June 2023

International Society of Sugar Cane Technologists
Founded 1924

Bulletin

Welcome to the ISSCT Bulletin for June 2023, 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

Newsletter No. 1

The Newsletter No. 1for the ISSCT XXXII Centennial Congress which will be held from 21 to 31 August 2025 in Cali, Colombia may be accessed through the following link.

The Newsletter contains information about Colombia, its sugarcane industry, the Congress Organising Committee and the supporting institutions as well as information on the ISSCT.

Inter-congress thematic Workshops

As already mentioned there will be five thematic workshops during the inter-congress period 2023-2025. The workshops will be as follows:

- Agricultural Engineering, Extension & Agronomy -Thailand, August 2024
- Germplasm & Breeding/Molecular Biology - India, 8-12 July 2024
- Pathology & Entomology - Salta, Argentina, 25-29 November 2024
- Joint Engineering and Processing - Germany, September/October 2024
- Co-Products, Reunion Island - September-October 2024

The ISSCT 13th Germplasm & Breeding / 10th Molecular Biology Workshop will be held from 8 to 12 July 2024 in Coimbatore, India. The Theme will be ***Breeding, Biotechnology and Germplasm Utilization for Developing Climate-Smart and Resource-Efficient Sugarcane Varieties.***

The first announcement which may be accessed through the following link contains information on key dates, themes of sessions, information on the host institution, workshop format, registration cost, entry visa, tourist activities, venue and contact details.

To take part in the workshop all participants must be compliant ISSCT members for the period 2023-2025. They may renew their membership or become new members at https://members.issct.org/appform/issct_colombia_2025.aspx

The Individual membership dues for the period 2023-2025 are USD 150.

Information on other workshops is forthcoming.

Sugar Cane News

From Agro-Waste to Sustainable Structures: Concrete Alternatives Made from Sugarcane

	Arch Daily	**May 25, 2023**	**https://www.archdaily.com/1001501/from-agro-waste-to-sustainable-structures-concrete-made-from-sugarcane**

Finding effective and valuable solutions for agricultural waste management has been an inspiring challenge for researchers. By-products from monocultures, such as residues from soybean production, corn cobs, straw, sunflower seeds, and cellulose, are often destined for soil composting, used as animal feed, or even converted into energy in order to reduce waste and mitigate the environmental impacts associated with agricultural activities. Sugarcane production, for example, generates a significant amount of by-products, totaling about 600 million tons of bagasse fiber waste from an annual production of two billion tons of sugarcane. This by-product has a promising potential to replace energy-intensive building systems, such as concrete and brick, by providing building materials that combine sustainability and structural efficiency.

With this perspective in mind, the University of East London (UEL), in partnership with Grimshaw Architects and manufacturer Tate & Lyle Sugar, has developed an innovative building material called Sugarcrete™. The aim of the project is to explore sustainable building solutions by recycling biological by-products from sugarcane, which in turn reduces carbon emissions in the construction industry – all while prioritizing social and environmental sustainability during the production and implementation of these building materials.

Indy 500 race cars are running on 100% renewable fuel and tires with recycled plastics

	Automotive News	**June 12, 2023**	**https://www.autonews.com/technology/indy-500-cut-greenhouse-gas-emissions-help-shell**

The green flag that starts the Indy 500 scheduled for Sunday, May 28, holds extra significance this year. The 33 open-wheel cars will be the cleanest, greenest and potentially meanest in the 107-year history of the classic American race.

Indy cars will be burning 100 percent renewable biofuel, using carbon neutral motor oil and orbiting the oval on tires made of recycled plastics. Even some of the support trucks delivering supplies to the track will be electric-powered.

Shell said this season's IndyCar fuel remains a 100-octane E85 blend. But the source of much of that 85 percent ethanol has changed. It now contains what Shell calls "second-generation" ethanol, which is made from a part of sugar cane that would have been tossed into landfills. The other 15 percent, the part that replaces last year's fossil fuel racing gasoline, is made from a nonfood source Shell won't identify. The new fuel is designed to cause little if any disruption to the race teams.

How new European Union legislation will impact the global

sugarcane sector

	Bonsucro	**May 19, 2023**	**https://bonsucro.com/how-new-european-union-legislation-will-impact-the-global-sugarcane-sector/**

The changing climate is an emergency that needs global cooperation. In 2015, leaders from across the world met in Paris and made a legally binding agreement to substantially limit global temperature increases to 1.5 degrees. However, the latest IPCC report published in March shows that emissions are still rising. Fortunately, policymakers have been paying attention to the mounting pressures and have been busy designing and proposing legislations and initiatives to drive change. We've reached a point where new laws are starting to come into effect, particularly in the European Union (EU), which will impact on almost all businesses in the sugarcane sector.

At Bonsucro, we have been closely following what these policy developments mean for us and our members with help from ISEAL. We are a member of ISEAL, a globally recognised framework for credible sustainability systems, and a community of sustainability standards. Now that the policy changes in the EU are well advanced, we want to share what this means for our members.

How are Blockchain technology and ChatGPT going to impact the agriculture sector?

	Agriculture Post	**April 11, 2023**	**https://agriculturepost.com/agritech/how-are-blockchain-technology-and-chatgpt-going-to-impact-the-agriculture-sector/**

Blockchain technology has every element necessary to become a genuine problem-solver. In contrast, many existing technologies are either inadequate or prohibitively expensive, Sumit Sarabhai writes.
Agriculture is one of the areas where blockchain technology could revolutionise by solving the existing problem of agri-product fraud, its traceability, price manipulation, and lack of customer trust in the product. Blockchain technology will bring drastic changes to the agriculture industry. Blockchain, coupled with the Internet of Things (IoT), is remodelling the food production industry. It is set to make farming a sustainable practice with a change in approach to optimise farming resources like water, labour and fertilisers. Farmers and other stakeholders will be able to improve the irrigation system on a timely basis with information like the quality of seed, and how crops are growing among other practices.

Technology adoption is key to sustainable regenerative farming

	Agriculture Post	**June 13, 2023**	**https://agriculturepost.com/opinion/technology-adoption-is-key-to-sustainable-regenerative-farming/**

In the pursuit of sustainable and regenerative farming practices, technology plays a crucial role. With the ever-increasing challenges posed by climate change, soil degradation, water scarcity, and the need to feed a growing global population, harnessing technology becomes essential.

By integrating innovative technologies into agricultural systems, farmers can enhance efficiency, reduce environmental impact, and foster long-term sustainability. From precision agriculture and remote monitoring to data analytics and artificial intelligence, technology offers a wide range of tools and solutions to support sustainable and regenerative farming.

US study finds PLA & oil-based fabrics resist degradation

FIBRE2F	**Fibre2Fashion**	**May 23, 2023**	**https://www.fibre2fashion.com/news/sustainability-news/us-study-finds-pla-oil-based-fabrics-resist-degradation-287824-newsdetails.htm**

Upon examining the biodegradability of various fabric types in the ocean for the first time, researchers at the Scripps Institution of Oceanography, UC San Diego found that natural and cellulose-based fabrics from wood degraded within a month. In contrast, Polylactic Acid (PLA), a touted biodegradable plastic, and oil-based sections of fabric blends didn't show any degradation signs after over a year underwater.

Biodegradable and compostable PLA, a bio-based plastic made from renewable resources like corn starch or sugar cane, is often hailed as a solution to the plastic problem and was therefore chosen for the study. Ten different types of commonly used fabrics in the textile industry were tested, including natural cellulose, wood-based cellulose, bio-based plastic (PLA), oil-based plastic, and mixed fabric blends, according to the study titled 'Not so biodegradable: Polylactic acid and cellulose/plastic blend textiles lack fast biodegradation in marine waters' published in the PLOS One journal.

Crop burning should be reduced through technology: UN body

DAWN	**Dawn**	**June 13, 2023**	**https://www.dawn.com/news/1759456/crop-burning-should-be-reduced-through-technology-un-body**

Modern technology must be utilised to reduce the effects of crop burning, instead of banning the practice altogether, a report by a United Nations body has suggested.

The report, Sustainable Management of Crop Residues in Bangladesh, India, Nepal, and Pakistan: Challenges and Solutions, released by the UN Economic and Social Commission for Asia and the Pacific, (UN-ESCAP), noted that residue burning plays an active role in contributing to air pollution in the Indo-Gangetic plains of South Asia.

It proposes a sub-regional framework under which interventions can assign a real economic and commercial value to crop residues, so that their burning results in an economic loss to the farmer.

Harvest Mate app helps cane growers' yield [Australia]

BUNDABERGNOW	**Bundaberg Now**	**May 10, 2023**	**https://www.bundabergnow.com/2023/05/10/harvest-mate-app-helps-cane-growers-yield/**

Cane growers in the Bundaberg Region can now have access to the new Harvest Mate app to help capture additional sugar yield from their crops.

The new decision support tool helps sugarcane growers make more profitable decisions at harvest time and it was launched in Queensland recently.

The Harvest Mate app, developed through a collaboration between the Palaszczuk Government and Sugar Research Australia (SRA), is designed to help growers capture additional sugar yield from their paddocks.

Raízen & Sulzer partner for advanced biofuel production [Brazil]

Sustainability	**Sustainability**	**June 7, 2023**	**https://sustainabilitymag.com/articles/raizen-sulzer-partner-for-advanced-biofuel-production**

Raízen, the leading producer of ethanol derived from sugarcane waste in Brazil, is embarking on a significant investment initiative.

Over the next seven years, the company plans to construct 20 advanced processing facilities for ethanol production and has chosen Sulzer as a key technology provider.

Sulzer, a renowned global specialist in pumps, has collaborated with Raízen for over two decades to address the pumping requirements for E2G technology.

They have provided a variety of pumps for pilot plants, and their engineering teams have closely collaborated to overcome the intricate technical obstacles involved in converting bagasse into valuable fuel.

Brazilian technical assistance to dairy and sugarcane industries in Sri Lanka [Brazil/Sri Lanka]

LB lanka business online	**Lanka Business Online**	**May 30, 2023**	**https://www.lankabusinessonline.com/brazilian-technical-assistance-to-dairy-and-sugarcane-industries-in-sri-lanka/**

High-Level Technical Team of eight professionals from the Federal University of Viçosa, Federal University of Sao Carlos and the Brazilian Cooperation Agency (ABC) is scheduled to undertake a technical visit to Sri Lanka with a view to providing Brazilian Technical Assistance for the development and capacity building of the Dairy and Sugarcane industries in Sri Lanka, from 09 to 21 June 2023.

The Technical Team is scheduled to undertake field visits and inspection tours in Udawalawe, Kandy, Mawanella and Kurunegala etc. to identify problems associated with the Dairy and Sugarcane industries and to provide technical solutions to increase capacity and the production of the two industries in Sri Lanka.

Russia and Cuba ink deals to revitalize communist-run island's ailing economy [Cuba]

REUTERS	**Reuters**	**May 19, 2023**	**https://www.reuters.com/business/russia-cuba-ink-deals-revitalize-communist-run-islands-ailing-economy-2023-05-19/**

Russian officials and business leaders have signed multiple deals with Cuban counterparts at a forum in Havana this week, agreeing to work together to boost sugar and rum output, assure wheat and crude oil supply to the communist-run island, and overhaul crumbling tourist facilities.

Russia this week also promised to help revive Cuba's once-vaunted sugar industry, which has nearly collapsed in recent years as its production has plunged to historic lows.

Aleksandr Bogatyr, of Russia's Progress Agro, told Reuters on the sidelines of the forum that his firm and Cuban state-run sugar company Azcuba would begin a joint venture as early as next year to overhaul the obsolete "Uruguay" sugar mill in Sancti Spiritus province.

	The firm hopes to eventually export as much as 150,000 tons of sugar per year, about one-third of this year's countrywide target.

Egyptian Irrigation Ministry, FAO discuss "Enhancement of Water Productivity in Agriculture" project [Egypt]

DAILY NEWS EGYPT	**Daily News Egypt**	**June 12, 2023**	**https://www.dailynewsegypt.com/2023/06/12/egyptian-irrigation-ministry-fao-discuss-enhancement-of-water-productivity-in-agriculture-project/**
	Egypt's Minister of Water Resources and Irrigation, Hani Sweilam; met with Nasr El-Din Haj El-Amin, representative of the FAO in Egypt, Walid Hassan, Senior Natural Resources Officer at FAO, and Naglaa El-Bendary, project coordinator and irrigation expert, to discuss the executive procedures for the "Enhancement of Water Productivity in Agriculture" project. *The project is integrated with the ministry's strategy, which includes the transformation of modern irrigation in sandy lands, sugar cane farms and orchards, and the implementation of development works for watering cans by converting them into pressurized pipes with a single-lift system with the use of solar energy as an energy source in line with the policy of the state towards expanding the use of environmentally friendly renewable energy.*		

Ethanol plant in Himachal Pradesh to prove a boon for farmers [India]

The Statesman	**The Statesman**	**June 6, 2023**	**https://www.thestatesman.com/india/ethanol-plant-in-himachal-pradesh-to-prove-a-boon-for-farmers-1503187937.html**
	The Central government has given its nod for the establishment of an ethanol plant to be installed in the Una district of Himachal Pradesh by Hindustan Petroleum Corporation Limited (HPCL). *An official spokesperson said here on Tuesday that due to the concerted efforts of the Chief Minister Thakur Sukhvinder Singh Sukhu the Centre government has approved to establish an ethanol plant in the Una district.* *This plant will be set up on 30 acres of land with a cost of Rs. 500 crore, he added.* *"Since major raw materials for producing ethanol are rice, sugarcane and maize the plant will go a long way in strengthening the economy of the farmers of the region as this raw material will be procured from Kangra, Hamirpur, Bilaspur and Una districts," he said.*		

Billions lined up as investors turn to sugar mills amid rising demand [Kenya]

NATION	**Nation**	**May 30, 2023**	**https://nation.africa/kenya/business/billions-lined-up-as-investors-turn-to-sugar-mills-amid-rising-demand--4250860**
	A fresh round of multi-billion shilling investments is lined up for the sugar industry in Kenya as investors trooped in hoping to capitalise on a widening deficit in the production of the sweetener.		

A review of the investment pipeline shows that more than Sh15 billion in fresh capital is targeted for the limping sugar industry towards greenfield projects as well as the expansion of some existing processing factories and cane farms.

The bulk of the greenfield sugar factory projects falls within Narok, Nandi, and Kericho counties—marking a noticeable shift from the traditional cane-growing zones in western Kenya such as Kisumu, Nyando, Mumias, Migori, Homa Bay, and Kakamega.

Innovation buzz: Pakistani company uses drones to offer high-tech help to farmers [Pakistan]

ARAB NEWS Pakistan	**Arab News Pakistan**	**June 8, 2023**	**https://www.arabnews.pk/node/2317866/pakistan**

The next generation farmhand in Pakistan may be a drone.

Since 2020, a woman-led Pakistani company called Kalam4Solutions has been teaching Pakistani farmers how to use drones that can hover above fields and perform backbreaking tasks like spraying pesticides and applying fertilizers in a fraction of the time it takes to do it by hand.

The goal of Kalam4Solutions, set up in 2018, is to provide high-tech relief for rural communities and help farmers save time, energy, and money in a country where agriculture is the largest sector of the economy, contributing around 24 percent to Gross Domestic Product (GDP), accounting for half of the employed labor force, and being the largest source of foreign exchange earnings through exports.

Louisiana's bagasse piles are bigger than ever. Could new technology find other uses? [USA]

THE ADVOCATE	**The Advocate**	**March 18, 2023**	**https://www.theadvocate.com/baton_rouge/louisianas-bagasse-piles-are-bigger-than-ever-could-new-technology-find-other-uses/article_5ea22930-f4e4-11ed-b509-4bcce84c12a8.html (paywall)**

Bagasse is a pain to deal with. It's light and fluffy and hard to transport. It's expensive to move. And as piles grow, they take up space where more sugar cane could grow.

Sugar cane farmers and mills across Louisiana have been searching for ways to get rid of bagasse for decades.

For years, mills have used bagasse as a power source.

American Biocarbon runs a pilot plant on the Cora Texas mill property, where it makes fuel pellets, a coal alternative used in industrial heating plants that are transitioning away from fossil fuels. It also makes biochar, which is placed under sugar cane roots and which the company estimates can increase yields by 30% per acre.

Sugarcane Ethanol Plant Secures Crop Commitments [USA]

	Energy AgWired	**June 12, 2023**	**https://energy.agwired.com/2023/06/12/sugarcane-ethanol-plant-secures-crop-commitments/**
	California Ethanol & Power has announced its low-carbon sugarcane-to-ethanol and power facility, Sugar Valley Energy, has secured letters of intent with local Imperial Valley farmers to grow 12,000 acres of sugarcane to support its initial feedstock production schedule. *The sugarcane plantings will take place in phases, corresponding with the timing of construction of the facility, which will encompass an advanced bioethanol refinery producing as much as 75 million gallons annually, and a power island that will produce 43 MW of bioelectricity as well as pipeline-grade biogas. The SVE Essential Ethanol™ will represent the lowest carbon pathway of any commercial biofuel produced in California.* *Commitments for another 38,000 acres of sugarcane are expected to be secured to support the facility completion and commencement of operation in 2026, with financing for the 160-acre facility and the agricultural operations expected this year.*		

Dow Sources Bio-based Feedstock for US Plastics Production [USA]

	Plastics Today	**June 1, 2023**	**https://www.plasticstoday.com/biopolymers/dow-sources-bio-based-feedstock-us-plastics-production**
	Dow has secured a long-term supply of bio-based ethylene feedstock for use in renewable-polyethylene production through a North American agreement with bioconversion company New Energy Blue. *New Energy Blue will make the bio-based ethylene from leftover corn stalks and leaves (aka, corn stover). Dow will buy the bio-based ethylene and use it to produce polyethylene for packaging, footwear, and transportation applications.* *"Our approach to incorporating bio-based feedstocks is a mass-balance approach, where we combine these new feedstocks with existing feedstocks and certify the presence of bio-based materials within the overall product feedstock," Manav Lahoti, Dow global sustainability director for Olefins, Aromatics & Alternative, tells PlasticsToday. "Dow's approach will be certified by the ISCC Plus, a certification highly regarded throughout the industry."*		

Latest Research

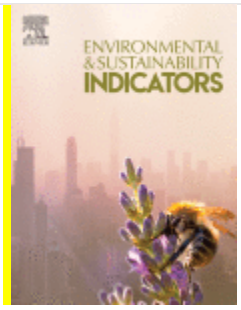
Use of imperialist competitive algorithm for optimization of energy productivity and damage assessment in sugar industry: A case study

A study was conducted to optimize energy consumption and evaluate the life cycle of the sugar industry in Plant (PS) and Ratoon (RS) sugarcane farms, which were evaluated using the imperialistic competition algorithm (ICA). The data were collected through face-to-face interviews with farmers and specialized questionnaires. The energy equivalent of each input or output was obtained, with diesel fuel inputs and

chemical fertilizers being the most non-optimal energy consumers. The energy indices showed better results when comparing yields at different levels. Additionally, a life cycle assessment (LCA) was performed using the IMPACT2002+ model, which revealed that the production of sugarcane generates fewer environmental burdens in almost all fields of production in RS than in PS. However, aquatic ecotoxicity and aquatic eutrophication were identified as the most significant environmental loads due to the excessive and unconventional use of chemical fertilizers. Based on the results obtained from the optimization of energy consumption and environmental emissions using the ICA, it was found that PS farms were more efficient than RS farms, despite consuming more energy. To reduce environmental greenhouse gas emissions in the sugar industry, focusing on reducing aquatic ecotoxicity and aquatic eutrophication would be the most effective strategy.

Published: June 10, 2023

> **Link**



Response of endophytic bacteria in sugarcane roots to different slow-release fertilizers with dicyandiamide (DCD) and humic acid (HA) applications

The overuse of chemical fertilizers has severe consequences on environmental ecosystems. However, slow-release fertilizers (SRFs) can reduce the total amount and number of fertilizer applications and improve efficiency. Field experiments were conducted in early March 2016 to investigate the proper usage of SRFs such as dicyandiamide (DCD) and humic acid (HA). Seven treatments were set up as follows: SRF with 120 g t-1 DCD (A); SRF with 150 g t-1 DCD (B); SRF with 235 g t-1 DCD (C); SRF with 3 kg t-1 HA (D); SRF with 8 kg t-1 HA (E); SRF with 18 kg t-1 HA (F); and traditional fertilization (CK). The abundance of endophytic bacteria in sugarcane roots under the B treatment was significantly higher than that under traditional fertilization. At the genus level, Massilia, Granulicella, and Herbaspirillum were unique and dominant in the sugarcane roots under the CK treatment. Compared with CK, Streptomyces was the unique dominant endophytic bacteria in sugarcane roots under different SRFs applications. These results suggest that cane health and tolerance to environmental stresses were not significantly altered after applying SRFs in sugarcane fields.

Published: June 10, 2023

> **Link**



Weed Management Research To Increase Sugarcane Cropping System Sustainability

Sugarcane cropping systems are rather environment-friendly, but weed control remains a key factor to achieve both technical and economic performances in sugarcane farms. Agroecological weed management has become crucial due to the increasingly strict European regulations and high societal expectations. Cirad and eRcane have been assessing more sustainable, rational and responsible weed management approaches for several years.

Published: 2023

> **Link**



Sustainable Management of Crop Fertilization And Soil Fertility

Fertilization practices have a major impact on sugar yields, while also being the source of multiple forms of pollution. Enhancing the planning and management of fertilization practices to boost the efficacy of fertilizers is crucial for the eco-environmental sustainability of sugarcane farms. Agricultural recycling of Exogenous Organic Matter (EOM) provides an alternative to chemical fertilizer applications. This agroecological practice helps mitigate global warming while improving soil fertility and must be managed localy in a circular economy setting.

Published: 2023

> **Link**



Agroecological Management of Sugarcane Pests

Agroecological management of sugarcane pests is going to play a key role in pest control solutions. This control strategy appears more complicated to implement in the field, as agroecology is based on fine knowledge of ecological processes (e.g. pest-crop-natural enemy interactions), and of how agricultural and environmental factors influence population dynamics. Here are some examples of what could be done to control insect pests, which cause 10 to 30% of crop losses, depending on infestation levels.

Published: 2023

> **Link**



Effect of Drip Fertigation on Growth, Yield and Quality of Ratoon Sugarcane

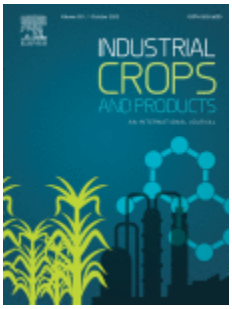
A field experiment was conducted at Zonal Agricultural Research Station, V.C. Farm, Mandya, Karnataka, India during Kharif 2020-21. The effect of water-soluble fertilizers on performance of ratoon sugarcane (Saccharum officinarum) as influenced by fertigation through surface drip irrigation was studied. The soil at the experimental site was red sandy loam with neutral pH (6.7), normal electrical conductivity (0.21dS m-1), medium organic carbon (5.2 g kg-1), low available nitrogen (275 kg ha-1), medium phosphorus (35 kg ha-1) and potassium content (280 kg ha-1). The experiment was laid out in Randomized Complete Block Design with three replications comprising seven treatments using VCF-0517 sugarcane mild late (12-14 months) maturing variety. The application of WSF at 125 per cent RDF (312.5:125:156:N:P2O5:K2O) through drip fertigation showed significantly superior growth and yield attributes viz., plant height (357.0 cm), no. of tillers clump-1 (15.0), internode length (16.67 cm), cane dry weight (54.8 t ha-1), millable canes (8.17 clump-1), cane length (341.67 cm), cane girth (3.30 cm), single cane weight (2.40 kg), number of internodes cane-1 (21.40) and cane yield (182.67 t ha-1). Also, superior juice qualities such as juice extraction percentage (70) and sugar yield (20.88 t ha-1) were recorded. The results clearly indicated application of water-soluble fertilizers at 125 per cent RDF through surface drip fertigation resulted in higher growth and yield of sugarcane due to enhanced water and nutrient use efficiency.

Published: June 9, 2023

> **Link**



Hydrothermal pretreatment of sugarcane bagasse pith for biogas production and digestate valorization to biochar



Sugarcane bagasse pith is generated as waste from bagasse-based paper industries which is still underutilized and mostly burnt as fuel in boilers. Therefore, an integrated pathway for the value-addition of the pith is explored. In the present study, hydrothermal pre-treatment of pith through response surface methodology and C/N was optimized for enhanced biogas production. At optimized conditions, a maximum biogas yield of 474.3 mL/gVS with ~55% methane was attained with cellulose and reducing sugar of 59.2% and 3.68 g/L respectively. A severity factor of 3.8–4 was found suitable for cellulose enrichment, reducing sugar and biogas production, and at higher severity, a reduction in the above parameters was observed. Moreover, the digestate-based biochar delivered the highest biochar yield and surface area of 75.8 wt% and 254.47 m2/g respectively. This study is the first of its kind where the bagasse pith has been explored in a biorefinery approach to achieve circularity.

Article online now, journal to be published October 2023

> **Link**

CO2 Capture in a Thermal Power Plant Using Sugarcane Residual Biomass

energies

The decarbonization of energy matrices is crucial to limit global warming below 2 °C this century. An alternative capable of enabling zero or even negative CO2 emissions is bioenergy with carbon capture and storage (BECCS). In this sense, the Brazilian sugar–energy sector draws attention, as it would be possible to combine the production of fuel and electricity from renewable biomass. This paper is the final part of a study that aimed to research carbon capture and storage (CCS) in energy systems based on sugarcane. The case studied is CCS in thermal power plants considering two different technologies: the steam cycle based on the condensing–extraction steam turbine (CEST) and the combined cycle integrated to biomass gasification (BIG-CC). The results for the thermal power plant indicate that the CO2 capture costs may be lower than those in cogeneration systems, which were previously studied. The main reasons are the potential scale effects and the minimization of energy penalties associated with integrating the CCS system into the mills. In the best cases, capture costs can be reduced to EUR 54–65 per ton of CO2 for the CEST technology and EUR 57–68 per ton of CO2 for the BIG-CC technology.

Published: June 7, 2023

> **Link**

Identification of Soil Features Suitable for Barley, Maize and Sugarcane Cultivation using Precision Agriculture

E3S Web of Conferences

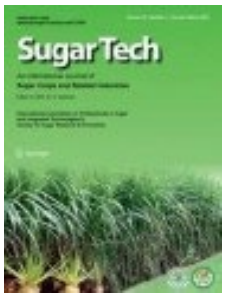
Agriculture plays a crucial role in a nation's economy by significantly contributing to its Gross Domestic Product (GDP). Improved methods of farming not only benefit farmers by lowering their workload but also boost crop yields. Identifying the optimal soil for each crop is essential for producing harvests of the highest quality and quantity. Precision farming in agriculture uses Internet of Things (IoT) technology to ensure the

most efficient use of available resources to increase crop yields and reduce operational costs. It reduces instances of crop failure and aids in averting catastrophic losses. Variations in soil temperature and soil moisture have the most significant influence on crop yield. The Soil Moisture Sensors calculate the soil's total volumetric water content. Using the BMP280 absolute barometric pressure sensor, it is possible to get accurate temperature and air pressure measurements. In the paper, the primary purpose of precision agriculture usage is to determine the optimal soil characteristics for the production of Barely, Maize and Sugarcane crops.

Published: June 5, 2023

> **Link**

A Soil Physical Assessment Over Three Successive Burned and Unburned Sugarcane Annual Harvests



A field experiment was carried out to evaluate changes in soil physical properties over three successive years of sugarcane cultivation under burned (BH) and unburned (UH) cultivation systems. Soil samplings were collected after sugarcane planting, after the plant-cane harvest (H1) and after the first ratoon harvest (H2) in areas subjected to BH and UH. The degree of compactness (DC), macroporosity (MaP), soil penetration resistance (SPR), total organic carbon, field water content (θ) and water content at field capacity (θFC) were measured. Moreover, the amount of surface straw was measured after H1 and H2. Soil physical quality was considerably reduced after H1 regardless of the harvest systems. Annual successive harvests increased DC by 10%, reducing MaP by about 50% and increasing SPR. The negative effects of the successive harvests were slightly greater at BH because of the lowest amount of sugarcane straw on the soil surface, which considerably reduced θ. It can be concluded that successive harvests reduce the soil physical quality in burned and unburned harvest systems after the first harvest, but the negative effect is more prominent in areas with straw burning.

Published: May 18, 2023

> **Link**

"Genotoxic" Warning: Chemical Found in Common Sweetener Damages DNA

SciTechDaily

Sucralose, a widely used artificial sweetener, produces a DNA-breaking compound, sucralose-6-acetate, during digestion, according to a recent study. This compound, also found in trace amounts in the sweetener itself, exceeds safe toxicological thresholds and can cause genotoxicity and "leaky gut."

A new study finds a chemical formed when we digest a widely used sweetener is "genotoxic," meaning it breaks up DNA. The chemical is also found in trace amounts in the sweetener itself, and the finding raises questions about how the sweetener may contribute to health problems.

Published: Jun 4, 2023

> **Link**

Events



2nd International Conference on Cane and Sugar 2023

Thailand Society of Sugar Cane Technologists

5-7 July 2023

Aswin Grand Convention Hotel
88 Vibhavadi Rangsit Rd (Kamphaeng Phet 6),
Talad Bangkhen, Lak Si
Bangkok, 10210 Thailand

> **Link**



Seminario Internacional – Agro 4.0 Industria - De la revolución verde a la agroindustria digital

Technicana

27-28 July 2023

Centro de Eventos Valle del Pacífico, Cali, Colombia

> **Link**

38th American Sugar Alliance International Sweetener Symposium

American Sugar Alliance

4-8 August 2023

Napa, California

> **Link**

Central American Sugar Meeting 2023

ATAGUA

7-11 August 2023

Hotel Museo Casa Santo Domingo
3a Calle Oriente 28 A
Antigua Guatemala, Guatemala

> **Link**

	95th SASTA Congress *South African Sugar Technologists' Association* **15-17 August 2023** **ICC, Durban, South Africa** **Abstract submissions are due by 20 February 2023 and if accepted, the papers will be due for submission to SASTA in April 2023.** > **Link**
	Fenasucro & Agrocana 2023 *Fenasucro & Agrocana* **15-18 August 2023** **Sertãozinho – SP, Brazil** > **Link**
	Sugarex Thailand 2023 *Fireworks Exhibitions and Conferences* **14-15 September 2023** **Khonkaen International Convention & Exhibition Center (KICE), Khonkaen, Thailand** > **Link**
	XII Congreso ATALAC 2023 COSTA RICA *Asociación de Técnicos Azucareros de Latinoamérica y El Caribe ATALAC* **Congress: 18-20 September 2023** **Centro de Convenciones de Costa Rica, Heredia.** **Post-Congress: 21-22 September 2023** **Hotel Condovac La Costa, Guanacaste.** > **Link**



International Conference on 'Sugar Industry – Modernization & Diversification for Sustainability'

UP Sugar Mills Assocation, National Sugar Institute Kanput

11-12 October 2023

National Sugar Institute, Kanpur, India

> **Link**

Sugar & Ethanol Asia

Sugar & Ethanol Asia 2023

InformaConnect

3-5 October 2023

Radisson Blu Plaza, Bangkok, Thailand

> **Link**



32nd ISO International Seminar

ISO

21-22 November 2023

London

> **Link**

CARBO SOLUTIONS INTERNATIONAL
HIGH TECH SUGAR SOLUTIONS

Carbo Solutions 25th International Sugar Conference

Carbo Solutions

24-26 January 2024

Casablanca Marriott Hotel, 100, Avenue des FAR Casablanca, Morocco

> **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).* **August 2025** **Centro de Eventos Valle del Pacifico, Cali – Colombia** > **Link**