

46th Annual Conference of the Australian Society of Sugar Cane Technologists (ASSCT 2025)

Brisbane, Australia
28 April - 2 May 2025

ISBN: 979-8-3313-2346-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2025) by Australian Society of Sugar Cane Technologists
All rights reserved.

Printed by Curran Associates, Inc. (2025)

For permission requests, please contact Australian Society of Sugar Cane Technologists
at the address below.

Australian Society of Sugar Cane Technologists
PO Box 5596
Mackay Mail Centre
QLD Australia 4741

Phone: (07) 4954 3956
Fax: 07 7 4829 4115

admin@assct.com.au

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Field Assessment of Attractants to Improve the Efficacy of RATTOFF® Sachets for Control of Rats in Sugarcane	1
<i>G Park, L Staples, A Royle, M Olayemi</i>	
Use of Genetic Manipulation and Gene Editing in the Australian Sugarcane Industry: Advances, Relevance and Barriers.....	5
<i>Stephen Mudge, Muyiwa Olayemi</i>	
Optimising Milling-Train Extraction Through Controlling Added Water	16
<i>GA Kent, RL Burdett, M Verri</i>	
Impact of a Corrosion Inhibitor on Heat-Transfer Rate in Evaporators	26
<i>Z Jago, G Yang, R Situ, J Gilberd, D Rodman</i>	
Measurement of Clarifier Mud Levels at Rocky Point Mill	30
<i>B Tyson, K Heck</i>	
Feedback on the 2024 ISSCT Co-Products Workshop Held in Reunion	36
<i>B Lavarack</i>	
Options to Reduce Tableland Mill's Process Steam Consumption to Below 40% on Cane	42
<i>R Broadfoot, P Chohan, D Rackemann</i>	
Observations from an Industry-Wide Leaf and Soil Survey to Detect Hidden Nutrient Constraints	52
<i>B Salter, D Skocaj, J Connellan, F Darain</i>	
Advanced Boiler/Turbogenerator Control in the Sugar Industry	62
<i>B Tyson, R Ironside</i>	
Accelerating the Optimisation of Water-Tube Boiler Performance Using a Digital Twin: A Case Study Using Simulated Datasets.....	69
<i>BT Rawlins, CPF Marais</i>	
Mill By-Product Impact on Soil Nutrients.....	77
<i>Peter Larsen, Carla Atkinson, Joanne Stringer</i>	
A Numerical Approach to Optimising Efficiency in Industrial Co-Generation Plants	91
<i>BT Rawlins, F Marais, C Van Den Berg, C Wilke</i>	
Towards Further Improvement in Clarifier Performance: Evaluating Juice and Mud Residence Times	98
<i>H Bakir, F Plaza, R Broadfoot</i>	
Gap Dynamics in Sugarcane Rows	108
<i>S Leekar, TA Jensen</i>	
Constraint Management Plans in the Wet Tropics Sugarcane Industry	113
<i>Shannon Byrnes, Belinda Billing, William Higham</i>	
Biobeds for Reducing the Impact of Pesticide Pointsources of Pollution Upon Water Quality	
Entering the Great Barrier Reef Lagoon: A Preliminary Investigation.....	117
<i>N Hill</i>	

Flue-Gas Cleaning Equipment for Bagasse-Fired Boilers to Comply with New Environmental Regulations	125
<i>B St C Moor, D Bezuidenhout, S Rosettenstein, P Anderson</i>	
Optimisation of Wet Scrubbing After Bagasse-Fired Boilers	133
<i>Ronnie Dauvellier, Barend Mienie, Patrick Smith</i>	
Multi-Physics Simulation of a Boiler Air Heater.....	143
<i>Cameron Hofer</i>	
FEA Simulation of a Mill-Gearbox Emergency Repair.....	144
<i>Cameron Hofer</i>	
Are There Ways to Increase the Productivity of Batch High-Grade Strike Pans?	145
<i>R Broadfoot, G Fraga</i>	
Performance of the Upgraded Evaporator Station at Kalamia Mill.....	166
<i>C McLean, D Rackemann, R Broadfoot, J Venning</i>	
Application of Targeted Extension Processes to Improve Grower Uptake of Multispecies Break Crops Within the Central Queensland Sugarcane-Growing Region.....	181
<i>C Trendell, N Hill</i>	
Processing Bagasse Fly Ash in the Australian Industry: A Review	186
<i>J Gilberd, A Mann, H Bakir</i>	
Conductivity-Based Moisture Measurements on Raw Sugar - Trials and Insights	202
<i>Manjunath Srinivasalu</i>	
Using AI Cameras to Detect Clarifier Mud Levels.....	203
<i>Hayden Hartley</i>	
Preliminary Study of Volatile Organic Compounds in Three Host Plants of Australian Cane Beetles.....	204
<i>SA Bawa, PC Gregg, AP Del-Socorro, KS Powell</i>	
Detection of Hot Axle Boxes on Cane Bins	205
<i>James Barrie</i>	
State of the Art NIR Technology in Sugarcane Mills in Brazil	206
<i>Douglas Romano Beletti, Dorival Pires Jr</i>	
Introduction of Flex Pin Design in Planetary Gear Boxes: Advanced Design and Assembly by Analyzing Applications and Load Factors.....	211
<i>Vrajlal B Senjaliya, Krishna Kumar Mariappan, Vipul A Jethva, Samir A Jethva</i>	
Sugar Dryer Control Using Fuzzy Logic Control Philosophy	217
<i>J Gilberd, D Ferraris</i>	
Losses from Ratoon Stunting Disease (RSD) Are Heavily Underestimated in Australia and Likely Exceed Million in Annual Direct Losses	218
<i>Sabina Yesmin, Vincent Mellor, Anthony J Young</i>	
Understanding Resistance to Ratoon Stunting Disease (RSD).....	226
<i>Anthony J Young</i>	

Runoff and Deep Drainage of Nutrients and Pesticides from Sugarcane in the Mackay-Whitsunday Region	235
<i>Mohammad Bahadori, Stephen Donaldson, Ken Rohde</i>	
RNAi Biopesticides as a Sustainable Management Tool for the Protection of Sugarcane from Root-Feeding Pests.....	236
<i>Ivy W Chen, Stephen Fletcher, Karl Robinson, Zhi-Ping Xu, Kevin Powell, Emtia Chandrima, Samuel Bawa, Neena Mitter, Narelle Manzie</i>	
Parasitoids of Sugarcane Moth Borers at Ramu, Papua New Guinea	237
<i>L Kikitam, ME Light</i>	
Best-Practice Pesticide Application in the Mackay- Whitsunday Sugarcane-Growing Region	238
<i>R Sluggett, A Keilbach</i>	
An Edge-Compute Machine-Vision System for Measuring Billet Length on a Mill Conveyor.....	245
<i>B Wixted, A Busch, R Bartels</i>	
Novel Insect-Specific Viruses and Their Potential for Biocontrol in the Australian Sugarcane Industry.....	254
<i>Kayvan Etebari, Michael Furlong</i>	
Weed Suppression, Biomass and Nitrogen Accumulation in Mixed Species and Monoculture Cover Crops in a Tropical Sugarcane Fallow1	257
<i>Lawrence Di Bella, Megan Zahmel, Lukas van Zwieten, Terry J Rose</i>	
Preliminary Surveys of Soldier Fly Species in Australian Sugarcane Fields and Progress Towards an in Vitro Rearing System.....	259
<i>KS Powell, SA Bawa, J Parryand E Chandrima</i>	
UAV-Derived Plot Lengths to Enhance the Accuracy of Sugarcane Breeding Trials.....	260
<i>Sijesh Natarajan, Xianming Wei, Jason Eglinton</i>	
Electricity Export by the Australian Sugar Industry	267
<i>AP Mann</i>	
A Simplified Model of a Boiler Furnace to Understand Effects on Grate Temperatures and Potential Overheating Events	274
<i>J Dahlenburg, F Plaza</i>	
Sugar Research Australia's RSD Laboratory - Current Methods and Industry Data	281
<i>Chuong Ngo, Lucy Gibbs, Rob Magarey, Simon Hansom, Noelia Neira, Edwina Mills</i>	
Modelling RSD Detection for Sampling Xylem and Leafsheath Biopsies.....	288
<i>Robert C Magarey, Chuong N Ngo, Lucy Gibbs</i>	
20 Years of Innovation in Sugar-Processing Technology: A Review.....	294
<i>S Rosettenstein, D Bezuidenhoudt, M Gokool, W Yeo, B Moor</i>	
Measuring Steam Flow Using an Elbow-Tap Flowmeter.....	307
<i>D Ferraris, S Power, J Gilbert</i>	
Impact of Location and Soil Variability on Sugarcane Yield Response to Nitrogen Application: Findings from Deeral and Babinda Trials.....	318
<i>Shannon Byrnes</i>	

On-Farm Demonstration Trials Investigating Sugarcane Response to Nitrogen in the Russell-Mulgrave Catchment	319
<i>Shannon Byrnes</i>	
Optimizing Sugarcane Mill Efficiency Through Real-Time Torque Measurement Leading to Future AI-Enhanced Milling Software	320
<i>Christian Darmali</i>	
Development of a Simple On-Farm Colourimetric Loopmediated Isothermal Amplification DNA Assay (AgTIY- RSDetect) for the Detection of Leifsonia Xyli Subsp. Xyli in Sugarcane	323
<i>K Horvath, A Jones, R Mapperson, R Rognoni, S Shanmugam, D Zatta, L Di Bella, K Cunliffe</i>	
Optimising the Design of Batch Pan Vessels	329
<i>Calvin Smith</i>	
Trends in Soil Chemical Fertility Within the Herbert District.....	330
<i>JA Sartor</i>	
Split and Dual Continuous Pans - Design Aspects for Maximizing the Benefit to Sugar Mills	336
<i>Panduranga Rao Meesala</i>	
Eliminating Roll Arcing	337
<i>GA Kent, S McLaughlin, T Kilpatrick, T van Blerk, N Alam</i>	
Predicting Frictional Pressure Losses in Complex Molasses-Transfer Systems.....	348
<i>Line Jenssen, Ross Broadfoot, Jay Venning</i>	
Experiences with Automatic Centrifugal Wash-Water Control	364
<i>Bjarne C Nielsen, Burkhard Bartels</i>	
Oscillating Vertical Crystallizer (OVC) - A New Generation of Efficient Coolers	368
<i>Omkar Thaval, Dirk Schneider</i>	
The Repetitive Surge Oscillograph (RSO) Test.....	369
<i>Ian Robinson</i>	

Author Index