

shra

Sugar Research
Australia

OUR BI-ANNUAL
MILLING MAGAZINE

MILLING MATTERS

Autumn 2018



Contents

- 3 Persistence pays off for sugar bursary graduates
- 4 Maximising industry value through optimised harvesting practices
- 6 Harvesting demonstration trials: what it means at the mill
- 9 Bringing milling research from the lab to the mill
- 10 Research looks to improve mill rolls
- 11 Overseas experience to help improve factory efficiency
- 12 Boiler simulator training to help avoid costly mistakes
- 13 Reducing costs through improving boiler maintenance efficiency
- 14 FUTURES FORUM: Forging a bright future for Australian sugarcane
- 15 Milling research investment

ISSN 2203-1111 (Print) ISSN 2203-112X (Online) © Copyright 2018 by Sugar Research Australia Limited. All rights reserved. No part of Milling Matters (this publication), may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of Sugar Research Australia Limited. Sugar Research Australia Limited acknowledges and thanks its funding providers, including levy payers (sugarcane growers and millers), the Commonwealth Government, and the Queensland Government (Department of Agriculture and Fisheries). Disclaimer: In this disclaimer a reference to 'SRA', 'we', 'us' or 'our' means Sugar Research Australia Limited and our directors, officers, agents and employees. Although we do our very best to present information that is correct and accurate, we make no warranties, guarantees or representations about the suitability, reliability, currency or accuracy of the information we present in this publication, for any purposes. Subject to any terms implied by law and which cannot be excluded, we accept no responsibility for any loss, damage, cost or expense incurred by you as a result of the use of, or reliance on, any materials and information appearing in this publication. You, the user, accept sole responsibility and risk associated with the use and results of the information appearing in this publication, and you agree that we will not be liable for any loss or damage whatsoever (including through negligence) arising out of, or in connection with the use of this publication. We recommend that you contact our staff before acting on any information provided in this publication. Warning: Our tests, inspections and recommendations should not be relied on without further, independent inquiries. They may not be accurate, complete or applicable for your particular needs for many reasons, including (for example) SRA being unaware of other matters relevant to individual crops, the analysis of unrepresentative samples or the influence of environmental, managerial or other factors on production.

(Cover Page) MSF Sugar's Allan Cross and Wayne Reys are adopting the outcomes of harvesting efficiency research.





Persistence pays off for sugar bursary graduates

A special bursary award has led to two engineering graduates scoring jobs at the MSF Sugar Maryborough Mill.

Local CQUniversity Australia mechanical engineering graduate Daniel Nicholson, and University of Queensland chemical engineering graduate Georgia Nilon received a special bursary award in 2015 after applying for the Sugar Research Institute Scholarship program.

Sugar Research Institute (SRI) receives such a large number of high-quality applications for the SRI scholarship each year that a special, unlisted bursary award funded by Sugar Research Australia was introduced to provide four weeks' paid work placement for Daniel and Georgia at MSF Sugar's Maryborough Mill during the 2016 crushing season.

Chemical engineer Georgia Nilon said the bursary allowed her to develop contacts within the industry and, through persistence and confidence, Georgia was offered a job in early 2017 by MSF Maryborough Mill's general manager, Stewart Norton.

Since her employment Georgia has learned a lot from different

projects across MSF Sugar mills and worked in the laboratory to get a good understanding of the chemical analysis process and what results are required.

"I went to South Johnstone and developed a lot of piping and instrumentation diagrams of their pan stage, boilers, juice clarification and heating stations for a potential expansion project," Georgia said.

"Recently I've completed a steam balance analysis of Maryborough Mill looking at our usage of steam everywhere, and where we can improve our efficiency."

Design engineer Daniel Nicholson never gave up on his goal to return to the MSF Sugar Maryborough Mill where he initially worked as a boilermaker apprentice to complete his transformation as a mechanical design engineer.

Daniel explained that, when he applied, he didn't even expect to be selected for interview let alone get the job; however, MSF Sugar valued Daniel's four years of trade experience and offered him a new role of design engineer.

"MSF Sugar were after someone with four years' experience," Daniel said.

"I did have that experience from working here previously, understood the industry, and had been awarded the bursary as well, so they saw I was capable at that next level rather than just on the tools."

Daniel said that engineers in the sugar processing industry use a whole range of skills on a variety of projects.

"There's no single project that's the same as any other. At the moment, I have five projects on the go and no two are alike," Daniel said.

Since the prestigious Sugar Research Institute Scholarship first began in 2015 it has been awarded to 12 recipients. ■

For more information, visit:
www.sri.org.au/sris-sugar-research-institute-scholarship/

(Above) MSF Sugar General Manager (Maryborough Region), Stewart Norton, with engineering graduates Daniel Nicholson and Georgia Nilon.



Maximising industry value through optimised harvesting practices

BY BRAD PFEFFER

At MSF Sugar's Tableland Mill, the aim is that the trucks never stop.

With 24 hour harvesting and 12 trucks hauling cane to the mill, but no storage of bins at the mill, a truck needs to be at the mill about every seven minutes to ensure they are pushing through 200 tonnes of cane per hour.

Any less than that, and milling costs increase through inefficiency and they are burning valuable bagasse that would otherwise be used for electricity cogeneration.

As with all regions, this means that there is a huge logistics operation in tracking the trucks and harvesters with GPS, as well as scheduling groups in different sub-districts to keep the cane flowing.

It is a finely tuned operation that is working well, and, now, MSF Sugar is keen to keep it moving forward through harvest optimisation.

Two of the men helping to coordinate that balancing act are Allan Cross (Operations Manager – South Johnstone Farms) and Wayne Reys (Tableland Farms Harvesting Supervisor). They are part of the team that oversees harvesting contracts that cut 213,000 tonne of MSF Sugar's own cane and about 132,000 from Tableland growers.

As part of that, the pair worked with SRA on demonstration trials in 2017 to assess cane and juice loss, which was then followed with a workshop to drive positive practice change.

They have worked with SRA to optimise the feedtrains in their harvesters, and harvesting parameters such as ground speed and fan speed are now run according to recommendations. They are fitting chopper drums that reduce losses through an efficient cut. They have also modified their machinery to suit 2m row spacings that are being adopted to improve farm productivity.

An analysis of the optimisation of the feedtrain alone showed that optimised machines compared to unoptimised machines were 6.7TCH better under low loss harvester settings, and 4.6TCH better under nominal harvester settings.

"It is the research that continues to drive our decisions," said Allan Cross.

"The research has to be done in the field to prove it. Once it's been proved, we are adopting that research."

The improvements to the farming system across MSF Sugar farms are also flowing through to positive impacts for harvesting.

According to Operations Manager of Tableland Farms, Rik Maatman, the 2m rows, for example, mean that the harvester already needs to slow down by 1 to 1.5 km/hour compared to 1.8m or 1.6m row systems.

"We are currently only cutting young 2m crops as we are developing that system, so it is all good yielding cane, and that means that our guys would rarely ever go over 4km/hour," Rik said.

They also continue to make other improvements to the farming system to improve harvesting efficiency. This includes long and straight runs, wide headlands, and having bin pads close to paddocks.

"With our farming system, GPS guidance also ensures that we aren't damaging the stool and, over the long term, we hope that the gains aren't just in reducing sugar loss, but also potentially growing an extra ratoon crop," Wayne Reys said.

The MSF Sugar team said that because they grow, harvest, and mill the cane, they are in an ideal situation to make the most of any changes.

The trials showed the clear gains to be made in reducing cane and sugar loss, but also showed that this also came with increased harvesting and



freight costs due to issues such as bin weights and bins per hectare.

According to last year's trial, the grower revenue net of costs was \$4494 per hectare for the recommended treatment, which compared to \$4253/ha for the nominal treatment and \$3964/ha for the aggressive treatment.

"Our rule of thumb is that we were saving \$3 in cane and it was costing us about \$1 in freight, so obviously that is a good investment ratio. As we continue to implement harvest optimisation, the next step will be looking at improving the freight," Rik said. ■

This work is one element of a much larger project called *Enhancing the sugar industry value chain*, which is funded by the Department of Agriculture and Water Resources and SRA as part of the Rural R&D for Profit Program. A new round of demonstration trials across the industry are about to get underway for 2018.

For more information, contact:
SRA Harvesting Adoption Officer, Phil Patane on ppatane@sugarresearch.com.au or (07) 4776 8202

The 2017 trial had four treatments:

TREATMENTS	FAN SPEED (RPM)	GROUND SPEED (KM/HR)	SECONDARY EXTRACTOR FAN
Low	600	3	Off
Recommended	750	4	On
Nominal (Conventional practice)	750	6	On
Aggressive	950	6	On

This table provides a snapshot of the results:

	CANE YIELD (TONNE/HA)	CCS (%)	SUGAR PRODUCTION (TONNE/HA)	BINS PER HECTARE	GROWER REVENUE PER HECTARE (AFTER MILL DEDUCTIONS)	CONTRACTOR REVENUE PER HECTARE
Low	136.5	14.2	21.5	6.8	\$6028	\$1097
Recommended	129.5	14.7	20.7	5.8	\$5813	\$1023
Nominal (Conventional practice)	122.3	14.6	19.7	6	\$5513	\$976
Aggressive	118.1	14.7	18.2	4.9	\$5125	\$900



Australian Government
 Department of Agriculture and Water Resources

(Over page) The crop at one of MSF Sugar's Tableland farms pictured earlier this year (February). (Top left) MSF Sugar's Allan Cross and Wayne Reys are adopting the outcomes of harvesting efficiency research. (Bottom left) Wayne Reys, Rik Maatman, and Allan Cross discuss harvesting plans for the 2018 season. (Above) MSF Sugar's Tableland Mill in operation.



Harvesting demonstration trials: what it means at the mill

In 2017, SRA worked with 43 harvesting groups in green-cane areas to assess the impact of adopted harvesting best practice. Each trial involved four treatments in commercial conditions: low loss, recommended practice, current practice, and aggressive practice. These treatments relate to ground speed and fan speed and were unique to each site.

Here, we show the overall results from the 2017 trials and examine the implications for greater adoption of Harvest Best Practice particularly in relation to the milling sector, as well

as outlining areas where investment and work is needed to achieve the 'sweet spot' for the industry.

In 2018, SRA will work across the industry on 60 more trials as well as strengthening collaboration with millers. The impact to mill logistical operations, in particular bin supply, requires further investigation. SRA will work in close consultation with the milling sector to appreciate milling logistics within the parameters of harvesting best practice. ■

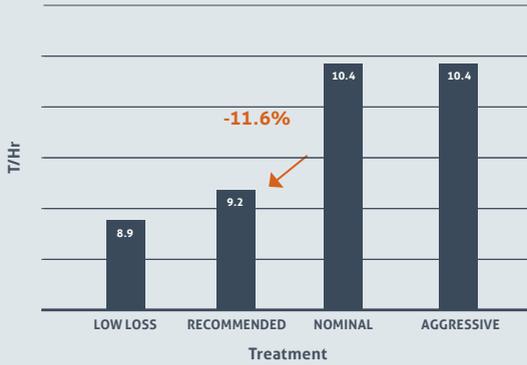
(Above) The adoption of harvesting best practice has issues for consideration in relation to cane supply and logistics. (Over - page 8) SRA conducted 43 harvesting demonstration trials with the industry in 2017.

Harvesting Rate



The 2017 field demonstration trials indicated that across the Australian sugar industry, a 14% decline in overall harvesting rate (tonnes per hour delivered to the bin) would occur as a consequence of harvesting contractors migrating from nominal to recommended practice.

Bin Fill Rate



Bin fill rates in the 2017 field demonstration trial indicate an 11.6% decline from average industry contractor harvesting practice (nominal) to recommended harvesting practice with no statistical difference in bin mass

Season Tonnage



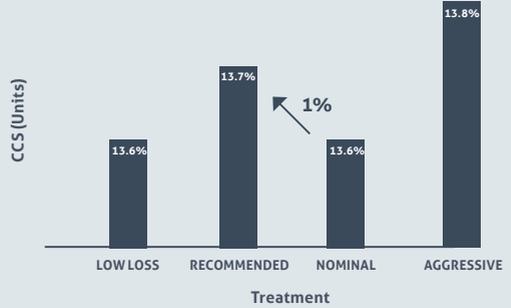
2017 Field Demonstration trials imply a 4.4% increase in tonnages between average industry contractor harvesting practices (nominal) to recommended harvesting practice with no increase to cane land. A statistically significant difference was recorded between industry nominal and recommended harvested yields.

Mill Fibre



Mill fibre levels decreased 0.6% in the trials, with no statistically significant difference between industry contractor practice (nominal) and recommended harvesting practice.

Mill CCS



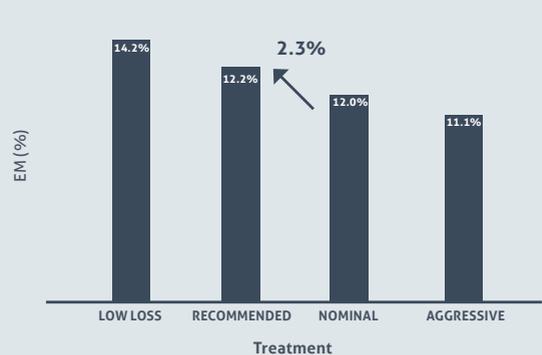
The 2017 Field Demonstration trials saw a 1% increase in CCS between average industry contractor harvesting practices (nominal) to recommended harvesting practice

Season Sugar Production



Sugar increased 5.5% between average industry contractor harvesting practices (nominal) to recommended harvesting practice

Extraneous Matter



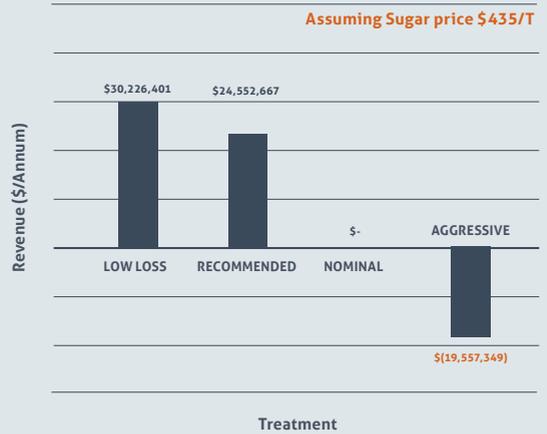
There was no statistically significant difference in the extraneous matter.

Change in Industry Value



Assuming a sugar price of \$435/T, the increase to industry revenue is \$76M if harvesting contractors were to change their nominal harvesting practice to recommendation.

Change in Mill Revenue



The 2017 Field Demonstration suggest a \$24M increase to industry mill revenue if contractors change their harvesting practice (nominal) and adopt recommended harvesting practice.

However the increase to milling revenue does not account for cost associated with milling cane harvested at harvesting best practice.



Australian Government
Department of Agriculture
and Water Resources



The SRA Harvesting Best Practice Adoption Team are committed to working with the Australian Sugar Industry milling sector in 2018 to enhance the industry value chain. It is our mission to collaborate with all mills across the regions to identify the most practical parameters to maximise harvesting best practice while minimising the impact to mill assets, operations and logistics.

This project is funded by SRA and the Australian Government Department of Agriculture and Water Resources as part of the Rural R&D for Profit Program.

For more information contact:

Carol Norris (Milling Liaison Officer) on cnorris@sugarresearch.com.au or 0459 861 482

Phil Patane (Project Leader) on ppatane@sugarresearch.com.au or 0431 818 482

Garry Landers (Researcher) on glanders@sugarresearch.com.au or 0417 607 873



Bringing milling research from the lab to the mill

SRA and QUT joined together earlier this year to present a series of milling research seminars to the Australian industry.

The five seminars were held in NSW, Bundaberg, Mackay, Townsville and Gordonvale and were an opportunity to provide an update on a range of projects that are striving for productivity, profitability, and sustainability outcomes for the milling sector.

A large volume of this work is part of SRA's investments in milling in with its 2017/18 to 2021/22 Strategic Plan and the Key Focus Areas of Milling Efficiency and Technology and Product Diversification and Value Addition.

In addition, research was presented on projects funded by external agencies and delivered through QUT

(for example, through the Australian Research Council).

SRA also took the opportunity to present information from the large Rural R&D for Profit project called Enhancing the Sugar Industry Value Chain, which contains several sub-projects that will have a direct impact on milling issues, particularly around issues such as extraneous matter and cane supply.

The Rural R&D for Profit project is funded by the Department of Agriculture and Water Resources and SRA.

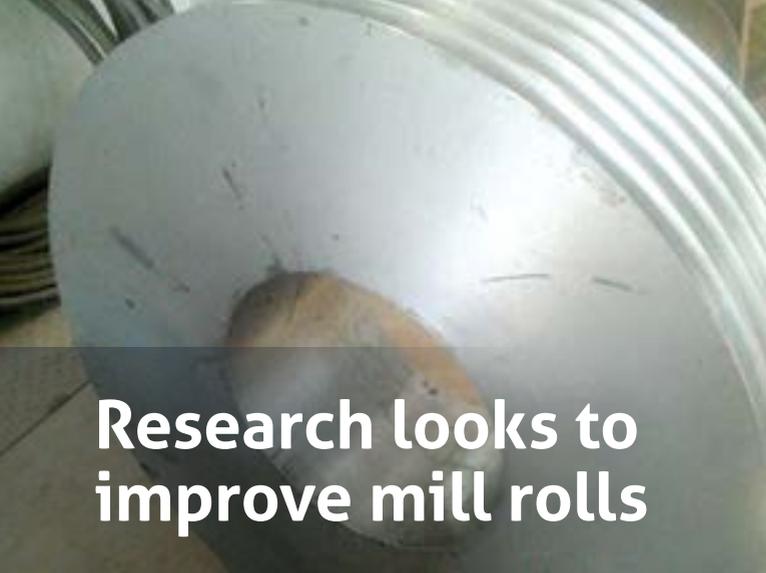
Presenters heard the results from 2017 demonstration trials, which were conducted with 43 harvesting groups in green-cane areas. Later this year, there will be 60 additional demonstration trials in all areas of the industry.

On that topic, SRA Adoption Officers told the seminars that trials to date suggest an increase to green cane industry revenue of up to \$74 million (\$24 million for millers), as a result of a 5 percent increase in sugar production with no increase in area under cane.

In addition to these seminars, SRA also provides information to the milling sector via milling webinars, and our fortnightly e-newsletter. You can subscribe to these by visiting the SRA website www.sugarresearch.com.au. ■

(Above) QUT's Dr Geoff Kent presenting at the Gordonvale milling research update in March this year.

"Later this year, there will be 60 additional demonstration trials in all areas of the industry."



Research looks to improve mill rolls

For more information, contact: Dr Geoff Kent on g.kent@sugarresearch.com.au or (07) 3138 1185.

A recent project has been undertaken to investigate new ways to reduce the cost of maintaining mill rolls.

Sugarcane mill rolls are the principal components of the milling process where the cane is crushed to separate the juice from the fibre. Because these are high-wear components that need to be reshelled every few years and also need to be regularly maintained during the season, this project has looked at ways of prolonging their life. The research team looked at options for coating mill rolls to make them more durable, to reduce the costs over their life.

This SRA-funded project was conducted by Dr Geoff Kent (QUT) and Dr Nazmul Alam from CSIRO.

Dr Kent said a process using tungsten carbide chips to provide a rough roll surface, without arcing, had been previously developed.

CSIRO had also developed a welding material to coat and increase the durability of grey cast iron using plasma-transfer arc welding (PTAW).

Several techniques were investigated, but the researchers encountered a number of challenges during their project.

"We determined that PTAW is not the right technology for the job," Dr Kent explained at recent research updates for the industry. "The long nozzles

required for the process created a lot of splatter and overheating of the nozzle."

With the PTAW ruled out, the researchers also investigated MIG welding and laser cladding. While these technologies showed more promise, there were challenges applying a uniform coating to the surface of the iron, meaning the final result was not satisfactory.

"The grey cast iron used in sugar mill rolls is not well-suited to welding, because it was designed to form globules of weld material that are rough to help grip the cane," Dr Kent said. "Unfortunately, this also means we couldn't create a smooth surface for cladding."

The researchers persevered and investigated rolls that are made of SG iron, also known as ductile cast iron. This material had been the subject of research in the past but had not been adopted because it was not readily available at the time.

"However, there are now suppliers willing to sell SG iron rollers and there are a few being used in the Australian industry. With SRA's approval of the project variation, Nazmul looked at a series of nine different materials that could be applied to the SG iron rolls."

This was then narrowed down to four promising candidates for further testing:

ALLOY POWDER	DESCRIPTION
Wear Pro 62	40% NiSiB + 60% spherical tungsten carbide
Durmat 520	Steel with high Cr, Ni and Mn
Durmat 564	Steel with high C and Cr
SAE 420	Martensitic stainless steel

Dr Kent explained that to achieve the same groove profile after cladding, more material needs to be applied to the bottom of the groove, and less to the side walls (flanks). They therefore investigated ways of using lesser cost material in the root of the grooves, and the techniques were successful in providing a smooth surface with no significant defects.

A new project was submitted to SRA for consideration in 2017 where the techniques would be tested in the 2019 / 2020 seasons.

The project was unsuccessful due to concerns about adoption of the SG iron roll shells and the options for sourcing the laser cladding. Dr Kent said that the research team would address these issues and re-submit for funding. ■

(Above left) The researchers investigated rolls that are made SG iron as part of the project. (Above right) Cleaning mill rolls in preparation for testing different materials for coating.



Overseas experience to help improve factory efficiency

The final report from this project is available from the SRA eLibrary www.elibrary.sugarresearch.com.au/. There are also additional appendices to the report that are confidential to Australian sugar mills and are available via the login via the Sugar Research Institute eLibrary via www.sri.org.au.

For more information contact Prof Ross Broadfoot at r.broadfoot@qut.edu.au or (07) 3138 1646.

Australian sugarcane factories generally consider best practice for process steam consumption to be about 40 percent on cane.

On the world stage, however, there are steam-efficient factories using different technologies that put those numbers in the shade, and they have brought their steam consumption very low, to lower than 32 percent on cane.

Knowing this, a recent research project sought to learn from the overseas experience and discover how some of these technologies could be adopted to the benefit of the Australian industry.

Undertaken by Queensland University of Technology, the project was overseen by Professor Ross Broadfoot, Dr Darryn Rackemann, and Mr David Moller, and was called *Develop a blueprint for the introduction of new processing technologies for Australian factories (2015/043)*.

It undertook the following phases of work:

- Measure the sucrose losses that presently occur in Australian evaporator stations which almost universally comprise Robert evaporators with tubes of 2m length and 44.45mm outside diameter.
- Assess the suitability of Kestner evaporators for Australian factories.

- Assess the suitability of falling film tube evaporators for Australian factories.
- Investigate the potential application of novel process steam efficiency technologies for application into Australian sugar factories.
- Undertake modelling studies for four Australian sugar factories to assess the suitability of using the alternative evaporator designs and the novel process steam efficiency technologies to suit nominated objectives for each of the factories.
- Investigate the effect on pan stage productivity (production rate and exhaustion) when using low pressure vapour for boiling the pans.
- Investigate the effects on whole of factory operations (including electricity export, surplus bagasse generation and water balance) resulting from the adoption of the new technologies into Australian sugar factories.

Researchers visited factories in several countries including South Africa, Reunion, Mauritius, India and Germany to better understand the technologies being employed in steam efficient factories.

According to the researchers, in many cases the technologies

being used in these steam efficient overseas factories can be introduced into Australian factories to provide capacity and operational benefits. The technologies that are not currently being used in Australian factories include:

- Falling film tube evaporators and Kestner evaporators;
- In-line juice heaters on vapour from the final evaporator;
- Barriquand juice heaters;
- Use of vapour from the 3rd evaporator for pan boiling;
- Direct contact pan feed conditioning systems; and
- Vapour recovery systems such as in condensate cigars. ■

(Above) Darryn Rackemann with QUT in front of two falling film tube evaporators and a semi-Kestner evaporator at Le Gol factory, Reunion.



Boiler simulator training to help avoid costly mistakes

Experience has taught Australian mill owners just how costly mistakes are when things go wrong at the boiler station.

At the same time, experience has also taught the Australian industry that mistakes are more likely and frequent early in the season, when operators may be 'rusty' after having just had about six months of doing a range of other tasks at the mill.

Recent incidents, attributed in part to operator error, have cost factories several millions of dollars in boiler repair costs and lost production.

All this has highlighted the importance of ensuring that operators are up to speed on the problems that may arise and the skills they need in operating boilers.

With this in mind, an SRA-funded project has been underway working with the milling sector to devise a suitable training simulator that could help alleviate some of these costly mistakes. Simulators are already successfully employed

at other parts of sugar mills, and this project is looking to implement this technology at this critical component of the mill.

Led by Dr Anthony Mann, the project has consulted heavily with industry through surveys and workshops and has completed the development of a back-end system for the simulator.

The front-end user interface is being developed and a suitable training program will be incorporated into this front-end user interface. The industry feedback will continue to be vital in ensuring the project delivers a useful end-product for the industry. ■

The project is funded by SRA and is called *A boiler simulator for improved operator training* (project code 2016/001).

More detail on further development on this project will be provided in the next edition of *Milling Matters*, in the second half of 2018.

For more information, contact: Dr Anthony Mann on a.mann@qut.edu.au or (07) 3138 1333

(Above) Work is underway to develop a training simulator for boiler operation.

"...industry feedback will continue to be vital in ensuring the project delivers a useful end-product..."



Reducing costs through improving boiler maintenance efficiency

The maintenance of sugarcane mill boilers is a significant cost to the Australian sugar industry.

It has been estimated that boiler tube wear and corrosion costs the industry about \$5 million each year in repairs, downtime, and inefficient operation. The cost of one convection bank due to wear is about \$1 million.

There is also a building challenge for the industry as boilers age. Most boilers in the industry are more than 30 years old, while a typical convection bank has a tube life of about 10-15 years using current protection technology.

As the boilers age, the wear and corrosion costs are expected to increase.

Thus a team of researchers at the Queensland University of Technology and CSIRO are working on a research project (project code 2016/020) that is investigating new ways of coating boiler tubes to extend their life and reducing these maintenance costs.

The research team consists of Dr Nazmul Alam (CSIRO), Dr Floren Plaza (QUT), and Dr Anthony Mann (QUT) and they are two years into a three year project.

As explained by QUT's Dr Geoff Kent at milling research seminars recently, the project began with a literature review to find materials suitable for coating. These coating were discussed with the milling sector during 2017 to assess their practical application and whole-of-life economics.

The next step was corrosion and erosion testing in the lab.

Dr Kent said this included 15 new coatings, an uncoated boiler tube, and two existing tube shield materials for the external erosion performance. For internal corrosion testing, 12 materials were tested, which included five materials that are applied to the surface of an existing tube, two materials that form the coating of as-supplied tubes, two corrosion resistant tube materials, standard boiler tube

materials, and two types of mild steel.

A number of materials have shown promise in the lab testing.

The research will now progress to testing of the shortlisted materials at Mulgrave and Isis, although this will need to be delayed until the 2019 crush because the most promising coatings require procedure development and application equipment.

SRA will keep industry informed of the progress of this work through Milling Matters, events for the milling sector, and our fortnightly newsletter. ■

**For more information,
contact: Dr Floren Plaza
on f.plaz@qut.edu.au or
07 3138 1239.**

(Above) Research is underway to investigate options for improving milling efficiency via better boiler maintenance.



FUTURES FORUM: Forging a bright future for Australian sugarcane

The Australian sugar industry is working towards a more internationally competitive industry, following an event in Mackay recently.

Called the Futures Forum, the event saw about 70 industry stakeholders gather together, representing a cross-section of industry, agribusiness, research organisations, government, and influencers.

The Futures Forum looked beyond the immediate challenges and industry's recent achievements to examine what it wants the future of the industry to look like in 5, 10, and 20 years from now.

SRA Chairman, Dr Ron Swindells, said the purpose of the forum was to be thought-provoking, inspirational, and interactive, so that it can deliver possible pathways forward.

"This is the first time the industry gathered together to consider its

collective long-term future," Dr Swindells said.

"At the forum, we heard from people both within the industry and from outside it. The speakers shared their insights into future trends, and helped generate new ideas for our industry.

"The industry is facing more than its share of challenges, especially around productivity and profitability and the need for all sectors to lift our international competitiveness. The industry is also proactively addressing environmental stewardship issues, and working together to make big gains in this area.

"The forum was an opportunity to plan and discuss how our industry can work together to capitalise on existing opportunities, and also how we can proactively create new opportunities that lead to positive productivity, profitability, and sustainability outcomes for growers and millers.

"This is an event focused on action. Following the forum, SRA is working with stakeholders to address priority issues, as guided by the National Sugarcane RD&E Strategy. We will publish an action plan and report via the SRA website and will communicate the outcomes to broader industry, government and other stakeholders." ■

The SRA website already features a number of videos and presentations from the day, which you can see at www.sugarresearch.com.au/sra-information/futures-forum/

(Above) Futures Forum.

Milling research investment

PROJECT TITLE	PROJECT NUMBER	PRINCIPAL R&D PROVIDER	CHIEF INVESTIGATOR	END DATE
Key Focus Area 5 (Milling efficiency and technology)				
Real time harvest and transport system	2014/037	QUT	Geoff Kent	01/09/2018
Improving mill efficiency through rapid analysis methodologies	2014/051	SRA	Steve Staunton	01/09/2017
Managing aspects of raw sugar quality in the Australian sugar industry	2014/052	SRA	Steve Staunton	01/08/2017
Investigation into modifying pan boiling techniques to improve sugar quality	2015/013	QUT	David Moller	30/06/2018
Increasing capacity to undertake cane preparation research through modelling and experimentation	2015/018	QUT	Geoff Kent	01/04/2018
Online analysis systems to measure the available nutrients in mill mud	2016/019	SRA	Steve Staunton	01/03/2020
Reducing boiler maintenance costs and deferring capital expenditure through improved technology	2016/020	QUT	Floren Plaza	
Evaporator liquor brix sensor	2017/003	Wilmar	Robert Stobie	31/12/2018
Managing aspects of raw sugar quality in the Australian sugar industry – Part II	2017/006	Griffith University	Chris Davis	30/06/2019
Investigations to mitigate the effects of sucrose degradation and acid formation in factory evaporators on sugar recovery and quality, corrosion and effluent loadings	2017/007	QUT	Darryn Rackemann	01/12/2020
Key Focus Area 6 (Product diversification and value addition)				
Process for making bagasse paper pulp	2012/053	QUT	Thomas Rainey	01/05/2018
A profitable future for Australian agriculture: biorefineries for higher-value animal feeds, chemicals and fuels (Rural R&D for Profit)	2015/902	QUT	Ian O'Hara	01/03/2019
Key Focus Area 8 (Collaboration and capability development)				
Integrated standardised competency based training for sugar milling operations	2017/013	QUT	David Moller	1/12/2019
A boiler simulator for improved operator training	2016/001	QUT	Anthony Mann	1/7/2018

THE FOLLOWING PROJECTS HAVE SUBMITTED FINAL REPORTS SINCE THE LAST EDITION OF MILLING MATTERS:

- Determine the optimum tube dimensions for Robert evaporators through experimental investigations and CFD modelling, QUT
- Develop a blueprint for the introduction of new processing technologies for Australian factories, QUT

THE FOLLOWING PROJECTS HAVE SUBMITTED MILESTONE REPORTS

- Reducing boiler maintenance costs and deferring capital expenditure through improved technology, QUT
- Investigations to mitigate the effects of juice degradation in factory evaporators on sugar recovery and quality, corrosion and effluent organic loading, QUT
- Integrated standardised training for Sugar Milling Operations, QUT
- On line analysis systems to measure available nutrients in mill mud, SRA
- Reducing the maintenance costs of mill rolls, QUT
- **Improved modelling of wet scrubbers, QUT**



Sugar Research Australia Limited
ABN 16 163 670 068

Head Office
50 Meiers Road
Indooroopilly QLD 4068
Australia

Postal Address
PO Box 86
Indooroopilly QLD 4068
Australia

T 07 3331 3333
F 07 3871 0383
E sra@sugarresearch.com.au
W sugarresearch.com.au

