

VSI

BULLETIN



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Foreword Foreword ...

During the 2024-25 crushing season, 192 sugar mills in Maharashtra started their crushing season as on 5th January, 2025. Out of which, 96 are in cooperative and 96 are in private sector. These sugar mills in the state had crushed 39.63 Mt (Million tonnes) of sugarcane and produced sugar of 3.43 Mt with average sugar recovery of 8.67%. The state is likely to produce 11.30 Mt of sugar by crushing of around 111.10 Mt of sugarcane and around 1.20 Mt of sugar will be diverted for ethanol production by use of BH molasses, sugarcane juice/sugar syrup as a feedstock.

As on December 31, 2024, at National level, 493 operating sugar mills have produced 9.51 Mt of sugar by crushing of 109.57 Mt of sugarcane. It is expected that the country's sugar output will be around 33.30 Mt during the season 2024-25. Around 4.00 Mt of sugar will be diverted for ethanol production.

India's sugar and bio-energy sectors are vital components of the country's economy, contributing significantly to employment, rural livelihoods, and energy security. The Government of India's push for a 20% ethanol blending in petrol target by 2025, 1% Sustainable Aviation Fuel blending target by 2027 and CBG blending target of 5% by 2028.

A look at the events, training, workshops reported in this issue will once again showcase the prominent role of VSI in capacity building through training on the domestic front. Visitors to VSI also do not fail to be impressed by its functions in research, extension and training as VSI's work has always related to sugarcane growers and industry's needs by trying to reduce the gap between the lab and land.

The various activities under taken by VSI during the period from October to December 2024 have been highlighted in this issue. Recently we celebrated our 49th Foundation Day of institute it is proud we are entered in to the 50th Year as 'Golden Jubilee Year' of 2024-25. We are happy to place this Bulletin in the hands of our readers and look forward to their suggestions for effecting further improvements in future.

We wish all our readers **"Happy New Year" 2025!!!**

(RM Devarumath)
Editor

EVENTS

National Seed Day

Under ICAR seed project Vasantdada Sugar Institute (VSI) had organized National Seed Day on October 1, 2024 on this occasion a one-day training programme was organized on “Improved technology for quality Sugarcane seed production” for Cane Development officer, Agriculture Assistants of sugar mills & seed nursery farmers.

Dr. JV Patil, Ex. Director, Indian Institute of Millet Research, Rajendranagar, Hyderabad was the chief guest. The workshop was inaugurated by lighting of lamp by Dr. JV Patil, and Dr. AD Kadlag Principal Scientist. The welcome address was given by Dr. JM Repale, Sr. Scientist. Dr. AD Kadlag guided to the participants regarding importance of three tier sugarcane seed production system. He mentioned that three tier seed multiplication programme is helpful for adoption of varietal and seasonal planting planning in the operational areas of sugar mills.

Dr. JV Patil, mentioned that the seed is most important and prime inputs in sugarcane farming in his inaugural speech. Good quality seed of improved varieties are necessary to sustain the productivity of sugarcane. Those mills and farmers are using traditional seed material year after year hence, productivity is decline of planting and ratoon cane in the inaugurated speech. He highlighted the role played by VSI in breeder’s seed production.

During technical session Dr. AD Kadlag, delivered the speech on ‘Varietal scenario in the State’, its Planning and identification, Sugarcane seed multiplication and production technology and Tissue culture technology beneficial for sugarcane farming. He stressed upon the role of sugar mills and their contribution in the seed replacement in the State is very low (6%). It is most important to replace sugarcane seed once in three years. In view of this, institute raising breeder’s seed every year on a 40 ha. area for distribution to mills. Most of mills are not aware about the importance of seed.

Mr. AN Jamadar and Mrs. Rupali Ghadge briefed on information about VSI online facility for booking of seed and settling registration to sugar factory & farmers.

Mr. AG Mundhe, Scientific officer, Farm Section Delivered live demonstration on one eye bud settling production on ‘Preparation of one eye bud settlings’. Dr. SG Dalavi, Scientist and Head, Tissue Culture, section delivered speech in production system of tissue culture plantlets.

For this National Seed Day Program, total 91 trainees of 32 sugar mills were participated. The program was concluded with vote of thanks by Dr. MW Pawar, Scientist, Farm Management and Development section.





Cricket Tournament

On this eve of foundation day institute organized a limited over's cricket tournament of among departmental/sections on November 16-18, 2024.

Total 07 departments were participated in this tournament. The matches were inaugurated by Mr. Sambhaji Kadupatil, DG and Mr. Shivajirao Deshmukh, Advisor in presence of staff members



49th Foundation Day of VSI

VSI celebrated 49th Foundation Day on November 19, 2022. On this occasion Dr. Ketaki Bapat, Former Adviser to Principal Scientific Adviser to Govt. of India and Dr. Santosh Mhaske, Principal Scientist, CSIR-National Chemical Laboratory, Pune are present as Chief Guest. The event was inaugurated by the lighting of lamp by auspicious hands of chief guests, Mr. Sambhaji Kadupatil, Director General, Mr. Shivajirao Deshmukh, Advisor and Dr. AD Kadlag Principal Scientist. Crop Protection & Crop Production AS & T. VSI staff members and students were present during the function.

Mr. Sambhaji Kadupatil welcomed dignitaries and VSI staff members. He felicitated the chief guests. Dr. KS Konde, Head, Alcohol Technology and Biofuels, introduced the Chief Guests.

Dr. Ketaki Bapat, and Dr. Santosh Mhaske, in their speech shared experiences and importance of the

R & D while working with in their fields. Both of us appreciated the R & D work and other activities being carried out in the Institute.

Mr. Shivajirao Deshmukh talked on various developments in the field of Research & Development, extension and education. He also briefed VSI in puts developed by Agriculture section and other activities of training and services to sugarcane growers and stakeholders.

On this occasion, Institute conducted a limited over's cricket matches among the departments was conducted and prize distribution for the wining team Sugar Technology Department and runner up team Agriculture Farm Section and Best Batsman and Best Bowler of tournament were felicitated by the dignitaries. The function concluded with vote of thanks by Mr. RS Gangele, Personal Manager, VSI.





TRAINING TRAINING

Oos Sheti Dnyanyag and Dnyanlaxmi

In the reminiscence of founder president of VSI late Padmabhushan Dr. Vasantdada Patil, '*Oos Sheti Dnyanyag and Dnyanlaxmi*' four days residential

training programs were organized for men and women sugarcane growers of Maharashtra at VSI, Pune during December 10, 2024 to January 3, 2025 in 4 batches as detail given below;

Batch No	Period	Area from which the farmers participated	No. of Participants	No. of sugar mills and individuals Participants
Oos Sheti Dnyanyag programme (Men farmers)				
I	December 10-13, 2024	Kolhapur and Sangli Districts	144	Sugar mills : 06 Individual : 01
II	December 17-20, 2024	Satara, Pune, Ahmednagar and Nashik Districts	122	Sugar mills : 07 Individual : 02
III	December 24-27, 2024	Solapur District and Marathwada region	107	Sugar mills : 07 Individual: 04
Oos Sheti Dnyanlaxi programme (Women farmers)				
VI	July 23-26, 2024	All sugar mills in Maharashtra	98	Sugar mills : 06
Total participants (Women +Men)			471	

In this training total 471 sugarcane farmers were participated from Jurisdiction of sugar mills in different parts of Maharashtra. Out of total sugarcane farmers, 07 sugarcane farmers were participated individually and rest of the farmers were deputed by 22 sugar mills from Maharashtra.

The training programs were conducted under valuable guidance of Mr. Sambhaji Kadupatil, Director General and Dr. AD Kadlag, Principal Scientist, Crop Production and Crop Protection, VSI, Pune. Dr. GS Kotgire, Scientist, Plant Pathology Section coordinated the program with the help of Scientist and supporting staff members of different disciplines of Agriculture Sciences & Technology Division.

Lectures on various topics related to sugarcane agriculture viz., varieties & varietal planning for planting & harvesting, seed nursery management, tissue culture use, modern planting techniques, weed

management, soil fertility and fertilizer management, irrigation water management, use of bio-fertilizers & bio-control agents, farm mechanization, economics of cultivation, ratoon management and integrated disease & pest management were conducted by Subject Matter Specialists. More emphasis was given on practical's and field demonstrations. The information on different types of agriculture inputs developed by VSI and academic activities of VSI was also given to them.

In the plenary session of every batch, the trainees cleared their doubts from the subject experts. The representative trainee farmers expressed their opinion about the training and hospitality. The certificates along with group photos were distributed to the trainees.

Batch No. : I



Batch No. : II



Batch No. : III



Batch No. : IV



VSI COMMITTEE MEETINGS

VSI Committee Meetings

In the month of November Technical committee meeting of Agriculture Science and Technology Division was held on November 11, 2024. In the

month of December Building and Purchase committee meeting was held on December 24, 2024.

Hon. President Visit to VSI

The review meeting of Institute was conducted on December 31, 2024 under the chairmanship of Hon. President, Mr. Sharad Pawar, for this meeting Mr. Sambhaji Kadupatil, DG, Mr. Shivajirao Deshmukh, Advisor, Mr. DB Ghule, Registrar and all HODs and

HOSs of the Agriculture, Technical Divisions and supporting staff were present. The each sections were present their ongoing research and activities also took the review financial positions and developmental activities at farms of VSI.



Quinquennial Review Team (QRT)

The Director General, VSI has constituted a Quinquennial Review Team (QRT) in the month of November 16, 2024 to review the work the departmental work of the scientist in Agriculture Sciences and technology Division. The team members comprising Dr. SN Puri, Former Vice Chancellor, Mahatma Phule, Krishi Vidyapeeth, Rahuri, Ahilyanagar as a Chairman of the QRT, Dr. VM Mayande, Former Vice Chancellor, Dr. Punjabrao, Deshmukh Krishi Vidyapeeth, Akola; Dr. KE Lawande, Former Vice Chancellor, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli as a Members of the QRT and Dr. AD Kadalg, Principal Scientist (Crop Production & Protection) AST, VSI as a Member Secretary for the QRT.

The QRT team visited on November 16, 2024 to review AST & D. During their visit Mr. Sambhaji Kadupatil, DG felicitated the chairman and Members in presence of Mr. Shivajirao Deshmukh, Advisor and all the staff of agriculture sections.

Dr. AD Kadalg presented the overview of the agriculture sections their activities in form R&D, training and extension along with information on staff positions of each section, VSI inputs and all the farms of VSI.



QRT-I Visit

The QRT team visited various departments. After the visit departmental HODs/HOSs were presented their progress of ongoing research projects, completed projects and research activities in front of QRT committee chaired by Dr. SN Puri, Dr. VM Mayande,

Dr. KE Lawande, Dr. Rajendra Patil, Associate Professor, Department of Biotechnology, SPPU, Pune to review the Biotechnological related work) and Dr. AD Kadlag on December 5-6 2024 and December 19, 2024 and they visited Naigaon and Lonwardi farm on December 20, 2024.



QRT-II Visit



QRT-III Visit

After all departmental review presentations and discussions, they suggested their views and improvement in each section. Later final discussions were held on January 24, 2025 the basis of their

suggestions action plan was presented by each sections and discussion were take place and meeting concluded with Vote of thanks.



VSI PARTICIPATION VSI PARTICIPATION

National Seminar on 'Indian Sugar Quality & BIS Standards' at NSI, Kanpur

A National level one-day seminar on topic "Indian Sugar Quality & BIS Standards" was organized jointly by National Sugar Institute, Kanpur and Bureau of Indian Standards, Delhi in Sharkara Soudh at NSI, Kanpur on October 18, 2024.

The aim of this seminar is to provide a thorough awareness of the current situation regarding sugar quality in India, the significance of abiding by BIS standards, and the actions required to guarantee the safety and competitiveness of Indian sugar. The standards of Plantation white Sugar, Refined sugar, Raw sugar, Khandsari sugar, Jaggary etc. are reviewed /developed and issued by BIS under FAD2 committee.



Nearly 200 delegates and eminent technologists were attended for this one-day seminar from various institutions. From VSI, Dr. RV Dani, Technical Advisor attended the seminar and talked and elaborated on the potential for direct consumption of raw sugar by modifying its specifications in line with BIS standards. He stressed the need of direct consumption of Raw sugar in the country considering the financial benefits to sugar mills as well as health benefits to consumers. Additionally, production of raw sugar helps to improve the quality of different feed stocks to distillery due to elimination of sulphur which will help to improve alcohol yield.

AICRP(S) Biennial workshop at PAU, Ludhiana

The team of six Scientists, Dr. JM Repale, Senior Scientist (Pl. Br.), Mr. RG Yadav, Head & Scientist, Entomology; Dr. Preeti Deshmukh, Head & Sr. Scientist (Soil Science); Dr. AS Patil, Scientific Officer & I/c Head, Agronomy, Dr. GS. Kotgire, Scientist, Plant Pathology had attended the AICRP(S) Biennial workshop held at Punjab Agricultural University (PAU), Ludhiana, Punjab on October 21-22, 2024.

Dr. Satbir Singh Gosal, VC, PAU, Ludhiana chaired the inaugural session. Dr. TR Sharma, DDG (CS), ICA, New Delhi and Dr. Prasanta Dash, ADG (CC), ICAR, New Delhi were chief guests. Dr. P Govindaraj, SBI, Coimbatore; Dr. R Viswanathan, Director, ICAR-IISR, Lucknow; Dr. Dinesh Singh, Project Coordinator, AICRP on Sugarcane ICAR-IISR, Lucknow were present and grace the function.

Dr. Satbir Singh Gosal, VC, PAU, Ludhiana mentioned in inaugural address speech that the new sugarcane varieties shall be developed specially for jaggery and

bottling of cane juice in tetra packing as it has a great market in cold areas where sugarcane is not growing. Dr. TR Sharma, DDG (CS) highlighted the need to concentrate on increasing per unit cane production and insisted that the area should not be increased as the land will be needed for other uses in future. He told that in sugarcane the genetic base is narrow by using same parental line and need to undertake an immediate project on pre-breeding aspects and biotechnological approaches. The monoculture in sugarcane should be avoided as it will be harmful in any epidemic situation and use of tissue culture in propagation of seed of new variety in shorter period. He mentioned that the scientist should work for value addition, branding and marketing in future.

Dr. Prasanta Dash, ADG, (CC), ICAR, New Delhi pointed out that the use of new AI technology in research for characterization of germplasm and to extract genomics and phenomics data.

Dr. R Viswanathan, Director, IISR, Lucknow insisted to revise the National monitoring teams to get the actual facts about the genotypes and diseases.

Dr. P Govindaraj, Director, SBI, Coimbatore in his speech pointed out that the National Hybridization Garden (NHG) at Coimbatore is a unique facility for breeders in India for hybridization and institute had started the pre-breeding work to introduce new genes and new sources of resistance for development of climate resilient sugarcane varieties.

The Crop Improvement session was held under chairmanship of Dr. Bakshi Ram, Ex-Director, SBI, Coimbatore and Co-chaired by Dr. Prasanta Dash, ADG (CC). Dr. P. Govindaraj, Director, SBI, Coimbatore & Principal Investigator (PI) (Crop Improvement) and members of PAMC Dr. A. D. Pathak, Ex-Director, IISR, Lucknow were present during the session.

Dr. P Govindaraj presented the Crop Improvement report for the year 2023-24. He highlighted to concentrate on the raising of seedlings from fluff and those who need guidelines should visit the Coimbatore / nearest centers. He mentioned about the two varieties viz., Co 17001 and Co 17004 are

qualified for higher cane and sugar yield in zonal varietal trials conducted at 17 centers.

The two entries viz., CoVSI 20013 (Co 9220 x CoT 8201) and CoVSI 17002 (Co 9206 x Co 89003) proposed by our center were accepted for their testing in IVT trial and allotted IVT numbers CoVSI 24121 and CoVSI 24122.

The new project on “Development of clones for red-rot, drought and flood and their evaluation” is discussed and selected the centers. The VSI, Pune is selected for this project to develop and evaluate the clones for drought. This project is long term basis and the crosses will be effected in 2024 by SBI, Coimbatore and we will get the fluff seed in February, 2025 for further project work.

The plenary session was chaired by Dr. Prasanta Dash, ADG (CC), ICAR, New Delhi and Co-chaired by Dr. Mangat, Director of Research, PAU, Ludhiana; Dr. P. Govindaraj, Director & PI, Crop Improvement; Dr. R. Viswanathan, Director, IISR, Lucknow & P.I., Plant Pathology; Dr. TK Sreevastava, P.I., Crop Production and Dr. Arun Baitha, P.I., Entomology were presented the proceedings.

Visit to Suzhou Inovance Technology Co. Ltd, China

Mr. RA Chandgude (Technical Adviser & Head, sugar Engineering Dept, VSI, Pune) and Mr. PG Patil (Technical Adviser, Sugar Engineering Dept, VSI, Pune) have visited to M/s Suzhou Inovance Technology Co. Ltd, Shanghai, China from December 20-25, 2024 for attending the R & D meeting for Installation of medium voltage drive for mill & fibrizer applications. In their visit they have attended the technical meet.

In Suzhou Inovance technology Co. Ltd, they had meeting with; Mr. Scotte Zheng (Vise President,

Overseas Busniess Group), Mr. Maxwell Zhang. (Product Manager) and Mr. Merlin (Senior Develop Engineer, Overseas Busniess Group).



During the visit, M/s. Suzhou Inovance Technology Co. Ltd, arranged a tour of their manufacturing plant and provided a detailed discussion on medium voltage AC drives. Inovance manufactures medium voltage AC drives, and we are looking for techno-economical solutions for fibrizers and mills. Also visited their manufacturing shop and quality control facilities, and found them to be satisfactory.

VISITORS TO VSI

Delegates from International Workshop organized by Department of Mechanical Engineering, COEP Technological University, Pune

The team of delegates from International Workshop on 'Agriculture Technology Transformation' organized by Department of Mechanical Engineering, COEP Technological University, Pune. They visited VSI on October 4, 2024. Their visit was warmly welcomed by Mr. Sambhaji Kadupatil, Director General and Dr. AD Kadlag, Principal Scientist (Crop Production and Protection), who introduced him to various ongoing research activities of the institute in presence of all the HODs and HOSs of the all agriculture and technical divisions. During their visit they visited various department of VSI to know the ongoing activities of VSI.



Visit of Delegation from Govt. of Bihar

The Delegation from Sugarcane Industries Department, Govt. of Bihar comprising of Mr. Krishnandan Paswan, Hon'ble Minister; Mr. Narmadeshwar Lal (IAS), Principal Secretary; Mr. Anil Kumar Jha (IAS), Cane Commissioner; Mr. JPN Singh, Joint Cane Commissioner; Mr. Vedawrata Kumar, Assitant Cane Commissioner; Mr. Deepak Kumar, PS to Hon'ble Minister and

Mr. Mukesh Kumar Das, PA to Hon'ble Minister visited VSI on October 18, 2024.

Mr. Sambhaji Kadupatil, Director General, VSI felicitate all the delegates in presence of all agriculture and technical staff of VSI. Dr. Deepali Nimbalkar gave presentation on activities of VSI. Later, they visited various sections of agriculture sciences and technology division.



Visit of MD, MSSCL, Akola

Mr. Yogesh Kumbhejkar (IAS), Managing Director, Maharashtra State Seeds Corporation Limited (MSSCL) Akola visited VSI on October 19, 2024. Mr. Sambhaji Kadupatil, Director General, VSI felicitate and briefed about VSI activities. Later, he visited PMB Lab., and Tissue Culture Laboratory followed by formal discussion about latest advancement in micropropagation techniques, virus indexing and genetic fidelity testing facility at VSI.



Dr. Jaya Rawat, General Manager, Dr. Vivek Rathore Deputy General Manager from R&D, Advanced Biofuel & Biotechnology, Bharat Petroleum Corporation Ltd., (BPCL) New Delhi visited institute

on November 5, 2024. Mr. Sambhaji Kadupatil, DG welcomed and felicitated them. Later they visited Department of Alcohol Technology & Biofuels. They had discussions ongoing projects and activities of the department and interacted with scientist.



Visit of MCAER Officers

Mr. Raosaheb Bhagade, Director General of the Maharashtra Council of Agriculture, Education and Research (MCAER), Pune and Dr. Harihar Kausadikar, Director, MCAER Pune, visited the institute on November 7, 2024. Mr. Sambhaji Kadupatil, Director General, VSI felicitated. Dr. AD Kadlag, Principal Scientist, gave a brief presentation on VSI activities in presence of all agriculture staff. They visited various sections of agriculture sciences and technology division.



Dr. Carlos Queiroz Paleaio and Ms. Debora from CTC, Brazil visited Institute on November 12, 2024. Mr. Sambhaji Kadupatil welcomed the guests and felicitated them in presence of HODs and HOSs of



the Agriculture and Technology Division. All staff members briefed about their sectional activities. Later they visited various sections to know the ongoing research and developmental activities of VSI.



Visit of AICRP(S) Monitoring Team

The AICRP(S) monitoring team comprised of four scientists Dr. Anna Durai, Breeder, ICAR-SBI, Coimbatore (Tamilnadu); Dr. Vikrant Singh, Breeder, Punjab Agriculture University, Ludhiana (Punjab); Dr. Jyoti Rekha Patnayak, Agronomist, SRS, Nayagarh, (Orissa) and Dr. Lalan Sharma, ICAR-Indian Institute of Research (Lucknow) and Mr. RG Yadav, Entomologist, Vasantdada Sugar Institute, Pune (Maharashtra). The team monitored the VSI research activity under AICRP program of Plant Breeding, Agronomy, Soil Science, Microbiology, Entomology and Plant Pathology at Vasantdada R & D Farm on November 30, 2024.

They visited the four Zonal Varietal Trials of plant breeding viz., Initial Varietal Trial, Advanced Varietal Trial-I Plant, Advanced Varietal Trial-II Plant and Advanced Varietal Trial-I Plant-Ratoon and trials on 'B.III-Evaluation and identification of climate resilient ISH and IGH genetic stocks (Plant II and Ratoon of Plant I). The team also visited the seedlings raised from fluff (Ground Nursery-I-2024 Batch). Total 5413 seedlings developed from 54 biparental crosses, polycrosses and general collections effected at Sugarcane Breeding Institute, Coimbatore. The team very much impressed and appreciated the seedlings establishment and growth from Ground Nursery-I and progress under fluff supply programme.



The team visited the experiments conducted under AICRP(S) by Agronomy, Soil Science, Microbiology, Entomology and Plant Pathology section.

Dr. Jyoti Rekha Patnayak visited the experiments conducted by Agronomy viz., AS 72: Agronomic evaluation of promising sugarcane varieties under varied fertilizer levels; AS 74: Evaluation of sugarcane varieties for drought tolerance and AS 79: Evaluation of new herbicide molecules for weed management in sugarcane. She satisfied about performance of crop and conduct of experiments. She also visited the experiment conducted by the Soil Science viz., AS77 Evaluation of liquid nanourea for its efficacy in enhancing N use efficiency and sugarcane growth and yield. She appreciated the progress of trials conducted and the progress of results and also visited the experiment conducted by the Microbiology AS 78: Evaluating efficacy of agricultural beneficial microorganisms as soil health and plant health products on yield and quality of sugarcane ratoon. She appreciated the trial and the application of consortium of soil beneficial microbes and consortium of endophytes along with 0, 25,50,75% RDF showed at par results in growth of sugarcane ratoon.

Dr. Lalan Sharma visited six trials in Plant Pathology viz., PP17 B- Evaluation of zonal varieties for resistance to smut disease, PP 17 D-Yellow leaf disease study (YLD), PP 17 E- Methodology for screening of varieties

for brown rust, PP17 F- Screening of entries under AVT for Pokkah boeng; PP 22- Survey of sugarcane diseases naturally occurring in the area on important sugar cane varieties, PP-32-Management of brown spot disease of sugarcane (A); PP- 33- Management of yellow leaf disease through meristem culture; PP34-I- Efficient delivery of fungicides and other agro inputs to manage major fungal disease in sugarcane, II.- Delivery of agro inputs to improve settling vigour in nurseries; PP34b- To demonstrate efficient delivery of plant protection chemicals through drone for effective management in sugarcane ecosystem; PP 35-Development of inoculation techniques for pokkah boeng disease of sugarcane. He satisfied about performance of crop and conduct of experiments.

Dr. Lalan Sharma and Mr. RG Yadav, visited the Entomology trials viz., E 4.1.1-Evaluation of zonal varieties /genotypes for their reaction against major insect pests, E.30-Monitoring of insect pests and bio agents in sugarcane agro-ecosystem, E.34- Standardization of simple, cost effective techniques for mass multiplication of sugarcane Bioagents, E.40- Integrated approach to manage white grubs in sugarcane, E.41- Assessment of yield losses caused by borer pests of sugarcane under changing climate scenario, E44-Management of sucking pests (mealy bugs, pyrilla, white fly, scales and wooly aphid) in sugarcane. The team appreciated the progress of trials.

Dr. Suresh Ukarande, Principal, K. J. Somaiya College of Engineering, Mumbai and his team members visited institute on December 13, 2024. Dr. AD Kadlag,

Principal Scientist (Crop Production & Protection) AST&D, welcome the guests and briefed the activities of VSI. Later they visited different sections of agriculture sections.



The team of ICAR-AICRP Seed Project (Agriculture Crops) from ICAR-National of Seed Science and Technology, Mau, UP visited VSI on October 1, 2024. Dr. AD Kadlag, Principal Scientist (Crop Production &

Protection) AST&D, welcomed the guests and briefed the activities of VSI. Later they visited Tissue Culture section and farms of VSI.



VISITORS TO VSI VISITORS TO VSI

Following visitors were visited VSI during (Oct.-Nov.-Dec., 2024)

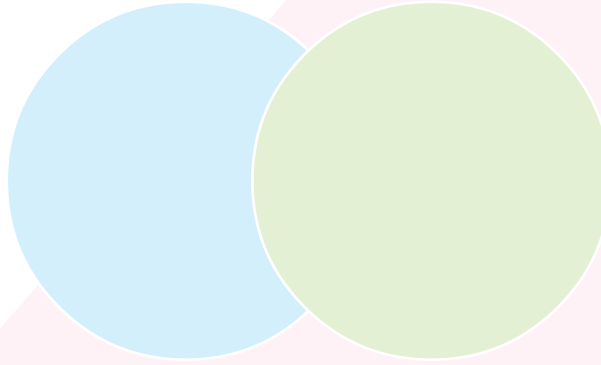
Name of Institutions	Visitors	No. of Visitors	Total
October - 2024			
Dr. D.Y. Patil Biotechnology and Bioinformatics Institute, Tathawade, Pune	Students and Faculties	80+3	83
Jaywantrao Bhosale Krishna College of Agriculture, Karad	Students and Faculties	13+3	16
Rajarambapu Patil SSK, Ltd., Rajaramnagar, Sakhrale,	Farmers	21	21
KVK, Solapur	Farmers and Officers	21+2	23
Shri Shivaji College of Agriculture Biotechnology, Amravati	Students and Faculties	75+7	82
Gangamai Industries & Constructions Pvt. Ltd., Rakshi	Farmers and Officer	27+1	28
Aditya Agriculture Biotechnology College, Beed	Students	6	6
Shri. Krushnandan Paswan, Minister of Sugarcane Industries, Bihar	Minister and IAS Officers	1+7	8
Individual Farmers from Maharashtra State	Farmers	85+55+68+62+35	305
Novemver - 2024			
Delegates from CTC, Brazil	Officers	1+1	2
Mr. Sanjeev Jadhav & Mr. Dnyandev Wakore from SARATHI, Pune	Ex. IAS Officers	1+1	2
Dr. Sharadchandra Pawar College of Agriculture, Baramati,	Students(RAWE)	8	8
College of Agricultural Biotechnology, Chiplun,	Students and Faculties	18+2	20
MIT School of Food Technology, Loni Kalbhor,	Students and Faculties	37+3	40
Individual Farmers from Maharashtra State	Farmers	71+85+72+70	298
Decemer - 2024			
Vasantrao Naik College of Agricultural Biotechnology, Yavatmal	Students and Faculties	49+3	52
Lokmangal Science and Entrepreneurship College, Wadala	Students and Faculties	40+4	44
Team Visit: Dr. Suresh. K. Ukarande and 4 Members from Somaiya Vidyavihar University, Mumbai	Director and Members	1+4	5
Krushnaji Khanduji Ghule Vidyalay, Manjari Bk., Pune	Students and Faculties	106+4	110
Mann Deshi Foundation, Mhaswad	Farmers and Representatives	60+2	62
N.M. College of Agriculture, Navsari Agricultural University, Gujrat	Students(RAWE) and Faculties	125+3	128
Bhartiya Jain Sanghatana's Secondary & Higher Secondary School, Wagholi, Pune	Students and Faculties	110+6	116
Individual Farmers from Maharashtra State	Farmers	91+70+129+66	356
:		Total	1815

LIBRARY NEWS LIBRARY NEWS

October to December 2024

1. **Verlag Dr. Albert Bartens KG (2024)** *ICUMSA Method Book Supplement 2024 (13th Ed)*; Germany: Verlag Dr. Albert Bartens KG, (p. 114).
2. **Bakshi R. M. (2024)** *The Constitution of India (19th Ed)*; Haryana: LexisNexis, (p. 593).
3. **Bhanage Vasant(2024)** *Law Dictionary English- English- Marathi (1st Ed)*; Pune: Hind Law House, (p. 1272).
4. **Professional Book Publishers (2024)** *The Code of Criminal Procedure, 1973, (as amended by 31-10-2019)(1st Ed)*; New Delhi: Professional Book Publishers(p. 366).
5. **Professional Book Publishers (2024)** *Code of Civil Procedure (as amended by 2023) (1st Ed)*; New Delhi: Professional Book Publishers (p. 322)
6. **Professional Book Publishers (2024)** *The Indian Penal Code (45 of 1860) (1st Ed)*; New Delhi: Professional Book Publishers(p. 216).
7. **G. Hemaprabha; T. RajulaShanthi; R. Viswanathan; C. Palaniswami (2022)** *Handbook on Sugarcane (1st Ed)*; Coimbatore: ICAR- SBI (p. 266).
8. **SavantDatta (2012)** *OosBrazilcha- Bharatacha (1st Ed)*; Pune: JanavhiPrakashan- VaishaliDipak Patil (p. 186).
9. **Zende A. A.;** *Tryst with Sugar Technology (A Bunch of Articles in Process Technology) (1st Ed)*; Pune: A. A. Zende (p. 132).
10. **Srinivas Madhav (2025)** *N. K. Acharya's Commentary onThe Right to Information Act, 2005 [Act 22 of 2005, w.e.f. 13-10-2005] (16th Ed)*; Hyderabad: Asia Law House- S.P. Gogia (p. 468)
11. **Professional Book Publishers (2025)** *The BharatiyaSakshyaAdhiniyam, 2023 (47 of 2023) The Indian Evidence Act, 1872 (1 of 1872) (1st Ed)*; New Delhi: Professional Book Publishers (p. 92)
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PUBLICATION

The Sugar Engineering Department executed several R&D projects jointly with COEP for the year 2023-24. Among these projects, the two prime ones are particularly important and beneficial to the sugar factory upon their conclusion. Based on the findings of these R&D projects, the Sugar Engineering Department presented two technical papers at the 53rd Annual Convention of SISSTA proceeding (Page No. 234-245 and 511-521) held on August 19-20, 2024 in Bangalore. The two prime projects in the form of short note given below and use the following link to see the full detail paper in the form PDF files of both papers.

Link:

Paper 1)

https://www.vsisugar.com/vsi_bulletin/sugartech1.pdf

Paper 2)

https://www.vsisugar.com/vsi_bulletin/sugartech2.pdf

The following are the two prime projects:

A) A CASE STUDY OF THE ROLLER CHAIN STRENGTH AND RELIABILITY OF SUGARCANE MILL CONVEYING SYSTEMS

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PS Shinde (Professor) Department of Mechanical Engineering, COEP Technological University, Pune

The VSI faculties conducted study in 2021-22 for different types of chains like roller- bush-pin (cane carrier, feeder tables, bagasse conveying), block forged (prepared cane), as main conveying systems with respect to the material of construction (MOC) for different parts of chain

material and reason of failure. The chain for conveying the material having more wear & tear observed in pins, chain and majority sprocket in mills of different chain manufactures. Further study was conducted with COEP in 2022-23 to have analysis of raw material composition, heat treatment adopted for chain manufacturing used w.r.t to IS standard and breaking load.

In the first part, Static analysis carried out of all the parts of inter rake carrier roller chain (like roller pin, roller bush and link) using Theoretical & Finite element analysis (FEA) method and analyzed the alternative material for failed material to meet the design requirements. In the second part determined the wear rate and coefficient of friction between the roller pin and bush materials under different operating conditions. The experiments performing on pin on disc machine.

The study highlights the importance of material selection and design optimization in the roller chains used in sugar mill conveying systems. It underscores the necessity of using advanced materials with high tensile strength, proper heat treatment processes, and continuous monitoring to ensure operational efficiency and reduce downtime caused by chain failure. The findings of this research provide a valuable reference for improving the strength and reliability of roller chains, ultimately leading to reduced maintenance costs, improved productivity, and a more cost-effective sugar mill operation.

The stress analysis indicated that the existing materials used for roller pins and roller links were inadequate to handle the breaking loads under operational conditions. The finite element analysis (FEA) and theoretical calculations revealed that both components experienced stress levels that exceeded their tensile strength, leading to a factor of safety (F.O.S) less than 1, which means that failure is likely under normal operational conditions.

Part No.	Part Name	Existing Material & its Strength(Sut MPa)	Theoretical (σv)MPa)	FEA (σv MPa)	F.O.S=Sut/σv	Deviation (%)	Remark
1	RollerPin	510	869.70	878.66	0.58	1.01	Not safe
2	RollerBush	505	287.4	342.48	1.75	16.05	Safe
3	Roller Link	625	754.81	864.99	0.82	12.73	Not safe

Findings:

1. **Roller Pin Failure:** The FEA stress of 878.66 MPa for the roller pin exceeds the tensile strength of the material (SS 410) which has an ultimate tensile strength of 510 MPa. This indicates that the roller pin material is not strong enough to withstand the applied loads. The required yield strength for safe operation should exceed 870 MPa, with a margin for safety.
2. **Roller Link Failure:** Similarly, the roller link, made from carbon-forged steel, exhibited Von-Mises stresses of 864.99 MPa, while its tensile strength is 625 MPa. This again results in an F.O.S. less than 1, signaling a high risk of failure. The required strength for safe operation is around 865 MPa, indicating that the material needs to be upgraded to one with a higher tensile strength, such as forged steel with enhanced heat treatment or alloy steels like AISI 4130.
3. **Roller Bush Safety:** The roller bush material, typically made from stainless steel 304, showed a factor of safety greater than 1 (1.75), making it safe under the same load conditions. However, its wear resistance and long-term durability should still be evaluated in real-world conditions to ensure that it performs optimally in the sugar mill environment.

Suggestions for Improvement:

- Material Upgradation for Roller Pin and Roller Link
- Heat Treatment Optimization
- Design Optimization
- Maintenance and Monitoring

Conclusion:

- The initial materials of pins (stainless steel) and block-type links (forged steel) failed to meet the design requirement as per theoretical and FEA analysis. Therefore, an analysis of mechanical properties and material availability was conducted to determine alternative materials.
- Based on the findings, it is recommended to replace stainless steel pins with AISI 4140 OR SS 410

tempered at 204°C (1000 MPa) and to replace forged steel links with AISI 4340 OR C 55 Cr 75 hardened & tempered (900 - 1050 MPa) in future designs.

- This project has shown that a thorough analysis of mechanical properties and material availability is necessary to identify alternative materials that can meet the design criteria.
- The wear rate in our experiment for stainless steel 410 is also between 1×10^{-6} and 5×10^{-5} mm³/Nm, which is the general range of the wear rate of stainless steel. So it is important to focus on factors that influence the wear rate.
- The coefficient of friction of SS410 can vary depending on the conditions and the counter material it is in contact with. However, as a general range, the coefficient of friction of SS410 can be between 0.2 and 0.6. In our experiment, the coefficient of friction obtained ranged from 0.20 to 0.28.

A) Effect of Ethanol Blending on Diesel Engine Performance and Emissions

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This study was carried out using a CRDI diesel engine to investigate the impact of blending ethanol with diesel fuel on engine performance and emissions in a twin-cylinder CRDI diesel engine. For this experimentation, we used the CRDI diesel engine in the COEP laboratory.

Initially, the engine manifold was modified through CFD (Computational Fluid Dynamics) simulation. A CFD study was performed in three phases to optimize the injector location on the manifold at two positions, the ethanol injector orientation at the optimized location, and the injection pressure at the chosen orientation.

Based on the CFD analysis, the optimum parameters were obtained and applied for experimentation on the CRDI diesel engine. After setting up the experimental facility, experimentation was carried out using ethanol samples from various sugar factories namely- LSSSSK,

Rajarambapu Patil SSK, Vighnagar SSK & Dwarkadhish SK in diesel engine at variable load & ethanol injector opening conditions at different RPMs. The experiments tested varying ethanol proportions under different engine speeds (2000 and 2400 RPM), loads (10-40 Nm), and injector openings (0-60%).

Key findings:

- ❑ **Engine Performance:** Blending ethanol improves brake mean effective pressure (BMEP) and brake power, especially at higher ethanol concentrations (60%). The best ethanol-diesel mix was 20% ethanol at 40 Nm load for both RPMs.
- ❑ **Combustion:** Ethanol reduces ignition delay and improves combustion efficiency, as seen in the heat release rate (HRR) and pressure profiles. Higher ethanol content generally leads to more efficient combustion, especially at higher engine speeds.

● Emissions:

- ❑ **NOx:** Ethanol blending reduces NOx emissions at lower RPM (2000), but the effect is less noticeable at higher RPM (2400).
- ❑ **CO:** At low loads, CO emissions rise with higher ethanol content; at higher loads, CO remains nearly constant.
- ❑ **HC:** Hydrocarbon emissions decrease with higher loads and more injector openings, improving combustion efficiency.

Overall, ethanol blending can enhance engine performance, improve combustion, and reduce some harmful emissions, especially NOx and hydrocarbons.

