

**2.3.1 Student centric methods/activities
such as experiential learning,
participative learning and problem
solving methodologies**



VASANTDADA SUGAR INSTITUTE

Manjari (Bk), Pune- 412307, Maharashtra



VASANTDADA SUGAR INSTITUTE

VSI Bulletin : Vol. - 22, Issue - 1, January - March 2022

Overview of Distilleries and Alcoholic Beverage Industry

Mr. Prasad Survey, Deputy Divisional Commissioner, Pune, State Excise, Government of Maharashtra State requested VSI to arrange half day training programme on 'Overview of distilleries and alcoholic beverage industry' for their 113 trainee officers. In this regard Department of Alcohol Technology & Biofuels (AT & B), VSI conducted half day training programme on 18th February 2022 for the trainee State Excise Officers, Government of Maharashtra. Mr. SR Jadhav, Deputy Superintendent, Hadapsar, Pune, Mr. Yuvraj Shinde, Deputy Superintendent, Pimpri Chinchwad and other few officers of training center Khandala were also present for the training programme.

In the training Mr. DA Patil, Assistant Professor & Joint Technical Adviser, AT & B, elaborated the importance of the course to the participants.

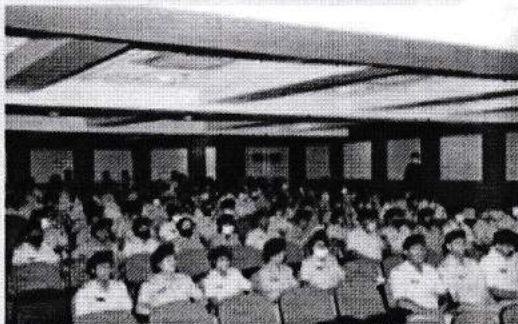
The first lecture was delivered by Mr. RV Godage, Assistant Professor & Joint Technical Adviser, AT & B. He has briefly presented his presentation on the topics such as Molasses quality, Storage of molasses, Batch fermentation, Continuous

fermentation, Atmospheric and Multipressure distillation, Characteristics of rectified spirit, Extra neutral alcohol, Fuel ethanol, Azeotropic distillation, Molecular sieve dehydration and DFPD Guidelines,

Mr. DA Patil has presented his presentation on topics such as Role of Excise in distillery unit, Alcoholic fermentation process, Factors affecting on distillery performance, Atmospheric distillation process, Production process of country liquor, Indian made foreign liquor (Whisky, Brandy, Rum, Gin & Vodka), records and registers to be maintained in CL & IMFL, taxes and duties on molasses and alcohol.

Dr. KS Konde, Associate Professor & Technical Adviser, AT & B, thanked to the Commissioner, State Excise, GoM and their Officers for sending their trainee officers for training. He has also taken the review of the lectures.

In the concluding session of the training programme, Mr. Prasad Survey thanked to the management of VSI and concern staff of AT & B for giving valuable information about training to the trainee officers.



Oos Sheti Dnyanyag & Dnyanlaxmi

In the memory of founder president of VSI late Padmabhushan Dr. Vasantdada Patil, **Oos Sheti Dnyanyag & Dnyanlaxmi** - residential training programmes were organized for sugarcane growers

of Maharashtra at VSI in two batches during December 21 - 24 & 28 - 31, 2021 reported in previous issue of VSI Bulletin and remaining batches were conducted during January to March 2022 is reported in the present issue of VSI Bulletin. Details as given below;

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TRAINING

Traditional vs Scientific Technologies for Mahua Spirit and Heritage Alcoholic Beverages Production-Optimization, Evaluation and Training (Heritage Wine Policy)

A training programme for tribal representatives was conducted from January 10-28, 2022 under the research project entitled 'Traditional vs scientific technologies for Mahua spirit and heritage alcoholic beverages production-optimization, evaluation and training (heritage wine policy)' was carried out by Department of Alcohol Technology and Biofuels (AT&B), VSI. This project is sanctioned by Principal Secretary, Department of Commercial Tax, Govt. of Madhya Pradesh and funded by Ministry of Tribal Affairs, Govt. of India.

Total 13 participants and Mr. Anrudh Mockerjee, project consultant attended the training programme. The participants were from Dindori and Alirajpur Dist. of Madhya Pradesh (MP) and most of the participants were tribal people. Participants were from various backgrounds such as farmer, Excise Officer and science students. Mr. Rajesh Henry, Additional Excise Commissioner, GoMP attended the training programme for one day. As instructed by GoMP, the training programme was conducted in Hindi.

Prof. SV Patil, Technical Adviser & Head, Department of AT & B briefly explained to the participants regarding all departmental activities with special reference to the Mahua project.

The training programme covered different topics such as alcoholic & non-alcoholic beverages, Mahua tree & its importance, traditional vs scientific fermentations & distillation, analysis of total reducing sugar, ethanoic & total organic volatile acidity, concept of sensory evaluation, isolation & maintenance of yeast culture, understanding pilot & effluent treatment plant, ideal packaging methods and rules & regulations linked to the Excise Department. The course also included hands-on practical based on the above topics which will be helpful for the participants while working at pilot demo plant at MP. During the training period, there was a one-day visit to

BrimaSagar Maharashtra Distilleries Ltd, Shreepur, Solapur, Maharashtra in which participants were acquainted about the Industrial pot distillation and foreign liquor.

On the occasion of the concluding session on January 28, 2022, the training certificates were given to the participants by Mr. Shivajirao Deshmukh, DG, VSI. He also briefed importance of this project about Mahua liquor. All the participants introduced their self and gave their positive feedback. During the session, discussion was also held and session was concluded with vote of thanks by Dr. S. Behera, Scientist, VSI.




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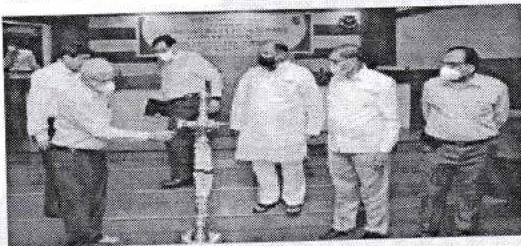


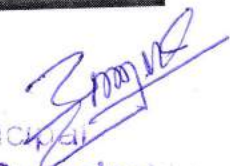
1. The planting of drought tolerant varieties like CoC 671, VSI 434 and VSI 08005 should be undertaken in the drought prone area of Maharashtra.
2. The early planting (Pre-season planting) should be preferred (October-November) in the drought prone area.
3. Distance between two rows can be reduced upto 90 cm in the drought prone area.
4. Incorporation of sugarcane trash in soil instead of burning OR in situ decomposition with trash mulching to increase the fertility of soil, it has a major role in soil conservation, checks the weed growth, helps to minimize the impact of water stress as well as salt stress on crop.
5. The application of *Acetobacter diazotrophicus* bioinoculant @ 3 lit/ha in 500 lit of water as foliar application after 60 days of planting in morning hours.
6. To control sugarcane mealy bug or scale insects infestation in stress condition by removal of lower 2-3 dry leaves and spraying of Imidachloprid 17.8 % SL @ 300 ml/ha (0.3 ml/lit) is recommended.
7. For the management of Early shoot borer and Internode borer in stress affected sugarcane crop, the release egg parasitoid *Trichogramma chilonis* @ 3-5 lac parasitized eggs /ha in suitable instalments in the field and soil application of granular insecticide Fipronil 0.3 GR @ 25 kg/ha or Chlorantraniliprole 0.4 GR @ 22.5 kg/ha or Spraying of Chlorantraniliprole 18.5% SC @ 375 ml per ha (0.4 ml/ lit of water) is recommended.
8. Under abiotic stress condition the incidence of sugarcane diseases viz, pokkah boeng, rust, red rot, wilt, pineapple and whip smut is increasing as well as abnormalities viz., leaf scorching, drying of leaves, rotting of leaves, decaying of leaves, defoliation and banded chlorosis are also observed. To control these diseases and abnormalities the recommended prophylactic measures should be adopted for the management of sugarcane diseases and abnormalities under stress condition.

Valorizing Waste from Sugar & Allied Industries

One-day workshop entitled 'Valorizing waste from sugar & allied industries' was jointly organized by the Department of Alcohol Technology and Biofuels, VSI and UK partners at Vasantdada Sugar Institute (VSI), Manjari (BK), Pune, India on March 31, 2022 with the active participation of sugar mills and distilleries from different States across the Country.

For this workshop following eminent Delegates & Speakers viz, Mr. Jayprakash Dandegaonkar, Chairman, NFCSFL & MRSSK Sangh Ltd., In Mr. Prakash Naiknaware, MD, NFCSFL, India; Mr. Sanjay Khatal, MD, MRSSK Sangh Ltd., India; Prof. V. V. Ranade, Professor Emeritus, Queen's University Belfast, UK; Prof. SV Patil, Professor Emeritus, Alcohol Tech &




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Biofuels, VSI, India; Prof. Yogendra Shastri, Department of Chemical Engineering, IIT Bombay, India; Mr. Joseph Vimal, MD, J & F Biogas, Chennai, India; Mr. Gajendra Singh, Dhampur Sugar Mills Ltd., UP, India (Online); Dr. Vinod Kumar, Cranfield University, Cranfield, UK (Online); Dr. Ines Baptista, Green Fuels Research Ltd., Berkeley, UK (Online); Mr. Shivajirao Deshmukh, Director General, VSI, India; Mr. Sambhaji Kadupatil OSD, VSI, India and apart from this, total 133 participant (Sugar Mills: 79 and VSI; 54) were present and

The workshop was inaugurated and welcome address was given by Mr. Shivajirao Deshmukh. He welcomed all the guests, sugar mill representatives and VSI staff. He told that Sugar and Allied Industries has huge opportunities for utilization of sugarcane bagasse (SCB) and press mud cake (PMC) for value added products such as bio-CNG, lactic acid, bio-butanol, succinic acid, xylitol, etc. He informed that VSI has collaborated with NiraBhima SSKL for installation of two pilot scale anaerobic digesters to study various aspects and retrofit Compressed biogas (CBG) facility in existing sugar mill complex.

Introductory remarks were given by Mr. Jayprakash Dandegaonkar. He informed that India is importing 77% crude oil requirements and 50% of natural gas requirement and Government of India has set a target of reducing this import by at least 10% by 2022. He also told that India has set a target of 10% blending of fuel ethanol with petrol by 2022 and 20% blending by 2025 for ethanol blending programme. He also informed that GOI has invited expression of interest by Oil Marketing Companies (OMCs) for production & supply of CBG under Sustainable Alternative towards Affordable Transportation (SATAT) programme. He further informed that Indian Sugar Mills generates 8-10 million tons of PMC and 100 million tons of SCB every year. He told that both PMC & SCB can be utilized for CBG production through anaerobic digestion (AD). SCB can be used to produce value added products such as bio-ethanol, bio-butanol, lactic acid, succinic acid and xylitol, etc. He emphasized that if 50 % of Sugar mills out of total 540 Sugar mills will adopt CBG technology, they will produce 3.75 lakh ton of CBG per annum with revenue of Rs. 1750 crore per annum to India and this will

create employment opportunities. He also explained the market potential of lactic acid and succinic acid.


Technical Session-I

During the 1st technical section, Prof. VV Ranade gave a presentation on 'Valorising waste biomass via hydrodynamic cavitation and anaerobic digestion'. He briefly discussed the visions of vWa project. He told that the PMC & SCB produced from sugar & allied industries could be converted in to bio-CNG & other value added products. He specially focused on hydrodynamic cavitation pretreatment method using vortex based devices for cavitation. He also also discussed biogas improvement for spent wash digester on commercial scale using cavitation pretreatment.

The 2nd technical presentation was delivered by Prof. SV Patil on the topic entitled 'Value added products from waste biomass'. Prof. SV Patil started his presentation with the explanation of vWa project concept and the role of VSI in the project. In his talk, Prof. Patil emphasized mainly on bio-CBG and lactic acid production. He also explained about the achievement of biogas production of 480 M³ per ton of dry PMC or 120 M³ per ton of wet PMC. He also explained about the 45% enhancement of biogas production rate in case of PMC feed when the retention time was changed from 30 days to 20 days. On aspect of CBG production, Prof. Patil described 5 different types of CBG production models on Sugar industry perspective.

The third technical presentation was delivered by Prof. Yogendra Shastri on the topic entitled 'Technologies for Sugar Industry Waste Valorization: Development and Scale-up Potential'. He explained life cycle analysis for different products (lactic acid, succinic acid, xylitol & CBG) in vWa. He mentioned regarding the techno-economic & life cycle assessment of different value added products (Rs. 215/kg lactic acid, Rs. 37/kg of CBG, Rs. 121/kg for succinic acid & Rs. 230/kg for xylitol). He also explained biomethane and lactic acid purification work at IIT Bombay.




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Technical Session II

During the 2nd technical session, Mr. Gajendra Singh, Dhampur Sugar Mills Ltd., UP, India gave a presentation on 'Biomethane production: An opportunity'. He explained the single stage anaerobic digestion with cavitation and two stage anaerobic digestion. He explained anaerobic digestion data for 1M³ and 7M³ digester. He also shown flame test for 7M³ digester. He also explained production of volatile fatty acids (acetic, propionic and butyric acids) during biogas production for two stage anaerobic digestion.

The 2nd technical presentation was delivered by Dr. Vinod Kumar on the topic entitled 'Sugarcane bagasse-based Production of Biochemicals'. He focused on production of xylitol and succinic acid from SCB. He informed that 102.5 g/L of xylitol was produced through fed-batch fermentation from pure xylose in comparison to 86.6 g/L of xylitol from SCB xylose hydrolysate. He further informed that 36.7 g/L of succinic acid was produced from pure xylose in comparison to 28.7 g/L of succinic acid from SCB xylose hydrolysate.

The 3rd technical presentation was delivered by Dr. Ines Baptista on 'Towards biobutanol production: ABE fermentation of sugarcane bagasse hydrolysate'.

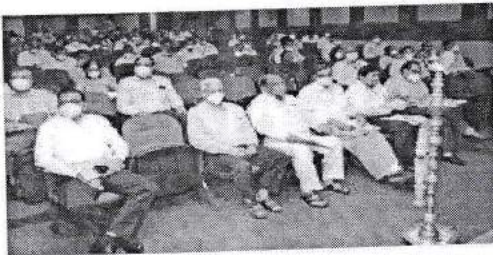
She emphasized on biobutanol production from synthetic media and SCB hydrolysate containing both glucose and xylose.

The 4th technical presentation was delivered by Mr. Joseph Vimalon on 'CSTR Semi dry fermentation technology'. He described in detail about pros and cons of semi-dry fermentation technology in the field of bio-digestion for various different substrates (paddy straw, press mud, cane trash, Napier grass).

The technical session I & II was coordinated by Dr. Kakasaheb Konde, Head, Professor and Technical Adviser, AT & B, VSI, India.

In the panel discussions, Mr. Shivajirao Deshmukh, Mr. Sambhaji Kadupatil, Mr. Prakash Naiknavare, Prof. Yogendra Shashtri, Mr. SD Bokhare, Prof. Vivek Ranade, Prof. SV Patil and Dr. KS Konde were present on the dias. There was lot of deliberation made on use of vWa technologies for production of value added products (bio-CNG, bio-butanol, lactic acid, succinic acid, xylitol) and their adoption in sugar and allied industries. The participants of the workshop raised many questions and doubts about the use of feed stocks released from sugar & allied industries and necessary explanation were provided by the delegates.

The programme was concluded with vote of thanks given by Mr. Sambhaji Kadupatil.



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11/05/2022

Activity Name: National Technology Day

Activity scope: To commemorate the role of Science and Technology in developing a modern India & aware students and faculties regarding dissemination of different available technologies in the society

Activity details: The student, staff and faculty members of VSI have celebrate the National Technology Day on 11th May to commemorate the role of Science and Technology in developing a modern India. The day was celebrated by organizing lecture of eminent Scientist/Technologist.

Speaker details: Prof. SW Gosavi, Head, Departments of Physics & Environmental Sciences, Savitribai Phule Pune University, Pune on topic entitled "Use of Nanotechnology for Sustainable Development"

Participants: Total number of participants was 85 (from outside)



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National Technology day

National Technology day is held annually on May 11 to honor the contributions of India's scientific community including scientists, researchers and engineers. The theme for this year was "Integrated approach in science and technology for a sustainable future". Dr. Sanjay Patil, Resources Scientist & Head, Maharashtra Remote Sensing Application Centre (MRSAC), Pune was invited as a chief guest for the technology day celebration at VSI on May 11, 2022. All staff members and students of VSI were present on the occasion. The program was coordinated by Dr. JM Repale. The function began with lighting of the lamp by the chief guest and the OSD, Mr. Sambhaji Kadupatil who also welcomed the guest with flowers. Dr. Deepali Nimbalkar briefed the audience about the significance of technology day and introduced the guest. After this, Dr. Sanjay Patil

delivered a lecture on 'Application of geoinformatics technology in agriculture'. He explained basics of remote sensing like remote sensing process, types of remote sensing, kinds of satellite, visual and digital image interpretation. He also explained remote sensing application in crop inventory, acreage estimation, cropping system analysis, production estimation, crop monitoring and condition assessment. He also explained use of hyper spectral sensors for identification of stress detection, varietal discrimination and disease identification. He briefed the work done in MRASC in the entire sector. The interactive session after the lecture was very interesting with lot of questions on varied applications of remote sensing, activities of MRSAC etc. from staff as well as students. The program concluded with a vote of thanks by Dr. Vivek Patil.



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14/09/2022


Activity Name: Cheetah is Back

Activity scope: The make aware about shrinking number as well as depleting habitat of Cheetah

Activity details:

Ministry of Environment, Forest and Climate Change's regional office, Nagpur coordinated with Department of Environmental Sciences to organize an awareness lecture on the theme 'Cheetah is back'. This lecture was organized on September 14, 2022 at seminar hall of the Institute. In this awareness presentation, shrinking number as well as depleting habitat of Cheetah was presented to audience. In addition, morphologically distinguishing characteristics of Cheetah, leopard and jaguar were explained with photographs. Efforts of Government of India to restore the Cheetah were highlighted in few slides of the presentation. Students of environmental sciences and few faculty members attended the programme. Dr. Amol Deshmane (Scientist, Dept of Environmental Sciences) delivered the presentation. Dr. Deepali Nimbalkar (Sr. Scientist and Head, Dept. of Environmental Sciences) and Mr. DB Ghule, Principal actively supported for organizing the programme.



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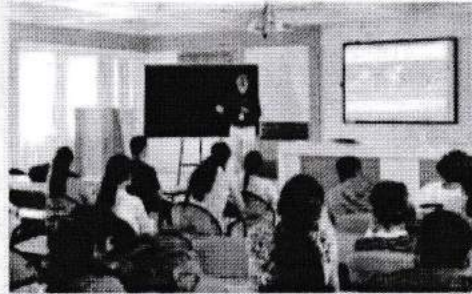
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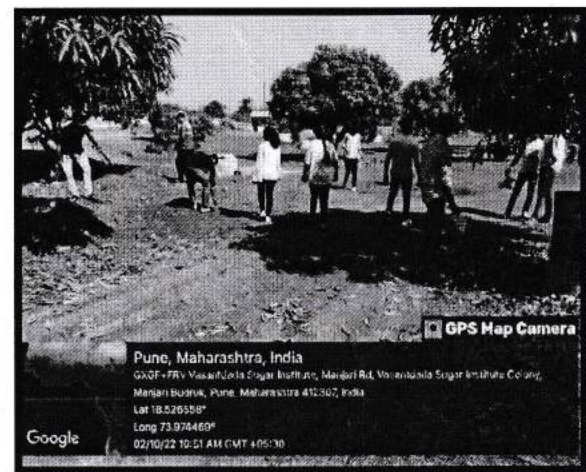
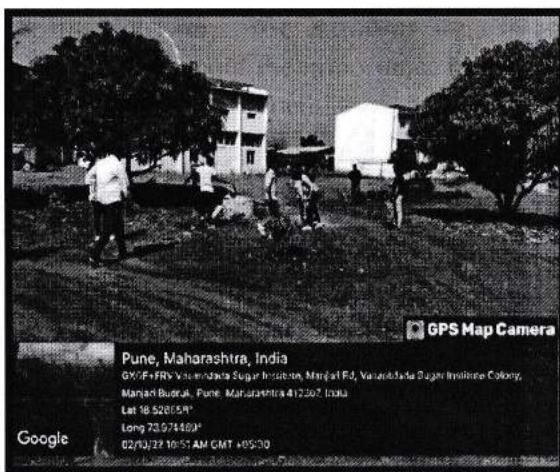
02/10/2022


Activity Name: Cleanliness drive

Activity scope: The make aware about importance of cleanliness

Activity details:

Institute have organized cleanliness drive under “Swachh Bharat Mission” during 02 Oct 2022. The institute aims in creating awareness among the students regarding garbage segregation. Student learns about the importance hygienic condition for the self-development and the societal development. Students have actively participated in this drive.



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13/03/2019

Activity Name: Field visit to Eco-restoration site Developed by Ecological Society at Panshet, Pune

Activity scope: To aware students for observing eco-restoration site

Activity details:

One-day field visit organized for M.Sc. (Environmental Sciences) students by Department of Environmental Sciences for eco-restoration on 12th March 2019. Students were taken to the site at Panshet in Pune district which was ecologically restored by Ecological Society. Mrs. Swati Gole one of the founder members of Ecological Society, Pune accompanied the group as a 'resource person'. On the way to Panshet, students observed changes in habitat and land use. They raised several queries related to observations and queries were answered by Dr. Deshmane Mrs. Swati Gole explained the history of the site then shifted to the principles of restoration and correlated the processes. She elaborated on the changes observed at restoration site in last three decades, the limitation observed in the process and her unbiased assessment of the entire restoration exercise. She also shared a grassland restoration experience that was carried out near Phaltan in Satara district of Maharashtra. The entire discussion session was useful to students as it offered a different perception, enhance their ability to think and visualize about importance of nature in daily life. After discussion, students visited the restoration site and noted their observations. Followed by, students visited a sacred grove at village Ambegaon Khurd. In the interactive session, students raised queries which were answered by Mrs. Gole and Dr. Deshmane.



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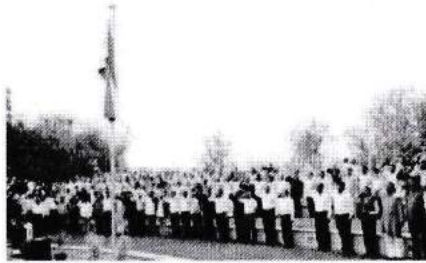
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EVENTS

The 70th Republic Day of India



The 70th Republic Day of India was celebrated on 26th January 2019. On this occasion the Director General, Mr. Shivajirao Deshmukh hoisted the National flag in the Institute in presence of staff members.



Field visit to Eco-restoration site Developed by Ecological Society at Panshet, Pune

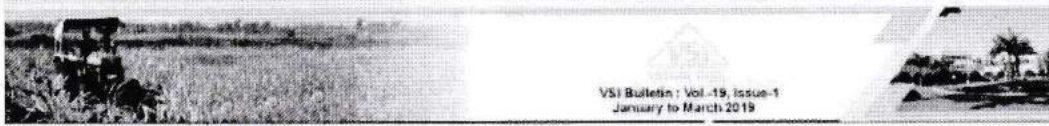
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Memorandum of Understanding (MOU) between VSI & SESVANDERHAVE

As directed by Hon President VSI, Mr. Sharadchandra Pawar, MOU was signed between SESVANDERHAVE, Belgium (Europe) and VASANTDADA SUGAR INSTITUTE Pune (India) on 20th February, 2019 for sugarbeet crop research and allied training. SESVANDERHAVE is a Belgian company specialized in the breeding and commercialization of high quality sugarbeet seed.

Mr. Shivajirao Deshmukh, Director General, Mr. Vikas Deshmukh, Director, Agricultural Sciences & Technology Department, VSI and Mr. Jean Noel Evrard, Head of Marketing & Communication, Mr. Mohan Bajikar Indian Representative, SESVANDERHAVE

company signed the MOU and agreed to work together for the period of next five years. Mr. PV Ghodke Scientist & Head Agronomy also present during this agreement.

In this MOU both SESVANDERHAVE and VSI will jointly cultivate sugarbeet in India. SESVANDERHAVE will share knowledge on the development, train staff and sugarbeet farmers of selected sugar factories. VSI will evaluate / test new genetic seed material received from SESVANDERHAVE to identify the best suitable genetic seed material under Indian climate condition.




VSI COMMITTEE MEETINGS

29th Institutional Bio-Safety Committee (IBSC)

The 29th meeting of Institutional Bio-Safety Committee (IBSC) of VSI meeting was held on 18th March, 2019 under the chairmanship of Mr. Shivajirao Deshmukh, DG, VSI in presence of Dr. P. Suprasanna, Head, FPBS, NABTD, BARC, Mumbai and DBT nominee., Dr. SK Raut, Consultant Doctor & Member, Shri. Vikas Deshmukh, Director, AST, VSI,

Dr. K. Harinath Babu, Senior Scientist, VSI – Member Secretary, Dr. RM Devarumath, Scientist & Member and Dr. SG Dalvi, Scientific Officer, VSI & member participated in the meeting. They discussed about various issues related to Bio-Safety, work progress and developing collaborations within and outside India for developing drought tolerant sugarcane.




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Continuous Activity each year

Activity Name: Soil testing

Activity scope: To analyse the soil samples and helping farmers and sugar mills in fertilizer management

Activity details:

Soil Science section of agricultural sciences and Technology Division of VSI established in 1986. The section has achieved significant success in research activities like site specific nutrient management, soil test crop response targeted yield approach, soil fertility management, GPS-GIS based soil fertility mapping, sulphur and silicon nutrition and formulation of agro-products. The section is engaged in development of organic sugarcane package, management of salt affected soil, use of humic acid and nano formulation. This section also deals with training & extension services to the sugar mills on sugarcane development at micro level and disseminates the information on soil and fertilizer management practices to increase the average sugarcane productivity and sugar recovery. Efforts are taken to promote application of fertilizers through drip irrigation and foliar application in sugarcane for increasing fertilizer use efficiency keeping this in view the section has formulated the fertilizers like Multi-Micro-Nutrient, Multi-Macro-Nutrient Liquid Fertilizers for foliar application, VSI-Microsol for fertigation and soil application which are available to the farmers through sugar mills and also in the Institute.



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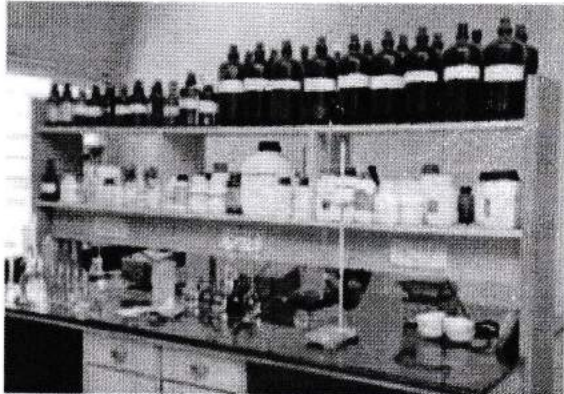
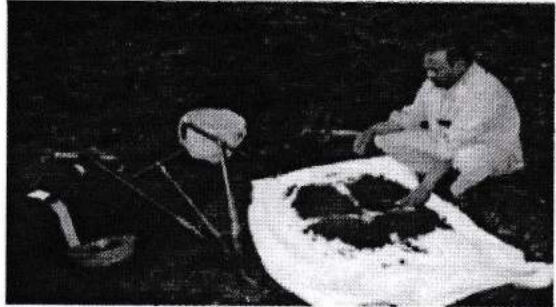
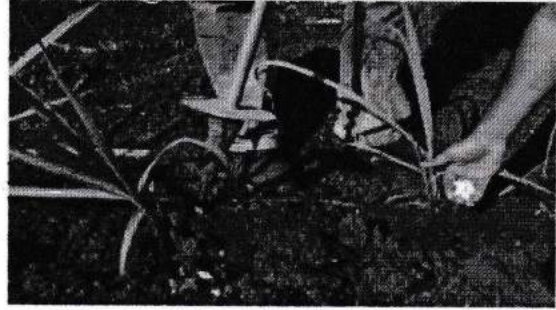
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Facility for soil testing



Z. Ramdas
Principal

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Manjari (Bk), Pune- 412307, Maharashtra

13/08/2021

Activity Name: Environmental Clearance, Compliances, Violations and Uploading of EC on Parivesh Portal

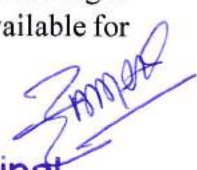
Activity scope: The make aware about Environmental Clearance, Compliances, Violations and Uploading of EC on Parivesh Portal

Activity details:

The Ministry of Environment Forests & Climate Change has taken steps to improve the environmental compliance process and also to bring transparency in this regard. As a part of this, its required that all the industries upload the information of their existing Environmental Clearance, Compliances, Violations and Uploading of EC on Parivesh Portal ECs online on Parivesh portal to help in the effective implementation of the EC condition. In order to help our member sugar mills in this aspect, the Department of Environmental Sciences organized an online workshop and demonstration under the auspices of "Aazaadi ka Amrut Mahotsav on 13th August 2021. This workshop was a joint effort of Maharashtra Federation of Cooperative Sugar Factories, Sugar Commissionerate, Government of Maharashtra & VSI. The workshop was attended by 95 participants. Mr. Sambhaji Kadupatil, OSD, VSI welcomed the participants in the beginning with an outline of the program. After this Mr. Shivajirao Deshmukh, Director General welcomed all participants and dignitaries. On the occasion of 'Azadi ka Amrut Mahotsav', he briefly covered evolution of sugar industry in India and particularly cooperative sugar sector in Maharashtra. Taking note of increase in the environmental issues in this industry, he urged the factory personnel to seriously look into it. Mr. Sanjay Khatal (MD, Maharashtra Federation of Cooperative Sugar Factories) picked up the same thread from DG, VSI and emphasized that global warming and climate change have become a major challenge for all of us. He expressed that sugar industry is now viewed as a bio-energy complex. Hence, the programme like this, which addresses environmental issues are immensely important. Towards end of his speech, he requested all participants to shift from 'chaltahai' (taken for granted) attitude and become serious on environmental issues.

Mr. Shekhar Gaikwad, Sugar Commissioner, in his speech, also emphasized on the pollution issue. In addition, he explained the role of sugar industry in Ethanol Blended Petrol (EBP) programme and economy of the state. He concluded his speech by giving best wishes to participants and organizers. Mr. Prakash Naiknavare (MD, National Federation of Cooperative Sugar Factories) joined the session as a participant. He expressed his eagerness to understand the present issue. This was followed by a presentation on 'Environmental Clearance Compliances and Violations' by Dr Deepali Nimbalkar where she explained the difference and the various notifications pertaining to the issue. She also talked about the special provisions for environmental clearance available for ethanol projects and the applicability of NIPL & B2 category.

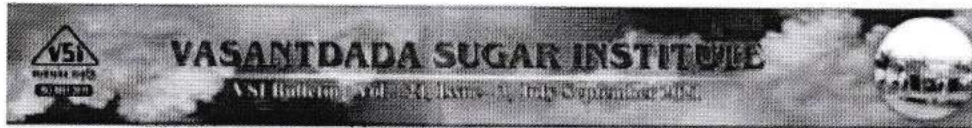



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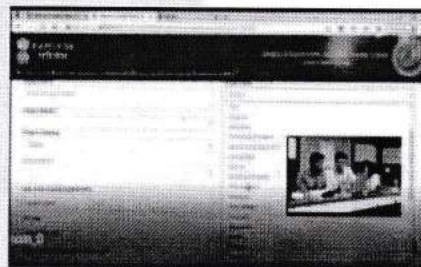
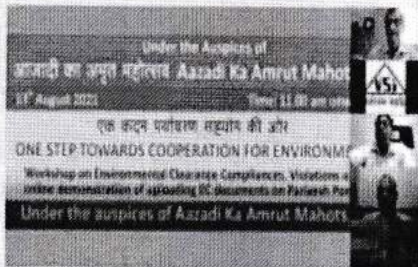
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After the presentation, Dr. Vivek Patil and Mr. Kapil Uphade gave an online demonstration of registration of project on Parivesh portal of MoEFCC and uploading of the EC documents in the same. The EC documents of Vilas SSK were uploaded as a part of this demonstration.

There was active participation from the audience. They raised number of queries, followed by the demonstration. These queries were satisfactorily answered by staff of Dept of Environmental Sciences, as well as DG, VSI. The programme ended with vote of thanks proposed by Dr. Amol Deshmane.




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02/10/2021

Activity Name: National Seed Day

Activity scope: To aware the students and farmers regarding the seed multiplication, its germination, and its impact on the society

Activity details: Vasantdada Sugar Institute (VSI) organized Seventh National Seed Day on October 1, 2021 under the ICAR seed project. On this occasion a one-day training programme was organized for the student of VSI on 'Sugarcane seed multiplication & production technology'.

Speaker details: Mr. Sambhaji Kadupatil mentioned the importance of seed replacement in sugarcane.

Participants: Total number of participants was 86 (from outside)



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VASANTDADA SUGAR INSTITUTE

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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

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 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.




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03/07/2019

Activity Name: Industrial Waste Water Treatment & Water Management Solutions for Sugar and Distillery Industry

Activity scope: The make aware about latest technological developments in the field of industrial water management solutions

Activity details:

Department of Alcohol Technology & Biofuels, VSI was organized presentation on 'Industrial Waste Water Treatment & Water Management Solutions for Sugar and Distillery Industry' on 03rd July 2019 along with M/s. Ion Exchange (India) Ltd. (M/s. IEIL), (Sugar & Distillery Vertical). These presentations were arranged to understand the latest technological developments in the field of industrial water management solutions, which can help technical staff of VSI to leverage better performance for our consultancy services to member and non-member Sugar/Distillery industry. In this context the staff of Alcohol Technology & Biofuels, Sugar Engineering, Sugar Technology and Environment Science, VSI were participated for this event. Dr. SV Patil, Technical Advisor and Head, Department of Alcohol Technology & Biofuels, welcomed the entire team from M/s. IEIL. He explained contribution of M/s. IEIL is a pioneer company for industrial water treatment in India and is recognized internationally in water and environment management. From M/s. IEIL total nine representatives having individual specialties in water and waste water management solution were present and they covered topics like Ion exchange membranes; Waste water treatment (WWTP, DTRO, CPU) and WTP (DM, RO, Softeners). Mr. Vishal Sathe (Deputy Manager-Corporate Marketing Group) presented introductory company profile. He covered the complete range of technologies, products and services to offer total solutions for water treatment and water management solution to every sector of industry. He also presented footprints achieved by company in last fifty years in the area of environment management solutions for all sectors across the globe.

Mr. Sridhar Padmanaban (Senior Vice President- Membrane Division) covered the Reverse Osmosis (RO) membrane technology. In his presentation he explained about the three stage technology for manufacturing of industrial membrane. He focused on in house membrane manufacturing facility has installed India's first state-of-the-art, completely integrated and automated Reverse Osmosis membrane manufacturing plant at Verna, Goa. He also covered different membrane technologies used for water filtration treatment such as Nano-filtration, Ultrafiltration and different membrane module used. Mr. Girish Mirashi (Senior Manager-Environment Division) presented aerobic and anaerobic treatment technologies for waste water solutions in Sugar/Distillery industry. He also focused on different aerobic, anaerobic industrial equipment/system used for water treatment with their principles of operations.



S. Mirashi

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VSI Bulletin : Vol-19, Issue-3
July to September 2019

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Mr. Dilli Babu (Manager-Sugar, Distillery & Food & Beverage Vertical) and Mr. P. Padmanaban (Deputy Manager-Proposals) covered dealkalization and demineralization of boiler feed water. He explained about the Indian Swift, a technology developed by M/s. IEIL for dealkalization and demineralization of boiler and cooling tower feed water.

The event was concluded vote of thanks by Dr. RV Dani. He thanked team of M/s. IEIL for their presentations and participants.

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10/08/2019

Activity Name: World Biofuel Day


Activity scope: To create awareness about the importance of non-fossil fuels as an alternative to conventional fossil fuels and to highlight the impact of all fuels on the environment

Activity details:

The Department of Alcohol Technology & Biofuels, VSI, had organized 'World Biofuel Day' on 10th August 2019 an interactive session for students of Alcohol Technology and M.Sc. (Wine Technology). This interactive session was conducted to create awareness about the importance of non-fossil fuels as an alternative to conventional fossil fuels and to highlight the impact of all fuels on the environment and various efforts made by Government of India to promote the biofuel sector. Dr. SV Patil, Technical Advisor and Head, Department of Alcohol Technology & Biofuels, welcomed all the students. He started his discussion with introduction to renewable and non-renewable sources available on the earth. He focused on first, second and third generation of Biofuels. He also informed that Govt. of India has taken significant steps in the field of Biofuels. He also talked about the Government initiatives on CBG (Compressed Biogas) for its production and usage as a clean and cheaper mode of fuel. CBG plants with the use of agricultural residue, cattle dung and municipal solid waste will provide an additional revenue source to farmers and job opportunities. On this occasion, Dr. KS Konde informed about the upcoming technologies and forecasted the future development in the field of biofuel industries. Dr. Shuvashish Behera explained terminology of food to fuel ratio and different biomass which can be utilized to produce biofuel. The event concluded with vote of thanks.

Participants: Total number of participants was 90

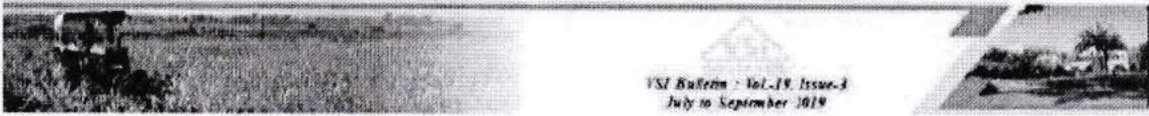



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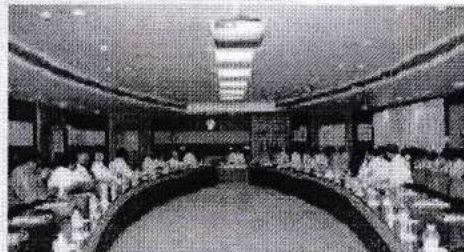
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VSI Committee Meetings

On 18th August, 2019 Investment Committee and 29th August, 2019 Governing Council Meeting was held at VSI. In the GC meeting Dr. RS Hapase, Principal Scientist presented the review of flood affected sugarcane crop in front of committee member's viz.,

Hon. President Mr. Sharad Pawar, Mr. Dilip Walse-Patil, Vice-President, Mr. Shivajirao Deshmukh, DG, Mr. Vikas Deshmukh, Director, Agricultural Sciences & Technology and Members of the Governing Council were present.




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10/10/2019

Activity Name: Wildlife Week

Activity scope: To create awareness about the importance of non-fossil fuels as an alternative to conventional fossil fuels and to highlight the impact of all fuels on the environment

Activity details: On the occasion of wildlife week, Department of Environmental Sciences had organized two invited lectures. Of these, the theme of first lecture was use of modern equipment for wildlife monitoring (e.g., animal tracking system, etc). It was held on October 01, 2019 and delivered by Mr. Dnyanesh Rathod. He was associated with Wildlife Institute of India and worked on project related to monitoring of tigers. Students were amazed while observing the slides and videos related to use of camera traps, GPS and collarids, etc in monitoring or tracking tiger. He also explained the application of collected data using these tools in preparation of conservation and management plan. Towards the end of the presentation a tool called 'range finder' was demonstrated to students by him. The second invited lecture was uniquely themed on ethno-ornithology; i.e. use of birds by different tribes in traditional way. Dr. Vinayak Chavan, faculty at Fergusson College, Pune delivered this lecture on October 05, 2019. He is an academic visitor to Edward Grey Research Institute of Field Ornithology and Institute of Human Sciences, University of Oxford, United Kingdom for collaborative work on Ethno-Ornithology in Western Ghats. He presented field observations from Tamhini area of Pune district of Western Ghat. In the presentation, he explained various services offered by bird species to forest dwellers and thus, students realized the importance of avian (bird) diversity in day-to-day life. He also shared views on research opportunities in wildlife. In the post presentation discussion, few students expressed their willingness to pursue research in wildlife related theme. In response, he happily agreed to guide students based on individual proposal.

Speaker details: Mr. Dnyanesh Rathod, Wildlife Institute of India & Dr. Vinayak Chavan, faculty at Fergusson College, Pune

Participants: Total number of participants was 24




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VSI Bulletin Vol. 19, Issue 4
October to December 2019



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44th Foundation Day of VSI

VSI celebrated 44th foundation day on November 19, 2019 under the chairmanship of Mr. Dilip Walase-Patil, Vice President of VSI. Prof. Dr. Shivajirao Kadam, Chancellor Bharati Vidyapeeth Pune was the Chief Guest of the function. Dr. Vijay Pol Sharma, Chairman CACP and Dr. Pande, Adviser CACP both were present as special guests. Dr. Indrajeet Mohite, Shri. Ashutosh Kale, members of Governing Council of VSI, Dr. DG Hapase Ex. Director VSI and Mr. US Indalkar officer from Sugar Commissioner Office Pune were also present.

All the dignitaries were welcomed by Mr. Shivajirao Deshmukh, Director General VSI. The event was formally inaugurated by Chief Guest Dr. Shivajirao Kadam by lighting the traditional lamp along with other dignitaries. Director General VSI introduced the Chief Guest and all dignitaries to the gathering consist of Scientists Technical Personnel's, other staff members and Students. Vice-President VSI briefed the R & D activities of VSI. Chairman CACP elaborated about the cost & prices of Agriculture commodities especially Sugarcane and Sugar products.




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05/06/2018

Activity Name: World Environment Day

Activity scope: To aware the students on impact of environmental sciences & its role towards society.

Activity details: VSI celebrated an activity on "World Environment Day" on 5th June 2018. On this occasion, Library have organized book exhibition & focused on display of rare and valuable books of Environmental Sciences from its collection and provided opportunity to enlighten the opinions to the visitors. Student and staff members visited the exhibition.

Participants: All stakeholders of the institute.



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Environmental Sciences, Savitribai Phule Pune University, Pune was invited as honorable guest for this year's function. All the Scientists, Technologists and Engineers of the Institute attended this function. At the outset, Prof. Gosavi was welcomed by Dr. SV Patil, Technical Adviser & Head, Alcohol Technology and Biofuels. Dr. Deepali Nimbalkar Sr. Scientist, Environmental Sciences Department introduced him to the audience. Prof. Gosavi gave a talk on 'Use of Nanotechnology for Sustainable Development'. He gave an overview of the various projects being conducted in the Department of Physics at SPPU and the funding received from national and international agencies. His speech covered three areas viz, solar energy for rural development, nanotechnology in water & wastewater treatment and nanotechnology in health care application. The first part elaborated on the solar energy project at Shive village near Bhama- Ashked dam in Pune district. This project uses solar

energy during day time and biomass energy when sunlight is not available. He explained how this unique project has made a change in the livelihood of villagers and is also used as a live laboratory by students of the university. Prof. Gosavi talked about the use of nanotechnology in water and wastewater treatment and informed use of nano particles for removal of various components from water and waste water in different application. The final part of the lecture dealt with the use of nanotechnology in health care with a stress on technologies for early detection of cancer. He gave details about the status of different developments with an example of early detection of breast and prostate cancers through markers. The address was concluded with a summary and answering the questions raised by audience from the audience. The function was concluded by vote of thanks.




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25/01/2019

Activity Name: Integrated approach to enhance economic yield of sugarcane and its bye-products

Activity scope: The make aware about ecofriendly practices for sugarcane production

Activity details:

The seminar was organized in the presence of Mr. Sharadchandra Pawar, Hon. President of VSI on "Integrated approach to enhance economic yield of sugarcane and its bye-products" at Vasantdada Sugar Institute, Pune on 25th January 2019, which was coordinated by Science and Technology Park (Institute promoted by Ministry of Science & Technology, Govt. of India).

The discussions were focused on the following topics:


- Eco-friendly ways of increasing yield of sugarcane and decreasing use of pesticides
- Enhancing sugar quality and increasing extraction yield from cane while crushing
- Increasing alcohol percentage in distillery.
- Bagasse- Multiple products increasing economic yield.
- Spent wash and press mud- efficient treatment.

On the above topics, the presentations were made by Dr. Rajendra Jagdale, Director General, Science and Technology Park, Dr. Sheshadria, Chennai, Dr. Chanakya, Indian Institute of Science, Bangalore, Mr. Shiva Subramaniam, Mr. Rajpal Navalkar and Dr. Solayappan.

On this occasion Mr. Dilip Walse-Patil, Hon. Vice President of VSI, Chairman National Federation of Cooperative Sugar Factories Ltd., Trustees and Council members of VSI, Mr. Shivajirao Deshmukh, Director General, Mr. Vikas Deshmukh, Director, AST, VSI and Head of the departments of Technology and Agriculture Division, 25 leading sugar mills viz. Chairmen, Managing Directors, Chief Engineers, Chief Agriculture Officers and Distillery Managers were participated in the program.

During the discussion, DG, VSI, raised the issue regarding Techno-Economical viability of the technologies suitable for sugar industry and allied bye-products. Shri Sharadchandraji Pawar suggested studying various innovative technologies to be adopted in the sugar industry and allied bye-products to enhance the progress of sugar industry in collaboration with Science and Technology Park, Govt. of India.




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VSI Bulletin Vol.-19, Issue-1
January to March 2019

Integrated Approach to Enhance Economic Yield of Sugarcane and its Bye-Products

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25/01/2019

Activity Name: Multi-Ratooning in Sugarcane and in situ Trash Management

Activity scope: The make aware about trash management in sugarcane cultivation

Activity details:

A one-day workshop on 'Multi-Ratooning in sugarcane and in situ trash management' was organized at Vasantdada Sugar Institute, Pune on 25th January 2019. Total 87 participants from 37 sugar mills of Maharashtra were attended the workshop. Mr. Vikas Deshmukh, Director, Agricultural Sciences & Technology and Head of the sections from VSI inaugurated the workshop by lightening the lamp. Mr. PV Ghodke, Scientist & Head, Agronomy Section in his, welcome speech highlighted the background and importance of topic of the workshop.

In the technical session, Mr. PV Ghodke made a presentation on 'Multi-ratooning in Sugarcane and in situ trash management.' He highlighted the benefits of ratoon crop, factors affecting low productivity and described advanced cultivation technologies in ratoon management. He suggested appropriate selection of sugarcane variety having good ratoonability, planting season and integrated ratoon management practices viz., trash mulching, stubble shaving, off barring nutrient management with crow bar, with foliar application of liquid fertilizers and biofertilizers are the important components for successful ratoon crop production. Dr. Preeti S. Deshmukh, Scientist & Head, Soil Science Section, talked on 'Efficacy of macro and micro nutrients as foliar application on sugarcane crop' and emphasized on fertilizer application on the basis of soil testing.

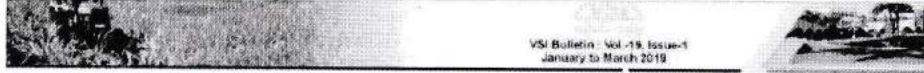


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Industry in republic of Fiji, in future. Mr. Shivajirao Deshmukh, DG, VSI, put forth the final remark in the valedictory function. He thanked all who concerned to conduct of course and expressed his views about the

prosperity of the sugar industry in Fiji. He also assured to help Fiji Sugar Corporation in days to come as regards to cane development and to improve efficiency of the sugar mills in Fiji. The function concluded with vote of the thanks by Mr. BH Pawar.



WORKSHOP

Multi-Ratooning in Sugarcane and *in situ* Trash Management

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23/02/2019

Activity Name: Workshop on Sugarcane Crop Management under Water Stress Condition

Activity scope: The make aware about crop management under water stress condition

Activity details:

The activity of monthly workshop is well admired among the cane officers from the sugar mills in the state. As a part of the extension activity the monthly workshop was organized on 'Sugarcane crop management under water stress condition' on 23rd February 2019. Total 68 participants from 36 sugar mills were present during workshop. This workshop was deal with efficient use of available water, nutrient supply and agronomic practices followed during water stress condition. Water, nutrient and agronomic practices will play vital role in adverse climatic condition.

The event was inaugurated in presence of Mr. Vikas Deshmukh, Director, AST and Head of sections, VSI and representative from the sugar mills by lighting the traditional lamp. In inaugural speech, Director briefed the important practices and management carried during the water stress condition.

In the technical session, Mr. PV Ghodke delivered the lecture on 'Agronomic practices in sugarcane under water stress condition'. He explained about overview of situation during summer and drought period, agronomic practices to be followed in drought situation. Mr. PP Shinde, Scientist & Head, Agriculture Engineering Section, talked on 'Water management in sugarcane under water stress condition'. He pointed that untimely and uneven distribution of rainfall results in limitation of water availability. Water always plays a pivotal role in improving crop productivity and sugar recovery. He suggested different water management practices needs to be followed under limited water availability as well as water stress condition. Dr. Preeti Deshmukh, Scientist and Head, Soil Science section presented the topic on 'Nutrient management in sugarcane under water stress condition'. She stated about the ecological requirement of sugarcane crop. Generally, drought reduces both nutrient uptake by roots and its transport from root to the shoots because of restricted transpiration rates and impaired active transport and membrane permeability.



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biofertilizers produced at VSI and their benefits in cane productivity. Dr. SG Dalvi, Scientific Officer, Tissue Culture section gave information about Vasant-Urja, a biostimulator prepared by VSI in collaboration with BARC, Mumbai. He described its effect on increase in productivity and drought tolerance. Mr. GG Ukirde, Chief Agri. Officer, Shri Vighnagar SSK Ltd: Dist. Pune presented the ratoon management schemes implemented by the sugar mill. Mr. MR Bhadule, Chief Cane Development Officer, Vitthalrao Shinde SSK Ltd., Dist. Solapur told regarding cane development activities implemented by sugar mill especially during drought situation to

increase the cane availability in their operational area. In the concluding session, Mr. Vikas Deshmukh, Director, AST stated the present situation of ratoon crop under drought situation in the sugar mills area and its effect on recovery and average cane yield in Maharashtra state. Mr. Shivajirao Deshmukh, DG, VSI addressed to the gathering and expressed the need to give attention towards the increase the ratoon productivity by implementing best management practices, field demonstrations and various cane development schemes by each sugar mill for the benefit of farming community. The program was ended with a vote of thanks by Mr. PP Shinde.

Workshop on Sugarcane Crop Management under Water Stress Condition

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under moisture stress condition, fertilizer application should aim at developing a deeper root system and adequate tillering before water/moisture stress. During the moisture stress period, foliar application of fertilizers is only useful and emphasized fertilizer should apply in soil after achievement of favorable moisture level with availability of water in the canal or by southwest monsoon rain.

The representatives from sugar mills viz. Shri Chhatrapati Shahu SSK, Samarth SSK, SMSMP SSK and Jawahar SSK explained the efforts made by them to save sugarcane crop during the water stress condition and the sugarcane response by application of foliar application of multi micro nutrient and multi macro nutrient fertilizer in sugarcane.


Dr. RS Hapase, Principal Scientist & Head, Plant Breeding section, briefed the progress of promotional award scheme and aware for the next month workshop on promotional cane development award. All Head of sections discussed with the participants for various issues related workshop. The programme was concluded with a vote of thanks with following recommendation;

1. In standing sugarcane, de-trashing of dried leaves can be followed by leaving 3 to 4 border rows or followed by mulching intercropping with suitable green manuring crops. In wider row and paired row planting method the light inter-cultivation / harrowing operation may be done. Mulching helps to reduce the loss of water from soil through evaporation and saves 25 to 30% water.
2. *In situ* trash mulching should be done in ratoon crops. *In situ* trash mulching without shredding is a highly useful technique to conserve soil moisture and reduce the impact of moisture stress and atmospheric draught.
3. In paired row planting, the irrigation should be applied through a long furrow between the rows

of sugarcane. In conventional system a long furrow method, irrigate the crop in alternate furrows. In wider row planting method, irrigate all the furrows up to final earthing-up and there after follow alternate furrow irrigation.

4. Drip and raingun sprinkler irrigation can be effectively used for survival of sugarcane crop in water stress condition.
5. Combined foliar application of Urea and Murate of Potash (White potash) each at 2.0% concentration (2.0 kg Urea + 2.0 kg Potassium in 100 lit. of water) at 15-20 days interval is helpful to retain more number of vigorous shoots till the moisture conditions become favourable.
6. Foliar application of VSI's multi-macronutrient and Multi-micronutrient 2 lit/acre in 200 lit. water at 60 days after planting and 3 lit./ acre in 300 lit. water at 90 days after planting along with Vasanturja, a biostimulator @ 5 ml/lit. of water during both the applications boosts the growth of sugarcane.
7. In water stress condition, foliar application of plant health @ 1 lit/acre mixed with 200 lit. water at 75 days after planting and ratooning can also work for fixing the atmospheric nitrogen efficiently and it will sustain the growth of sugarcane.




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25/02/ 2019

Activity Name: One day Awareness workshop on “Recent Developments in Environment and Safety in the Sugar and Allied Industry”

Activity scope: The make aware about significance of environment and safety in sugar and allied industry

Activity details:

The significance of environment and safety in industrial operations cannot be overemphasized, more so in sugar and allied industry. The industry is the backbone of the rural economy yet in recent times it has been the focus of criticism over excessive water usage and water pollution. There have also been incidences and accidents which point to the lack of adequate industrial safety. Such incidences have also caused environmental concern. Recently, there have been new notifications regarding environmental clearance for sugar and distillery projects vis-a-vis the National Biofuels Policy as also the use of groundwater (CGWA). These will have an impact on the sugar and distillery industry.

Considering the above, a one-day awareness workshop on ‘Recent developments in environment and safety in the sugar and allied industry’ was organized at Vasantdada Sugar Institute on 25th February 2019. Dr. Amol Deshmane welcomed all the guests and requested the Director General welcomed the Chief Guest, Mr. Shekhar Gaikwad (Sugar Commissioner). This was followed by an introduction to the theme of the workshop by Dr. Deepali Nimbalkar and an address by Mr. Shivajirao Deshmukh, DG, VSI which focused on the significance of environmental issues for the industry and VSI’s role in approaching them. Mr. Shekhar Gaikwad, in his inaugural address, advised the environmental officers to work with dedication and follow every norm strictly to minimize the impacts due to sugar industry and distilleries. He suggested making a pollution inventory for sugar and distillery industry along with regular self-audits & third part audits once in three years.

This workshop was arranged in two sessions, Technical Session I- Safety & Technical Session II- Environment. Mr. Isak Mujawar gave the first talk on general safety guidelines for the sugar and distillery industry (including HRA). He explained the terms as Hazard, Risk and how to identify and control hazard as well as risk. He suggested setting up an emergency exit plan for worker’s safety. The second lecture on PESO Guidelines for ethanol storage was delivered by Mr. Prakash Patil who explained The Petroleum Act, 1934 and Rules, 2002, in detail with the rules for import, transport & storage of petroleum and also the criteria for license. The final presentation in this session was made by Dr. Eknath Alhat, VSI who elaborated on the safety issues in Effluent Treatment Plants.




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Recent Developments in Environment and Safety in the Sugar and Allied Industry

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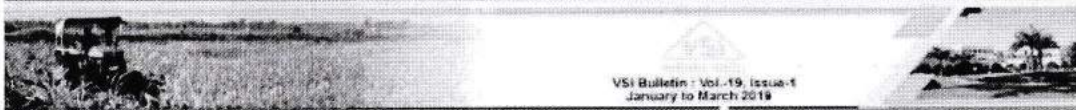
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In the second session on environmental issues, Dr. SV Patil, Head & Technical Advisor, Dept. of Alcohol & Bio-fuels explained the various alternatives available to the distillery industry for achieving zero liquid discharge. The final talk was delivered by Dr. Deepali Nimbalkar on recent EIA Notification and its implications for sugar and distillery industry. She explained in detail about the notifications pertaining to the distilleries regarding fuel ethanol projects as also the EIA notification on violation projects. She also enlightened briefly about the draft notification regarding extraction of groundwater.

The workshop received a very good response with 79 participants who were active in the deliberations. All

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the speakers received several questions which were answered to the satisfaction of the participants. Many participants requested VSI to arrange such workshops twice a year, so that they remain updated and it helps

to follow specific process and implementation of norms to take care of environment and to improve the status of mills as well as workers. The workshop ended with vote of thanks by Mr. Vivek Patil



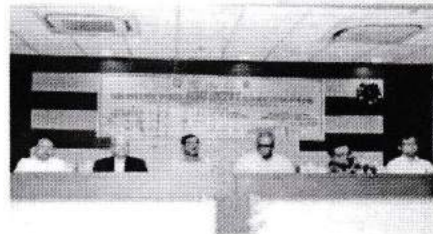
Valorising waste (vWa) from Sugarcane Industries via Innovations in Pre-treatment, Bio-production and Process Intensification

One day awareness workshop on 'Valorising waste (vWa) from sugarcane industries via innovations in pre-treatment, bio-production and process intensification' was held on 5th March 2019 at Vasantdada Sugar institute (VSI), Department of Alcohol Technology & Biofuels.

Dr. Indrajeet Mohite, Prof. Vivek Ranade, Mr. Vijaykumar Goel, Prof. Vivek Kumar and Prof. Yogendra Shastri present on the dais. Introductory remarks on vWa project were delivered by Prof. Vivek Ranade. He explained the basic concept to valorize these wastes into bio-gas, lactic acid, succinic acid and bio-butanol.

Total participation in the workshop was about 120 including VSI staff. In Inauguration Ceremony, Dr. SV Patil, Head, and Technical Advisor, Department of Alcohol Technology & Biofuels welcomed all the guests, vWa partners, industry representatives and VSI staff. Mr. Shivajirao Deshmukh DG, felicitated

Mr. Shivajirao Deshmukh, in his inaugural speech, congratulated Prof. Ranade for his vision in formulating a very innovative project and offering a great opportunity to VSI for leading the vWa project from India side. He elaborated on activities conducted by VSI for the sugar and allied industry as well as footprint



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Advanced Technologies for Improving Crop Productivity and Increasing Water use Efficiency in Sugarcane


The training program on 'Advanced technologies for improving crop productivity and increasing water use efficiency in sugarcane' for farmers was conducted in two batches of three days duration at VSI. The training for first batch was conducted during 25-27 February, 2019 in which 180 farmers (134 Men and 46 Women farmers) attended training program. Second batch of training program was conducted during 1-3 March, 2019 in which 195 farmers (179 Men and 16 Women farmers) attended the training program. Both the programs were inaugurated by Director, AST, in presence of farmers, officers from ITC and Head of Departments AST were present.

In training, information of sugarcane varieties released by VSI viz. CoVSI 9805, VSI 434, CoVSI 03102 and VSI 08005 was given to the farmers. The proper varietal planning and harvesting program plays an important role in sugar industry for achieving higher cane yield and sugar recovery. The management practices of different varieties were explained to the farmers. The seed is also one of the important inputs in sugarcane production. It is essential to follow three tier seed nursery program for better crop yield. The information of seed production technology including seedling production was given to the farmers. The tissue culture is an advanced technology of fast multiplication of sugarcane varieties and also development of new sugarcane varieties. The

sugarcane productivity mainly depends on the various agronomic practices carried out during the crop growth period. The information of preparatory tillage, use of good quality seed, seed treatment, methods of planting, intercultural operations like earthing up, fertilizer management, weed control, intercropping, crop rotation and ratoon management was given to the farmers. Integrated nutrient management is important to boost the crop yield. Organic matter in the soil is an essential component for healthy crop growth that improves soil fertility. It greatly improves physical and biological condition of soils, reduces soil erosion and increases water holding capacity. The sugarcane trash can be used in sugarcane fields either directly or after composting. The green manuring practice with sunhemp or dhaincha prior to sugarcane planting is very useful to improve soil fertility. Balance doses of organic and inorganic fertilizers are important for meeting nutritional requirement of sugarcane crop. The information of various biofertilizers useful for sugarcane cultivation, bio-stimulator for productivity improvement was also given to the farmers. Water management of sugarcane plays a pivotal role in improving crop productivity. The conventional irrigation system did not permit the restricting of irrigation only to meet the requirement of the root zone, leading to excessive percolation and other losses. It therefore, results in water logging, soil

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salinity and drought situations. The overall irrigation efficiency has not been more than 30-40%. Under this scenario it is necessary to adopt modern irrigation techniques like surface, sub surface drip and rain gun sprinkler irrigation needs to be promoted in sugarcane agriculture. The fertigation is also possible with drip and rain gun sprinkler irrigation and water soluble fertilizers can be efficiently applied through these techniques. The modern irrigation technology results in increasing water use efficiency and also for improving the fertilizer use efficiency. The mechanization is also important in the context of untimely and limited availability of man power and increased cost of labour for agriculture purpose. The equipment available for mechanized farm operations were shown to the farmers and insisted for its adoption to bring down the cost of cultivation of sugarcane. Integrated disease and pest management

is very much important in sugarcane cultivation in order to avoid the yield losses due to occurrence of particular disease or pest. Integrated control measures at right time results in minimizing the losses due different pests and diseases. The control measures for various diseases and pests were explained to the farmers. The emerging trend of biological control of various diseases and pests was also explained to the farmers. Participants were also shown various experimental field plots, water management practices, farm implements and tissue culture raised plantlets during the field visit.

Interactive session was conducted after finishing the lectures, practical and field visits. During this session, the queries/questions of farmers were answered. The certificates were given participants at the hands of Director, AST and the program concluded with vote of thanks.



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