



CCD-CROP-IAC Research for Climate Change Mitigation

The partner company Nuseed is the interviewed for this edition.



Nuseed Brasil is part of the global growth of Nuseed. Founded in 2006, Nuseed now has over 400 employees dedicated to research and development (R&D) and commercial sales of canola, carinata, sorghum, and sunflower in Australia, Europe, North America, and South America. Globally, Nuseed offers VALUE BEYOND YIELD™ through dedicated customer service.

To understand the importance of public-private partnerships in sugarcane research, such as the one established between Nuseed and IAC, we spoke with Dr. José Antônio Bressiani, Director of Research and Development of new sugarcane varieties at Nuseed.



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Sugarcane: Discovery of new genes for increased resilience to drought stress is an opportunity for the development of new sugarcane varieties.

An article published in 2023 by the CCD-CROP-IAC team in the international journal *Frontiers in Plant Science* presented significant advances in understanding the mechanism of water efficiency – the better use of water in two sugarcane varieties: 'IACSP97-7065' and 'IACSP94-2094,' known for their sensitivity and tolerance to drought, respectively.

 **frontiers** | Frontiers in **Plant Science**

Drought-triggered leaf transcriptional responses disclose key molecular pathways underlying leaf water use efficiency in sugarcane (*Saccharum* spp.)

Danyel F. Contiliani^{1,2†}, João Felipe C. de O. Nebó^{3†}, Rafael V. Ribeiro⁴, Marcos G. de A. Landell², Tiago C. Pereira^{1,5}, Ray Ming⁶, Antonio Figueira^{3*} and Silvana Creste^{1,2*}

Reference: Contiliani, D. F., Nebó, J. F. C. D. O., Ribeiro, R. V., Landell, M. G. D. A., Pereira, T. C., Ming, R., ... & Creste, S. (2023). Drought-triggered leaf transcriptional responses disclose key molecular pathways underlying leaf water use efficiency in sugarcane (*Saccharum* spp.). *Frontiers in Plant Science*, 14, 1182461.

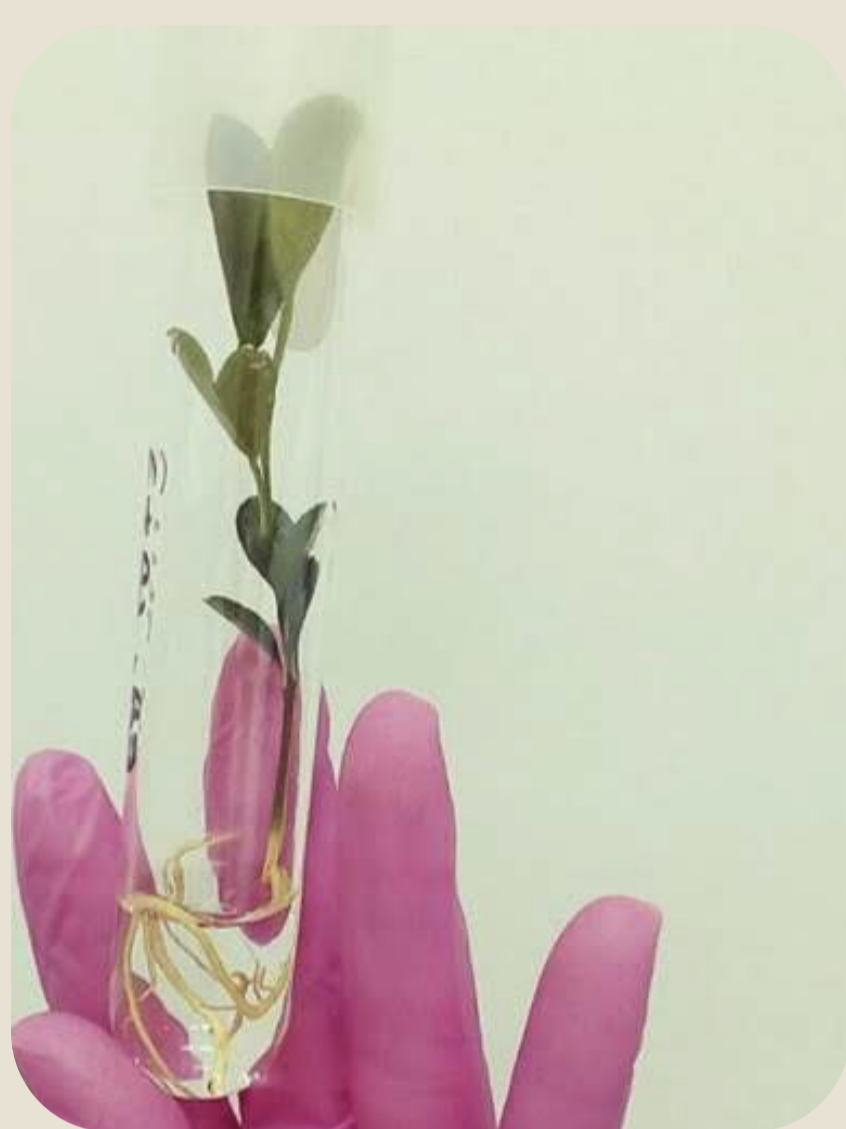
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Citrus Industry at Risk: CCD-CROP-IAC Task Force Against Greening

Researchers from CCD-CROP-IAC are actively engaged in developing new technologies to overcome the challenges posed by Greening, currently considered the most devastating disease affecting citrus cultivation. Greening, also known as HLB (Huanglongbing), is caused by the bacterium *Candidatus Liberibacter* spp., and has already caused significant damage to citrus orchards in the United States, gaining momentum in Brazil and other parts of the world.

Evaluation of Transgenic Citrus Plants Indicates Elite Events with Increased Tolerance to Greening

One of the strategies to expedite the development of new citrus cultivars is applying biotechnological tools for the insertion or modification of specific genes related to the plant's defense response against the bacterium *Candidatus Liberibacter* spp., which causes Greening. In this regard, researchers from CCD-CROP-IAC have successfully achieved, through genetic transformation, events of transgenic plants tolerant to Greening. While some events are in the testing phase in a greenhouse, others are at a more advanced stage and are being evaluated in the field.



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Tangerine Production: Seeking Better Scion x Rootstock Combinations and Scion Disease Tolerance

Tangerines are among the fruits that have experienced a significant price increase, primarily due to a reduction in cultivated area and plant productivity. Tangerine producers have faced challenges in maintaining production due to many plants affected by the Greening-causing bacterium and the fungus responsible for Alternaria Brown Spot (MMA).



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Researchers from CCD-CROP-IAC Strengthen Collaboration with National and International Universities

CCD-CROP-IAC Researchers Collaborate with UFPR for Coffee Improvement

To expand work on in vitro cultivation and genetic transformation of coffee, the CCD-CROP-IAC-Coffee team has established collaboration with Professor Dr. Alessandra F. Ribas from the Department of Crop Science and Plant Health at the Federal University of Paraná (UFPR).

Dr. Alessandra's research group has extensive experience in coffee cell culture and has developed the most widely used protocol for the transformation of embryogenic calli via *Agrobacterium tumefaciens* in coffee.

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Researchers from CCD-CROP-IAC Abroad

Ph.D. student Danyel Fernandes Contilliani has been awarded a FAPESP Overseas Researcher Fellowship (BEPE-FAPESP) for a professional training period of up to 12 months outside the country.

During this period, Danyel will develop novel CRISPR-based tools, including new base editors, gene insertion technologies, and strategies for transcriptional gene activation.



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Researchers from CCD-CROP-IAC Bring Consumers, Companies, and Research Partners into the "Alcides Carvalho" Coffee Center

Science and Coffee: Meeting with Award-Winning Baristas at IAC

Researchers from CCD-CROP-IAC welcomed a select group of national and international award-winning baristas to the "Alcides Carvalho" Coffee Center. Among them, Boram Júnior Um stands out as the current Brazilian and world champion. The meeting between researchers and baristas was made possible by the partner company Datterra Atividades Agrícolas Ltda, whose technical team was also present during the visit.



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Science and Market: Meeting with Nestlé Employees at IAC

In September, researchers from CCD-CROP-IAC welcomed George Arvanitis from Nestlé Greece, Marcel Cutrona Júnior and Rogério dos Santos from Nestlé Brazil, along with Beatriz Filipov, trade, and marketing advisor from Datterra Atividades Rurais Ltda, to the "Alcides Carvalho" Coffee Center. The group of experts in quality coffees had the opportunity to explore selected coffees within the IAC's Special Coffees Program.



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3rd Workshop of CCD-CROP-IAC Strengthens the Triple Helix Model of Technological Innovation

On October 27, 2023, the CCD-CROP-IAC held its third workshop at the auditorium of the Alcides Carvalho Coffee Center of the Agronomic Institute (IAC) in Campinas, SP.

The event showcased results obtained in the last twelve months within the project 'Biotechnological and Genomic Strategies for Quality, Productivity, and Sustainable Management of Coffee, Sugarcane, and Citrus.' The project is financially supported by FAPESP and partner companies.



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CCD-CROP-IAC Gains Visibility in Brazil and Worldwide

Undergraduate Students with Research Projects Linked to CCD-CROP-IAC Receive Awards at National Congresses

Natacha Cassiano Rocha, an undergraduate student in Biological Sciences at UNICAMP and a Pibic/CNPq/IAC scientific initiation scholarship holder, presented results from the project 'Isolation and cultivation of coffee protoplasts aiming at the CRISPR-CAS9 technique' at the 17th Interinstitutional Congress of Scientific Initiation – CIIC 2023, held at the Agronomic Institute (IAC) in August 2023.

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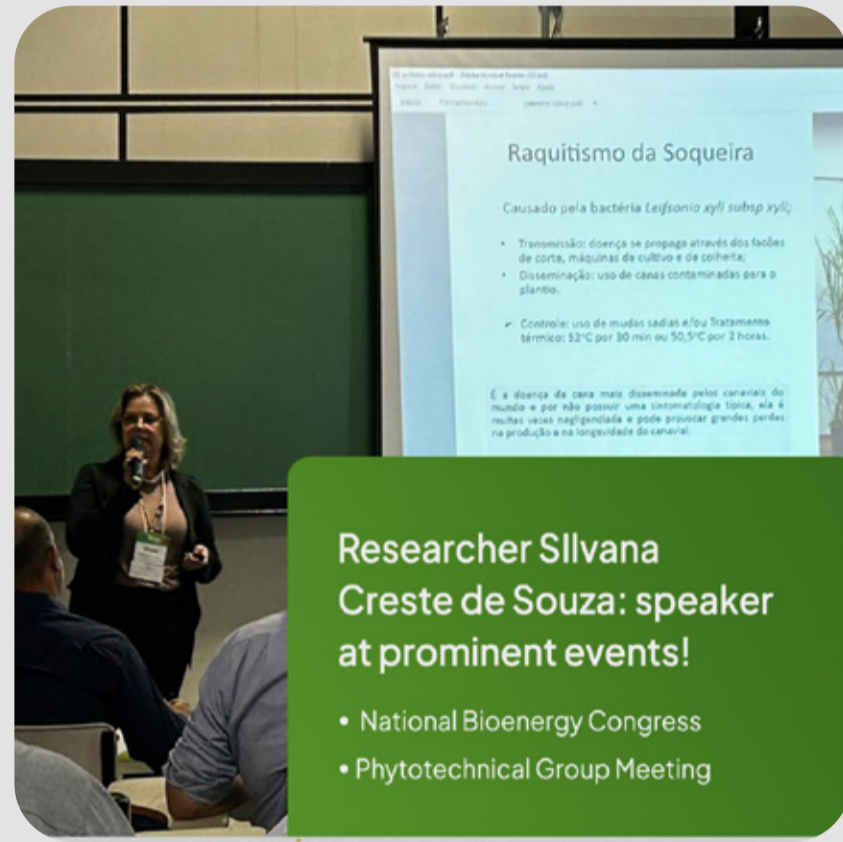
Researchers from CCD-CROP-IAC Stand Out at National and International Events

Dr. Alessandra Alves de Souza was featured in the opening session of the IS-MPMI Congress in Rhode Island, USA.



Researcher Silvana Creste de Souza: speaker at prominent events!

- National Bioenergy Congress
- Phytotechnical Group Meeting



Researcher Mariângela Cristofani-Yaly was a speaker at the event: "Together in Combating Greening, the battle is ours"

Discover the keys to a sustainable future in citrus farming



Researcher Oliveira Guerreiro Filho was highlighted at the 53rd Brazilian Phytopathology Congress

CBFITO 2023



CROP-IAC is present at an international event on food security



Consolidated excellence in research! Our sincere congratulations to each scientist who represented our center as a speaker at renowned events. We express our pride in a team of researchers that stands out and shines on national and international stages, reaffirming our unwavering commitment to the progress of agronomic science.

Find out more about the project. CCD-CROP-IAC

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