February 2024 International Society of Sugar Cane Technologists Founded 1924 Bulletin

Welcome to the ISSCT Bulletin for February 2024, in which we collect latest ISSCT updates, along with news, research, and past and upcoming events related to sugar cane technology.

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ISSCT News

First Announcement: ISSCT Joint Engineering and Processing Workshop


ISSCT Joint Engineering and Processing Workshop
6 to 10 October 2024
Hotel Meliá Berlin, Germany
First Announcement
Innovations in the Sugar Cane Industry – Enhancing Sustainability, Quality and Efficiency
Sessions
Processing Section
- Sugar quality
- Mass and energy balances
- Sustainable processing practices
- Factory data analyses and trends
- NIRS technology applications and updates

Engineering Section
- Material handling and testing
- Contribution of the cane sugar industry for decarbonization with special focus on Carbon Capture Storage and Utilisation (CCS and CCU)
- Green cane harvesting
- Trash collection
- Fuels including pre-treatment
- Beet & Cane – Potential joint topic
- Energy management
- Industry 4.0

Key Dates
12/02/2024 Abstract submission and registration open
01/06/2024 Deadline for abstract submission
01/08/2024 Deadline for workshop registration

The ISSCT Joint Engineering and Processing Workshop will be held from 6 to 10 October 2024 at the Hotel Meliá, Berlin, Germany.

The topic is Innovations in the Sugar Cane Industry – Enhancing Sustainability, Quality and Efficiency.

- Download the Intent to Submit Abstract here.
- View the full details on the ISSCT website

Second Announcement: 13th Germplasm & Breeding / 10th Molecular Biology Workshop


ISSCT
13th Germplasm & Breeding / 10th Molecular Biology Workshop
8-12 July 2024
Coimbatore, India
https://sugarcane.icar.gov.in/index.php/issctworkshop2024/
Second Announcement
The ISSCT 13th Germplasm & Breeding /10th Molecular Biology Workshop will be hosted by ICAR-Sugarcane Breeding Institute, Coimbatore and the Society for Sugarcane Research and Development, Coimbatore, India from 8-12 July 2024.
Monday July 8 2024
Registration
Opening Ceremony
Keynote Address: Invited speakers
Workshop: Oral sessions & discussion
Welcome Dinner
Tuesday July 9 2024
Workshop: Oral sessions & discussion
Flash and dash poster presentation session
Wednesday July 10 2024
Field trip to ICAR-SBI facilities
Thursday July 11 2024
Visit to National Distant hybridization facility and commercial fields
Friday July 12 2024
Workshop: Oral sessions & discussion
Germplasm & Breeding / Molecular Biology Section Business Meeting

The ISSCT 13th Germplasm & Breeding /10th Molecular Biology Workshop will be hosted by ICAR-Sugarcane Breeding Institute, Coimbatore and the Society for Sugarcane Research and Development, Coimbatore, India from 8-12 July 2024.

Key Dates:

- 8 Jan 2024: Abstract submission and registration open
- 29 February 2024: Deadline for Abstract submissions (oral presentations and posters)

View the full announcement on the ISSCT website

Second Announcement: ISSCT Agriculture Commission Workshop – Agricultural Engineering, Agronomy and Extension



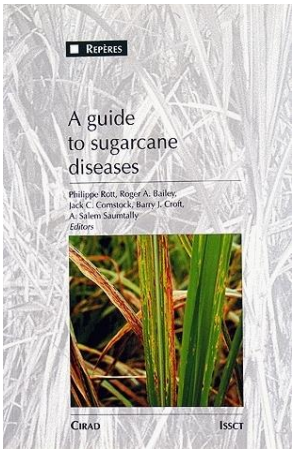
The ISSCT Agriculture Commission Workshop encompassing Agricultural Engineering, Agronomy and Extension will be hosted by the Thailand Society of Sugar Cane Technologists (TSSCT) from 19 to 22 August 2024.

The Workshop will include three full days of scientific presentations and discussions including a half-day wrap-up session on the final day of the workshop. Oral presentations and posters are welcome. Topics of sessions will include sugarcane agricultural engineering, agronomy, and the linkages between these. In addition, there will be a day tour of several interesting places, e.g. the KUBOTA Farm, and Sugarcane and Sugar Industry Extension Center (Chonburi Region) during the week of the Workshop or a field trip. Abstracts for all scientific contributions, oral presentations, and posters, will be distributed to participants during the Workshop and published on the ISSCT website.

Abstracts for all contributions (oral and poster) must be submitted as per the instructions on the website by 1 May 2024.

[Find out more on the ISSCT website]

Guide to Sugarcane Diseases



The PDF of the "Guide to Sugarcane Diseases" published in 2000 by Cirad and ISSCT can now be downloaded at no cost from the website of the publisher QUAE following the link below:
https://www.quae.com/produit/78/9782876143869/a-guide-to-sugarcane-diseases

We ask for the PDF to always be downloaded directly from the website (instead of sharing the PDF via email) so as to have an accurate statistics regarding interest in the guide.

The objective of the guide is to supply sufficient and updated information regarding scientific knowledge and practical aspects of disease control to those who have to deal with sugarcane. Each disease is thoroughly described and information regarding strains of the pathogen, diagnosis and control are also provided. References are cited and each disease is illustrated by several color pictures.

In Memoriam - Dr. Régis Julien (1939 – 2024).

Dr. Régis Julien who spent practically his whole career over some 30 years at the Mauritius Sugar Industry Research Institute from 1966 to 1996, passed away on 31 January 2024. He joined the MSIRI as Assistant Plant Breeder and occupied various posts and ended his career as Director of the Institute. He became world renowned for pioneering work on sugarcane flowering. He was a member of ISSCT and published articles at various congresses. He was also an ardent defender of sugarcane. His obituary may be accessed through the following link:

https://issct.org/2024/02/16/in-memoriam-dr-regis-julien/

Sugar Cane News

Sugar cane waste converted into concrete-beating Sugarcrete

NEW ATLAS	**New Atlas**	**February 6, 2024**	**https://newatlas.com/environment/sugar-cane-waste-sugarcrete-building-material/**

After sugarcane crops have been harvested, a great deal of fibrous stalk waste known as bagasse is left over. That substance has been incorporated into an eco-friendly building material called Sugarcrete, which recently won an international Climate Positive Award.

First announced last May, Sugarcrete was developed via a partnership between the University of East London and British firm Tate & Lyle Sugars. The material consists of sugarcane bagasse combined with proprietary mineral-based binders. This mixture is compressed and left to cure, resulting in high-strength blocks that can be used in place of traditional clay or concrete bricks.

Understanding and addressing FLAG emissions in sugarcane production

BON SUCRO	**Bonsucro**	**December 21, 2023**	**https://bonsucro.com/flag-emissions-in-sugarcane-production/**

Taking science-backed climate action is more crucial than ever. To keep global warming below 1.5°C, all sectors need to cut their greenhouse gas emissions by 50% by 2030 and achieve net-zero emissions by 2050.

This urgency is especially clear in the Forest, Land, and Agriculture (FLAG) sector, responsible for approximately 23% of global greenhouse gas emissions. This sector is also increasingly feeling the effects of climate change, such as lower yields, health risks to workers due to heat, and financial losses.

For companies operating in agricultural sectors, like sugarcane, navigating existing frameworks and guidelines and taking effective steps to reduce emissions can be challenging.

Seven new projects awarded grants from Bonsucro Impact Fund

BON SUCRO	**Bonsucro**	**January 24, 2024**	**https://bonsucro.com/seven-new-projects-grants-bonsucro-impact-fund/**

New grants have been awarded to seven projects through the Bonsucro Impact Fund. These projects address some of the most critical issues facing the sugarcane sector. These projects have been selected through a competitive application process under three calls for proposals

	focused on: climate change adaptation, water stewardship, and human rights and decent work.

Can we really fuel planes with fat and sugar?

BBC	**BBC**	**December 3, 2023**	**https://www.bbc.com/future/article/20231201-can-we-really-fuel-planes-with-fat-and-sugar**
	For sustainable air fuel to work, it's going to need a staggering amount of land. As the politician next to him took out his phone for a selfie, Virgin Atlantic chairman Richard Branson peered into the camera, grinned, and did a double thumbs-up. The world's first commercial airliner to cross the Atlantic using 100% biofuel had just landed in New York. Virgin Atlantic's Boeing 787 was powered not by fossil fuels, but plant sugars and waste fats – a form of so-called Sustainable Aviation Fuel, or SAF. A British Conservative MP posted his smiling selfie with Branson to the social media site X, formerly known as Twitter, and declared the flight "a significant UK aviation achievement". (The flight was partly funded by the UK government.) *But not everyone is so sure that this represents the future of flying. The biomass required to make biofuel can come from a broad range of sources – plant material, food waste or even algae. While biofuels release CO2 when burned, some consider them a sustainable option because they are renewable and biomass removes some CO2 from the atmosphere as it grows.*		

Climate managers bet on farming to boost biodiversity investment

EUROMONEY	**Euromoney**	**November 13, 2023**	**https://www.euromoney.com/article/2c7rmq3agv3ck7u0yguf4/esg/climate-managers-bet-on-farming-to-boost-biodiversity-investment**
	Sugar cane is one of Australia's largest agricultural exports. The country's raw sugar exports are expected to reach 3.5 million metric tons (MMT) in 2023/24, up from, 3.2MMT last year. Under the new free-trade agreement with the UK, Australia's Department of Agriculture, Fisheries and Forestry expects the value of the country's sugar exports to the UK to reach A$74 million ($48 million). *However, on the ground, thousands of hectares of sugar cane farmland are being repurposed to cultivate macadamia orchards instead, as investment managers look for high-value agriculture assets with better sustainability credentials that appeal to impact investors.*		

Can Second-Generation Ethanol Production Help Decarbonize the World? (Podcast)

	Harvard Business School	**January 30, 2024**	**https://hbswk.hbs.edu/item/cold-call-can-second-generation-ethanol-production-help-decarbonize-the-world**

Raízen, a bioenergy company headquartered in São Paulo, is Brazil's leader in sugar and ethanol production and the world's leading ethanol trader. Since its creation in 2011, the company had primarily produced first-generation ethanol (E1G) from sugarcane, a crop that can also be used to produce sugar. In 2015, Raízen also started to produce second-generation ethanol (E2G), a biofuel derived from residual and waste materials, such as cane bagasse and straw – which don't compete with food production. The company's growth strategy focused on developing and boosting a low carbon portfolio that focused on E2G, based on the belief that Raízen—and Brazil—could help the world decarbonize and profit from the energy transition.

Paula Kovarsky, Raízen's chief strategy and sustainability officer, was confident the company could become a global green energy champion. But after the board's approval for the first round of E2G investments, she faced a complex challenge: how to expand the market for second-generation ethanol and other sugar-cane waste biofuels, in order to ensure Raízen's long-term growth? Harvard Business School professor Gunnar Trumbull and Kovarsky discuss the company's strategy for bringing second-generation ethanol to the world in the case, "Raízen: Helping to Decarbonize the World?"

Bio-based Lignin Plastics Target Auto Applications in UK-funded Project

	Plastics Today	**February 6, 2024**	**https://www.plasticstoday.com/automotive-mobility/bio-based-lignin-plastics-target-auto-applications-in-uk-funded-project**

A consortium led by sustainable technology innovator Sonichem has been granted nearly £600,000 ($750,000) in funding from Innovate UK's Resource efficiency for materials and manufacturing (REforMM) program. The funding will accelerate the development of Sonichem's proprietary ultrasound technology and the production of renewable, cost-effective alternatives to petrochemicals commonly used in the production of plastics and composites used by the automotive industry. The CARMA (carbon-neutral agroforestry-derived resins to materials for automotive applications) project will apply Sonichem's ultrasonic processing technique to automotive applications for the first time.

The Sonichem technology and process can convert ligno-cellulosic biomass (including hard and soft woods, sugar cane bagasse, straws, and grasses) safely, efficiently, cleanly, and economically into cellulose, natural sugars, and lignin.

TotalEnergies Corbion publishes LCA of chemically recycled PLA

	Sustainable Plastics	**January 17, 2024**	**https://www.sustainableplastics.com/news/totalenergies-corbion-publishes-lca-chemically-recycled-pla**
	TotalEnergies Corbion has published the life cycle assessment (LCA) of its chemically recycled Luminy PLA. The company operates a 75,000 tons per year polylactic acid (PLA) production facility in Rayong, Thailand. Since the start of operations in 2018, TotalEnergies Corbion has been chemically recycling its internal waste from virgin Luminity PLA (vPLA) production through a hydrolysis depolymerisation process. *The LCA is for PLA from sugarcane in Thailand and considered the feedstock used for rPLA as an average of two waste streams: post-industrial waste from a PLA fibre application in Europe, and post-consumer waste of bottle streams from Asia.* *The scope of the study is cradle-to-gate, meaning that use phase and end-of-life are not considered, for both vPLA and rPLA. The functional unit is 1 kg of Luminity PLA. Recycled PLA substitutes virgin PLA in the same amounts because the 'chemical recycling process ensures identical quality and functional equivalence', the study says.*		

From refinery to biofuel reactor [Australia]

	Cosmos	**January 21, 2024**	**https://cosmosmagazine.com/technology/energy/from-refinery-to-biofuel-reactor/**
	A disused Western Australia oil refinery is one step closer to being given a new lease on life as a biofuel reactor and it could help power Australia's aviation industry towards its 2050 carbon reduction targets. *The $1 billion BP Kwinana Renewable Fuels Project situated between Perth and Rockingham will produce up to 1.6m litres (10,000 barrels) of biofuels daily from vegetable oils, animal fats (tallow) and other agricultural and biological wastes.* *The bioaviation and biodiesel fuels it produces could be directly substituted for their fossil fuel equivalents.*		

Prime Minister John Briceño welcomes agreement for Belize's sugar crop industry [Belize]

	Caribbean National Weekly	**January 10, 2024**	**https://www.caribbeannationalweekly.com/cuisine/prime-minister-john-briceno-welcomes-agreement-for-belizes-sugar-crop-industry/**
	Prime Minister John Briceño has facilitated a two-year agreement between Belize Sugar Industries Limited (BSI) and Belize Sugar Cane Farmers Association (BSCFA), marking an end to the deadlock that disrupted this year's sugar crop.		

	This resolution comes after the government of Belize took an active role for several months, aiming to reconcile the differences between BSCFA and BSI. *The newly signed agreement ushers in a sense of optimism, with all parties looking forward to ending the recent demonstrations and road blockades.*

Sugarcane energy major São Martinho invests €47.4m in biomethane plant [Brazil]

	Bioenergy Insight	**November 3, 2023**	**https://www.bioenergy-news.com/news/sugarcane-energy-major-sao-martinho-invests-e47-4m-in-biomethane-plant/**
	São Martinho, one of the world's largest sugarcane energy companies, has announced plans to construct its first biomethane plant. Produced through the anaerobic digestion of vinasse, a residue from ethanol production, the plant will process 100% of the vinasse generated at the Santa Cruz unit, located in Américo Brasiliense, in the interior of São Paulo (SP), to produce approximately 15 million cubic meters of biomethane per harvest.		

Contributing to the development of sugar crops in China

	Krishak Jagat	**December 27, 2023**	**https://www.en.krishakjagat.org/global-agriculture/contributing-to-the-development-of-sugar-crops-in-china/**
	The summary meeting of the United Nations Food and Agriculture Organization (FAO) and Agricultural Technical Cooperation Project (TCP) "Ecologically Safe Planting and Resource Recycling of Sugar Crops" (hereinafter referred to as the "Sugar Project") was held in Beijing. Representatives from the Agricultural Trade Promotion Center of the Ministry of Agriculture and Rural Affairs, FAO, Chinese Academy of Agricultural Sciences, Inner Mongolia Autonomous Region and Guangxi Zhuang Autonomous Region attended the meeting and discussed the prospects and strategies for the sustainable development of sugar crop production through ecologically safe planting and resource recycling.		

Cuba scrambles to revive its once-vibrant sugar cane industry (video) [Cuba]

	France24	**October 6, 2023**	**https://www.france24.com/en/video/20231006-france-24-report-cuba-scrambles-to-revive-its-once-vibrant-sugar-cane-industryx**
	Used to produce sugar, rum and, today, bioethanol, Cuba's sugar cane was once the country's		

	most iconic export. But last year saw a dramatic fall in production. A lack of farmhands because of mass emigration, as well as a lack of fuel and fertilisers have created a worrying spiral for the Cuban economy. And climate change could make things even worse, as FRANCE 24's Laurence Cuvillier and Matthieu Comin report.

20-30% loss of cane production in Fiji over the years due to climate change [Fiji]

fijivillage	**Fiji Village**	**January 16, 2024**	**https://www.fijivillage.com/news/20-30-loss-of-cane-production-in-Fiji-over-the-years-due-to-climate-change-r54xf8/**
	There have been 20-30% loss of cane production in Fiji over the years due to climate change such as flooding, salt-water intrusion, soil erosion, and drought. *This has been highlighted by the Director of Planning, Policy, and Research for the Ministry of Multi-Ethnic Affairs and Sugar Industry Reshmi Kumari during the 3rd International Conference and Exhibition on "Sustainability: Challenges & Opportunities in Global Sugar Industry" at the Vasantdada Sugar Institute in Pune, India.* *While presenting Fiji's perspective on climate change and sugarcane production, she also highlighted Fiji's need for advanced research and technology adoption to bolster the sugar industry.*		

$500k for modern tech | Drones and machinery to reshape sugarcane industry [Fiji]

The Fiji Times	**The Fiji Times**	**January 28, 2024**	**https://www.fijitimes.com.fj/500k-for-modern-tech-drones-and-machinery-to-reshape-sugarcane-industry/**
	The Ministry of Sugar will spend $500,000 to buy machines that will assist in cane planting and include drones to add fertiliser on farms. *A tender had been published to purchase 12 mechanical sugarcane planters, 16 mechanical fertiliser rippers and applicators, and four drones designated for weedicide and other nutrient applications.*		

World's No.2 sugar producer India may need imports in 2025 [India]

	Reuters	**December 19 2023**	**https://www.reuters.com/markets/commodities/worlds-no2-sugar-producer-india-may-need-imports-2025-2023-12-19/**
REUTERS	*India, the No.2 sugar producer, has been a net exporter of the sweetener for the past six years. However, it is set to ban exports in the crop year that started in October and may even be forced to import in the following year as farmers turn to other crops, according to traders, industry officials, and farmer interviews.* *The production decline is driven by unusually dry conditions, fuelled by El Nino, in the western state of Maharashtra and its neighbour to the south, Karnataka, which along with Uttar Pradesh in the north account for over 80% of Indian sugar output.*		

Global conclave to discuss creation of investment forum on climate resilient agri-food systems [India]

	The Hindu	**January 17, 2024**	**https://www.thehindu.com/sci-tech/energy-and-environment/global-conclave-to-discuss-creation-of-investment-forum-on-climate-resilient-agri-food-systems/article67749163.ece**
TH	*Developing an investment forum in the agriculture sector is the key agenda of the two-day conclave on Advancing Climate Resilient Agri-food Systems in India beginning here on Thursday.* *Jointly organised by the National Institution for Transforming India (NITI Aayog), Ministry of Agriculture, and the Food and Agriculture Organisation of the United Nations (FAO), the conclave will discuss an investment and partnership strategy to advance climate resilient agri-food systems among the government, private sectors, and farmers' organisations.*		

Sugar body ISMA adds bio-energy to title, names new President [India]

	BusinessLine	**December 27, 2023**	**https://www.thehindubusinessline.com/economy/agri-business/sugar-body-isma-adds-bio-energy-to-title-names-new-president/article67661178.ece**
businessline	*Indian Sugar Mills Association, the industry body of private sugar mills, has adopted a new name, Indian Sugar and Bio-energy Manufacturers Association, but will continue to use the short form ISMA.* *Announcing the change in a statement on Thursday, ISMA also notified that Mandava Prabhakar Rao will be the new president of the association on completion of Aditya Jhunjhunwala's tenure. Gautam Goel is the new vice president, ISMA said.*		

Sumitomo eyes biodiesel mass production in Japan for decarbonization [Japan]

	NikkeiAsia	**January 9, 2024**	**https://asia.nikkei.com/Business/Energy/Sumitomo-eyes-biodiesel-mass-production-in-Japan-for-decarbonization**

Trading house Sumitomo Corp. is looking to mass-produce biodiesel in Japan using wood and sugarcane waste, in a bid to give the hard-to-make renewable fuel more of a foothold in the country.

The Japanese trading house plans to open a demonstration plant in 2025 on the southern island of Tanegashima with the University of Tokyo and Solariant Capital, a U.S. renewable energy development and investment company. After testing and getting mass production underway, the company plans to gradually increase output starting in fiscal 2027, aiming to eventually reach 1 million tonnes per year.

In Its Own Sweet Time: Sustainability And Innovation In South Africa's Sugar Industry [South Africa]

	Forbes Africa	**December 20, 2023**	**https://www.forbesafrica.com/focus/2023/12/20/in-its-own-sweet-time-sustainability-and-innovation-in-south-africas-sugar-industry/**

Sprouting with possibilities but marred by uncertainties, South Africa's sugar sector has seen rough patches over the past few years. But the industry has growth prospects and is pushing for sustainability and innovation.

From civil unrest and flooding along South Africa's coast to load shedding and the macroeconomic politics at play, the country's sugarcane farmers have experienced an increasingly turbulent period over the past several years.

According to the SA Canegrowers Annual Report 2022/2023, soaring input costs have made for a difficult operating environment in the sugar industry. The cost of fuels and lubricants has increased by 12%, fertilizers by 34% and irrigation by 45%. Furthermore, the average increase, combining all these inputs, was over 11%. This while increases in the price of sugar was limited to 7% over the term of the Sugarcane Value Chain Masterplan to 2030.

Latest Research

Inexpensive, carbon-neutral biofuels are finally possible

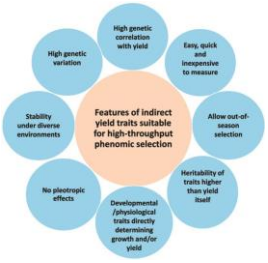
When it comes to making fuel from plants, the first step has always been the hardest — breaking down the plant matter. A new study finds that introducing a simple, renewable chemical to the pretreatment step can finally make next-generation biofuel production both cost-effective and carbon neutral.

For biofuels to compete with petroleum, biorefinery operations must be designed to better utilize lignin. Lignin is one of the main components of plant cell walls. It provides plants with greater structural integrity and resiliency from microbial attacks. However, these natural properties of lignin also make it difficult to extract and utilize from the plant matter, also known as biomass.

Published: December 13, 2023

> Link

Revolutionizing sugarcane breeding: The emerging role of genomics and high-throughput phenomics



Sugarcane, a crucial worldwide food and bioenergy crop, accounts for approximately 80% of the world's sugar production, with its largest cultivation in Brazil and India. As the 5th largest crop by production value and acreage, it presents unique breeding challenges due to its complex polyploid genome, derived from interspecific hybridization. Current sugarcane breeding methods, involving a lengthy 10- to 12-year multistage selection process, have resulted in slower yield improvements compared to other major crops. The main obstacles in the breeding process include the extended cycle, challenging phenotyping due to substantial biomass, and limited heritability of crucial traits. These issues, particularly the logistical challenges in accurate phenotyping, have hindered genetic gains. Addressing these constraints, specifically through developing efficient, high-throughput phenotyping methods, presents a critical research opportunity to enhance sugarcane breeding and expedite yield improvements.
In July 2023, Plant Phenomics published a perspective article entitled by "A Combined Genomics and Phenomics Approach is Needed to Boost Breeding in Sugarcane".
This paper points to the slow improvement in sugarcane yields through traditional breeding methods, which has prompted a shift toward molecular marker-assisted selection (MAS) over the past 30 years.

Published: December 19, 2023

> Link

An Empirical Investigation on the Relationship Between Fertilizer Inputs and Production Efficiency in the Main Sugarcane Planting Areas in China



Reducing fertilizer inputs and improving the sustainability of sugarcane are important to the well development of China's sugar industry. In the present study, the DEA-Malmquist model was used to empirically analyze the fertilizer input and production efficiency in Guangxi, Yunnan, Guangdong and Hainan, the four main sugarcane planting provinces in China. Among these four areas, Yunnan had the maximum integrated technical efficiency level during the period from 2012 to 2021. After 2015, Hainan achieved optimum integrated technical efficiency through the growth of scale efficiency. Besides, Guangdong also achieved optimal integrated technical efficiency with increasing scale efficiency of fertilizer inputs after 2019, while Guangxi, the most important sugarcane producer in China, showed the higher redundancy in fertilizer input, accounting for 36.48–45.89% of total applications. Total Factor Productivity analysis revealed that policies have helped the major producing regions to make progress at the frontier of technological progress. However, the growth of technical efficiency change fluctuated more in Guangxi mostly due to its poor natural resource endowment and high local fertilizer costs. In summary, the integrated technical efficiency of fertilizer inputs for sugarcane cultivation in China has improved in the past, and the frontier of technical progress has shifted forward, whereas the technical efficiency of Guangxi, the largest sugarcane producer, has improved to a limited extent. We believe that the promotion of continuous industrial policies is an effective way to change the habit of using chemical fertilizers for sugarcane farmers. This study serves as a reference and a strategic basis for improving the efficiency of the sugarcane industry at the technical and scale levels.

Published: February 6, 2024

> Link

Potential of Pressmud Waste from Sugar Industry in Brick Manufacturing for Green Business and Sustainability



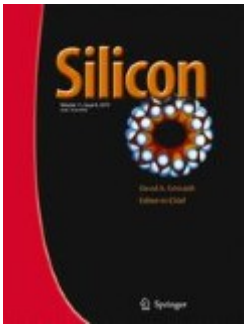
The construction industry in Malaysia is currently witnessing sustained expansion, as seen by the rising demand for residential properties, commercial structures, and other infrastructures throughout our country. Therefore, the present study seeks to identify suitable materials and proportions for manufacturing lightweight bricks utilizing industrial waste materials. This study investigates the feasibility of using pressmud, a sugarcane refinery waste, as a fine bio-aggregate for the production of construction materials. Binary blended cement-pressmud bricks were formed by mixing Ordinary Portland cement with pressmud at various weights percentages (50%, 40%, 30%, 20%, and 10%). Various experiments were undertaken to investigate and compare the characteristics of pressmud bricks and commercial sand bricks. The experiments focused on density determination and compression tests (standard brick). The compression tests demonstrated that cement-pressmud bricks with a weight ratio of up to 20% exhibited a compatible strength to standard brick, with values ranging from 17.16 MPa to 23.01 MPa. The pressmud bricks exhibited reduced weight, with 10% and 20%

variants weighing 17-23% less than the standard brick. Thus, it can be concluded that pressmud possesses significant potential as a bio-aggregate for producing lightweight and cost-effective construction materials when used in appropriate proportions.

Published: February 10, 2024

> **Link**

Boosting the Soil Phosphorus Availability to Plants by Using Silicon-Rich Crop Residues and Reducing Fertilizer Requirements



Crop residues rich in silicon (Si) viz. rice straw (RS), sugarcane leaf (SL) etc., are agricultural waste generated abundantly in India and elsewhere, have great potential for alleviation of phosphorus (P) deficiency in soil. Quantitative research on Si-rich crop residue's impact on P availability in Indian soils is limited. This investigation assessed P release influenced by Si-rich crop residues in two different soils, viz. alkaline alluvial soil collected from New Delhi (Olsen-P 6.2 mg kg^{-1}) and calcareous alluvial soil collected from Samastipur (Olsen-P 6.8 mg kg^{-1}) in laboratory experiment. Further, in a greenhouse experiment, impacts of applied Si on P availability to wheat crop (cv.- HD 2967) in alkaline alluvial soil of New Delhi was assessed.
Results of the P release study reveals that application of Si through various sources significantly enhanced 0.01 M $CaCl_2$ extractable P in both soils. In the greenhouse experiment, crop residues significantly and positively impacted soil available P and growth parameters of wheat like straw yield, grain yield, straw P uptake and grain P uptake. Combined application of a reduced recommended dose of P (RDP) with RS or SL could produce statistically similar wheat yield to that of 100% RDP alone.

Applying these residues could potentially reduce P fertilizer rates by 25–50% without compromising wheat yield, resulting in substantial P fertilizer savings.

Published: February 8, 2024

> **Link**

Aerial phenotyping for sugarcane yield and drought tolerance



Sugarcane breeding is resource-intensive and time-consuming, and could benefit substantially from the integration of aerial phenotyping (AP) for rapidly identifying genotypes with superior yield traits. The study aimed to assess the feasibility of using AP to enhance sugarcane breeding by rapidly identifying genotypes with superior yield traits. The specific objectives of the study were to: (1) assess the impacts of canopy cover and stomatal conductance on stalk dry mass yield (SDM); (2) assess the feasibility of estimating these traits with aerially sensed normalized difference vegetation index (NDVI) and canopy temperature (Tc); (3) evaluate the potential for predicting SDM from NDVI and Tc; (4) formulate best AP procedures. The study comprised a replicated field trial near Komatipoort, South Africa, with 54 genotypes grown under well-watered and water deficit conditions. Traits were measured on the

ground (canopy cover and stomatal conductance) and remotely sensed from the air with a drone (NDVI and Tc) throughout the plant and first ratoon crops, and SDM was measured at harvest. Measurements were categorized by crop water status and extent of canopy cover, and phenotypic trait correlations were analyzed for these different categories. The study confirmed canopy cover and stomatal conductance as influential traits for determining SDM. Canopy cover could be used as a proxy for identifying high- and low-yielding genotypes early on in water stress-free crops. Findings suggest that high stomatal conductance benefits well-watered crops, while relatively low conductance could be advantageous in dry environments, though further investigation is needed. Canopy cover was predicted well from NDVI at partial canopy for well-watered crops, while the prediction of stomatal conductance from Tc lacked reliability. It was concluded that NDVI and Tc could be used to identify high- and low-yielding genotypes when measured earlier on in the growth cycle for well-watered crops. Results also showed potential for using water treatment differences in Tc and SDM to identify drought tolerant genotypes. Lastly, the study highlighted methodological challenges and insights for future agronomic trait prediction using AP techniques. The findings of this study will be used in further testing in the early stages of the breeding programme along with the breeding populations, ultimately helping to manage breeding strategies for target environments. This has the potential to enhance breeding efficiency and ultimately genetic gains towards productive sugarcane cultivars for the future.

Journal to be published: March 15, 2024, article online now

> **Link**

Recovery of Potassium from Pyrolysis Product of Sugar Fabrication Waste Carbonation Cake and Vinasse Mixture and Production of Adsorbent for Wastewater Treatment



In this study, percolation tests with water were carried out on the products that were subjected to pyrolysis and obtained in order to carbonize the organics in the vinasse carbonation cake mixtures. For this purpose, the mixtures prepared from the concentrated vinasse supplied from Sugar Factory and the carbonation cake supplied from Sugar Factory were heated at 500 °C for 4 h, and the extractability and dissolution rate of potassium into water were determined by leaking water over the products. The ability of the residue to remove methylene blue from the aquatic environment was determined. It should be emphasized that the solid residue from the potassium extraction has a considerable amount (289–370 mg/g) and a basic dye removal capacity greater than that of the raw carbonation cake (208 mg/g). COD value in the extract of the pyrolysis product with a cake/vinasse ratio of 0.5 was determined as 970 mg/l with a significant increase. The methylene blue removal capacity of the extraction residue samples obtained in this group of experiments decreases as the dry cake–vinasse ratio increases. It should be emphasized that the composite product obtained by taking advantage of these results can be actively used in the production of compound fertilizer.

Published: February 6, 2024

> **Link**

Study on Regeneration Ability of Saccharum sp Clones for Optimizing Cryopreservation Techniques and Identification of Suitable Explant for Long-Term Storage



Cryopreservation is an alternate approach for the long-term preservation of vegetatively propagated crops like sugarcane. This technique is used to preserve plant cells in vitro, enabling long-term storage of plant materials without alteration or modification of their natural state. The goal of this study was to develop a simple and efficient cryopreservation method for the long-term storage of Saccharum species. The cryopreservation techniques were optimized for three distinct explants of Saccharum species, which include the apical meristem, meristem-derived axillary buds, and dormant nodal buds. Various low-temperature cryopreservation strategies were used in this study, viz., two-step freezing, desiccation followed by direct immersion, vitrification, and encapsulation. The regeneration of material after cryogenic treatment at different time intervals exhibited germination in meristem-derived axillary buds and dormant nodal buds. Meristem culture was undertaken to obtain disease-free meristem-derived shoots for cryopreservation. Under encapsulation followed by dehydration, meristem-derived axillary buds of IND 19–2045 and Co 86032 regenerated after cryo treatments at various time intervals from 15 min to 70 h. The genetic fidelity of Co 86032 was confirmed using SRAP markers. Dormant nodal buds of four clones, namely IND 03–1310, IND 03–1294, IND 03–1295, and IND 03–1296, responded well after cryo treatments at different time intervals ranging from 15 min to 70 h under the desiccation–direct immersion method and the encapsulation–dehydration method.

Published: January 31, 2024

> **Link**

Generative AI and Its Impact on Sugarcane Industry: An Insight into Modern Agricultural Practices

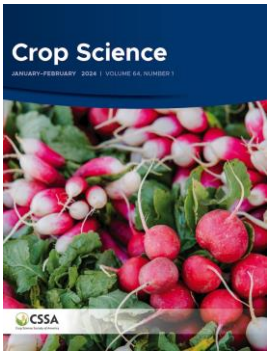


Generative Artificial Intelligence (GAI) offers remarkable opportunities for transforming sugarcane agriculture, promising significant improvements in crop cultivation, processing, and sustainability. This short communication delineates GAI's prospective applications in the sugar industry, emphasizing tangible benefits and outlining the necessary steps toward integrating this innovative technology effectively. Implementing GAI, while challenging, primarily due to the required investment, infrastructure development, data privacy concerns, and workforce training, is crucial for optimizing crop yield, sustainability, and enhancing bioethanol production from sugarcane. Recognizing and addressing these challenges through multi-stakeholder collaboration, policy formulation, and robust data security measures is fundamental, as is the need for ongoing research and development in applying GAI to the sugar industry to realize global sustainability goals.

Published: January 29, 2024

> Link

Indices for measuring ratooning ability of sugarcane varieties



The primary objective of sugarcane (Saccharum spp.) variety testing programs is to identify cultivars that have high cane yields and good ratooning ability (RA). The purpose of this study was to evaluate the usefulness of six RA indices to estimate RA among sugarcane varieties and to identify an index well suited to predict RA in long-term ratoon crop cycles. The six indices were as follows: ratoon crops yield means, second ratoon to plant cane yield ratio, final ratoon crop to plant cane yield ratio, mean of ratoon crops to plant cane yield ratio (RP), linear regression, and quadratic regression. Data from four variety trials consisting of eight post-release varieties plus a control, harvested early, mid, and late in the cropping season for over six crop cycles, were used to estimate the RA indices. To identify indices that can predict RA in long-term ratoon crop cycles, simple linear regression analyses were used to compare the RA indices derived from 6-year crop cycles and similar indices derived from data from 111 commercial fields harvested over 11 successive crops. Coefficient of determination (R^2) values plotted against their respective ratoon crop numbers were used to determine the minimum number of ratoon crops required to accurately predict RA indices for the 11-year crop cycle. The six indices varied in their rankings of the RA of varieties, emphasizing the importance of identifying the most appropriate indices for different ratooning practices. Based on its highest R^2 value of 0.92, the RP index was identified as the most accurate index to predict RA in long-term ratoon crop cycles requiring a minimum of five successive crops.

Published: January 31, 2024

> Link

Events

	SIT Annual Technical Meeting 2024 *Sugar Industry Technologists (SIT)* **28 April – 1 May 2024** **Vancouver, Canada** > **Link**
	ASSCT Annual Conference *Australian Society of Sugar Cane Technologists* **16-19 April 2024** **Townsville Entertainment and Convention Centre, Townsville, Queensland, Australia** > **Link**
	11th Annual Africa Sugar Conference *Africa Sugar Group* **24-25 April 2024** **Radisson Blu Hotel, Upper Hill, Nairobi, Kenya** > **Link**

International Society of Sugar Cane Technologists Founded 1924	**ISSCT 13th Germplasm & Breeding / 10th Molecular Biology Workshop** *International Society of Sugar Cane Technologists (ISSCT) / ICAR-Sugarcane Breeding Institute, Coimbatore, India / Society for Sugarcane Research and Development (SSRD)* **8-12 July 2024** **Coimbatore, India** > **Link**
SASTA	**96th SASTA Congress 2024** *SASTA – South African Sugar Technologists' Association* **13-15 August 2024** **ICC, Durban** **45 Bram Fischer Rd** **Durban, 4001 South Africa** > **Link**
30a fenasucro & agrocana	**Fenasucro & Agrocana 2024** *Fenasucro* **13-16 August 2024** **Sertãozinho – SP, Brazil** > **Link**

International Society of Sugar Cane Technologists Founded 1924	**ISSCT Agriculture Commission Workshop, Agricultural Engineering, Agronomy and Extension Sections** *International Society of Sugar Cane Technologists (ISSCT) / Thailand Society of Sugar Cane Technologists (TSSCT)* **19-22 August 2024** **The Zign Hotel, Pattaya, Chonburi, Thailand** > **Link**
10th Edition SugarEx THAILAND 2024	**SugarEx Thailand** *Fireworks Exhibitions and Conferences* **12-13 September 2024** **Khonkaen International Convention & Exhibition Center (Kice), Khonkaen, Thailand** > **Link**
International Society of Sugar Cane Technologists Founded 1924	**ISSCT XIII Co-Products Workshop** *International Society of Sugar Cane Technologists / eRcane* **15-20 September 2024** **Saint-Gilles, La Réunion** > **Link**



8th IAPSIT International Sugar Conference ISC-2024 and Sugarcon 2024

International Association of Professionals in Sugar & Integrated Technologies (IAPSIT), Society for Sugar Research & Promotion (SSRP) and International Centre for Interdisciplinary Science & Education (ICISE)

16-19 September 2024

International Centre for Interdisciplinary Science and Education (ICISE), Quy Nhon, Binh Dinh, Vietnam

> **Link**

ISSCT Joint Engineering and Processing Workshop

International Society of Sugar Cane Technologists / SATCA

6-10 October 2024

Hotel Meliá, Berlin, Germany

> **Link**



33rd International Sugar Organization Seminar

ISO – International Sugar Organization

26-27 November 2024

London, UK

> **Link**

International Society of Sugar Cane Technologists Founded 1924	**ISSCT XIII Pathology and XI Entomology Joint Workshop** *International Society of Sugar Cane Technologists / SATCA* **25-29 November 2024** **Salta, Argentina** > **Link**
International Society of Sugar Cane Technologists Founded 1924	**ISSCT XXXII Centennial Congress** *International Society of Sugar Cane Technologists / Asociación Colombiana de Tecnicos de la Caña de Azúcar (TECNICAÑA).* **21-31 August 2025** **Centro de Eventos Valle del Pacifico, Cali – Colombia** > **Link**