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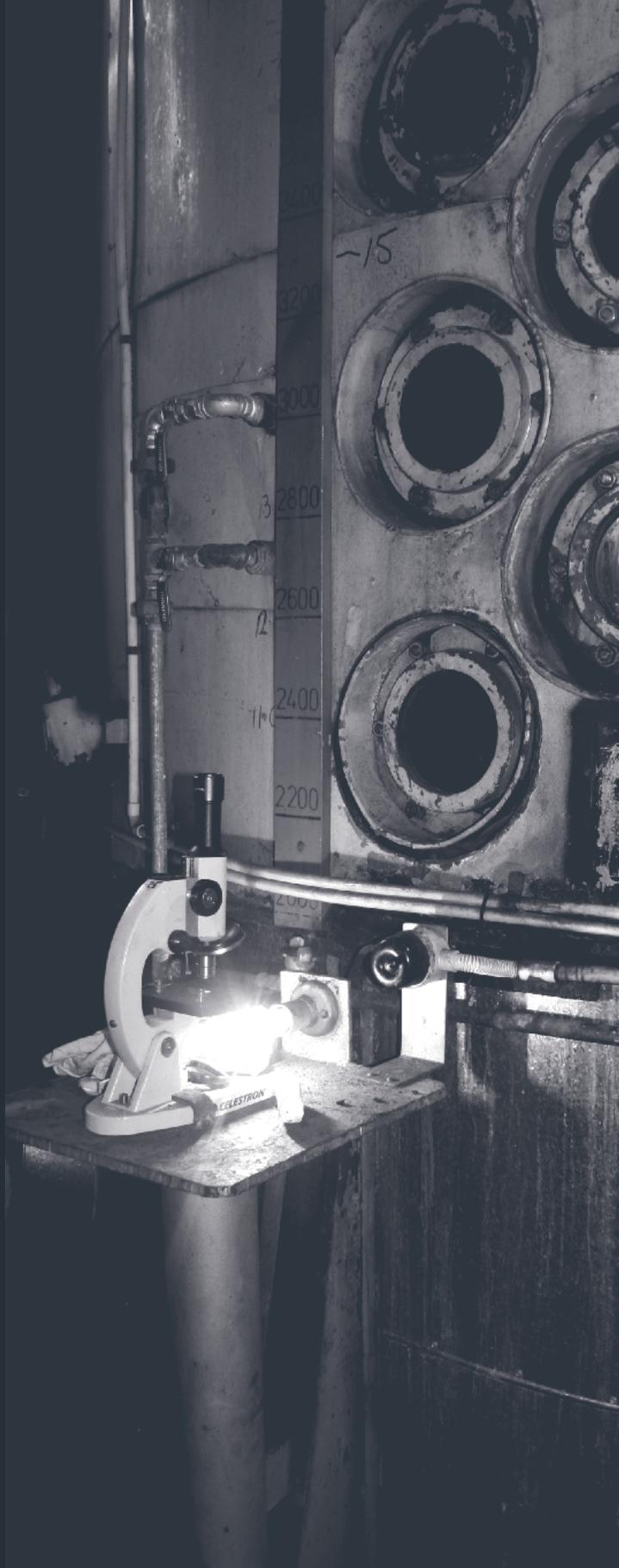


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(Cover Page) Staff from Wilmar and Herbert growers travelled to the Childers and Rocky Point regions to learn more about harvesting efficiency, as you can read on page 4. Pictured is Childers grower/contractor Michael Russo (right) talking harvesting efficiency with Luis Rodriguez (Wilmar), Leanne Oliveri (Wilmar), Regan Kernke (Herbert grower), and Adam Douglas (Wilmar).





International scientist joins SRA chemistry and NIR team

SRA has added expertise and capacity to its chemistry laboratory and near-infra red (NIR) work with the appointment of experienced Senior Chemist, Dr Heidi du Clou.

Dr du Clou has worked internationally on sugarcane research, previously in South Africa and New Zealand, and joins the SRA team to work on a range of projects that drive outcomes for Australian sugarcane growers and millers.

While at the South African Sugar Milling Research Institute NPC (SMRI) she earned a PhD in chemistry for her thesis *Characterisation of extracellular polysaccharides produced from a fungal pathogen of sugarcane.*

Dr du Clou's primary focus will be in SRA's Indooroopilly chemistry laboratory to ensure it continues to deliver high quality and timely outputs for a range of projects

related to milling, soil health, chemical residues and NIR.

Dr du Clou will work closely with Key Focus Area (KFA) Leader, Mr Steve Staunton, and other chemistry lab staff, on projects and work highly valued by SRA's milling investors.

"We are excited to bring Heidi's international expertise in sugarcane to SRA and the Australian industry," Mr Staunton said.

SRA invests in a range of activities for the milling sector through KFA 5 *Milling efficiency and technology* and KFA 6 *Product diversification and value addition.*

Dr du Clou said she looked forward to creating practical Outcomes for millers and growers.

"The SRA chemistry lab and NIR work provide vital services and research and development activity for the Australian sugarcane industry. This

role is a fantastic opportunity to work closely with growers and millers and help SRA continue to deliver upon their requirements," she said. ■

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(Top left) Plant Breeding Technician Matt Tinai and Dr Heidi du Clou in the field. (Top right) Dr Heidi du Clou. (Bottom right) Dr Heidi du Clou and Matt Tinai inspect seedlings.



Herbert growers and millers head south to learn more on harvest efficiency

It is well known that sugarcane growers and millers enjoy looking over the other side of the fence to see how they can improve things on their own turf.

Thanks to an initiative by Sugar Research Australia (SRA) and Wilmar Sugar, this 'looking over the fence' has taken a step further for a group of growers and millers from the Herbert region, with the group looking much further afield than their own district.

The group has recently travelled from the Herbert region in North Queensland to Rocky Point near the Gold Coast and Childers in the Southern Region. The aim of the trip was to learn from millers, growers and harvesting contractors in these southern parts of the industry and discover how they are adopting

practices that are helping them to optimise harvesting efficiency.

The trip was jointly funded through an SRA Travel and Learning Award and Wilmar Sugar.

Herbert Regional Operations Manager for Wilmar Sugar, Mr Adam Douglas, said that the group was returning to the Herbert armed with more information about the impact of cane loss and extraneous matter on a farm's bottom line.

"Our objective was to meet and collaborate with Rocky Point and Childers growers who have changed their harvesting practice," Mr Douglas said.

"It has been an opportunity to learn about the potential to increase profitability by reducing cane loss and extraneous matter levels."

SRA Adoption Officer for Harvesting, Phil Patane, said that the trip was a chance to visit during the harvest season, which put everything into context for making harvest best practice work.

"Through research and demonstration trials, we know that there is potential to improve harvesting efficiency and therefore put more revenue into the value chain," Mr Patane said.

"From trial results in 2017, it was identified that the industry could potentially obtain a 5.5 percent increase in harvested tonnes with no cane land increase and a \$74 million increase in shared industry revenue if operating at harvesting best practice recommendations.



"However, we also know that optimising harvesting is complex and a range of factors have to be considered. This is why it is so valuable for the group from the Herbert to engage with their peers in the southern region.

"We are all operating in one Australian industry, but also across a vast geographic distance, so this trip was a rare and valuable opportunity for the millers and growers from the Herbert.

"This was a chance for them to ask questions and consider how their own operation compares."

Ingham grower Paul Marbelli said he had not had the chance to visit the Rocky Point and Childers regions before, so this was a unique opportunity.

"The trip has been interesting to see how other districts are doing things," Mr Marbelli said. "We can't compare everything between regions, as there are unique conditions down here, but it has been interesting to learn how these farmers and contractors are dealing with their situations."

This work adds to existing industry engagement on harvesting efficiency through a project through the Rural R&D for Profit program funded by the Australian Government Department of Agriculture and Water Resources, SRA, and the Queensland Government. ■



Australian Government
Department of Agriculture
and Water Resources

(Over page) Herbert growers Paul Marbelli (left) and Charles Girgenti (centre) spoke with Rocky Point harvesting contractor Nick Skopp about how he had adjusted his harvesting practices to reduce cane losses in the field.

(Top left) Michael Russo (right) talks harvesting optimisation with Herbert growers and millers.

(Top right) Herbert grower Charles Girgenti walking through the Isis mill with Wilmar staff Paul Giordani and Luis Rodriguez.

(Middle right) Robyn Oliver, Isis Central Sugar Mill, explains her work in the lab, the mill's use of NIR, and how this links to cane quality.

(Bottom right) Michael Russo (Dicanna Harvesting) and Paul Nicol (Chief Field Officer, Isis Mill) check out just how good base-cutter blades are for cutting cane, after bolting them to the handle of a cane knife.



Boiler simulator to build crucial operator knowledge

Mishaps and accidents with sugarcane mill boilers can be dangerous and costly.

Serious damage and lengthy delays can quickly see repair costs and lost production value climb into the millions of dollars, according to QUT researcher Dr Anthony Mann.

As one way of improving training for new or relatively inexperienced operators, Dr Mann is currently undertaking a project to construct a boiler simulator to improve operator understanding at a basic level, and help form a foundation that could help avoid costly mistakes.

This project, funded by Sugar Research Australia, is looking to mimic some of the critical aspects of boiler operation and provide a product that has relevance across the industry.

"There are more than 50 boilers in the Australian industry, and boiler operating stations are very complex, so this project is providing something useful by looking at

common situations that arise in most factories," Dr Mann explained. "This is a relatively small project, so we are not providing a simulator that is specific to any particular boiler station."

He said that the simulator would be a useful tool for introducing people new to boilers (or those who have been away from boilers for an extended period) in a risk-free environment.

"We are creating a computer-based, entry-level simulator that will cover the basic concepts of boiler stations. The simulator is another tool that will be available to sugar mills to help avoid mistakes at this critical part of the factory. If it helps prevent one significant mistake, then the project will have paid for itself many times over."

The simulator would be complementary to practical and on-the-job training.

The project has recently been consulting with milling companies

to incorporate their feedback into the draft simulator. This builds on previous consultation with the sector in the early stages of development.

The project is aiming to produce the final simulator toward the end of 2018. ■

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(Above) This project is looking at common situations that arise in most factories to develop a useful simulator for training boiler operators.

More information on varieties is available from SRA's online variety decision support tool, QCANESelect®.

Regional variety guides (six) have also recently been produced and distributed throughout the industry.

View the guides at www.sugarresearch.com.au/sra-information/publications/

Variety stats show Q240[®] a rising star



An analysis of the 2017 sugarcane crop has shown the rising popularity of the variety Q240[®], as well as the ongoing dominance of varieties Q208[®], Q183[®], and KQ228[®].

In 2017, the Australian sugarcane crop was 33.3 million tonnes, back from 36.5 million tonnes in 2016. This crop came from an area of 375,500 hectares with an average yield of 89 tonnes of cane per hectare (TCH) and a commercial cane sugar (CCS) of 13.29.

With cyclone damage in the Central Region, along with drought, floods, and more erratic weather, these results saw the tonnes reduced from 2016 when it was 99.2 TCH, but CCS increased compared to 2016's 12.84.

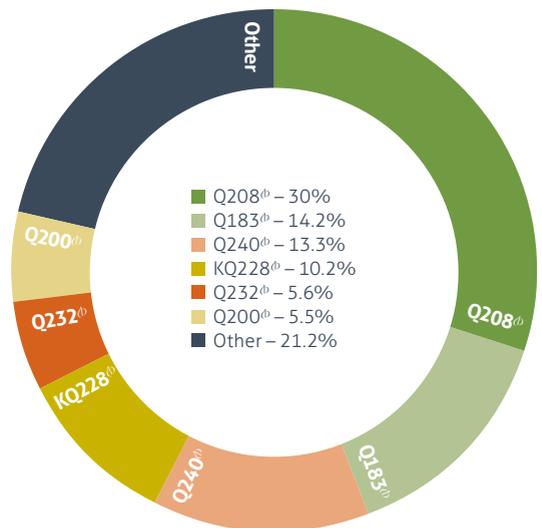
A breakdown of the varieties grown in 2017 showed that the top six varieties represented 79 percent of the crop.

Q240[®] is now the third most popular variety at 13 percent of the crop, which compared to 2016 when it was about 8 percent of the crop, and

2015 when it was still establishing and was 4 percent of the crop.

Q208[®] remains the most popular at 30 percent of the crop, with Q183[®] the next in line at 14 percent.

The top five Queensland varieties are Q208[®], Q183[®], Q240[®], KQ228[®], and Q200[®], while in New South Wales they are Q208[®], BN83-3120, Q232[®], Q183[®], and Q240[®]. ■





A COLLABORATIVE PROJECT SPANNING MULTIPLE INDUSTRIES AND ORGANISATIONS IS LOOKING TO ADD VALUE TO A RANGE OF AGRICULTURAL BY-PRODUCTS, AND BAGASSE IS A MAJOR FOCUS.

Feeding bagasse to livestock is not new. The concept has been experimented with for decades and usually attracts a lot of attention during drought.

However, feeding bagasse to livestock has always faced challenges; bagasse is very high in fibre and livestock can't extract much energy from raw bagasse. Anything more than a few percent of raw bagasse in livestock feed starts to reduce daily weight gains. Even when treated with existing technology, bagasse remains a high-fibre product.

And bagasse is a by-product; not a waste product. Even though it has higher commercial value in some mills than others, all projects on bagasse value adding have had to ensure that any new use for bagasse makes economic sense.

A current research project builds on previous SRA investments and is taking the existing value of bagasse into account. It is also exploring the challenges and opportunities to present practical outcomes for adoption by the industry. Importantly, the project is developing ways to improve the digestibility of bagasse and make it into a more complete feed for a wide range of livestock.

COLLABORATION AND DELIVERY

Queensland University of Technology (QUT) Senior Research Fellow Dr Mark Harrison is leading one component of the project and he said that the entire project was focused on delivering practical outcomes.



Putting bagasse on the feed menu for livestock

"Assuming the technical challenges are overcome, we are very interested in where in Queensland and NSW it makes sense to make animal feed from bagasse," Dr Harrison said. "Obviously there is heightened awareness during drought, but long-term development has to align with where livestock are concentrated."

As well as understanding potential markets, Dr Harrison also said the project had been working closely with the fodder industry through the Australian Fodder Industry Association and Feed Central.

"These relationships have been pivotal to the project and over the last 12 months have improved our understanding of where bagasse sits among other fodder sources," he said.

"We started the project benchmarking bagasse against high quality forages like vetch and lucerne, but we now understand that it's difficult for bagasse – raw or treated – to compete against those fodders when there's enough rain to keep fodder production at normal levels.

"So, we are benchmarking against lower quality forages like straw and looking at the potential role for treated bagasse during drought."

IMPROVING THE VALUE

Growing microbes on the bagasse is one way to increase its nutritional value as a stockfeed.

"Even when bagasse is pretreated, it is still only adding fibre and carbohydrate to the ration," explained QUT Associate Professor, Robert Speight. "But we are looking at using the bagasse as a food-source for microbes such as fungi and bacteria, and then they do the work of converting that fibre into 'themselves'.

"For livestock, these microbes are a great source of protein and can also add essential nutrients to the bagasse. This can help make the bagasse a more complete feed."

This project is also investigating the potential of providing the animals with probiotics, which could help them better digest the fermented bagasse, and has already identified several potentially valuable probiotics by searching through the microbes that live in bagasse piles.

The project has begun feeding trials with chickens to assess whether the probiotics are safe. The second feeding trial will add bagasse to the ration to determine the impact of these probiotics on digestion and growth.

UNDERSTANDING THE ANIMAL

Dr Harrison said that this work linked with another crucial component of the project; establishing a clear picture of bagasse digestion inside animals. Ms Mahsa Abbasabadi, a QUT PhD student, is working closely with the University of Queensland to undertake animal feeding and rumen fluid fermentation trials.

"The project is using cutting-edge genetic technology to identify the way the microbes in the gut change when the animal eats raw, treated, or fermented bagasse. Then, we can look how to grow the right microbes on bagasse so that they work in partnership with the existing gut microbes to extract more energy from the fibre," Dr Harrison said.

FUTURES FORUM

The topic of industry diversification drew significant attention at the industry's Future Forum in April.

The key message from the forum was that the sugar will remain a core output of our industry, but that diversification is critical to future profitability and sustainability with diversification of revenue streams across food, fuel, energy, and fibre products.

Mackay grower Joe Muscat attended the Futures Forum and was also interviewed by ABC Landline on a segment specific to the research project led by QUT.

Mr Muscat said that the Australian industry needs to look at different end products.

"We need to do more work on adding value to our commodity. With our input costs always increasing, we have to find ways to manage that and keep a profitable business. I see value adding as an opportunity going forward." ■

This project is funded by the Commonwealth Department of Agriculture and Water Resources and SRA as part of the Rural R&D for Profit Program. SRA also acknowledges the funding contribution from the Queensland Department of Agriculture and Fisheries towards this research activity.

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To view the Landline segment on this project visit www.abc.net.au/news/2018-07-29/sugar-spinoff:-sugarcane-growers-take-on-their-own/10049548



**Australian Government
Department of Agriculture
and Water Resources**

(Over page top) QUT Senior Research Fellow Dr Mark Harrison is investigating ways of using bagasse to create higher-value animal feeds. (Over page bottom) SRA CEO Mr Neil Fisher discusses industry value-add opportunities with Mackay district growers Joe and Stephen Muscat.



Fibre Quality Measurement gets a 30-year review

A RECENT INDUSTRY WORKSHOP, COMPLEMENTED BY RESEARCH INVESTMENT, HAS LOOKED AT A RANGE OF ISSUES AROUND FIBRE QUALITY AND MEASUREMENT TO HELP CONTINUE TO DELIVER OPTIMUM VARIETIES FOR THE INDUSTRY.

The Australian sugar industry relies on the performance of its cane varieties to sustain profitable businesses throughout the value chain.

SRA's variety development program targets key attributes important to achieving industry expectations for both agronomic performance and milling performance. The key "millability" characteristics of these varieties are defined principally by the percentage of fibre in the cane, and the particular characteristics of that fibre as determined by a set of standardised Fibre Quality Measurements (FQM) which include impact resistance, shear strength and the percentage of short fibres.

These measurements were established in the mid 1980s, and allowed varieties to be assessed with regard to suitability for milling. Varieties showing FQM characteristics outside a "normal" range were generally classified as "hard" or "soft" canes as a generalisation of their physical response during milling.

Soft canes generally had FQM attributes which included low fibre content and hard canes had high fibre content.

In recent years, a small number of varieties have been released with low fibre, such as SRA1[®] and SRA4[®], which exhibited characteristics attributed to soft canes in the milling process. This presented particular challenges to achieving adequate factory performance.

To respond to this issue, SRA has invested in research to better understand these soft cane varieties, and capture more knowledge about the development history, FQM assessment and measurable variations in processing these varieties.

In addition, SRA has also responded by convening an industry workshop to discuss the path forward for fibre quality and what research is needed to provide improved variety outcomes.

The workshop was chaired by SRA Research Funding Panel (RFP) Chairman, Mr Gary Longden, and attended by representatives from SRA, CSIRO, QUT, CANEGROWERS, the Australian Cane Farmers Association, milling organisations, the Australian Sugar Milling Council, and productivity services companies.

A key topic at the workshop was discussion on the current system for determining FQM in the breeding program and opportunities to measure fibre quality earlier in the variety development process. The current FQM system is not suitable for evaluating the large number of clones examined throughout the variety development program. Only the most advanced clones within the final assessment trials (FATs), including those at Accelerated and Maximum Propagation stages, are tested for fibre quality.

The ability to identify at-risk varieties sooner could save significant effort in progressing preferred varieties through the breeding program, but comes with the challenge of implementing these measures against a greater number of clones.

The workshop also discussed adapting new technology for measuring fibre attributes, and methods of providing more information to regional variety committees (RVCs) so that this could better inform their discussions around future potential varieties.

The workshop reviewed preliminary investigations into adapting near



infrared spectroscopy (NIR) systems currently used by SRA as a suitable means of large scale screening across multiple clones for FQM attributes.

There was general agreement that establishing suitable calibrations for FQM attributes using NIR analysis was possible, and investigations to achieve this should be given a high priority. This technology could inform earlier stage breeding decisions, and the current standardised testing methods would remain as a last stage evaluation and for ongoing calibration of the NIR based analysis system.

The workshop also identified future research investigations that could provide value to the industry, and considered that a standardised system for ongoing reporting of milling characteristics of varieties would be beneficial to an improved understanding of varietal characteristics and potential breeding applications.

In response, the SRA Board will invest in research to address the workshop outcomes, focusing on a project to develop and assess NIR calibrations for SpectraCane implementation to accelerate FQM

data development and adaptation within the breeding program.

The workshop has been informed by several research projects within SRA's investment portfolio, including the most recent project led by Dr Geoff Kent at the Queensland University of Technology, with a project called Reviewing and extending knowledge of fibre quality assessment and effects of cane varieties.

This project had a number of objectives including re-evaluation of the "safe range" for existing FQM values as indicated by measured conditions within factory operations, and assessing factory operating performance for different varieties across multiple seasons. The work also identified several approaches for better presentation of fibre quality data to RVCs to aid in the selection of new varieties for release.

In addition, the project provided SRA with information on the cost of measuring fibre quality at an earlier stage in the breeding program, and the potential benefits if satisfactory SpectraCane calibrations for fibre quality could be made.

Dr Kent's research has also proposed further analysis of the effects of different varieties on factory operation and performance, with a view to gaining better information on the cost implications of varieties with extreme fibre quality and placing an economic value on fibre quality.

An alternative line of research to consider how to manage low fibre and soft canes to minimise the impact on factory processing is proposed, involving managing crop maturity and ripeness to elevate fibre content and controlling cane preparation to limit fibre quality impacts. ■

The project has recently submitted its final report, which is published in the SRA eLibrary www.elibrary.sugarresearch.com.au/.

(Above) Work is underway to better understand fibre quality measures and variety performance.



Raw Sugar Analysis by Laboratory DA1650 NIR ready to go

BY STEVE STAUNTON, KEY FOCUS AREA LEADER FOR MILLING EFFICIENCY AND TECHNOLOGY

After the successful completion of project 2014051 – Improving mill efficiency through rapid analysis methodologies the SRA near infrared spectroscopy (NIR) support team has continued this work to set up the SRA Mosaic server based at Indooroopilly.

The Mosaic server allows the SRA support team to monitor any the performance of any laboratory NIR instruments remotely, change the scan settings for different products, upload data for calibration development, apply bias adjustments and download calibration updates or calibrations for new products.

We have implemented several successful connections to the Mosaic server during the 2018 season, including; an existing DA1650 instrument at Tully, two roving DA1650 instruments used by Queensland Sugar Limited, an existing FOSS InfraXact instrument at Millaquin Mill and a new DA1650 instrument at Victoria Mill.

There are several options for remote connection to the SRA Mosaic server:

- Always connected, which requires a permanent secure connection through the client's IT firewall.
- Connected for updates, which requires a temporary secure connection through the clients IT firewall or an internet dongle that provides a connection outside the firewall.

- Never connected. In this situation, the instruments would be sent to SRA for updates.

We know from recent research that NIR analysis of key constituents in prepared cane, bagasse, juice and syrup streams, magma, massecuite, molasses, raw sugar and mill mud are feasible. We also know that adequate accuracy and precision to make informed decisions around factory operations had been achieved for the raw sugar, pan products and prepared cane calibrations.

Validation results collected during the 2018 crushing season strongly support these conclusions for the raw sugar and molasses global calibrations, but indicate that the massecuite, syrup and bagasse calibrations require further development. Insufficient data was collected to evaluate the other products.

VICTORIA MILL 2018 VALIDATION RESULTS

NIR data for raw sugar, massecuite, and molasses was collected at Victoria Mill using the SRA DA1650 instrument during the course of project 2014051; how well the global calibrations would transfer to the new DA1650 instrument purchased by Victoria mill had not been previously tested.

The global raw sugar calibration was updated with data from Victoria Mill after 30 samples had been

collected and analysed as is the normal practice, no other product calibrations have been updated. Validation results for all products assessed at Victoria Mill are shown in Table 1.

The validation results for a significant population of raw sugar samples analysed at Victoria Mill show the validation error to be lower than the calibration error with no significant bias indicating that the updated global calibration is fit for purpose for sugar pol and moisture analysis.

The global calibrations for molasses, massecuite and syrup are all showing validation errors higher than the calibration error with various levels of bias indicating that they would all benefit from a calibration update to represent the new DA1650 instrument. The high coefficients of determination (R2) suggest that one calibration update may be all that is required to achieve similar results to those achieved by the updated raw sugar calibration.

TULLY SUGAR LIMITED 2018 VALIDATION RESULTS

NIR data for raw sugar was collected at Tully Mill using the Tully DA1650 instrument during the course of project 2014051. The results obtained from the 2018 data demonstrate the performance of the DA1650 instrument using a localised global calibrations (large percentage of Tully data in calibration) after a

Table 1: Victoria Mill DA1650 2018 Validation Statistics

PRODUCT	CONSTITUENT	CALLIBRATION ERROR	VALIDATION ERROR	R ²	SLOPE	BIAS	RANGE	N
Raw Sugar	Pol	0.12	0.10	0.49	0.65	0.00	98.4 - 99.7	2197
	Moisture	0.03	0.03	0.46	0.66	-0.01	0.07 - 0.41	1599
Molasses	Dry Substance	0.44	0.89	0.72	0.79	-0.06	69.4 - 80.8	108
	Sucrose	1.42	1.47	0.94	1.08	-0.11	33.5 - 53.7	108
Massecuite/ Magma	Dry Substance	0.58	1.09	0.55	1.69	-0.01	90.0 - 93.0	29
	Sucrose	1.30	1.79	0.95	0.97	2.03	59.4 - 83.5	29
Juice/Syrup	Dry Substance	0.55	0.55	0.84	1.16	-1.19	67.2 - 70.4	9
	Sucrose	0.59	0.73	0.86	1.30	-1.93	60.9 - 64.6	9

Table 2: Tully Mill DA1650 2018 Validation Statistics

PRODUCT	CONSTITUENT	CALLIBRATION ERROR	VALIDATION ERROR	R ²	SLOPE	BIAS	RANGE	N
Raw Sugar	Pol	0.12	0.08	0.46	0.86	0.04	98.6 - 99.1	257
	Moisture	0.03	0.03	0.36	0.53	0.03	0.23 - 0.40	261
	Ash	0.02	0.03	0.19	0.47	0.03	0.14 - 0.27	235
	Colour	150	144	0.07	0.26	139	1190-1772	213
	Reducing Sugars	0.05	0.04	0.05	0.29	0.03	0.18 - 0.30	235
	Fine Grain	2.1	2.2	0.35	0.63	-0.72	7.0 - 19.0	230
	Dilution Indicator	3.2	3.9	0.38	0.32	8.7	28-58	261
Molasses	Dry Substance	0.44	1.26	0.40	0.62	-0.08	70.2 - 77.3	70
	Sucrose	1.42	2.24	0.93	1.09	0.17	26.1 - 56.7	68
	Pol	1.18	1.64	0.97	0.99	-0.29	29.9 - 57.1	65
Bagasse Final	Moisture	0.79	1.41	0.20	0.40	1.03	43.6 - 49.8	75
	Pol	0.25	0.20	0.25	0.36	1.58	1.8 - 2.7	75

routine yearly update. Validation results for all products assessed at Tully mill during the 2018 season are shown in Table 2.

The validation results for raw sugar samples analysed at Tully show the validation error to be lower than the calibration error with no significant bias indicating that the localised global calibration is fit for purpose for sugar pol, moisture, ash, reducing sugars and fine grain analysis and that the calibrations for sugar colour and dilution indicator require further updates.

The global calibrations for molasses and final bagasse are all showing validation errors higher than the calibration error, except pol in bagasse, with various levels of bias indicating that they would all benefit from a calibration

update. The high coefficients of determination (R²) for molasses pol and sucrose support the results from Victoria mill again, which suggests that one calibration update may be all that is required. The validation results for molasses dry substance are not achieving the accuracy or precision expected and further investigation is required.

The DA1650 laboratory NIR validation results obtained from both the Tully and Victoria mills suggest that the global raw sugar calibration, when applied to a new instrument, will require one calibration update including a

minimum of 30 local samples, before producing results that are fit for purpose. The ability to transfer calibrations to multiple DA1650 instruments was one of the objectives of project 2014051 and the data suggests that the global raw sugar calibration is ready to go.

The DA1650 laboratory NIR validation results obtained from both the Tully and Victoria mill for the global molasses, massecuite, syrup and final bagasse calibrations suggest that further work is required to achieve similar transferability but the results to date are very encouraging. ■

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Small Milling Research Program open for applications through SRA

The milling sector of the Australian sugarcane industry is now invited to submit applications to the Small Milling Research Program (SMRP) investment scheme.

The SMRP is a targeted initiative developed by SRA to work with sugarcane millers and researchers to deliver productivity, profitability, and sustainability outcomes.

This will be the second year of the investment scheme, and SRA is now calling for applications that will allow investment in small projects to develop a product, service, or process that will solve targeted problems in sugar mills and deliver tangible outputs with almost immediate outcomes.

Applications are open from now until 16 February 2019, with applicants able to apply for up to \$75,000 for

their project. All successful projects are expected to be completed within 12 months of their starting date.

SRA CEO Mr Neil Fisher said the scheme was developed during the formation of the SRA *Strategic Plan 2017/18 – 2021/22* and that it aligned with the needs of SRA's milling investors.

"The scheme is an opportunity to invest in lower-cost, short-term, industry-identified and preferably industry-led research," Mr Fisher said. "Each project must have an Australian milling stakeholder as one of the project participants, which ensures that the project is linked to practical Outcomes.

"The investment is included in our current total investment in our Key Focus Area (KFA) of *Milling Efficiency and Technology*."

Mr Fisher said that the scheme would strengthen collaborations between industry and research as well as increase research skills and capability in sugar mills.

"We encourage researchers to collaborate with industry to put forward their best ideas for new projects." ■

For more information, visit the SRA website at www.sugarresearch.com.au/research-investment/small-milling-research-project-initiative/.

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	2014037	QUT	Geoff Kent	01/02/2019
Investigation into modifying pan boiling techniques to improve sugar quality	2015013	QUT	David Moller	30/05/2019
Increasing capacity to undertake cane preparation research through modelling and experimentation	2015018	QUT	Geoff Kent	01/04/2019
Online analysis systems to measure the available nutrients in mill mud	2016019	SRA	Steve Staunton	01/03/2020
Reducing boiler maintenance costs and deferring capital expenditure through improved technology	2016020	QUT	Floren Plaza	01/07/2020
Evaporator Liquor Brix Sensor	2017003	Wilmar	Robert Stobie	31/12/2018
Managing aspects of raw sugar quality in the Australian sugar industry Part II	2017006	Griffith University	Chris Davis	30/06/2019
Investigations to mitigate the effects of juice degradation in factory evaporators on sugar recovery and quality, corrosion and effluent organic loading	2017007	QUT	Darryn Rackemann	01/12/2020
Pan design and operational changes to suit Australian pan stages operating on low pressure vapour	2018012	QUT	Ross Broadfoot	01/10/2021
Evaluation of the Neltec Colour Q for measuring the purity of magma from C centrifugals	2018201	Isis Central Sugar Mill Company Ltd	David Pike	01/05/2019
Improving the impact of evaporator calandria noxious gas bleeding arrangements on evaporator rate and condensate quality at Racecourse Mill	2018202	Mackay Sugar Limited	Brett Bampton	14/05/2019
Understanding the cause of high colour sugar - intrinsic cane colour, extraneous matter or factory practices?	2018203	Wilmar Sugar	Robert Stobie	01/04/2019
Activated Sludge Plants – Optimising Operations and Technology	2018204	Wilmar Sugar	Robert Stobie	01/04/2019
 Key Focus Area 6 (Product diversification and value addition)				
A profitable future for Australian agriculture: Biorefineries for higher-value animal feeds, chemicals and fuels	2015902	QUT	Ian O'Hara	01/02/2019
Manipulation of carbon partitioning to enhance the value of sugarcane (ARC LINKAGE UQ collaboration with SRA contribution)	2016801	UQ (SRA contribution)	Frikkie Botha	30/12/2019

THESE PROJECTS HAVE SUBMITTED THEIR FINAL REPORT:

- Process for making bagasse paper pulp, QUT
- Reviewing and extending knowledge of fibre quality assessment and effects of cane varieties, QUT

THE FOLLOWING PROJECTS HAVE SUBMITTED MILESTONE REPORTS SINCE THE PREVIOUS ISSUE OF MILLING MATTERS:

- Investigation into pan boiling techniques to improve sugar quality, QUT
- A boiler simulator for improved operator training, QUT
- Evaporator Liquor Brix Sensor, Wilmar
- A profitable future for Australian agriculture: biorefineries for higher-value animal feeds, chemicals and fuels (R&D for Profit), QUT
- A non-pneumatic cane cleaning system with no cane loss, QUT
- Integrated standardised training for sugar milling operations, QUT

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