



43rd Annual Conference Futureproofing a Resilient Industry

Mackay Entertainment and Convention Centre
Tuesday 19th April - Friday 22nd April 2022



President's message ASSCT 2022 Conference

The 43rd ASSCT conference is the premier technical and professional event for the Australian sugar industry. In April 2022, the conference returns to Mackay. With one eye on the continuing pandemic across the planet, the theme for the conference is "Futureproofing a Resilient Industry".

It seems that the only certain thing at the moment is uncertainty itself. Our theme is aimed at encouraging thoughts and ideas on how the industry can remain resilient in these times and how we can at least partially insulate the industry from unexpected conditions and occurrences. This approach can be both "micro-" and "macro-" based, i.e. from futureproofing an individual cane stalk, through and up to the entire industry remaining resilient through ever-changing circumstances.

The conference is open to people from all sectors of the sugar industry as well as those who support each sector, growers, millers, harvesters, researchers, extension, suppliers and engineers.

The final program for the technical papers and the poster papers sessions is yet to be finalised but we expect presentations from both local and international experts, focusing on cutting edge research and innovative engineering. This process of sharing the latest research findings and clever ideas is a great way to allow continuous improvement for the Australian sugar industry.

The Conference will be held at the Mackay Entertainment and Convention Centre, from 19 to 22 April 2022.



As well as the technical sessions, there will be opportunities to network with both old and new colleagues at a Welcoming Function to be held on Tuesday evening (19 April), a Happy Hour on Wednesday evening, and the Gourmet Barbeque Dinner on Thursday evening. Also, throughout the conference, an Industry Equipment Exhibition will be set up where delegates can interact closely with industry equipment and services suppliers regarding their offerings,

For partners of delegates who may also wish to attend, a Partners Program will be available, visiting some of the great local attractions, with just a touch of retail therapy thrown in.

The conference will operate under a MECC approved Covid Safe Plan. We will continue to monitor and adhere to government Covid guidelines and recommendations and will operate the event accordingly.

On behalf of the local organising committee, I look forward to welcoming you to Mackay in April 2022 to participate in the 43rd ASSCT conference.

Best Regards,

Paul Benecke

President ASSCT 2021/2022

GUEST SPEAKERS



Mayor Greg Williamson

Greg is a 5th generation Mackay local – In fact, his Great Great Grandfather was an elected member of the first Council in Mackay.

With a wealth of business, political, community and defence experience accumulated over a diverse career, Greg returned to the Mackay Mayoralty in 2016 having previously served as Mayor of the City from 1991 to 1994.

Between 1994 and 2016 his career in General Management saw him as Regional General Manager for QLD & NT at Chandler MacLeod - one of Australia's largest Human Resource companies. He was the founding General Manager of a national aerospace staffing firm Aero Ready; and then had 8 years General Management experience in heavy engineering services to the Queensland resources sector. Greg has an organisational reputation focus, demonstrated expertise in people management, and a passionate commitment to community service.

Outside of public life, he is a current licenced pilot and has over thirty-five years' service in the Australian Air Force Cadets retiring as the Australian National Commander of the 8000-strong organisation when he was elected Mayor in 2016. Greg is married to Annette and they have two adult children.



Mr. Jannik Olejas

Jannik Olejas was appointed the CEO of Mackay Sugar in April 2020, having previously held the role of General Manager from September 2019, following the completion of the subscription into Mackay Sugar by Nordzucker AG.

Mr. Olejas was previously employed by Danisco Sugar A/S since 1992. Following the acquisition of Danisco Sugar by Nordzucker AG in 2009, he has held various positions initially within Sales and Marketing and subsequently in Agriculture for the Nordzucker Group. Along with working internationally with clients, suppliers, and stakeholders across Europe, prior to moving to Australia, Mr Olejas held the senior management position with Nordzucker of Head of Agri Sourcing reporting directly to the CEO & CAO.

Mr. Olejas holds a degree in Sales and Marketing from Copenhagen Business School and has undertaken various general management training courses at International Business Schools.



Dr. Graham Bonnett

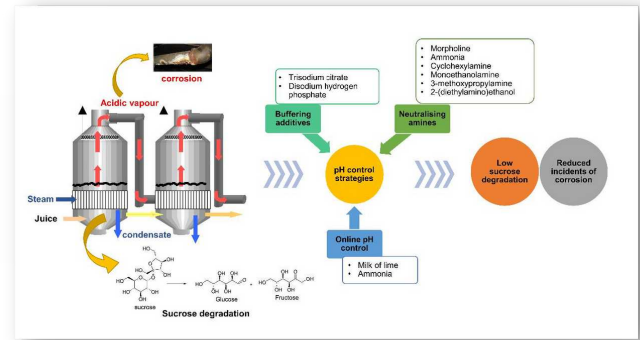
Graham was awarded both a Bachelor of Science with Honours in Agricultural Science (Crops), and a Doctor of Philosophy from The University of Leeds. His doctoral studies focused on the mobilisation of stem reserves in barley. He conducted post-doctoral research on improving the quality of annual pasture at the University of Melbourne. Then joined CSIRO in 1993, working in Canberra, Townsville and since 2003 in Brisbane. In Queensland, he worked on understanding the growth and development of sugarcane and improving sugarcane varieties before taking research leadership roles.

In 2009, Graham was awarded the Queensland-Smithsonian Fellowship, working at the Smithsonian Tropical Research Institute, Panama where he successfully conducted a comparative study of a wild relative of sugarcane that is an invasive weed in Panama but is much less invasive in Australia. Graham is a member of the Gene Technology Technical Advisory Committee (GTTAC) that advises on the release of genetically modified organisms for trials and commercial purposes and a member of the Independent Science Panel advising on the Reef Water Quality Protection Plan.

Currently, he is the Interim Leader of the Drought Resilience Mission. The goal of which is to identify ways of reducing the impacts of drought on agriculture, communities and the environment.

Mitigation strategies to maintain pH of juice in evaporators

Sucrose degradation in the early effects of the evaporator station is an issue faced by several Australian sugar mills, particularly where vapour bleeding arrangements have been installed to achieve high levels of steam efficiency in the factory. The impacts of higher temperatures and longer residence times in steam efficient factories causes increased juice degradation and can result in substantial losses in revenue due to loss of sucrose. The degradation reactions produce acidic compounds and can lead to the formation of acidic condensates and corrosion of equipment. During juice evaporation, sucrose loss can occur because of degradation reactions that are catalysed by heat, pH, and other juice components. Of these, pH has a significant impact on reaction rates but can be controlled better than temperature and other operating parameters. Chalani Marasinghege, under the supervision of Darryn Rackemann from QUT, conducted research to assess potential pH control strategies to minimise sucrose degradation and subsequent impacts during the sugar manufacturing process. These strategies were: (1) the use of reagents to improve the



buffering capacity of the juice, (2) the use of alkanolamines to neutralise the acidic compounds formed, and (3) on-line pH adjustment to minimise reductions in pH. All these strategies were able to achieve significant reductions in sucrose loss by 20-50% in laboratory trials while addition of amines maintained alkaline condensate conditions throughout the juice boiling process which was an added advantage in terms of reducing corrosion potential. However, some of the strategies come at the expense of chemical costs, and other processing implications such as scaling of the evaporators. The use of ammonia was shown to be the preferred pH control strategy for both juice and condensate, though it led to a slight increase in juice colour.

Author: Chalani Marasinghege

Opticane: An irrigation tool and weather support tool

Whether it is to manage resources during drought or simply to improve productivity, irrigation management is an important part of many sugarcane-growing regions in Australia. Many irrigation decision-support tools (DSTs) have been developed in the past with varying levels of success. Opticane (www.opticane.net) was developed as an Internet of Things tool that integrated current weather data, locally relevant weather forecasts and a crop model to produce weather and irrigation requirement forecasts for use in irrigation management decisions. In contrast to many DSTs, a major focus of Opticane's development has been the user experience. This paper overviews the insights and lessons learnt from the

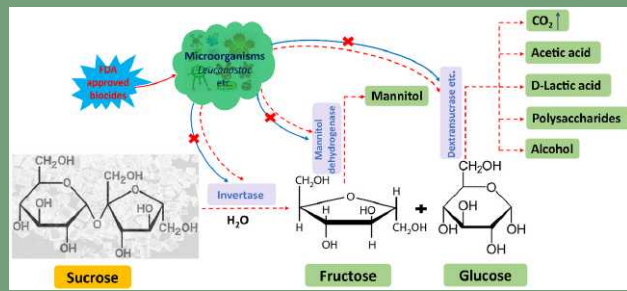
project development. By highlighting the features available to users, we hope to encourage growers to investigate irrigation DSTs. By overviewing the development process, we hope to encourage researchers to explore the possibilities of interactive web development to engage industry partners with research outputs. Consultation with industry partners has led to the expansion of Opticane beyond irrigation advice, to include rule-of-thumb advice for a range of management 'tasks' such as spraying and burning. The number of visitors to the Opticane site has continued to increase over the life of the project. The majority of visits have used the current conditions and weather

forecasts tools, but few have engaged with the irrigation advice, suggesting further work is needed in this area.

Preliminary feedback suggests users largely like the Opticane user interface, particularly for exploring data from weather stations. We recommend researchers and industry partners consider interactive web apps as a way of engaging with users. Effectively disseminating advice and findings in a scalable and easy to access format will improve the uptake of advice that can lead to improved industry sustainability.

Authors: J Sexton, B Melville, A Schepen, B Philippa, S Attard, M Davis and Y Everingham

Biocides to reduce microbial degradation



(P100 and P200) based on both laboratory- and factory-scale trials. Sucrose, glucose, fructose, mannitol, organics acids and polysaccharides content of juices with and without biocide treatment were used as markers to determine sucrose degradation. The laboratory tests on primary mixed juice (PMJ) and secondary mixed juice (SMJ) from 4 mills clearly showed that P100 biocide is more effective at inhibiting sucrose degradation in PMJ than P200, while the reverse is true with SMJ. The factory trials at one sugar mill indicated that dosing P100 in the milling train reduced microbial sucrose degradation compared to that without using of biocide, while at another sugar mill, the effectiveness of P100 and P200 could not be easily distinguished. The results from this study have indicated there may be benefits of using biocides in Australian sugar mills.

Author: Changrong Shi

Ross Broadfoot marks 50 years in the sugar milling industry



Dr. Ross Broadfoot

On 18 January 2021, Ross Broadfoot, Principal Research Fellow at Queensland University of Technology (QUT) and ASSCT Life Member, reached the milestone of providing research and development, consulting

and training services to the Australian sugar milling industry for 50 years. In his 50 years, Ross has gained an international reputation for his expertise in crystallization equipment and processes, along with his work in evaporation, centrifuging and energy management and his contribution to 76 ASSCT conference papers. To celebrate his achievement, Ross's two employers, Sugar Research Institute (SRI) and QUT are partnering with fellow sponsors Bradken, Consolidated, NALCO Water and Castrol to host a dinner during the 2022 ASSCT conference on Wednesday 20 April. Many registered members and delegates to the conference aligned to the Manufacturing Section will receive an invitation to this dinner prior to the conference. For further information please contact Geoff Kent (g.kent@qut.edu.au or 0418708593).

Caleb Connolly from Queensland Department of Agriculture and Fisheries and colleagues explore the economic and environmental benefits of adopting practice changes aimed at managing soil health.



Caleb Connolly, Economist, Department of Agriculture and Fisheries, with Charlie Cacciola, Burdekin sugarcane grower. Image used with permission, thanks to Sugar Research Australia.

Economic, biophysical and farm management data before and after the practice changes were supplied by three growers from the Herbert, Burdekin and Mackay regions. Despite the different strategies of the farms, the economic benefit was positive for all farms, ranging from \$42 to \$131 per hectare per year, suggesting that the suites of changes adopted were profitable. Environmental improvements were also demonstrated with reduced fossil-fuel use, reduced greenhouse-gas emissions, and reduced potential for water pollution. For one farm, the reduction in greenhouse-gas emissions was predicted to be equivalent to taking 172 cars off the road. The case studies provide further evidence of the joint economic and environmental benefits of cane-growing innovations being adopted by the Australian sugarcane industry. They provide examples for growers considering practice changes and add to a growing positive narrative to the wider community about the industry's efforts to improve sustainability. They highlighted the need to add soil-health indicators in future life-cycle assessments of practice change.

Joel Simpson and Steve Staunton from Sugar Research Australia tackle the issues of retaining laboratory personnel for Australian sugarcane mills and the need for mill staff to make process adjustments

They used near-infrared (NIR) laboratory instruments to develop mature calibrations that provide many advantages, such as ease of use, speed of analysis, multiple constituent results generated in one scan for multiple mill products, and precision and accuracy of the results. The paper demonstrates how the “development” and “operation” procedures were successfully applied for two sugarcane mills. A previously generated globalised calibration, created from various mill instruments and sample populations, was used as a basis for developing a mature localised calibration specific to the mill sample sets and their respective laboratory instruments. Stored raw sugar (pol, moisture), fresh raw sugar (pol, moisture) and molasses (dry substance, sucrose, and final molasses sucrose) were the targeted products considered for the two mills. Once matured, the “operation” methodology was implemented, where only a single-seasonal NIR calibration update was required for each mill for all product constituent equations to meet the required prediction performance criteria. Providing reliable NIR test results within such short time frames allowed near real-time decisions to be made by process operators with minimal training requirements. The two-stage NIR development/operation methodology can be employed for similar products with the appropriate data.

In recent years, concerns have been raised that many sugarcane varieties in the development pipeline, particularly in the Central and Southern regions, have fibre quality classified as soft, with some soft enough to cause processing problems in the factory.

The main issues have been feeding of the cane through the milling train and high bagasse moisture contents causing subsequent combustion issues and low steam pressure at the boiler station. With soft canes in a factory’s cane supply, there is a need to find a way to process them reliably at a reasonable rate to extract the sucrose and produce reasonable quality bagasse for steam generation. Geoff Kent and Floren Plaza from QUT led a multi-organisation project to determine the impact of soft canes on milling and to develop solutions to allow the commercial milling of these often high-sugar varieties. They propose changing shredder speed and changing added water rate as strategies to address problems caused by the processing of soft canes.



QUT Research Assistant Darcy Patrick near the first mill at Isis

Trials at Isis Mill involved adjustments to three parameters: shredder speed, maceration water flow rate and maceration water temperature, with a total of 68 tests carried out. The experiments were successful in identifying and prioritizing the parameters required to automate adjustments required for processing soft cane varieties. These results provided sufficient information for the design of an automated electro-mechanical shredder grid door positioner, and its programming, installation and commissioning so that full factory trials could be carried out including automated grid positioning. The positioner was made up of a master / slave configuration with two 5 tonne power jacks driven by servo gear motors controlled by two inverters.

43rd
ASSCT CONFERENCE

Mackay Entertainment and Convention Centre
Tuesday 19th April - Friday 22nd April 2022

REGISTER NOW

The Annual ASSCT Conference showcases the latest innovations and developments within the sugar cane industry.



ASSCT welcomes you to Mackay

The Mackay Region is often referred to as an 'unexplored' part of Queensland - with a lot of untold stories. This beautiful region promises the visitor 'quiet satisfaction on a road less travelled' and our regional brand reflects these experiences. A perfect getaway for families, couples or the single traveller, The Mackay Region can offer natural experiences, fun-filled adventures, or pure relaxation with a backdrop of gorgeous scenery and amazing sunsets. Whether it's inland, on the coast

“ Fall asleep to the sound of waterfalls and wake up surrounded by lush rainforest. Enjoy sunrise with wallabies or sink your toes in the sand at a secluded beach. ”

or in the City Centre, see nature come to life with unique and rare experiences in The Mackay Region. Explore Australia's largest sub-tropical rainforest with a visit to Eungella National Park and allow Finch Hatton Gorge to take your breath away. Visit any time of the year and you will be able to immerse yourself in the local history and culture and experience exciting entertainment with an extensive choice of events that are unique to [The Mackay Region](#).

Conference Program

The official opening session of the 43rd ASSCT Conference will be held on Wednesday 20th April 2022 at the Mackay Entertainment and Convention Centre (MECC), 258 Alfred Street Mackay QLD 4740.

All General, Manufacturing and Agricultural sessions will follow and also be hosted at the MECC, concluding on Friday 22nd April after the Agricultural and Manufacturing field tours.

Some key events will be:

Tuesday, 19th April
Wednesday, 20th April

Thursday, 21st April

Friday, 22nd April

Welcome Function, 5:30 pm
ASSCT Conference Official Opening
by Mayor Greg Williamson, 9:00 am
Happy Hour, 5:30 pm
Al Fresco Gourmet BBQ Dinner and Awards Presentation, 6:30 pm
Agricultural and Manufacturing Field Tours

The finalised program will be published on the ASSCT website and an electronic copy of the ASSCT conference proceedings will be sent to all financial members and registered delegates of supporting companies.

The organized event complies with COVID requirements.



Contact:

Rod Steindl – ASSCT Secretariat
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Email: secretariat@assct.com.au
Website: www.assct.com.au

Sarah Edwards – ASSCT Office Administrator
Phone: 07 4954 3956
Email: admin@assct.com.au

Conference Tours

Agricultural Tour Friday, 22nd April

Itinerary

7:30AM Bus departs MECC
11:30AM Bus returns to MECC

Tour includes

- SRA long-term trash blanketing trial site, Supercross (plant breeding) trial, pharmacist research trial
- Two innovative grower farms (soil health, fallow crops, irrigation, farming systems)

Key Contact on the Day

Barry Salter - 0407 374 853

Number of People

Maximum of 50 - capped at one bus

Dresscode Requirements

Hat, sunscreen, closed shoes, long pants and long-sleeved shirt

To be provided

Drinks, lunch pack on return to MECC

Manufacturing Tour Friday, 22nd April

Itinerary

7:00AM Bus departs MECC
11:30AM Bus returns to MECC

Tour includes

- Sugar Australia Ltd Refinery at Racecourse Mill
- Consolidated Plastics in Paget

Key Contact on the Day

Bryan Lavarack - 0429 477 190

Number of People

Place is limited on the refinery visit, so delegates are urged to register early for the tours to avoid disappointment.

Dresscode Requirements

Long clothing, closed-in flat shoes, face masks. Any kind of jewelry must be removed.

To be provided

Drinks, lunch pack on return to MECC

Please note: There will be a bus to take delegates from the MECC to the Airport.
Arrives at airport at 12:00 pm for 1:00 pm and 1:30 pm flights.

Partners Program

Our Partners Program provides a number of opportunities to sample the local life around Mackay through a variety of activities. As well as some chances to experience retail therapy, we will be exploring the award winning Sarina Sugar Shed and the associated Field of Dreams precinct which includes a museum, art gallery, and a lovely shaded walk for the more energetically inclined. On another day, we will be touring some interesting sites around greater Mackay including lunch in one of Mackay's many scenic settings. We look forward to welcoming you to Mackay.

- Louanne Benecke



Sarina Sugar Shed

Accommodation

With a multitude of places to stay in and around Mackay, ASSCT has compiled a short list of venues all within walking distance of the MECC. All accommodation should be booked by delegates at their own expense directly through their preferred place to stay.

Mackay is a popular destination for travellers and ASSCT wishes to advise that a large sporting event is also scheduled in Mackay during this week, so early accommodation arrangements are recommended.

[Click here for suggested accommodation.](#)

Please note: Other accommodation in Mackay is available and the above are suggestions based on close proximity to the venue only.



Registration

Early bird discount ends 19 March 2022

There are several ticket types available for purchase. Please read the descriptions before placing your order to ensure you are purchasing the correct ticket.

Full, Associate and Delegates of Supporting Members - \$360 (increases to \$400)
Life Members - \$280 (increases to \$320)
Non -Members - \$410 (increases to \$450)

Standard Tickets include admission to the Welcome Function and the Gourmet BBQ Dinner. Extra tickets for those who wish only to attend these functions are available for purchase. There is also an option to join or renew your ASSCT membership while registering for the conference. If any difficulties are experienced in purchasing, please contact us at admin@assct.com.au.

[Click here to register.](#)

If you wish to register your company as an exhibitor at the Industry Equipment Exhibition, please contact the Exhibition Coordinator, Ainsley Gatley on 0488 197 400 or exhibitors@assct.com.au.

On-site registration is available commencing 12:00 pm on Tuesday 19 April or 7:30 am on Wednesday 20 April at the MECC.

THANK YOU TO ALL OUR SPONSORS, BURSARY DONORS, AND EXHIBITORS

**All current sponsors and exhibitors at time of publishing*

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