ISSCT BULLETIN

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October 2026 International Society of Sugar Cane Technologists Founded 1924 Bulletin

Welcome to the ISSCT Bulletin for October 2026, in which we collect latest ISSCT updates, along with news, research, and past and upcoming events related to sugar cane technology.

Contents

ISSCT News **4**

Feature Article: Unlocking the Potential of Sugar Cane in Five COMESA Region Countries: Innovation, Diversification and Regional Cooperation 4

Webinars 10

Agriculture Commission – 27 October 2026 10

2nd Pathology Section – 29 October 2026 10

Factory Commission – 17 November 2026 11

Workshops 11

Agricultural Engineering & Agronomy 11

Germplasm & Breeding/Molecular Biology 11

Pathology & Entomology 11

Engineering & Processing 12

Co-products 12

Management 12

Mid-Term Meeting 12

ISSCT XXXIII Congress 13

Distinction - Professor Sampaio Carneiro Receives José Paulo Stupiello Award 13

Sugar Cane News **14**

Sugarcane and the climate: why having a science-based target matters 14

Study identifies key factors for expanding Agriculture 4.0 in Brazil 14

From import replacement to global exporter, Chinese harvester maker sweetens sugarcane business [China] 14

Egypt to turn sugarcane waste into bioethanol in $278 million project [Egypt] 15

Tech modernisation push for sugar sector [Fiji] 15

FSC marks Pacific milestone with spray drone technology [Fiji] 15

Fiji sugar sector embraces digital tools to improve grower services and inclusion [Fiji] 16

Technology lifted Baramati sugarcane yield by 40%, cut water use by 30%: Ashwini Vaishnaw [India] 16

How a small Maharashtra town taught the world a lesson in smart farming [India] 16

Philippines steps up fight against sugarcane pest as RSSI threatens production, farmer incomes [Philippines] 17

Rwandan Sugarcane Farmers Could Boost Yields Nearly 20 Percent Without Extra Inputs, Study Finds [Rwanda] 17

SASTA congress looks at new ways to unlock value from sugar cane [South Africa] 17

South Africa's small sugar farms are producing less than they could: study finds ways to boost them [South Africa] 18

Green transformation begins with production efficiency [Vietnam] 18

Latest Research 19

Unlocking the genetic potential of sugarcane: gene discovery for molecular breeding 19

Biology, host resistance, parasitoids and insecticidal management of the sugarcane mealybug Phenacoccus saccharifolii (Green) (Hemiptera: Pseudococcidae) in India 23

Systems-level dissection of salinity stress tolerance in sugarcane interspecific hybrids 23

Events 25

The International Conference of Sugar and Integrated Industries 25

Germplasm & Breeding/Molecular Biology Workshop 25

9th IAPSIT International Sugar Conference 2026 26

35th International Sugar Organization Seminar 27

Pathology & Entomology Workshop 28

Agricultural Engineering & Agronomy Workshop 28

Engineering & Processing Workshop 29

ASSCT 2027 Conference 29

Co-Products Workshop 30

ASSCT Annual Joint Meeting 30

Sugarex Indonesia 2027 30

Management Workshop 30

XXXIII ISSCT Congress 2028 31

ISSCT News

Feature Article: Unlocking the Potential of Sugar Cane in Five COMESA Region Countries: Innovation, Diversification and Regional Cooperation

By

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Introduction

Sugar cane remains an important agricultural and agro-industrial crop across Eastern and Southern Africa. Beyond sugar production, the sector supports rural livelihoods, employment, clean and renewable energy, trade and foreign exchange. It has a complex multi-dimensional role in the economy. However, the sector faces a number of challenges, namely climate variability, rising production costs, declining productivity, ageing mills and farmers, and volatile market prices. These pressures highlight the need to reposition sugar cane as the foundation of a broader and more diversified bioeconomy.

A recent study, "***Effect of Declining Sugar Cane Production on East African Agricultural Economies***", supported by the InterAcademy Partnership (IAP), a partner organisation of UNESCO, was undertaken by the Kenya National Academy of Sciences (KNAS), in collaboration with science academies in Ethiopia, Mauritius, Mozambique and Uganda. It examined the overall trend in sugar cane production and identified opportunities for renewal through productivity improvement, innovation, diversification, investment and regional cooperation (Michieka *et al*., 2026). All five countries are members of the Common Market for Eastern and Southern Africa (COMESA, Figure 1), except for Mozambique that withdrew from COMESA in 1997.

COMESA regroups 21 African countries, of which 11 produce sugar cane namely, Egypt, Eswatini, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Sudan, Uganda, Zambia and Zimbabwe. In 2023/2024, these 11 countries accounted for approximately 6.855 million tonnes of sugar, representing more than half of Africa's sugar production. COMESA countries' collective consumption is estimated

at 6–8 million tonnes annually, with a deficit of about 1.5 million tonnes, making the region a net importer. This creates an opportunity to strengthen regional production and reduce dependence on imports.

Africa: A Region with Significant Sugar Cane Potential



Figure 1. Map of Africa showing the COMESA Member States

Ethiopia possesses substantial potential for expanding sugar production, with approximately 105,000 ha currently under cane and up to 4 million ha of potentially irrigable land that could favour significantly agricultural development. The sector supports about 450,000 livelihoods and domestic demand is strong, with sugar consumption reaching approximately 872,000 tonnes in 2023 compared with production of about 350,000 tonnes.

Despite this potential, field productivity has declined because of diseases such as smut and ratoon stunt and also of salinity, irrigation-management problems, ageing mills and infrastructure. Weaknesses in management have also a significant impact. About 69% of fields are reported to be declining, partly because of old varieties and soil degradation, while high-value vegetable crops are increasingly discouraging some farmers from exploiting sugar cane .

Diversification with the sugar cane sector remains underdeveloped. Ethanol production is limited to two factories, while molasses and other co-products are not fully utilised.

Ethiopia's prospects are considerable, provided that modernisation and diversification are pursued through improved varieties resistant to diseases, irrigation and salinity management, rehabilitation of mills and infrastructure, stronger support to outgrowers, and policies that encourage investment and value addition.

Kenya's sugar industry provides livelihoods, directly and indirectly, to more than eight million people. Some 350,000 small-scale contract farmers feed 17 public and private mills, operating primarily in the Western sugar belt region. In 2023, about 289,631 ha were cultivated, and sugar production reached 815,000 tonnes. Kenya is dependent on imports to bridge the gap between domestic supply and national demand of about 1.1 million tonnes.

Sugar cane productivity remains low, with average cane yields of about 55 t/ha and sugar production of around 5.36 t/ha. Drought, diseases, old varieties, high production and processing costs, outdated mills and limited technology adoption continue to constrain the sector.

Kenya's priorities include higher-yielding varieties and better agronomy, modern processing, improved infrastructure and finance, stronger farmer–mill relationships and timely payments, and a supportive legal and regulatory framework. State mills are moving towards long-term private leases, while new mills are considering ethanol, bagasse electricity, paper and particle board, industrial alcohols and other products.

Mauritius provides a different but particularly relevant model. Sugar cane was historically a major pillar of the economy, but its contribution to GDP has fallen sharply from 30% at Independence in 1968, to less than 2% today owing to diversification in other sectors including textile, tourism, services, IT, etc. Production declined from 270,875 tonnes in 2020 to 220,305 tonnes in 2025, while cane area harvested is 33,805 ha, compared with a peak production of 718,464 tonnes of sugar from 87,370 ha in 1973.

Despite declining production, Mauritius has developed a technologically advanced and diversified sugar cane agro-industry. Three major factories -

Omnicane, Alteo and Terra process cane into refined and speciality sugars, electricity from bagasse, ethanol from molasses, biofertilisers from vinasse and other co-products. More than 20 speciality sugars, including extra fine Demerara, cinnamon sugar, antioxidant sugar and Low-GI sugar, are exported to premium markets.

The future of the Mauritian sector is increasingly shaped by diversification, renewable energy, biomass utilisation and higher-value products. Continued R&D in breeding, biotechnology, climate resilience, mechanisation, artificial intelligence and digitalisation will be important to sustain competitiveness.

Mozambique produces some 350,000 tonnes of sugar annually, generally meeting domestic demand and exporting around 15% in surplus years. The sector covers about 157,573 ha and employs more than 20,000 people. Nucleus estates account for about 75% of production, with smallholders supplying the remainder.

Production has been affected by cyclones and floods but is recovering from the shocks of 2022–2023. Cane production fell to about 1.6 million tonnes before recovering to 1.9 million tonnes in 2024–2025. Average cane yield is about 56.2 t/ha, with large farms achieving higher yields than smallholders.

Mozambique has milling capacity of about 580,000 tonnes of sugar, but only four of seven mills are operational, with capacity utilisation around 42%. Limited diversification beyond molasses for animal feed further constrains value creation.

Key challenges include climate risks, high production and logistics costs, competition from cheaper imports, and weak research support. The country uses a 20% tariff and customs surcharge to manage sugar imports, but illegal and low-priced cross-border imports can undermine domestic production and investment. Priorities include rehabilitation, infrastructure improvement, higher cane yields, mill modernisation, appropriate trade policy, ethanol and bioenergy, and stronger R&D.

Uganda has a relatively well-developed sugar cane industry, with cane area increasing from 72,675 ha in 2020 to 96,986 ha in 2024. Outgrowers provide about 70% of cane. Productivity, however, has declined because of limited finance, weak adoption of improved varieties and technologies, inadequate irrigation and extension, high production costs, climate variability, and falling farm-gate prices.

Value addition opportunities include ethanol and cogeneration. The Biofuels Act (2020) and Regulations (2022) provide a framework for biofuel development, although the planned 1% blending programme has been delayed by infrastructure and investment constraints.

Priority actions include expanding irrigation, strengthening research and extension, and accelerating the dissemination and adoption of improved varieties and production practices, together with greater utilisation of cane co-products.

From Production Challenges to Opportunities for Transformation

The experiences of the five countries demonstrate that increasing sugar production alone will not be sufficient. The objective should be productive, competitive, resilient and diversified sugar cane value chains in which agricultural productivity, processing efficiency, farmer viability, infrastructure and market access reinforce one another.

Climate resilience is an immediate priority. Changing rainfall patterns, extreme weather and water constraints increase the need for irrigation, resilient varieties and climate-smart production practices.

For growers, productivity and economic viability are equally important. Extension services, finance, inputs, good planting material, mechanisation and transparent payment systems are essential to sustain farmer participation.

Modernisation of milling facilities can reduce production costs, improve sugar recovery and reduce stoppages. Better utilisation of existing capacity is particularly important where mills are operating below potential.

Beyond Sugar: The Emergence of the Sugar cane Bioeconomy

The most important opportunity identified in this study is the transition from a conventional sugar industry towards a diversified sugar cane-based bioeconomy.

Kenya is considering ethanol, bagasse electricity, paper and board, industrial alcohols and other downstream products. Mozambique has opportunities in cogeneration and ethanol, while Mauritius demonstrates the potential of speciality sugars, renewable energy, bioethanol and biomass utilisation.

Diversification creates additional revenue streams, improves resource efficiency and reduces dependence on a single commodity, increasing resilience to market and climatic shocks.

Research and Innovation as Drivers of Renewal

Research and innovation will be central to the future development of the COMESA sugar cane sector, particularly in breeding and biotechnology, climate-smart agriculture, irrigation, mechanisation, pest and disease management, processing, renewable energy and co-products.

For ISSCT, this provides an important area for engagement through its international network for sharing scientific knowledge, technological advances and practical experience and adapting solutions to African production systems.

Looking Ahead

The challenges facing sugar cane in COMESA should not obscure the opportunities. The five-country study demonstrates strong foundations in knowledge, industrial capacity, competent human resources and markets. Regional cooperation can facilitate technology transfer, reduce duplication and strengthen regional supply and trade. The future will depend on combining productivity improvement with innovation, diversification, investment and cooperation.

This study represents an initiative to forge a stronger and more integrated collaborative framework among Ethiopia, Kenya, Mauritius, Mozambique, and Uganda, drawing on the complementary expertise, experience, and know-how available within each country. By working collectively, the participating countries can share knowledge, strengthen institutional and technical capacities, identify common challenges, and develop solutions that are better adapted to the African context. Such collaboration should also catalyze deeper and sustained engagement of these countries, and, more broadly, other African nations, with ISSCT. In this regard, ISSCT can provide an important platform for regional cohesion, knowledge exchange, and professional networking, bringing together Africa's diverse scientific, technological, and innovative capacities and connecting them with the wider international sugarcane community.

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The authors gratefully acknowledge the valuable contributions of all researchers involved in the study *Effect of Declining Sugar Cane Production on East African Agricultural Economies*, conducted in five COMESA region countries, namely Kenya, Ethiopia, Mozambique, Mauritius and Uganda, with the support of the InterAcademy Partnership (IAP). In particular, the authors acknowledge R. W.

Michieka, JT. Yohannes, T. Negi, W. Evelyn, J. Mutondo, E. Ayienda, S. Vudiya and S. Achieng for their contributions to the country studies, data collection, analysis and insights that provided the foundation for this paper. The authors also acknowledge the support of the Kenya National Academy of Sciences and the respective National Academies involved in the study.

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Webinars

Between June and July 2026, the ISSCT Secretariat together with the Biology and Co-Products Commissions, successfully hosted a series of five webinars, that brought together more than 150 researchers, scientists and industry professionals from 26 countries. The webinar series provided a dynamic platform for sharing the latest scientific advances, innovative technologies, and practical solutions to support a more resilient and sustainable sugar cane industry. The reports on the webinars are available on the ISSCT website at:
https://www.issct.org/activities/webinars/

Three other webinars are scheduled as follows:

Agriculture Commission – 27 October 2026

Theme: Sustainable Sugar Cane Production: Innovative Technology in Agronomy, Engineering and Extension to Deal with a Changing Future
https://www.issct.org/wp-content/uploads/2026/09/Announcement-ISSCT-Agriculture-Commission-Webinar-1.pdf

2nd Pathology Section – 29 October 2026

Theme: A Guide to Sugarcane Diseases – 2nd Edition
https://www.issct.org/wp-content/uploads/2026/09/2nd-ISSCT-Pathology-Webinars-2026-.1.jpeg

Factory Commission – 17 November 2026

Theme: Emerging opportunities offered by the wide application of technologies for measurements and decision making to address climate variability and changing conditions affecting sugar cane quality.

https://www.issct.org/wp-content/uploads/2026/10/First-Announcement-ISSCT-Factory-and-Processing-Webinars-2026-2.pdf

Workshops

Thematic workshops, as indicated in the table below, will be held during this inter-congress period in 2026-2027. Announcements for all workshops have been published on the ISSCT website and preparations are well underway.

https://www.issct.org/activities/workshops/

Commission/Section, Theme and Venue	Date	Announcement (Click to access)
Agricultural Commission		
Agricultural Engineering & Agronomy	12-15 April 2027	Announcement
Embracing technological advancements and AI to enhance productivity and sustainability		Workshop website
L'Auberge Casino & Hotel Baton Rouge, LA, USA		
Biology Commission		
Germplasm & Breeding/Molecular Biology	9-13 November 2026	Announcement
Developing Climate Resilient Sugarcane		Workshop website
Accra Beach Hotel, Hastings, Christ Church, Barbados, Barbados		
Pathology & Entomology	15-19 March 2027	2nd Announcement
Pushing the frontiers of agroecological management		Workshop website

strategies of sugarcane pests and diseases in the context of climate change		
Le Récif Hotel, Saint-Gilles-les-Bains, Réunion		
Factory Commission		
Engineering & Processing	19 and 20 April 2027	Announcement Workshop website
Cairns, Australia		
Co-products Commission		
Co-products	6-10 June 2027	Announcement Workshop website
Reinventing the sugar industry for next-generation value		
Khon Kaen, Thailand		
Management Commission		
Management	January/February 2028 (During XXXIII Congress)	
Guatemala		

Mid-Term Meeting

As provided for in the ISSCT Constitution, the Mid-Term Meeting, will review the progress made in the scientific, technological and administrative aspects of ISSCT since the last Congress held in Colombia in August 2025, and discuss preparations for the XXXIII Congress. The meetings will be held as follows:

- Tuesday 20 October 2026 - Meeting of Technical Programme Committee (TPC)
- Wednesday 28 October 2026 - Meeting of Executive Committee
- Thursday 30 October 2026 - Joint Meeting of Executive Committee and TPC, followed by Joint Meeting of Executive Committee, TPC and COC.

The main outcomes of these meetings will be communicated to our members in the December issue of the ISSCT bulletin.

ISSCT XXXIII Congress

The ISSCT XXXIII Congress will take place in Guatemala from 28 January to 6 February 2028 and will comprise Pre and Post Congress Tours as well as the Trade Exhibition and social events. You may access the Congress Newsletter 1 and 2 through the following links:

Congress Newsletter 1:

https://designrr.page/?id=489090&token=51652552&type=FP&h=5110

Congress Newsletter 2:

https://www.issct.org/2026/09/02/xxxiii-congress-newsletter-2/

Distinction - Professor Sampaio Carneiro Receives José Paulo Stupiello Award

ISSCT warmly congratulates its Executive Committee Chair, **Prof. Monalisa Sampaio Carneiro**, on receiving the prestigious **José Paulo Stupiello Award** at the 13th Association of Sugar Technicians of Latin America and the Caribbean **– ATALAC– Congress** held in **Ribeirão Preto, São Paulo State, Brazil**, in August 2026.

The José Paulo Stupiello Award, named in honour of the renowned Brazilian sugar cane scientist **Prof. José Paulo Stupiello (1935–2025)**, who made major contributions to the **scientific and technological development of Brazil's sugar cane and bioenergy sector,** recognises outstanding contributions to the advancement and development of the sugar cane sector. This prestigious distinction is a fitting recognition of Prof. Sampaio Carneiro's significant contribution to sugar cane science and the development of the sector. Prof. José Paulo Stupiello was staunch supporter of ISSCT for many decades and in recognition of his significant contribution to the advancement of the our Society, was made Honorary Life Member in 1989.

Sugar Cane News

Sugarcane and the climate: why having a science-based target matters

	Bonsucro	**October 7, 2026**	**https://bonsucro.com/why-having-a-science-based-target-matters/**
	Sugarcane needs a stable, healthy environment to thrive. As we are already seeing, changing weather driven by climate breakdown, like unpredictable rainfall, extreme heat and water scarcity, is cutting yields and putting pressure on supply chains and rural economies. *But the sector carries its own climate impacts, with sugarcane production generating 400 million tonnes of CO_2 equivalent every year. This is why sugarcane has to be part of the climate solution.* *Livia Ignácio, Bonsucro's Regional Head for South America, explains how science-based targets can turn climate ambition into action, and where Bonsucro members can start.*		

Study identifies key factors for expanding Agriculture 4.0 in Brazil

	Agência FAPESP	**September 30, 2026**	**https://agencia.fapesp.br/study-identifies-key-factors-for-expanding-agriculture-40-in-brazil/59269**
	A study published in the journal Agricultural Systems identified the main factors driving the adoption of so-called Agriculture 4.0 technologies in Brazil and proposes strategies to promote their responsible use in the agri-food system. The research is part of the initiatives of the Science Center for Digital Agriculture Development (Semear Digital). Semear Digital is headquartered at Embrapa Digital Agriculture, a decentralized unit of the Brazilian Agricultural Research Corporation (EMBRAPA), in Campinas in the state of São Paulo. It is one of FAPESP's SCDs.		

From import replacement to global exporter, Chinese harvester maker sweetens sugarcane business [China]

	Xinhua	**October 4, 2026**	**https://english.news.cn/20261004/5fcdcc7b0e1f4a5a858c03a0940521a6/c.html**
	When Zhang began developing a sugarcane harvester in 2008, he expected challenges. He did not expect it would take eight years to bring the machine to market. For years, the engineer-turned-entrepreneur and his team spent harvest seasons testing and redesigning prototypes in cane fields in Chongzuo, south China's Guangxi Zhuang Autonomous Region. The city is about 1,600 km from his factory in Luoyang, central China's Henan Province.		

During one field test, a steering linkage snapped in a muddy patch. In many others, the machine struggled with cane flattened by typhoons. Today, machines made by his company, Luoyang Chenhan Agricultural Equipment Technology, account for about half of China's sugarcane harvester market by volume, the company says. They are also drawing buyers overseas, from Southeast Asia to Latin America.

Egypt to turn sugarcane waste into bioethanol in $278 million project [Egypt]

	Fast Company	**August 26, 2026**	**https://fastcompanyme.com/news/egypt-to-turn-sugarcane-waste-into-bioethanol-in-278-million-project/**

Egypt is moving forward with plans for a $278 million project to produce second-generation bioethanol from sugarcane bagasse, a byproduct of sugar production.

Minister of Supply and Internal Trade Sherif Farouk reviewed progress on the project with representatives from Proger and Drexel, according to a ministry statement.

The project aims to convert sugarcane bagasse into bioethanol, creating additional value from agricultural waste while reducing its environmental impact and associated carbon emissions.

Tech modernisation push for sugar sector [Fiji]

	Fiji Times	**September 25 2026**	**https://www.fijitimes.com.fj/tech-modernisation-push-for-sugar-sector/**

Fiji's agricultural leadership is doubling down on technological modernisation and inclusive growth to secure the future of the nation's vital sugarcane sector.

Speaking at the unveiling of the Sugar Cane Growers Fund's Document Management System, chatbot, and GEDSI framework, Minister for Agriculture, Waterways and Sugar Tomasi Tunabuna highlighted the critical role of innovation in overcoming persistent industry challenges, including high operational costs, labour shortages, and climate impacts.

"The sugar industry, for that matter, cannot remain outside research," he said.

FSC marks Pacific milestone with spray drone technology [Fiji]

	The Fiji Times	**September 2, 2026**	**https://www.fijitimes.com.fj/fsc-marks-pacific-milestone-with-spray-drone-technology/**

THE Fiji Sugar Corporation is set to become the first institution in Fiji and the Pacific to deploy spray drones in sugarcane farming. FSC has procured two DJI spray drones, each with a 20-litre

	capacity, with support from the Ministry of Agriculture, Waterways and Sugar Industry through its capital grants program. *The move marks a major step in FSC's efforts to mechanise and modernise the sugar industry while improving farming efficiency and productivity. Ten FSC officers have begun a 10-day specialised training program at the FSC Training Centre to operate the drones.*

Fiji sugar sector embraces digital tools to improve grower services and inclusion [Fiji]

	ChiniMandi	**September 4, 2026**	**https://www.chinimandi.com/fiji-sugar-sector-embraces-digital-tools-to-improve-grower-services-and-inclusion/**
	Fiji's sugar industry is accelerating its shift towards digital services, with new technology platforms aimed at improving efficiency, expanding financial access and helping growers cope with rising costs and climate-related challenges, reported Fiji Sun. *The Sugar Cane Growers Fund (SCGF) on Thursday launched its Digital Management System (DMS), Smart Chatbot and Gender Equality, Disability and Social Inclusion (GEDSI) Framework in Lautoka. The initiatives are being supported by the Asian Development Bank (ADB).*		

Technology lifted Baramati sugarcane yield by 40%, cut water use by 30%: Ashwini Vaishnaw [India]

	ChiniMandi	**October 8, 2026**	**https://www.chinimandi.com/technology-lifted-baramati-sugarcane-yield-by-40-cut-water-use-by-30-ashwini-vaishnaw/**
	Union Minister Ashwini Vaishnaw has said that farmers in Baramati raised sugarcane yields by 40 per cent while cutting labour costs and using less water and fertiliser, through a combination of satellite data, sensors and weather information. He made the remarks at the World Development Report 2026 event in Delhi, according to a video shared by news agency IANS on its X handle.		

How a small Maharashtra town taught the world a lesson in smart farming [India]

	The Indian Express (paywall)	**August 16 2026**	**https://indianexpress.com/article/cities/pune/baramati-tiny-ai-smart-farming-doubles-sugarcane-yield-10836027/**
	At a United Nations Food and Agriculture Organisation (FAO) summit in Rome on July 3, global experts were comparing notes on the future of farming—data, technology, and sustainability. Then a project from Baramati, a taluka in Pune, walked away with a title nobody expected: "superior to global benchmarks".		

	The team behind it had just shown the world something remarkable. In a pilot spanning 10,000 sugarcane farms, yields doubled. Water use dropped by 40-50 per cent. Fertiliser use fell by 30 per cent. Soil health improved. For context, the FAO and International Rice Research Institute (IRRI) studies typically report AI-driven yield gains of 15-20 per cent. Baramati doubled that.

Philippines steps up fight against sugarcane pest as RSSI threatens production, farmer incomes [Philippines]

ChiniMandi	**ChiniMandi**	**August 25, 2026**	**https://www.chinimandi.com/philippines-steps-up-fight-against-sugarcane-pest-as-rssi-threatens-production-farmer-incomes/**
	The Philippines is stepping up efforts to contain the red-striped soft scale insect (RSSI), an invasive sugarcane pest that has affected nearly 94,000 hectares and threatens farmer incomes, cane supplies to mills and domestic sugar production, reported RPN News. *The Department of Agriculture (DA) and Sugar Regulatory Administration (SRA) are deploying drones, chemical spraying, emergency cash assistance and biological controls to contain the pest, while also introducing high-yielding sugarcane varieties as part of a longer-term strategy to strengthen industry productivity.*		

Rwandan Sugarcane Farmers Could Boost Yields Nearly 20 Percent Without Extra Inputs, Study Finds [Rwanda]

Bioengineer.org	**Bioengineer.org**	**October 1, 2026**	**https://bioengineer.org/rwandan-sugarcane-farmers-could-boost-yields-nearly-20-percent-without-extra-inputs-study-finds/**
	Rwanda's sugar bowl is leaking. The country produced roughly 130,000 metric tons of sugarcane in 2022, yet national demand for sugar sits between 160,000 and 180,000 metric tons a year, forcing imports to fill a gap of 30,000 to 50,000 metric tons. *A new study of smallholder farmers along the Nyabarongo River suggests that a large share of that shortfall could be closed not by planting more land or buying more fertilizer, but simply by using what farmers already have more effectively. The research, published in BMC Agriculture, applied stochastic frontier analysis to 202 sugarcane producers in Kigali City and the Eastern Province and found an average technical efficiency of 80.58 percent. In plain terms, the same fields, the same labor and the same inputs could yield nearly 20 percent more cane if management inefficiencies were ironed out.*		

SASTA congress looks at new ways to unlock value from sugar cane [South Africa]

	Farmer's Weekly	**August 29, 2026**	**https://www.farmersweekly.co.za/agri-news/south-africa/sasta-congress-looks-at-new-ways-to-unlock-value-from-sugar-cane/**
	Held from 18 to 20 August during SASTA's centenary year, the congress brought together sugarcane researchers, growers, millers, and industry representatives from South Africa and abroad to share research and discuss some of the challenges and opportunities facing the industry. *Speaking to Farmer's Weekly, SASTA President Dr Muhammad Kadwa, said the centenary was an important milestone for an association that had spent a century providing a platform for the exchange of scientific and technical knowledge within the sugar industry.*		

South Africa's small sugar farms are producing less than they could: study finds ways to boost them [South Africa]

	Modern Ghana	**August 16, 2026**	**https://www.modernghana.com/news/1519645/south-africas-small-sugar-farms-are-producing.html**
	South Africa has around 25,653 small-scale sugar cane growers, making the industry a lifeline for rural communities in Mpumalanga and KwaZulu-Natal provinces. By generating 65,000 direct and 270,000 indirect jobs, its agricultural and milling operations support more than a million livelihoods in these areas. But the productivity of many small-scale growers remains well below potential. Production constraints are limiting both farm profitability and the sector's overall contribution to rural economic development. *A six-year research project by senior entomologist Lawrence Nkosikhona Malinga and his colleagues at the South African Sugarcane Research Institute in collaboration with the Department of Agriculture and Rural Development, South African Farmers Development Association, looked to identify and address some of the challenges. They found variations in growers' education levels, language barriers, lack of funding, lack of technical expertise and poor planning of crop production.*		

Green transformation begins with production efficiency [Vietnam]

	Vietnam.vn	**October 10, 2026**	**https://www.vietnam.vn/en/chuyen-doi-xanh-bat-dau-tu-hieu-qua-san-xuat**
	Agricultural production efficiency is typically assessed through productivity, output, or product value. However, in the context of sustainable development, efficiency is also evaluated based on resource consumption, input costs, and environmental impacts. *At the Environmental-Social-Governance (ESG) workshop on digital transformation and artificial intelligence in agriculture held in Tay Ninh province, Mr. Dang Bui Khue – Director of E&S, Thanh*		

Thanh Cong - Bien Hoa Joint Stock Company (AgriS), emphasized that to develop a circular economy effectively, it is first necessary to optimize input factors.

According to Mr. Dang Bui Khue, the circular economy is not about generating a lot of waste and then trying to recycle or reuse it. More importantly, it's about calculating the amount of water, raw materials, and energy needed for each stage, minimizing waste right from the production process. This approach is being implemented by AgriS through the application of science and technology, data, and precision farming solutions in managing sugarcane raw material areas

Latest Research

Dissecting the Population Composition Among First-Generation Selfed Progeny of Elite Sugarcane Cultivar Co 11015



Sugarcane clones, owing to their high heterozygosity, generate extensive variation upon selfing through genome reshuffling. In the present study, the early sucrose-accumulating sugarcane variety Co 11015 was selfed to decipher the genetic diversity and population structure among its selfed progeny using sequence-tagged microsatellite (STMS) markers. A total of 112 alleles were amplified, most of which were polymorphic. Population structure analysis identified four subpopulations (SPs) based on ΔK values between successive SPs. The parent, Co 11015, was assigned to SP 2, which also exhibited the lowest intra-cluster heterozygosity. The genotypic data were further analysed using Discriminant Analysis of Principal Components (DAPC), and three principal components were selected through cross-validation. Three discriminant functions effectively resolved the four SPs. A high degree of concordance (93.75%) was observed between the STRUCTURE and DAPC clustering results, highlighting their complementarity. Among the markers, alleles M52 and M51 of marker NKS 6 exhibited consistently high loadings across all three discriminant functions, indicating their major contribution to genetic differentiation among subpopulations. Based on marker loadings, the alleles were classified into four groups: The first three clusters comprised informative markers, whereas the fourth and largest cluster predominantly contained uninformative and redundant markers. This study revealed substantial genetic diversity among the selfed progeny of Co 11015 and identified highly informative STMS markers capable of effectively discriminating closely related selfed individuals.

Published October 7, 2026

> Link

Unlocking the genetic potential of sugarcane: gene discovery for molecular breeding

Sugarcane is a globally important crop for sugar production and bioenergy generation. However, its highly complex allopolyploid genome has greatly hindered conventional breeding, making cultivar development a lengthy and labor-intensive process that often requires more than a decade. Molecular breeding provides a promising solution by enabling the targeted improvement of desirable traits, but its success depends fundamentally on the discovery and functional characterization of key genes. In this review, we summarize recent advances in sugarcane gene discovery, focusing on genes associated with major agronomic traits, including sucrose accumulation, growth and development, and responses to biotic and abiotic stresses. We also discuss the current challenges limiting gene identification and utilization in sugarcane, and highlight emerging technologies and future strategies to accelerate gene discovery and molecular breeding. This review provides an integrated overview of the current progress and future prospects of sugarcane gene discovery, offering valuable insights for developing improved cultivars through genomics-assisted breeding.



Published August 13, 2026

> **Link**

Ascophyllum nodosum Extract Promotes Vegetative Growth and Sugar Yield in Ratoon Sugarcane

Agronomy

Maintaining the productivity and technological quality of sugarcane during ratoon cycles represents a constant challenge for the sugarcane-energy sector, driving the adoption of biostimulants. This study aimed to evaluate and compare the effects of different biostimulants on the biometric development, yield, and technological quality of second-ratoon sugarcane. The experiment was conducted in a randomized complete block design with four treatments and four replications: (1) Control; (2) Ascophyllum nodosum; (3) A. nodosum + nutrients; and (4) Arbuscular mycorrhizal fungus (Rhizophagus irregularis). Tiller density, stalk height, stalk diameter, stalk weight, productivity, total recoverable sugars (TRS), and sugar yield were evaluated. Data were subjected to analysis of variance (Tukey's test, $p \leq 0.05$) and principal component analysis (PCA). Tiller density was not affected by the treatments; however, biostimulation with A. nodosum alone proved to be the most effective treatment, yielding the highest stalk height (2.35 m), stalk weight (1.48 kg), TRS (146.06 kg t-1), and sugar yield (14.52 t ha-1), representing a 19.5% increase in sugar yield compared to the control. Inoculation with R. irregularis matched A. nodosum in productivity but resulted in lower TRS, indicating a sucrose dilution effect. A. nodosum combined with nutrients did not surpass the control across production variables. PCA confirmed the distinct separation and superiority of the isolated A. nodosum treatment along the growth and productivity axis, further demonstrating that these inputs operate through distinct physiological mechanisms. In conclusion, the A. nodosum-based biostimulant (applied alone) constitutes the most promising strategy to simultaneously enhance yield and technological quality in sugarcane ratoon crops.

Published: October 5, 2026

> Link

Towards Sustainable Biorefining: Assessing the Environmental Impacts of Sugarcane-Based Multi-Product Systems

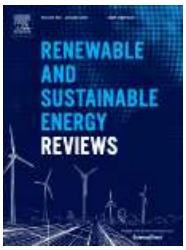


The transition from linear to more resource-efficient sugar production requires assessment of whether by-product valorization produces net environmental benefits across multiple impact categories. A consequential life cycle assessment (LCA) was conducted for the production of 1 metric tonne of sugar, using 7692.077 kg of sugarcane as the reference flow, and compared conventional sugar production (Sc-0) with six sugarcane-biorefinery configurations based on molasses, bagasse, and vinasse valorization. The assessment considered endpoint categories such as human health, ecosystem quality, resource use, and several midpoint categories using the ReCiPe framework. Sc-1 produced the lowest total weighted environmental impact (-157 points) compared with 167 points for Sc-0, while Sc-2 produced the highest total weighted impact (187 points). Monte Carlo analysis showed that Sc-1 and Sc-3 maintained net environmental benefits across the tested uncertainty range, whereas Sc-5 and Sc-6 were sensitive to variation in the quantities of value-added products. The results indicate that replacing natural gas with bagasse-based fuel can substantially improve environmental performance under the modeled system-expansion framework, whereas pathways involving molasses-derived yeast showed trade-offs in selected toxicity-related categories. These findings therefore demonstrate that by-product valorization depends on the type of substitution and valorization pathway considered. The study provides a broad environmental basis for evaluating accessible sugarcane-biorefinery configurations and supports further assessment of alternative pathways.

Published October 16, 2026

> Link

Mixed lignocellulosic biomass for continuous bioethanol production: logistics, process integration and biodesign



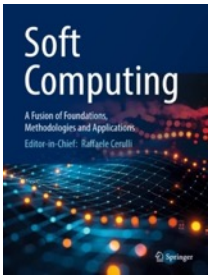
The increasing demand for renewable energy and the urgent need to mitigate climate change have driven global interest in bioethanol as a sustainable alternative to fossil fuels. However, reliance on edible feedstocks such as corn, sugarcane or wheat has proven unsustainable due to food-fuel competition. In contrast, second-generation bioethanol production that utilizes lignocellulosic biomass primarily depends on a single biomass, limiting the continuous production because of seasonal variability and high production costs. Mixed lignocellulosic biomass (MLB) utilization has emerged as a promising strategy to address these challenges by integrating diverse agricultural residues, forestry waste, energy crops and industrial by-products within biorefineries. MLB provides supply stability, enhances enzymatic saccharification and minimizes inhibitor formation through synergistic buffering and compositional complementarity. This review comprehensively evaluates the significance of feedstock diversity,

pretreatment strategies, enzymatic hydrolysis and fermentation approaches in MLB-based bioethanol production. It further examines process integration strategies, such as simultaneous saccharification and fermentation, consolidated bioprocessing and hybrid reactor systems for year-round operations. Techno-economic assessments demonstrate that MLB reduces the production costs, while life-cycle analyses confirm significant greenhouse gas mitigation potential. Despite these advantages, this study describes challenges in feedstock logistics, inhibitor management, strain robustness and process stability. Moreover, it outlines future directions that emphasize the roles of artificial intelligence and machine learning in feedstock blending, synthetic biology for robust microbial consortia and supportive policy frameworks to promote biomass aggregation. Overall, MLB represents a scalable and sustainable pathway for continuous second-generation bioethanol production, offering environmental, economic and technological advantages over single-feed approaches.

Published October 15, 2026

> **Link**

MDSA2CNet: a self-attention-based hybrid deep learning model for disease detection in sugarcane and rice crops



The timely and reliable identification of plant diseases is essential for sustaining agricultural productivity and reducing yield losses. In this work, we present S2RMCMD (Sugarcane and Rice Multi-Crop Multi-Disease), a unified benchmark dataset developed by merging three publicly available sources—Sugarcane1 Thite, Sugarcane2 Plant Disease Dataset of Assam, and BangladeshiCrops Rice. The resulting dataset contains 17, 134 high-resolution images spanning 20 disease classes and includes major fungal, bacterial, and viral infections such as red rot, smut, ring spot, grassy shoot, bacterial blight, and rice blast. Images were collected under varied illumination and field conditions, increasing the practical relevance of the dataset for real-world agricultural scenarios. To demonstrate the applicability of S2RMCMD, we introduce MDSA2CNet, a hybrid deep learning architecture that combines MobileNetV2 with three DenseNet variants (DenseNet121, DenseNet169, and DenseNet201) using feature-level concatenation enhanced by a self-attention module. The models were trained using transfer learning with fine-tuning and systematically tuned hyperparameters to achieve optimal performance. A cross-validation approach was employed to assess the model's robustness across different crop types and disease variations. Experimental evaluations indicate that MDSA2CNet consistently surpasses the individual backbone networks, achieving a training accuracy of (98.38%, test accuracy of 95.29%, precision of 95%, recall of 94%, and an F_1-score of 95%. The principal contribution of this study lies in the creation of the first multi-crop, multi-disease dataset that jointly incorporates sugarcane and rice leaf images, along with a strong hybrid architecture augmented with self-attention that generalizes effectively across diverse disease patterns. This integration demonstrates the potential of cross-crop datasets and attention-based hybrid networks to advance scalable and automated plant disease diagnosis within precision agriculture.

Published October 15, 2026

> **Link**

Biology, host resistance, parasitoids and insecticidal management of the sugarcane mealybug Phenacoccus saccharifolii (Green) (Hemiptera: Pseudococcidae) in India

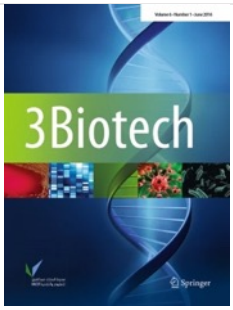


The sugarcane mealybug, Phenacoccus saccharifolii, has emerged as a major pest of sugarcane in India since the 2021–2022 season, but information on its biology, host-plant reaction, natural enemies and chemical control remains limited. Comprehensive laboratory and field investigations were conducted during 2023–2025 to address these knowledge gaps. The male and female mealybugs completed their life cycles in 21.9 ± 1.2 and 39.2 ± 1.6 days, respectively, and parthenogenetic amphitoky was observed in addition to sexual reproduction. Age-specific fecundity studies indicated a generation time of 31.5–32.5 days and a doubling time of 7–8 days. Screening of 230 sugarcane entries revealed considerable variation in their reaction to P. saccharifolii infestation, with the widely cultivated varieties Co 86032 and CoV 09356 showing the lowest and highest mean infestation levels of 3.22 and 71.85%, respectively. Four encyrtid parasitoids, Leptomastix sylvae, Aenasius hayati, A. arizonensis and Eotopus beneficus, were identified, with an overall parasitism of 15–19%. Leptomastix sylvae was the dominant parasitoid, accounting for 55.76–68.63% of total parasitism, and preferred third-instar mealybugs. Its male and female life cycles lasted 20.8 and 24.5 days, respectively. Two hyperparasitoids, Promuscidea unfasciativentris and Prochiloneurus pulchellus, also emerged from mummified mealybugs. Thiamethoxam was the most toxic insecticide against third-instar nymphs. The granular insecticides viz., thiamethoxam 0.9%+fipronil 0.2% GR, chlorantraniliprole 0.5%+thiamethoxam 01% GR and carbofuran 3% GR, provided more than 80% reduction in P. saccharifolii population following two applications at their respective recommended doses. These findings provide baseline information for developing integrated management strategies against P. saccharifolii.

Published October 13, 2026

> Link

Systems-level dissection of salinity stress tolerance in sugarcane interspecific hybrids



Salinity is a major abiotic factor limiting sugarcane productivity. In the present study, eight sugarcane interspecific hybrids were evaluated under control (3 dS m^{-1}) and salinity stress conditions (9 dS m^{-1}) using an integrated approach encompassing morpho-physiological, anatomical, root system architecture, ionic, and molecular studies. Under salinity stress, certain interspecific hybrids exhibited enhanced tillering (40.9%), internode production (15.8%), maintenance of SPAD values, increased Fv/Fm (5.6%), and a moderate reduction in stalk diameter (2.19%) and Leaf Area Index (5.8%). Although relative water content (RWC) declined in all genotypes, TSGS 22–385 showed the smallest reduction (7.3%) while maintaining a high Brix value (20%). Leaf anatomical changes, including epidermal thickening, bulliform cell enlargement, and maintenance of vascular bundle integrity, further contributed to stress adaptation. Root architectural analysis showed a marked increase in the tolerant genotype TSGS 22–385, with total root length increasing from 12.39 to 23.58 m, total root surface area from 394.31 to 631.10 cm^2, and root volume from 10.0 to 13.8 cm^3, whereas the sensitive genotype TSGS 21–33 exhibited 29% and 30% reductions in root fresh and dry weights, respectively. Ionic analysis showed that TSGS 22–385 maintained higher K^+ accumulation (2319 ppm) while

restricting Na^+ accumulation (192 ppm), indicating improved ionic homeostasis under salinity. Moreover, the genotype maintained better sucrose and purity percentages under control (21.36, 93.09) and salinity (21.2, 92.95). Pooled Analysis of Variance revealed significant effects of genotype, treatment, and genotype × treatment interaction for most morpho-physiological and biochemical traits ($P \leq 0.05$). Principal component analysis revealed that PC1 (20.4%) and PC2 (18.6%) together accounted for 40.2% of the overall variation. Brix, Purity, Cane diameter, sucrose %, purity %, Root dry weight, K+ accumulation and all stress-responsive genes were positively associated with TSGS 22–385. At the molecular level, TSGS 22–385 showed strong upregulation in the Na^+/H^+ exchanger (5.69-fold), suggesting a potential role of NHX-mediated Na^+ sequestration in vacuolar compartments in limiting cytosolic ion toxicity. Overall, TSGS 22–385 stands out as a promising tolerant genotype for superior growth, physiological, ionic, root architecture and molecular responses under saline conditions.

Published October 10, 2026

> **Link**

Events

	**International DATAGRO Conference on Sugar and Ethanol** *DATAGRO* **26-27 October 2026** **São Paulo, Brazil** > **Link**
	**The International Conference of Sugar and Integrated Industries** *ICSII* **7-10 November 2026** **Luxor, Egypt** > **Link**
	**Germplasm & Breeding/Molecular Biology Workshop** *ISSCT Biology Commission* **9-13 November 2026** **Barbados** > **First Announcement** > **Workshop Website**

9th IAPSIT International Sugar Conference (ISC 2026) & Sugarcon 2026 Next-Gen Challenges, Opportunities & Future-Proofing the Sugar Industry through Innovation	**9th IAPSIT International Sugar Conference 2026** *Sugarcane Research Institute, Guangxi Academy of Agricultural Sciences (GXAAS) / International Association of Professionals in Sugar and Integrated Technologies (IAPSIT) / Society for Sugar Research & Promotion (SSRP)* *Note: **Global Sugar Industry Connect (GSIC)** is an exclusive and unique platform for global sugar industry participation without physical presence in the conference. This In-Absentia Participation Programme for industry machinery manufacturers, equipment suppliers, and service providers offers companies an opportunity to actively participate in the conference through digital posters and video presentations, without the need for their physical presence in Nanning. Find out more here.* **17-20 November 2026** **Nanning Hotel, Nanning, Guangxi, P.R. China** > **Link**
WABCG World Association of Beet & Cane Growers	**WABCG-ISO Consultation 2026** *World Association of Beet and Cane Growers (WABCG)* **30 November 2026** **Church House, Westminster, UK** > **Link**

	35th International Sugar Organization Seminar *ISO* **1-2 December 2026** **Church House, Westminster, UK** > **Link**
	AFCAS Journée de Rencontre *L'Association Francophone de la Canne à Sucre (AFCAS)* **15 December 2026** **Forum des Images, Paris 1er, France** > **Link**
	Sugarcane ICSB workshop at International Plant and Animal Genome Conference (PAG 34) *Scherago International* **Workshop: 11 January, 8:30am** **Conference: 8-12 January 2027** **San Diego, USA** > **Link**



Pathology & Entomology Workshop

ISSCT Biology Commission

15-19 March 2027

Réunion Island

> **Second Announcement**

> **Workshop Website**



Agricultural Engineering & Agronomy Workshop

ISSCT Agricultural Commission

11-15 April 2027

L'Auberge Casino & Hotel Baton Rouge LA, USA

> **Second Announcement**

> **First Announcement**

> **Workshop Website**

Africa Sugar by informa

Annual Africa Sugar Conference

Informa

13-15 April 2027

	Nairobi, Kenya > **Link**
International Society of Sugar Cane Technologists Founded 1924	**Engineering & Processing Workshop** *ISSCT Factory Commission* **17-20 April 2027** **Cairns, Australia** > **First Announcement** > **Workshop Website**
ASSCT Australian Society of Sugar Cane Technologists ABN: 11 075 608 098 website: www.assct.com.au ACN: 075 608 098	**ASSCT 2027 Conference** *Australian Society of Sugar Cane Technologists (ASSCT)s* **20-22 April 2027** **Cairns Convention Centre, Cairns, Queensland, Australia** **CALL FOR PAPERS:** - 18 October 2026: Submit SYNOPSIS of proposed paper to Editor by e-mail. - 15 November 2026: Submit COMPLETE PAPER to Editor by e-mail. - 31 January 2027: Submit POSTER ABSTRACTS - 15 April 2027 Submit POWERPOINT PRESENTATIONS. > **Link (conference website)** > **Link (call for papers)**

4th Edition Sugarex VIETNAM 2027	**SugarEx Vietnam 2027** *Fireworks Media (Thailand) Co., Ltd.* **27-28 May 2027** **Hồ Chí Minh, Viet Nam** > **Link**
International Society of Sugar Cane Technologists Founded 1924	**Co-Products Workshop** *ISSCT Co-Products Commission* **6-10 June 2027** **Avani Khon Kaen Hotel & Convention Centre, Khon Kaen, Thailand** > **First Announcement** > **Workshop Website**
ASSCT American Society of Sugar Cane Technologists	**ASSCT Annual Joint Meeting** *American Society of Sugar Cane Technologists (ASSCT)* **22-24 June 2027** **Hyatt Regency Coconut Point, 5001 Coconut Rd Bonita Springs, FL 34134, United States** > **Link**
8th Edition Sugarex INDONESIA 2027 An International Exhibition of Sugar Companies, Sugar Technology, and Its Supporting Industries	**Sugarex Indonesia 2027** *Fireworks* **10-11 November 2027** **Surabaya, Indonesia** > **Link**
International Society of Sugar Cane Technologists Founded 1924	**Management Workshop** *ISSCT Management Commission*

	January/February 2028 (during Congress) **Guatemala** > **Link** (more information to be included when available)
International Society of Sugar Cane Technologists Founded 1924	**XXXIII ISSCT Congress 2028** *ISSCT & Asociación de Técnicos de Azucareros de Guatemala (ATAGUA)* **January/February 2028** **Comité Permanente de Exposiciones, COPEREX, 8a calle 2-33 zona 9, Ciudad de Guatemala, Guatemala City** > **Link**

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