

# **45th Annual Conference of the Australian Society of Sugar Cane Technologists (ASSCT 2024)**

Townsville, Australia  
15 – 19 April 2024

ISBN: 979-8-3313-0779-0

**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© (2024) by Australian Society of Sugar Cane Technologists  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## INDEX OF AUTHORS

ALMEIDA AFL, HAY R, DALE A, LOCKIE S, EVERINGHAM Y	ESG analysis on-farm: a practical framework to support Australian producers	147-153
ATTARD J, SHEEHAN M, GILBERD JW	Using activated bio-char to reduce colour during juice clarification in a raw sugar mill	276-285
BADGER TM, KELLY DM	Towards zero effluent in Wilmar's Proserpine mill	255
BAKIR CH, PLAZA F, BROADFOOT R	Evaluation of a pilot-scale system for removing bagacillo from juice	113-126
BANKIE OF	A supplementary compressed-air ploughing system for batch centrifugals trialled at Racecourse mill	226-230
BAWA SA, EMTIA C, FARNAN H, POWELL KS	Using novel screening methods for evaluating insecticides against canegrubs	161-167
BHUIYAN SA	Temporal development of smut, yield loss, and integrated management strategies using a fungicide and varietal resistance	35-37
BIGGS K, MCLEAN C	Pan condenser performance versus modelled performance	68
BRADSHAW C, SCARDAMAGLIA F	Working together to achieve a sustainable outcome for the sugar industry and environment	106-112
BROADFOOT R	Potential major changes in process control of Australian sugar factories	138-146
BROADFOOT R, FRAGA G	Guidelines for cost-effectively improving sugar recovery from C massecuite cooling crystallisers	177-194
CHUNG D, JARDINE J	Cane railway track inspection methodology and best practices	387-407
EMTIA C, BAWA SA, FARNAN H, POWELL KS	Review of soldier flies in sugarcane and identification of some key research gaps	154-160
FILLOLS EF	Post-emergent control of balsam pear	195-204
FRAGA G, LAVARACK B, BROADFOOT R, WHITE A	Use of dry substance as the process variable to control massecuite concentration during pan boiling	215-225
GILBERD JW, BIRCH P, BAKIR CH	A clarifier scraper design to minimise nuisance lifting	56-63
GREEN H, LARSEN PL, KOCI J, LAI C, NELSON PN	Long-term effects of gypsum on the chemistry of sodic soils under sugarcane	79-82
GREEN H, LARSEN PL, LIU C, NELSON PN	Removal of carbon dioxide via enhanced weathering of sugarcane mill ash under different soil conditions	168-170
HALPIN NV, GRANSHAW T, LINTON A, SKOCAJ DM, CONNOLLY C, FRESSER D, ANDERSON A	Soybean and peanut rotations benefit sugarcane production in the Burdekin	297-307
HALPIN NV, MARSHALL AC, REHBEIN WE, BIRD, CAMERON T	The 'best' legume rotation for southern cane growers	38-49
HAMEL D	Ark Energy's journey to date	345
HARRIS D, ROBERTS D	Technology pathways supporting adaptable and sustainable sugar industry transitions	329

## INDEX OF AUTHORS

HEADON E, RINCON NR, SKOCAJ DM	Growers reduce uncertainty around adjusting nitrogen rates following legume cover crops in the Murray district	1-5
HOLDEN FJL, NELSON PN, BIRD M	Removal of carbon dioxide through enhanced weathering of basalt in acidic soils under sugarcane	324-328
JENNINGS D	Analysis of diffuser juice application at Inkerman Mill	66
JENSSEN L, BROADFOOT R	Measured and predicted consistency values for C massecuite	205-214
KENT GA, PLAZA F, FRAGA GL, LUCKE A, RYAN M, GREEN T, RYAN K	Automating the handling of soft canes through the factory	83-89
LARSEN PL, ATKINSON C, STRINGER J	Nutrient content after the application of mill by-products and implications for nutrient management	240-254
LEEKAR S, JENSEN TA, CHUMPIA C, SCHROEDER BL	Potential of UAV imagery and Learning Techniques for determining gaps in sugarcane rows	51
LI Q, BHUIYAN SA, ZIA M, SAMBASIVAM P, GAO Y, FORD R	Carbon nanodots as novel fungicides for driving disease prevention in sugarcane	271
LOCHNER KA, QUIRK RG	Pricing impacts and rationale for transitions in sugarcane farming in northern New South Wales and Queensland: a conversation starter	6-16
MAGAREY RC	The BSES yield decline program: foundational research into soil factors affecting root health in the Australian sugarcane industry	127-137
MANN AP, BROADFOOT R	Effect of factory reliability on bagasse usage and surplus	90-96
MARCELO C, WEST N, KANE S	Revised design of signal poles used at active level crossings of cane railways	171-176
MATSUEDA Y, SHEEHAN M, GILBERD JW	Modelling the integration of bagasse pyrolysis into sugar mill energy systems	286-296
MATTHEWS J	Using hydrotreated vegetable oil (HVO) as a renewable fuel in the Wilmar locomotive fleet	64
MILLA R, MAGAREY RC	Extension and RSD management in the Burdekin: challenges and successes	308-314
NILON G, RICHTER M	A suspected Maillard reaction in a continuous C Massecuite pan - findings and outcomes	67
O'SULLIVAN C	Are biofuels a sweet deal for the Australian sugar industry? Opportunities and barriers	330
PARK G	Effect of application of Moddus® on yield of stand-over sugarcane in the Herbert River District in 2023	50
PHILP A	Retrofitting versus replacement for obsolete remote shunting unit (RSU) systems	65

## INDEX OF AUTHORS

QURESHI ZM, GHAZANFAR A	The journey towards sustainable business through technological advancement and diversification into the downstream industry: a role model in the Pakistan sugar industry	331-338
RAHIMI AZGHADI M, OLSEN A, SALEH A, WOOD J, GRANSHAW T, FILLOLS EF, PHILIPPA B	Precise robotic spot-spraying of weeds for improved environmental and economic outcomes in the sugarcane industry	339-344
RENOUF M, CHAMBERLAIN S, SCHROEDER BL, WESTMORE E, QUIRK M	Life cycle assessment of greenhouse gas emissions from changes in cane-growing practices	408-413
ROBERTSON J, CONNELLAN J, MAITLAND N	Implications for sugarcane nutrient management following a green-manure crop of sunn hemp	231
RÓZSA J, RUKAVINA M	Supersaturation-based control of sugar crystallization	103-105
SALTER B	Impact of long-term trash blanketing and tillage prior to planting on soil carbon and sugarcane production	69-78
SCHEMBRI MG, FILLOLS EF, POWER B	Nutrients and pesticides in end-of-paddock run-off water for farming practices in the Central region	17-26
SCHROEDER BL	Will the Australian sugarcane industry's current agricultural R&D enable the next 'step change'?	414-421
SCHROEDER BL, PARK G, SKOCAJ DM, WOOD AW	Are urea-based enhanced-efficiency fertilisers widely appropriate for reducing nitrogen application rates in sugarcane production?	256-263
SHEPHERD L, SITU R, GILBERD JW, RODMAN D	Heat-transfer surface film impact on heat-transfer rate in evaporators	232-239
SKOCAJ DM, RIGBYA, PARK G, SCHROEDER BL	Impact on crop performance of application timing of nitrogen fertiliser and interaction with harvest time	358-366
SOUTHERN B, PLAZA F	Modelling the harvester's front end to reduce billet and stool damage: the behaviour of leaves	315-323
THAVAL OP, DOWLING C	Performance of the bagasse diffuser at Invicta Sugar Mill	346-357
WALLACE J, RODMAN D, RODMAN T	Challenging convention to improve chemistry management of sugar-mill boiler stations	97-102
WANG E, COLLINS B, ATTARD S, EVERINGHAM Y	Enhancing efficiency and profitability: the impact of smart irrigation scheduling in sugarcane production systems	27-34
WATERS E, CHEN C, DI BELLA LP, NIELSON R, HARRAGON R, AZGHADI MR	Detection of ratoon stunting disease with freely available satellite-based multispectral imaging and machine learning	52-55
WILSON R, BURKE B	Introduction of a new Laboratory Information Management System (LIMS)	264-270
ZIA M, WATTS J, SAMBASIVAM P, NGUYEN T, TONISSEN KT, CHEN D, FORD R, BHUIYAN SA, LI Q	Toxicity of carbon dots to sugarcane and human cells	272-275