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Foreword

Foreword ...

The country's sugar output will be around 29.50 million tonnes in forthcoming season 2021-22 due to good and well spread monsoon across the country. It is expected that sugar production will decline by 3.50 million tonnes due to increased diversion of B-heavy molasses and sugarcane juice for ethanol production. Maharashtra is likely to produce 11.20 million tonnes of sugar by crushing of around 109.6 million tonnes of sugarcane. There will be bumper sugarcane crop due to fairly good monsoon in 2019; sugarcane area is expected to increase from 1.14 million ha to 1.23 million ha (7.61%). The country will move with carry forward sugar stocks of around 8.0 million tonnes.

For several decades, Maharashtra was the leader in sugarcane production, but in last two years, it has lost the premier status to Uttar Pradesh. The state government set up an 11-member committee headed by **sugar** commissioner to study sugarcane production scenario in Uttar Pradesh and measures to be taken to restore Maharashtra's position as the leader state.
In the fight against the COVID-19 pandemic the industry also joined its hands. Due to sustained efforts, production capacity was enhanced to 30 lakh litres per day to produce 4.2 million crore litres of hand sanitizers. Keeping in view of role of hand sanitizer in long run to fight against the pandemic COVID-19, permission was extended to distilleries/other units for further period of one year from 31st December, 2020 to 31st December, 2021. Today the country is not only meeting its captive requirements but also exporting the sanitizer. In the wake of the oxygen crisis, sugar mills and distilleries in parts of Maharashtra, Karnataka and U.P., decided to come forward to produce and supply the medical oxygen to overcome the shortage being faced by hospitals in several parts of the country.

VSI in this quarter successfully organized a Webinar on 'Opportunities for Sugar/Distillery industry in Compressed Biogas (CBG) Sector on 2nd July 2021. Training programmes for sugarcane growers and sugar industry related training were conducted in the month of July to September 2021 keeping in view the COVID-19 situation, guidelines and protocols followed. The detailed update is given on the following pages.

I request the members to please wear mask, maintain social distancing and take other necessary precautions for the safety of your near and dear ones.

RM Devarumath

(RM Devarumath)
Editor

HOMAGE

HOMAGE

Late Dr. Dnyandeo Gangaram Hapase

Late Dr. Dnyandeo Gangaram Hapase worked in this Institute from 1st March 1984 to 16th February 1994. He was appointed as Chief Agronomist. Later, he worked as a Director From 10th November 1986 to 16th February 1994. He passed away on 29th August 2021. On behalf of the VSI staff we express our heartfelt sympathy & condolences to members of the bereaved family and pray for the eternal peace of his soul

Late Jadunath Mohanty

Late Jadunath Mohanty was appointed as Finance Manager cum Cost Accountant in the Finance Section. Later on, he was designated as Financial Advisor. He also worked as I/c Personnel Manager From 2000 to 2008. He retired from the services of the Institute on 30th September 2008 and there after he was working as Financial Advisor (Honorary). He passed away on 20th August 2021. On behalf of the VSI staff we express our heartfelt sympathy & condolences to members of the bereaved family and pray for the eternal peace of his soul.

EVENTS

Celebration of 75 years of India's Independence - 'Azadi Ka Amrut Mahotsav'

VSI Celebrated 75 years of India's Independence- **'Azadi Ka Amrut Mahotsav'** on 15th August 2021. On this occasion the national flag was hoisted by Mr. Shivajirao Deshmukh, Director General in presence of Mr. Sambhaji Kadupatil, Officer on Special Duty, Mr. DB Ghule, Registrar/Principal. VSI employees/students took part in the 'Azadi Ka Amrut Mahotsav' celebrations by singing the RASHTRAGAAN at VSI campus.

Memorandum of Understanding (MoU) between VSI and NRSC, Hyderabad

National Remote sensing centre, ISRO, Department of Space, Govt. of India, Balanagar, Hyderabad and Vasantdada Sugar Institute, Pune signed a MoU on 11th August 2021 for Establishment of field equipment for validation of soil moisture products under National Hydrology Project (NHP). National remote sensing centre (NRSC) as one of the implementing Agency under National Hydrology project (NHP) is engaged in generation of geospatial products & services pertaining to water resources management. As stated earlier, NRSC is generating daily evapotranspiration using satellite data and soil moisture products using hydrological modeling techniques under NHP. In order to validate these products, a comprehensive field-based instrumentation setup will be used to take in-situ measurements required for Evapotranspiration and Soil moisture validation. For selection of site, Dr. K Chandrasekhar, Scientist/Engineer SG and Head (Applications),

Ms. Nidhi Mishra, SCI/ENG SE and Ms. Annie Maria, ISSAC SCI/ENG SE, Water resources group, RSAA, Regional Remote Sensing Cenre, (NRSC), Hyderabad visited the research farms of the institute and selected the Lonarwadi Farm for installation of this instrument.

Opportunities for Sugar/Distillery Industry in Compressed Biogas (CBG) Sector

Webinar on **'Opportunities for Sugar/Distillery Industry in Compressed Biogas (CBG) Sector'** was organized by dept. of Alcohol Tech & Biofuels, Vasantdada Sugar Institute (VSI), on 2nd June 2021. Mr. Sharad Pawar, Hon. President, VSI, & Member of Parliament (Rajya Sabha) and Mr. Dilip Walse-Patil, Hon. Vice-President, VSI, Minister of Home, GoM was the Chief Guest in the Webinar. Following members viz., Mr. Harshvardhan Patil, Hon. Ex-Minister, Maharashtra; Mr. Jayprakash Dandegaonkar, Chairman, NFCSFL & MRSSKS Ltd; Mr. Shivajirao Deshmukh, Director General, VSI; Mr. Shekhar Gaikwad, Commissioner of Sugar, GoM; Mr. Vishal Patil, Governing Council Member, VSI; Mr. Abhinash Varma, Director General, ISMA; Mr. Prakash Naiknavare, Managing Director, NFCSF Ltd and Mr. BB Thombare, Chairman, Natural Sugar were present as the panelist in the webinar. The webinar was attended by 181 participants from members and non-members Distilleries and Sugar Factories.

Mr. Shivajirao Deshmukh, DG, VSI welcomed all delegates. He emphasized on the opportunities for sugar industry in the field of bio-CBG production using different feedstock. CBG has the potential to replace CNG in automotive and industrial sector. CBG plant can be operated on press mud cake (PMC) or sugarcane bagasse (SCB) or their mix throughout year which will generate additional revenue to sugar mills.

Key note address was given by Mr. Sharad Pawar. He talked about the present scenario on the current energy consumption and current imports of crude oil and natural gas in India. GoI has set a target of reducing this import by at least 10% by 2022. He informed that different renewable energy feedstocks (PMC, SCB, municipal solid waste, etc) is being promoted by GoI for the production of CBG and various schemes for CBG. He also mentioned that there is potential of 3.75 lakh ton of CBG per annum in India & 1.50 lakh ton of CBG per annum in Maharashtra with revenue of Rs.1750 crore per annum to India and Rs.700 crores per annum to Maharashtra if 50% of sugar mills will go for CBG production which will create huge employment opportunity and can boost economic development.

In the technical presentations following members were delivered talks;
Prof. SV Patil talked on circular bioeconomy for CBG and organic fertilizer production for sugar mills. He informed about the SATAT scheme. GoI has planned to set up 5000 CBG plants by 2025 in phased manner. Ministry of New & Renewable Energy (MNRE) has declared subsidy of Rs. 4.00 crore per 4800 kg CBG per day and Rs. 10.00 Crore per project. Department of Agriculture and Farmers Welfare, GoI has notified that fermented digestate from anaerobic digester of PMC/SCB/ PMC/other agro-wastes as fermented organic manure. There are schemes for financial support for CBG Plants by State Bank of India and Bank of Baroda. He also mentioned that VSI is setting up of two pilot digesters with financial assistance from Nira Bhima SSKL for the production of biogas from PMC, SCB, sugarcane trash (SCT) and mixture of PMC, SCB and SCT.

Mr. RB Lad, Mr. Praveen Badiger and Mr. NS Mohan in their presentation discussed their digester technology for biogas production and membrane technology for biogas purification.

Mr. Sanjay Murgai, Head CBG Projects, JBM Renewables (Jay Bharat Maruti Group), Dr. AV Mohan Rao and Mr. Mohit Gupta, SERL also presented their work on CBG. They have presented data and technology in their two running plants (Warananagar, Maharashtra and Rohtak, Haryana) on PMC.

Mr. Nitin Shete, Vice President, Praj Industries Ltd. He explained the possibility of conversion of PMC, SCB and spent wash for CBG production. He also proposed a model for supply of dual fuel kits (Diesel + CBG) for truck, tractors and small 3 and 4 wheelers which can reduce 30 to 40% of transport costs. He mentioned that Praj has developed 4 key commercial technologies such as microbial consortium for feedstock pretreatment, rumen microbe's consortium for high yield and fast anaerobic digestion process, high efficiency biogas up-gradation to CBG and high quality bio-manure formulation.

Mr. Aakash Gundawar, Untied Enviro Pvt. Ltd., Pune. He explained CBG production technologies, its advantages and feedstock for CBG.

Afterwards, there was a panel discussion with Mr. Dilip Walse-Patil, Mr. Jayprakash Dandegaonkar, Mr. BB Thombare, Mr. Vishal Patil, Dr. Indrajeet Mohite, Mr. Shekhar Gaikwad, Mr. Abinash Varma, Mr. Shivajirao Deshmukh and Mr. Prakash Naiknavare.

In the concluding session, Mr. Dilip WalsePatil mentioned that given the abundance of biomass in the country, CBG has the potential to replace CNG. He also mentioned that digestate that comes out from the digester can be used as bio-manure. This will also help to replace chemical fertilizer partly with organic fertilizer and contribute to move towards sustainable agriculture.

In concluding remarks, Mr. Shivajirao Deshmukh thanked all dignitaries and delegates present for attending the Webinar. He requested all sugar mills to come forward and take initiative in production/supply of CBG.

Oos Sheti Dnyanyag & Dnyanlaxmi

In the memory of the founder president of VSI late Padmabhushan Dr. Vasantdada Patil, VSI organised '***Oos Sheti Dnyanyag & Dnyanlaxmi***' residential farmer's training program for men and women sugarcane growers of Maharashtra state. The training program was condected as per the government guidelines regarding covid-19 pandemic disease and training batches were organised in the month of July & August 2021 as details are given in following table; In *Oos Sheti Dnyanyag* and *Dnyanlaxmi* training programmes, 296 sugarcane farmers participated from different parts of Maharashtra. Out of total sugarcane farmers, 16 sugarcane farmers participated individually and 18 were sponsered by the sugar mills. Each batch of training was inaugurated by the representatives from participated farmers and welcome address was delivered by the training coordinator. Lectures on various topics like sugarcane varieties & varietal planning, seed nursery management, tissue culture, modern planting techniques, weed management, soil fertility and fertilizer management, irrigation water management, use of bio-fertilizers, farm mechanization, sugarcane economics, ratoon management and integrated disease & pest management were taken and practicals & field demonstrations conducted by subject experts of different Sections/Dept. of Agriculture Divisions of VSI.

Batch No.	Period	Area from which the farmers participated	No. of participants	Number of Sugar Mills & Individuals
***Oos Sheti Dnyanyag* programme (Men farmers)**				
I	5th to 8th July 2021	Kolhapur District and Vidarbha region	58	Sugar mills – 04 Individual – 02
II	13th to 16thJuly, 2021	Sangli and Satara Districts	63	Sugar mills – 05
III	20th to 23thJuly,2021	Pune, Ahmednagar and Nashik Districts	50	Sugar mills – 03 Individual – 06
IV	27th to 30th July, 2021	Solapur District and Marathwada region	51	Sugar mills – 04 Individual – 03
V	10th to 13th August, 2021	Marathwada region (Special batch)	40	Sugar mills – 02 Individual – 05
***Oos Sheti Dnyanlaxmi* programme (Women farmers)**				
VI	3rd to 06thAugust,2021	Sangli, Satara and Solapur Districts.	34	Sugar mills – 04
	Total participants (Women +Men)		**296**	Sugar mills – 18 Individual – 16

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

Oos Sheti Dnyanyag programme (Men farmers)

Batch No. : I

Batch No. : II

Batch No. : III

Batch No. : IV

Batch No. : V

***Oos Sheti Dnyanlaxmi* programme (Women farmers)**

Batch No. : VI

Laboratory Equipments & Analytical Methods and Sugar Manufacturing Process

Two training programmes on '**Laboratory Equipments & Analytical and Sugar Manufacturing Process'** were conducted during 2nd to 4th & 5th to 7th August 2021 for units of Balrampur Chini Mills Ltd (BCML) Uttar Pradesh. For above mentioned training programme, the training to be imparted to their laboratory and process staff purpose, VSI officials from Sugar Technology Department as Dr. RN Bhosale, Technical Advisor, Mr. S Panda, Technical Adviosr, Mr. DB Sapkal, Sr. Sugar Technologist and Mr. LS Dalvi, Technical Manager Sugar Laboratory visited to BCML, UP at Lucknow office and imparted the training. The details of training programme as given below;

1st training on **'Laboratory Equipments and Analytical Methods'** total 32 members participated from various posts such as Lab Chemist, Assistant Lab Chemist , Sr. Lab Chemist, Jr. Lab Incharge, Quality Control Officer, Manager Quality Control, Chief Manager Lab, Sr. Manager QC. Based on the contents of topics of training programme, the pre-test and final test was conducted for the participants. Following topics were covered during the program;

- Importance of sampling, sample preparation and its analysis in the sugar laboratory
- Introduction of National Accreditation Board for Testing and calibration Laboratories(NABL)
- Importance of calibration and practical demonstration of various equipment e.g. digital polarimeter, pH meter etc.
- Brief about ICUMSA, ICUMSA methods for analysis of white, raw and plantation white sugar.
- Color of intermediate boiling house products and finished product.
- Conductivity ash%, polarization%, Moisture % in white and raw sugar.
- Reducing sugar %, Insoluble matters and floc test in white sugar.
- Various graphs involved in spectrophotometric sugar analysis

2nd training on **'Sugar Manufacturing Process'** total 32 members participated from various posts such as Manager, Additional Manager, Additional General Manager, Assistant General Manager, Chief Manager, Chief Chemist, Dy. Chief Chemist, Sr. Dy. Chief Chemist, Dy. General Manager from all the units. Based on the contents of topics of training programme, the pre-test and final test was conducted for the participants. Following topics were covered during the program;

- Composition of cane and juice, principles of cane juice clarification with different types of liming and sulphitation process and tips to improve clarification efficiency.
- Role of Reducing sugar in sugar processing and various measures to reduce the final molasses purity.
- Pan Boiling: Theory of pan boiling, Tips to improve exhaustion in all grades massecuites
- Vertical and horizontal continuous pan and operational problems.
- Decanter and rotary vacuum filter
- Quality of sugar with reference to various test parameters , various types of sugars and liquid sugar.
- Intermediate boiling house products colour and their impact on final product
- Various measures to reduce the steam consumption in sugar mill
- Various measure to achieve best efficiency and sugar quality, during B Heavy diversion
- Molasses quality – Total reducing sugar and Un-fermentable sugar
- Water management in sugar mills & recent trends in water management in sugar processing- Type of technologies for sugar condensate polishing units, ETP & STP Operation

Milling Plant

Department of Sugar Engineering, VSI conducted a one week duration tailor made short term training programme for Balarampur Chini Mills Ltd., groups Haidergarh Unit (UP) for engineering department heads, sectional heads and mill engineers of ten sugar mills on the 'Milling Plant' from 9th to 14th August 2021. Total 32 engineers participated in the training programme. Unit Head, Haidergarh unit, Corporate Technical Team Head (CTT Engineering) and HR officers, inaugurated the short-term training programme.

Mr. SP Nalawade Joint Technical Advisor and Mr. DN Shiotle conducted short-term training programme. In short term training different topics like cane handling, cane preparation, cane milling, mill gearing, hydraulic system, capacity and power calculations, mill setting & trash plate profile. In addition to this, virtual training conducted on modern trends in juice extraction and power saving in milling plant by Mr. RA Chandgude-Technical Adviser & Head and Mr. PG Patil -Technical Adviser (Electrical).

The training programme also included practical calculations for sugar mill imbibitions, dilution ratio, juice drainage, mill capacity, power, mill setting and trash plate profile. The department heads of sugar units presented best practices adopted of their mills for repair and maintenance. They also, conducted the survey along with CTT Head along with participating engineers to Haidergarh plant and discussed on the mill performance, best practices in maintenance of milling plant.

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

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 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.

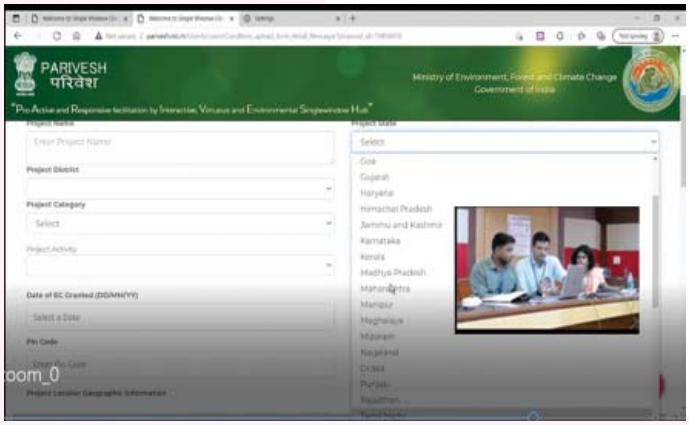
Mr. Sanjay Khatal (MD, Maharashtra Federation of Cooperative Sugar Factories) picked up the same thread from DG, VSI and emphasized that global warming and climate change have become a major challenge for all of us. He expressed that sugar industry is now viewed as a bio-energy complex. Hence, the programme 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. She stressed on the seriousness of complying with the EC conditions and the fines for various violations.

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.



Progress of VSI's Promotional Cane Development Award Scheme (CDAS) by the Participating Sugar Mills and Conduct of Adaptive Research Trials of Promising Sugarcane Genotype CoVSI 18121 with Co 86032

The one day workshop on 'Progress of VSI's Promotional Cane Development Award Scheme (CDAS) by the Participating Sugar Mills and Conduct of Adaptive Research Trials of Promising Sugarcane genotype CoVSI 18121 with Co 86032' was held on 28th August 2021 under the chairmanship of Mr. Sambhaji Kadupatil, Officer on Special Duty (OSD), VSI, Pune. The welcome address was given by Dr. RS Hapase, Head & Principal Scientist, Plant Breeding Dept. The workshop was inaugurated with lightening of lamp by Mr. Sambhaji Kadupatil in presence of HOD/HOS from Agricultural Section and participants. Mr. Kadupatil gave the introductory speech to participants. He said that the factory staff should make sincere efforts to increase the cane yield and sugar recovery under the CDAS scheme by which the technical recommendations for the increase in cane productivity will easily reach to farmer's field. He also mentioned to participate on large scale in the conduct of adaptive trials of promising sugarcane genotype CoVSI 18121 in area of operation.

Total 95 participants from 47 sugar factories attended the workshop. Dr. RS Hapase took review of the progress of the promotional award scheme (CDAS) and told to take more efforts to achieve the highest cane yield and sugar recovery as this is the last planting season under the CDAS scheme.

Mr. BJ Takalkar, Stastical Officer guided about the '*Oos Bhushan*' award scheme undertaken by the institute and suggested to participate in this scheme and send the farmers details. Later Dr. RS Hapase briefed about the promising sugarcane genotype CoVSI 18121 and conduct of its adaptive research trials along with its parent variety Co 86032.

The concluding session was chaired by the Mr. Shivajirao Deshmukh, Director General and Mr. Sambhaji Kadupatil, OSD, VSI, Pune. Mr. Shivajirao Deshmukh interacted with the participants and took review of the promotional cane development award scheme. The workshop was concluded with the vote of thanks by Dr. JM Repale, Senior Scientist, Plant Breeding with the following recommendations were finalized in the core committee meeting-

- All the year wise data regarding CDAS (area under various aspects like seed supply, varietal planning and harvesting programs, soil fertility inputs and drip irrigation etc.) should be sent to the Institute for compilation.
- Maximum numbers of adaptive trials of newly developed midlate maturing with high sugar and erect growing genotype CoVSI 18121 in comparison with its mother parent Co 86032 should be conducted in all the planting season. For this maximum demand of the settlings should be booked to Institute's Farm section for timely conduct of adaptive research trial on five acres of each or maximum 100 acres also can be booked if you conduct the mini mill trial of eight hours each of CoVSI 18121 with Co 86032.
- Information on more participants for the award '*Oos Bhushan'* should be sent immediately i.e. on or before 15th September for further decision of the award.
- The demand for the sugarcane seed and settlings of the different varieties may be placed well in advance for timely supply.
- Application of drone is being popular now-a-days among the farmers for spraying in sugarcane however, the basic research is undertaken by the Institute and Mahatma Phule Krushi Vidyapeet (MPKV), Rahuri. Hence, all the result data and experiences of the drone users through sugar mills should be shared / made available with the Institute.

Advanced Technologies in Sugarcane Agriculture

The residential training programme was organized for officers and staff members from Divisional Joint Director of Agriculture Aurangabad and Latur sponsored under National Food Security Mission (NFSM). The objective of the training was to train the participants, about advanced technologies in sugarcane agriculture. The two days training programme was conducted on 7th & 8th September, 2021.

Out of 37 participants 18 from Divisional Joint Director of Agriculture, Aurangabad and 19 from Divisional Joint Director of Agriculture, Latur including Agriculture Officers, Assistants Supervisors participated in this training.

The training was inaugurated by Mr. Sambhaji Kadupatil, OSD in presence of Heads of section and representative staff members. Mr. GE Atre, Scientific Officer, Plant Pathology section welcomed all the participants and staff members of VSI Agriculture section. During the inaugural speech, Mr. Kadupatil highlighted the importance of the training and appealed to all officials to adopt integrated cropping system and focus on integrated nutrient management for increasing the productivity of sugarcane crop. He

also appeals to participants to follow the protocols as sanitization of hands, social distancing etc. to take care about Covid-19 situation.

Modern and scientific sugarcane cultivation technology was taught which covered the lectures on various topics like sugarcane varieties and varietal planning, seed nursery management, tissue culture, modern planting techniques, weed management, soil fertility and fertilizer management, irrigation water management, use of bio-fertilizers, farm mechanization, ratoon management and integrated disease & pest management during two days training program. All the agriculture scientists conducted theory lectures and more emphasis was given on practicals and field demonstrations during the programme.

In the plenary session, Mr. BH Pawar, Senior Scientist & Head, Plant Pathology took the review of training. During discussion Officials asked questions about organic sugarcane agriculture, drip irrigation, effect of flood on sugarcane crop etc. and subject experts answered their doubts.

In the concluding function, the representative trainees expressed their satisfaction about the training and hospitality etc. Hon. Director General, VSI discussed with participants about the difficulties faced by them in sugarcane agriculture and appealed them to guide farmers for adopting modern technologies in sugarcane agriculture. The certificates were distributed to the trainees and programme concluded with Vote of thanks given by Dr. GS Kotgire, Scientist, Plant Pathology section.

Agri-clinic and Agri-business Management

The training programme on '**Agri-clinic and Agri-business Management'** under National Institute of Agricultural Extension Management (MANAGE), Hyderabad, was inaugurated on 9th September 2021 at Vasantdada Sugar Institute. Total 31 participants participated in this training programme. The event was inaugurated in presence of Mr. Sambhaji Kadupatil, the officer on special duty (OSD) of the organization, sectional heads of Agricultural Sciences and Technology Division and trainees by lighting of the traditional lamp. Dr. Preeti Deshmukh welcomed the guest, sectional heads and all the participants and briefed about the activities in Vasantdada Sugar Institute and she focused that this is first batch of this training programme and everyone should take advantage of this and build their own business. Mr. Sambhaji Kadupatil explained that everyone should use this training in their lives to start their own business and make a significant contribution to the development of agriculture as well as provide proper guidance to the farmers. He also explained the beauty of syllabus of this training progrramme and it will definitely improve the overall personality of each trainees and ultimately every trainees will be become good

businessman. During this inaugural function, all participants gave their brief introduction and their interested project. This training will be completed on 26th October 2021. Mrs. JP Kharade expressed her gratitude and concluded the inaugural function.

Modern Technologies in Sugarcane Agriculture-I

The training programme was organized for cane development staff from four sugar mills from Madhya Pradesh. The objective of the training was to train the participants, about modern technologies in sugarcane agriculture. The training programme was conducted during 13th to 15th September, 2021. Total 44 participants for the training from four sugar mills viz. Ramdev Sugar Mill, Hoshngabad (14), Aakriti Sugar Mill, Tumda (19), Narmada Sugar Mill, Bankhedi (08) and Shakti Sugar Mill, Narsingpur (03) including General Cane Manager, Cane Inspector, Chief Cane Development Officers and Cane Development Officers were participated from Madhya Pradesh.

The training was inaugurated by Mr. Sambhaji Kadupatil, OSD, in presence of Heads of sections and representative staff members. Mr. GS Kotgire, Scientist, Plant Pathology section welcomed all the participants and others. During the inaugural speech, Mr. Kadupatil highlighted the importance of the training, integrated cropping system and integrated nutrient management etc. for increasing production of sugarcane crop. He also told to follow the protocols of Covid-19 pandemic disease.

Modern and scientific sugarcane cultivation technology which covered the lectures on various topics like sugarcane varieties and varietal planning, seed nursery management, tissue culture, modern planting techniques, weed management, soil fertility and fertilizer management, irrigation water management, use of bio-fertilizers, farm mechanization, ratoon

management and integrated disease & pest management. All the agriculture scientists conducted theory lectures in Hindi and practicals and they also visited to field demonstrations plots.

In the plenary session, Mr. BH Pawar, Senior Scientist & Head, Plant Pathology took the review of training. During discussion participants asked queries about organic sugarcane agriculture, trash mulching, sugarcane wooly aphid, drip irrigation etc. They got resolved their doubts from the subject experts. In the concluding function, the representative trainees expressed their satisfaction about the training and other facilities etc. Mr. Shivajirao Deshmukh, DG, VSI interacted with participants about present scenario of sugarcane cultivation in MP etc. The event concluded with distribution of certificates to the trainees and Vote of thanks.

Advanced Technologies in Sugarcane Agriculture

The training programme was organized during 21th to 24th September, 2021 for farmers from operational area of Shri Chhatrapati Rajaram SSK, Ltd., Kasba Bawda, Kolhapur on '**Advanced technologies in sugarcane agriculture'** the objective of the training was to train the sugarcane growers.

Forty nine farmers from Shri Chhatrapati Rajaram SSK Ltd., Kolhapur including one Individual farmer from Junnar (Pune) were participated for 3 days training program. The training was inaugurated by participating sugarcane growers in presence of Heads of Sections and representative staff members of AS&T Division by lighting of traditional lamp. Mr. BH Pawar, Senior Scientist & Head, Plant Pathology Section welcomed all the participants and briefed about training and VSI activities.

Advanced sugarcane cultivation technologies which covered the lectures on various topics like sugarcane varieties and varietal planning, seed nursery management, tissue culture, modern planting

techniques, weed management, soil fertility and fertilizer management, irrigation water management, use of bio-fertilizers, farm mechanization, ratoon management, economics of sugarcane agriculture and integrated disease & pest management were taught during three days training program. All the agriculture scientists conducted theory lectures with the help of power point presentations. More emphasis was given on practical's and visit to field demonstrations during the program.

In the farewell session, Dr. GS Kotgire, Scientist, Plant Pathology Section welcomed all the participants and took the review of trainingIn the concluding function, the representative trainees expressed their satisfaction about the training, lodging and boarding facilities provided to them. Hon. Director General, VSI discussed with participants about the difficulties faced by them in sugarcane agriculture and appealed them for adoption of advanced technologies in sugarcane agriculture. The certificates were distributed to the trainees and program concluded with vote of thanks by Dr. GS Kotgire.

Modern Technologies in Sugarcane Agriculture-II

The training programme was organized for farmers from Kolhapur Dist. sponsored by Agricultural Technology Management Agency (ATMA) during 28th to 30th September, 2021. Total 50 Participants from Kolhapur Dist. as Radhanagari (22), Bhudargad (18) and Ajara (10. The training was inaugurated by Mr. Sambhaji Kadupatil, Officer on Special Duty, in presence of Heads of sections and representative staff members. Mr. GS Kotgire, Scientist, Plant Pathology section welcomed all the participants and others. During the inaugural speech, Mr. Kadupatil highlighted the importance of the training and activities of VSI.

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

INTERACTIVE MEET

INTERACTIVE MEET

Use of Retro Fitment Kits for Compressed Bio Gas (CBG)/Compressed Natural Gas (CNG) for Agricultural Tractors

One day interactive meet on 'Use of Retro Fitment Kits for Compressed Bio Gas (CBG)/Compressed Natural Gas (CNG) for Agricultural Tractors' was jointly organized by Vasantdada Sugar Institute (VSI) and Central Institute of Road Transport (CIRT), Pune on 30th August 2021. Meeting was attended by representatives from sugar mills (Nira Bhima SSKL, Natural Sugar & Allied Industries Ltd, Malegaon SSKL and Kukadi SSKL), representatives of manufactures/ suppliers of Retro Fitment Kits (Rawmatt India, Mankar Gas Agencies and CBGplus), CIRT team & VSI team. Total 40 participants attended the interactive meet.

Welcome address was given by Mr. Shivajirao Deshmukh, DG, VSI. He highlighted importance of retro-fitment of kits to agricultural tractors in view of increasing prices of diesel and related benefits to the farming community.

Mr. Sambhaji Kadupatil, OSD, VSI briefed the purpose of meeting and role of CIRT, Kit manufacturer/ suppliers, sugar mill and VSI. He mentioned that CIRT will be involved in certification of kit. They also monitor safety aspects and performance of the retro fitted vehicles. Kit manufacturers will provide kit specification to CIRT/VSI and kits to VSI/sugar mills. They will be responsible for conversion of tractors from Diesel to CNG. Sugar mills will provide information such as load carrying capacity and range required for tractors. Sugar mills will also provide tractors for conversion and conduct trials with the help of kit manufacturers. VSI will facilitate the retro fitment of kit with the help of CIRT, Pune. VSI will also provide two/three tractors for retro-fitment and will be involved in trials.

Mr. BB Thombare, Chairman and Managing Director, Natural Sugar & Allied Industries Ltd., emphasized that sugar mills should take the responsibilities of converting existing tractors to CNG which will help farmers to save up to 50% on their fuel cost which will ultimately result in reducing the harvesting and transportation cost in FRP price.

Mr. Harshvardhan Patil, Hon. Ex-Minister mentioned that price of kit should be affordable to the farmers. He also mentioned that conversion should not compromise performance of tractor. He also emphasized that only dual fuel kits should be used for trials.

Mr. Narendra Murkumbhi, Chairman, Technical Committee, VSI also participated in the meet via video conferencing. He welcomed the initiative taken by VSI and explained about the market potential along with its benefits to sugarcane growers/sugar mills.

During interactive discussion, the kit manufacturers explained about the technical specifications of dual fuel kit for tractors. They also shared the details of vehicles which have been converted from diesel to CNG. On the basis of their past experience they assured that dual fuel kit conversion for tractor is possible. However, they have emphasized that trials need to be conducted on agricultural tractors. They also explained advantages and disadvantage of mono and dual fuel kits.

In concluding remarks, Prof. SV Patil, Head & Technical Adviser of Department of Alcohol Technology & Biofuels, VSI, mentioned that each of the participating sugar mill can convert minimum about six tractors to CNG/CBG using kits offered by respective retro-fitment vendors. He also mentioned that all interested sugar mills are requested to invite the concerned vendor to finalize the retro-fitment at their factory. He finally thanked all the participants for attending meet and their support in this initiative.

VSI COMMITTEE MEETINGS

VSI COMMITTEE MEETINGS

Purchase and Selection Committee Meeting

Purchase and Selection Committee meeting was held 7th July 2021 under the chairmanship of Hon. Vice-President, Mr. Dilip Walse-Patil.

Technical Committee Meeting

The Technical Committee meeting was held on 9th and 10th July, 2021. In this meeting Mr. Narendra Murkumbi, Chairman, followed with members were present as Mr. Vijaysinha Mohite-Patil, Dr. Indrajit Mohite, Mr. Arvind Gore, Mr. Ganapatrao Tidke, Mr, Madan Bhosale, Mr. Vishal Patil, Mr. Arun Lad, Mr. Shivajirao Deshmukh, DG, Mr. Sambhaji Kadu Patil, OSD and Mr. Vikas Deshmukh, Director, Agriculture Sciences and Technology, The meeting was conducted for the review of completed experiments during the year 2020-21 with ongoing technical performance of each experiments and future research program for year 2021-22 of all the departments of Agriculture and Technology Divisions/Sections were presented their Research and Development of ongoing projects

and extension activities of their departments During presentation/discussion the technical members gave their valuable suggestions and guidelines for the carrying out the research work.

Governing Council Meeting

Governing Council meeting was held on 21st September 2021 under the chairmanship of Hon. President, Mr. Sharad Pawar in presence of Trustee and other Governing Council members.

PARTICIPATION BY VSI STAFF

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1. Confederation of Indian Industry (CII) organized a virtual conference on Green Sugar Summit- 2021 during 5th & 6th August 2021. The theme of the conference was making Indian sugar sector world class in green. In this conference various topics like ethanol production, latest development in sugar technology, energy efficiency in milling system, alternate sugar manufacturing, energy efficiency in co-generation, energy efficiency in evaporators, energy efficiency in distilleries, electrical systems & best practical's implemented by sugar industry were presented by eminent speakers from sugar sector. In this conference Mr. RA Chandgude, Technical Advisor and Head, Sugar Engineering Dept. VSI has participated and presented research paper on **'Latest development in Sugar Milling'**.

2. Indian Electrical and Electronics Machine Association (IEEMA) and Electrical Rotating Machines, Drives and Applications (ELROMA) organized International conference ELORAMA 2021 on 6th to 8th September 2021. IEEMA is the apex association in electrical world. IEEMAs division ELROMA jointly offers an international platform for presentation of new ideas and trends of technological developments in electrical industry around the globe. ELROMA invited Vasantdada Sugar Institute, Pune for research paper on new ideas and trends electrical system in sugar industry. In this context, Mr. RA Chandgude, Technical Advisor and Head Sugar Engineering Department and Mr. PG Patil, Technical Advisor (EE) and submitted the paper on '**New AC Drive System for efficient operation of Batch Centrifugals'.** The paper was presented by Mr. PG Patil in the session of **Conventional & Futuristic Applications in electrical rotating machines & drives** on 7th September 2021. The Session was chaired by Mr. Claes Bjaeholt, Crompton Greaves Drives, Sweden.

VISITORS TO VSI

VISITORS TO VSI

Mr. Md. Lutfor Rahman, Deputy High Commissioner, Bangladesh Deputy High Commission in Mumbai accompanied by Mr. Shaheen Chowdhury, Administrative Officer visited VSI on Friday 9th July, 2021. He had a meeting with The Director General, VSI and discussed regarding Research and Development of sugarcane varieties and the Productivity of new varieties of sugarcane. Dr. RS Hapase took him to VSI experimental fields along with the sugarcane demo plots. He was very much impressed by the sugarcane crops grown in the main campus and shown his interest to get the similar trend of the higher productivity in Bangladesh. After the field visit they visited the Departments like Sugar Technology, Sugar Engineering and Alcohol Technology and discussed in their meeting hall about new technologies available with VSI for processing of raw sugar, reducing the sugar colour at the lowest side, guidance for the distilleries', zero effluent discharge etc. Dr. RV Dani, Mr. RA Chandgude and Dr. SV Patil and all their associate technical staff took active part in discussion. In the concluding meeting with and Mr. Shivajirao Deshmukh, Director General, Mr. Sambhaji Kadupatil, OSD and Hon'ble members of the Technical Committee members of VSI felicitated Mr. Rahaman who was very much impressed upon the technologies available in Agriculture, processing and distilleries.

ARTICLE
ARTICLE

कार्यक्षम ज्युस एक्स्ट्रॅक्शन पध्दतीचे नाविन्यपुर्ण पर्याय

रा.अ. चांदगुडे–विभाग प्रमुख व स.भी. थोरात–तांत्रिक सल्लागार
साखर अभियांत्रिकी विभाग, वसंतदादा शुगर इन्स्टिट्यूट
वसंतदादा शुगर इन्स्टिट्यूट, पुणे

साखर कारखान्यामधे ज्यूस एक्स्ट्रक्शन यंत्रणेला अत्यंत महत्व आहे. सहवीजनिर्मिती व आसवणी या उपपदार्थ प्रकल्पासाठी सुध्दा कार्यक्षम ज्यूस एक्स्ट्रक्शन अपेक्षित असते. साखर कारखान्याचे अर्थकारण हे पुर्णपणे ज्यूस एक्स्ट्रक्शनच्या कार्यक्षमतेवर अवलंबून असते. ज्यूस एक्स्ट्रक्शनची उद्दीष्टे म्हणजे जास्तीत जास्त उसाचा रस काढणे व बॉयलरसाठी दर्जेदार भुसा तयार करणे व ह्या क्रिया कमीत कमी उर्जेमध्ये पार पाडणे.

देशामधे १७ व्या शतकापासून वर्म गिअरिंगसह रोलर्सच्या तंत्रज्ञानाने ऊसापासून ज्यूस एक्स्ट्रक्शन करण्यात येते. आज सुध्दा भारतातील काही साखर कारखाने ६०–७० वर्षापुर्वीचे जुने मिलिंग तंत्रज्ञानाचा वापर करीत आहे. यामध्ये तीन रोलरच्या दोन मिलला एक टर्बाइन ड्राईव्ह वापरतात (ट्विन ड्राईव्ह). या मिलसाठी जास्त उर्जा, संचलन, दुरूस्ती खर्च जास्त लागतो. साखर कारखान्यात मिलींग प्लांट ऊस हाताळणी, केन प्रिपरेशन व ज्यूस एक्स्ट्रक्शन यावर सुमारे एकूण उर्जेच्या ५०% ऊर्जा खर्च होते.

सद्या उस हाताळणी, केन प्रिपरेशन, ज्यूस एक्स्ट्रक्शन यामधील आधुनिक व नाविन्यपुर्ण पर्यायी तंत्रज्ञानामुळे ज्यूस एक्स्ट्रक्शन प्लांट मध्ये जास्तीच्या गाळपाच्या/वेगासह ज्यूस एक्स्ट्रक्शन सुमारे ९५.५० ते ९६.५०% पर्यंत मिळत आहे. तसेच जास्तीत जास्त आरएमई ९७.२०% व कमित कमी बगॅस पोल १.२५% आढळून आला आहे. ज्यूस एक्स्ट्रक्शनसाठी विजेचा वापर सुमारे ३५.७६ ते ६५.५५ युनिट/ टन फायबर आढळतो. यामध्ये ७ घटनेचा अभ्यास २६ साखर कारखान्या मध्ये करून निष्कर्ष काढले आहेत.

ऊसापासून ज्यूस एक्स्ट्रक्शन करण्यासाठी दोन तंत्रज्ञानाचा वापर केला जातो.

१) मिलींग तंत्रज्ञान
२) डिफ्यूजर तंत्रज्ञान (ऊस व शर्कराकंद यांचे साठी)

बहुसंख्य साखर कारखाने ज्यूस एक्स्ट्रक्शन साठी मिलिंग तंत्रज्ञान व काही मोजके कारखाने डिफ्युजर तंत्रज्ञान वापरतात. उस हाताळणी, केन प्रीपरेशन व मिल डिझाइन या मधील आधुनिक तंत्रज्ञानामुळे जास्त गाळपाचा वेग व उर्जाबचतीसह जास्त एक्स्ट्रक्शन सुमारे ९५.५ ते ९७.०% पर्यंत मिळते. यासाठी व्यवस्थापनाने मिलची यंत्रणा निवडण्यासाठी विशेष लक्ष देणे आवश्यक आहे. भुस्यावर आधारित सहवीजनिर्मिती प्रकल्पातून जास्त विजेची निर्यात होण्यासाठी ज्यूस एक्स्ट्रक्शन व साखर प्रक्रिया कार्यक्षम असणे अत्यावश्यक आहे.

काही साखर कारखान्यामध्ये फार जुनी मिलिंग यंत्रणा वापरात आहे. त्यामुळे साखरेचा व्यय जास्त होऊन बायलरसाठी कमी दर्जाचा भूसा उपलब्ध होतो. साखरेचा व्यय व ऊर्जावापर कमी होण्यासाठी ज्यूस एक्स्ट्रक्शन प्रणाली अत्यंत महत्वाची असते. यासाठी ऊस हाताळणी, केन प्रिपरेशन व ज्यूस एक्स्ट्रक्शन मध्ये आधूनिक यंत्रणेचा वापर करून सुधारणा करणे आवश्यक आहे. कारखान्याचे अर्थकारण ज्यूस एक्स्ट्रक्शन यंत्रणेच्या कार्यक्षमतेवर अवलंबून असते.

महाराष्ट्र व इतर राज्यातील साखर कारखान्यामध्ये ऊस हाताळणी, केन प्रीपरेशन, मिलिंग/डिफ्युजर यामधील आधुनिक यंत्रणा, माहितीचा तपशिल व त्यांचे पृथ्थकरण करून खालीलप्रमाणे निष्कर्ष काढले आहेत.

ऊस हाताळणी पद्धती

- अधिक क्षमतेचे व्ही.एफ.डी सह कॅन्टीलिव्हर पद्धतीचे केन अनलोडर्स, हायड्रॉलिक डिहुकींग इत्यादीमुळे केनयार्ड मध्ये वाहनांचे जामींग होत नाही व ऊस हाताळणीचा वेळ वाचतो.
- ऊस हाताळणी, केन प्रिपरेशन व मिलींग यांचे संचलन व केंद्रीय नियंत्रण पध्दतीने (प्लांट कंट्रोल रूम/डि.सी.एस. मधून) केल्यामूळे ऊस हाताळणीत वेळ वाया जात नाही व कमी कर्मचाऱ्यात काम होते.
- हायड्रॉलिक ट्रक/ट्रॅक्टर टिपलर्सच्या साह्याने यांत्रिक पध्दतीने तोडून आलेला ऊस व्यवस्थित गाळप करता येतो.
- गव्हाणीवर ट्रँप आयर्न सेपरेटर (मॅग्नेट) मुळे ऊस तयार करणाऱ्या सुऱ्या व रोलरचे टीथ (दाते) खराब होत नाही.
- प्लॅनेटरी गिअर बॉक्सेस व एसी व्हीएफडीच्या वापरामुळे नियंत्रण चांगले होते व वीज बचत होते.
- रसाचे दोनदा चाळणी (डबल स्क्रिनिंग) मुळे मिश्र रसात बगॅसिलो (भुस्याचे बारीककण) जात नाही. त्यामुळे रस शुध्दीकरणाची कार्यक्षमता वाढते.

केन प्रीपरेशन : केन प्रीपरेशन यंत्रणा सारखी किंवा तीच असताना वेगवेगळ्या जातीच्या उसाचे प्रीपरेशन भिन्न मिळते. ताज्या उसाचा प्रिपेरटरी इंडेक्स जास्त व शिळ्या उसाचा पीआय कमी मिळतो. कमी पीआय असल्यास मिलचा उर्जा वापर वाढतो. यासाठी ऊस तोडणी व त्याचे गाळप यामधील वेळ कमीत कमी असावा. उसामध्ये पालापाचोळा (ट्रॅश) जास्त असल्यास पीआय कमी मिळतो व मिल क्षमता व कार्यक्षमता कमी होते.

केन प्रीपरेशन यंत्रणे मधील सुधारणा

- लेव्हलर/चॉपर स्विंग टाईप असावे. त्यांच्या सुऱ्या स्वयंमधारधार (सेल्फ शार्पनिंग) असाव्या व हार्डनेस ४५ ते ४८ एचआरसी असावी.
- फायब्रायझरच्या स्विंग डायमीटर २१५० मिमी असावा टीप स्पीड ८५मी/सेकंद असावी तसेच हमर्सला बदलता येतील असे कार्बाईट टिप्स बसवावे. त्यांची हार्डनेस ६३ एचआरसी असावी.
- व्होलकेन श्रेडरची टीप स्पीड ९५ मी/सेकंद असावी. यामुळे पीआय ९०% मिळू शकतो.
- केन प्रिपेटरी यंत्रणा/मशिनरीसाठी व्हेरिएबल स्पीड ड्राईव्ह असल्यामुळे वीज वापर कमी होतो. काही कारखान्यात व्हेरिएबल स्पीड ड्राईव्ह खालीलप्रमाणे फायदे दिसून आले आहेत.
- पीआय आणि प्रायमरी एक्स्ट्रकशन वाढतं.
- फायब्रायझर गती ६३० ऐवजी ७३० आरपीएम आणि टीप स्पीड ८४ मी/सेकंद असल्यास पीआय ८१.९३ पासून ८६.७० पर्यंत वाढतो. मिलसाठी लागणारी वीज वापर ४९.४६ युनिट प्रति टन फायबरपासून ३४.९४ युनिट प्रति टन फायबरपर्यंत कमी होते. पीआय ५.८% वाढतो तर मिलचा वीज वापर हा २.९% कमी होतो.

केन मिलिंग ज्यूस एक्स्ट्रक्शन आणि उर्जा बचती बाबत खालील सुधारणा झाल्या आहेत.

- पीआय + ८७% आणि प्रीपेअर्ड केनची जास्त घनता.
- मिलची फिड क्षमता (फिड ॲबिलिटी) वाढवण्यासाठी डोनेली शूटची उंची २.५ ते ३ मीटर.
- टॉप रोलरवरील ज्यूस फ्लडिंग टाळण्यासाठी टॉप, डिस्चार्ज रोलर्स आणि जीआरपीएफचा टॉप रोलर यांना लोटस करावं.
- ज्यूस एक्स्ट्रक्शन सुधारणेसाठी आणि रिॲबसार्प्शन कमी करण्यासाठी डिफरन्शिल ग्रूव्हिंग.
- मिलच्या डोनले शूटची लेव्हल आणि मिल लोड या वरून मिलची गती डीसीएसद्वारे नियंत्रण.
- मिलच्या टॉप आणि डिस्चार्ज रोलर्सच्या चेवरॉन ग्रूव्हिंगऐवजी रोलर्सला आर्किंग करणं अधिक कार्यक्षम यामुळं मिलची फिड क्षमता आणि एक्स्ट्रॅक्शन वाढतं आणि भुश्याचं मॉईश्चर % कमी होते.
- व्यवस्थित ट्रॅशप्लेट सेटिंग आणि हिल क्लिअरन्स असल्यास ज्युस ड्रेनेज आणि एक्स्ट्रॅक्शन सुधारते.
- टीआरपीएफ / जीआरपीएफला मिल रोलरच्या १३०% व्यास असलेला अंडरफिड रोलर बसवल्यास मिलची क्षमता, प्रायमरी आणि मिल एक्स्ट्रॅक्शन वाढते आणि मिल गती कमी करता येते.
- इव्हॅपोरेटरची क्षमता विचारात घेऊन इंबिबिशन सुमारे २५० ते ३५०% त्याचं तापमान ८५ ते ९० सेंटिग्रेड त्याची फवारणी बगॅस ब्लॅकेटच्या संपूर्ण भागावर असावी.
- रोप किंवा रोपलेस कपलिंगच्या वापरामुळं मिलचा टॉप रोलर फ्री फ्लोटिंग राहतो, मिसअलाईनमेंट ॲडजेस्ट होते आणि सर्वोत्तम मिल हायड्रॉलिक प्रेशर ठेवून मिल सेटिंगप्रमाणं चालतं.
- मिल सॅनिटेशनवर विशेष लक्ष ठेवावं. साखरेचा व्यय १३% इनव्हर्शनमुळं, २५% इंझाईम्समुळं आणि ६२% जिवाणूच्या वाढीमुळं (मायक्रोबायल ग्रोथ) होतो.
- यासाठी परिणामकारक बायोसाईड केमिकल क्लिनिंगमुळं व्यय कमी होतो. क्वार्टरनरी अमोनियम आणि इतर केमिकल्स आलटून पालटून वापरावं आणि मिलवरील डेड पॉकेट्समधे स्टीम फवारणी करावी, गरम पाण्यानं प्रत्येक पाळीत मिल धुवून काढावी.

लोटस रोलरची कामगिरी

कारखान्यात मिलची कार्यक्षमता लोटस रोलर उभारणी पूर्वी आणि लोटस रोलर उभारणी नंतरचा अभ्यास दोन वर्ष केला. लोटस रोलरचे फायदे खालीलप्रमाणं आढळून आलं.

- पोल % बगॅस ०.४० युनिटनं कमी झाला.
- मॉईश्चर % बगॅस एक युनिटनं कमी झाले.
- मिलवर ज्यूस फ्लडिंग झालं नाही.
- मिलचे आरएमई एक युनिटनं वाढले.
- स्लीव्ह लोटस रोलरमुळं रिशेलिंगची किंमत ३० टक्क्यांनी कमी झाली.

यूएफआर/टीआरपीएफ/जीआरपीएफ सह मिल

दहा साखर कारखान्यात प्रेशर फिडिंग यंत्रणेचा तुलनात्मक अभ्यास आणि माहितीचं पृथःकरण (डाटा ॲनॅलिसिस) करून खालीलप्रमाणं निष्कर्ष काढले आहेत.

- फक्त यूएफआरसह मिलचं प्रायमरी एक्स्ट्रॅक्शन कमी मिळते. उर्जा वापर कमी लागतो आणि संपूर्ण मिलची कामगिरीसुद्धा कमी मिळते.
- टीआरपीएफसह मिलचं प्रायमरी एक्स्टॅशन मध्यम मिळतं आणि उर्जेचा वापरसुद्धा मध्यम असतो.
- जीआरपीएफसह मिलची कामगिरी उत्तम होते.

पिनियनलेस शाफ्ट ड्राइव्हसह हायस्पीड आणि लो स्पीड मिल्स

सामान्यतः मिलची पृष्ठगती १२ ते १६ मीटर/मिनिट असते. भारतातल्या साखर कारखान्यात मिलची गती सामान्यतः ८ ते १८ मीटर/मिनिट आहे. मिलची गती निवडताना दोन थिअरीचा वापर आढळतो.

- हवाईयन थिअरी : याला थिन ब्लँकेट थिअरी किंवा हाय स्पीड मिलिंग म्हणतात. ही पद्धत हवाई आणि क्युबा या देशात लोकप्रिय आहे.
- जावन थिअरी : याला थिक ब्लँकेट थिअरी किंवा लोस्पीड मिलिंग म्हणतात. सात साखर कारखान्यात हाय स्पीड आणि लो स्पीड मिलिंगचा अभ्यास केला. विविध कामगिरी मापदंडाचे संकलन आणि पृथक्करण केलं. यामधे हाय स्पीड, लो स्पीड आणि पिनियन लेस शाफ्ट ड्राईव्ह यांचा तुलनात्मक अभ्यास करून खालीलप्रमाणं निष्कर्ष काढले.
- लो स्पीड मिलिंगमधे हाय स्पीड मिलिंगपेक्षा पोल % बगॅस ०.१७ युनिटनं कमी झाला आणि मॉईश्चर % बगॅस ०.४२ युनिटनं कमी झाले.
- लो स्पीड मिलिंगची गती हाय स्पीड मिलिंगपेक्षा २५% नं कमी केल्यावर किंवा ठेवल्यास लो स्पीड मिलिंगचा उर्जा वापर १३.८५% नं कमी झाले.
- पिनियनलेस शाफ्ट ड्राईवच्या उभारणीमुळं ५० ते ६०% सिव्हिल बांधकाम खर्च कमी होतो.
- टॉप रोलरच्या फ्री फ्लोटिंमुळं एक्ट्रॅक्शन आणि कार्यक्षमता सुधारते. आरएमई ९६+ मिळतो.
- लो स्पीड मिलिंगमधे मिल टँडेममधे मिलची संख्या कमी करणं शक्य होतं.
- मिल लोड आणि डोनेले शूटमधील भुश्श्याच्या स्तंभाची उंची यानुसार डीसीएसच्या माध्यमातून मिलचा प्रत्येक रोलर भिन्न गतीनं चालवणं शक्य होतं आणि त्यामुळं एक्स्ट्रॅक्शन सुधारतं.
- मिलसाठी कमी उर्जा खर्च होते. ती प्रत्येक मिलसाठी साधारण १.० ते १.३ युनिट/टन इतकी असते.
- लुब्रिकंटच्या वापरात सुमारे ४० ते ४५ टक्क्यांची बचत होते.
- मिल जामिंग होण्याची शक्यता कमी होते.
- मिलच्या विविध घटकांची झीज आणि मोडतोड कमी होते.

टू रोलर मिलिंग तंत्रज्ञान

दोन साखर कारखान्यात या तंत्रज्ञानाचा अभ्यास करण्यात आला. ज्यूस एक्स्ट्रॅक्शन विविध मापदंडाची माहिती घेऊन आणि पृथ्थकरण करून खालीलप्रमाणं निष्कर्ष काढले.

- प्रायमरी एक्स्ट्रॅक्शन ७१.३० ते ७७.५०% च्या दरम्यान आढळून आले.
- रिड्यूस्ड मिल एक्स्ट्रॅक्शन ९५.९३ ते ९६.१४% च्या दरम्यान आढळून आले.
- मिलसाठी उर्जा वापर २९.४५ ते ४१.१० युनिट/टन फायबर.
- यामध्ये शाफ्ट माउंटेड पिनियन लेस ड्राईव्ह आणि अँटी फ्रिक्शन ब्रिअरिंग्जच्या वापरामुळं कमी उर्जा लागते आणि मॉईश्चर % बगॅस कमी होतो.

ज्युस एक्स्ट्रॅक्शनसाठी डिफ्युजर तंत्रज्ञान

या तंत्रज्ञानाच्या अनुषंगानं चार साखर कारखान्यांत अभ्यास करण्यात आला. ज्यूस एक्स्ट्रॅक्शनचे विविध मापदंड व त्याअंतर्गत माहिती संकलित करून त्याचं माहितीचे पृथ्थकरण करून खालीलप्रमाणे निष्कर्ष काढले.

- रिड्यूस्ड डिफ्युजर एक्स्ट्रॅकशन ९६.१७ ते ९७.१३% च्या दरम्यान आढळलं.
- पोल % बगॅस १.२३ ते १.८४ च्या दरम्यान आढळला.
- ज्यूस एक्स्ट्रॅक्शनसाठी वीजेचा वापर (डिफ्युजर+एक डिवॉटरिंग मिल) २७.३८ ते ३३.६६ युनिट/टन फायबरच्या दरम्यान आढळला.
- ज्यूस एक्स्ट्रॅक्शनसाठी वीजेचा वापर (डिफ्युजर+दोन डिवॉटरिंग मिल) ४१.५२ ते ५१.५१ युनिट/टन फायबरच्या दरम्यान आढळला.

मिलिंग स्टेशन उर्जा बचत करण्यासाठी खालील उपाययोजना करण्यात येतात. (केन हँडलिंग/प्रीपरेशन आणि मिलिंग)

- यांत्रिक आणि विद्युत उपकरणांच्या यंत्रांच्या क्षमतेनुसार योग्य वापर.
- अनलोडर, फिडर टेबल, कॅरिअर्स, पंप्स यांच्यासाठी एसी व्हीएफडीचा वापर.
- घर्षण कमी करण्यासाठी कॅरिअरसाठी टेफ्लॉन रनर्सचा वापर आणि योग्य बिअरिंगची निवड.
- केन प्रीपरेशन यंत्रांसाठी व्हेरिएबल स्पीड ड्राईवचा वापर.
- मिलसाठी प्लॅनेटरी आणि हेलिकल गिअर बॉक्सेस आणि व्हीएफडीचा वापर.
- रोलरसाठी स्वतंत्र शाफ्ट माउंटेड पिनियन लेस ड्राईव्ह बसवणं.
- ब्रांझ आणि फॉस्पर ब्रांझ जर्नल बिअरिंगऐवजी अँटिफ्रिक्शन बिअरिंगचा वापर.
- ट्रान्समिशन लॉसेस टाळण्यासाठी रोप/रोपलेस कपलिंगचा वापर.
- उर्जा सक्षम पंपाचा मोटर्सचा वापर.
- परिणामकारक ल्युब्रिकेशनसाठी केंद्रीय ल्युब्रिकेशन प्रणाली (सेंटरलाइज्ड लुब्रिकेशन सिस्टिम).
- केन प्रीपरेशनची यंत्रणा आणि मिल यांच्या लोडनुसार डीसीएस प्रणालीद्वारे संचलन आणि नियंत्रण.

विविध ज्यूस एक्स्ट्रॅक्शन प्लाँटचा तुलनात्मक अभ्यास

यामध्ये यूएफआर, टीआरपीएफ, जीआरपीएफ, लो स्पीड मिलिंग शाफ्ट माउंटेड पिनियनलेस ड्राइव, टू रोलर मिल आणि डिफ्युजर यांचे विविध मापदंड आणि कामगिरीच्या माहितीची माहिती घेऊन पृथक्करण करून खालील निष्कर्ष काढले.

- ऊस प्रीपरेशन यंत्रणेसाठी व्हीएफडी ड्राइव्हच्या वापरामुळं पीआय सुधारतो आणि ज्यूस एक्स्ट्रॅक्शनसाठी कमी उर्जा लागते.
- शाफ्ट मांउंटेड पिनिअनलेस ड्राईवसह थिक ब्लँकेट मिलिंग (स्लो स्पीड मिलिंग) मुळं सुक्रोज एक्स्ट्रॅक्शन सुधारते आणि मिलसाठी कमी उर्जा लागते. कार्यक्षम मिलिंगसाठी हे एक सर्वोत्तम संयोजन आहे आणि ते आर्थिकदृष्ट्या योग्य आहे.
- पहिल्या मिलचे प्रायमरी एक्स्ट्रॅक्शन सुधारण्यासाठी आणि शेवटच्या मिलचं मॉईश्चर % बगॅस कमी करण्यासाठी टू रोलर मिल कार्यक्षम आणि योग्य आहे.
- डिफ्युजर कार्यक्षमता सर्वात चांगली असल्याचे दिसून आले तसेच वीज वापर कमी दिसून आला. केंद्र सरकारच्या ज्यूस इथेनॉल निर्मिती प्रक्रिया मध्ये ज्यूस एक्स्ट्रॅक्शनसाठी डिफ्युजर यंत्रणेचा पर्याय योग्य आहे.

UPCOMING EVENTS

Monthly Workshop schedule for the year of 2021-22

S.No.	Date	Topics	Co-ordinators*
1	23-10-2021	**Management of soil fertility and characterization of salt affected soil** Subtopics: 1. Soil fertility management of operational area of sugar mill using Geospatial technology 2. Characterization and management of sugarcane growing salt affected soil	**Mr. PP Shinde** **Dr. PS Deshmukh** **Mrs. SD Ghodke**
2	27-11-2021	**Ratoon Management** Subtopics : Nutrients, biofertilizers, biopesticides, Vasanturja	**Mr. PV Ghodke** **Dr. PS Deshmukh** **Dr. SG Dalvi** **Mrs. SD Ghodke**
3	25-12-2021	**Review of CDAS program** Subtopic : Progress of VSI's multilocation trials	**Dr. RS Hapase**
4	22-01-2022	**Crop protection in sugarcane** Subtopics : 1. Introduction of new pests and diseases and their control 2. Key factors in increasing the yield	**Mr. BH Pawar** **Mr. RG Yadav** **Mr. P V Ghodke**
5	26-02-2021	**Integrated Water Management in sugarcane** Subtopics : Ideal agronomic practices by use of Vasant Urja and Multinutrients.	**Mr. PP Shinde** **Mr. PV Ghodke** **Dr. PS Deshmukh** **Dr. SG Dalvi**
6	26-03-2022	**Sugarcane Management in stress condition** Subtopic : Trash management practices and precautions to control white grubs and white fly	**Dr. RS Hapase** **Mr. PV Ghodke** **Dr. PS Deshmukh** **Dr. SG Dalvi** **Mr. US Manjul** **Mrs. SD Ghodke**

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

VISITORS TO VSI

VISITORS TO VSI

In this quarter (July-August-September, 2021) following visiters visited to Information and Service Centre, Vasantdada Sugar Institute, Pune,

Particulars	No. of Visitors
July - 2021	
Individual Farmers / Officers from Maharashtra State	**551**
Director, Officer & Farmers from Malegaon SSK Ltd., Pune	**21**
Agriculture College Students	**06**
August - 2021	
Individual Farmers from Maharashtra State	**439**
Agriculture College Students	**04**
Cosunltanbt Officer & Farmers from Madhucon Sugar & Power Industries Ltd., Dist. Khammanm, State : Telgana	**13**
September - 2021	
Individual Farmers from Maharashtra State	**400**
Trainees from KVK Baramati, Pune	**38**
Agriculture College Student	**15**
Famers from Lokmangal Sugar Ethanol & Co-gen Ltd., Solapur	**45**
Total	**1532**

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Editor : *Dr. RM Devarumath, Mr. AA Prabhavalkar*
Layout & Photography : *Mr. Sanjay A Dawari*

Committee :
Dr. KH Babu, Mrs. Seema Joshi, Mr. MR Shinde, Mr. RA Chandgude, Dr. PS Deshmukh, Mr. US Manjul, Mr. RB Bhoite

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