

Welcome to the ISSCT Bulletin for July 2021, collecting latest news, research, along with past and upcoming events related to sugar cane technology.

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Sugar Cane News

Mauritian Government announces 2021-22 budget – sugar cane producers set to benefit

In its Budget Speech for 2021-22, the Mauritian Government announced a raft of measures intended to boost the country's agricultural sector and ensure that its sugar cane industry in particular has a clean and sustainable future.

The budget, delivered by Mauritius' Minister of Finance, Renganaden Padayachy, introduces a number of new policies and changes to existing approaches that will affect the sugar cane industry, ranging from green energy production to sustainability certification and improved remuneration for sugar cane planters.



At the heart of the new budget is a new national mechanism for sourcing energy from biomass. The 'National Biomass Framework' will allow all Mauritian sugar cane planters and producers to be remunerated for bagasse at Rs 3.50 per kWh of electricity. This translates into a guaranteed price of Rs 3,300 per tonne of sugar for bagasse. For energy, this means that for each tonne of sugar produced a sugar planter would get Rs 100 (USD \$2.5) at the previous pricing level. Now, they will receive Rs 3,300 (USD \$82.5). 11% of Mauritius' renewable energy is sourced from biomass, and the government hopes to meet 60% of its energy needs through renewable sources by 2030.

Significantly, the budget also promotes sustainability through incentives that aim to help producers adopt standards such as [Bonsucro](#). Sugar cane producers will be offered a "50% refund on the costs related to certification, testing and accreditation with a view to achieving standards such as Bonsucro." A Mauritian mill, Omnicane, became the first in Africa to achieve Bonsucro certification in 2019.

Other sugar cane-related provisions in the budget include:

- A guaranteed price of Rs 25,000 per ton (USD \$580) for planters producing up to 60 tons of sugar for Crop 2021;
- A waiver on insurance premium payable to Sugar Insurance Fund Board by planters producing up to 60 tons of sugar for crop 2021;
- A 50% subsidy on fertiliser for Crop 2021 for planters producing up to 60 tons of sugar;
- A Cane Replantation Scheme for small planters; and
- A modern sugar storage facility of 150,000 tons at Riche Terre.

The budget speech can be found in full here:

https://mauritiusassembly.govmu.org/assets/pdf/budgetDay/2021/2021_22budgetspeech_english.pdf

Rising mechanisation in SE Asian regional sugar cane harvest

	Khmer Times	June 7, 2021	https://www.khmertimeskh.com/50869479/rising-mechanisation-in-se-asian-regional-sugar-cane-harvest/
<p><i>The mechanisation of the sugar cane sector, in particular in the harvesting of sugar cane, remains low across Southeast Asia relative to other major producing markets, namely Brazil, other countries in South America and India and China.</i></p>			

On St. Croix and Puerto Rico, a Centuries-Old Crop is New Again [US Virgin Islands]

	The St. Thomas Source	June 9, 2021	https://stthomassource.com/content/2021/06/09/on-st-croix-and-puerto-rico-a-centuries-old-crop-is-new-again/
<p><i>The green tassels of sugar canes were a surprising sight on a May morning in 2021, waving in the wind more than half a century since the crop was grown on a large scale on St. Croix.</i></p>			

University Of São Paulo: The Conductor Of An Orchestra: Red-Rot Fungus Controls Insect And Plant To Spread [Brazil]

	India Education Diary	June 15, 2021	https://indiaeducationdiary.in/university-of-sao-paulo-the-conductor-of-an-orchestra-red-rot-fungus-controls-insect-and-plant-to-spread/
<p><i>Infestations by pests and fungi in the sugarcane crop are one of the biggest problems faced by the sugar-alcohol industry and often occur together. Red rot, caused by the fungus Fusarium verticillioides, and the sugarcane borer, for example, are almost always in association. It was believed that the borer opened the way for the fungus to contaminate the sugarcane, but researchers at USP's Luiz Queiroz School of Agriculture (Esalq) in Piracicaba, in an innovative discovery, point out that the relationship between the two is much closer than that it seems and the fungus is the master of this whole scheme.</i></p>			

Two-fifths of EU agricultural imports could be 'highly vulnerable' to drought by 2050

	Carbon Brief	June 15, 2021	https://www.carbonbrief.org/two-fifths-of-eu-agricultural-imports-could-be-highly-vulnerable-to-drought-by-2050
<p><i>Ercin's new study assesses the EU's "agri-food economy" – which includes meat, dairy, cocoa, coffee, food and cosmetic production based on palm oil – and highlights how vulnerable EU imports are to droughts in other countries and then decline. CO2 concentration. The research selects eight crops – including cocoa, coffee and sugar cane – that need significant amounts of rainfall to grow and are frequently imported to the EU.</i></p>			

Recent advances in the sustainable aviation industry

	Biofuels International	June 22, 2021	https://biofuels-news.com/news/recent-advances-in-the-sustainable-aviation-industry/
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The global aviation industry currently accounts for about 2.5% of human-induced greenhouse gas emissions. Researchers all over the world are scrambling to figure out a more secure way to fuel aviation and mitigate its carbon footprint.

...Unlike the others, Hydroprocessed Fermented Sugars to Synthetic Isoparaffins (HFS-SIP) is made up of a single molecule, which is a 15-carbon hydrotreated sesquiterpene known as farnesane.

Farnesane is produced by the fermentation of sugars, which is done commercially from sugar cane juice.

Frosts Reported in Brazil's Sugarcane, Coffee and Corn Areas [Brazil]



IPP Media

May 31, 2021

<https://www.ippmedia.com/en/features/transform-agriculture-through-production-improved-seed-varieties>

SAO PAULO, June 30 (Reuters) - Frosts were reported in Brazil's sugarcane, coffee and corn areas on Wednesday, analysts and weather agencies said, as the country saw very low temperatures all the way from the southernmost state of Rio Grande do Sul to the northern part of São Paulo.

Coimbatore-based institute shares seven technologies [India]

THE TIMES OF INDIA

The Times of India

July 1, 2021

<https://timesofindia.indiatimes.com/city/coimbatore/city-based-institute-shares-seven-technologies/articleshow/84001255.cms>

COIMBATORE: City-based ICAR-Sugarcane Breeding Institute (SBI) licensed seven of its technologies to two private firms on Tuesday. The institute signed over licenses for six technologies, including soil moisture indicator, cane jam production from sugarcane juice, technology for production of cane dietary fibre food products, liquid jaggery, sugarcane de-trashing tool and sugarcane rind removing equipment to Nashik-based Celebrating Farmers Edge International and license for the motorized double-headed sugarcane single bud cutting machine to Singanallur-based Sri Balaji Industries.

Court Upholds Florida Residents' Claims in Sugarcane Burning Pollution Lawsuit Against Big Sugar [USA]



Business Wire

July 2, 2021

<https://www.businesswire.com/news/home/20210702005458/en/Hagens-Berman-and-Berman-Law-Group-Court-Upholds-Florida-Residents%E2%80%99-Claims-in-Sugarcane-Burning-Pollution-Lawsuit-Against-Big-Sugar>

A federal judge has upheld negligence, strict liability, and medical monitoring claims brought by Florida residents in a lawsuit against conglomerate sugarcane growers who practice widespread sugarcane crop burning causing pollution, property damage and hazardous air quality, according to Hagens Berman and Berman Law Group of Florida.

Sugarcane waste can be used to produce fuel, diversify sugar industry - ILO study [Guyana]



NewsRoom.gy

June 11, 2021

<https://newsroom.gy/2021/06/11/sugarcane-waste-can-be-used-to-produce-fuel-diversify-sugar-industry/>

The waste of the sugarcane, known as bagasse, can be used to create second-generation ethanol for fuel, which can be a profitable agro-energy investment in the diversified sugar industry, a recent study concluded.

	<p>On Thursday, an International Labour Organization (ILO) study on the socio-economic impact of the closure of four local sugar estates between 2016 to 2017 was released. The estates were closed due to economic considerations but this study found that the shutdown resulted in significant hardships for thousands of people.</p> <p>Cognisant of the current government's aim to reopen these estates, revitalise the sugar industry and restore livelihoods, the study made key recommendations on how the local sugar industry can be diversified and made profitable. One such recommendation was the creation and use of cellulosic ethanol from sugarcane.</p>
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Opening up sugar industry to displace thousands of agri workers [Philippines]

	Bulatlat	July 2, 2021	https://www.bulatlat.com/2021/07/02/opening-up-sugar-industry-to-displace-thousands-of-agri-workers/
<p>MANILA – Farmers groups decried the possible displacement of thousands of agricultural workers due to the planned liberalization of the sugar industry.</p> <p>In a statement, the Unyon ng mga Manggagawa sa Agrikultura (UMA) and the National Federation of Sugar Workers (NFSW) said that agricultural workers in the sugar industry nowhere to go as millions of Filipinos already lost their job during the pandemic.</p>			

Early crushing: hard choices? [India]

	Business Recorder	July 1, 2021	https://www.brecorder.com/news/40104062/early-crushing-hard-choices
<p>After receiving flak from farmer lobbies, the Punjab government has reinstated several amendments to The Sugar Factories (Control) Act, 1950. The amendments restore the power of the provincial government to notify beginning of cane crushing season, "no later than November 30th". The ruling party, it appears, is leaving no stone unturned to please the farmer support base in the province. But is it a wise decision?</p>			

Explained | How India's ethanol-blending plan impacts industry [India]

	Money Control	June 30, 2021	https://www.moneycontrol.com/news/business/explained-how-indias-ethanol-blending-plan-impacts-industry-7107401.html
<p>Blending petrol with more of home-grown ethanol can reduce India's oil import bill by \$4 billion a year, and is great news for sugar mills as it is produced from a byproduct. It also helps farmers.</p> <p>As part of the central government's target to blend petrol with ethanol up to 20 percent 2023, the Ministry of Road Transport and Highways on June 28 issued a draft notification to facilitate manufacture of automobiles designed to run on petrol blended with ethanol to the extent of 12 percent and 15 percent.</p>			

Moving to organic fertiliser: Educate farmers fast [Sri Lanka]

	Daily FT	June 22, 2021	https://biofuels-news.com/news/new-planting-technology-to-boost-australian-sugarcane-industry/
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	<p>President Gotabaya Rajapaksa is extremely interested in moving from current agricultural practice of using chemical fertiliser to organic, in line with his 'Vistas of Prosperity and Splendour' policy framework, which stated that the whole agricultural sector of the country should be transformed to use organic fertilisers. His wish is to make Sri Lanka the first country in the world having moved to 100% organic fertiliser cultivation.</p> <p>... The Director General of Sevanagala Sugar Industries claimed they saved Rs. 250 million by stopping the use of chemical fertilisers and the saving would be utilised to build a factory for organic fertiliser.</p>
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Brazil's Sugarcane Technology Center is "training" investors to raise R\$1 billion with IPO [Brazil]

	The Rio Times	June 21, 2021	https://riotimesonline.com/brazil-news/brazil/sugarcane-technology-center-in-brazil-training-investors-to-raise-us196-million-with-ipo/
<p>The Centro de Tecnologia Canavieira (Sugarcane Technology Center - CTC) is seeking to "educate" potential investors before resuming its initial public offering (IPO) process, interrupted in April this year.</p> <p>At the time, there was strong competition from several other offerings, and the IPO window in the Brazilian market was starting to close. The company expected to raise approximately R\$1 billion (US\$196 million) with the operation.</p>			

Pakistan-China Cooperation In Sugar Industry To Bring Sweet Revolution [Pakistan]

	Technology Times	June 8, 2021	https://www.technologytimes.pk/2021/06/08/pakistan-china-cooperation-in-sugar-industry-to-bring-sweet-revolution/
<p>Pakistan and China can produce high-grade sugar in abundance and export it across the world, said Dr Gu Wenliang, Agricultural Commissioner of the Chinese Embassy in Pakistan, according to China Economic Net (CEN). "Sugarcane Cooperation Between China And Pakistan Will Bring Sweet Revolution, And Will Literally Turn The Friendship Between The Two Nations 'sweeter than honey,'" he remarked.</p>			

A breath of fresh air - The bio-, circular and green model may help offset a drop in sugar cane output [Thailand]

	Bangkok Post	June 7, 2021	https://www.bangkokpost.com/business/2128075/a-breath-of-fresh-air
<p>Thai sugar cane output is expected to fall significantly this year because of drought, but millers and farmers may be able to cope with the decrease thanks to the government's bio-, circular and green (BCG) economic model.</p> <p>The model sees sugar factories use parts of cane plants that are often seen as refuse for a fuel source, while farmers can generate more income by abandoning their traditional method of clearing the fields by burning, which is blamed for unleashing PM2.5 ultra-fine dust into the air.</p>			

Shree Renuka Sugars becomes India's most-valued listed sugar firm [India]

	Mint	June 30, 2021	https://www.livemint.com/market/stock-market-news/shree-renuka-sugars-becomes-india-s-most-valued-sugar-firm-11625043261164.html
	<p>Shree Renuka Sugars has pipped EID Parry and Balrampur Chini to become the country most-valued sugar firm, with the stock having surged nearly 300% over the last two months.</p>		

Cuba closes one of the worst sugar harvests in its history [Cuba]

	MRT	July 4, 2021	https://marketresearchtelecast.com/cuba-closes-one-of-the-worst-sugar-harvests-in-its-history/92694/
	<p>The 2020-2021 harvest was "one of the worst in the history of Cuba" by fulfilling only 66% of the planned plan of 1.2 million tons, announced this Saturday the state group Azcuba sugar bowl. Speaking at the meeting of the Council of Ministers, whose review is published today by the official newspaper Granma, the president of Azcuba, Julio García, mentioned among the causes of the low performance "organizational and management deficiencies", broken equipment, low quality of raw material and time lost in harvesting and transportation.</p>		

Latest Research

Engineered yeast tolerance enables efficient production from toxified lignocellulosic feedstocks

Lignocellulosic biomass remains unharnessed for the production of renewable fuels and chemicals due to challenges in deconstruction and the toxicity its hydrolysates pose to fermentation microorganisms. Here, we show in *Saccharomyces cerevisiae* that engineered aldehyde reduction and elevated extracellular potassium and pH are sufficient to enable near-parity production between inhibitor-laden and inhibitor-free feedstocks.

By specifically targeting the universal hydrolysate inhibitors, a single strain is enhanced to tolerate a broad diversity of highly toxified genuine feedstocks and consistently achieve industrial-scale titers (cellulosic ethanol of >100 grams per liter when toxified). Furthermore, a functionally orthogonal, lightweight design enables seamless transferability to existing metabolically engineered chassis strains: We endow full, multifeedstock tolerance on a xylose-consuming strain and one producing the biodegradable plastics precursor lactic acid. The demonstration of "drop-in" hydrolysate competence enables the potential of cost-effective, at-scale biomass utilization for cellulosic fuel and nonfuel products alike.

Published: 20 June 2021

> [Link](#)

ScienceAdvances

Production Chain of First-Generation Sugarcane Bioethanol: Characterization and Value-Added Application of Wastes

The search for energy security and environmental sustainability has fueled a growing interest in biofuel production worldwide. Although first-generation bioethanol is regarded a clean, renewable, and green alternative to fossil fuels, its production process leads to the generation of a huge amount of waste with high polluting potential. This review article presents a thorough analysis of the production chain of sugarcane-based first-generation bioethanol and the chemical characterization of the wastes produced in this process.

Published: 2 July 2021

> [Link](#)

Published: 02 July 2021

Production Chain of First-Generation Sugarcane Bioethanol: Characterization and Value-Added Application of Wastes

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Design of a New Fermented Beverage from Medicinal Plants and Organic Sugarcane Molasses via Lactic Fermentation

Functional beverages obtained using medicinal plants and fermented with lactic acid bacteria are gaining much interest from the scientific community, driven by the growing demand for food and beverages with beneficial properties. In this work, three different batches of medicinal plants and organic sugarcane molasses, named FB-1c, FB-sp and FB-1csp, were prepared and fermented by using *Lactobacillus acidophilus* ATCC 43121, *Bifidobacterium breve* B632 and a mix of both strains' culture, respectively.

Published: 31 June 2021

> [Link](#)



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MODENA E REGGIO EMILIA | INSTITUTIONAL RESEARCH INFORMATION SYSTEM
ARCHIVIO ISTITUZIONALE DEI PRODOTTI DELLA RICERCA

Biocontrol potential of the entomopathogenic nematodes (Rhabditida: Steinernematidae and Heterorhabditidae) against the termite species, *Microtermes obesi* (Holmgren) (Blattodea: Termitidae)

Globally, termites cause a great problem for the farmers which eat the stalk of the wheat, maize, and the sugarcane and also affect the growth of vegetables. For ecological farming system, biocontrol agents represent a vital implement in pest management policies. Biological control can play a probable, even more considerable part to reduce the adverse possessions of synthetic chemical pesticides.

The present study aimed to evaluate the biocontrol potential of one heterorhabditid species and 4 steinernematid species against the

Article | [Open Access](#) | [Submitted Guidelines](#)

Research | [Open Access](#) | Published: 02 July 2021

Biocontrol potential of the entomopathogenic nematodes (Rhabditida: Steinernematidae and Heterorhabditidae) against the termite species, *Microtermes obesi* (Holmgren) (Blattodea: Termitidae)

[Sama Javed](#) [Serafili](#) & [Tobassum Ara Khanum](#)

Egyptian Journal of Biological Pest Control, 31, Article number: 93 (2021) | [Cite this article](#)
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termite species (*Microtermes obesi* (Holmgren) (Blattodea: Termitidae)) on filter paper bioassay and wooden logs.

Published: 2 July 2021

> [Link](#)

Exposure to sugarcane borer-induced plant volatile (E)-caryophyllene enhances parasitoid recruitment

Predators and parasitoids locate herbivore-infested plants via detection of herbivore-induced plant volatiles (HIPVs) that are released in response to pest damage. Synthetic HIPVs have been proposed as tools to enhance the biological control of crop pests. The sugarcane borer, Diatraea saccharalis (Fabricius) (Lepidoptera: Pyralidae), is a key herbivore pest of sugarcane, Saccharum spp. (Poaceae), in the Americas. To manage D. saccharalis in Brazil, more than 3 million ha of sugarcane have been treated with the larval parasitoid Cotesia flavipes (Cameron) (Hymenoptera: Braconidae). In this study, the role of sugarcane HIPVs as cues in the host-finding process of C. flavipes was investigated using a combination of dynamic headspace collection, chemical analysis, and laboratory behavior experiments.

Published: 1 July 2021

> [Link](#)

ORIGINAL ARTICLE

Exposure to sugarcane borer-induced plant volatile (E)-caryophyllene enhances parasitoid recruitment

Alfonso de F. Santos, da Silva Hilo, Samilly A. de Santos, Myriam L. da Silva, Thiago F. L. Ribeiro, Donatello A. Oliveira, Jéssy Elaine de Oliveira, José Gonçalves Costa ... See all authors

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PDF TOOLS

Implications of regional N₂O–N emission factors on sugarcane ethanol emissions and granted decarbonization certificates

Reducing greenhouse gas (GHG) emissions by substituting fossil fuels depends on how biofuels are produced and how emissions are calculated. Nitrous oxide (N₂O) emissions from synthetic and organic N fertilizers are important sources of GHG from [sugarcane ethanol](#). This study aimed to synthesize the literature information and derive regional N₂O emissions factors (EFs) for N fertilizers according to Tier 2 approach. This study also evaluated how the use of Tier 2 affects emissions compared with those obtained by the IPCC Tier 1. Moreover, this study examined how N fertilizers can affect GHG emissions and the earning of decarbonization certificates (CBIOS) by ethanol producers.

To be published: October 2021

> [Link](#)



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Implications of regional N₂O–N emission factors on sugarcane ethanol emissions and granted decarbonization certificates

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<https://doi.org/10.1016/j.rser.2021.111472>

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Simulation of different biorefinery configuration including environmental, technical and economic assay using sugarcane bagasse

Due to growing environmental concerns mainly related to non-renewable fuels and high added-value chemicals, new solutions should reduce greenhouse gas emissions. Biorefineries, which use lignocellulosic biomass as raw material, emerges as a promising alternative to replace fossil fuels and to avoid competition between food and fuel production for arable land and drinking water. Sugarcane is one of the most harvested crops in the world, mainly in the equatorial zone. One tonne of processed cane generates between 300 and 400 kg of bagasse. This work proposes a biorefinery configuration for the co-production of ethanol, xylitol, lignin, and cellulose acetate, analyzing two different scenarios in the context of low sugarcane availability.

Published: 1 July 2021

> [Link](#)



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Available online 1 July 2021, 128162
In Press, journal Pre-proof



Simulation of different biorefinery configuration including environmental, technical and economic assay using sugarcane bagasse

Jesús David Cañal Medina ^{1,*,†}, Pablo Bozán Martín ¹, Antonio Almeida Magalhães Jr. ^{1,†}, João Cesar de Carvalho ², Adeline Tamara Wozniakowicz ³, Carlos Ricardo Soccol ^{2,*,†}

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<https://doi.org/10.1016/j.jclepro.2021.128162>

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Separations of pollutants from sugar processing industry: Treatment and characterization

The purpose of this research work is to handle the sugar processing effluent up to acceptable standard. The aspiration of this experimental effort is to treat the sugarcane processing plant effluent with electrochemical method in batch mode using an iron plate as electrode. Response surface methodology (RSM) was employed to develop the driving parameters for color and chemical oxygen demand (COD) elimination. By analyzing the response curves of various parameters, maximum 75.4% of COD and 99.9% of color removal were predicted at pH of 6.8, current of 1.1 A, electrode distance of 13 mm and treatment interval of 78.3 min correspondingly.

Published: 3 June 2021

> [Link](#)



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Improving Enzymatic Digestibility of Sugarcane Bagasse from Different Varieties of Sugarcane using Deep Eutectic Solvent Pretreatment

Sugarcane bagasse, a fundamental by-product of the sugar industry, was utilised to improve its digestibility for bioenergy applications. Choline chloride based deep eutectic solvents (DESS) were used for pretreatment of five different varieties of sugarcane bagasse (SRA1, SRA5, Q208, MA239, ISB) and a comparative study



Bioresource Technology
Available online 1 July 2021, 125480
In Press, journal Pre-proof



Improving Enzymatic Digestibility of Sugarcane Bagasse from Different Varieties of Sugarcane using Deep Eutectic Solvent Pretreatment

Valeri B. Chinnasa ^{1,*}, Adhikari Parvathy ¹, Karanaj Kidanu Sami ^{1,†}, Balakrishna J. Princy ¹

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of compositional and morphological changes was performed.
Three eutectic mixtures - choline chloride: malonic acid (1:1),
choline chloride: glycerol (1:2) and choline chloride: lactic acid (1:5)
were used to selectively remove lignin and improve
saccharification efficiency.

Published: 1 July 2021

> [Link](#)

Events

2021 SASTA Congress

South African Sugar Technologists' Association (SASTA)

17-19 August 2021

Online

> [Link](#)

Thailand Sugar Conference / SUGAREX Thailand 2021

Fireworks Exhibitions and Conferences

9-10 September 2021

Khonkaen International Convention & Exhibition Center (KICE)

Khonkaen, Thailand

> [Link](#)

79th STAI Annual Convention and International Sugar Expo 2021

The Sugar Technologists' Association of India (STAI)

Last week of September 2021

Online

> [Link](#)

28ª Feira Internacional da Bioenergia

International Sugar Organization

9-12 November 2021

Sertãozinho, Brazil

> [Link](#)

30th ISO International Seminar

International Sugar Organization

23–24 November 2021

East Wintergarden, Canary Wharf, London

> [Link](#)

4th Agricultural Engineering, Agronomy and Extension Workshop

International Society of Sugar Cane Technologists, CENICAÑA & TECNICAÑA

22 – 25 November 2021

Cali, Colombia

> [Link](#)

Sugar & Ethanol Asia

Informa Connect

1 – 3 December 2021

Bangkok, Thailand (and online)

> [Link](#)

11th Annual Africa Sugar Conference

Informa Connect

7–9 December 2021

Uganda

> [Link](#)

ISSCT XIII Pathology Workshop

International Society of Sugar Cane Technologists, Chacra Experimental Agrícola Santa

Rosa and INTA's Estación Experimental Agrícola Famaillá

13– 17 December 2021

Salta and Jujuy, Argentina

> [Link](#)
