



# VSI BULLETIN

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## Foreword Foreword ...

The sugar mills in Maharashtra started their crushing operations for season 2021-22 from the last week of October 2021. At the end of December 2021, 189 sugar mills in the state crushed 471.65 lakh tonnes of sugarcane and produced 45.75 lakh tonnes of sugar with an average sugar recovery of 9.70%. It is expected that the state will likely produce 112.00 lakh tonnes of sugar by crushing around 1096 lakh tonnes of sugarcane and around 10 lakh tonnes of sugar will be diverted for ethanol production by use of BH molasses, sugarcane juice and sugar syrup as a feedstock. At the national level, 491 operating sugar mills at the end of 31<sup>st</sup> December, 2021 have produced 115.70 lakh tonnes of sugar by crushing 1227.17 lakh tonnes of sugarcane. It is expected that the country's sugar output will be around 308.00 lakh tonnes during season 2021-22 due to good and well spread monsoon across the country and around 35.00 lakh tonnes of sugar will be sacrificed due to diversion of BH molasses and sugarcane juice for ethanol production.

The various activities undertaken by VSI during the period from October to December 2021 have been highlighted in this issue. In this pandemic situation VSI has followed all the precautionary measures of Covid 19 which indicates that VSI, as an organization is marching ahead with confidence.

Covid 19 in Maharashtra, still the cases are invariably increasing. Hence I request the readers to please wear a mask, maintain social distancing and take other necessary precautions for the safety of your near and dear ones.

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

Wishing all our readers a Very Happy & Prosperous New Year 2022.



  
(RM Devarumath)  
Editor



## CONGRATULATION CONGRATULATION



Mr. Raghunath V. Burase

Mr. Raghunath V. Burase, Technical Officer, Department of Alcohol Technology & Biofuel, VSI was awarded Ph.D. under the faculty of Science in the subject of Microbiology by Dr. Babasaheb Ambedkar Marathwada University, Aurangabad for the thesis entitled 'Biomethanation of high brix spentwash' on

October 28, 2021 under the guidance of Dr. RD Joshi, Principal, Yogeshwari Mahavidyalaya, Ambejogai, Dist. Beed and Prof. SV Patil, Technical Adviser & Head, Department of Alcohol Technology & Biofuel, VSI as a Co-guide.

## VSI COMMITTEE MEETINGS VSI COMMITTEE MEETINGS

### The minutes of 32<sup>nd</sup> Institutional Bio-Safety Committee (IBSC)

The 32<sup>nd</sup> meeting of the Institutional Bio-Safety Committee (IBSC) of VSI was held on December 18, 2021 through a webinar under the chairmanship of Dr. K. Harinath Babu, Senior Scientist, VSI in presence of Dr. Anuradha Upadhyay, Principal Scientist, ICAR-NRC Grapes, Pune and DBT nominee., Dr. SK Raut,

Consultant Doctor & Bio-safety Officer, Noble Hospital, Pune, Dr. RM Devarumath, Scientist & Member Secretary, VSI, & Dr. SG Dalvi, Scientist, VSI – Member participated in the meeting. They discussed the progress of the sugarcane transgenic work and various issues related to Bio-Safety.

### VSI Meeting

On November 27, 2021 three meetings of VSI Committees namely, Building & Purchase, Investment and Selection Committee Meetings were held in VSI under the chairmanship of the Hon. Vice President, Mr. Dilip-Walse-Patil.



## EVENTS

### National Seed Day

Vasantdada Sugar Institute (VSI) had organized Seventh National Seed Day on October 1, 2021 under the ICAR seed project. On this occasion a one day training programme was organized on 'Sugarcane seed multiplication & production technology' for Agriculture Assistants of sugar mills and seed nursery farmers.

This event was inaugurated by Mr. Sambhaji Kadupatil, Officer on Special Duty, in presence of sectional Heads of Agriculture Science and Technology Division. Mr. Kadupatil, in his inaugural speech, mentioned the importance of seed replacement in sugarcane. Sugarcane growers are using the same seed material year after year hence productivity is also declining. It is most important to replace sugarcane seed once in three-four years. Most of the mills are unaware of the importance of the seed replacement programme. Genetically and physically pure seed gives optimum germination due to which per unit yield increased by 10 to 15%. In view of this, Institute raising breeder's seed every year on 40 ha area for distribution to mills. During the program various lectures were given by scientists as follows; 'Varietal scenario in the State, its Planning and identification' by Dr. JM Repale,

Sr. Scientist, Plant Breeding Section, 'Sugarcane cane seed multiplication, production technology' by Mr. SS Katake, Scientist and Farm Manager, 'Sugarcane seed Production through Tissue Culture' by Dr. SG Dalvi, Scientist, Tissue Culture, 'Seed borne diseases and control measures' by Mr. BH Pawar, Sr. Scientist, Plant Pathology on and 'Integrated pest management' by Mr. RG Yadav, Scientist and Head Entomology section.

Mr. Shivajirao Deshmukh, Director General, VSI had discussed problems in the seed production in the concluding session and he mentioned that the seed replacement rate should be increased by more than 20%. Presently it is very less i.e. 6.0%. On this occasion message was given to participants to adopt improved seed production technologies and to replace old seed materials once in a three years.

For this National Seed day program total 86 trainees of 27 sugar mills have participated. The program was concluded with a vote of thanks by Mr. RN Gaikwad, Scientific Officer, Farm Management and Development section.





## 46<sup>th</sup> Foundation Day of VSI

VSI celebrated 46<sup>th</sup> Foundation Day on November 19, 2021 under the Chairmanship of Mr. Shivajirao Deshmukh, Director General of VSI. Dr. Sushil Solomon, Vice President, International Association of Professionals in Sugar & Integrated Technology was the Chief guest of the function. Mr. Sunil Kumar Ohari, General Manager (Project), UP Co-operative Sugar Factories Federation Ltd., Lucknow was present a special guest. Mr. Sambhaji Kadupatil, Officer on Special Duty and VSI staff members were present.

All the dignitaries were welcomed and introduced by Dr. SV Patil, Technical Advisor & Professor, Department of Alcohol Tech. & Biofuels, VSI. The event was formally inaugurated by Chief Guest Dr. Sushil Solomon by lighting the traditional lamp along with other dignitaries.

Mr. Sunil Kumar Ohari talked about UP Co-operative sugar factories Federation Ltd., He has elaborated information about UP sugarcane scenario about sugarcane growers and industry.

Dr. Sushil Solomon talked about various factors of sugarcane and its byproducts. He also emphasized socio-economic issues related sugar industry, the distillery industry, government policies etc. Later he appreciated the R & D work and other activities being carried out in the VSI in his speech.

The function concluded with a vote of thanks by Dr. RV Dani, Technical Advisor & Head, Sugar Tech. Department, VSI.





## TRAINING/WORKSHOP/WEBINAR

### Management of Soil Fertility and Characterization of Salt Affected Soil

A one-day workshop on 'Management of soil fertility and characterization of salt affected soil' was organized by AST division on October 23, 2021. Mrs. Jyoti Kharade welcomed Mr. Sambhaji Kadupatil, OSD, Heads of agricultural sections and all the participants. Total 37 participants from 21 sugar mills were present during this workshop.

The workshop was inaugurated by Mr. Sambhaji Kadupatil, OSD by the lightening the lamp. In the inaugural speech, he highlighted the importance of the topic of the workshop. He briefed about all important management practices of salt affected soil.

During the technical session Dr. Preeti Deshmukh, Scientist & Head, Soil Science section delivered the lecture on 'Management of Soil Fertility and Characterization of Salt Affected Soil'. She explained about characterization of saline, sodic and saline sodic soil and informed us that there is a need to analyze the soil samples by saturation paste in the soil testing lab of sugar mills. She highlighted that area under salinity and sodicity is increasing day by day and it disturbs the soil physical condition, destroys beneficial micro-flora and fauna and nutrient availability and their uptake. She appealed that sub-soiling, selection of the appropriate variety, cropping sequence, irrigation methods, organic manuring a right type of chemical fertilizers, crop rotation and amelioration play a vital role in improving soil fertility and sugarcane productivity.

Mr. PP Shinde, Scientist & Head, Agriculture Engineering section talked briefly on sources of excess soil water that results in high water table including high precipitation in the humid region, surplus irrigation water and canal seepage in irrigated lands. Drainage systems play a pivotal role in the control of excess water and the accumulation of excess salts in the crop root zone. He suggested that the subsurface drainage system should be adopted by the sugar mills in their area of operation for reclamation of salt affected soils.

Mrs. SD Ghodke, Scientific Officer & Head, Microbiology section delivered a talk on 'Microbial remediation of saline sodic soil of Maharashtra'. She highlighted that microorganisms can survive, grow and reproduce in extreme saline conditions are known as halophilic microorganism. They have the ability to withstand the denaturing effects of salts as well as to manage and maintain the equilibrium between the high level osmotic pressure and low water activity level outside the cell. Homophiles are salt loving organisms that inhibits saline and hyper-saline environment. She briefly informed about the studies going on bioremediation at VSI.

Mr. SS Heganna, Chief Agricultural officer, Shri Datta Shetkari SSK, Shirol explained the success story of the reclamation of saline sodic soil at the operational area of sugar mill. He highlighted that, subsurface drainage is beneficial for reclamation of saline sodic soil and





he also presented the changes in the data of soil properties in the reclaimed. He appealed that approximately 765 ha area reclaimed till now and work is going on approximately 2676 ha by the sugar mill in cooperation with farmer.

The interactive session was held in presence of Mr. Shivajirao Deshmukh, DG. The participants raised their queries about costing for subsurface drainage,

chemical amendments and bioremediation. Mr. Shivajirao Deshmukh mentioned that salt affected soil is a burning issue in this era and appreciated the reclamation work done by Shri Datta SSK. He suggested all officers to visit the sugar mill for monitoring the work of reclamation. The programme was concluded with a vote of thanks.

## Agri-clinic and Agri-Business Management

The training programme on 'Agriclinic and Agribusiness Management' under the National Institute of Agricultural Extension Management (MANAGE), Hyderabad was held from September 9, to October 26, 2021 at Vasantdada Sugar Institute.

The training programme was concluded on October 26, 2021. The concluding session was chaired by Mr. Shivajirao Deshmukh, DG, VSI. Dr. Preeti Deshmukh welcomed the guest, sectional heads and all the

participants. She briefed about the activities which have done in 45 days training programme. Mr. Shivajirao Deshmukh, Director General guided the participants and encouraged them to start their own businesses. He also suggested that it is important to focus on own personality development for starting the business and work on increasing the productivity of farmers. Mr. SA Surwase expressed his gratitude and concluded the training programme with a vote of thanks.



## Sugarcane Ratoon Management

The one-day workshop on 'Sugarcane Ratoon Management' was held on November 27, 2021 at VSI, Pune. Total 48 participants from 25 sugar mills attended the workshop. There were five technical presentations and three sugar mill officers' presentations on various aspects of ratoon management were scheduled.

In the technical session, Dr. AS Patil, Scientific Officer, Agronomy section made a presentation on 'Sugarcane Ratoon Management'. He highlighted the benefits of the ratoon crop, advanced cultivation technologies for

improved ratoon productivity. Mrs. JP Kharade, Scientific Officer, Soil Science section highlighted the role of nutrient management in ratoon production. Mr. BG Mali, Scientific Officer, Microbiology section explained the use of bio-fertilizers and bio-pesticides for sugarcane ratoon management. Dr. GS Kotgire, Scientist, Plant Pathology section throws light on diseases of sugarcane with special reference to grassy shoot diseases. Later Dr. SG Dalvi, Scientist, Tissue Culture section gave information about Vasant Urja, a bio stimulator prepared by VSI in collaboration with



BARC. Mr. MA Jadhav, CDO, Sonhira SSK, Dist.: Sangli, Mr. VD Jadhav, CDO, Krantiagrani GD Bapu LAD SSK, Dist.: Sangli and Mr. SP Bhalekar, CDO, Pandurang SSK, Dist.: Solapur presented the efforts taken for increasing the productivity of ratoon crop at their respective sugar mill.

The concluding session was chaired by Mr. Sambhaji Kadupatil, OSD, VSI. He interacted with participants and suggested that, cane development officers should take more efforts for the implementation of cane development award scheme (CDAS) at respective sugar mills for the benefit of the cane growers. The workshop was concluded with the vote of thanks by Mr. PV Ghodke, Scientist & Head, Agronomy section with the following recommendations finalized by the core committee.

- Multiple ratooning proved cost effective; it should be encouraged in operational area of sugar mills.
- For higher ratoon productivity strictly follow the agronomic practices viz. stubble shaving, trash mulching, off barring, gap filling and basal dose of fertilizer followed by irrigation within 15 days after harvesting of previous cane crop.
- The fertilizer should be applied 10-15 cm away from the root zone with the help of crow bar for increasing the fertilizer use efficiency in ratoon sugarcane.
- Application of 75% fertilizer nutrient worked out by STCR (Soil test crop response) equation through fertigation along with drenching of phosphate solubilizing bacteria @ 2.5 l<sup>it</sup>ha<sup>-1</sup> at planting and

foliar application of acetobacter @ 3.0 lit ha<sup>-1</sup> at 60 DARI is recommended higher ratoon productivity.

- Grassy shoot disease (GSD) of sugarcane can be efficiently managed through the strategies like, use of healthy diseased free setts / plantlets from three tier seed nursery program, sett treatment with recommended pesticides, regular inspection of crop and rouging of affected stools and their destruction, and control of insect pests which acts as a vectors at right time may be employed.
- Vasant Urja can be sprayed with bio-fungicides on stubbles immediately after the harvesting of cane, also used with Plant health, Multi macro & micronutrient for spraying, it can be used with Muriate of Potash or Silicic acid to manage the adverse effect of water stress.
- Following measures to be adopted under water stress conditions for sustainable ratoon productivity
  - Application of additional dose of Potash @ 125 kg MOP/ha at earthing up.
  - Combined foliar application of Urea and MOP each at 2.0% concentration (2.0 kg Urea +2.0 kg Potassium in 100 liters of water) during the drought period applied at 15-20 days interval.
  - Protective irrigation by means of alternate or skip furrow systems combined with trash mulching helps to sustain yields with limited water availability.





## Agri-clinic and Agri-Business Management

In the memory of the founder president of VSI late Padmabhushan Dr. Vasantdada Patil, Oos Sheti Dnyanyag – residential training programmes were organized for the sugarcane growers of Maharashtra at VSI in two batches during December 21 - 24 & 28 – 31, 2021 as mentioned below:

In the training, lectures on various topics like sugarcane varieties & varietal planning, seed nursery management, tissue culture, modern planting techniques, weed management, soil fertility and fertilizer management, irrigation water management, use of bio-fertilizers, farm mechanization, sugarcane

Batch No.	Period	Area from which the farmers participated	No. of participants	Number of Sugar Mills & Individuals
<b>Oos Sheti Dnyanyag programme (Men farmers)</b>				
I	12 <sup>st</sup> to 24 <sup>th</sup> Dec., 2021	Kolhapur District and Vidarbha region	101	Sugar mills – 05 Individual – 04
II	28 <sup>th</sup> to 31 <sup>st</sup> Dec., 2021	Sangli and Satara Districts	63	Sugar mills – 05
<b>Total Participants</b>			<b>221</b>	<b>Sugar mills - 09 Individual - 05</b>

Oos Sheti Dnyanyag training programme was inaugurated by Mr. Sambhaji Kadupatil, OSD, in presence of Head of sections, a representative from participant farmers. Dr. GS Kotgire, Scientist, Plant Pathology section welcomed all the participants and others. In his inaugural speech, Mr. Kadupatil highlighted the importance of the training and activities of VSI.

economics, ratoon management and integrated disease & pest management were conducted by Subject experts. More emphasis was given to practical and field demonstrations.

In the plenary session of every batch, the trainees got their doubts cleared by the subject experts. In the concluding function, the representative trainee farmers expressed satisfaction about the training, lodging and boarding facilities. The certificates along with group photos were distributed to the trainees.

### Oos Sheti Dnyanyag programme (Men farmers)

Batch No. : I







### Batch No. : II





## Review of Cane Development Award Scheme (CDAS) and guidelines for VSI's Cane Development Awards

The one-day workshop on 'Review of CDAS and guidelines for VSI's Cane Development Awards' was held on December 25, 2021 under the Chairmanship of Mr. Sambhaji Kadupatil, OSD, VSI. Total 44 participants from 25 sugar mills have attended the workshop.

The welcome address was given by Dr. RS Hapase, Head & Principal Scientist, Plant Breeding section. Mr. Sambhaji Kadupatil inaugurated the program and he narrated the present scenario of sugar production in Maharashtra state. He further talked about CDAS would help to increase the productivity of sugarcane and also this scheme helps to create good technical officers.

Dr. RS Hapase, Head & Principal Scientist, Plant Breeding took a review of the progress of the promotional award scheme (CDAS) and informed Agriculture Officers / Cane Development Officers of the participated sugar mills for CDAS to plan properly in the planting season 2021-22 for various aspects of the CDAS scheme to get the good results. All officers should maintain the files of CDAS with specifically signed the information pages before sent to VSI. He also guided about the conduct of adaptive trials of sugarcane genotype CoVSI 18121 in comparison with its mother parent Co 86032 and lifting of seed for trial purpose.

Mr. BH Pawar, Head & Senior Scientist, Plant Pathology section guided about the information to be submitted

with the applications and the marking system for various Cane Development awards given by the institute to sugar mills and cane growers.

The special session was conducted on 'Drone Technology'. In this session, Mr. SR Jamdade, Rajaram Babu SSK, Sangli had given the lecture and highlighted the various advantages and dis-advantages of spraying by using drones in sugarcane fields. He also gave the live demonstration of spraying by drone in sugarcane fields. The agricultural scientists viz., Mr. PV Ghodke, Head & Scientist, Agronomy; Dr. Preeti Deshmukh, Head & Scientist, Soil Science; Mrs. Sudha Ghodke, Head & Scientist, Microbiology and Dr. SG Dalvi, Scientist, Tissue Culture, in brief explained about the various doses needs to be optimized by conducting the experiments in near future which includes weedicides, multi-micronutrients liquid fertilizers, biofertilizers and Vasant Urja respectively.

The concluding session was chaired by Mr. Shivajirao Deshmukh, DG and Mr. Sambhaji Kadupatil, OSD, VSI. Mr. Shivajirao Deshmukh interacted with the participants and took feedback from the participants about the spraying by using the drone in sugarcane fields and he also told that the institute will conduct the experiments to optimize the doses of various inputs for their spraying with help of the Rajarambabu SSK, Sangli. The following recommendations were finalized in the core committee meeting-





1. The Agriculture Officers / Cane Development Officers of the participated sugar mills for CDAS should planned properly during the current planting season i.e. 2021-22 for various aspects of the CDAS scheme like seed supply, varietal planning and harvesting programs, soil fertility inputs and drip irrigation etc. to get the good results.
2. The Agriculture Officer/ Cane Development Officer should confirm with their CDAS file that each information page was signed.
3. The seed material of promising sugarcane genotype CoVSI 18121 should be uplifted at the earliest and conduct the adaptive trials in comparison with its mother parent Co 86032. The list of farmers with their area needs to be submitted immediately after completion of planting for further visit to plots for guidelines and to record the observations.
4. Field demonstration of spraying by using drone technology in agriculture was demonstrated by

the sample drone was provided by Rajarambapu Patil Sugar mill and Chatak Innovations Company. Mr. Shivajirao Deshmukh, DG, Mr. Sambhajirao Kadupatil, OSD, Scientists of VSI and Cane development officers from the sugar mills were present during the demonstration.

5. The practical and technical aspects of the drone technology were discussed. Forum expected more research work on concentration of inputs, water volume, time of operation etc. from VSI scientists. The tentative technical program on standardization of dose of herbicides through drone was presented by Mr. PV Ghodke Scientist, Agronomy section. Mr. Shivajirao Deshmukh, DG, VSI nodded the use of new technology of using drones for spraying and crop scouting is a need of the hour. This will help the sugarcane and other farmers in increasing the productivity with low cost of cultivation.

The workshop was concluded with a vote of thanks by Mr. PR Hapase, Scientist (Pl. Br.).

## Field demonstration on application of drone technology in agriculture

In the present era, man-power is a scare thing in the agriculture production system, which results in untimely operations, hits the productivity badly. In this context a demonstrative program on spraying of agro inputs through drone mounted sprayer was organized at VSI on December 25, 2021.

The sample drone was provided by Rajarambapu Patil Sugar mill and Chatak Innovations Company. Mr. Shivajirao Deshmukh, DG, VSI, Mr. Sambhajirao Kadupatil, OSD, VSI, Scientists of VSI and Cane

Development Officers from the sugar mills were present during the demonstration.

Practical and technical aspects of the drone technology were discussed. Mr. Shivajirao Deshmukh, DG, nodded the use of new technology of using drones for spraying and crop scouting is a need of the hour. This will help the sugarcane and other farmers in increasing the productivity with a low cost of cultivation. The event concluded with a vote of thanks.





## Modern Technologies in Sugarcane Agriculture

The training programme was organized for farmers from Parbhani Dist. sponsored by Agricultural Technology Management Agency (ATMA) from December 30 to January 1, 2022. Total 50 Participants from different places as Manwath (25), Pathari (15) and Sonpaeth (10) were attended the program. The objective of the training was to train the farmers, about modern technologies in sugarcane agriculture. The training was inaugurated by Mr. Sambhaji Kadupatil, OSD, in presence of Heads of sections and representatives from participants. Dr. GS Kotgire, Scientist, Plant Pathology section welcomed all the participants and others. During the inaugural speech, Mr. Kadupatil highlighted the importance of the training and activities of VSI and appealed to all farmers to

adopt modern technologies during sugarcane cultivation. He also mentioned to take care and precautionary and follow guidelines like sanitization, social distancing & wear masks for preventing Covid 19 disease.

There was active participation from the trainees. They raised number of queries related to sugarcane cultivation and practices etc. These queries were satisfactorily answered by the staff of different sections of the Agriculture Division. In the concluding function, the representative trainees expressed their satisfaction about the training and other facilities etc. The event concluded with the distribution of certificates to the trainees and a vote of thanks.





## PARTICIPATION BY VSI STAFF

### SISSTA- Golden Jubilee Convention

The Golden Jubilee Annual Convention of the South Indian Sugarcane & Sugar Technologists Association (SISSTA) was organized on October 1 & 2, 2021 at the Eagleton Golf center, Bidadi, Bangalore.

Mrs. Sudha D. Ghodke, Scientific Officer and Head, Agril. Microbiology section and Mr. S. Panda, Technical Manager, Department of Sugar Technology were attended this event.

On October 1, 2021 in the prize distribution ceremony, Mr. S. Panda, Technical Manager, Dept. of Sugar

Technology has received a gold medal for best paper presentation at the 49<sup>th</sup> Annual Convention of SISSTA, Chennai on July 28-29, 2019.

On October 2, 2021 in technical sessions following research paper was presented in the sugarcane agriculture session by Mrs. Sudha D. Ghodke on 'Biological reclamation of saline sodic soil using halophilic/halotolerant microorganisms to increase crop yield' and Mr. S. Panda, on 'Implementation of Methodology- Improvement of production efficiency & financial benefit of sugar mills'.

### Collaboration with Indira Gandhi Krishi Vishwavidyalaya, Raipur

During their recent visit to Raipur, Prof. SV Patil, Head and Technical Adviser and Mr. AB Deshmukh, Scientist, Department of Alcohol Technology and Biofuel, VSI were invited to Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, on October 2, 2021. The aim of the visit was to understand the concept of extraction of proteins from rice and further processing it for bio-ethanol production. Dr. SB Verulkar, Professor, PMBB, IGKV, Raipur had approached VSI and visited VSI, Pune on 6<sup>th</sup> and 7<sup>th</sup> August 2021 to explore the opportunities to do collaborative work for extraction of proteins from rice and Bio-ethanol production from mother liquor by-product of the protein extraction. During the visit, Dr. SB Verulkar welcomed the VSI team and introduced other faculty members of IGKV, Raipur and briefed them about ongoing work on protein extraction from rice. He explained that IGKV,



From left to right: Dr. Deepak Sharma, Dr. SB Verulkar, Dr. R Bajpai, Mr. AB Deshmukh, Hon'ble Vice Chancellor, Dr. SK Patil, Dr. SV Patil, Dr. Henchanal, Ex-chairperson, PVPFRA, Mr. Ajay Mansukhani, Dr. Girish Cha

Raipur wants to collaborate with VSI on above proposed aspects. The collaboration is desired for process development, its evaluation and scale-up of the developed process before its commercialization after its sensitive analysis. It is also proposed to perform the sensitive analysis of the Biofuel production from rice straw which is an agro waste produced after harvesting of rice crop.

Meeting was also held with Honorable Vice Chancellor, Dr. Sanjay Kumar Patil, IGKV, Raipur, who emphasized the importance of proposed R & D work, particularly for Chhattisgarh state as it has excess of rice production. He further explained that the project will have the significant impact on farmer's income in the state. The Vice Chancellor mentioned that the required funds for the collaborative work can be arranged from one of the funding agencies, preferably from the state government of Chhattisgarh as this is one of the ambitious projects of IGKV that can contribute to the



eco-friendly management of rice straw. In continuation, he mentioned that IGKV students and / or staff can come to VSI for this work. Prof. SV Patil mentioned that an MoU has to be signed in this context between the two organizations and assured for the required inputs for further progress of the proposed R & D work.

During the interactive meet, Dr. Deepak Sharma, HoD, Genetics and Plant Breeding, Dr. SB Verulkar, Professor, Plant Molecular Biology & Biotechnology, Dr. RK Bajpai, Director, Research, Dr. Girish Chandel, HOD, Plant Molecular Biology and Biotechnology, Dr.

Vivek Tripathi, Associate Director Research were also present and expressed their views on the R & D project.

Dr. SB Verulkar also requested Prof. SV Patil to address the Ph. D students in view of industrial developments along with government policies announced for ethanol production and its utilization in the county in coming years. Prof. SV Patil expressed his views, gave projections of ethanol production in the country and cleared the doubts of the students. He also explained the opportunities for the students to build their career in the field of Biofuel.

## 79<sup>th</sup> Annual Convention of STAI, Kanpur

The STAI's 79<sup>th</sup> Annual Convention and International Sugar Expo 2021 was organized jointly with National Sugar Institute, Kanpur on October 4-5, 2021 at NSI, Kanpur. The convention was attended by the following staff by virtual mode.

Dr. RS Hapase, Principle Scientist & Head, Dr. JM Repale, Sr. Scientist, Plant Breeding section, Mr. PP Shinde, Scientist & Head, Agril. Engineering section, Dr. Preeti S. Deshmukh, Head & Scientist, Ms. Jyoti P. Kharade, Scientific Officer, Soil Science Section, Mrs. Sudha D. Ghodke, Scientific Officer & Head, Mr. BG Mali, Ms. Kranti G. Nigade, Agril. Microbiology section from Agriculture division and Mr. RA Chandgude, Head and Technical Adviser, Dept. of Sugar Engineering were attended and presented the research papers as follows:

- The Response of Promising Midlate Maturing Sugarcane Genotypes in Different Agro-Climatic Regions of Maharashtra State by RS Hapase, DS Pawar & JM Repale.
- Scheduling of Irrigation with Mulch under Surface Irrigation in Sugarcane Crop by PP Shinde.
- Influence of Organic Inputs on Sugarcane Yield and Soil Fertility by Jyoti Kharade, Preeti Deshmukh & Samadhan Surwase.
- Soil Fertility Mapping of Ambad Tehsil, Jalna District, Maharashtra Using Geospatial Technique by Preeti Deshmukh, Varsha Hingmire, SS Walte & SB Bramhe.
- Biological Reclamation of Saline Sodic Soil Using Halophilic / Halotolerant Microorganism to Increase Crop Yield by Sudha D Ghodke, BG Mali & AS Shinde.
- Study of Exo-Polysaccharide Producing Bacteria from Sugarcane Rhizosphere and Their Impact On Growth, Yield and Quality of Sugarcane Under Water Stress Condition in Pot Culture Studies by Sudha D Ghodke, BG Mali & AS Shinde.
- Evaluation of Efficiency of Entomopathogenic Nematode against White Grub in Sugarcane Crop by Kranti G Nigade, Sudha D Ghodake & US Manjul.
- Studies of Plant Growth Promoting Rhizobacteria for Enhancing Cane and Sugar Yield of Sugarcane Crop by Kranti Nigade, Sudha D Ghodake & Sharmilee Pradip Pisal.
- Innovative and Sustainable Options for Improving Juice Extraction Efficiency by RA Chandgude & PG Patil.
- Augmenting Mill Performance through Productive Imbibition by Suryanarayana Sastry S, RA Chandgude, SP Nalawade & DN Shitole.



## 66<sup>th</sup> Annual Convention DSTA

The 66<sup>th</sup> Annual Convention of the Deccan Sugar Technologists Association, Pune (India) was organized on October 30-31, 2021 at Yashwantrao Chavan Academy of Development Administration, Pune by

hybrid mode. Mr. PV Ghodke, Scientist & Head, Agronomy section, attended this convention and presented the paper entitled 'Agronomic evaluation of tropical sugarbeet genotypes in Maharashtra'.

## 15<sup>th</sup> Agricultural Science Congress



The 15<sup>th</sup> Agricultural Science Congress was held at Banaras Hindu University, Varanasi, U.P. during November 13 - 16, 2021. The congress was organized by the National Academy of Agricultural Sciences, New Delhi. The theme of the congress was 'Energy and Agriculture: Challenges in 21<sup>st</sup> Century'.

Mr. PP Shinde, Head, Agricultural Engineering from VSI, Pune participated in the congress as an invited speaker for the session Agricultural Engineering and Technology and presented a paper on 'Mechanized harvesting of sugarcane'.

## World Association of Beet and Cane Growers (WABCG) Meeting

A virtual meeting of the World Association of Beet and Cane Growers (WABCG) was held from November 08-22, 2021 in three phases. Vasantdada Sugar Institute is a member and observer of this association. Mr. Shivajirao Deshmukh, DG, Mr. Sambhaji Kadupatil, OSD and Mr. PV Ghodke, Scientist, Agronomy Section, VSI attended these

online meetings. Detailed discussions on world sugar stock, sugar pricing policy, ethanol production-pricing, and various problems faced by the industry were held during these meetings. Director General VSI made a presentation on 'Recent developments in the Indian Sugar Industry'.

## Global Launch of Biosyrup : A New Sustainable Feedstock for Production of Ethanol



Maharashtra Rajya Sakhar Sangh (MRSS), Jaywant Sugars Ltd. (JSL) and Praj Industries Ltd. (PIL) jointly organized the programme of global launch of 'Biosyrup: A new sustainable feedstock for production of ethanol' on December 3, 2021 at JSL, Dhawarwadi, Tal. Karad, Dist. Satara.

Mr. Shekhar Gaikwad (Sugar Commissioner, GoM), Sangeet Singala (Chief Sugar Director, GoI), Mr. Jayprakash Dandegaonkar (President, National Federation for Co-operative Sugar Factories Ltd), Mr. Shriram Shete (Vice President, MRSS),



Mr. Vijaysinh Mohite Patil (Ex Deputy Chief Minister, GoM and Director, MRSS), Mr. BG Thombare (President, Western Sugar Mills Association), Mr. Babanrao Shinde (Director, MRSS), Mr. Rajendra Nagawade (Director, MRSS), Mr. Ganashyam Shelar, Mr. Sanjay Khatal (Managing Director, MRSS), Dr. Suresh Bhosale (Founder Chairman JSL and Chairman Yashwantrao Mohite Krishna SSK), Mr. Vinay Bhosale (Trustee, Krishna Foundation), Dr. Promod Chaudhari (Founder & Executive President, PIL), Prof. SV Patil (Technical Adviser & Head, Department of Alcohol Technology & Biofuels, Vasantdada Sugar Institute, Pune, Chairman, Managing Directors, Distillery Managers and representatives of various sugar mills attended the programme. Several other delegates also attended the programme through virtual mode.

In this event, Prof. SV Patil made a presentation on 'Storability study of biosyrup'. VSI had conducted the storability study of biosyrup for 10 months starting from January 2021 to October 2021. TRS content of biosyrup was almost constant throughout the period.

The initial TRS content was 73.78 % and the final TRS was 75.04 %. No reduction in TRS was observed. There was an increase in TRS % by 1.5 to 2.0 % which may be due to water evaporation. There was no degradation of sugar observed. The volatile acidity was in a limit and it was possible to ferment the biosyrup very easily. Lactic acid bacterial count and total bacterial count in all samples were observed within the acceptable limit and there was no adverse effect seen on the total sugar content of biosyrup.

He also explained the economics of ethanol production using biosyrup. He stated that the Government should allow the distillery industry to use the biocomposting route for treatment of spentwash generated using syrup and biosyrup. Incineration boiler (with coal as supportive fuel) will be not suitable for treatment of such type of spentwash.

Prof. SV Patil, Dr. RV Burase, Mr. HA Pachpute and Mr. RN More were involved as the technical team of VSI including along with team of JSL and PIL during conducting the Biosyrup to ethanol trial at JSL.





## VISITORS TO VSI VISITORS TO VSI

### AICRP(S) Monitoring Team to Zonal Variety Trial (ZVT)

The AICRP(S) monitoring team comprising of five scientists headed by Dr SB Patil, Breeder, ARS, Sankeshwar; Dr Mrs. VP Jaiswal, Agronomist, ICAR-IISR, Lucknow; Dr VK Biradar, Entomologist, SRS, Tharsa; Mr. BH. Pawar, Plant Pathologist, VSI, Pune and Dr. GK Singh, Chief Technical Officer, AICRP(S) unit IISR, Lucknow had visited the institute on November 13 & 14, 2021 to monitor the AICRP(S) research program at VSI location. The team visited the experiments conducted at research farm as per the technical programme 2021-22 of AICRP(S) by the Plant Breeding, Agronomy, Soil Science, Entomology and Plant Pathology. The team members visited three Zonal Varietal Trials and the seedlings (total 4753) were raised from fluff under the fluff supply program of AICRP(S). The promising genotypes from zonal varietal trials under early and Midlate group are as under :

1. Initial Varietal Trial-Early: CoVc 18061, Co 18012, Co 18009, Co 18024, CoVSI 18121
2. Advanced Varietal Trial-I Plant: Co 16006, Co 16010, Co 16018.
3. Advanced Varietal Trial-II Plant: Co 15010, CoN 15071, Co 14005, CoSnk 15102, Co 15009
4. Advanced Varietal Trial-I Plant-Ratoon: Co 15010, Co 14005, Co 15009, Co 15017.

Dr. SB Patil appreciated the conduct of trials, crop growth in the breeding trials conducted. The team members visited the seedlings grown under the fluff supply programme in Ground Nursery-I (2021) at net sheds by Plant Breeding and were satisfied with the growth of seedlings.

The team visited the further experiments conducted under AICRP(S) by Agronomy and Soil Science, Entomology and Plant Pathology section. The details of the visit are as under ;

Dr Mrs. VP Jaiswal, visited the experiments conducted by Agronomy section viz., AS72: Agronomic

performance of elite sugarcane genotypes and AS74: Evaluation of sugarcane varieties for drought tolerance. Mr. PV Ghodke explained the results of the trials obtained. The other two trials conducted by Soil Science viz., AS75- Precision nutrient management through rescheduling time of application for widely spaced sugarcane plant-ratoon system and AS76- Evaluation of PSAP on AICRP in sugarcane at given varieties in different agro climatic zones were also visited and Mrs. JP Kharade explained the protocol and observations of trials.

Dr VK Biradar visited the Entomology trials viz E 4.1: Evaluation of zonal varieties /genotypes for their reaction against major insect pests. All genotypes/varieties screened under this project were tolerant or moderately tolerant to early shoot borer except CoC 671 (Std.) which was susceptible to it. E.28: Survey and Surveillance of sugarcane insect pests. E.30: Monitoring of insect pests and bio agents in sugarcane Agro-ecosystem: Percent incidence of Early shoot borer was recorded maximum 26.67 % in 22<sup>nd</sup> standard meteorological week. E.34: Standardization of simple, cost effective techniques for mass multiplication of sugarcane bio-agents. Produced 1254.40 cc *Corcyra* eggs, 650 *T. chilonis* & *T. priteosum* cards up to September 2021. E 40: Integrated approach to manage white grub in Sugarcane. In August 2021 organic module was free from white grub infestation, while in the IPM module and untreated control observed 0.8 & 1.40 no of grubs per clump respectively. E 41: Assessment of yield losses caused by borer pests of sugarcane under changing climate Scenario. At 150 DAP cumulative % incidence of Early shoot borer was 3.15 % and 9.27 % in treated block and untreated block respectively.

Dr VK Biradar visited the pathology nine trials viz., PP1 (AICRP-S, PP17, B): Evaluation of zonal varieties for resistance to smut disease under artificial disease condition at field level, PP 17 D: Yellow leaf disease



study (YLD), PP 17E: Methodology for screening of varieties for brown rust, PP 17F: Screening of entries under AVT for pokkah boeng, PP 28 (b) :Methodology for screening sugarcane genotypes for resistance to brown rust (*Puccinia melanocephala*), PP 31: Screening and epidemiology of Pokkah boeng in sugarcane, PP 32: Management of brown spot disease of sugarcane, PP 33: Management of yellow leaf disease through meristem culture, PP 33: Efficient delivery of fungicide and other Agro inputs to manage major fungal diseases in sugarcane. Dr. GS Kotgire

has given the detailed information about the field trials as well as survey observations. Dr. VK Biradar expressed the satisfaction about the care and maintenance of the trials. Plant Pathology section of VSI has conducted all the 9 experiments (Above mentioned 9 and PP22) allotted to them. During the visit, Dr. VK Biradar has also recorded the natural incidence of the pokkah boeng disease (PB) on different varieties under AVT in Plant Pathology research trial.





1. Mr. Anup Kumar, Principal Secretary, Cooperation & Marketing GoM and Mr. Shekhar Gaikwad, Sugar Commissioner, GoM visited VSI on October 14, 2021. Mr. Sambhaji Kadupatil, OSD VSI welcomed and felicitated them.



2. The team of officers from Mantralaya comprising, Mr. Ankush P. Shingade, Deputy Secretary; Mr. Pamod M. Valanj, Under Secretary; Mr. Prashant R. Pimple, Section Officer; Mr. Prakash A. Waghmare, Asst. Section Officer and Mr. Shailesh S. Surve, Asst. Section Officer visited VSI on December 4, 2021. During their visit they visited different departments to know the activities of VSI.



3. Mr. Kantilal B. Umap, Commissioner of State Excise, Government of Maharashtra State, Mr. Prasad Survey, Divisional Deputy Commissioner of Excise, Pune), Mr. Yatin Sawant, Assistant Joint Commissioner, Molasses and Alcohol and Mr. Santosh Zagade, Superintendent of Police, Pune visited Department of Alcohol Technology & Biofuels (AT & B), VSI on December 10, 2021. On this occasion Mr. Shivajirao Deshmukh, DG, VSI, Mr. Sambhaji Kadupatil, OSD, VSI and Prof. SV Patil, Technical Adviser & Head, AT & B joined them and visited various sections of the Department.

Prof. SV Patil briefly explained to the Commissioner State Excise and their Officers regarding all departmental activities with special reference to the project entitled 'Scientific study on losses of malt



spirit during maturation and aging' Funded by United Spirits Ltd., Division of Diageo India Ltd. Later they visited facilities of pilot winery and nano brewery laboratories. They also visited and understood the available analytical facilities required for alcohol, molasses, spirit and denaturant analysis.



In this quarter October to December 2021 following visitors visited to Information & Service Centre of VSI

Particulars	No. of Visitors
<b>October - 2021</b>	
Individual Farmers from Maharashtra State	248
Individual Farmers / Officers from Outside State	30
<b>November - 2021</b>	
Individual Farmers from Maharashtra State	152
<b>December - 2021</b>	
Individual Farmers from Maharashtra State	214
Maharashtra Govt. Officers from Co-operative Dept.	06
<b>Total</b>	<b>650</b>



## ARTICLE

### Grassy shoot disease - emerging disease problem in sugarcane

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Plant Pathology Section,  
Vasantdada Sugar Institute, Manjari (Bk.) Pune

Vasantdada Sugar Institute, Manjari (Bk.), Pune

#### Introduction

Sugarcane (*Saccharum officinarum* L.) is one of the important agro industrial crops of the tropical and subtropical countries of the world. India being a world's larger consumer as well as the second largest producer of sugar country requires sugarcane production on large scale. To fulfill this demand large amount of seed material is to be exchanged from one location to another. Most of the sugarcane diseases are seed borne and therefore movement of seed material from one to another place leads to introduction of diseases to new location from its centre of origin takes place. Due to many reasons including unfavorable environment this host plant invites large number of pathogens and this crop suffers from about 240 diseases at world level. While in India, 180 diseases have been recorded on sugarcane. The damage caused to sugarcane during each epidemic would vary depend upon the nature of disease and spread of the affected varieties. Similar to other major diseases of sugarcane, phytoplasmal diseases are also of economic importance and cause various biochemical changes in the plants. Phytoplasma has been reported to be associated with grassy shoot disease of sugarcane which causes significant losses in sugarcane yield and sugar recovery. It is very important to identify the disease at earlier stage to avoid its further spread and to develop effective management strategy. The identification of the disease is based on the symptoms developed by infected plants is not always specific and can be confused with those caused by biotic and abiotic agents. With the use of various serological and

molecular techniques, phytoplasma can easily be detected at early stage. These diagnostic techniques could be utilized in supply of healthy sugarcane seed material.

Grassy shoot disease (GSD) was recognized for the first time in Thailand in the mid-1990's. This disease is caused by a phytoplasma – a very small organism that lives in the phloem of the vascular bundles and cause serious losses. First seen in India in the 1940s and after 2006 this disease became major disease of sugarcane.

#### Symptomatology of grassy shoot disease (GSD):

GSD is characterized by the production of a large number of thin, small, slender, adventitious tillers from the base of the affected stools, giving the plant a bushy appearance bearing pale yellow or chlorotic leaves which remain thin, narrow, reduced in size. Formation of white leaves by leaf chlorosis and proliferation of tillers, excessive tillering and stunting of the plants gives the plant a grassy appearance and hence the name grassy shoots disease. Affected plants do not produce millable canes. If the attack is light, one or two weak canes may be formed. Most of the affected stools die. In some cases, the diseased clumps remain stunted and may produce one or two weak canes. The disease is particularly pronounced in the ratoon crop give the appearance of a field full of perennial grass. Secondary infection on the full-grown canes shows side sprouting and yellowing.

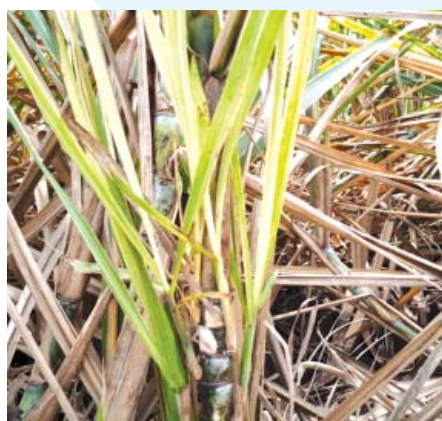


## Transmission:

The disease primarily spread by infected setts; while secondary infection may involve insect vectors especially leaf hoppers, plant hoppers and psyllids from the family *Cicadellidae*, *Fulgoroidea* and *Psylloidea* in a persistent propagative manner. Also, there are reports on transmission by three different species of aphids viz., *Rhopalosiphum maidis* (Fitch), *Melanophis sacchari* (Zehntner) and *Melanophis sacchari* form a *indo sacchari* (David) as well as by *Proutista moesta* (Westwood).

## Management:

1. Use of healthy diseased free - collected from three tier seed nursery program.
2. Roguing of affected stools and destruction – Mass eradication.
3. Heat therapy: seed/planting material should be treated with MHAT (54°C for 150 min)
4. Ratooning of affected crop must be avoided.
5. Crop rotation may be employed to reduce inoculum in the field.
6. Control of insect pests at right time.





## UPCOMING EVENTS

### Monthly Workshop schedule for the year of 2021-22

S.No.	Date	Topics	Co-ordinators*
1	25-01-2022	<b>Crop protection in sugarcane (Virtual Workshop)</b> Subtopics : 1. Introduction of new pests and diseases and their control 2. Key factors in increasing the yield	Mr. BH Pawar Mr. RG Yadav Mr. P V Ghodke
2	26-02-2021	<b>Integrated Water Management in sugarcane</b> Subtopics : Ideal agronomic practices by use of Vasant Urja and Multinutrients.	Mr. PP Shinde Mr. PV Ghodke Dr. PS Deshmukh Dr. SG Dalvi
3	26-03-2022	<b>Sugarcane Management in stress condition</b> Subtopic : Trash management practices and precautions to control white grubs and white fly	Dr. RS Hapase Mr. PV Ghodke Dr. PS Deshmukh Dr. SG Dalvi Mr. US Manjul Mrs. SD Ghodke

\*- sub topics for each workshop may be decided or modified by the coordinators

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