





ISSCT Germplasm & Breeding Section Webinar

The International Society of Sugar Cane Technologists (ISSCT) is pleased to invite you to the webinar on sugar cane Germplasm & Breeding which will take place on

Tuesday 7 July 2026 from 11 am to 1 pm GMT

Theme: Selection strategies for accelerated and precision breeding

Chaired by George Piperidis (Chair of ISSCT Germplasm & Breeding Section) with presentations as follows:

Presenter / Country / Organisation	Presentation Title
Dr Sijesh Natarajan, Australia / SRA	*Development and application of predictive breeding technologies to enhance genetic gains in the Australian sugarcane breeding program*
Dr Anna Hale, USA / USDA	*Gimmicks, Gadgets, and Good Data - Promise or Proof?*
Dr James Todd, USA / USDA	*Evaluating Sugarcane Seedlings: A Greenhouse–Field Comparison*

The presentations will focus on the current and new tools being used or validated by sugar cane breeders to improve breeding and selection efficiency.

Format of the webinar:

- Each presentation will last 20 minutes
- 5 minutes will be allocated to questions after each presentation
- After the final presentation, there will be a 20 to 30-minute panel discussion involving all speakers
- Total duration of the session will be up to 2 hours.

The programme with the biodata of the presenters is given below. The facilitators/organizers are:

- Dr. George Piperidis, SRA, Australia
- Dr. Danilo Cursi, CTC, Brazil
- Dr. Marvellous Zhou, SASRI, South Africa
- Dr Andrew Stoute, WICSCBS, Barbados
- Dr Jean-Yves Hoarau, eRcane, Réunion

Language
The Webinar will be conducted in English.

Registration
The Registration Form for the Webinar may be accessed through the following link:
https://us06web.zoom.us/meeting/register/zDgh083VTV2zP8n1xSl7YQ

The Webinar is open to ISSCT compliant members as well as to non-members.

Compliant Members
Compliant members are those who have already settled their membership dues for the period 2025-2028. For those who have not yet done so, they may settle their dues of USD 150 through the following link:
https://members.issct.org/appform/issct_guatemala_2028.aspx

Non-Members
If a participant wishes to register for ONLY the webinar in Germplasm and Breeding, he/she should settle a registration fee of USD 50 through the following link:
https://members.issct.org/webinar/overview.aspx

After having settled either your ISSCT membership dues or only the registration fee for the webinar, an e-mail with the meeting details (Username and Password to access the Webinar), will be sent to you.

Further information
For further information, please contact the ISSCT **Germplasm & Breeding Chair –** George Piperidis gpiperidis@sugarresearch.com.au or the ISSCT Secretariat at issctsecretariat@gmail.com / issct@intnet.mu

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Programme

Tuesday 7 July 2026
11 am to 1 pm GMT

Chair: Dr George Piperidis

Speaker 1: 11:00 am GMT – 11:20 am GMT

Dr Sijesh Natarajan (SRA, Australia)

Biodata

Dr. Sijesh Natarajan is Breeding Technology Lead at Sugar Research Australia and an Industry Fellow at the ARC Training Centre for Predictive Breeding, University of Queensland. He oversees the integration of advanced breeding technologies in the SRA breeding program, combining genomics, high throughput phenomics, and big data analytics to accelerate genetic gains and improve sugarcane productivity. He has led research projects that combine crop physiology, phenotyping, and quantitative genetics, leading to the successful adoption of phenomics technologies across the SRA program. With nearly a decade of research experience, he works closely with both industry and academic partners to advance data-driven approaches for sugarcane improvement.

Development and application of predictive breeding technologies to enhance genetic gains in the Australian sugarcane breeding program.

The profitability and sustainability of the Australian Sugarcane industry is heavily dependent on the cultivation of high-yielding, disease-resistant sugarcane varieties. Plant breeding efforts at Sugar Research Australia (SRA) has played a major role in the success of the industry. However, genetic gains for key economic traits have plateaued and industry productivity has remained stable in recent years. Sugarcane breeding is constrained by a complex genome, difficult phenotyping, long cycle times, and multiple breeding targets, which together make the current system slow and inefficient. Predictive breeding technologies, including genomic selection, drone-based phenomics, and big data analytics, show potential in overcoming some of the traditional breeding challenges. The application of predictive breeding and its potential for improving efficiency and genetic gains will be discussed.

Speaker 2: 11:25 am GMT – 11:45 am GMT

Dr Anna Hale (USDA-ARS, USA)

Biodata

Dr. Anna Hale is a Research Geneticist working in the area of Genetic Improvement of Sugarcane for Temperate Climates at the USDA-ARS, Sugarcane Research Unit (SRU). The Unit's mission is to enhance the viability of sugarcane as a sugar and/or biofuels feedstock through germplasm enhancement and variety development, improved cultural practices, and pest management. The two components of the breeding program at the SRU are the development of commercial cultivars and sugarcane germplasm enhancement (basic breeding). Responsible for basic breeding, Anna plans, conducts, and leads independent and team-oriented research to characterize and utilize basic germplasm (wild species), increase genetic diversity within the sugar- and energy-cane cultivar development programs, and increase stress tolerance in *Saccharum.*

Gimmicks, Gadgets, and Good Data - Promise or Proof?

Breeders struggle with finding a balance between collecting good data and collecting enough data. The amount of selection pressure at the right time can be difficult to schedule and implement. Many companies promote new technology for rapid screening of plant phenotypic data. Testing is required to determine efficacy of the devices and validate the obtained data. In Louisiana, cost effective and efficient screening methods for cold tolerance remain an elusive goal that sits out of reach despite ongoing technological advances. Novel approaches and use of technology for screening will be presented and strengths and limitations of these new approaches discussed.

Speaker 3: 11:50 am GMT – 12:10 pm GMT

Dr James Todd (USDA-ARS, USA)

Biodata

James Ryan Todd is a research geneticist with the USDA-ARS Sugarcane Research Unit in Houma, Louisiana, where he leads the commercial breeding program responsible for developing new sugarcane varieties for the Louisiana industry. He has 14 years of experience in sugarcane research, with expertise spanning field and greenhouse phenotyping, genotype-by-environment (G×E) studies, and the integration of new technologies to improve breeding efficiency. His work focuses on advancing high-performing, resilient varieties that support the long-term sustainability and productivity of Louisiana's sugarcane sector.

Evaluating Sugarcane Seedlings: A Greenhouse–Field Comparison

In 2023, researchers studied 15 sugarcane families to see if greenhouse growth correlated with field performance. Greenhouse plants were evaluated for growth and root vigor and leaves from selected crosses were scanned with an optic spectrometer. Plant height and stalk number were recorded in the field, and drone imagery was acquired during first ratoon crop before selections were made in second ratoon. Greenhouse spectral data were predictive of family-wide root rating. While greenhouse vigor generally aligned with field height, removing a single poor-performing outlier revealed a negative correlation between high greenhouse vigor and field selection rates.

Panel discussion:

Panel: ISSCT Germplasm & Breeding Committee members, Dr. Sijesh Natarajan, Dr. Anna Hale, Dr. James Todd.

Attendees will be able to ask further questions of the presentations and give updates on the strategies and tools being implemented in their breeding programme, highlighting the challenges, problems, and successes.