maharashtra.
6.	M/s Dewan Sugar Ltd., Distt – Moradabad, U.P.
7.	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., Laksar, Distt – Haridwar, Uttarakhand.
8.	M/s DSCL Sugar, Hariawan, Distt – Hardoi, U.P.
9.	M/s DSCL Sugar, Ajbapur, Distt – Lakhimpur-Kheri, U.P.
10.	M/s EID Parry (India) Ltd., Sankili, Andhra Pradesh.
11.	M/s Avadh Sugar Energy Ltd., Hargaon, Distt – Sitapur, U.P.
12.	M/s Dhampur Sugar Mills Ltd., Dhampur, Distt – Bijnor, U.P.
13.	M/s Kisan Sahkari Chini Mills Ltd., Unit – Nazibabad, Distt – Bijnor, U.P.
14.	M/s The Shahabad Co-op. Sugar Mills Ltd., Shahabad, Distt – Kurukshetra, Haryana.
15.	M/s Kichha Sugar Company Ltd., Distt – Udham Singh Nagar, Uttarakhand.
16.	M/s Triveni Engineering & Industries Ltd., Unit -Khatauli, Distt – Muzaffaragar, U.P.

17.	M/s Uttam Sugar Mills Ltd., Barkatpur, Najibabad, Distt – Bijnor, U.P.
18.	M/s Olam Agro India Pvt. Ltd., Distt - Gurugram, Haryana.
19.	M/s DSCL Sugar, Hariawan, Distt – Hardoi, U.P.
20.	M/s Uttam Sugar Mills Ltd., Unit – Libberheri, Distt – Haridwar, Uttarakhand.
21.	M/s Dhampur Sugar Mills, Asmoli, Distt – Moradabad, U.P.
22.	M/s Chadha Sugar & Industries Pvt. Ltd., Batala, Distt – Gurdaspur, U.P.
23.	M/s Indian Sugar Exim Corporation Ltd., New Delhi.
24.	M/s Triveni Engineering & Industries Ltd., Unit – Rani Nangal, Distt – Moradabad, U.P.
25.	M/s Triveni Engineering & Industries Ltd., Unit – Chandanpur, Distt – Amroha, U.P.
26.	M/s National Forum of Sugar Consultants, New Delhi.
27.	M/s Panipat Co-operative Sugar Mills Ltd., Panipat, Haryana.
28.	M/s Dhampur Sugar Mills Ltd., Unit – Mansurpur, Distt – Muzaffaranagar, U.P.
29.	M/s Bannari Amman Sugar Ltd., Distt – Coimbatore, Tamil-Nadu.
30.	M/s Triveni Engineering & Industries Ltd., Sugar, Unit – Milak Narayanpur, Distt – Rampur, U.P.
31.	M/s Dalmia Sugar & Industries Ltd., Unit – Kolhapur, Maharashtra.
32.	M/s Shri Datta Sakar Karhana, Distt – Kolhapur, Maharashtra.

33.	M/s Sonipat Co-operative Sugar Mills Ltd., Sonipat, Haryana.
34.	M/s Kesar Enterprises Ltd., Distt – Bareilly, U.P.
35.	M/s Shri Malaprabha Sahakari Sakkare Karkhana, Hubli.
36.	M/s Daurala Sugar Works Ltd., Distt – Meerut, U.P.
37.	M/s Haryana Co-operative Sugar Mills Ltd., Panchkula, Distt – Rohtak, Haryana.
38.	M/s Triveni Engineering & Industries Ltd., Unit - Sabitgarh, Distt – Bulandshahar, U.P.
39.	M/s Triveni Engineering & Industries Ltd., Unit - Ramkola, Distt – Kushinagar, U.P.

➤ **ANALYTICAL SERVICES:**

Analytical services were rendered to following:

1.	M/s Dalmia Sugar Mills Ltd., Nigohi, Distt – Shahjahanpur, U.P.
2.	M/s The Kisan Sahkari Chini Mills Ltd., Mahmoodabad, Distt – Sitapur, U.P.
3.	M/s Shree Madhi Vibhag Khand Udyog Sahakari Mandli Ltd., Distt – Surat, Gujarat.
4.	M/s Rudra Bilas Kisan Sahkari Chini Mills Ltd., Bilaspur, Distt – Rampur, U.P.
5.	M/s Balrampur Chini Mills Ltd., Unit – Babhnan, Distt – Gonda, U.P.
6.	M/s U.P. Co-operative Factory Federation Ltd., Lucknow, U.P.
7.	M/s DSCL Sugar, Rupapur, Distt – Hardoi, U.P.
8.	M/s DSCL Sugar, Loni, Distt – Hardoi, U.P.

9	M/s Simbhaoli Sugar Mills Ltd., Distt – Ghaziabad, U.P.
10	M/s DSCL Sugar, Unit - Loni, Distt- Hardoi, U.P.
11	M/s DSCL Sugar, Unit – Rupapur, Distt- Hordoi, U.P.
12	M/s Harinagar Sugar Mills Ltd., Harinagar, West Champaran, Bihar.
13	M/s Shahabad Co-operative Sugar Mills Ltd., Shahabad, Distt – Kurukshetra, Haryana.
14	M/s K.M. Sugar Mills Ltd., Distt – Faizabad, U.P.
15	M/s Dalmia Sugar Mills Ltd., Unit – Nigohi, Distt – Shahjahanpur, U.P.
16	M/s Ninaidevi Sakhar Karkhana, Distt – Sangli, Maharashtra.
17	M/s Global Cane Sugar Services Pvt. Ltd., New Delhi.

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

➤ PREPARATION AND SALE OF SUGAR STANDARDS:

Sale of sugar standards for the sugar season 2018-19 commenced from 1st October, 2018. Bureau of Sugar Standards issued 127 Sugar Standard Grades to 29 sugar factories during January-March, 2019.

➤ VISIT OF DIGNITARIES:

1. Mr. Narayan Thete, Eminent Sugar Technologist of 1974 batch visited the institute with Mr. S B Bhad, Chairman, of M/s S.S. Engineers to work jointly on performance evaluation of Diffusers.

2. Mrs. Usha Chandrasekhar, Ex. Chief Post Master General of India & daughter of Late C. V. Subba Rao, who was a student of Sugar Technology 1949-51 visited the Institute. She constituted a gold medal in memory of her father to be given to the student of Sugar Technology course securing first rank in the final examination.



➤ OUR OTHER ACTIVITIES :

1. "KRISHAK SAMVAAD" was organized at the institute providing platform for creating awareness among farmers about new sugarcane varieties, planting method from bud chip to trench planting, methods of irrigation including micro-irrigation and on inter-cropping.





2. Experimental Sugar Factory operated during the crushing season 2018-19 where students of Sugar Technology First Year Course got their in-plant training. Trials of few new equipments viz. stirrer-less juice sulphiter and moisture control unit was also made.



3. The Institute celebrated 70th Republic Day on 26th January, 2019.



On this occasion, Shri Narendra Mohan, Director hoisted the National Flag and took the salute from the security guards.

Highlighting the commendable work carried out by the institute for upgrading teaching and training facilities, he called upon the staff and students of the institute work with dedication so that the institute may achieve its target of becoming an “Institute of Eminence”.



4. SBI-ATM at NSI, Kanpur was inaugurated on 1st February, 2019 by Prof. Narendra Mohan, Director, National Sugar Institute.



5. Under the Swachhta Activities taken up by the institute, a bio-toilet was provided by the institute to nearby Government Primary School (Girls). Awareness was also created amongst the students about swachhta.



6. Students of B. Tech (Biotechnology) CSJM University visited Experimental Sugar Factory on 16th February 2019 and took keen interest to know various unit operations carried out for production of sugar.



7. Swachhta oath was administered to staff and students and special cleanliness drive

"Swachhta Pakhwada was undertaken in and around campus from 16th February, 2019.



Essay & painting competitions and Nukkad Natak were also organized involving staff & students of the institute.

8. New Year Get-together function has been observed at the institute on 20th January, 2019. Many distinguished alumni graced the occasion.

