

39th Conference of the Australian Society of Sugar Cane Technologists (ASSCT 2017)

Cairns, Australia
3 - 5 May 2017

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**THIRTY-NINTH CONFERENCE
CAIRNS, 2017**

PROGRAM

The Official Opening, Annual General Meeting, and all Technical Sessions of the Conference will be held at the Pullman Cairns International (PCI), 17 Abbott Street, Cairns City. The Industry Equipment Exhibition (IEE) and Poster Papers will also be located within the PCI.

WEDNESDAY, 3 MAY 2017

Registration at the PCI, 17 Abbott Street from 07.30

MORNING SESSION – 09.00

Chair: Dr Rob Magarey

WELCOME AND OFFICIAL OPENING

Mayor of Cairns
Cr Bob Manning OAM

- 09.15–09.30 President’s address: Rob Magarey
09.30–10.15 Keynote address: Alistair Mowat: Leadership, collaboration and adaptation to economic shocks builds resilience into the New Zealand kiwifruit industry
10.15–10.45 *Official opening of the Industry Equipment Exhibition followed by morning tea*

GENERAL SESSION

Chair: Rob Magarey

- 10.45–11.30 Keynote address: Peter Allsopp: Vision to value, or vagueness to vanishing?
- Paper 11.30–12.00 Innovation and competitiveness in the Australian sugar industry, by S Cox, S Salunke, I O’Hara, R Parker, S Sinclair 16–27
- Paper 12.00–12.30 Billet Length: Has the industry benefited by reducing billet length? by Stuart Norris, Phil Patane, Chris Norris..... 28–37
- 12.30–13.00 *Lunch*

AFTERNOON SESSION – 13.00

AGRICULTURE SESSION

Chair: Danielle Skocaj

- Paper 13.00–13.30 Productivity: Keynote paper
Sugar productivity—time to make an omelette, by PL Larsen, AJ Dougall 38–48
- Paper 13.30–14.00 Productivity: Innovative methods to analyse and summarise mill data to identify some of the key factors impacting on farm productivity in the Herbert by J Stringer, B Croft, I Asamoah, L Di Bella, M Sefton, R Nielson, P Larsen, R De Lai, I Davies 49–66

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Paper	14.00–14.30	<u>Productivity</u> : Is district yield potential an appropriate concept for fertiliser decision making? by Rob Bramley, Jackie Ouzman, David Gobbett 67–76	
Paper	14.30–15.00	<u>Productivity</u> : Benchmarking cane supply quality in the Herbert, Burdekin, Proserpine and Plane Creek regions, by PL Larsen, PA Patane, I Asamoah 77–88	

MANUFACTURING SESSION

Chair: Jeffery Snoad

Paper	13.00–13.30	No. 1 boiler incident—Marian Mill 2016, by T Lloyd, C Wood, D Sievers 391–398	
Paper	13.30–14.00	The development of standard operating procedures for boilers at Mackay Sugar Limited, by Robert Wilson, Bryan Lavarack..... 399–405	
Paper	14.00–14.30	Modelling and experimental determination of the drying kinetics of bagasse fibre, by H Slogrove, M Sheehan, C Walker 406–416	
Paper	14.30–15.00	i. Erythorbate, an alternative to sulfite in the prevention of corrosion in sugar mill boilers by D Rodman, D Otley, L Rodriguez 417–422	
		ii. Managing a major oil leak on a 30 MW steam turbine at Cape Byron Power’s Condong cogen plant, by Thomas Kraemer, Steve Sheppard 423–426	
	15.00–15.30	<i>Afternoon tea</i>	

AGRICULTURE SESSION

Chair: Peter Samson

Paper	15.30–16.00	<u>YCS Keynote paper</u> : There’s yellow, and then there’s yellow—which one is YCS? by Annelie Marquardt, Kate Wathen-Dunn, Robert J Henry, Frederik C Botha 89–98	
Papers	16.00–16.30	<u>YCS</u> i. A pathology-based investigation into the cause of Yellow Canopy Syndrome, by Kathy Braithwaite, Edwina Mills, Davey Olsen 99–106	
		ii. Effect of plant growth regulators on expression of Yellow Canopy Syndrome in sugarcane, by DJ Olsen, J Brownlee . 107–113	
Paper	16.30–17.00	Sharpening research outcomes through innovative management and leadership, by RC Magarey 114–119	

MANUFACTURING SESSION

Chair: Neil Sichter

Paper	15.30–16.00	Direct contact juice heating—when to use and when not to use, by R Broadfoot, DW Rackemann 427–434	
Paper	16.00–16.30	Effect of operating conditions on sucrose losses in evaporators in Australian sugar factories, by DW Rackemann, R Broadfoot 435–444	
Paper	16.30–17.00	Operation of mills with low steam demand: challenges and success in evaporator station and pan house, by Andreas Lehnberger, Fahmi Brahim, Reinhold Hempelmann 445–451	
	17.00–18.00	<i>Happy hour with the IEE</i>	

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THURSDAY, 4 MAY, 2017

MORNING SESSION—08.00

AGRICULTURE SESSION

Chair: Bernard Schroeder

Paper	08.00–08.30	<u>Soil quality: Keynote paper</u> Mixing sugar with wine—an approach to soil quality benchmarking, by Rob Bramley, Danni Oliver, Jackie Ouzman	120–130
Paper	08.30–09.00	<u>Soil quality: Invited paper</u> Importance of soil-borne diseases to the grains industry and role of PREDICTA B as a management and research tool, by AC McKay, D Hartley, Herdina, D Giblot-Ducray, KM Ophel-Keller	131–140
Paper	09.00–09.30	<u>Soil quality: Invited paper</u> Soil biological health—what is it and how can we improve it? by Richard Brackin, Susanne Schmidt, David Walter, Shamsul Bhuiyan, Scott Buckley, Jay Anderson	141–154
Paper	09.30–10.00	<u>Soil quality</u> Soil carbon, root health and nematode pests in sugarcane soils. 1. Root and soil health and its relationship to soil carbon levels, by Graham R Stirling	155–165
		Soil carbon, root health and nematode pests in sugarcane soils. 2. Factors influencing nematode-suppressive services in soils from sub-tropical Queensland, by Graham R Stirling	166–174

MANUFACTURING SESSION

Chair: Doug Sockhill

Paper	08.00–08.30	Characterisation of dissolved organic matters in molasses by using LC-OCD-OND, by Mahshid Farzanehsa, Korshed Chinu, Mohammadreza Behi, Dale McClure, Geoff Barton, John Kavanagh	452–460
Paper	08.30–09.00	A preliminary study on cultivation of <i>Mucor plumbeus</i> for microbial oil production using molasses, by Z Zhang, G Cai, J Te’O, Heng-Ho Wong, I O’Hara	461–471
Paper	09.00–09.30	The need of bagacillo in processing? by F Plaza, CH Bakir, DW Rackemann	472–478
Paper	09.30–10.00	i. How energy efficient can we get? by AP Mann	479–485
		ii. Leveraging regulation for industry gain: NGERS guidelines for sugar mills, by Jacqui Willcocks, Sharon Denny	486–489
	10.00–10.30	<i>Morning tea</i>	

AGRICULTURE SESSION

Chair: Danielle Skocaj

Paper	10.30–11.00	<u>Soil quality</u> Soil mapping scale and minimum mapping area for conventional soil mapping of central and northern sugarcane regions of Queensland, by JI McClurg	175–181
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Paper	11.00–11.30	<u>Water quality: Invited paper</u> Herbicides and the water quality conundrum, by Phil Ross, Emilie Fillols, Belinda Billing, Aaron Davis	182–189
Paper	11.30–12.00	<u>Water quality</u> Review of factors associated with off-site environment contamination with the insecticide imidacloprid from Australian sugarcane fields, by KJ Chandler	190–199

MANUFACTURING SESSION

Chair: Jim Crane

Paper	10.30–11.00	Electronic cane consignment at Isis Mill, by Paul Nicol, Gary McNair	490–495
Paper	11.00–11.30	Isis rail yard handling system, by M Ryan, G McNair	496–500
Paper	11.30–12.00	Improved Willison cane wagon coupling, by LG Santarossa, SI Anderson, G Zhu	501–513
	12.00–12.30	<i>Sectional AGMs</i>	
	12.30–13.00	<i>Lunch</i>	
	13.00–14.30	<i>Industry Workshop</i>	
	14.30–15.00	<i>Afternoon tea</i>	

AGRICULTURE SESSION

Chair: John Pickering

Paper	15.00–15.30	<u>Water quality</u> Consequences of forcing sugarcane growers in the wet tropics to adopt the recommended fertiliser practices, by Karen E Benn	200–208
Paper	15.30–16.00	<u>Water quality workshop</u> Water quality—a grower’s perspective, by D Telford, S Calcagno, J Marano	209–212
	16.00–16.30	<u>Water quality workshop</u> Short presentations and panel discussion	

MANUFACTURING SESSION

Chair: Peter Flanders

Paper	15.00–15.30	40 Tonne locomotive driveline upgrade, by LG Santarossa, H Zelenka, S Vickers, F Price	514–530
Paper	15.30–16.00	Second generation remote shunting unit locomotives, by Malcolm Newman	531–537
Paper	16.00–16.30	Re-purposing Babinda and Mourilyan sugar mill sites: removal of infrastructure and remediation of land contamination, by P Anderson, D Kaye, D Bignell, M Thatcher	538–546
Paper	16.30–17.00	Sugarcane-based feed products, by MD Harrison, L Cao, W Stolz, IM O’Hara	547–556

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AGRICULTURE SESSION

Concurrent session

Chair: Greg Shannon

Paper	16.30–17.30	<u>Extended abstracts/posters</u> Arbuscular mycorrhizal fungi reduce canegrub performance via multiple mechanisms including increased silicon concentrations, by Adam Frew, Jeff R Powell, Peter G Allsopp, Nader Sallam, Scott N Johnson 213–216
Poster		A preliminary study on using <i>trichoderma</i> and <i>paenibacillus</i> as biocontrol agents against sugarcane fungal pathogens, by Zhanying Zhang, Junior Te’O, Ian O’Hara 217
Poster		<i>Raivuna Iranica</i> (Homoptera: Dictyopharidae) a new insect associated with sugarcane in Khouzestan Province, Iran, by Amin Nikpay 218
Poster		Improved RSD management in Harwood leads to record yields, by Anthony Young 219–221
Poster		Physiological effects of YCS in sugarcane plants, by Priya Joyce, Nirosha Hewage Don, Davey Olsen 222–225
Poster		Legume crop rotation suppressed the nitrifying microbial community in a sugarcane cropping soil, by Chanyarat Paungfoo-Lonhienne, Weijin Wang, Yun Kit Yeoh, Neil Halpin 226

AGRICULTURE SESSION

Concurrent session

Chair: Terry Morgan

Paper	16.30–17.30	<u>Extended abstracts/posters</u> Whole system carbon cycling during the growing season of a sugarcane crop in the Tweed Valley, by JR Webb, RG Quirk, IR Santos, DT Maher, BCT Macdonald, B Robson, P Isaac, I McHugh 227–228
Poster		The effect of waterlogging on eight sugarcane varieties grown on a heavy clay soil in the Herbert River, by Glen Park, Barry Salter 229
Poster		Sugars for ratoon growth—sugars within the underground stool structure to germinate ratoon growth, by Donna Glassop, Jai Perroux, Anne Rae 230–233
Poster		Nitrogen loss in a sugarcane crop in the wet tropics, by J Fries, N Tahir, B Masters 234
Poster		Does crop size determine sugarcane nitrogen fertiliser requirements? by PJ Thorburn, JS Biggs, D Skocaj, BL Schroeder, J Sexton, YL Everingham 235
Poster		Categorising soils for improved nitrogen management in the Tully Mill area, by DM Skocaj, BL Schroeder, AP Hurney 236
Poster		Comparison of existing vs. recently introduced insecticides for shoot borer control in North Central Vietnam, by NQ Nguyen, GR Cripps 237
Poster		The effect of defoliation on Yellow Canopy Syndrome (YCS) severity in sugarcane, by Andrew Memory, Davey Olsen ... 238

18.30–22.30 *Conference Dinner*

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FRIDAY, 5 MAY 2017

MORNING SESSION—08.00

AGRICULTURE SESSION

Concurrent session

Chair: Terry Morgan

Paper	08.00–08.30	Potential production and environmental benefits from controlled release fertilisers—lessons from a simulation analysis, by K Verburg, JS Biggs, Z Zhao, PJ Thorburn	239–250
Paper	08.30–09.00	Estimating economic impacts of controlled release fertilisers in sugarcane systems: an economic risk case study analysis, by John Kandulu, Peter Thorburn, Jody Biggs, Kirsten Verburg	251–262
Paper	09.00–09.30	The assessment of enhanced efficiency fertilisers (EEFs) in a glasshouse experiment to investigate nitrogen loss pathways in sugarcane, by LP Di Bella, J Armour, P Moody, M Royle, M Ibanez, M Le Bris	263–273
Paper	09.30–10.00	An economic evaluation of controlled release and nitrification inhibiting fertilisers in the Burdekin, by M Thompson, J Dowie, C Wright, A Curro	274–279

AGRICULTURE SESSION

Concurrent session

Chair: Bert Collard

Paper	08.00–08.30	Profiling growers to understand them and the factors impacting their production, by John Agnew, James Ogden-Brown, Kevin Moore, Joanne Stringer	280–287
Paper	08.30–09.00	Parental improvement in the SRA sugarcane breeding program, by Xianming Wei, Phillip Jackson, Craig Hardner, Roy Parfitt, Felicity Atkin, George Piperidis	288–295
Paper	09.00–09.30	Using DNA markers to speed up progress in sugarcane breeding, by Phillip Jackson, Xianming Wei	296–303
Paper	09.30–10.00	Development of a high-throughput, low-cost SNP genotyping panel for sugarcane breeding, by Meredith D McNeil, George Piperidis, Shamsul Bhuiyan, Jingchuan Li, Xianming Wei, Bert Collard, Karen Aitken	304–311

MANUFACTURING SESSION

Chair: Doug Sockhill

Paper	08.00–08.30	A comparison of data mining algorithms for improving NIR models of cane quality measures by J Sexton, Y Everingham, D Donald	557–567
Paper	08.30–09.00	Development of condition-based maintenance for sugar mill assets, by H Yu, P Borghesani, ME Cholette, GA Kent, L Ma, BJ Burke	568–576
Paper	09.00–09.30	What is the minimum number of operators required to operate a sugar mill? by D Moller	577–585
Paper	09.00–10.00	Effect of juice screen position on extraction, by GA Kent, M Doolan	586–591
	10.00–10.30	<i>Morning tea</i>	

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AGRICULTURE SESSION

Concurrent session

Chair: Barry Salter

Paper	10.30–11.00	Extension of the ‘six easy steps’ nutrient management program to the Queensland wet tropics, by David Calcino, Alan Hurney, Bernard Schroeder	312–319
Paper	11.00–11.30	i. Smart automation of furrow irrigation in the sugar industry, by Malcolm Gillies, Steven Attard, Andres Jaramillo, Marian Davis, Joseph Foley	320–325
		ii. Mycorrhizal fungi interactions with nutrients, pests and pathogens in sugarcane: a review, by Anders Claassens, Catherine J Nock, Lukas van Zwieten, Terry J Rose	326–332
Paper	11.30–12.00	Challenges of cane ripening using Corsair (Fluazifop-P-Butyl) and Moddus (Trinexapac-ethyl) to improve sucrose content in sugarcane at Ramu Agri Industries Limited (RAIL), Papua New Guinea, by Sam Emete, Duncan Butler, Lastus S Kuniata	333–341
Paper	12.00–12.30	Identification of climatological sub-regions within the Tully Mill area, by J Sexton, Y Everingham, D Skocaj, J Biggs, P Thorburn, B Schroeder	342–350

AGRICULTURAL SESSION

Concurrent session

Chair: Graham Bonnett

Paper	10.30–11.00	Variation in stool architecture and bud sprouting: morphological traits that may contribute to ratooning, by Donna Glassop, Donald Pollock, Jai M Perroux, Anne L Rae	351–360
Paper	11.00–11.30	Integration of insecticides in the management of <i>Sesamia griseascens</i> Warren (Lepidoptera: Noctuidae) in sugarcane at Ramu, Papua New Guinea, by Lastus S Kuniata	361–370
Paper	11.30–12.00	New methods for screening sugarcane clones for resistance to leaf scald, by Barry Croft, Andrew Greet	371–376
Paper	12.00–12.30	Incursion of sugarcane smut in commercial cane crops at Ramu, Papua New Guinea, by Leka Tom, Kathy Braithwaite, Lastus S Kuniata	377–384
Paper	12.30–12.45	SRA quarantine: recent innovations to deliver new varieties faster, by Nicole Thompson, Elizabeth Wilson	385–390

MANUFACTURING SESSION

Chair: Jeff Snoad

Paper	10.30–11.00	Soft canes and their impact on the factory, by GA Kent, RC Parfitt, DM Pike, PR Stuart, DB Pickering, H Prasad	592–603
Paper	11.00–11.30	Modelling the flows through a shredder, by AP Mann, F Plaza, H Bakir, GA Kent	604–617
Paper	11.30–12.00	Six-roll mill with shaft mounted electro-mechanical drives, by B Heron, P Delley, B O’Brien, C Garson	618–630
Paper	12.00–12.30	Perforated mill roll shells, by C Garson	631–642
Paper	12.30–12.45	Thyssenkrupp two roller cane mill and its performance at Indian Cane Power Ltd, Karnataka, India, by Yashwant Sakhardande, SR Kundargi	643–649

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- 12.45–13.30 *Lunch*
13.30–14.30 *ASSCT Annual General Meeting*
14.30–15.00 *Closing Ceremony*