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# VSI BULLETIN



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April - June 2025  
Vol.-25, Issue-2

## Foreword Foreword ...

During the 2024-25 crushing season, 200 sugar mills in Maharashtra were in operation of which, 101 are in cooperative and 99 are in the private sector. All the operating sugar mills in the state had crushed 85.50 Mt (Million tonnes) of sugarcane and produced 9.66 Mt of sugar including diversion of BH molasses and achieved average FRP sugar recovery of 11.29%. Out of 200 sugar mills, 127 sugar mills are diverted BH molasses, sugarcane juice/sugar syrup as a feedstock for ethanol production and under this process 1.55 Mt of equivalent sugar is sacrificed.

At National level, 534 operating sugar mills have produced 26.15 Mt of sugar by crushing 276.80 Mt of sugarcane. Around 4.50 Mt of sugar will be diverted for ethanol production.

The various activities under taken by VSI during the period from April to June 2025 have been highlighted in this issue. Recently we celebrated our Maharashtra Day, Technology Day. Seminar on AI Applications in the Sugar Industry & MOU between VSI and KVK/Agriculture Development Trust (ADT), Baramati conducted on June 9, 2025 under the Chairmanship of Hon. President of VSI Mr. Sharad Pawar. On this occasion, VSI Brought the Maharashtra State Cooperation Sugar Factory Federation, the west India Sugar Mills association and the ADT Baramati and The seminar was specially arranged for

Chairmen, Directors, and Officers of sugar mills across Maharashtra to take AI technology to the sugarcane fields.

A significant step towards collaborative research and development in sugarcane cultivation, a Memorandum of Understanding (MOU) was signed between Assam Agricultural University, Jorhat and Vasantdada Sugar Institute, Pun on June 10, 2025 at University Campus of AAU, Jorhat.

A look at the events, training, seminar and workshops reported in this issue will demonstrate the strength of VSI in this field. This is also reflected by the good placements of VSI students in sugar mill and distilleries in the country. It once again showcases the prominent role of VSI in to train and educate through training to the sugarcane growers on the domestic front. Visitors to VSI also do not fail to be impressed by its functions in research, extension and training as VSI's work has always related to sugarcane growers and industry's needs by trying to reduce the gap between the lab and land.

We are happy to place this Bulletin in the hands of our readers and look forward to their suggestions for effecting further improvements in future.

**(RM Devarumath)**  
Editor

## EVENTS EVENTS

### 65<sup>th</sup> Maharashtra Din

VSI celebrated 65<sup>th</sup> Maharashtra Day commonly known as *Maharashtra Din* which is celebrated annually on May 1<sup>st</sup> to commemorating the formation of the Marathi speaking state of Maharashtra in India from the division of the Bombay State on May 1, 1960. On this occasion National Flag was hoisted by Mr. Sambhaji Kadupatil, Director General at VSI campus, in presence of Mr. Shivajirao Deshmukh, Advisor, Mr. DB Ghule, Registrar, staff members and students of VSI.



## National Technology Day

National Technology Day celebrated in the institute on May 14, 2025. The chief guest for the occasion was Dr. Prashant S. Bodake, Dean, Agriculture Technology Education and Head, Agronomy, Mahatma Phule Krishi Vidyapeeth, Rahuri. The event was attended by the Mr. Sambhaji Kadupatil, Director General all staff and students of the Institute. It commenced with a welcome by Dr. Deepali Nimbalkar, Head, Environmental Sciences, setting the tone for an engaging discussion. This was followed by lighting of the ceremonial lamp by the guest and dignitaries. Dr. Preeti Deshmukh, Head, Soil Science introduced the guest after which he was felicitated by the Director General. The Director General in his address highlighted the significance of National Technology Day, which commemorates India's successful nuclear tests conducted on May 11, 1998 at Pokhran. This landmark event showcased the nation's growing

scientific and technological capabilities and its commitment to self-reliance in science and innovation. He also reflected on how technology has transformed our lives over the years from basic living conditions to a modern world shaped by smart phones, satellites, online education and artificial intelligence.

Dr. Boadake in his talk emphasized the impact of technology in agriculture, which has transformed the lives of millions of farmers across the country. He elaborated on the use of drone technology, precision farming, mobile applications and artificial intelligence (AI) in enhancing agricultural productivity, efficiency and sustainability. His speech inspired the audience by showcasing how technological innovations are bridging the gap between tradition and modernity in farming. The event concluded with a vote of thanks by Mr. PU Deshmukh, Sugar Engineering.



## Seminar on AI Applications in the Sugar Industry & MOU Between VSI and KVK/Agriculture Development Trust (ADT), Baramati

The event was organized under the chairmanship Mr. Sharad Pawar, Hon. President of VSI, a seminar was organized on the application of Artificial Intelligence (AI) in the sugarcane production & a Memorandum of understanding (MoU) between the Vasantdada Sugar Institute and Agricultural Development Trust (ADT), Baramati on June 9, 2025. VSI Brought the Maharashtra State Cooperation Sugar Factory Federation, the west India Sugar Mills association and the ADT Baramati and The seminar was specially arranged for Chairmen, Directors, and Officers of sugar mills across Maharashtra to take AI technology to the sugarcane fields.

The program was attended by dignitaries as Mr. Sharad Pawar, Hon. President of VSI, Mr. Ajit Pawar, Hon. Deputy Chief Minister of Maharashtra & Trustee, VSI; Mr. Babasaheb Patil, Hon. Minister of Co-operation of Maharashtra, Mr. Manikrao Kokate, Hon. Minister of Agriculture, Maharashtra, Mr. Hasan Mushreef, Hon. Minister of Medical Education, Mr. Harshavardhan Patil, President, National Federation of Cooperative Sugar Factories Ltd. Mr. P. R. Patil, Chairman, Maharashtra State Federation of Co-operative Sugar Factories Ltd. Mr. B.B. Thombare, President WISMA, Mr. Jayant Patil, Trustee VSI & AI Action Committee Chairman, Mr. Rajesh Tope, Trustee VSI, Mr. Satej Patil, Vijay Singh Mohite Patil, Trustee VSI, Mr. Jayprakash Dandegaonkar, Trustee VSI, Mr. V.Anaskar, Administrator, MSC Bank, Trustees/Technical Experts of KVK and Agriculture Development Trust (ADT), Baramati and Trustees and Governing Council Members of VSI Chairmen, Vice-Chairmen, Directors, and Officers of sugar mills, Mr. Naiknaware, Managing Director, National Federation of Cooperative Sugar Factories Ltd., Managing Director, Maharashtra State Federation of Co-operative Sugar Factories Ltd., Chairman/Executives of District Co-operative Banks

Mr. Shivajirao Deshmukh, Advisor, VSI and Mr. Sambhaji Kadupatil, Director General, VSI were present.

A detailed discussion was held regarding the application of AI systems in the sugar industry, enhancement of sugarcane yield through AI, infrastructure and equipment requirements, and the associated expenses for implementing AI in sugarcane fields. An explanatory presentation was delivered by agricultural and AI experts from the Agriculture Development Trust (ADT), Baramati. They demonstrated how AI systems helped achieve a significant increase in sugarcane yield up to 40% along with savings of up to 30% in water and fertilizer usage. With the help of AI, they attained sugarcane yields of up to 154.56 tons per acre. Several farmers who participated in the AI implementation program with ADT, Baramati shared their experiences, highlighting improvements in cane yield as well as reductions in water and fertilizer consumption.

It was decided to implement this AI system at VSI's sugarcane research plots and expand its use on a large scale across sugar mills in the state. Sugar mills are encouraged to actively participate in the program with the support of VSI and facilitate large-scale AI adoption in farmers' sugarcane fields. The initial target is to reach approximately 100,000 farmers in the first phase.

Mr. Sharad Pawar in his address said that VSI and ADT have entered into a Memorandum of Understanding (MoU). Through this agreement, the focus will be on ensuring that this technology reaches as many farmers as possible. Although the area under sugarcane cultivation is large, there are several shortcomings in terms of productivity. Efforts must be made to address these issues.

He further stated that most sugar mill face a shortage of sugarcane supply, resulting in crushing seasons lasting only around a hundred days or even fewer. This

leads to underutilization of factory machinery, which adversely affects their financial viability. He also emphasized, we must find a solution to increase the yield per acre of sugarcane, which is of utmost importance. To achieve this, the use of Artificial Intelligence (AI) is essential, as it will help enhance sugarcane production as well as the output of sugar and its by-products, such as ethanol.

Hon. President also noted that ADT in Baramati has already begun using AI to improve sugarcane yields. He suggested that sugar mills should actively plan for increasing sugarcane yield per hectare. He highlighted the vital role of Krishi Vigyan Kendras (KVKs) in delivering technology to farmers. He urged sugar mills to take concrete steps to improve sugarcane yield, sugar recovery, and overall sugarcane cultivation

Mr. Ajit Pawar announced that, AI technology will be implemented in the sugarcane fields of one lakh farmers across the state. The MS Govt. will bear the cost for 90,000 farmers, while the Vasantdada Sugar Institute (VSI) will cover the expenses for 10,000

farmers. Each participating farmer will receive a subsidy of 25,000 per hectare. An interest-free crop loan of 10,000 per hectare will also be provided for AI implementation in sugarcane farming. Of this, VSI will contribute 9,250 per hectare, and sugar factories will contribute 6,750 per hectare. In total, AI technology will be adopted on the sugarcane farms of one lakh farmers in the state. The Maharashtra State Co-operative Bank Ltd., Mumbai, has allocated 500 Cr. for the implementation of AI systems in sugarcane agriculture.

He also informed that, AI is playing an increasingly important role in enhancing sugarcane production by improving various aspects of cultivation, such as crop monitoring, disease detection, resource management, and yield prediction. By using technologies such as satellite imagery, AI-powered sensors, and machine learning, farmers can make data-driven decisions to optimize their sugarcane cultivation leading to increased yields, reduced costs, and improved sustainability.

The event was concluded with vote of thanks





## TRAINING

### Advanced Technologies in Sugarcane Agriculture

The three days residential training program was organized by VSI for sugarcane growers & farmers from working areas of sugar mill. The program was conducted during April 3-5, 2025 and event was sponsored by Dalmia Bharat Sugar Industries, Ltd, Sangli. The objective of the training was to train the participants about advanced technologies in sugarcane agriculture. One hundred farmers were participated the said training program.

Dr. GS Kotgire., Scientist, Plant Pathology section welcomes all the participants followed by the inauguration by the Dr. AD Kadlag, Principal Scientist, Crop Production and Crop Protection. In his inaugural speech emphasized about the advanced technologies of sugarcane cultivation and importance of sugarcane crop for social economic growth.

In this program modern and scientific sugarcane cultivation technology was taught during the training period which covered the lectures and practical's on various topics like sugarcane varieties and varietal

planning, nursery management, tissue culture, modern planting techniques, soil fertility and fertilizer management, irrigation water management, use of bio-fertilizers, farm mechanization, ratoon management and integrated disease and pest management. All the agriculture concern scientists taught theory lectures and practical's & field demonstrations was given during the program.

In the plenary session, Dr AD Kadlag discussed with participants during farewell function about the difficulties faced by them in sugarcane agriculture in their area and appealed them to adopt modern technologies in sugarcane. The participants resolved their doubts from the subject experts. In the concluding function, the representative trainees expressed their satisfaction about the training and other hospitability provided to them. The certificates were distributed to the trainees. The event was concluded with vote of thanks was given by Dr. GS Kotgire.



## Soil, Water and Tissue Testing

The Soil Science Section of the Vasantdada Sugar Institute (VSI), Pune, organized a comprehensive training programme on 'Soil, Water, and Tissue Testing' from May 27 to 31, 2025. This initiative aimed to enhance the technical expertise of soil lab in-charges and soil chemists from various sugar mills. A total of 16 trainees representing 16 different sugar mills participated in the programme. The inauguration was led by Mr. Sambhaji Kadupatil, Director General of VSI with Dr. AD Kadlag, Principal Scientist & Head of Crop Production & Crop Protection and heads of various agricultural sections in attendance. Mrs. JP Kharade welcomed the participants and provided an overview of the training schedule.

The training encompassed modern and scientific methods for analyzing soil, water and plant tissues along with fertilizer recommendations based on yield-targeting approaches. Key topics included the use of GPS and GIS technologies for soil fertility mapping,

fertilization techniques specific to sugarcane cultivation and the integration of Artificial Intelligence in enhancing soil testing and agricultural practices. Practical sessions provided hands-on experience in analyzing soil pH, electrical conductivity, organic carbon, available nutrients (nitrogen, phosphorus, potassium, sulfur), exchangeable cations (calcium, magnesium), micronutrients (iron, manganese, zinc, copper, boron), total nitrogen, phosphorus, potassium in plant samples and carbonate, bicarbonate, chloride in water samples.

The training was coordinated by Dr. Preeti Deshmukh, Senior Scientist & Head of the Soil Science Section. The valedictory function was held on May 31, 2025, in the presence of Mr. Sambhaji Kadupatil, Dr. AD Kadlag, and all heads of sections. Certificates and group photographs were distributed to the trainees and the programme concluded with a vote of thanks.



## Quality Analysis of Biofertilizers (FCO 1985 Standards)

Agricultural Microbiology section has organized the 5 days' short term training program on 'Quality Analysis of Biofertilizers' (FCO 1985 Standards) during 2–6 June, 2025 for the staff working in biofertilizers production unit at sugar mills, which was established under the guidance of VSI. Total 08 staff from 05 sugar mills viz., Yashwantrao Mohite Krishna SSK, Karad, Satara Shri.Vighnagar SSK, Junner, Pune, S.M. Bhausahab Thorat SSK, Sangamner, Ahilyanagar, Loknete Marutirao Ghule Patil Dnyaneshwar SSK Nevasa, Ahilyanagar & K. Sudhakarant Paricharak Pandurang SSK, Shreepur, Malshiras, Solapur attended the training program.

The training was inaugurated by lightening of lamp by the hands of Mr. PP Shinde, Scientist & Head,

Agricultural Engineering Section. In this event total 8 lectures and 10 practical were conducted by the staff of Agriculture Microbiology Section.

Dr. AD Kadlag had delivered the special lecture on use of biofertilizers through AI (Artificial Intelligence) in Sugarcane.

The concluding session was organized on June 6, 2025. The chairman of the concluding session was Dr. AD Kadlag. In this session the questions and answers were discussed followed by distribution of certificate with group photos were given to the participants by the hands of Dr. AD Kadlag. The session concluded with vote of thanks.

## Management of Insect Pest and Diseases in Sugarcane

The residential training programme was organized for officers and staff members of sugar mills. The objective of the training was to train the participant about advanced integrated management practices for management of insect pest and diseases in sugarcane. The four days training programme was conducted on 3<sup>rd</sup> and 6<sup>th</sup> June, 2025.

Eleven participants were attended the training program, consist of Agriculture Assistants and Agriculture overseer from eight sugar mills in Maharashtra. The training was inaugurated by the

Dr. AD Kadlag, Principal Scientist, Crop Production and Crop Protection.

Dr. GS Kotgire., Scientist, Plant Pathology section welcome all the participants and others. In this training advanced management practices was taught during the training period which covered the lectures and practical's on various topics like status of sugarcane diseases in Maharashtra and India, management of foliar diseases, sett borne diseases, sugarcane sucking pest, sugarcane borers and biological control of sugarcane pests. More emphasis



given on practical's which includes identification and symptomatology of insect pest and diseases, sett treatment, biological control, etc.

In the plenary session, the participants resolved their doubts from the subject experts. In the concluding function, Principal scientist and head of sections discussed with participants about the difficulties faced

by them in sugarcane agriculture in their area and appealed them to adopt integrated management strategy for pest management. The representative trainees expressed their satisfaction about the training, lodging and boarding facilities provided to them. The certificates were distributed to the trainees. The training concluded with vote of thanks.

## Short Term Training Programme – June 2025

The Institute is largely concern to conduct short term training programmes to the employees of the sugar mill to enhance their working knowledge, vision to adopt new technology and also guide the industries to reform their normal function of sugar and allied byproducts to gain their key objectives.

The genuine effectiveness and practical utility of these courses have been widely accepted and adopted by the industries. The training courses largely guide and assist the industries, in many factors. Many industries treat this training course as some essential criteria for granting promotion to higher grade to trained employees.

VSI has organized Short Term Training Programme from June 16 to 27, 2025. For two sessions of a week each, total 309 candidates were enrolled to various courses like Juice clarification, pan boiling, fermentation & distillation, instrumental analysis, pollution control, waste water analysis etc. Officers / operating staff of VSI's member and non-member factories were enrolled for programmes. The training was arranged in theory /practical (in English and Marathi) so as the candidate get fulfilled and updated their knowledge in concerned fields. The short term courses conducted and the participants joined for the same from as given below;-

Programme	No. of Participant
Juice Clarification& Evaporation	70
Pan Boiling& Centrifugal	86
DFPD Guidelines for various feed stocks various feed stocks diversion for ethanol production & FRP Recovery Calculation	19
Boiler attendant	17
Mill foreman	14
Fermentation & Distillation techniques in distillery	46
Techniques in Analytical Instruments	01
Repairs and Maintenance of sugar factory instruments	17
pollution control& Environmental Management in Sugar Factories & distilleries	06
ETP Operation& maintenance	08
Special Analysis in Sugar Laboratory	19
Analysis of Water/Waste Water & Solid waste	01
Wet and Instrumental analysis	05
<b>Total</b>	<b>309</b>

## WORKSHOP WORKSHOP

### Innovative Strategies for Pest and Disease Management in Sugarcane

A one-day workshop on 'Innovative Strategies for Pest and Disease Management in Sugarcane' organized by AS & T Division on June 21, 2025. Dr. GS Kotgire, Scientist, Plant Pathology Section welcomed Chief Guest Dr. UB Hole, Associate Dean, MPKV, Rahuri, Heads of Sections in AS & T Division and all the participants.

The workshop was inaugurated by Chief Guest and Heads of Sections. In the welcome speech Dr. AD Kadlag highlighted the importance of the topic of the workshop. He briefed about climate change and their impact on all important pests in sugarcane and gave more emphasis on white grub. Total 42 participants from 20 sugar mills attended this workshop. During the technical session Dr. UB Hole, delivered the lecture on Bio-IPM of White grub in Sugarcane. He explained about detailed strategies for management of white grub in sugarcane.

Dr. GS Kotgire, delivered the lecture on 'Innovative Strategies for Pest and Disease Management in Sugarcane. He briefed about the losses caused due to soil and sett borne diseases, history of sugarcane diseases and transmission of sugarcane diseases. He appealed to sugar mills and farmers to follow practices for the management of sugarcane diseases viz., implementation of three-tier seed nursery programme for the supply of healthy seed, selection of recommended varieties of sugarcane for commercial planting, sett treatment with pesticides before planting, field survey and crop monitoring for pest occurrence, field demonstrations for disease management practices, scientific irrigation

management, integrated nutrient management, timely application of agricultural inputs, crop rotation practices, restriction on seed movement and foliar application of systemic and contact fungicides alone or in combination useful for management diseases. Mr. RG Yadav, Scientist and Head, Agril. Entomology section delivered talk on 'Innovative Strategies for borer and sucking pest Management in Sugarcane'. He explained about important borer and sucking pests of sugarcane, losses caused by them and their management. He appealed soil application of Fipronil 0.3 GR @ 25 kg/ha or Chlorantraniliprole 0.4 GR @ 22.5 kg/ha at planting and 60 days after planting and release of egg parasitoid *Trichogramma chilonis* in field @ 3-5 lac parasitized eggs/ha in suitable installments helpful for management of borers in suru and ratoon crop of sugarcane.

Dr. KG Nigade, Scientist, Microbiology section delivered a talk on 'The Potential of Entomopathogens in Biological Control of Pest in Sugarcane'. She highlighted the importance of biological control and gave remedies for control of sugarcane white grub by the application of Entomopathogenic Nematodes (EPN) @ 2.5 lit./ ha. The interactive session was held in presence of all Head of Sections. The participants raised their queries about white grub, Grassy Shoot Disease, Yellow Leaf Disease and Brown Spot Disease. The program was concluded with a vote of thanks by Mr. GE Atre, Scientific Officer, Plant Pathology Section of VSI, Pune.



## GUEST LECTURE GUEST LECTURE

Guest lecture was organized by AST & D VSI by Krishi Ratna Shri. Chandrashekhar Hari Bhadsavle from Saguna Regenerative Technique (SRT) Saguna Bagh, Malegaon, Neral, Tel. Karjat, Dist. Raigad. He presented about the SRT technique (Saguna Regenerative Technique) Definition as It is a conservation agriculture (CA), No-till method of farming which does not cause atrocity of tillage, completely stops soil erosion, promotes natural production of earthworms, increases organic carbon of the soil, considerably increases productivity of the land and added effect of amazing happiness & confidence of the farmer. He also importance of SRT as it reduces water requirement for crop cultivation to the tune of 40% (especially for rice), reduces cost of production by 40% and reduces back breaking labor by 50%. It also stops emission of greenhouse gasses and effectively does carbon sequestration to improve

soil fertility. Amazing ability of rural empowerment has been observed even with tribal families where their annual income has risen 4 times. Above all it brings joy and confidence to the farmer which has now started the reverse trend of able youth returning to the farming profession.

They used these techniques on more than 55 acres of land under cultivation. Out of this total land, about 10 acres under 6 earthen ponds for aquaculture, 15 acres for agro-forestry, 10 acres for horticulture, 15 acres for field crops, 5 acres for cattle barns, vermin-composting and activated slurry project. All of this is integrated with tourism without losing land under cultivation to make a perfect example of Agro Tourism (Krishi Paryatan). After the presentation in front of Scientists and Officers from Agriculture Sciences and Technology Division of VSI, queries raised by scientists were answered by the guest

## VSI Committee Meetings

VSI Committee a meeting of Building Purchase Committee Meeting was held on May 26, 2025. and Governing Council Meeting under the chairmanship of Hon. President of VSI Mr. Sharad Pawar was held

on June 9, 2025. The Technical Committee Meeting under the chairmanship of Dr. Indrajeet Mohite of Agriculture section was held on June 20, 2025.



## Visit of Hon. President VSI to Sugarcane Breeding Centre, Amboli

Mr. Shrad Pawar, Hon. President of the Vasantdada Sugar Institute (VSI), Pune, visited the Sugarcane Breeding Centre (SBC) in Amboli on April 25, 2025. The visit commenced with an inspection of the 216B farm and Survey No. 277-278. The information on present 1359 germplasm and activities of sugarcane breeding is being carried out was discussed and highlighted the outcome of the center by releasing the sugarcane variety VSI 08005 (VSI 12121) for commercial cultivation for the Maharashtra state and Peninsular zone.

The meeting under Chairmanship of Hon. President is held and attended by Mr. Sambhaji Kadupatil, Director General; Mr. Shivajirao Deshmukh, Adviser; Dr. AD Kadlag, Principal Scientist (Crop Production and Protection); Dr. JM Repale, Senior Scientist and Dr. KV Sushir, Senior Scientist. In meeting the in-depth discussion on breeding programmes, progress and future research plan was discussed. The Chairman suggested for preparation of the Vision Document for

next ten years which includes the strategic research plan to out yield the early maturing, high yield, high sugar varieties with high ethanol production and having climate resilient for cane growers of the Maharashtra State. In the discussion on Use of Artificial Intelligence (AI) in sugarcane breeding and sugarcane cultivation, it is suggested to undertake the one AI plot at each seed farm of the institute to study on AI.

The visit reinforced VSI's commitment to advancing sugarcane research and leveraging innovative technologies to enhance crop productivity and sustainability.



## VSI PARTICIPATION VSI PARTICIPATION

### Visit to VITO, Belgium and Euro-Global Summit on Biofuels and Bioenergy (Bio-fuels 2025) at Amsterdam, Netherlands

From VSI, Mr. Sambhaji Kadupatil, Director General, Dr. Kakasaheb Konde, Head, Professor and Technical Advisor, Department of Alcohol Technology and Biofuels and Mr. Rajendra Chandgude, Head and Technical Advisor, Department of Sugar Engineering & Renewable Energy visited VITO, Belgium on April 4, 2025. From VITO, Ludo Diels, Advisor, VITO and his team attended the meeting.

Mr. Kadupatil gave brief about VSI and role of VSI in the whole sugar value chain from the crop breeding till the refining of the sugar. Dr. Konde presented sugar industry challenges and opportunities. He emphasized the circular bio-economy approach for sugar industry and ongoing VSI activities in line to this. VITO team presented their ongoing research activities which are

strongly focused on process technology, in situ product recovery, enzymatic processing, etc. Following points were discussed during meeting

- Collaboration based on lignin depolymerization.
- Transformation or extraction of chitin from the yeast sludge from the fermentation.
- Fermentation optimization with ISPR and classical DSP.
- Remote sensing
- Horizon programs of the EU in collaboration with DST.
- HEU call (together with DST) for waste to hydrogen.

Based on the discussion during meeting, VSI and VITO agreed for future collaboration.

C2P FORUM LLC, South Carolina, USA organized the Conference Euro-Global Summit on Biofuels and Bioenergy (Bio-fuels 2025) at Amsterdam, Netherlands scheduled on April 3-4, 2025.

The C2P Forum invited Hon. Director General Mr. Sambhaji Kadupatil, Dr. KS Konde, Head, Alcohol Technology & Biofuels and Mr. Rajendra A. Chandgude, Head, Sugar Engineering & Renewable Energy Department for inaugural session of the conference and as the distinguished speakers for the summit/conference. Considering the diminishing energy resources such as fossil fuels - coal, gas, oils etc., the summit was very useful for the innovation of various types of energy resources

specially Bio-fuels from agriculture waste such as wood, bagasse, crop-waste etc.

Mr. Sambhaji Kadupatil as the key speaker delivered a lecture on 'Circular Bioeconomy Approach for Product Diversification in Sugar and Allied Industry', Dr. SK Konde delivered a lecture on 'Circular Bioeconomy Avenues of Green Hydrogen Production in Sugar and Distillery Industry' and Mr. RA Chandgude delivered the lecture on 'Effect of Ethanol Blending on Diesel Engine Performance and Emissions' on April 3, 2025. All these lectures were of prime importance for the energy sector, sugar business and Bio fuels worldwide. The summit was very innovative and useful for new energy resources to meet the world energy demand.



## Visit to University of Cologne Germany

The University of Cologne is a system-accredited higher education institution in Germany. They are planning to start a 'Joint International Master of Environmental Sustainability' (M.Sc.), a new study programme offered jointly by University of Cologne and Bharati Vidyapeeth (Deemed to be) University, Pune. Dr. Deepali Nimbalkar, Senior Scientist & Head, Department of Environmental Sciences was invited as an expert of professional practice for the accreditation assessment of this proposed programme.



The reviewers included, Prof. Dr. Berta Martín López - University of Oldenburg, Professor for International Sustainable Development and Planning; Prof. Dr. Peter Fiener University of Augsburg, Professor for Water and Soil Resource Research; Dr. Deepali Nimbalkar Head, Dept. of Environment Science, Vasantdada Sugar

Institute, Pune (expert of professional practice); Ellen Mallas University of Bonn (student representative) and Dr. Jan Kruse University of Cologne, Faculty of Laws (internal reviewer).

The role of Dr. Nimbalkar was to assess as a scientific expert, evaluating the study programme from a perspective from professional practice considering the specificities of the Indian Higher Education System. As a part of this she visited the University on April 2-3, 2025 for participation in the quality dialogue, in which the study programme was discussed with different stakeholders (programme directors, faculty members, students). She also visited the Institute of Geographical Sciences in the University of Cologne, the library within the Institute and also the microplastics laboratory.

## MOU with VSI Pune and Assam Agriculture University, Jorhat

In a significant step towards collaborative research and development in sugarcane cultivation, a Memorandum of Understanding (MOU) was signed between Assam Agricultural University, Jorhat and Vasantdada Sugar Institute, Pune on June 10, 2025 at University Campus of AAU, Jorhat. The agreement aims to drive innovation, sustainability and knowledge exchange and technology transfer. The MOU was formalized during meeting held at AAU,



Jorhat bringing together officials and scientists from both the institutions. The VSI delegates comprising Mr. Sambhaji Kadupatil, Director General, VSI; Dr. AD Kadlag, Principal Scientist, Crop Production and Protection, VSI and Dr. KV Sushir, Senior Scientist, Plant Breeding, VSI and representing AAU were Dr. Sanjay Chetia, Director of Research (Agri.); Dr. Mirnal Saikia, Associate Director of Research; Dr. Niloy Borah, Principal Scientist and

Dr. Milon Konwar, Scientist, Dr. Tridib Borbora, Scientist, Plant Breeding and Dr. Jutimala Phookan, Scientist, Plant Pathology from AAU's Sugarcane, Medicinal and Aromatic Plants Research Station (SMAPRS), Buralikson were present in DOR office for signing MOU.

The meeting opened with Dr. Saikia outlining the collaboration vision to transform Assam's sugarcane landscape through research – backed, tech-enabled approaches. In his keynote, Dr Chetia set the tone for the partnership, calling it strategic alliance with long term benefits for Assam agro economy.

Mr. Kadupatil emphasized the role of modern tools like Artificial Intelligence (AI) in advancing sugarcane productivity. He discussed how AI can be deployed to optimize fertilizer application, irrigation scheduling and pesticide usage while both yield and quality.

Dr. Kadlag an overview of VSI's pioneering work and reinforced the potential of collaborative trials and adaptive research suited to Assam's climatic conditions.

Dr. Sushir highlighted the SBC, Amboli hybridization facility and exchange of variety and germplasm which are tolerant to water logging conditions of Assam which may be used in hybridization for developing

water logging tolerant variety especially for some parts of Kolhapur region.

Dr. Saikia of AAU added further depth by highlighting the untapped potential of sugarcane by-products such as bagasse, molasses and press mud which could create new income streams for farmers through bioenergy, organic inputs and value added products. This partnership is expected to unlock new opportunities for Assams sugarcane growers by integrating scientific expertise, cutting edge technology and regional knowledge. It marks the critical step towards making sugarcane a profitable and sustainable crop.

The event concluded with a vote of thanks delivered by Dr Phookan, underscoring the shared commitment to innovation and farmer-centric development.

During the visit to Aaasam, team of VSI also discussed with Assam's Agricultural University Vice Chancellor Dr. Bidyut Deka regarding collaboration and the collection of some *Erianthus*-based germplasm from the Bramhapura river belt side as exploration of germplasm. Dr. Kadlag delivered a lecture in the Agronomy Faculty Hall about VSI's Research and Development activity. Team also visited Tea Processing Unit and the Soil Science Section of AAU.

## Innovation Day - Shaping Automation

This is a time of unprecedented innovation and technology is evolving at a rapid pace. This applies to the manufacturing sector as well especially in automation, AI, IoT and data analytics. The sector is transforming with increasing speed. AI-powered automation, interoperable systems, and MSME enablement are not just trends-but imperatives-for driving efficiency,



quality, and global competitiveness in India's industrial sector.

'Innovation Day - Shaping Automation' was organised by Manufacturing Today and presented by Schneider Electric on June 12, 2025 at Conrad, Pune, with a panel discussion on 'Shaping Industrial Automation: Embracing Open, Flexible, and Sustainable Solutions for the Data-Driven Future'.

Dr. Deepali Nimbalkar, Senior Scientist & Head, Department of Environmental Sciences, VSI was invited as a panelist. The panel discussion was moderated by Ms. Sujatha Vishnuraj, Editor, Manufacturing Today. The other panelists included: Mr. Pravin Karve, President, Thermax Babcock & Wilcox Energy Solutions Ltd., Dr. Ravindra Utgikar, Vice President and SBU Head, Wilo Mather, Mr. Shrikant Wale, President - Execution, Praj Industries, Mr. Amit Deshpande, Sr. General Manager Engineering Eastern, Aquatech Systems Asia Pvt. Ltd., Mr. Robinson Joseph, ME Leader, India ABO, Cummins India, Mr. Siddharth Mayur, Founder and Managing

Director, H2E Power and Mr. Arvind Kakru, Vice President- Industrial Automation, Schneider Electric

Dr. Nimbalkar talked about how smart automation can contribute towards achieving net zero and sustainability by increasing energy/resource efficiency and decreasing waste generation. She also discussed the use of open, interoperable IoT platform to unlock the full value of industrial data-ranging from asset management to predictive analytics-while promoting sustainability and reducing environmental impact. She also informed the attendees about VSI's work in AI in sugarcane agriculture. Her inputs were appreciated by the panelists and attendees.

## Visit to CTC, Brazil

Mr. R.A. Chandgude, Head & Technical Advisor, Department of Sugar Technology and Renewable Energy and Dr. A.S. Patil, Scientific Officer and In-Charge, Agronomy Section, visited Brazil from June 14-24, 2025 to study the Brazilian sugar industry. The visit aimed to explore key industrial practices and advanced technologies across the entire value chain from sugarcane cultivation to sugar and byproduct production. They observed Brazil's cutting edge

innovations, including fully mechanized sugarcane farming, elimination of stubble burning, adoption of advanced fertigation techniques and a strong focus on environmental conservation. We also visited renowned institutions such as Unica, Rizan, CTC and a commercial sugar mill, gaining valuable insights into mechanized harvesting, dry cleaning of harvested cane, ethanol production, environmental decarbonization and integrated bioenergy systems.



## VISITORS TO VSI

Indian Sugar and Bio-Energy Manufacturers Association (ISMA) visited Vasantdada Sugar Institute on April 29, 2025 to see the Technology, Research achievement, Education facilities & extension advisory activities of the Institute.

The delegation included various dignitaries from for Indian Sugar Industry, such as Mr. Ashwini Shrivastav, Joint Secretary (Sugar), Department of Food & Civil Supplies, Government of India, as the special Guest, Mr. Deepak Ballani, Director General, ISMA, Mr. Deep Mallik, Director (Tech), ISMA, Mr. R.L.Tamak, DCM Shriram, Mr. Satyajit Jagtap, Baramati Agro,



Ms. Ankita Patil, Indreshwar Sugar, Mr. Vedang Pittie, Harinagar Sugar, Mr. Aditya Jhunjhuwala, KM Sugar, Mr. Jah Ashiq, COO, EID Parry, Mr. Govind G (VP), Nirani Group, Mr. Sankalp Suman, Dy. Head, Mr. Pradip Das, Sr. Manager, Mr. R.K. Gangwar, Mawana Sugars.

Mr. R.A. Chandgude - Head & Technical Adviser (Sugar Engineering & Renewable Energy Department) welcomed & introduced the delegates. As per Indian Tradition, Mr. Sambhaji Kadupatil, Director General warmly welcomed the Joint Secretary Shrivastav and other delegates, along with heads of various departments of the Institute. The event began with a documentary film about the Institute followed presentation covering the history and activities of the Institute, as well as notable research and initiatives undertaken by various departments by Dr. Deepali Nimbalkar, the Head of the Department of Environmental Science. After the presentation,



delegates engaged in discussions regarding various research activities and posed questions to the Heads of Departments. Delegates also had the opportunity to visit several departments, including Agriculture, Tissue Culture, Alcohol Technology and Biofuels, MB & GE Lab. and Genetics, and Breeding.



Dr. Sangita Kasture, Scientist-G, Ministry of New and Renewable Energy (MNRE), New Delhi visited Vasantdada Sugar Institute (VSI), Pune on dated May 23, 2025 for discussion on development of bio-based products and understand VSI activities. All head of the departments and head of the sections were present in the meeting. Dr. KS Konde, Head, Prof. and Technical Advisor, Department of Alcohol Technology & Biofuels presented ongoing VSI activities and achievements. He explained about current R&D activities which are in line with the circular bioeconomy approach. Later,

Dr. AD Kadlag, Principal Scientist, Div. of Crop Production and Protection and Dr. AS Patil, Scientific Officer & I/C Head, Agronomy presented agriculture related activities. Dr. Kasture discussed about the opportunities for biobased products such as biofuels and biochemical's and emphasized their importance in

biorefinery based initiatives. She suggested about funding opportunities from Department of Biotechnology (DBT) and MNRE. Later, she visited different departments, sections and pilot plant facility at VSI.

Dr. Devendra Singh, Director, Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar, visited to Vasantdada Sugar institute, Pune on June 5, 2025. During the visit Dr. AD Kadlag, Principal Scientist, Crop Production and Protection, AST&D felicitated and briefed the activities of VSI. Later he visited different departments to know more about VSI infrastructure and projects.



Prof. Dr. Indra Mani, Vice-Chancellor at Vasantnaik Marathwada Krishi Vidyapeeth, Parbhani visited VSI on June 3, 2025. Mr. Sambhaji Kadupatil, Director General warmly welcomed and felicitated along with heads of various departments of the Institute. The event began with a documentary film about the Institute after he visited various departments to know the projects and infrastructure of VSI.

### Following Visitors were visited VSI during (April+May+June, 2025)

Name of Institutions	Visitors	No. of Visitors	Total
<b>APRIL - 2025</b>			
Individual Farmers from Maharashtra State	Farmers	75+48+65+52	240
<b>MAY - 2025</b>			
Karnatak University, Dharwad	Students & Faculties	39+1	40
Individual Farmers from Maharashtra State	Farmers	69+48+65+51+57	290
<b>JUNE - 2025</b>			
MGM College of Agricultural Biotechnology, Chatrapati Sambhajnagar	Students & Faculties	75+2	77
Vibgyor School, Fursungi, Tal: Haveli, Dist: Pune	Students & Faculties	42+2	44
Vibgyor School, Fursungi, Tal: Haveli, Dist: Pune	Students & Faculties	72+2	74
Farmers interstate education tour through AATMA, Tal: Jat, Dist: Sangli	Farmers & representative	59+93+45+50	238
<b>Total :</b>			<b>1003</b>

## PUBLICATION PUBLICATION

### Initiative Taken by VSI for Promoting VHP Raw Sugar for Domestic Consumption Dr. Rajeev Dani (Sugar Technology)

#### Introduction:

Raw sugar is being used for direct consumption in various developed & developing countries around the globe. In India, the sale of raw sugar in the domestic market has been restricted due to the absence of a release quota system, unlike Plantation white sugar /Refined sugar, which are allowed under regulated quotas. All types of sugar fall under the purview of the Essential Commodities Act, governed by the Sugar (Control) Order 1966 and the Sugarcane (Control) Order 1966 with further amendments.

A significant breakthrough has recently been achieved through the efforts of Vasantdada Sugar Institute (VSI), with valuable support from Mrs. Seema Paroha, Chairperson of the FAD 02 Committee, along with other esteemed committee members. As a result, the raw sugar specification standards under IS 5975 were officially amended on May 22, 2025 by the Bureau of Indian Standards (BIS) and published in The Gazette of India in Part III - Section 4 dated May 29, 2025.

It was also included in the sugar (Control) order 2025 published in Press Information Bureau that Raw Sugar will be considered in the total stock of sugar across the country. Additionally, in the Gazette of India part II – Section 3- Sub Section (i) regarding the definition of Raw Sugar, it was mentioned as changes may be incorporated as specified by BIS or FSSAI as amended from time to time.

According to the revised specifications, raw sugar specifically of Very Very High Polarization (VVHP) grade may now be used for direct human consumption, within one year from the date of

manufacture The next crucial step is to obtain the necessary release order/quota for raw sugar from the Directorate of Sugar & Vegetable Oil (DSVO), which will enable the practical implementation of this amendment and open new possibilities for domestic utilization of raw sugar. This is the historical achievement in Indian sugar industry with the help from management of VSI which is beneficial for Sugar mill, Consumers and Farmers as mentioned below.

- i. Sugar Mill - Reduction in production & maintenance cost, Increase in sugar recovery and increase in capacity utilization
- ii. Consumer - Low glycemic index, Low sugar price
- iii. Farmer - Additional profit to the sugar mill will be shared with the farmer.

#### Raw Sugar Definition & Its Revisions:

As per BIS Standards (IS 5975:2003) first revision of Raw Sugar specifications, raw sugar is defined as unwashed centrifugal sugar with a minimum polarization of 96.5°, surrounded by the original film of molasses, derived from sugarcane or sugar beet, to be further refined or reprocessed for making direct consumption sugar. Raw sugar shall be in the form of uniform fine crystals and free from dirt, extraneous matter, and undesirable odors.

In the second revision of BIS 2020 Standards (IS5975:2020), raw sugar is defined as unwashed centrifugal sugar with minimum polarization of 96.5°, surrounded by the original film of molasses, derived from sugar cane or sugar beet, to be further refined or reprocessed for making it superior quality sugar. Raw sugar shall be in the form of uniform crystals of 500 to 800 micron size. It shall be free from dirt and

extraneous matter and from fermented, musty or other undesirable odor.

The revised definition implies that raw sugar may be suitable for direct consumption, though it is not explicitly stated. Reprocessing is required only for enhancing quality. Raw sugar size must be maintained within the 500 to 800-micron range.

#### Challenges in Raw Sugar Consumption:

In India, consumers are accustomed to plantation white sugar. Awareness campaigns are necessary to promote raw sugar by highlighting its benefits. Shelf life of Raw Sugar is lesser than plantation white sugar or refined sugar. To address this challenge related to shelf life and considering shelf life of safely one year period for VVHP Raw Sugar, an initial cap of maximum 15% raw sugar out of total sugar production per sugar mill is recommended. The Government of India (GOI) should mandate this limit and establish a quota system similar to plantation white sugar to ensure timely consumption within three to six months of production. Technocrats should also educate the public about raw sugar benefits which are mentioned below.

#### Advantages of Raw sugar Consumption:

- ◆ It has nutrients such as vitamins, minerals and antioxidants due to layer of molasses on sugar crystal.
- ◆ Offer a unique taste and aroma.
- ◆ Give a boost to dark beverages, cooking and baking goods.
- ◆ One-to-one substitute for refined sugar as sulphurless sugar.

#### Advantages of Raw sugar Production:

##### Major Advantages:

- ◆ Lesser production cost of around Rs.105 per quintal of sugar as compared to PWS.
- ◆ Increase in Sugar recovery.
- ◆ Reduction in consumption of major chemicals like Lime & complete elimination of Sulphur.
- ◆ Increase in capacity utilization.
- ◆ Lower steam consumption.

#### Other advantages:

- ◆ Reduction in erosion of equipment & pipelines
- ◆ Better quality of Injection water
- ◆ Reduction in effluent load at ETP
- ◆ Improvement in molasses quality.
- ◆ Reduction in air pollution due to elimination of Sulphur.

#### VSI Contribution for Promotion of VVHP Raw Sugar for Direct Consumption:

Dr. Rajeev Dani, Member of the FAD 02 Committee, strongly advocated for the direct consumption of raw sugar by highlighting its various advantages at the 20<sup>th</sup> meeting of the FAD02 Committee held on June 7, 2024. His proposal to revise the raw sugar specifications led to a significant amendment in Clause 4.2 of IS 5975:2020, thereby permitting the use of VVHP-grade raw sugar for direct consumption.

In addition to his active role in the standards committee, Dr. Dani presented several impactful technical papers during 2022 and 2023 at annual conventions organized by STAI (Sugar Technologists' Association of India), and DSTA (Deccan Sugar Technologists' Association). His study focused on promoting VVHP raw sugar for domestic consumption, emphasizing its health benefits from a consumer perspective and economic advantages from the sugar mill's standpoint.

In recognition of the excellence and relevance of this work, his papers were honored with Gold Medal by STAI and first prize award by DSTA.

#### Technical Comment on IS 5975:2020 Amendment:

Based on the discussions had during the 20<sup>th</sup> FAD 02 technical committee meeting held on June 7, 2024, BIS published P draft regarding the amendment in specifications of Raw Sugar on its web site and asked for the comments from the technical committee members in which it was mentioned as 'VVHP raw sugar may be used for direct consumption'. In reply, Dr. Rajeev Dani commented on clause 4.2, highlighting that VVHP raw sugar has a maximum shelf life of one year due to higher moisture content compared to

plantation white sugar (Max-0.1%) and refined sugar (Max-0.04%). The presence of a molasses film increases bacterial contamination risk, making it unsuitable for consumption beyond one year.

Based on the comments received and 21<sup>st</sup> meeting FAD02 committee held on October 17, 2024 with Prof. Seema Paroha, Director, NSI, Kanpur & Chairperson, FAD02 committee, Dr. Vasudha Keskar, Member, FAD02 committee and other committee members, the committee deliberated on the comment received and further discussions decided to amend the clause 4.2 of IS 5975:2020-Raw Sugar Specification by incorporating the following :

*'VVHP grade raw sugar, also known as light brown sugar, may be used for edible purposes within one year from the date of manufacturing.'*

The amendment was circulated for public comments until January 10, 2025, received three acceptances.

**Work Group for Review:**

- 1 Dr. Rajeev V. Dani (Convener),  
Vasantdada Sugar Institute, Pune
- 2 Dr. Vasudha Keskar,  
MAARC Labs Pvt. Ltd., Pune
- 3 Dr. Mihir Mandal  
National Sugar Institute, Kanpur

The committee has reviewed and accepted this change and amendment published in 'The Gazette of India No-CG-DL-E-29052025-263463 (Extraordinary) dated May 22, 2025'. This notification issued with Ref: HQ-PUB015/1/2020-PUB-BIS (1247) -In pursuance of Sub-rule (1) of Rule (15) of the Bureau of Indian Standards Rules, 2018, the Bureau of Indian Standards hereby notifies that Amendments to Indian standards, particulars of which are given in schedule hereto annexed have been established.

This amendment was established on May 22, 2025 and presently in force. Raw sugar standards will be updated with this amendment within six months period (November 21, 2025).

Under the continuous guidance and generous support from the Hon'ble President, Vice President, Governing Council Members and Director General of Vasantdada Sugar Institute, Pune, it is the historical achievement in Indian sugar industry for making VVHP Raw sugar eligible for direct consumption.



## LIBRARY NEWS LIBRARY NEWS

### April to June 2025

1. **Aaglawe G. S.(2022)** *Boiler Parichay: Boiler Attendants, Engineers aaniVidyardhyansathi(1<sup>st</sup> Ed)*;Mumbai: Urmila Aaglawe (p. 305).
2. **Harari Yuval Noah(2017)***Homo Deus: A Brief History of Tomorrow (1<sup>st</sup> Ed)*; London: Vintage Publications, (p. 514).
3. **Allan Pease; Dixit Sudhir (2003)***Body Language: Haav- Bhav Se Samaze Dusaronke Man Ki Baate (Hindi Language) (1<sup>st</sup> Ed)*;Bhopal: Manjul Publishing House, (p. 260).
4. **Covey Stephen R.(2013)** *7 Habits of Highly Effective People- Power full Lessons in Personal Change (12<sup>th</sup> Ed)*; New Delhi: Simon & Schuster(p. 397).
5. **Dale Carnegie (2023)** *Mitra Joda Aani Prabhavshali Vha (1<sup>st</sup> Ed)*; Thane: Abhishek Book Company(p. 222)

**Adviser :** Mr. Sambhaji Kadupatil  
**Editor :** Dr. RM Devarumath  
**Layout & Photography :** Mr. Sanjay A Dawari

**Committee :**  
Mr. MR Shinde, Mr. RA Chandgude, Dr. KS Konde,  
Dr. PS Deshmukh, Dr. GS Kotgire, Mr. US Manjul,  
Mr. RB Bhoite

VSI Bulletin is published by the Vasantdada Sugar Institute, Pune.

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