May 2022

International Society of Sugar Cane Technologists
Founded 1924

Bulletin

Welcome to the ISSCT Bulletin for May 2022, 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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News from ISSCT

ISSCT XXXI Congress Website

The Congress website is now operational and may be accessed through the following link:
https://issctcongressindia2023.in/

The website contains all relevant information on Registration for Congress, Pre and Post Congress Tours, Social Programme, Trade Exhibition and other aspects.

ISSCT XXXI Congress Newsletter 1

As previously mentioned in the April issue of the ISSCT, the Congress Newsletter 1 may be accessed through the following link.
https://issct.org/2022/04/18/issct-xxxi-congress-newsletter-1/

It contains detailed information on the Congress itself and the related activities i.e., Pre and Post Congress Tours, Social and Cultural events, Accompanying Persons' Programme, Trade Exhibition, Hotel Accommodation, Visa, Call for Papers and Posters, Registration Fee and the composition of the various committees that have been set up to organize and manage the Congress.

ISSCT Pathology Section Webinars

After the Factory Commission Webinar which was held on Tuesday 29 March 2022 and the Molecular Biology Webinar scheduled for Tuesday 2 August 2022 (https://issct.org/2022/04/18/register-for-issct-molecular-biology-webinar/), two webinars will be organised by the Pathology Section on **23 June and 30 June 2022 from 1:00pm GMT – 3:30pm GMT** (times are in Greenwich Mean Time).
The two webinars will be of a duration of approximately 2.5 hour each including breaks and discussion time.

You will find below the First Announcement for the two webinars

Thursday 23 June 2022 - Webinar 1

Theme: Sugarcane streak mosaic virus – research and updates.
Chaired by Nicole Thompson (Chair of ISSCT Pathology Section) with presentations by Dr Rob Magarey (Sugar Research Australia) and Dr Jean-Heinrich Daugrois (CIRAD)
Thursday 30 June 2022 - Webinar 2
Theme: Pathogen diagnostics and surveillance.

Chaired by Dr Nawshad Joomun (MSIRI) with presentations by Dr Dimitre Mollov (USDA-APHIS) and Dr Nicole Thompson (SRA)
Both webinar series will also allow for country updates and discussion following the formal presentations.

The facilitators/organizers are:

- Dr. Nicole Thompson Sugar Research Australia
- Dr. Nawshod Joomun, MSIRI
- Dr Jean-Heinrich Daugrois, CIRAD
- Dr Stuart Rutherford, SASRI

Language
The webinars will be conducted in English.

Registration
The Registration Form for the Webinar may be accessed through the following link:

- **Webinar 1:** https://us06web.zoom.us/meeting/register/tZwkcu6oqzMqHdWSV39xRPVBdbCuqrWY7nnV
- **Webinar 2:**
- https://us06web.zoom.us/meeting/register/tZEpd-CqrDgvGNUvnMdcgcG58cLix0QOsboy

The Webinar is only open to compliant members of ISSCT. When you register for the webinar, your registration will be checked against ISSCT membership and payment records, and you will receive an e-mail with the meeting details (Username and Password to access the Webinar). If you have outstanding membership dues, you will be asked to pay these online before your registration is approved. The Individual Membership dues are USD 140 and may be settled through the following link: http://members.issct.org/appform/issct_india_2022.aspx

Further information
For further information, please contact the ISSCT **Pathology Chair –** Nicole Thompson nthompson@sugarresearch.com.au or the ISSCT Secretariat at issct@intnet.mu

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> WEBINAR 1

Thursday 23 June 2022
1:00pm – 3:30pm GMT
Registration

Session 1: Sugarcane streak mosaic virus – research and updates
Chair: Nicole Thompson

Speaker 1: 1pm GMT – 1:30pm GMT
Dr Rob Magarey (Sugar Research Australia)
Sugarcane streak mosaic virus research in Indonesia and Myanmar
SCSMV was recorded in Indonesia in the early 2000s and has since been found extensively across the Archipelago. Collaborative research between Australian, Indonesian and Myanmar scientists focused on diagnosis, epidemiology, transmission, yield loss, varietal resistance, potential insect vectors and commercial crop incidence. Speed of disease spread appeared variable with more rapid spread in Myanmar. Sensitive and specific diagnostic assays have been developed for use in quarantine.

Speaker 2: 1:30pm GMT – 2:00pm GMT
Dr Jean-Heinrich Daugrois (CIRAD)
Outbreak of sugarcane streak mosaic virus on sugarcane in Côte d'Ivoire.
Sugarcane streak mosaic virus (SCSMV) that causes streak mosaic has been reported in several countries in Asia. Since 2016, mosaic symptoms were observed in Côte d'Ivoire and a survey performed in 2018 revealed that symptomatic plants were infected by SCSMV. Low genetic diversity was observed among 14 isolates of the virus that were fully sequenced. At Sucaf-CI estate (Ferkessédougou), disease incidence in first stage nurseries increased from 0-15% in October 2018 to 10-93% in January 2020.

SCSMV Panel discussion 2:00pm GMT – 2:30pm GMT
Panel: Rob Magarey, Jean-Heinrich Daugrois, Stuart Rutherford, Nawshad Joomun, Nicole Thompson (Chair)
15 minute break. Attendees who wish to make country update to contact Chair who will call on these in next session.

Session 2: 2:45pm – 3:30pm GMT

Country updates from attendees (part 1)
Chair: N Thompson
Attendees will be able to make comments and give updates of new diseases, or emerging issues in their country/region. Information from this session will be used to initiate the updates of disease lists for countries.

> WEBINAR 2

Thursday 30 June 2022
1:00pm – 3:30pm GMT
Registration
Session 1: Pathogen diagnostics and surveillance – research and updates
Chair: Nawshad Joomun

Speaker 1: 1:00pm GMT – 1:30pm GMT
Dr Dimitre Mollov (USDA).
The use of high throughput sequencing in sugarcane virus discovery and diagnostics
Sugarcane viruses are a major concern for the exchange and movement of sugarcane germplasm worldwide. High throughput sequencing (HTS) is a powerful technology for discovery of new and emerging viruses and detection of known viruses. In this report the use of HTS for: 1) virus discovery of new and emerging viruses; 2) optimization of existing diagnostics protocols; and 3) optimization of HTS as a detection tool will be discussed.

Speaker 2: 1:30pm GMT – 2:00pm GMT
Dr Nicole Thompson (SRA).
iMapPESTS: Modernising sugarcane diagnostics and surveillance in Australia
There has been significant investment in modernising surveillance tools in Australian agriculture by developing a surveillance system known as iMapPESTS (www.iMapPESTS.com.au). This is a multidisciplinary project with the flagship being development of sophisticated sentinel units. SRA has been involved in this project by adapting, upgrading and modernising diagnostics for established and exotic sugarcane pests of biosecurity concern. In this presentation I will discuss the sentinel surveillance units, their use in sugarcane surveillance and the new tests developed for a range of sugarcane pathogens.

Diagnostics and surveillance panel discussion: 2:00pm – 2:30pm GMT
Dimitre Mollov, Nicole Thompson, Stuart Rutherford, Jean-Heinrich Daugrois, Nawshad Joomun (Chair TBA)

15-minute break: Attendees who wish to make country update to contact Chair who will call on these in next session.

Session 2:45pm – 3:30pm GMT
Country updates from attendees (part 2)
Chair: N Thompson
Attendees will be able to make comments and give updates of new diseases, or emerging issues in their country/region. Information from this session will be used to initiate the updates of disease lists for countries.

Obituary: Assistant Professor Dr. Kasem SUKSATHAN

1932 - 2022



It is with great sadness that we have learned of the demise of Asst. Prof. Kasem Suksathan on 23 April 2022 in Bangkok, Thailand. Asst. Prof. Suksathan was born in Chonburi, Thailand on 6 March 1932. He graduated from Kasetsart University, Bangkok Thailand, Ranchi University, Biuhar India and the University of the Philippines at Los Banos, Philippines. He began his career after his studies at Kasetsart University in 1962. Most of his plant breeding work focused on sugarcane. Thai sugarcane varieties were launched and widely used under his long-time research and development. He was a symbol of the Thai sugar and cane industry with the foundation of Thailand Society of Sugar and Cane Technologists (TSSCT) in 1983. Thailand hosted the Pre-Congress Tour of the XVIII in 1986 and the XIX ISSCT Congress 1992. Both events met with enormous success following which he took a leading role as TSSCT President. In addition, Dr. Suksathan was ISSCT Councillor for Thailand from 1977 to 1992.

We met with Dr. Suksathan for the first meeting in 1986 when the Pre-Congress Tour was held in Thailand. Since then we have met him regularly and the last time was for the XXIX Congress in Thailand in December 2016. He was really a nice person who always tendered assistance and he was a strong supporter of ISSCT. It is considered that he has contributed to the advancement of sugarcane both locally and internationally.

Expressions of condolences have been sent on behalf of ISSCT to his son, Dr. Piyakaset Suksathan and to his family.

Jean Claude Autrey
General Secretary

Sugar Cane News

Intercropping boosting both sugarcane, onion production [Bangladesh]

	The Business Standard	**April 16, 2022**	**https://www.tbsnews.net/economy/intercropping-boosting-both-sugarcane-onion-production-403926**
THE BUSINESS STANDARD	*Farmers in Joypurhat were losing interest in sugarcane cultivation as it takes a long time from planting to harvesting the crop, but the technology of intercropping of sugarcane with onion made them change their minds.* *Large onions are now peeping through the soil under the leaves of thin, sharp and green sugarcane plants. This is the first time that the farmers have cultivated the Bari-4 variety of onion with sugarcane on the same field.*		

Autonomous trucks replace tractors on Brazilian farms

	Future Farming	**May 5, 2022**	**futurefarming.com/smart-farming/tools-data/the-power-of-swat-maps/** *[Subscription Required]*
FUTURE FARMING	*Brazilian agtech company Grunner turns regular Mercedes-Benz trucks into autonomous farm vehicles for sugar cane harvesting. With the autonomous trucks, farmers can reduce both costs and soil compaction. Presented at Agrishow 2022 in Brazil, last week, the technology is already used by hundreds of farms in Brazil through a partnership with Mercedes-Benz. The idea for autonomous trucks arose in 2013, when the brothers Henrique and Mateus Belei saw opportunities to improve the sugar cane harves*		

Brazil's GMO sugarcane area to nearly double this year, company says [Brazil]

	Reuters	**April 6, 2022**	**https://www.reuters.com/world/americas/exclusive-brazils-gmo-sugarcane-area-nearly-double-this-year-company-says-2022-04-06/**
REUTERS	*Brazilian farmers are set to nearly double the area planted with transgenic sugarcane in the season starting this month, the world's main supplier of the genetically modified (GMO) crop, Centro de Tecnologia Canavieira (CTC), told Reuters.* *CTC estimates that new cane varieties resistant to stem-boring insects will cover 70,000 hectares in the 2022/23 crop cycle, up from 37,000 hectares last year in Brazil, one of the biggest sugar producers in the world.*		

Innovative solar dryer for sugarcane processing [Dominican Republic]

	Dominican Today	**April 13, 2022**	**https://dominicantoday.com/dr/economy/2022/04/13/innovative-solar-dryer-for-sugarcane-processing/**
	The National Evangelical University (UNEV), through the Center for Scientific Research and Technology Development (TECUNEV), an operational research unit, has inaugurated a solar dryer that will dry sugar cane without spoiling the product and dehydrate it by eliminating all the water without affecting its nutrients. *The inauguration was led by academy Rector Juan Guerrero Ávila who said that this would enhance the university's research work.* *Project leader Julio Alejandro Abril said that the initiative is part of a research project funded by the National Fund for Innovation and Scientific and Technological Development (FONDOCYT), which will also improve education and training for students in various fields of study, as well as training for specialists and university graduates in this branch of science, by allowing participants to write theses combining theory with practice and teaching with research.* *UNEV Research Director Diógenes Aybar said that this device was fundamental for the university's research work.*		

Scientists solve problem of industrial waste from sugarcane processing in India

	University of York	**May 10, 2022**	**https://www.york.ac.uk/news-and-events/news/2022/research/solve-industrial-waste/**
	Scientists have discovered how to significantly improve the sustainability of the sugarcane industry by turning a major by-product into a valuable chemical used in food, medicines and cosmetics. *In a project carried out in partnership between scientists in the UK, including from the University of York, and Indian and UK companies, researchers found a way to turn bagasse - the fibrous material left after crushing the sugarcane plant - into citric acid.* *India is the world's second largest producer of sugar, and the industry is one of the largest rural employers. However the industry generates significant industrial waste in the form of bagasse. This biomass is currently burnt to power the sugar factories, but this process is inefficient and does not use all of the available bagasse.*		

India Looking At Learning Advances In Drip Irrigation For Paddy, Sugarcane, Cotton [India]

	Ommcom News	**May 7, 2022**	**https://ommcomnews.com/india-news/india-looking-at-learning-advances-in-drip-irrigation-for-paddy-sugarcane-cotton**
	After years of learning best agricultural practices from Israel, India is now taking help from the country to set up Centres of Excellences for Agriculture to advance in usage of micro and smart irrigation systems (drip irrigation) for paddy, sugarcane and cotton cultivation. *As Union Agriculture and Farmers Welfare Minister, Narendra Singh Tomar, will be leading a delegation to Israel from May 8-11, his very first visit will be to the facilities of Green 2000 – Agricultural Equipment and Know How Ltd. and NETAFIM Ltd., which are engaged in planning, setting up, consultation and on-going management of various projects in different spheres of agriculture and usage of drip irrigation in paddy, sugarcane and cotton cultivation.*		

STPI launches smart farm challenge [India]

THE TIMES OF INDIA	**Times of India**	**May 10, 2022**	**https://timesofindia.indiatimes.com/city/chandigarh/stpi-launches-smart-farm-challenge/articleshow/91454264.cms**

The Software Technology Parks of India (STPI) on Monday launched the Smart Farm Grant Challenge (SFGC) for startups and Neuron Centre of Entrepreneurship (CoE) in Mohali is the anchor CoE of this challenge.

Under this open challenge, selected startups will be provided financial assistance of Rs 2 crore to identify impactful solutions to address the problem statements identified for sugarcane harvest. This challenge was launched by Arvind Kumar, director general of the STPI, in virtual mode.

India's FarmERP wants to bring benefits of ag data to the rest of the developing world [India]

AFN #FOODTECH #AGTECH	**AgfunderNews**	**April 19. 2022**	**https://agfundernews.com/farmerp-wants-to-bring-benefits-of-ag-data-to-the-rest-of-the-developing-world**

At a time when tech adoption was still low in Indian agriculture, two Pune-based computer engineers began working on a software solution to bring digitalization to the industry.

In 2006, FarmERP — the brainchild of Sanjay Borkar and Santosh Shinde, who both came from agricultural families — was released. The objective behind the platform was to systematize farming operations to make them more efficient, profitable, and predictable.

FarmERP's B2B solution serves agribusinesses, with mid- to large-sized farms of between 1,000 and 100,000 hectares, by digitalizing their financial management processes. Users can track their finances through modules like accounting, costing, and procurement reports. They can also track, manage, and analyze data on crop health and supply chain processes.

Clients typically get an annual subscription, which can run for three, five, or seven years. They get training, basic data migration, and system customization according to their needs. FarmERP can also integrate with their existing smart devices, such as automated weather stations, irrigation systems, sensors, and drones.

Pakistan, China join hands for agri-mechanisation [Pakistan]

THE EXPRESS TRIBUNE	**The Express Tribune**	**April 30, 2022**	**https://tribune.com.pk/story/2354814/pakistan-china-join-hands-for-agri-mechanisation**

Slow adoption of mechanisation technology has been a key reason for low yields and inefficiencies in agriculture in Pakistan, resulting in lower profit for farmers, said Dr Muhammad Waqar Akram, a lecturer in the Department of Farm Machinery and Power, University of Agriculture Faisalabad.

He is attending Modern Agriculture Workshop of China-Pakistan Regional Innovation Institute for Modern Agriculture, organised by the Ministry of Agriculture and Rural Affairs of China.

The five-month workshop, starting from the end of March, provides inclusive training in the use and maintenance of modern agricultural machinery, field management, etc.

A sector with an agenda [Thailand]

Bangkok Post	**Bangkok Post**	**May 2. 2022**	**https://www.bangkokpost.com/business/23**

			03530/a-sector-with-an-agenda

The 2022 meetings of the Apec Business Advisory Council (Abac), which highlights the bio-, circular and green (BCG) economic model, are prompting Thailand to gear up for advanced technologies and environmentally friendly businesses.

The Thai government introduced BCG as a new path for national economic development a few years before it was listed on the agenda for the four Abac meetings, held as part of the 2022 Asia-Pacific Economic Cooperation (Apec) summit, hosted by Thailand later this year.

According to the ministry, among the prominent BCG projects are some involving the bio-economy, with investment value worth more than 10 billion baht. They include a polylactic acid (PLA) technology project in Rayong, Thailand's first biochemical complex in Nakhon Sawan, and the Palm Biocomplex project in Chon Buri.

PLA is a compostable biopolymer that can be used in a variety of applications including coffee capsules and food packaging. This biopolymer is made from renewable sources such as corn starch or sugar cane.

Latest Research

UAVs to Monitor and Manage Sugarcane: Integrative Review

agronomy

Pilotless aircraft systems will reshape our critical thinking about agriculture. Furthermore, because they can drive a transformative precision and digital farming, we authoritatively review the contemporary academic literature on UAVs from every angle imaginable for remote sensing and on-field management, particularly for sugarcane. We focus our search on the period of 2016–2021 to refer to the broadest bibliometric collection, from the emergence of the term "UAV" in the typical literature on sugarcane to the latest year of complete publication. UAVs are capable of navigating throughout the field both autonomously and semi-autonomously at the control of an assistant operator. They prove useful to remotely capture the spatial-temporal variability with pinpoint accuracy. Thereby, they can enable the stakeholder to make early-stage decisions at the right time and place, whether for mapping, re-planting, or fertilizing areas producing feedstock for food and bioenergy. Most excitingly, they are flexible. Hence, we can strategically explore them to spray active ingredients and spread entomopathogenic bioagents (e.g., Cotesia flavipes and Thricrogramma spp.) onto the field wherever they need to be in order to suppress economically relevant pests (e.g., Diatraea saccharalis, Mahanarva fimbriolata, sugarcane mosaic virus, and weeds) more precisely and environmentally responsibly than what is possible with traditional approaches (without the need to heavily traffic and touch the object). Plainly, this means that insights into ramifications of our integrative review are timely. They will provide knowledge to progress the field's prominence in operating flying machines to level up the cost-effectiveness of producing sugarcane towards solving the sector's greatest challenges ahead, such as achieving food and energy security in order to thrive in an ever-challenging world.

Published March 9, 2022

> Link

Precision agriculture adoption and technical efficiency: An analysis of sugarcane farms in Brazil



Precision Agriculture Technologies (PATs) are at the core of the fourth revolution in farming technology, also called Agriculture 4.0. This study evaluates the determinants of PATs adoption and its impacts on technical efficiency (TE) and technology gap ratio (TGR) of sugarcane farms in the state of São Paulo, Brazil. A selectivity correction model for stochastic frontiers is combined with a metafrontier production function approach to estimate the role of a set of determinants of PATs adoption and its impacts on TE and TGR. In person interviews with 131 sugarcane farmers provided cross-sectional farm level data from the 2018/19 crop year. The estimates of a sample selection equation showed that farming size, farmer's schooling and technical assistance positively affect PATs adoption by sugarcane farmers. Estimates of stochastic production frontiers (SPFs) and metafrontier revealed that the average of the TE and TGR scores of adopters are higher than those of non-adopters. The managerial gaps (TE) between adopters and non-adopters are considerably wider than their technology gaps (TGR). The adoption of PATs subsidizes farmers decision-making process which increased the efficiency in inputs use, an important issue for economic and environmental sustainability in sugarcane farming.

Published April 2022

> **Link**

Sugarcane Breeding, Germplasm Development and Related Molecular Research in China



Sugarcane is the most important sugar crop in China. In this paper, we reviewed advances in sugarcane breeding, germplasm development and breeding-related molecular research in China. From the 1950s to now, much progress has been made in China in the collection and evaluation of sugarcane germplasm, variety selection techniques and biotechnology. A total of 3300 Saccharum and related species are preserved in the China National Nursery of Sugarcane Germplasm Resources, in Kunming, Yunnan province. Through intra- and interspecific crossing between Saccharum spp. and related species, successful introgression of genes from wild germplasm including S. spontaneum, Narenga porphyrocoma, Erianthus rockii, and Erianthus fulvus has been achieved. Imported elite clones from major international sugarcane breeding programs remain an important source of parental material for variety development. A series of clones derived from innovative crosses at Hainan sugarcane breeding station with native Chinese S. spontaneum germplasm have been important parents in Chinese breeding program, leading to release of 37 commercial cultivars. Transgenic sugarcane clones with insect and disease resistance, and drought and low potassium-tolerance were also created. However, its use in commercial production remains unclear at this stage. Recently Chinese researchers published the first report of S. spontaneum genome, which is providing substantial new knowledge and unprecedented genomic resources for the genetic improvement of sugarcane. Through the efforts of breeders and researchers, the yield, sucrose content and disease resistance of sugarcane in China have been improved greatly. The current major constraints in the sugarcane industry in China are the low level of mechanized harvesting, poor ratooning and diseases such as smut, and sugarcane borer. Developing production systems and varieties suited to mechanized harvesting, resistant to smut and increased ratooning are now a high priority.

Journal published April 2022, article available online since October 2021

> **Link**

Research and Development Prospects for Sugarcane Industry in Vietnam



A lot of agricultural waste is generated in India and the farmers mostly burnt that waste and create environmental problems. Efforts are being made to convert that waste into some useful products and Nano-technology stays no behind in making that agricultural waste into a useful product. Nano-technology helps by making Nano-composites using agri-residues like bagasse and some industrial wastes like fly ash and thereby reduce the environmental pollution. Carbon and its compounds and have an ionic attraction for metals compounds and property helps in the removable of heavy metals present in water. Graphite based Nano composite prepared were applied to various waste water bodies of pulp and paper industry and it had been found that the colour of the water gets reduced by 60–80%, decline in BOD by 40–70% and COD by 70–80%.

Journal published March 5, 2022

> Link

Cost analysis of subcritical water pretreatment of sugarcane straw and bagasse for second-generation bioethanol production: a case study in a sugarcane mill



The value of lignocellulose residues for green technologies has been growing, but biomass pretreatment is still an economic challenge. In this case study, a cost analysis of subcritical water pretreatment (SCWP) of sugarcane by-products for ethanol production was conducted. The proposed industrial scheme is attached to a Brazilian sugarcane mill, which generates a surplus of bagasse. Seven scenarios were simulated to address the prospects of the implementation of the process in the mill. The fermentation of sugarcane bagasse hydrolysate with Scheffersomyces stipitis upgraded the ethanol yield. The fixed capital investment of the industrial process was approximately US$27 million and 35% of this was associated with the SCWP. The highest ethanol yield was obtained for the process operated with hydrolysate from sugarcane bagasse (6740.5 kg ethanol day-1), which is associated with the high hemicellulose content in the bagasse composition compared with straw. The cost difference revealed that the fixed capital investment and utilities were the largest expenses for process implementation and operation. The simulated process reached 5.45 US$ L-1 as the lowest cost of manufacturing. However, this cost is approximately 10-fold higher than the market price for ethanol in Brazil. In conclusion, the SCWP of sugarcane straw and bagasse demands significant technical improvement before scaling up to the industrial scale for bioethanol production. © 2021 Society of Chemical Industry and John Wiley & Sons, Ltd

Journal published March/April 2022, article available online since December 2021

> Link

History and Development of Molecular Markers for Sugarcane Breeding

Sugarcane (Saccharum spp. hybrids) is one of the world's most important economic crops for both the food and biofuel industries. It has one of the most complex genomes of any crop plant, varieties are unbalanced polyploids and derived from interspecific

hybridisation between the domesticated Saccharum officinarum and a wild relative S. spontaneum. Here I review sugarcane's complex genetics and chart the history of DNA marker development in sugarcane over the last 30 years. Despite its complex autopolyploid genome of over 100 chromosomes, marker development has spanned the first hybridisation-based markers, restriction fragment length polymorphism markers (RFLP) to the high-throughput next generation sequence methods currently used to detect single nucleotide polymorphism (SNP). Although there is a long history of research and development in sugarcane, it is only comparatively recently that marker technology has caught up with the need for discovery of large numbers of single-dose SNP markers and methods for genotyping that are fast, efficient and cost-effective that can be used for selection in a breeding program. The choice of genotyping platform depends on the breeding application and both whole genome SNP methods (array-based and genotype-by-sequencing (GBS)) and low density scalable and cost-effective platform technologies have a place in sugarcane breeding.

Journal published April 2022, article available online since October 2021

> **Link**



Modification of cellulose from sugarcane (Saccharum officinarum) bagasse pulp by cold plasma: Dissolution, structure and surface chemistry analysis

Cellulose is a most abundant natural biopolymer, however, the strong hydrogen bonding system makes cellulose hard to dissolve, limiting its further applications. In this study, an innovative cold plasma (CP) technology was used to modify cellulose from sugarcane (Saccharum officinarum) bagasse pulp. Dissolution, structure, and surface chemistry of cellulose before and after CP treatment were investigated. Results showed that the dissolution rate of cellulose after different CP treatment time (3–12 min) and operating voltage (40–70 kV) was significantly improved. Roughness, even holes (CP treatment 9 min with 50 kV) and breakage (CP treatment 9 min with 70 kV) were observed on the surface. The crystallinity index decreased from 62.31% (control) to 60.88% (CP treatment 3 min with 50 kV). The hydrogen bonding force was weakened and the peak intensity of Cdouble bondO and Csingle bondO stretching vibration groups were enhanced. Therefore, CP-modified cellulose may be applied more in future, such as biological films for food future packaging.

Published: April 16, 2022

> **Link**



Application of Sugarcane Bagasse in Chemicals and Food Packaging Industry: Potential and Challenges

Recent research and development in the field of sugarcane bagasse processing offers a promising hope to the sugarcane industries. Various value-added bioproducts and technologies have been developed by the utilization of waste sugarcane bagasse. Other applications such as the production of energy, biodegradable material, packaging products, construction, and bioadsorbents still need to be evolved more so that the remaining sugarcane bagasse can be utilized. Few limitations of sugarcane bagasse valorisation make difficulties in the commercialization of green technologies; therefore, there is a need to develop efficient processes to utilize it as a raw material for value-added products and various other applications.

Published: March 29, 2022

> **Link**



Advancing anaerobic digestion of sugarcane vinasse: Current development, struggles and future trends on production and end-uses of biogas in Brazil



Anaerobic digestion (AD) is a multipurpose technology. One of the AD outcomes is biogas that can be used to supply a local thermal demand, electricity generation or upgraded to fuel vehicle. Brazil has the largest potential for producing biogas, due to its extensive agroindustrial production plus the fact that the country has a population of over 210 million inhabitants. The Brazilian Association of Biogas and Biomethane (ABiogás) reports a potential biogas production of 41.4 billion m3 per year in the sugar-energy sector. However, less than 2% of this is achieved, indicating that the biogas is still chemically, economically, and politically invisible. The current technologies for the production, purification and end-use of biogas/biomethane were reviewed and presented in the context of sugarcane biorefineries. One of the major findings has indicated a thermal efficiency of 85% and a national grid surplus of 74–121 kWh.ton-1 sugarcane when steam boilers connected to electricity generators are used. Alternatively, a quarter of the vinasse generated by a medium-size sugarcane mill (600 m3 d-1) would be enough to supply the diesel consumption of on agricultural operations. The motivation of this review came from the fact that normally renewable energy does not reach its potential due to the lack of references on technological, regulatory and management in their productive arrangements: essential aspects to make them feasible. Therefore, it is expected to strengthen the panorama of research in the biogas system to properly fit with the current expansion and diversification of the Brazilian energy matrix.

Published April 2022

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Events

ASSCT AMERICAN SOCIETY OF SUGAR CANE TECHNOLOGISTS	**ASSCT Annual Florida & Louisiana Joint meeting** *American Society of Sugar Cane Technologists* **14-16 June 2022** **Hyatt Regency Coconut Point Bonita Springs FL USA** > **Link**
XVI International Congress on Sugar and Cane Derivates DIVERSIFICATION 2021 AZCUBA GRUPO AZUCARERO ICIDCA	**XVI International Congress on Sugar and Cane Derivatives: Diversification 2022** *AZCUBA Sugar Group, the Cuban Association of Sugar Technicians and the Cuban Institute of Research on Sugarcane Derivatives* **20-24 June 2022** **Cuba** > **Link**

	Conferencia Bonsucro México 2022 *Bonsucro* **30 June – 1 July 2022** **Mexico City, Mexico** > **Link**
	American Sugar Alliance Symposium *American Sugar Alliance* **29 July - 3 August 2022** **Vail, Colorado** > **Link**
	94th SASTA Congress 2022 *SASTA – South African Sugar Technologists' Association* **16-18 August 2022** **ICC, Durban, 45 Bram Fischer Rd, Durban, 4001 South Africa** > **Link**
	28ª Feira Internacional da Bioenergia *Fenasucro & Agrocana* **16-19 August 2022** **Centro de Eventos Zanini, Sertãozinho, Brazil** > **Link**
	XII Congreso Tecnicaña (XII Tecnicaña Congress) *Tecnicaña* **12-16 September 2022** *At Tecnicaña we are preparing to share a unique international scenario with the Sugarcane Agroindustrial Sector, for this reason, we invite you to participate in this great meeting that will allow us to have the opportunity to meet again around sugarcane to discuss and reflect on the future and projections of the agribusiness.* **Cali, Valle del Cauca, Colombia** > **Link**
	7th IAPSIT International Sugar Conference & Sugarcon-2022 ***"Sustainability of the Sugar and Integrated Industries: Issues & Initiatives"*** *Indian Institute of Sugarcane Research* ~~**16-19 February 2022**~~ **Postponed to 16-19 October 2022** **Lucknow, India & virtual platform (for international delegates)** > **Link**

ISO	**31st ISO International Seminar 2022** *International Sugar Organization* **22-23 November 2022** • ***Congress: 20-23 February*** • ***Pre-congress tour: 17-18 February*** • ***Post-congress tour 24-28 February*** **East Wintergarden, Canary Wharf, London, UK** > **Link**
International Society of Sugar Cane Technologists Founded 1924	**ISSCT XXXI Congress** *International Society of Sugar Cane Technologists / The Sugar Technologists' Association of India (STAI)* **February 2023** • ***Congress: 20-23 February*** • ***Pre-congress tour: 17-18 February*** • ***Post-congress tour 24-28 February*** **Hyderabad International Convention Centre (HICC), India** > **Link**