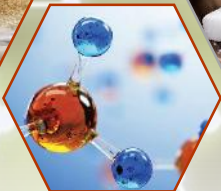




NATIONAL SUGAR INSTITUTE KANPUR – 208017 (U.P.), INDIA



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NEWSLETTER

JULY – SEPTEMBER, 2020



Due to pandemic, it has been a bitter year for the Indian economy, but sugar exports took a jump with many factors like better international prices, periodic review of export quota and opening of new market helping in sugar exports to the extent of 5.7-5.8 million tonnes. With the onset of next crushing season 2020-21, the

sugar factories have started conducting sugarcane surveys to assess basically the quality to decide on probable date of start of crushing operations. The next sugar season is also expected to be sugar surplus and thus balancing of demand-supply shall again be at the top of agenda.

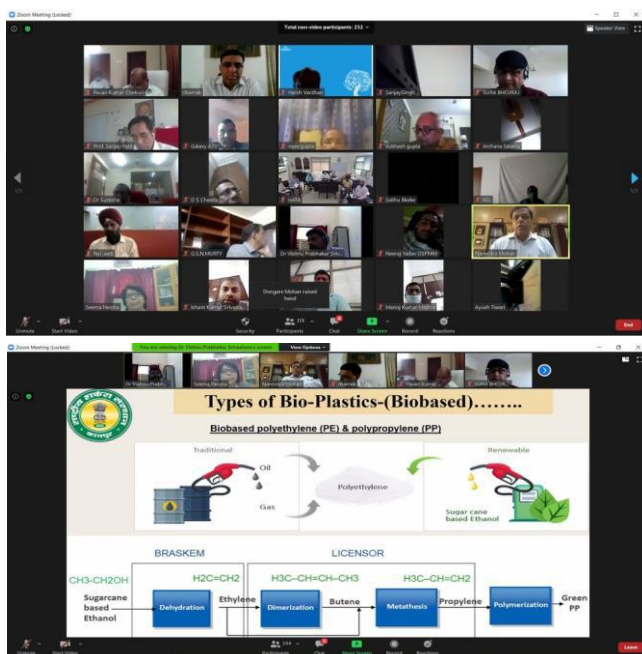
With WTO restrictions, Brazil expected to prefer production of sugar over ethanol and probable curtailment in sugar consumption due to pandemic, exports are going to be challenging. Looking to the opening stocks of sugar for the sugar season 2020-21 and expected sugarcane availability during forthcoming sugar season, Indian sugar industry is required to look into diversion of sugar for ethanol which has assured market and price. The industry is also required to brainstorm on production of safe and healthier sugars with a close eye on market requirements including exports.

I wish a very successful and healthier crushing season 2020-21.

Narendra Mohan
Director

WEBINARS ORGANIZED:

1. An International WEBINAR on "**Alternate Uses of Bagasse**" was organized by the institute on 2nd July, 2020. Inaugural address was delivered by Shri R. L. Tamak, Executive Director & CEO (Sugar Business), DCM Shri Ram Ltd. and concluding remarks were given by Dr. MS Sundaram, Managing Director, JPMA, Pune. Presentations were also given by the institute faculty members on Bio-plastic, Particle Board, Eco-Ware Crockery and Dietary fiber from sugarcane bagasse.



2. An International webinar was organized on 06th August, 2020 on the topic "**Sugar & Sweeteners-Quality and Consumption Patterns**" jointly by National Sugar Institute, Kanpur, National Sugar Development Council, Nigeria and Assiut University, Egypt, wherein large nos. of delegates from India, Sudan, Egypt, Nigeria, Sri Lanka, Saudi Arabia, Kenya and Nepal participated. Lectures were delivered by institute faculty and eminent experts from other countries.



ONLINE WORKSHOP ORGANIZED:

An online workshop was organized on 28th July, 2020 on the topic "**Good Laboratory Practices and Quality Control in Sugar Factories**". Beside the Indian participants, seven overseas candidates attended the programme. Informative lectures were delivered on Good Laboratory Practices such as calibration of equipments/ instruments and standard procedures for analysis of dextran, colour, starch and conductivity ash etc.



EXECUTIVE DEVELOPMENT PROGRAMME

Five days online “**Executive Development Programme**” was conducted by National Sugar Institute, Kanpur, on 24th - 28th August, 2020.



The programme was inaugurated by Secretary (Food & Public Distribution), Government of India. Joint Secretary (Sugar & Administration) also graced the occasion. The programme was attended by about 100 senior executives from Indian & Overseas sugar industries. Lectures were delivered on the important topics relating to project management, raw material management, inventory management, human resource management, and on recent trends in processing.

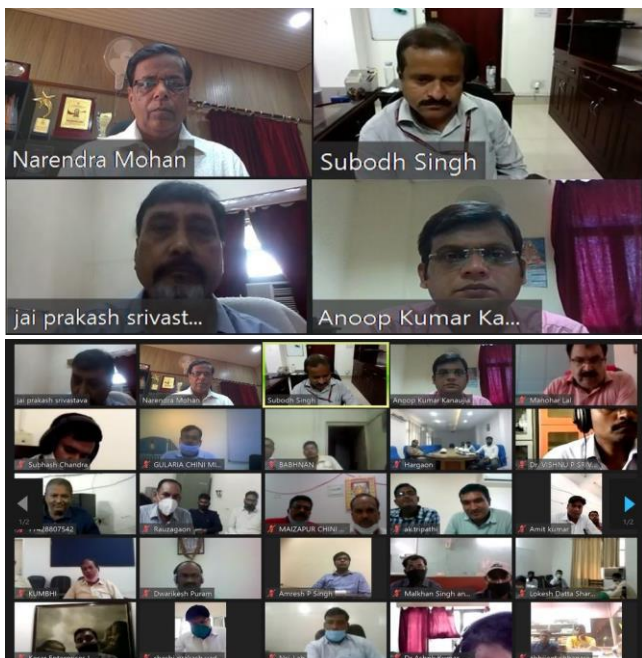
VIRTUAL TRAINING PROGRAMME

1. Two days online training programme on “**Supply Chain Management in Sugar and Allied Industries**” was organized on by the

institute from 9th to 10th September, 2020. About 200 trainees from all over the country, Kenya and Nigeria participated in the programme wherein they were trained on measures to be taken for ensuring safe food from “farm to fork.”

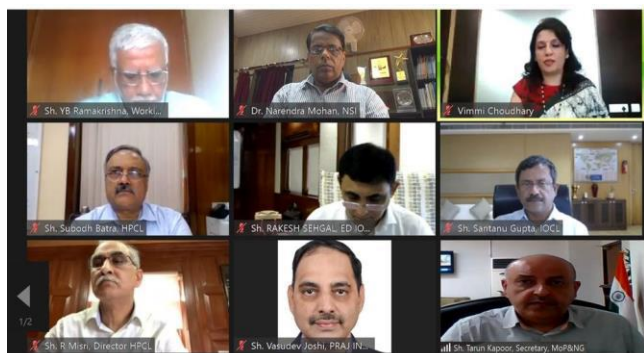


2. Three days online virtual training programme on “**Operation & Effluent Analysis in Sugar Factories**” was conducted by National Sugar Institute, Kanpur, was held on 22nd to 24th September, 2020. The programme was inaugurated by Shri Subodh Kumar Singh (IAS), Joint Secretary, Department of Food & Public Distribution, Government of India. He stressed the need for a clean and green sugar industry through technological interventions, removing tag of a polluting industry. Training was imparted on recent technological interventions in effluent treatment and standard protocol for waste water analysis.



ONLINE LECTURE:

An online lecture was delivered on 10th August, 2020 by Director, National Sugar Institute, Kanpur on the topic of **“Bio-fuels towards Atmanirbhar Bharat”** during the interactive session organized by Ministry of Petroleum & Natural Gases. During the lecture, he highlighted the potential of ethanol production, need for alternate feed stocks and challenges in cane juice diversion.



ONLINE MEETING:

1. Online meeting of FAD-2, Bureau of Indian Standards, New Delhi was held on 22th July, 2020 under the Chairmanship of Director, NSI, Kanpur for revising existing standards and

framing of new ones. The revised standards for raw sugar, refined sugar and icing sugar were finalized. New standards are to be framed for low Sulphur Sugar, Brown Sugar and Organic Sugar.



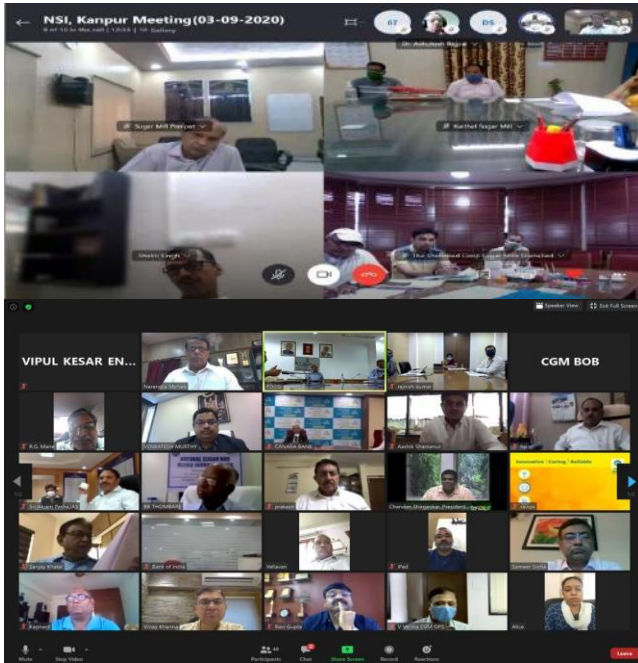
Sl. No.	Characteristics	Requirements				Method of test, Ref to	
		LP	SRP	NSRP	NSRIP	Annex of this Standard	IS No. of IS:1279
(1)	(2)	(3)				(4)	(5)
1)	Polarization, Min	96.2	98.0	99.0	99.5	—	6
2)	Reducing sugars, percent by mass, Max	1.0	0.8	0.6	0.40	—	7
3a)	Impurities, max, percent by mass, Min	0.8	0.6	0.5	0.4	—	10
3)	Safety factor, Min	0.3	0.3	0.3	0.2	A	—
4)	Crystall size, Min	400	400	400	400	B	—
5)	Crystall size, Max	400	400	400	400	—	—
6)	Colour (IU) max	2000	1500	1000	500	—	—
7)	Starch mg/ kg max	200	150	100	50	—	—
8)	Free ash, mg/ kg max	150	100	50	50	—	—

2. Online meeting of 53rd Advisory Board of the Institute was held on 24th July, 2020 under the Chairmanship of Joint Secretary (Sugar & Administration), Government of India. The board, while expressing satisfaction on the working of the institute, stressed for undertaking more collaborative research projects for developing technologies for value addition through better by-product utilization.

3. Meeting Co-chaired by Secretary (Food & Public Distribution), Secretary (Ministry of Petroleum & Natural Gas), Secretary (DFS), Government of India was held with the stakeholders of sugar & allied industry to discuss measures for boosting ethanol supplies. Director, NSI also participated in the meet & expressed his views.



4. An online meeting was held on 4th September, 2020 between National Sugar Institute, Kanpur and Haryana Sugar Federation officials for seeking institute's help in producing good quality fortified jaggery and adoption of bio-gas production technology from filter cake in its existing sugar units.



RESEARCH:

- 1. Studies on isolation of Lignin from sugar industry based biomass and development of the process for the conversion of derived lignin and fermentable sugar to Value-added product** - The experimental work has been conducted to get at least 10 gm lignin. The related isolation, purification and identification of the desired compound are under process.
- 2. Studies on access of bio-plastic as polyethylene substitute from sugarcane bagasse** - Literature survey has been completed and based on it and the work plan, procurement of the required material is in progress.
- 3. Studies on the feasibility of utilization of sugarcane bagasse as a potential feedstock**

to access cosmetic ingredients - Re-quantification of xylose content in bagasse hydrolysate via spectrophotometric method has been performed and the related experimental work is in progress.

4. Studies on pot-efficient synthesis of alkyl levulinates (Als) using sugarcane bagasse derived cellulose - A paper in the form of manuscript entitled "Valorization of Sugarcane Bagasse Cellulose to Methyl Levulinate within a bio-refinery approach by direct alcoholysis" has been prepared and submitted for the presentation in STAI Convention 2020.

5. Standardization of method for determination Preparatory Index - Literature survey on the topic has been completed on the different methods to determine the PI recommended by various laboratory manuals. The desired equipment is being procured for conducting trials during sugar season 2020-21.

6. Role of Hydroxyapatite (HAp) in cane juice clarification - Further experiments on lab scale were carried out at different pH (9.0 - 10) and temperature (98-100°C) to form the precipitate after applying the different doses of lime and phosphoric acid. The structure of Hydroxyapatite precipitate was studied and further experiments shall be carried out on autoclave at higher pH & temperature.

7. 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. - Project approved along with the components/equipment for the project. Material required for first part of the study is under procurement and receiving of items is awaited. The items for second part of the study is in progress.

8. Studies on deterioration patterns on different sugars - Four sugar samples were analysed for parameters such as colour, ash, pol, pH, RS, SO₂, turbidity as per plan of work. The study shall be published in the form of a paper.

9. Utilization of Potash Rich ash for production of valuable bio fertilizer. - A paper was prepared on "Utilization of Incineration ash of sugar factory boiler for production of valuable bio fertilizer and their assessment on *Urad crop*. Preparation of *azatobacter* and *PSB* bio-fertilizers Initiated the same will be used in sugar cane crop.

10. Comparative study of Nine varieties of sweet sorghum for production of ethanol yield. - Compilation of the report of the first trial was done and submitted. The second trial on cultivation of these varieties is undergoing in consultation with Indian Institute of Millets Research, Hyderabad

RESEARCH PAPERS:

1. A research paper on "**Rationalization of Potassium Salt of Active Phosphorus (PSAP) dose for maximum economic yield, quality of sugarcane and soil sustainability**" by Narendra Mohan, Dr. Ashok Kumar, Dr. Lokesh Babar & Tej Pal Verma published in Green Farming Journal (International Journal of Applied Agricultural & Horticultural Sciences).

2. A research paper on "**Environmental Sustainability for Indian Sugar Industry**" by Narendra Mohan & Abhijeet Patil, published in International Journal for Scientific Research & Development in June, 2020, Vol. -8, No. -4.

3. A research paper on "**Water and Effluent Management in Indian Sugar Factories a Novel Approach**" by Narendra Mohan sent for publication in International Sugar Journal.

4. A research paper on "**Trials of a New Stirrerless Juice Sulphiter at Experimental Sugar Factory**" by S.K. Trivedi published in International Journal of Innovative Science and Research Technology, Vol -5, Issue -7, in July, 2020

5. A research paper on "**Automation in Indian Sugar Industry and Further Requirements: An Overview**" by Virendra Kumar and Brajesh Singh sent for publication in Indian Sugar.

6. A research paper on "**Suitability of Some Low Cost Stainless Steels as Fabrication Material in Cane Sugar Industry**" by Narendra Mohan & Ashutosh Bajpai in International Journal of Science & Research Vol. - Issue 8, August, 2020.

7. A research paper on "**Pre Clarification of Cane juice**" by Narendra Mohan, A. K. Garg, Subhash Chandra & Mohit Kumar has been accepted in International Journal for Scientific Research & Development for publication.

8. A research paper on "**An Overview of B-Heavy Molasses Diversion for Ethanol Production**" by Mohit Kumar, Vivek Pratap Singh & Narendra Mohan published in Indian Sugar in July, 2020.

9. A research paper on "**Bio Ethanol from Sugar Industry - How to Push?**" by Narendra Mohan, Director, National Sugar Institute, Kanpur, sent for publication in proceedings of STAI annual convention 2020.

10. A research paper titled "**Integrated Nutrition Management for Maximum Economic Cane Yield and Sustainable Soil Health**" by Dr. Ashok Kumar & Dr. Lokesh Babar, sent for publication in proceedings of STAI Annual Convention 2020.

11. A research paper on “**Natural Value added Product mix from Indian Sugar Industry – A Step towards Changing Tomorrow**” by Narendra Mohan & Anushka Agarwal, sent for publication in proceedings of STAI Annual Convention 2020.

12. A research paper on “**Valorization of Sugarcane Bagasse Cellulose to Methyl Levulinate with in a Bio-refinery Approach by Direct Alcoholics**” by Narendra Mohan, V.P. Singh, Chitra Yadav & Tushar Mishra, sent for publication in proceedings of STAI Annual Convention 2020.

CONSULTANCY:

The consultancy services of the institute suffered significantly due to pandemic and during July-September 2020. Thus, consultancy services could be provided only to the following:

1	M/s Dhampur Sugar Mills Ltd., Unit – Meeraganj, Distt – Bareilly, U.P.
2	M/s Dwarikesh Sugar Industries Ltd., Unit – Bundki, Distt – Bijnor, U.P.
3	M/s Shree Kedarnath Agro Product Ltd., Distt – Bagalkot, Karnataka.
4	M/s Badami Sugars Ltd., Distt – Bagalkot, Karnataka.
5	M/s Integrated Casetech Consultants Pvt. Ltd. Noida U.P.
6	M/s Venus Sugar Ltd., Distt – Sambhal, U.P.
7	M/s Kisan Sahkari Chini Mills Ltd., Distt – Bareilly, U.P.
8	Triveni Engineering & Industries Ltd., Unit – Deoband, Distt – Saharanpur, U.P.
9	Triveni Engineering & Industries Ltd., Unit – Raninangal, Distt – Moradabad, U.P.
10	M/s Isha Agro Sciences Pvt. Ltd., Distt- Sahjahanpur (UP).

11	M/s The Jind Co-operative Sugar Mills Ltd., Haryana.
12	M/s DCM Shriram Ltd., Distt- Lakhimpur Kheri (UP).
13	M/s Kesar Enterprises Ltd., Distt- Bareilly (UP).
14	M/s Wave Sugar & Industries Pvt. Ltd., Unit Dhanaura Mandi Disst- Amroha (UP).
15	M/s The Kaithal Co-operative Sugar Mills Ltd., Distt- Kaithal, Haryana.
16	M/s Integrated Casetech Consultants Pvt. Ltd., Noida (UP).
17	M/s Harinagar Sugar Mills Ltd., Distt- West Champaran, Bihar.
18	M/s Seksaria Biswan Sugar Factory Ltd., Distt- Sitapur (UP).

ANALYTICAL SERVICES:

Institute started offering testing of Ethyl Alcohol based Sanitizer in its sophisticated, most modern NABL accredited analytical laboratory. Analytical services were rendered to following for analysis of sanitizers & other sugar house products etc.

1	M/s The Kisan Sahkari Chini Mills Ltd., Sathion, Distt – Azamgarh, U.P.
2	M/s Balrampur Chini Mills Ltd., Unit – Gulariya, Distt – Lakhimpur, U.P.
3	M/s The Palwal Cooperative Sugar Mills Ltd., Palwal, Haryana
4	M/s Rai Bahadur Narain Singh Sugar Mills Ltd., Laksar, Distt – Haridwar, Uttarakhand.
5	M/s Maa Mahamaya Sahkari Shakkar Karkhana Maryadit, Ambikapur, Distt – Surajpur, Chhattisgarh.
6	M/s Seksaria Biswan Sugar Factory Ltd., Distt- Sitapur (UP).

OUR OTHER ACTIVITIES:

1. Tree plantation was organized by the younger staff of institute at campus from 1 to 7th July, 2020.



2. Dr. Smt. Seema Paroha, Professor (Biochemistry), participated as eminent speaker in National Webinar on "**Impact of Covid -19 in Human life and Environment**" and delivered lecture on "**Covid-19 Outbreak: Migration, Effects on Society, Global Environment and Prevention**" on 29th July, 2020 organized by National Academy of Sciences, Bhopal and Government PG college, Satna, (M P).

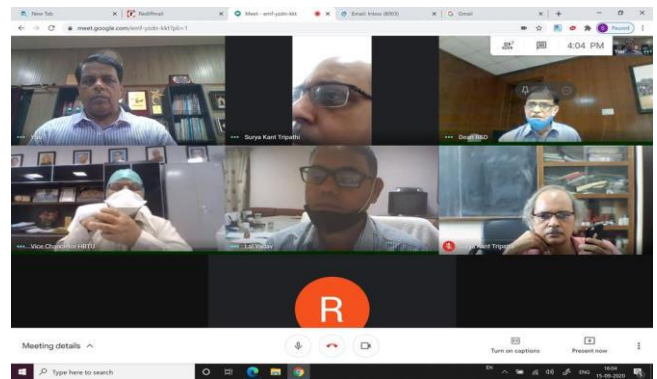
3. On the **74th Independence Day**, Director, hoisted the National Flag at the Institute and addressed the faculty members, staff, and students through online. The prizes were distributed to Staff for doing good work under "Swachhta Activities".



4. Shri Anoop Kumar Kanaujia, Assistant Professor (Sugar Engineering), presented article on "**Annual Inspection of Grossly Polluting Industries (Sugar & Distillery Units)-2020**", during one-day webinar, organized by Central Pollution Control Board (CPCB) and National Ganga River Basin Authority (NGRBA), on 7th August 2020, wherein he focused on various observations and findings based on Annual Inspections during 2019-20.

5. Sadbhavana Diwas- 2020 was observed on 20th August to commemorate the birth anniversary of former Prime Minister, Late Shri Rajiv Gandhi. Online oath was taken by the staff of the institute on this occasion.

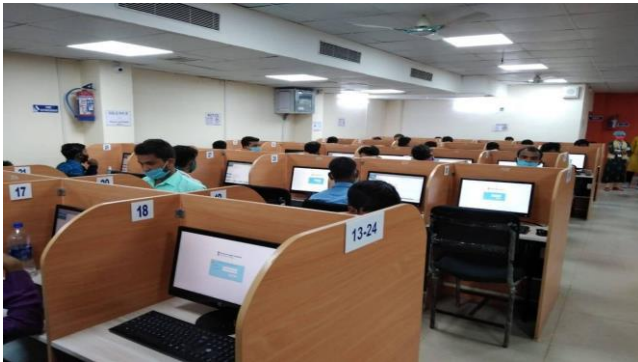
6. Director, National Sugar Institute, Kanpur was nominated to the R&D committee of prestigious Harcourt Butler Technical University (HBTU) and he attended its meeting on virtual platform on 15th September, 2020.



7. “Vishwakarma Pooja” was organized in the Experimental Sugar Factory & Instrumentation Division of the institute on 17th September, 2020 following guidelines issued in respect of covid-19.



8. Online Entrance Examination-2020 for admission to various courses conducted by NSI, Kanpur was organized on 20th September, 2020 at 15 centers across the country.



9. An online meeting of expert committee was held on 23rd September, 2020 to formulate guidelines for diversion of B Heavy molasses, juice, syrup or sugar for ethanol production during the forthcoming alcohol year.



10. Meeting of the Committee of Experts constituted by the Govt. of India under the Chairmanship of Director, National Sugar Institute for approval of Sugar Standards Grades for the season 2020-21 was held on 25th September, 2020 at IISR, Lucknow. The distribution of Standards shall commence from 1st October, 2020.



11. Institute established an "Isolation Centre" to take care of any unprecedented situation due to covid-19. Arrangements of pulse-oxy meter, thermal scanner, oxygen, nebulization and infusion have been made.



12. राजभाषा को बढ़ावा देने के लिए राष्ट्रीय शर्करा संस्थान कानपुर द्वारा 16 सितम्बर, 2020 को एक नए हिन्दी पुस्तकालय का शुभारंभ किया गया एवं राजभाषा में उत्कृष्ट प्रदर्शन एवं प्रतियोगिताओं के विजेताओं हेतु पुरस्कार वितरण किया गया।



13. निदेशक, राष्ट्रीय शर्करा संस्थान, कानपुर, ने दीनार टाइम्स चैनल पर 30 सितम्बर, 2020 को शुगर इंडस्ट्रीज पर चर्चा हेतु भाग लिया और विभिन्न उत्पादों द्वारा शुगर इंडस्ट्री के उत्थान करने के लिए चर्चा की।

14. राष्ट्रीय शर्करा संस्थान, कानपुर को बगास से एक अन्य मूल्यवर्धित उत्पाद "मिथाइल लेवुलिनेट" बनाने में सफलता प्राप्त हुयी। एंटी फ्रीजिंग गुण के कारण इसे ठंडे एवं उच्च पर्वतीय क्षेत्रों

में इसका प्रयोग बायो-डीजल में मिश्रण करने के लिए भी किया जाता है।



इसका प्रयोग खाद्य पदार्थों में फ्लेवर के रूप में प्रयोग के साथ इसे कृषि कार्यों में कीटनाशक, खर-पतवार नाशक एवं पौधों के उचित विकास के लिए किया जा सकता है। इसे कैन्सर में लोकलाइजिंग एजेंट एवं फोटो डाइनिमिक थेरेपी के अतिरिक्त अन्य उद्योगों में प्लास्टिसाइजिंग एजेंट के रूप में भी प्रयोग किया जा सकता है।

15. राष्ट्रीय शर्करा संस्थान, कानपुर के कृषि रसायन अनुभाग द्वारा किसानों की जानकारी, "मीठी चरी (स्वीट सोरघम) की खेती" एवं "गन्ने में खर पतवार के प्रबंधन" हेतु बढ़ाने के लिए पुस्तिकाओं का सरल हिंदी में प्रकाशन किया गया।

