



MillingMatters

Autumn 2017



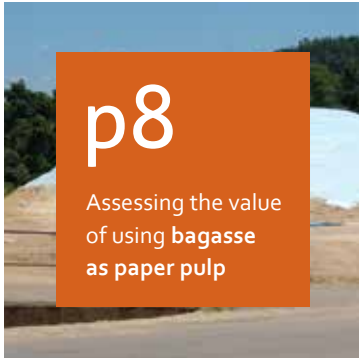
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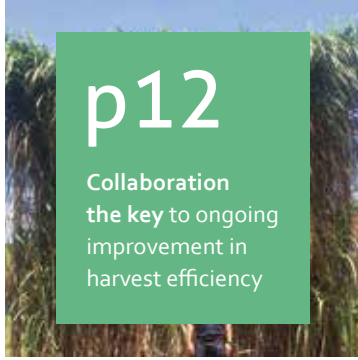
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Variety decisions rest with the local industry through new RVCs



With changes to biosecurity legislation in both Queensland and New South Wales the previous process for the approval and release of sugarcane varieties from Sugar Research Australia (SRA) has changed.

The changes have required several processes to be established and over recent weeks SRA has supported the establishment of these processes under the new system.

As part of the legislative changes the previous power held by the Queensland and NSW departments for the establishment of approved variety lists has been removed.

SRA will develop and release sugarcane varieties that are developed through the SRA breeding program and, based on the recommendations from the Regional Variety Committees, recommended variety lists will be produced. The Regional Variety Committees (RVCs) will replace the previous Variety Approval Committees.

These regional committees are responsible for the decisions around variety release. For that reason, SRA does not chair these meetings, as the decision on variety approval is a decision for the committee (growers, millers, and other stakeholders).

Some of these committees have already met over recent weeks, with the process of the nomination of voting members identified at a regional level.

RVC membership should include representatives from growers, mills and productivity service organisations and include the identification of a chair and secretary within the committee. SRA's role within the RVC will be limited to the provision of relevant technical information to assist the committee in making decisions on particular varieties.

SRA will continue to provide logistic support to the RVCs, through regional variety officers and plant breeders, to ensure an effective transition into the new system.

The Sugarcane Industry Biosecurity Committee (SIBC) will act as the industry committee for biosecurity matters. Its membership consists of industry, research organisations and State government.

In addition to decisions on varieties, the RVCs are also reviewing the current disease thresholds for their region and advise SIBC of the recommendations.

SIBC will consider biosecurity matters impacting the SRA plant breeding program and provide advice to Biosecurity Queensland and the NSW Department of Primary Industries with regard to biosecurity factors such as disease resistance that can determine/limit movement of sugarcane plant material between biosecurity zones.

For more information on Biosecurity contact SRA KFA Leader for Biosecurity, Dr Andrew Ward on award@sugarresearch.com.au or (07) 3331 3319; or for varieties and plant breeding, KFA Leader for Optimally Adapted Varieties, Plant Breeding and Release, Dr Bert Collard, bcollard@sugarresearch.com.au or (07) 4056 4507.

Above: Regional Variety Committees are replacing the former Variety Approval Committees, to determine new sugarcane varieties.



Enhancing the sugar industry value chain

Project details

Key Focus Area:

Multiple

Project name:

Enhancing the sugar industry value chain by addressing mechanical harvest losses through research, technology, and adoption

Project number:

2016/901

Project end date:

2019

A major collaborative and comprehensive research and adoption program is underway to optimise the efficiency of the sugarcane harvest and deliver positive outcomes across the value chain.

How much sugar is not making its way through the mill and earning income for the industry? And how do we re-capture that lost value for the benefit of the value chain?

These are two of the major questions that are being answered as part of an extensive research and adoption project being driven by SRA along with a wide range of collaborators.

The project is called *Enhancing the sugar industry value chain by addressing mechanical harvest losses through research, technology, and adoption* and it is funded by the Australian Government, SRA, and QUT, with very significant in-kind contributions from other organisations.

There is good evidence that, since mechanical harvesting began, significant losses of cane have been occurring and that the level of loss has increased over the years. The extent of these losses is variable and can be excessive.

The key issue is that incremental losses at successive stations in the harvester add up to significant impacts on overall profitability. These mainly occur through extractor losses, chopper losses and pick-up losses.

Adoption project

The Adoption Project will recruit volunteer harvester groups (a harvester operator and the farmers contracted) to participate in collaborative trials and workshops. Approximately 10 percent of harvesting groups will be recruited to the project in 2017 and another 10 percent in 2018.

A comprehensive, day-long demonstration trial on the impact of harvester operation on losses will be organised for each group. These will be conducted using the in-field sucrose loss trailers by SRA, Wilmar or MAPS (with SRA participation in all trials) as well as mass balance trials.

The trials will look at a holistic approach to the entire harvesting operation. The groups will participate in and review the results of the trials and discuss possible responses at facilitated workshops led by SRA Adoption Project team members.

Outcomes will be tailored to each group and could include changed payment arrangements, installation of sensors for harvester monitoring and so on. The trials will also be used for further validation of the online harvest optimisation tool, SCHLOT.

In each area, regional coordinating groups are being set up to provide a link between the Adoption Project and the industry in the field. These will be small groups comprising local industry representatives including millers and growers and other stakeholders as appropriate.



These groups will assist in recruiting volunteer harvesting groups for the project, assist in the logistics of the trials and promote activities on a local level to encourage adoption, with support from the adoption project.

Basecutter project

The impact of mismatched basecutter and harvester forward speeds was evaluated in a trial using a JD 3520 harvester at Isis in November.

During December an early ratoon tillering assessment was carried out, looking at the number, size, distribution and weight of shoots that had emerged after approximately one month.

The assessment involved counting and measuring the number of tillers present and their respective heights in each 0.5 metre sub-plot in each of the trial plots. A sample of shoots from near (but not in) each trial plot were cut, measured and weighed to create a relationship between measured tiller lengths within each plot and the actual amount of biomass present.

Counting the shoots present in each 0.5 metre sub plot allows the team to compare the number of shoots emerging with the number of stalks present at the last harvest. This is intended to allow an assessment of whether the number of 'holes' in a row changed with different harvesting treatments as well as how the plant's tillering behaviour responds to different harvesting treatments.

Substantial work has also been going into designing the hydraulic and control systems to allow control of basecutter and front end speeds for the trial.

Work has also been underway to prepare fitting harvesters involved in the project with the hydraulic and control system upgrades required for the project.

Cane cleaner

A mobile cane cleaner has been under construction and will be used for large-scale trials in the 2017 season.

In mid-January project leaders Steve Ginns and Brian Robotham travelled to Finch Engineering at Kaimkillenbun to get an update on the construction of the mobile cane cleaner.

The project leaders have raised points for consideration regarding the safe transport and operation of the cane cleaner with the manufacturers, NorrisECT and Finch Engineering.

It is expected that the trials with the cane cleaner will involve large tonnages of cane from the cane cleaner, low loss harvesting and other treatments to study the impact of clean cane on the whole value chain.

This project is supported by funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit programme.

Milling trials assess soft canes



When a new variety is approved for release for a region within the Australian sugarcane industry, a range of factors are considered to assess how it will perform for sugarcane growers and millers.

> For more detail on recent changes to the variety approval process, see the story on page seven.

One of the important characteristics that impacts how a variety is processed through the mill is its fibre characteristics – that is, where it sits on the spectrum between being a soft cane or a hard cane.

If a variety sits too far at either end of the spectrum, this causes issues for milling the cane. For example, some people in the industry may remember old soft (or low fibre) varieties such as Q87 and Q103 and the associated stories of lights dimming in factories as these varieties were milled. In recent years, new varieties with low fibre characteristics, SRA1^ϕ, SRA4^ϕ and QC04-1411, were released or approved for release in several regions.

Due to concerns that these varieties are too soft in fibre to be milled, and that this would impact value chain profitability, a small research project took place in 2016 to investigate this further and compare these varieties against standard varieties.

The project was led by Dr Geoff Kent at QUT, funded by Sugar Research Australia (SRA), and SRA Bundaberg-based plant breeder Roy Parfitt has been a major collaborator.

Recent varieties

According to the trials, SRA1^ϕ had a low fibre content of typically 10% and an impact resistance lower than the minimum criterion considered for normal canes.

The other two varieties, SRA4^ϕ and QC04-1411 had relatively normal fibre content of about 14%. While their impact resistance was low, it was still within the normal range. Shear strength is the other fibre quality parameter with a defined normal range.

The shear strength of all three varieties was within the normal range, with SRA1^ϕ having the lowest values. The final fibre quality parameter, short fibre content, does not have a defined normal range.

It is noted, however, that of the 35 results examined, the two highest values were for QC04-1411 and the next two highest values were for SRA1^ϕ (Q240^ϕ was the fifth highest and also had a shear strength lower than QC04-1411).

Milling issues

Dr Kent said that while the soft fibre varieties were able to be processed, there were some significant problems that were highlighted during his experiments.

This included mill feeding problems and stalling the elevator at one mill, and large quantities of froth overflowing the drains at another mill after about 15 minutes, which would have eventually led to the mill needing to stop operation. There were also further issues such as steam pressure reduction in another mill, due to increases in bagasse moisture content.

“Not all factory boilers can withstand significant increases in bagasse moisture content,” Dr Kent said.



Above: SRA1^ϕ in the field. **Opposite page:** Dr Geoff Kent, QUT, conducting trials at the Isis mill in October 2016.

“The experience at one mill processing SRA1^ϕ resulted in a rapid drop in steam pressure that only avoided a boiler shutdown because SRA1^ϕ was only processed for 15 minutes.”

In light of the research, Dr Kent said that the yield and CCS of such varieties needs to be considered in relation to their practicality and costs with processing and capital upgrades.

Some mills have suggested that improvements that would be required to process such varieties would run into many millions of dollars, which they could not afford. Other regions at this stage are continuing with release of SRA1^ϕ, albeit watching the research closely.

“We have also found since starting this project, that some of this information hadn’t been making its way to SRA’s plant breeding program, so we have also identified the opportunity to improve that communication,” he said.

The current process

The fibre quality of cane is also considered in relation to a range of other traits including yield, CCS, disease resistance, and ability to ratoon.

In the past, BSES and the Sugar Research Institute developed standard tests that measured a range of characteristics in relation to fibre, and use of these tests has continued at SRA.

These particular new varieties were measured to be near the edge of the acceptable parameters, or just outside the parameters in the case of SRA1^ϕ.

The decision to release the varieties continues to sit with the regional committees. SRA is no longer promoting SRA1^ϕ, however the decision to release the variety remains with local regional variety committees.

Further research

A new project is proposed to begin on July 1 with the title *Reviewing and extending knowledge of fibre quality assessment and effects of cane varieties*, also led by Dr Kent with collaboration from Mr Parfitt. At the time of writing, it was under consideration by the SRA Research Funding Panel.

The project will extend the work of the 2016 research by reviewing historical fibre quality measurements (FQM) and understanding the variability within varieties, the impact of different mill arrangements, and consider how FQM could guide variety development. It will also look at how to best present FQM information for selection of new varieties.

This could enhance the feedback for plant breeders on the effect of varieties on mill operation and performance. It will also review the “safe range” FQM.

For more information contact Dr Geoff Kent on (07) 3138 1185 or Roy Parfitt on (07) 4155 7428

Assessing the value of using bagasse as paper pulp



Project details

Key Focus Area:

KFA6

Project name:

Process for making bagasse paper pulp

Project number:

2012/053

Chief investigators:

Dr Thomas Rainey and Prof Bill Doherty

Project end date:

01/04/2018

A major research project is investigating the potential to turn bagasse into paper pulp, which would help greatly lift the value of a resource that is put to an otherwise low-value use.

In overseas sugarcane industries, using bagasse to create paper pulp is not uncommon. However, there are challenges for the Australian industry to overcome before it could be feasible for adoption.

For example, overseas processes use chemicals that are unacceptable for use in the context of the Australian sugar industry's proximity to the Great Barrier Reef. Also, the lengthy geographic spread of our industry also means a more economic method would be required, as traditional pulping methods usually require many millions of tonnes of fibre.

The aim of this research is to modify the current potash-based processes to achieve a high quality bleached pulp and also a black liquor fertiliser by-product. It is hoped that a new process would reduce the capital cost of a pulp mill by 20 percent, with the possibility of further reductions by using existing mill boiler capacity.

This is where the research from QUT steps in, with a long-term project that began in 2012 and is investigating the potential for new methods, as well as assessing the fertiliser co-product that is created. The research is led by Dr Thomas Rainey and Prof Bill Doherty from QUT and is funded

by SRA. The industry partner is Mr Les Nielsen from EnviroFibre.

The recent work is occurring in conjunction with Central Pulp and Paper Research Institute, India, with 300kg sent to India to test the new process. This followed lab experiments in Australia.

The results indicated that the paper pulp could be useful as high-value bleached pulp and the researchers said the "process performed extremely well at scale-up".

Financial modelling has also indicated an internal rate of return as high as 30.7 percent over 15 years, based on 100,000 tonne/year of bagasse.

The fertiliser co-product trials have been run by Farmacist. Early pot trial results in a range of soils and crops were that the black liquor performed similarly to conventional fertiliser. Soils included sand, vertosol clay and heavy clay.

Early indications were that the black liquor stimulated bacteria population, which could indicate that it improves soil health.

"It is worth noting that if a paper pulp plant is co-located to a sugar mill, the black liquor could be combined with mill mud, bagasse fly ash and biochar to produce pelletised slow release fertiliser," Dr Rainey said.

For more information contact Dr Thomas Rainey, t.rainey@qut.edu.au; Prof Bill Doherty, w.doherty@qut.edu.au; or Mr Les Nielsen, diales@internode.on.net.

Upcoming SRA Milling Webinars



The SRA Milling Webinar series provides milling staff and other industry stakeholders with the opportunity to learn more about milling research topics and projects, and also discuss the information being presented.

It is also an opportunity to provide input and feedback. The series also allows attendees from any cane-growing region to participate without the need to travel – right from the desk in your office.

Every webinar is recorded and hosted on the SRA website to allow those who weren't able to participate on the day to watch it later or, for those who did participate, to view it again.

To join our webinars you will need a stable internet connection, headphones or speakers if you want to listen over the Internet, or a telephone (if you plan to listen via teleconference). You will also need a recent version of Adobe Flash Player.

If you would like to receive email invitations for our webinar series, simply click 'Subscribe to Updates' on the home page of our website www.sugarresearch.com.au and select the Milling Webinars option.

Upcoming webinars

Determine the optimum tube dimensions for Robert evaporators through experimental investigations and CFD modelling

With Ross Broadfoot

Assessment of new soft cane varieties

With Geoff Kent

Recent 2017 webinars

(Recorded and available to view)

Improved modelling of wet scrubbers

A profitable future for Australian agriculture: biorefineries for higher-value animal feeds, chemicals and fuels



New MSF partnership to help the Reef



MSF Sugar is partnering with the Australian Government and growers to improve the quality of the water entering the Great Barrier Reef.

The Australian Government has announced funding of \$4.5 million for the delivery of MSF Sugar's Project Uplift Farming Systems Initiative.

The initiative will be delivered over the next five years as part of the fifth investment phase of the Australian Government's Reef Trust, which will be supplemented by an estimated \$12.8 million co-investment by MSF Sugar and growers engaged to participate in the initiative.

MSF Sugar CEO, Mike Barry, said the partnership is significant as "The Project Uplift Farming Systems Initiative represents a new and unique approach to engaging with cane farmers to improve on-farm practices".

"It is unique as the project is an industry-led initiative being driven as a partnership between MSF Sugar, Sugar Research Australia (SRA) and the sugarcane industry, who together aim to improve on-farm nutrient management practices and therefore improve the quality of water entering the Reef lagoon," Mr Barry said.

Over the next five years, MSF Sugar will establish 36 farming groups who will be assisted in the transition from existing farming systems to new, more efficient farming systems that lead to Smartcane BMP accreditation at 'above industry standard'.

The new farming system is based on the recently developed SRA Farming System which uses legume crop rotation, green cane trash blanketing, minimum tillage and controlled traffic to minimise soil compaction and reduce farm water runoff.

Under the project, the majority of grower groups invited to participate will be located in the Wet Tropics with a smaller number in the Burnett Mary region. The Reef Trust grant funding will be delivered in conjunction with loan financing to be provided by MSF Sugar and will leverage significant private investment and contributions from participating sugarcane farmers.

In addition to being a unique industry approach, according to MSF Sugar's General Manager Agriculture, Trevor Crook, the project is significant. The Project Uplift Farming Systems Initiative builds on a successful pilot project currently underway in far north Queensland's Mulgrave area that has been funded and led by MSF Sugar. Through the pilot, harvest figures on trial blocks have been shown to produce exactly twice the return to growers in terms of dollars per hectare year on year, while minimising fertiliser runoff and other environmental impacts.

"Through the pilot, we demonstrated the importance of reviewing and updating cane farming systems. Using the SRA Farming System the pilot farms have vastly improved water retention year on year which has had a positive impact on water runoff," Mr Crook said.

MSF Sugar has a vision to transform its mills from sugar manufacturing to bio-technology hubs where a multitude of different products will be produced. Achieving this goal requires a stable and resilient cane supply network which can only be achieved if the sector remains viable and profitable.

Above: Mulgrave grower Paul Gregory is one farmer who has been involved in MSF's Project Uplift.

Improving value chain efficiency through cane cleaning



Research is investigating new technology that could transform parts of the sugarcane harvesting and milling process, through a potential new cane-cleaning technology.

Project details

Key Focus Area:

KFA4

Project name:

A non-pneumatic cane cleaning system with no cane loss

Project number:

2014/035

Chief investigators:

Neil McKenzie and Floren Plaza

Project end date:

01/12/2017

The technology has been developed by QUT and is being investigated as part of a research project that is looking to increase the scale of the new cane cleaning technology, and also assess its feasibility and practicality for use at sugar mills.

It is a new type of technology that does not use air to clean the cane. By approaching it from a different angle, it means that the technology avoids many of the problems that come with air-cleaning of cane, particularly cane losses. It will also work well with both dew-soaked or rain-soaked sugarcane as well as dry cane.

The researchers also hope that the new technology will use less energy and prevent problems with dust emissions.

Being able to clean cane in this way has the potential to open new doors for the industry to harness more value from the sugarcane crop.

Once the trash is separated from the cane, it could allow for harnessing greater value from the whole sugarcane crop, provided that greater value can then be extracted from the trash. It also offers advantages in much cleaner cane supply into the sugar factory for processing.

This research, which is funded by Sugar Research Australia (SRA), is also

synchronising with a Rural R&D for Profit project that is looking at optimising the harvesting value chain, funded by the Australian Government Department of Agriculture and Water Resources.

The research is currently in the phase of increasing the scale of the cane-cleaning technology, which cannot be described in this article in order to protect the intellectual property of the project. It has gone from a small scale to a scale that has allowed for throughputs of up to 6.5t/hour and separation efficiency of almost 60 percent, but it is very early days, according to the researchers. There was no cane loss throughout the range of tests.

These tests have already signalled some improvements that could be made, ahead of a plan to increase it to a semi-commercial scale with a target of 150 t/hour with acceptable trash separation. Before then, though, the researchers said that they needed the existing machine to show improved performance in throughput and cleaning efficiency. Work on the project has paused whilst the researchers seek feedback from the industry, and a mill site to carry out further testing of the existing machine.

For more information contact Dr Floren Plaza, QUT, (07) 3138 1185 or f.plaza@qut.edu.au.

Collaboration the key to ongoing improvement in harvest efficiency



Excessive harvesting losses are not just an issue in Australia, but also in overseas industries. SRA Adoption Officer Phil Patane travelled to the Brazil and the US to learn more.

The Australian sugar industry has been given a valuable insight into factors that drive the design decisions of the two major harvester manufacturers, via a recent trip to Brazil and the US. SRA Adoption Officer, Phil Patane, made the trip in 2016 as part of his extensive work with the Australian industry to optimise the harvest. He visited the Case IH factories in Sorocaba and Piracicaba in Brazil and John Deere's main factory in Thibodaux in Louisiana.

Here are Phil's top five lessons

1

The Australian market for harvesting machinery is small. It represents less than 3 percent of harvesters sold in the world, meaning that if Australia seeks to influence design change, then it will be crucial to work with industries such as Brazil.

2

Better integration between research and the commercial manufacturers is required. Extensive Australian research over 20 years has shown the opportunities for improving harvesting efficiency, but there is potential to improve connections between that research and the manufacturers.

3

Excessive harvesting losses are a key issue not only within the Australian sugar industry but in Brazil and the US as well. Although ground speed and pour rates in the US and Brazil are significantly lower than those in the Australian industry, they continue to face the same challenges of matching row profile to basecutter setup.

4

The Brazilian harvesting market is predominantly dictated by fuel consumption and performance. Current and past research indicates that increased fan speed subsequently results in greater cane/juice loss, as well as an increase in fuel consumption. This is an area that SRA harvesting research will continue to address in next season's trials focusing on assessing cane/sugar loss and monitoring fuel consumption.

5

The Australian sugar industry needs to continue its high level of harvesting research to enable us to keep our competitive edge in the worldwide market. Focus needs to remain on doing the best possible job with current machines and retro-fittable improvements which are economically viable for the Australian industry. This includes working with aftermarket suppliers.



Top left: Phil visiting John Deere's facilities in the United States.

Top right: Phil Patane at the Case IH harvesting manufacturing plant in Piracicaba, Brazil.

Left: Harvesters under construction in Brazil.

Opposite page: Some very big cane at the Programa Cana do IAC in Ribeirão Preto - São Paulo.

Next steps

Phil says that the trip has already strengthened ties between research and the overseas manufacturers, with both companies keen to collaborate in the future.

"Continued contact with Case IH and John Deere will allow Australian research to be trialled and, hopefully, adopted in the future," Phil said.

"An example of this is that Case IH has started to investigate the potential benefits of optimising the feedtrain on the 8000/8800 series harvester.

"John Deere have reduced maximum fan speed setting to 970 RPM on the new model CH 570."

Other modifications include the removal of the "football rollers" back to standard individual rollers and an option of changing to an additional 100 cc pump to speed-up basecutters to 700 RPM.

"Although this is a step in the right direction, these are only minor improvements in regards to minimising cane loss and improving machine performance," he said. "Other bigger issues, such as extractor loss and front-end design improvement need to be continuously communicated to the manufactures. It was the "feeding green cane" project in Australia that drove the development of the JD 3520."

On-going contact with the engineering and marketing division of Case IH and John Deere will also allow Australia better understand future design change to adapt to this development.

Global Product Marketing Manager Case IH – Sugarcane, Billy Lawson, said the visit strengthened the global sugar industry.

"Overall, our industry's size is small, but we experience a diversity that is perhaps unmatched in the world cash-crop arena," Mr Lawson said.

"Visits from groups such as SRA foster an open exchange of ideas and cultural practices that are imperative for continued growth. Case IH was happy to host Phil and we remain ready to open our doors again to anyone from SRA."

The study tour was made possible through a Sugar Travel and Learning Award, through SRA's Research Funding Unit. The purpose of these awards is to provide career development opportunities for sugar industry professionals, and to also provide benefits to the Australian industry.

For more information contact Phil Patane at ppatane@sugarresearch.com.au or (07) 4776 8202

Presenting the latest milling research to stakeholders



SRA and QUT recently worked together to provide a series of research updates for the milling sector across the Australian industry.

The purpose of these workshops was to give milling stakeholders an overview of the full scope of milling research being undertaken by SRA and QUT. This included projects funded by SRA as well as QUT projects funded through other grants and initiatives.

Presentations were provided by Dr Geoff Kent, QUT, Prof Ross Broadfoot, QUT, and Ms Eloise Keeffe, SRA.

This research investment from SRA is part of two of SRA's eight Key Focus Areas (KFA5: Milling efficiency and technology; and KFA6: Product diversification and value addition).

In addition, SRA also invests in other development work to benefit the milling sector through KFA8: Capability development, attraction and retention.

This includes initiatives such as scholarships, PhD research, travel and learning awards, and early and mid-career researcher awards. For more information on these initiatives and eligibility criteria, please visit the SRA website, www.sugarresearch.com.au.

Above: Wilmar and Mackay Sugar workers at one of the research updates (Racecourse).

Right: Dr Geoff Kent with QUT provides an update on the Rural R&D for Profit project *A profitable future for Australian agriculture: bio-refineries for higher-value animal feeds, chemicals and fuels*. This project is funded by SRA and the Australian Government Department of Agriculture Water Resources through its Rural R&D for Profit programme.

SRA also provides research updates to the milling community through the SRA milling webinar series (see story page nine). Updates are also provided through a fortnightly email newsletter from SRA.

Research updates on some of this work will also be provided at the forthcoming Australian Society of Sugarcane Technologists (ASSCT) conference in Cairns from May 3 to May 5. This event is also featuring a day on Tuesday May 2 that includes discussion of sugarcane manufacturing topics.

Discussion will include boiler safety, global boiler trends and new technology in boiler control; aspects of milling train efficiency; maximising sugar recovery from molasses; meeting challenges in process training; energy and renewables policy; and power systems maintenance.

To subscribe to updates from SRA, visit the SRA website.



Project Title	Project Number	Principal R&D Provider	Chief Investigator	End Date
Key Focus Area 5 (Milling efficiency and technology)				
Determine the optimum tube dimensions for Robert evaporators through experimental investigations and CFD modelling	2012/054	QUT	Ross Broadfoot	01/05/2017
Improved modelling of wet scrubbers	2012/055	QUT	Anthony Mann	01/05/2017
A retrofit to a mill to reduce its operational and maintenance costs	2013/059	QUT	Geoff Kent	02/08/2017
Reducing the maintenance costs of mill rolls	2013/060	QUT	Geoff Kent	01/08/2019
Real time harvest and transport system	2014/037	QUT	Geoff Kent	01/09/2017
Improving mill efficiency through rapid analysis methodologies	2014/051	SRA	Eloise Keeffe	01/08/2017
Managing aspects of raw sugar quality in the Australian sugar industry	2014/052	SRA	Eloise Keeffe	01/08/2017
Investigation into modifying pan boiling techniques to improve sugar quality	2015/013	QUT	David Moller	01/06/2017
Increasing capacity to undertake cane preparation research through modelling and experimentation	2015/018	QUT	Geoff Kent	01/05/2018
Develop a blueprint for the introduction of new processing technologies for Australian factories	2015/043	QUT	Ross Broadfoot	01/09/2017
A boiler simulator for improved operator training	2016/001	QUT	David Moller	01/07/2018
Online analysis systems to measure the available nutrients in mill mud	2016/019	SRA	Eloise Keeffe	01/04/2020
Reducing boiler maintenance costs and deferring capital expenditure through improved technology	2016/020	QUT	Floren Plaza	01/07/2019
Key Focus Area 6 (Product diversification and value addition)				
Process for making bagasse paper pulp	2012/053	QUT	Thomas Rainey	01/04/2018
A profitable future for Australian agriculture: biorefineries for higher-value animal feeds, chemicals and fuels	2015/902	QUT	Ian O'Hara	01/04/2019

The following projects have submitted milestone reports since the last edition of *MillingMatters*:

- Improved modelling of wet scrubbers, QUT
- Real time harvest and transport system, QUT
- Improving mill efficiency through rapid analysis methodologies, SRA
- Managing aspects of raw sugar quality in the Australian sugar industry, SRA
- Increasing capacity to undertake cane preparation research through modelling and experimentation, QUT
- Reducing boiler maintenance costs and deferring capital expenditure through improved technology, QUT



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