Sugar Research Australia

Cane Matters

Autumn 2024

CONTENTS

ISSN 2653-4843 (Online) ISSN 2653-4835 (Print)

(Cover page) Pictured (L-R) SRA Far North District Delivery Officer Paul Calcino, Far Northern cane growers Luke Cabassi and Jason Salvetti, Burdekin growers Ryan Brownlie and Aaron Linton, SRA Burdekin District Manager Terry Granshaw, SRA District Manager Central Dylan Wedel and Mackay growers Ross Nicholson and Tony Bartolo joined a bus tour of the Burdekin in February where cane growers from the Burdekin, Bundaberg, Mackay and North Queensland viewed new farm technologies and advances in irrigation practices.

Editorial contributions by Sonia Campbell, Christine Walker, and Mike Ebner. Design by Eli Lin.

Acknowledgements: *SRA acknowledges and thanks its investors, including levy payers (sugarcane growers and millers), the Commonwealth Government and the Queensland Government.*

Queensland Government

Australian Government
Department of Agriculture, Fisheries and Forestry

A MESSAGE *from our* ***Interim Chief Executive Officer***

Sustainability remains the forefront of our industry's reputation.

The Australian sugar industry has enjoyed an excellent reputation for the quality of its products and has built international markets based on this.

Moreover, major customers such as the Coca-Cola Company and the global standard for sugarcane, Bonsucro, have recognised our sustainability in a number of areas of operation.

Most growers are proud of the fact that they are increasingly using sustainable land management practices based on sound scientific insights about soil health and the judicious use of inputs.

But the pressure is on from consumers, governments, financiers and international markets for growers and millers to prove our sustainability credentials to the world.

It is now time for the industry to set goals and targets based on an accurate understanding of where we need to improve our sustainability.

Last year the Federal Government allocated $302 million to a Climate Smart Agriculture package nationally to focus on:

- climate adaptation projects that trial, demonstrate and implement agricultural practices for effective natural resource management.
- improved national data on soil to help inform farmers and land managers ($36 million).
- New National Soil action plan in partnership with states and territories ($20 million).
- An expansion of work around collection and analysis of climate data and how it impacts on farmers ($38.3 million).
- The further development of an Australian Agricultural Sustainability Framework ($5 million).

In response to these developments, SRA is seeking to adopt a digital data framework to meet future and existing sustainability reporting requirements for the Australian sugarcane industry going forward.

In a recent SRA and Queensland Department of Agriculture and Fisheries (DAF) co-funded project, we developed a sustainability framework aimed at measuring and evaluating the environmental performance of the Australian sugarcane industry. However, that project recognised the need for a more structured data collection framework to position the industry as a leader in this area.

We will now work with an across-industry working group to bring about this framework which can be readily embedded in industry operations with confidence in the simplicity of record keeping, the accuracy of auditing and the security of data.

SRA has received expressions of interest and tenders from qualified and experienced organisations to develop the framework by the end of 2024. More developments will be reported here as they occur.

Shaun Coffey
Interim Chief Executive Officer

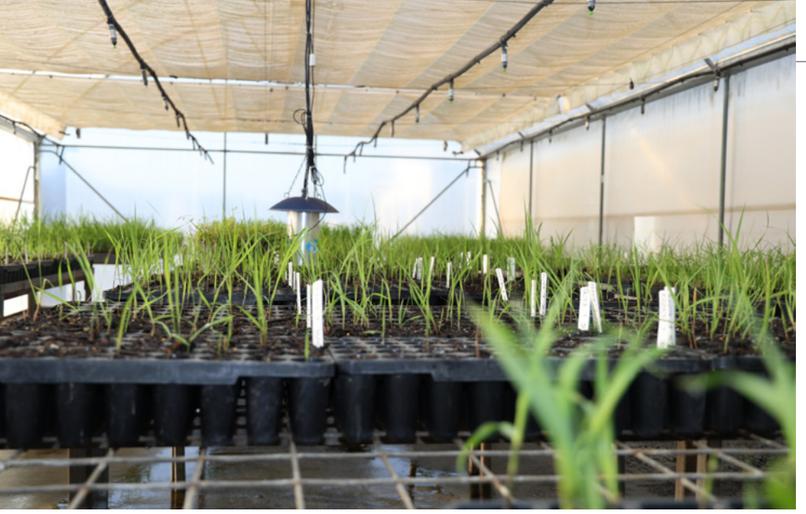
INTRODUCING SRA'S NEW DIRECTORS

Chris Bosworth

Chris Bosworth is a sugarcane grower in the Herbert River district with more than 45 years' experience and commitment to the sugarcane industry. He has held numerous board positions in the industry, representing growers locally and more broadly. He is a current Director of the Queensland Cane Growers' Organisation (QCGO) and is Chair and Director of CANEGROWERS Herbert River. He is committed to supporting SRA's role as the industry's peak research body.

Donna Campagnolo B.Sc.

Donna Campagnolo is a third-generation sugarcane farmer, holding a Bachelor of Science degree from the University of Queensland. She has an extensive background in research, development and extension, and biosecurity, not only within the sugar industry but also the public sector. Donna's experience has given her a deep, practical understanding of legislative processes and procedures, particularly regarding Australia's potential risks in biosecurity. Donna has played significant roles on various industry and sporting committees, giving her a unique set of skills to drive SRA's strategic direction.



Variety breeding.

STRONG GROWTH IN NEW VARIETY ADOPTION

Accelerated delivery of high-performing varieties is crucial to ensuring the Australian sugarcane industry remains productive, sustainable and profitable.

Each year SRA plant approximately 100,000 new potential varieties as seedlings which is the beginning of a 10-year testing regime that characterises productivity and reliability across ratoons in the target production environments, disease resistance profiles, CCS levels, and fibre quality characteristics.

Regional Variety Committees review performance data and approve the release of new varieties that offer a commercial advantage to the local industry and meet the minimum disease standards agreed with the Sugarcane Industry Biosecurity Committee.

SRA develops sugarcane varieties and supplies clean seed to Productivity Services Organisations (PSOs) for propagation and retail distribution to growers, predominantly as billets, but also whole stalks and one-eye sett derived plants. SRA also supplies tissue culture plantlets either direct to growers or via PSOs.

Approved seed sales are critical to the adoption of new varieties and disease management through provision of disease-free planting material of established varieties.

New data confirms strong sales growth

Releasing new seed sale data, which reveal a significant increase in new variety sales since 2018, SRA General Manager of Variety Development Dr Jason Eglinton said there were a number of changes made to achieve increased variety adoption.

A range of improvements have been implemented across the breeding program including new technology and more aggressive tactics. Continuous improvement in the performance information provided to growers is important to build confidence in adoption of new varieties. Improvements in the Approved Seed programs conducted by PSOs have also played a major role in ensuring the new varieties are available to growers.

"The significant improvement in Approved Seed sales is a testament to the professionalism and diligence of the productivity services staff that support the industry. Achieving this result is also a positive reflection on the relationships between SRA and the PSOs," Dr Eglinton said.

"There was a 580% increase in sales of new varieties from 2018 to 2022 and this new benchmark was maintained in 2023.

"The improvement from seed planting of 150 hectares of new varieties in 2018, to growers buying sufficient seed, to plant 852 hectares in 2023 is a major increase in the adoption of new varieties."

"There was a 580% increase in sales of new varieties from 2018 to 2022 and this new benchmark was maintained in 2023."

Dr Jason Eglinton, SRA General Manager Variety Development.

Annual reporting

In 2018 a reporting regime was instituted for PSOs to provide SRA with annual reports on seed sales. This was an initial benchmarking exercise with comparative performance information shared with the PSOs. This now serves as a baseline reference to monitor improvements in the supply and demand of SRA varieties. The results from the 2023 sales program are shown in Figure 1 (right).

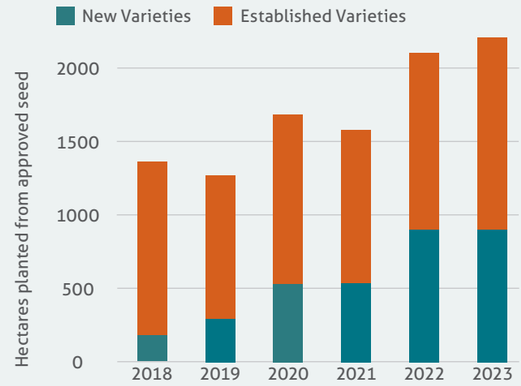


Figure 1. Approved seed sales from 2018 to 2023. *New varieties are defined as up to seven years from their first release decision by a Regional Variety Committee. Sales numbers for billets, whole stalks, one eyed setts, and tissue culture plantlets are converted to area based on industry standard planting rates.*

Who's leading the pack?

The new varieties leading the increase in grower adoption are SRA23$^{\Phi}$, SRA26$^{\Phi}$, SRA28$^{\Phi}$, SRA21$^{\Phi}$ SRA9$^{\Phi}$, SRAW30$^{\Phi}$, SRA32$^{\Phi}$, and SRA36$^{\Phi}$. Figure 2 illustrates the strong portfolio of new varieties is driving sales across all mill areas.

Dr Eglinton believes a long-term average of 20-30% in new variety sales annually is a reasonable expectation.

"Maintaining the current scale of sales now becomes the objective rather than anticipating annual growth," Dr Eglinton said.

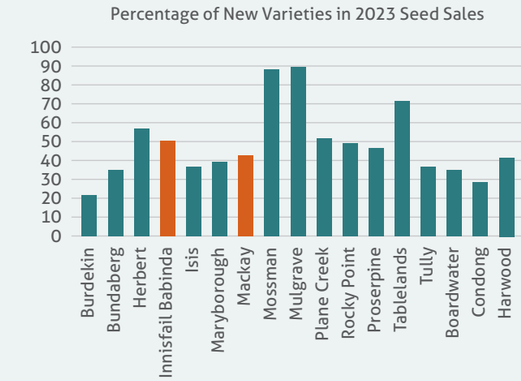


Figure 2. Proportion of new varieties in total sales for each PSO in 2023. *Estimates based on the past three years are presented for Mackay Area Productivity Services and Innisfail Babinda Cane Productivity Services.*

Seed sales per milling area

Planting opportunities are influenced by seasonal conditions and some of the annual fluctuations in seed sales in different milling areas are reflective of weather impacts.

Significant improvement in PSOs' seed sales over time is evident in NSW, the Burdekin, and the Herbert. Modest but important increases have been achieved in Mackay, Tully and Mulgrave mill areas.

Commercial crop production data

Dr Eglinton added that 2023 commercial crop production data for new varieties was currently being collected and collated.

"The production from new varieties is expected to increase to around 10% of the crop in 2023. This will likely be led in the Central region at more than 20% with the variety SRA9$^{\Phi}$ being the key driver," he said.

"The Northern region is expected to exceed 10% production of new varieties with SRA26$^{\Phi}$ and SRA15$^{\Phi}$ being the fourth and fifth largest varieties at the South Johnstone mill respectively, and SRA26$^{\Phi}$ being the third largest variety for the Mulgrave mill in 2023.

"The Herbert region will closely follow the North with strong adoption of SRA26$^{\Phi}$ and SRA28$^{\Phi}$. The translation of recent SRA23$^{\Phi}$ sales into commercial production in the Burdekin and future sales of SRA32$^{\Phi}$ and SRA34$^{\Phi}$ will be key to driving new varieties up to 15 – 20% of total production."

MAPS productivity officers Andrew Dougan (left) and Mikayala Bowman conduct a plant source inspection for a local grower.

Leaf sheath biopsy (LSB) collection: MAPS has recently adopted the LSB method as one of their methods for detecting RSD. The process offers a less labour intensive option for sampling larger plots.

INVESTING IN YOUR BUSINESS' FUTURE WITH APPROVED SEED

Why use approved seed?

Diseases such as ratoon stunting disease (RSD), Fiji leaf gall, smut, leaf scald, chlorotic streak and mosaic can be transmitted in planting material from one block to another, reducing the crop yield significantly.

Approved seed should be planted into blocks that have had legumes or trash blanket fallows. It is important to keep the fallows free from sugarcane volunteers – never plant approved seed into plough out/ replant blocks.

Sourcing approved seed

Approved seed is produced under strict quality assurance guidelines established by SRA and implemented by your local productivity services organisation (PSO) in their propagation and distribution blocks.

All cane planted into seed plots for multiplication is supplied by SRA to the PSOs.

Before release, it is treated and screened for diseases. Standard treatment for diseases such as RSD, smut, leaf scald and chlorotic streak involves cold-soak, long hot/water treatment (CSLHWT): 40 hours in cold water, followed by hot water at 50°C for three hours (within six hours of the cold-water soak).

Tissue culture is another way of obtaining approved seed. It is an effective way of obtaining unlimited quantities of a new variety for early propagation and bulking up for commercial production.

"Mackay Area Productivity Services (MAPS) prides itself on being able to give the highest quality of clean seed material to our growers," Shane Hare, MAPS Productivity Officer explains.

"We achieve this high standard by following the strict guidelines and procedures set out by SRA," he said.

These guidelines and procedures include:

- Cold Soak and Hot Water Treatment of any new SRA varieties that come on farm.
- Vigorous pest and disease walking.
- RSD sampling of every row at intervals of 20 paces.
- Stringent sterilisation of machinery and equipment.

"As we move to a greater demand for clean billet material, we are conscious not to take shortcuts or drop our standards in quality control. We've also recently adopted the new leaf sheath biopsy (LSB) method that SRA developed for RSD detection," Shane said.

Bulking up approved seed

As a general guide, a factor of 10 can be used when bulking up approved seed. One tenth of one hectare (1 ha) planted to whole stick, billets or tissue culture will produce one hectare of seed. If the one hectare block produces 100 tonnes of cane per hectare (TCH), it will supply 10 hectares of seed if your planting rate is 10 TCH in billets. Only material from plant and/or first ratoon should be used for propagation material.

Approved seed is produced under strict quality assurance guidelines established by SRA and implemented by your local productivity services organisation in their propagation and distribution blocks.

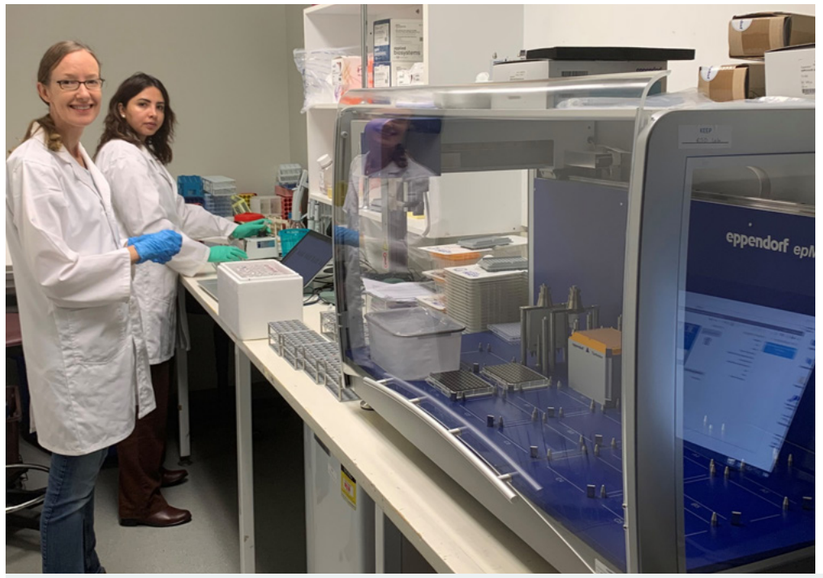
Mackay Area Productivity Services staff thoroughly inspect every row of cane before it is approved for distribution to growers.

Ensuring you're planting high quality material

"Regular clean seed renewal and healthy plant cane establishment is the foundation for long term productivity and sustainability in your ratoons," Indiana Zarb, MAPS Productivity Officer said.

"Our team aim to inspect each grower's plant sources prior to planting. It is checked visually for seed quality and condition, for any mixed varieties and for pests and diseases, including RSD."

SRA operates the RSD assay laboratory where the most up-to-date DNA tests are used to detect the presence of the RSD-causing bacteria in the samples, handling most of the samples collected across the industry.



RSD lab technicians Edwina Mills (left) and Noelia Neira (right) in SRA's dedicated RSD sample room.

Chuong Ngo, SRA Molecular Plant Pathologist, explains the process of detecting the disease.

"The bacteria that cause RSD are readily detected in both xylem sap that has been extracted from cane stalks and leaf sheath biopsies (LSB). Sampling poor stools and volunteers from different parts of a field can increase the chances of detecting the disease.

"Xylem sap is collected by blowing compressed air through billets using approximately 16-20 stalks per sample. LSB samples are collected by taking one leaf sheath disc per stalk from 50 stalks.

"Although one in ten samples from growers' fields have been found to have RSD, it should be noted that there are around 80,000 stalks/ha in a crop – so a negative test result from just 16-50 stalks won't guarantee there is no disease present in that crop."

TAKE HOME MESSAGES:

1. Obtain approved seed every year.
2. Sterilise planter and plant in fallow ground (eliminate volunteers).
3. Only plant commercial fields with seed cane that is plant or first ratoon and no more than five years from hot water treatment. Ensure your productivity services officer performs a plant source inspection and sends a sample to the SRA labs to test for RSD.
4. Sterilise cane knives, harvesters, plant cutters, trash strippers and planters when cutting and planting seed cane. Wash implements thoroughly, spray with Steri-Max or 70% methylated spirits and leave for five minutes.

Pictured (L-R) Mulgrave grower Richard Hesp and son Hayden Hesp, with SRA District Manager Far North Gavin Rodman and SRA Northern Variety Development Manager Dr Felicity Atkin.

HIGH DEMAND FOR SRA37$^{\Phi}$ IN THE NORTH

Released in 2022, SRA37$^{\Phi}$ has improved ratooning ability and disease resistance for Pachymetra and smut when compared to Q208$^{\Phi}$.

SRA37$^{\Phi}$ was the highest selling variety from Approved Seed Plots in 2022 for the Mossman, Mulgrave, and South Johnstone mill areas.

Solid demand has also been seen in Tully since its release, so Northern growers will begin to get some commercial experience with SRA37$^{\Phi}$ this year.

One of those growers is Richard Hesp. The Mulgrave cane farmer is usually one of the first to try a new variety when it's released by SRA in the region, and SRA37$^{\Phi}$'s Pachymetra resistance offered additional incentive.

"At the moment, I'm probably leaning towards Pachymetra resistant varieties. But, I try them all," Richard said.

"If SRA recommends a variety for this area, I'll get my allocation of sticks and I will plant it out, and usually I will try it in a couple of different spots and just see how it goes."

Richard now has almost 10 ha of SRA37$^{\Phi}$ planted and ratooning across multiple farms, in a variety of soils and growing conditions.

While he admits the variety doesn't "jump out at you" initially as a plant crop, it does produce a high stalk population. And, while he's yet to send any to the mill, he can vouch for its germination qualities compared to other varieties, and the early crop establishment creating good weed control.

"Everybody talks about, as soon as you drive out the end of the row (after planting), the first one's sticking its head out, it comes up that quickly. It's a good germinator, and it's reliable," Richard said.

"Its plant crop is on par with other varieties, and the ratoons just get better each time. The SRA37$^{\Phi}$ had a few more stalks in the plant crop than most other varieties, but not heaps. But after you harvest it, the first ratoon has a lot more sticks, and is very nicely presented to the harvester."

"Everybody talks about, as soon as you drive out the end of the row (after planting), the first one's sticking its head out, it comes up that quickly. It's a good germinator, and it's reliable."

Richard Hesp, Mulgrave cane grower

"Compared to varieties such as SRA26$^{\Phi}$, it's an easy variety (to harvest). SRA37$^{\Phi}$ looks like it's hanging on to its trash, but it sort of falls away."

SRA Northern Variety Development Manager Dr Felicity Atkin said Richard's results so far were reflective of SRA trials of SRA37$^{\Phi}$.

"Where we see the benefits of a variety like SRA37$^{\Phi}$ is its improvements in the ratoons," Dr Atkin said.

"Against Q208$^{\Phi}$, it's almost a two tonnes of sugar per hectare advantage across plant through to second ratoon. And against SRA26$^{\Phi}$, which is our new benchmark, it has a 1.4 tonnes of sugar advantage.

"This is based on 24 individual harvest results of SRA37$^{\Phi}$ from four locations across the north since 2016."

The trial results are a promising outlook for Richard. After using some for planting material, he will send the rest of his current SRA37$^{\Phi}$ crop to mill this season.

Pale green and red candy stripes are often displayed on the stalk of SRA37$^{\Phi}$.

PACHYMETRA TESTING A VALUABLE TOOL IN FARM MANAGEMENT

Sampling for Pachymetra is now a routine practice for Richard Hesp when preparing to plant, and he sees it as integral to his overall farm management.

He has been sending soil samples to SRA's Tully laboratory for testing for the disease since 2021.

"If the spore count comes back high, I'm definitely going to put a Pachymetra resistant variety in there. If it is a bit lower, you might go for SRA37$^{\Phi}$ which is intermediate-resistant," he said.

"If there is anything under 15,000 spores, you can look at anything. I can put a variety like Q208$^{\Phi}$ in there. It's just another tool you have, to select your variety."

The routine sampling has not only helped Richard to select his varieties, but has also provided some evidence to back some theories he's had.

"At one stage I was trying some Q183$^{\Phi}$ and after growing it in a paddock you always had a good subsequent crop, each one that went in was remarkably better," he said. Adding in jest," I think it strangled the Pachymetra or something. It's just a shame Q183$^{\Phi}$ wasn't a more productive variety for me though."

Continue...

"That really prompted me to start Pachymetra testing. For $50, you take the soil sample over to SRA and they arrange to get it to Tully for testing. You generally get the results back in a couple of weeks or less."

SRA District Manager Far North Gavin Rodman encouraged more growers to take advantage of the Pachymetra testing offered by SRA, to support variety selection and productivity.

"SRA conducted a Pachymetra survey last year in Mulgrave which found 64% of the samples were above the high economic loss threshold of 50,000 spores per kilogram of soil. Based on this survey yield loss estimates from Pachymetra were calculated to be approximately 150,000 tonnes for Mulgrave in the 2022 season alone," Mr Rodman said.

"Surveys in Babinda and Mossman have recently found similar proportions of samples above the high economic loss threshold. So what Richard is doing is a great thing to counteract that."

For more information on sending soil samples for Pachymetra analysis, growers should contact their local productivity services organisation or local SRA District Manager.

Pictured above: Far northern cane grower Richard Hesp and SRA Northern Variety Development Manager Dr Felicity Atkin inspect SRA37$^{\phi}$ on one of Richard's Mulgrave farms.

Pictured above: A ratoon crop of SRA37$^{\phi}$ at the Meringa SRA Station.

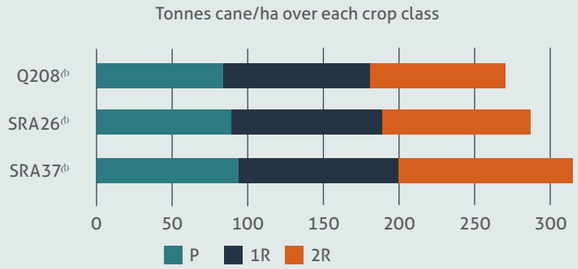
SRA37$^{\phi}$ FACTS

Although offering only a marginal sugar yield advantage in its plant crop over Q208$^{\phi}$, it gains a 13% advantage over Q208$^{\phi}$ overall due to its exceptional performance in ratoons.

Consistently strong ratooning across all Northern coastal trial locations since its initial testing in 2016.

Rapid and reliable germinator, makes it ideal for early crop establishment. Also very reluctant to arrow even during optimum conditions, which allows it to continue growing throughout the season for mid to late harvesting.

Better disease resistance to smut and Pachymetra when compared to Q208$^{\phi}$.SRA37$^{\phi}$ dominated new variety clean seed sales of productivity service organisations across the Northern coastal region in 2022 and 2023.



VARIETY	RELATIVE TO Q208$^{\phi}$	
	CCS	TSH
Q208$^{\phi}$	0.0	0.0
SRA26$^{\phi}$	0.7	1.4
SRA37$^{\phi}$	-0.1	1.8

SRA37$^{\phi}$ FAST TO GERMINATE AND STRONG RATOONING

SRA37$^{\phi}$ is becoming well known for its fast germination when compared to current commercial varieties. SRA37$^{\phi}$ is quick to produce multiple tillers for early crop establishment. It has moderate, loose trashing, above average stalk population at maturity which sometimes display pale green and red candy stripes.

It has an erect growth habit for good presentation to the harvester. SRA37$^{\phi}$ has more of an erect canopy than SRA26$^{\phi}$, but it still provides better canopy closure than Q208$^{\phi}$ for good weed competition.

Strong ratooning is a key feature of SRA37$^{\phi}$ when compared to Q200 and Q208$^{\phi}$. While comparable in plant crop it yields up to 20% greater cane yield than Q208$^{\phi}$ by second ratoon.

SRA37$^{\phi}$ offers better disease resistance to smut and Pachymetra over the current major varieties grown across the Far Northern region.

SRA37$^{\phi}$ is a very sparse to non-arrowing variety and does not sucker readily. It will continue to grow steadily throughout the autumn and winter months, similar to SRA26$^{\phi}$. Limited maturity testing suggests SRA37$^{\phi}$ follows a similar maturity curve as Q200 and SRA26$^{\phi}$ and is best harvested mid or late in the season. Maturity testing or use of crop ripeners is recommended if SRA37$^{\phi}$ is being considered for early harvest.

The table below shows productivity data presented from 12 x Plant, 8 x 1R and 4 x 2R harvest results from Northern Final Assessment Trials (FATs) planted in 2019, 2020 and 2021.

VARIETY	DISEASE RATINGS						APPEARANCE AT HARVEST		
	Smut	Pachymetra	Leaf scald	Orange rust	Brown rust	Yellow spot	Arrow	Lodging	Suckering
Q208$^{\phi}$	I-R	I	R	R	R	R	Mod-heavy	Average	Light-mod
SRA26$^{\phi}$	R	R	R	R	P*	R	V.sparse	Average	Light
SRA37$^{\phi}$	R	I-R	R	P*	P*	P*	V.sparse	Good	Light

RESISTANT (R) RESISTANT-INTERMEDIATE (I-R) INTERMEDIATE (I) INTERMEDIATE-SUSCEPTIBLE (I-S) SUSCEPTIBLE (S) *PROVISIONAL RATING (P)

BURDEKIN BUS TOUR OF SMART IRRIGATION TECHNOLOGIES

Cane growers from Central and Northern Queensland took part in a two-day bus tour of the Burdekin in February viewing some of the latest smart irrigation practices and technologies being trialled in the region.

Thirty growers from the Mackay-Whitsunday region, Atherton Tablelands and Burdekin took away valuable learnings from local growers involved in irrigation trials as part of the Burdekin Irrigation Project (BIP), the Lower Burdekin Smart Irrigation Project (LBSIP) and the Major Grants Project.

The tour group was taken to three farms including two LBSIP demonstration sites, where a range of innovations were shown including low-pressure surface drip irrigation, automated furrow irrigation and automated pivot watering systems.

SRA Burdekin District Manager Terry Granshaw said the two LBSIP demonstration sites had been trialling various automated practice changes that had brought substantial efficiencies to the growers' farming systems and way of life.

"Here in the Burdekin, irrigation is the number one opportunity for growers to improve their productivity, there is no question about that," Mr Granshaw said.

"It's been great to be able to show other districts and other farmers what we are actually doing here as part of the (Burdekin Irrigation) Project and how we are making practice change happen to irrigation management.

"Different districts have different (farming) constraints, but irrigation is on the top of the list for many other growers from other districts as well."

SRA Far North District Delivery Officer Paul Calcino brought growers from the Atherton Tablelands along for the tour to gain a greater insight into automated irrigation technologies from growers who have had first-hand experience.

"The majority of growers on the Tablelands utilise irrigation on their farms, but it's often not as high-tech as some of what we've seen here in the Burdekin," Mr Calcino said.

"We thought it was a good opportunity to learn from the Burdekin, as to how they have been able to improve their irrigation systems, so that growers could potentially adapt their own systems back home."

"I think our growers have taken a lot away from it, especially in regards to automation, which is what people are really interested in.

"The potential to save a lot of time and money by not not having to do some jobs manually. And, the ability to accurately determine a crops' water requirement in real-time using sensors, by factorting that into the automation, is also a game changer."

SRA District Manager Central Dylan Wedel agreed that smart technology offered many opportunities for growers in his district to grow their businesses.

"I think for our region, irrigation is a pretty big opportunity to be able to increase our production locally," Mr Wedel said.

"So, I think to be able to come up here to the Burdekin and see what they are doing in the irrigation space, it gives us some creative juices on what we could do locally, potentially not on the same scale, but definitely try to acheive the same outcomes."

First stop on the bus tour was Joe and Aaron Linton's family farm at Home Hill. The father and son have used a mix of high-pressure, sub-surface automated drip irrigation and furrow irrigation to water their highly permeable soils.

Aaron explained the different challenges they had overcome over the years experimenting and trialling various automated irrigation technology which had led to improved efficiencies and productivity on farm.

"I've done some permanent drip, high-pressure compensated drip. And I automated those systems with stuff you could buy off the shelf, computers and valves that would open and shut with high pressure irrigation," Aaron said.

"We've trialled different irrigation practices, furrow irrigation, but the automation has been the enabler, allowing us to do that."

Another trial being run on the Linton's farm, in conjunction with SRA and the BIP, is a low-pressure drip tape, comparing it to standard furrow irrigation. The low-pressure system was showing promising results, until Cyclone Kirilly caused significant damage to the tape in the trial site.

"It was working really well and then we had the cyclone come through and blew the cane over and squashed some of the tape," Aaron recounted.

"But until that point, when it was erect, it was working really well. We didn't have much data, but water use was 50% (less), giving a 40-50% saving in actual applied water, so therefore because they were running at the same head, it's probably a saving of about 40-50% in power usage as well."

"So the early signs were good, before the cyclone, but that's why you do trials, to see what works and what doesn't."

Continue...

Top row left to right: *Growers from Central and Northern Queensland took part in the two day bus tour of the Burdekin.*

Growers on Joe and Aaron Linton's Home Hill farm.

SRA District Manager Central Dylan Wedel (right) chats to Aaron Linton on his family-owned farm.

BURDEKIN BUS TOUR

Bottom row left to right: *An automatically driven pivot irrigation system used to irrigate cover crops.*

An automated furrow irrigation system on Burdekin grower Paul Villis's cane farm. The farm is also a demonstration site for the Lower Burdekin Smart Irrigation Project.

Bryan Granshaw of Rocks Farming Company takes visiting growers through the automated irrigation system technologies at the farm.

SRA's Burdekin District Manager Terry Granshaw and cane grower Paul Villis take growers through Mr Villis's automated furrow irrigation trials.

Growers at the Home Hill property of cane grower Joe Linton (pictured facing the camera with orange and blue shirt). Mr Linton works the family farm with his son Aaron.

The Linton's trial site on their Home Hill farm.

BURDEKIN BUS TOUR

BURDEKIN BUS TOUR

Paul Villis who has been farming cane in the Burdekin since 2005, demonstrated his trial of different flow rates in an automated furrow irrigation system, developed within the Lower Burdekin Smart Irrigation Project.

The trial is testing different high-flow water volume rates, replicating strips 18 rows apart, to try and achieve a more efficient furrow irrigation.

Mr Villis said having a fully automated scheduled irrigation system offered significant productivity gains and time savings, particularly given the challenges of growing in highly permeable soil.

"The problem here is the deep drainage. The soils just open up, particularly in bean crops, and the water just goes down (into the soil) instead of advancing (down the furrow)," Mr Villis said.

"And if we are having dramas, we will water at night instead of the day, because the sun does something (to the water). It will advance and then go backwards.

"So the beauty of this technology is we can water at night time. We can schedule it to push it through and get to the end (of the furrow) and automatically change to the next set. And we don't have to be out here doing it ourselves at midnight.

"And, by doing this, we've halved the time it takes for the water to reach to the end of each furrow."

The bus tour also visited Rocks Farming Company where the company has a fully centralised automated irrigation system and is working towards complete automation of 2700 ha of irrigated farming land within three to five years.

Mr Granshaw said he hoped growers came away from the tour with greater confidence in investing in smart technology and the potential benefits it could deliver.

"It's a great feeling to see growers use the infrastructure that they have now, or change it just a little bit, to incorporate smart technologies and practices and to see the outcomes," Mr Granshaw said.

"As well as productivity gains, efficiency and cost savings, it's about a grower's lifestyle. Irrigating can be a full-time job. So is there a better way we can be doing it?"

"The information we've received from every farmer about their hands-on experience is well worth the trip. What they've implemented into their systems, the efficiencies, which potentially allows us to put into our growing decisions. It's the way of the future,"
-Home Hill cane grower Ryan Brownlie.

The Mackay bus tour to the Burdekin was organised as part of a collaboration between Sugar Research Australia (SRA), Reef Catchments and the Queensland Department of Agriculture and Fisheries (QDAF).

Queensland Government · sra Sugar Research Australia · REEF CATCHMENTS

The Burdekin Irrigation Project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation with collaboration between Sugar Research Australia, Farmacist, AgriTech Solutions, Burdekin Productivity Services, Burdekin Bowen Integrated Floodplain Management Advisory Committee, James Cook University, the Queensland Department of Agriculture and Fisheries and NQ Dry Tropics.

Australian Government · REEF TRUST · Great Barrier Reef Foundation

Lower Burdekin cane grower Steve Pilla (pictured left) has adopted automated irrigation systems through the Burdekin Irrigation Project. Pictured here with SRA Burdekin District Manager Terry Granshaw.

Bryan Granshaw from the Rock's Farming Company with some of the automated irrigation technology the company has installed as part of the BIP.

LASTING LEGACY OF THE BIP IN THE LOWER BURDEKIN

When the Burdekin Irrigation Project (BIP) was initiated three years ago, its objective was to support Lower Burdekin sugarcane farmers to transition to more efficient irrigation systems and practices.

As the project draws to a close in June 2024, it's clear the BIP will leave a legacy of delivering so much more.

By assisting farmers to install smart irrigation technology tailored to farm constraints and objectives, growers taking part in the project have been able to reduce on-farm water usage and energy costs, run-off and deep drainage losses, resulting in improved productivity and profitability, and environmental co-benefits.

Sugar Research Australia (SRA) District Manager Burdekin Terry Granshaw said practice changes undertaken as part of the SRA-led BIP would have long-term sustainability impacts for growers, as well as the environment. However, there was more work to be done.

"Using experts in their fields to guide growers and installing smart irrigation tools to make informed decisions based off actual data will create a lasting legacy. But we have only just started," Mr Granshaw said.

"The number of growers participating is very encouraging and shows that there is scope for similar projects beyond the BIP. The diversity of the size of farms participating with different soil types, infrastructure and irrigation practices and constraints has also been a highlight of the project.

"And, successful demonstration sites around the district gives growers confidence that changes that are made, on farm, are proven and tested."

More than 70 growers have so far participated in the BIP over three rounds capturing expressions of interest in the project.

Participants can choose to work with one of three delivery partners: AgriTech Solutions, Burdekin Productivity Services or Farmacist – connecting one-on-one to tailor smart irrigation systems to suit each grower's requirements.

SRA Environmental Sustainability Scientist Dr Simon Clarke said one of the major reasons for the project's success, was the ability to adapt to growers' individual farm needs.

"The BIP has exceeded expectations in terms of interest in automating irrigation systems," Dr Clarke said.

"Project activities have ranged from the assessment of system performance through to installing end of row sensors, so automated setups can switch between sets.

"We've seen lots of interest in using automation to help with the task of irrigating, as well as increasing flow rates. Automation helps achieve the more frequent and precise set changes needed to match water volumes with crop requirements whilst reducing deep drainage and run off," he said.

The BIP was designed to contribute to the Reef Trust Partnership Lower Burdekin Regional Plan. The BIP has a target of reducing dissolved inorganic nitrogen at the end of catchment by 19.3 tonnes per year, representing 40% of the regional plan.

Dr Clarke said the work of the BIP would continue through other projects.

"In the Burdekin, the Burdekin Smart Irrigation Project will continue BIP activities after the project formerly closes, and conversations have begun on how the BIP consortium can deliver productivity and environmental outcomes in future projects," he said.

"I think the BIP will be the first in a series of similar projects taking place across other irrigated cane production regions."

The Burdekin Irrigation Project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation with support from Sugar Research Australia, Farmacist, AgriTech Solutions, Burdekin Productivity Services, Burdekin Bowen Irrigated Floodplain Management Advisory Committee, NQ Dry Tropics, James Cook University and the Queensland Department of Agriculture and Fisheries.

Australian Government | REEF TRUST | Great Barrier Reef Foundation

Ayr cane grower Talbot Cox.

GOOD TIMING FOR THE BIP FOR ROCKS FARMING

Talbot Cox, managing director of Rocks Farming Company (RFC) at Ayr, has been growing sugarcane in the Burdekin for almost 35 years.

With approximately 2700 ha of irrigated cane farming land, RFC is one of the area's largest sugar producers.

Mr Cox says the Burdekin Irrigation Project (BIP) came along at a time when the company had just begun evaluating its irrigation practices, none of which were automated at the time.

"We were really looking at all of our irrigation practices in our cane. Water usage, irrigation efficiency, just trying to make things more efficient," Mr Cox recalls.

"The BIP came along at the same time and it was good because it made us go back to the start and evaluate everything, starting with getting some baseline data on everything we were putting into our field."

He said the company started by selecting a 100ha block that had proven to be more difficult to irrigate and also required higher water use.

"We started measuring flows and understanding what sort of water we were using per section of the block and certain parts of that block were using more water than other parts. This became very obvious when we tracked how many metres per hour the water progressed down the paddock by the sets that were run.

"So, it got us thinking about what we could be doing better. We started adjusting flow rates up higher and higher, so the typical flow rate that we were using was about two litres a second, going down a furrow and then we'd push that up to four litres and then up to eight litres a second."

Pushing the higher flow rates meant that the block – which normally took one to two days to push water down the furrows, which was averaging 35 metres per hour progression down the furrow – was now getting through in seven to eight hours and was now averaging 140 metres per hour down the furrows.

"Some of our irrigation sets are now coming down in six hours, so the automation became the tool to allow us to do that. Because once you start watering between six to eight hours, manpower alone just can't do it. You can't be there six to eight hours changing over the paddocks. Automation allows that to happen. And, it's the scheduling software that works with the automation that makes the whole system work."

Operating each system from an application (app) on their phones, each Irrigation Manager uses the IrrigWeb scheduling tool, which tracks crop demand, inputs local rainfall data, and then calculates when the next irrigation should be applied while keeping track of the irrigations that have been applied.

Working with AgriTech Solutions, Mr Cox said the BIP offered considerable technical support, to ensure their smart irrigation practice changes suited their individual needs.

"Between changing our practice, automating our valves, using IrrigWeb to schedule water applications, there was a lot of development of the software to make the product more robust and more capable of doing what we wanted it to do," he said.

"So, as we make these changes, it will become something that is good for the whole industry."

The company continues to expand its automated irrigation network and hopes to be fully automated within three to five years. For other growers considering automated irrigation, Talbot offers this advice.

"I would say to growers, don't just automate what you are currently doing. Start from a blank sheet and consider what is the best way to irrigate this farm and use the automation as the tool to water better. Now that could mean things like pipeline upgrades, or some riser upgrades or different spacings to get the flow rates that you need to get the water down to a more efficient manner. If you just put automation onto your current practices, it's just not the best money spent."

Moth borer damage to sugarcane.

Ratoon Stunting disease testing.

Yellow Canopy Syndrome sugarcane.

REVIEW OF SUGARCANE BIOSECURITY PLAN

The development of an updated Sugarcane Industry Biosecurity Plan, led by Plant Health Australia (PHA), is progressing and has reached an important milestone.

PHA has completed an extensive literature review and updated assessment of all the biosecurity threats facing the Australian sugarcane industry and have compiled a new draft set of Threat Summary Tables summarising the most significant biosecurity threats for the industry.

In December 2023, representatives from PHA met with SRA and Biosecurity Queensland staff to review the updated Threat Summary Tables, which will form the basis of the new Industry Biosecurity Plan.

The identification, prioritisation and management of key biosecurity risks, through the development and implementation of a biosecurity plan, are critical to industry's biosecurity preparedness.

The incursion of just one exotic pest or disease could significantly impact industry's yield and quality, as well as growers' market access both domestically and internationally.

Current biosecurity planning provides a mechanism for the sugarcane industry together with governments and other stakeholders to assess current biosecurity practices and future biosecurity needs. Dr Stephen Mudge, SRA Manager of Research Missions, SRA Manager of Biosecurity and Disease Screening Dr Shamsul Bhuiyan and SRA's lead entomologist Dr Kevin Powell met with senior members of PHA and Biosecurity Queensland to review the Biosecurity Threat Summary prepared by PHA.

The next step in the development of the new Industry Biosecurity Plan will involve assembling a Biosecurity Implementation Group, comprised of both industry and government representatives. The Group will look at the industry's preparedness for high priority pests (including precautions undertaken by industry), and develop an action plan that describes the activities to be undertaken to improve biosecurity preparedness and response capability.

This same group will also consider possible on-farm biosecurity resources, both in terms of format and delivery. This meeting is being planned for April 2024, with the updated Biosecurity Plan to be released later in the year.

REGIONAL SUGAR MILLING RESEARCH SEMINARS

SRA supports milling research on behalf of the entire milling sector of the sugar industry. Each year in partnership with QUT, SRA presents a series of regional sugar milling research seminars to showcase the highlights of research.

Milling companies and their staff are invited to join seminars in their mill area to hear first-hand from SRA-funded researchers.

Locations and dates

Mackay – 8am–3pm, Mon, 18 March - (TBC) Training Room Racecourse Mill

Townsville – 8am–3pm, Tues, 19 March – Rydges Southbank

Gordonvale – 8am–3pm, Wed, 20 March – Rambler Room, Mulgrave Mill

Rocky Point – 8am–3pm, Mon, 25 March – Rocky Point Mill (AV link to NSW mills)

Bundaberg – 8am– 3pm, Wed, 27 March – Lakeside Room, Millaquin Mill

Topics include:

- Eliminating roll arcing
- Strategies to minimise impacts of processing existing soft cane varieties, and an industry cost/benefit analysis
- Bagasse fly ash system performance benchmarking
- Modelling the harvester's front end to reduce billet and stool damage - the behaviour of leaves
- Cane bin tracking and electronic consignment of cane.

For a full list of topics go to the SRA website at: sugarresearch.com.au or scan the QR code below:

BURDEKIN FUTURE FARMING FIELD DEMONSTRATION

Automation and artificial intelligence (AI) technologies have been increasingly embraced by cane growers in the Burdekin in recent years and was part motivation for an SRA field demonstration in Ayr earlier this year.

Growers and other industry stakeholders gathered at SRA Burdekin Station at Brandon in January where they were given a demonstration of a commercial autonomous farming vehicle, as well as a collaborative project that SRA are partners in - the AutoWeed AI project - which uses autonomous sensory technology for weed control.

The autonomous farming vehicle displayed, can be used for a number of automatic on farm operations such as seeding, weeding and spraying, operating 24 hours a day, guided solely by GPS and cameras.

Additionally, the machine can turn in a tight circle and is light weight, meaning less soil compaction. It also features autonomous record keeping, by recording and mapping all applications.

SRA Burdekin District Manager Terry Granshaw said automation and other innovative technologies that improved growers' productivity and profitability, was a major pillar of Burdekin's District Productivity Plan, devised by SRA.

"The autonomous farming machine we got to see at the field day is greatly aligned with this (productivity) plan. It's the type of innovation that could potentially integrate with some of the sensor research currently being undertaken by SRA, including the AutoWeed project, which was also demonstrated on the day," Mr Granshaw said.

"I think it's important for SRA to continue to be on the front foot. When we talk about technology and SRA, it's what we do, so it's great for us to show growers these types of innovations.

"It's the future. And right now, we're just touching the surface of it."

Denis Pozzebon, who has been farming cane in the Burdekin for almost 40 years, attended the demonstration day and said it was great to get an insight into future technologies.

"I think it's been a very excellent and interesting day today. We've got to step into the future," Mr Pozzebon said.

"The Robotti (autonomous farm vehicle) is a new tool. It's got the potential to open up a whole new area in the fruit and veggie space. But it does have a good spot in sugar cane as well.

"And the AutoWeed, I think it offers a great cost saving for farmers with its ability to use new technology to reduce the amount of chemicals applied to the farm area, and with that, it benefits the environment as well. Growers are always looking to save on inputs."

Autonomous farm vehicle

Farm Concepts Director Braden Hellmuth who demonstrated the Danish-made autonomous farm vehicle said growers were interested in the overall design of the vehicle. It uses a standard type 2 linkage, is powered by a Kubota diesel engine and has similar hydraulic capabilities as a standard tractor of the same size. It can also be equipped with a PTO to drive implements, the same as a tractor.

"The Robotti replaces your standard tractor of an equivalent size, where you can put a range of different implements on the back to complete most of your farm tasks," Mr Hellmuth said.

"The opportunities are endless. I guess in sugar I see opportunities for things such as stool splitting, potentially even billet planting, plus there is a whole bunch of applications around seeding, cultivation and spraying that apply to most cover and veggie crops."

AutoWeed

SRA partnered with James Cook University researchers and Townsville-based agricultural technology company AutoWeed four years ago to test and develop the AutoWeed AI crop sprayer. The system uses green-on-green artificial intelligence (AI) technology to detect weeds and reject background plant life, lowering herbicide costs for growers, by reducing herbicide usage.

AutoWeed co-founder Alex Olsen said initial trials have already shown the machine to be 95% as effective as blanket spraying, while reducing herbicide outputs by up to 60% in the right circumstances. Meaning, the technology offers significant benefits for both productivity and the environment.

"We basically mount a camera in between the tractor and the spray boom of existing machinery, such as a tractor, and that camera acts as an eye to detect the weed, if it's existing. It then tells the sprayer to turn on as the vehicle is passing over the crop.

"That basically allows it to, not spray the whole paddock, but only spray a portion of the paddock depending on how much weed density you have. So, you are only using as much herbicide as you have weeds."

As part of the project, AutoWeed conducted nine trials of the technology across the Burdekin region, with positive outcomes. The demonstration day provided its own milestone.

"Today was very special, because this is the first time we have proven that this technology can detect two weeds at once, in sugarcane, using two different tanks. So, it's kind of a Burdekin first, a world first you might call it!"

Farm Concepts Director Braden Hellmuth demonstrates an autonomous farm vehicle at the Burdekin Field Demonstration Day at the Brandon Station.

Watch the demonstration video at sugarresearch.com.au/media or scan the QR code below.

The AutoWeed AI project, funded by a grant through the partnership between the Great Barrier Reef Foundation and the Australian Government's Reef Trust, is a collaboration between JCU, AutoWeed and Sugar Research Australia.

Sugar Research Australia

JAMES COOK UNIVERSITY AUSTRALIA

Pictured (L-R) – AutoWeed co-founder Jake Wood, SRA Burdekin District Manager Terry Granshaw and AutoWeed co-founder Alex Olsen.

The autonomous farming vehicle displayed at the demonstration day.

Pictured right (L-R) – Burdekin grower Denis Pozzebon, Drew Alexion, CBA, Panikos Spyrou, QCAR, PJ Gileppa, CBA.

Pictured left (L-R) – Alf Pappalardo, Sam Pappalardo and Romano Parisotto.

Pictured (L-R) Tully-based SRA Senior agronomist Nancy Rincon, Tully cane grower Frank Hughes and Graduate SRA Agronomist Erin Headon with the bean planter purchased through the Mobilising the Murray project, allowing Mr Hughes to trial legumes as a cover crop on farm.

BETTER TOGETHER: **GROWERS AND AGRONOMISTS DRIVE MURRAY MOMENTUM**

The framework for the Mobilising the Murray project made it popular with growers, rewarding for SRA agronomists to implement, and successful in its ability to deliver productivity improvements with environmental co-benefits.

The project was launched in 2021 by Terrain National Resource Management (NRM) and funded by the Australian Government's Reef Trust. Sugar Research Australia (SRA) became a major partner in the initiative in 2022. The initial target was to improve land management practices across 8,000 ha of the Murray catchment.

A key element contributing to the success of the project was the freedom granted to decide how the project was to be delivered. This created great partnerships between growers in the Murray catchment and SRA agronomists. These partnerships began with understanding grower productivity constraints and interests.

Tully-based SRA Senior Agronomist Nancy Rincon and Agronomist Erin Headon were recruited by SRA for the project and continue to work with growers in the district.

While water quality outcomes were fundamental to the project, it had a broader scope, assisting growers to identify crop growth constraints and address them through practice change, resulting in productivity and efficiency gains, along with environmental benefits.

Ms Headon said the process of investigating constraints was unique to each farm, as each grower faced different production challenges. Financial support and services, such as deep soil testing, Pachymetra assays, drainage management, Electrical Conductivity (EC) mapping and whole-of-farm planning were provided to determine the root cause. Where opportunities to improve productivity or profitability by refining nutrient management were identified, on-farm trials were established to test the new practice.

She said conducting on-farm trials was pivotal to the project's success.

"It's essential and also part of the SIX EASY STEPS® toolbox, to trial these things on your farm. It's a great way to evaluate a new practice, product, or rate for your specific circumstances," Ms Headon said.

"We had quite a few workshops, showcasing the SRA researchers addressing productivity issues. We had cane grub management, imidacloprid application, a range of SIX EASY STEPS® nutrient management workshops, water quality updates, precision horticulture and drainage management," she said.

A combination of on-farm demonstration trials and field days was used to address grower concerns and constraints to practice change, and allowed timely sharing of trial outcomes for improved decision making.

Tully cane grower Frank Hughes was the first grower to sign up to the project, working with Ms Headon and Ms Rincon to diagnose productivity constraints in a poor-performing block. Frank then trialled some of the SIX EASY STEPS® Toolbox guidance on his Bilyana farm, and later investigated legumes as a cover crop, having never planted them before.

"Our country here is very wet and we didn't think we could grow legumes as a cover crop," Mr Hughes said.

Given the known benefits of legumes as a cover crop,in improving soil health, protecting soil from erosion in the wet season and contributing significant amounts of nitrogen (N) to the soil, Mr Hughes was keen to give a legume crop a go.

Through the project, he was able to purchase a bean planter with fellow Bilyana growers Derrick and Wendy Finlayson, and Rohan Bosworth, using it to direct drill legume seeds into his existing rows.

"We direct drill them on top of the old cane rows, so we don't cultivate at all, it's straight through the trash. By doing this, we've been able to grow legumes as a cover crop even in extremely wet conditions," Mr Hughes said.

"Research shows legumes are better for soil health and crop nutrition, so we're hoping that we can reduce our nitrogen rates when we are planting cane and better soil health will hopefully produce a better crop overall."

The project supported 30 demonstration sites across the Murray catchment. Seven of these focussed on helping growers better understand how they could adjust their plant cane N rates following a legume cover crop.

"These growers weren't confident about how much N may be available after a legume cover crop. We were able to monitor changes in soil mineral N over time by collecting regular soil samples. This allowed us to show the grower how much soil mineral N was available and how it changed in response to management and climatic conditions," Ms Rincon said.

Ms Rincon said the results were positive and provided confidence to the growers that their decision to omit fertiliser N at side dressing (1) reduced costs, (2) did not reduce yield and (3) had additional environmental benefits.

"Under specific circumstances, reducing fertliser N at top-dressing can reduce fertiliser costs without impacting productivity which is likely to reduce the potential for N losses over the wet season."

SRA Environmental Sustainability Scientist Dr Simon Clarke said the Mobilising the Murray project allowed SRA to assist growers to answer key questions and provide financial incentives that are likely to result in long-lasting practice change.

"Funding bodies can be confident that flexible project activities will lead to improved grower engagement and environmental co-benefits. This is because the productivity improvements growers seek often involve using less inputs or using inputs more effectively," Dr Clarke said.

Other financial incentives assisted growers to install pest-proof fencing, GPS guidance, mill by-product applicators and variable rate fertiliser controllers.

The Mobilising the Murray Project was funded by the Australian Government's Reef Trust and delivered by Terrain NRM in partnership with Sugar Research Australia.

Australian Government | REEF TRUST | TERRAIN NATURAL RESOURCE MANAGEMENT

A farm in the Mulgrave District inundated by flooding which followed Cyclone Jasper.

QUEENSLAND **CYCLONE IMPACT**

Growers in Northern districts of Queensland were impacted to varying degrees by Tropical Cyclones Jasper and Kirrily, and subsequent flooding which followed both weather events.

Sugarcane areas in the coastal regions of the Far North are believed to have been some of the hardest hit, by ensuing floods following ex-Tropical Cyclone Jasper.

SRA District Manager, Far North, Gavin Rodman said impacts to the growing region ranged from minimal to severe.

"Some growers were impacted quite a lot and some guys not so much. In some areas, we've had neighbouring growers that were at both ends of the spectrum," Mr Rodman said.

"It was quite interesting to see the movement of flood waters through some of our lower catchments. Not only were we looking at inundation from the rivers, but strong currents tearing through paddocks as well."

Mr Rodman said while the level of dead cane from flooding, was less than what he had initially predicted, there was still large areas of damaged cane.

"The hope is that the majority of the damaged cane will recover enough to be harvested and ratooned this season, however, there will likely be some tough decisions to be made on some of these damaged blocks later this year," he said.

Mr Rodman said some individual growers were impacted quite heavily.

"One of the worst cases was one grower who lost almost 60%, and there was a lot of plant cane in that," he said.

"One of the big challenges that we are seeing, is those plant crops that were planted later in the season last year, they have now been wiped out (in some cases) and need to be planted again. So, you've got double the cost for the same crop and you're now a year behind where you would have been."

Further south, there were reports of some severe crop damage from Tropical Cyclone Kirrily near Ingham.

Burdekin SRA District Manager Terry Granshaw said there had been minimal crop damage reported across the Burdekin district in the aftermath of TC Kirrily, which crossed the coast north of Townsville in late January.

"We experienced maximum wind gusts of 155km per hour. Early plant cane and early harvested ratoons were severely lodged," Mr Granshaw said.

"Most areas had some paddocks that had snapped cane at the growing point. These varieties were Q183$^{\phi}$, Q232$^{\phi}$, WSRA17$^{\phi}$ and a very small amount of SRA23$^{\phi}$ and Q240$^{\phi}$.

"There was some local flooding of roads after the rain depression had progressed inland. And reports from local helicopter pilots suggested that the crop from the air was bending back up and looking ok."

IMPROVING GROWERS' CYCLONE RESILIENCE

Growers in Northern regions of Queensland are accustomed to the impacts of tropical cyclones and localised flooding.

However, SRA Far North District Manager Gavin Rodman and Far North District Delivery Officer Paul Calcino believe there are ways to improve industry's resilience after being impacted by a major weather event.

After ex-Tropical Cyclone Jasper crossed the Far North coast on 13 December 2023, leaving a trail of flood damage in its wake, the pair began collecting data on how growers in the region both prepared for and dealt with the system's aftermath.

They have also held meetings with CANEGROWERS Cairns Region, MSF Sugar and local staff from the Queensland Department of Agriculture and Fisheries (QDAF) to discuss the impacts from the Category 2 system and subsequent flooding.

"Cyclones are a part of life for growers in the North, however, it's important that we understand how to bounce back as quickly as possible after they occur," Mr Rodman said.

"In this instance, it was the flooding that caused the greatest impacts and not the winds. We began collecting information on the practices that had occurred immediately prior to the event, practices immediately after and planned activities.

"We also asked growers how they were impacted by the subsequent flooding and what their recovery plans were, not only for the rest of this year, but next year as well."

Mr Rodman believes that collating this information and sharing the feedback with other growers has the potential to improve industry's overall preparedness and recovery from future cyclonic events.

"The flooding that occurred brought with it all kinds of challenges, from large areas of dead cane to soil and trash movement in surviving crops," he said.

"The job that was tasked to Paul and I was to develop a tool to gain an understanding not only of the resources that growers had, but also what was required to get them back to where they were before the flooding."

"And when we are talking about resources, we're not necessarily talking about how many dollars in the bank, but rather access to clean planting material, access to planters, access to high-rise spray equipment, those types of things.

"One of the benefits of collecting this information is the opportunity to then share different ideas amongst growers who are facing similar challenges. For example, this grower said that he'd been using his ratooning discs to reshape his row profiles. Have you thought about doing that? Because you've lost trash and now have soil movement in play?"

Other data collected included how flood-affected growers would schedule their planting in 2024 - whether this would be completed this year or staggered over several years.

"We are thankful to those growers who have provided us with feedback. Each bit of information we get has the potential to assist other growers and improve the industry's overall resilience and recovery in the future," Mr Rodman said.

Dead cane in the wake of flooding which followed Cyclone Jasper in the Mulgrave District.

Photo Credit: Annette Rapmund, SRA Pathology Technician, Woodford

FLOODING LEADS TO ARMYWORM OUTBREAK IN THE NORTH

Leaf damage from armyworm.

Severe flooding associated with two tropical cyclone events in December-January impacted a large portion of the North Queensland growing region and was associated with a subsequent outbreak of armyworms.

Growers in the area expressed concern over the apparent sudden infestation of armyworms. However, SRA's lead entomologist Dr Kevin Powell said their presence in the wet, humid conditions that were experienced at the time, was not cause for concern and the situation continued to be monitored.

SRA received samples, for identification, from some growers in Far North Queensland (FNQ) and a variety of different species of armyworm had been identified.

Dr Powell said it was also clear from samples received that fungi and high field temperatures were having an impact on the insects at the time, and were naturally controlling the populations.

"What was interesting is a lot of the armyworms being reported (in the North) had a fungal infection. So that fungal infection was going to be reducing the populations naturally," Dr Powell said.

"There is also anecdotal evidence that high temperatures in FNQ above 30°C would also reduce armyworm population levels."

Armyworms are generally kept in check by natural enemies - both insect and microbial. Any use of insecticides is generally not required and will severely disrupt the natural enemy balance.

Growers are urged to remain on the lookout for armyworm larvae, as early detection and correct identification are key. Good weed management is also one of the more crucial measures of control as weeds can act as alternative hosts for armyworms.

Dr Powell said he often received emails from growers requesting an armyworm be identified to species level, however, it can be hard to identify if a photograph is not clear.

Growers who would like to identify armyworm found on their property can also take samples to their local agronomist or contact SRA directly.

For further information on armyworms go to the SRA website at: sugarresearch.com.au or scan the QR code below.

TENDERS SOUGHT FOR INDUSTRY SUSTAINABILTY DATA FRAMEWORK

Sugar Research Australia (SRA) is seeking to adopt a digital data framework to meet future and existing sustainability reporting requirements for the Australian sugarcane industry in 2024.

In February, SRA called for expressions of interest (EOIs) and tenders from suitably qualified and experienced organisations to develop a structured sustainability data framework, incorporating digital solutions for future industry benchmarking.

SRA's Interim CEO Shaun Coffey said the data framework sought would deliver a systematic and streamlined approach to collecting farming and sustainability data, meeting the industry's current and future sustainability reporting requirements.

"SRA has worked with the Department of Agriculture and Fisheries to deliver two significant projects, the Life Cycle Assessment of raw sugar manufacturing and the development of a sustainability framework aimed at measuring and evaluating the environmental performance of the Australian sugarcane industry," Mr Coffey said.

"Through this process, we identified the need for a more structured data collection framework that will ultimately assist in positioning the industry as a leader in profitability, environmental sustainability, and resource use efficiency."

The sustainable data framework will be developed in collaboration with an Industry Working Group and external consultants leading the development of related initiatives.

The tender will be awarded by 29 March 2024. The work will be completed by 1 November 2024.

Data requirements

The first data component of the project will include farming data required within the framework which will include yield, fertiliser rates, diesel usage for machinery operations and irrigation, irrigation rates, electricity usage for irrigation, water sources used in irrigation systems, and pesticide use.

The data will incorporate all sugarcane regions from the Wet Tropics in north Queensland to northern New South Wales.

Other data for sustainability reporting requirements will be required by the project and will be guided by the requirements for current sustainability initiatives, in fulfilling priority data gaps.

Further information or queries please email: sraresearchinvestments@sugarresearch.com.au

SRA District Manager Northern & Agricultural Machinery Specialist Phil-Anthony Patane with Tully grower Jamie Dore.

MEET YOUR NEW MATE IN THE FIELD

Harvest Mate is a free web-based portal and app designed to help cane growers and harvesting contractors capture additional cane and sugar yield from the paddock.

Using industry data and economic analysis, *Harvest Mate* is a practical framework to optimise harvest settings to increase yield and revenue.

Harvest Mate provides growers and contractors with an opportunity to increase cane and sugar yield. Industry trial results showed an average of five per cent increase in yield with the potential to deliver an additional $116/ha, after paying both harvesting costs and levies.

It was developed and funded over three years by Sugar Research Australia (SRA) and the Department of Agriculture and Fisheries, (DAF) with input and support from sugarcane growers and contractors across the industry.

It is easy to use and free, making it accessible to anyone who wants to improve their harvest practice in Australia.

Register today at harvestmate.au

Download the FREE app from Apple App Store or Google Play Store.

For more information visit sugarresearch.com.au

SRA acknowledges the invaluable research contribution by economists from the Queensland Department of Agriculture and Fisheries (DAF) for the development of this tool, as well as funding from DAF for its delivery.

Queensland Government

Harvest Mate
Improving economic outcomes

TO USE *HARVEST MATE*

REGISTER TODAY AT *HARVESTMATE.AU* THEN DOWNLOAD THE FREE APP FROM THE GOOGLE PLAY STORE OR APPLE APP STORE.

sra Sugar Research Australia
Queensland Government

1. Once-off User Profile Set-up for harvesting contractors (Allow for 45-60 minutes)

Fixed Costs are also entered here. These can also be entered automatically if you have completed the 'Fixed Cost Calculator' – to access this click on your profile (top right of screen) and a drop-down menu will appear.

Enter the Harvester Repairs and Maintenance figure for your business. Ensure that the value is an average of consecutive years.

Step 1 **Enter your harvester, haulout and labour details under the 'Machinery & Labour Setup' section.**

- Fixed Costs are also entered here (can also be entered automatically from the 'Fixed Cost Calculator').

Note: This is done pre-season but can be adjusted in-season if required. Updates in successive seasons would take less time.

Step 2 **Enter your group details (such as roster) under the 'Group & Operational Setup' section.**

Step 3 **Under the 'Group & Operational Setup' section you can invite growers who are part of your harvesting group.**

- This allows them to upload their block information automatically from mill estimate data.

Note: The grower being invited will need to have created a profile already.

2. Block/Crop Information Input (3-5 minutes per block)

To calculate the block specific outputs in the App, you need to load block and crop specific data to the 'Infield Logistics' section.

This section is to be completed by the growers in the group and or harvesting contractor.

Step 4 **Add the relevant Farm to the 'Infield Logistics' section.**

Step 5 **Add blocks (if required) and enter in the outstanding block and crop information.**

- All block/crop information is required if the grower has not uploaded their estimate data.

Step 6 **Return to the Group & 'Operational Setup' section and link (assign) the blocks to the relevant Group and Harvester.**

Following **Step 6** the assigned blocks can be accessed via the comparison scenarios section or in the App.

Note: Ensure that all block and crop information is entered correctly with all fields completed otherwise this will impact blocks not being correctly assigned to the group and harvester.

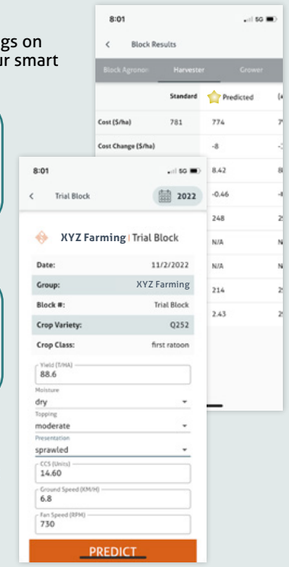
3. Infield App Use (1-2 minutes per block)

To determine the most economically optimal settings on the day of harvest, use the *Harvest Mate* App on your smart phone.

Step 7 **Select the relevant block on the App and update any inputs if required (e.g. if conditions are damp or the crop has lodged).**

Step 8 **Click the 'Predict' button and select the most relevant harvester settings for your business.**

- The most economically optimal settings are labeled with a ⭐ however this may not be the most practical for your business.



4. Comparison SCENARIOS (2-5 MINUTES PER BLOCK/REPRESENTATIVE AREA CALCULATION)

After you have updated the 'Infield Logistics' section and linked blocks to a group/harvester:

- Select the group and grower/s you are considering a harvesting scenario for.
  - Allowances can also be added here if applicable.
- Select the predicted settings on each block (or select the standard settings if no change is required).
- Once settings have been selected for a grower, calculate the average costing outputs for the grower.
  - This will show the average change in harvesting cost and the expected net benefit for the grower.

Note: These outputs can be used pre-season to assist growers and contractors to explore scenarios.

INTERNATIONAL RESEARCH
FOR MOTH BORER CONTROL
Be prepared but not alarmed

Exotic moth borers, which are endemic to South-East Asia and the Pacific including Papua New Guinea (PNG) and Indonesia, are one of the highest biosecurity threats to Australia's sugar industry.

But it's projects like the one continuing to be led by SRA entomologist Dr Kevin Powell that instills confidence in how industry will effectively manage the exotic threat, should it reach the Australian mainland.

'Moth borers – how are we going to manage them when they arrive?' (2018/010) is an international research collaboration involving the Indonesian Sugar Research Institute and Ramu Agri Industries in PNG, with co-funding from SRA and the Queensland Department of Agriculture and Fisheries (DAF).

After three years of field studies in PNG and Indonesia, testing a range of insecticide products on a number of moth borer species, including stem and top shoot borers, Dr Powell is confident we will be armed with an effective chemical option to control any possible future incursion.

"The research has involved working with Australian agrochemical companies to select insecticides to test in PNG and Indonesia to determine their efficacy against different species of moth borers," Dr Powell said.

"The results so far are very promising. Although we have one season left to complete the project once all data is analysed, we are very likely to have at least one chemical control option for an Emergency Use Permit application, should there be an incursion. It appears to be working very effectively in both countries against some moth borer species."

In the event of an incursion an application would need to be submitted to the Australian Pesticides and Veterinary Medicines Authority (APVMA) for an Emergency Use Permit for any new chemical control agent.

"The data we are collecting would support an application to get the chemicals approved for emergency use. But, just like other insect pests, you can't be totally reliant on a single chemical. So, in the future, we will need to look at a more integrated approach for long-term control," Dr Powell said.

Australia's concern over moth borers is certainly valid, given international experiences with the pest, which is found widely in cane-growing regions of South-East Asia and the Pacific.

"We've seen the destruction it has caused overseas. In Papua New Guinea there have been reports of between 70-80% yield loss in sugarcane, especially where multiple moth borer species coexist," Dr Powell said.

"And, moth borers can also affect rice and grain crops, so an incursion would not just impact the sugar industry, it could affect other industries as well."

"But, I think with any biosecurity threat we've got to make sure that we are vigilant and report anything that is suspicious. Because if it's reported late, and the pest becomes established, it's not going to be easy to contain."

SRA acknowledges the funding contribution of the Department of Agriculture and Fisheries for this research activity.

Queensland Government

From left to right, the international research teams in Bandar Lampung, Indonesia and Ramu, Papua New Guinea.

Pictured (L to R) at Isis Mill with the At-line purity equipment are: Shane Senstock, mill fugaller, Brett Walker, Senior Production Assistant, and Jillian Wedmair, mill fugaller.

AT-LINE PURITY
MEASUREMENT SYSTEM CONTINUES TO IMPRESS

Further trials with an automated sensor at Millaquin Mill and at Isis Mill in the 2022 and 2023 seasons have been positive in proving the instrument's efficient measurement of the purity of molasses streams during the raw sugar making process, says QUT researcher, Darryn Rackemann.

The instrument was developed by Queensland University of Technology research staff and technicians in 2021.

An initial trial to test it at Rocky Point Mill was conducted in the 2021 season, funded under a Small Milling Research Project by Sugar Research Australia. A full report is in *Cane Matters Spring 2022 issue.*

The instrument can process all high brix liquid streams in the mill - syrup and A, B and C molasses – to provide a purity estimation for a stream in less than four minutes.

It can operate independently with little supervision or maintenance needed.

The measurement system works by diluting the high brix liquid factory sample. As the sample is diluted, its conductivity is measured and the peak conductivity for the sample determined. The point of peak conductivity is directly related to the true purity of the sample.

In the Millaquin Mill trial the instrument was calibrated weekly in a process using a sample of known purity and measuring its conductivity. The calibration took only ten minutes. The error for subsequent calibrations was estimated at only plus or minus one unit of purity.

The system is a stand-alone instrument that can be easily moved from site to site. However, it can also be permanently installed and easily controlled from a batch function within the factory control system.

An installed system requires:

- Measurement of the sample and dilution volume/weight (such as a balance)
- Conductivity probe/transmitter
- Clean water supply, either cooled condensate or domestic supply with a conductivity of less than 300 mS/cm
- Sample and water supply valves
- Controller.

"Trials of the system have highlighted that although the results may not be as accurate as a composite laboratory result, the high frequency of the results (every four minutes) provides a significant level of additional information about the purity of the factory streams for factory control operations," Darryn said.

"Isis Mill's trial with the instrument in the 2023 season has led management to consider more work with the instrument this year to extend the trial.

"I recommend that more mills join Rocky Point, Millaquin and Isis in considering testing the prototype system on site to determine if it adds value to the control of the factory process," Darryn said.

"I am happy to share information about both the prototype system and the batch control logic with interested mill managers."

SRA Variety Development Manager Far North Felicity Atkin inspecting a variety demonstration plot with Innisfail district grower Stephen Andrijevic.

2024 FIELD DAYS

Preparations are well underway for SRA's popular annual Field Days, to be held in three locations of the North in April and May 2024.

Meringa will be first cab off the rank, hosting its event on 30 April. As has become customary, the day will include a thought-provoking program of presentations, site tours and stalls.

SRA District Manager, Far North, Gavin Rodman said research activities on show at the Field Day would include the latest varieties, weed management including balsam pear trials, nutrient management, and pest and disease control.

"SRA's Field Days are an opportunity to showcase all of SRA's research activities on the one stage so to speak, so growers can get an idea of how these improvements can work on their farms," Mr Rodman said.

"So, it's a chance to meet face-to-face with our researchers working across a broad scope of projects which are designed to support growers' businesses and industry sustainability.

"It's very hands on and very interactive. Growers that come along can see and have robust conversations with each other and SRA researchers, hopefully coming up with solutions and ideas that benefit their operations."

Mr Rodman said the annual Field Days had grown in popularity over the years and were generally locked into most growers' calendars across the Northern Districts.

"It's the sort of networking opportunity you don't get at other industry events. And, as much as the Field Days are about learning and sharing ideas, it's also a great excuse to get off farm and catch up with your mates. If you are a local grower and are thinking about coming along, I can guarantee you the day will not disappoint."

This year's Meringa Field Day will also include a presentation by the Bureau of Meteorology (BOM) demonstrating Bureau weather and forecasting models. Cane growers and agronomists can use these models to benefit their specific locations and seasonal timeframes. The discussion will also include forecast insights, to understand how weather forecasts are produced.

FIELD DAYS - SAVE THE DATE!

Meringa – 30 April

SRA's Meringa Station, 34 Hall Road, Gordonvale. RSVP by Friday 20 April.

Further information contact Gavin Rodman at grodman@sugarresearch.com.au

Mackay – 8 May (Details TBC)

Further information contact Dylan Wedel at DWedel@sugarresearch.com.au

Innisfail

The South Johnstone Field Day showcase event on 16 May promises an exciting, new program which has been designed to demonstrate how SRA research is fostering sugarcane agronomy on-the-ground.

SRA Northern District Manager Phil-Anthony Patane said the day would be a combined initiative with the Cassowary Coast Reef Smart Farming (CCRSF) Project, managed by CANEGROWERS Innisfail.

"The first half of the day will be research presentations and the second half will be in the field," Mr Patane said.

"It will be a real lab to paddock experience, with those attending getting the chance to see how the Cassowary Coast Reef Smart Farming project is supporting SRA's research through field extension work and grower practice change."

CCRSF project leader Debra Telford said the afternoon field trip would include a soil pit viewing and tours of new variety demonstration plots.

"The collaboration between SRA and CCRSF is fast-tracking the implementation of emerging research at ground level," Ms Telford said.

"Growers will be able to see for themselves how SRA's newest varieties are performing in different soil types across the Johnstone catchment."

Morning presentations will include;

- Dr Seona Casonato, SRA Lead Field Pathologist – Disease Measurement and Management
- Dr Kevin Powell, SRA Entomology Leader – Beyond Imidacloprid Project
- Emilie Fillols, SRA Weed Scientist – Weed Management
- Dr Felicity Atkin, SRA Variety Development Manager Far North – Plant Breeding

Innisfail and Tully growers can attend the South Johnstone Showcase at the Australian Sugar Heritage Centre, 18-22 Bruce Highway, Mourilyan. The program of events begins at 8.30 am.

Mackay

The annual MAPS/SRA Field Day will be held at MAPS Victoria Plains farm on 8 May.

Other details are to be confirmed. Keep an eye out for SRA communications, including e-newsletters and the SRA website, for further details as they come to hand.

TALK WEATHER WITH THE BUREAU

The Bureau of Meteorology (BOM) will present a series of talks for all weather watchers in the sugar industry during March-May. A dedicated meteorologist will be on hand to provide:

- an overview of recent weather and demonstration of weather and climate products produced by the Bureau
- how sugarcane growers and agronomists can use BOM products to benefit their specific locations and seasonal timeframes
- a review of forecasts compared with actual results for the past 12 months of weather
- an explanation of climate drivers, anomalies and models
- Q&A sessions.

Participants are encouraged to bring their laptops or tablets to try out some of the website links and processes during the meetings.

Dates and locations:

Central: 12 pm (lunch), 1-3 pm, Friday, 15 March, SRA Mackay, 26135 Peak Downs Highway Te Kowai. RSVP by 8 March to: SRA District Manager Central, Dylan Wedel email DWedel@sugarresearch.com.au or phone 0490 029 387

Ballina: 9-11 am, Tuesday, 16 April, Richmond Room, 5 Regatta Avenue, Ballina

Isis: 2-4 pm, Thursday, 18 April, CANEGROWERS Isis, 48 Churchill Street, Childers.

RSVP for Ballina and Isis by Wednesday, 10 April to: SRA District Manager Southern, Lisa Devereaux email LDevereaux@sugarresearch.com.au or phone 0456 590 497

Meringa: Tuesday 30 April, Meringa Field Day, SRA Meringa Station. RSVP to: SRA District Manager Far North, Gavin Rodman, email GRodman@sugarresearch.com.au or phone 0476 807 355

Tully: Wednesday, 1 May, Tully Bowls Club, Butler Street, Tully (Session time to be confirmed). RSVP to: SRA Graduate Agronomist, Erin Headon email EHeadon@sugarresearch.com.au or phone 0447 109 376.

INTRODUCING **ONE OF SRA'S UP-AND-COMING YOUNG WOMEN IN SCIENCE**

Pictured (L-R) Laboratory Technicians Dr Farzana Darain and Noelia Neira-Peralta.

Noelia Neira-Peralta grew up in Arequipa, Peru, and comes from a family steeped in science. Her mother is a microbiologist, her father, a chemical engineer, and her sister is a doctor.

"I grew up well acquainted with the Periodic Table of Elements, with learning scientific names, with knowing the correct names for parts of the human anatomy, and the causes of various illnesses," Noelia said.

"Growing up in such an environment definitely formed and strengthened my interest in science very early on."

She completed a Bachelor of Life Sciences (Biology) in 2012 in her home town at the National University of San Agustin.

Fast forward to 2018 and Noelia has travelled to Australia and started an internship at SRA as part of her Masters of Biotechnology at the University of Queensland.

She was part of a research project that involved the isolation and molecular identification of endophytic fungi in different sugarcane varieties. These fungi, such as *Epicoccum nigrum*, have been associated with the biological control of phytopathogens in sugarcane and in soil where sugarcane grows. Others, such as *Helminthosporium sacchari*, have been known to cause disease in sugarcane, such as Eyespot, characterised by yellowish oval lesions on leaves and stems.

Dr Priya Joyce, a Principal Research Scientist at the time at SRA and Dr Stephen Mudge, Research Mission Manager supervised Noelia.

After graduating, Noelia worked at SRA from 2019 to 2020.

It was an exciting time for a young woman in science as Noelia was able to work on the delivery of Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR), in sugarcane calluses. Calluses are a growing mass of unorganised plant cells, which form from plant tissue samples exposed to growth hormone regulators.

CRISPR is at the cutting edge of science. It is a family of DNA sequences found in the genomes of single cell organisms whose cell lacks a nucleus, such as bacteria and archaea.

They can be used to detect and destroy DNA from similar organisms during subsequent infections, providing a form of acquired immunity. CRISPR can also be used to edit genes within organisms with a wide variety of applications. (Further CRISPR research led to the development of one of gene technology's sharpest tools: the CRISPR/Cas9 by female scientists Emmanuelle Charpentier and Jennifer Doudna, winning them the Nobel Prize in Chemistry in 2020.)

Noelia worked in the molecular genetics lab with Dr Priya Joyce and also assisted Inorganic Chemist Zofia Ostatek-Boczynski in the Inorganic Chemistry lab, and Near Infrared Chemist Andrew Lynch.

"Working at SRA was incredibly wonderful," Noelia said.

"It was my first time working abroad and I was learning a lot by being around some very knowledgeable colleagues."

She had a change of career in 2021 when she moved into the biopharmaceuticals sector.

At the height of the COVID pandemic she was working on manufacturing antigen-coated gold nanoparticles and other components of lateral flow immunoassays for COVID Rapid tests.

"It felt super great to be a part of the solution to the pandemic," Noelia said.

"With the high demand at the time, we had to reach daily production targets and manufacturing yields which were quite challenging."

However, with the subsequent decline in the number of COVID cases many newly opened biopharmaceutical companies struggled to keep afloat and the company Noelia worked for entered into voluntary administration.

Noelia was able to remain in Brisbane and return to SRA when Laboratory Technician Dr Farzana Darain contacted her last year for help with the high number of soil samples from sugarcane farms that had to be analysed for multiple research projects.

She now works in the Inorganic Chemistry lab with Farzana.

Her work focuses on 'wet chemistry' (a term used to refer to chemistry generally done in the liquid phase on a lab bench) and the multiple quantitative methods that are used to determine major and trace elements in plant and soil samples.

"It was lovely to return to my former work colleagues. Coming back felt both nostalgic and sweet at the same time.

"I feel part of the team and my job is well focused with every day another step forward towards a useful research outcome."

Noelia is happy to remain in plant science.

"I became interested in studying plant pathology during my degree. The amount of viral, bacterial and other diseases that affect crops, and the genetic mechanisms which determine how plants survive pathogens and evolve over time are frankly astonishing," Noelia said.

"Once you understand what a strong role plants play in the health of earth's ecosystems and human life you quickly find that plant science is fascinating."

SRA hopes this article will encourage science graduates to think about a career in the sugarcane industry.

Join SRA's team of skilled scientists and work on translational research to solve agronomic challenges.

From nutrient management to crop and soil care, science graduates play a vital and exciting role in shaping the future productivity and sustainability of sugarcane growing - the beating heart of a billion-dollar Australian export industry.

Noelia Neira-Peralta in the chemistry laboratory at Indooroopilly.

TWO ASIS STUDENTS NOW WORK FULLTIME AT WILMAR

Two students who finished their work placements under the Australian Sugar Industry Scholarship in July/August last year are now employed full time by Wilmar at Pioneer Mill near Brandon and at Plane Creek Mill at Sarina.

SRA with the Sugar Research Institute and Australia's sugar milling companies each year fund undergraduate student placements at the mills through the Australian Sugar Industry Scholarship (ASIS), to encourage high calibre students to work in Australian sugar processing.

Katja Biggs, a Chemical Engineering graduate of the University of Queensland and Bill Tapp, a Mechanical Engineering graduate of James Cook University were among seven students who completed work placements in July-August last year.

The five other students in the group completed further placements during November/December. They will complete their degrees at the end of this year:

- Harrison Turner, a Chemical Engineering final year student who worked at Mossman Mill (July/August) and at Tully Sugar (November/December) last year.
- Jason Nel, an Electrical Engineering final year student who worked at Racecourse Mill and at Wilmar in Townsville.
- Clayton Tozer, a Mechanical Engineering final year student who worked at Tully Sugar and at Pioneer Mill.
- Chelsea Tapscott, a Chemical Engineering final year student who worked at Harwood Mill and at Pioneer Mill.
- Bronwen Nel, a Chemical Engineering student who worked at Wilmar's Pioneer Mill and at Plane Creek Mill.

Applications are now open for 2024 scholarships and close on 15 March.

To qualify you must be a penultimate year student currently undertaking an engineering, science or technical degree at an Australian university or tertiary institution and able to undertake up to three periods of work placement of 12 weeks each, over an 18 month period during semester breaks at an Australian sugar mill.

Interns are paid at industry rates plus a living away allowance.

More information and the application form is available here: Australian Sugar Industry Scholarship – Sugar Research Institute (sri.org.au)

Pictured: Katja Biggs, A Chemical Engineering graduate of the University of Queensland is now working for Wilmar full time at Plane Creek Mill near Sarina.

Growers attending the Mission Beach advanced weed workshop.

Emilie and Gavin at the Babinda workshop

OPTIMISING THE USE OF KNOCKDOWN HERBICIDES

Sugar Research Australia's Weed Scientist Emilie Fillols continued her extensive advanced weed workshop tour, hosting another two herbicide workshops in the Northern District in February.

For the past two years, Emilie has presented numerous pre-emergent and post-emergent weed management workshops in cane growing regions across New South Wales and Queensland.

Around 35 growers attended two workshops held at Babinda and Mission Beach on 14-15 February, learning how to optimise the use of knockdown herbicides and spray applications. Topics included: How knockdown herbicides enter the leaves, reach their target site and kill the weeds; How to choose the correct adjuvant; and How to prevent spray drift.

The workshops also included presentations by Mark Rantucci and Malcolm Salisbury from Nufarm, demonstrating the impact of product incompatibility and the effect of different nozzles and adjuvant on drift.

More workshops are planned for the Northern and Central Districts in the coming months.

Keep an eye out for further details in your SRA *eNewsletter.* Not an email subscriber? Sign up today. Visit: sugarresearch.com.au/subscribe/

(L-R) Len and Kerry Paris.

(L-R) – David Wah Day and William Wah Day.

(L-R) – Ross Marino and Darryl Quabba.

(L-R) – Brett Coulthard, SRA District Delivery Office Far North Paul Calcino and Cameron Reghenzani.

RESEARCH PROJECT INVESTMENTS

PROJECT IDENTIFIER	TITLE	CHIEF INVESTIGATOR	RESEARCH AGENCY	END DATE
Research Mission 1: Profitable and Productive				
2017/002	Implementing and validating genomic selection in SRA breeding programs to accelerate improvements in yield, commercial cane sugar, and other key traits	Ben Hayes	The University of Queensland	1/10/2023
2020/003	Maximising cane recovery through the development of a harvesting decision-support tool	Phil-Anthony Patane	Sugar Research Australia	1/12/2023
2022/012	Use of machine learning to determine the extraneous matter and billet length in cane consignments	Geoff Kent	Queensland University of Technology	1/02/2027
2022/014	Australian Sugar Industry – Development of factory training modules – Phase 3	Bruce King	Sugar Research Institute	1/03/2027
2022/201	Feasibility study of using mill waste streams by a 5 ha micro-algae facility for supplemental income	Craig Wood	Isis Central Sugar Mill Co. Ltd	6/10/2023
2022/202	Optimising milling train extraction through added water control using online NIR cane and bagasse data	John Edwards	Tully Sugar Limited	1/06/2023
2023/201	Bagasse fly ash system performance benchmarking	Jonathon Gilberd	Wilmar Sugar Australia Limited	30/06/2024
2023/202	Evaluating the suitability of measuring massecuite dry substance for control on Australian pan stages	Bryan Lavarack	Mackay Sugar Limited	1/07/2024
2023/203	Billet Quality Assessment	Barton Wixted	Grifith University	30/06/2024
Research Mission 2: Resilient and Enduring				
2018/010	Moth borers - how are we going to manage them when they arrive?	Kevin Powell	Sugar Research Australia	1/06/2025
2020/002	Developing an integrated device for on-farm detection of sugarcane diseases	Muhammad Shiddiky	Griffith University	21/03/2024
2020/004	Beyond Imidacloprid - Chemical and Biorational Alternatives for Managing Canegrubs	Kevin Powell	Sugar Research Australia	1/03/2025
2020/007	Environmental DNA Technologies and Predictive Modelling for Rapid Detection and Identification of Sugarcane Priority Pests and Diseases	Andrew Weeks	EnviroDNA Pty Ltd.	1/06/2024
2020/008	Transformational crop protection – Innovative RNAi biopesticides for management of sugarcane root feeding pests	Neena Mitter	The University of Queensland	30/06/2024
2022/002	Updating the Sugarcane Industry Biosecurity Plan	Stuart Kearns	Plant Health Australia	1/06/2027
2022/003	Fiji Leaf Gall (FLG) Eradication Strategy: Peri-urban surveillance for area freedom	Seona Casonato	Sugar Research Australia	1/06/2024
2022/004	Soldier fly diagnostics, distribution, and development of an artificial diet	Kevin Powell	Sugar Research Australia	1/05/2025
2022/005	Assess weed impact/distribution for prioritisation	Emilie Fillols	Sugar Research Australia	30/06/2024
2022/006	Development of a resistance screening method for chlorotic streak	Chuong Ngo	Sugar Research Australia	1/06/2026
2022/007	Delivery of a pest and disease diagnostic step change for the sugarcane industry (RSD - NIR)	Seona Casonato and Steve Staunton	Sugar Research Australia	1/12/2025
2022/015	Delivery of a pest and disease diagnostic step change for the sugarcane industry (RSD-LAMP)	Jimmy Botella	The University of Queensland	1/05/2026
2022/016	Viruses to aid biological control of major root-feeding pests of sugarcane	Michael Furlong and Kayvan Etebari	The University of Queensland	1/08/2027
2022/901	Agri-climate outlooks	Danielle Skocaj	Agricultural Innovation Australia Limited	30/12/2024
Research Mission 3: Diversified and Adaptable				
2022/018	Building industry engagement capability for a diversified and adaptable Australian sugarcane industry	Madeline Smith	Queensland University of Technology	30/06/2024

PROJECT IDENTIFIER	TITLE	CHIEF INVESTIGATOR	RESEARCH AGENCY	END DATE
Research Mission 4: Sustainable and Efficient				
2020/802	Mackay Whitsunday Cane to Creek	Matt Schembri	Sugar Research Australia	30/06/2024
2020/804	Reducing herbicide usage on sugarcane farms in reef catchment areas with precise robotic weed control	Emilie Fillols	Sugar Research Australia	30/06/2024
2020/805	Increasing industry productivity and profitability through transformational, whole of systems sugarcane approaches that deliver water quality benefits	Simon Clarke	Sugar Research Australia	30/06/2024
2021/008	Develop a sustainability framework for Australian sugarcane and sustainability report in collaboration with stakeholders	Ingrid Roth	Roth Rural Pty Ltd	1/11/2024
2021/804	Mobilising the Murray	Simon Clarke	Sugar Research Australia	31/12/2023
2021/805	Soil specific management for sugarcane production in the Wet Tropics	Danielle Skocaj	Sugar Research Australia	13/06/2024
2021/806	DES122685 Sugarcane nutrient management training	Lisa Devereaux	Sugar Research Australia	30/06/2023
2022/010	Industry-wide leaf and soil survey to detect hidden macro and micronutrient constraints	Barry Salter	Sugar Research Australia	30/06/2024
2022/011	Understanding phosphorous requirements for sugarcane crops growing in alkaline soils	Danielle Skocaj	Sugar Research Australia	13/12/2027
2022/801	XXXX Lower Burdekin Smart Irrigation Project	Simon Clarke	Sugar Research Australia	1/05/2025
2022/802	Lower Burdekin Cane Major Grants Project	Simon Clarke	Sugar Research Australia	1/05/2024
2022/8803	Cassowary Coast Reef Smart Farming - Tully	Simon Clarke	Sugar Research Australia	17/05/2024
Research Mission 5: Resourced and Skilled				
2018/015	Sugar Milling R & D Capability Building Program	Geoff Kent	Queensland University of Technology	31/03/2027
2019/102	PhD Scholarship - Genetic solutions for determining fibre quality traits in sugarcane	Angela O'Keeffe	The University of Queensland	31/03/2024
2019/806	Advancing techniques for diagnosis of yellow canopy syndrome	Kevin Powell	Sugar Research Australia	25/06/2023
2021/101	PhD Scholarship - Optimising mill mud and ash applications for soil improvement and carbon sequestration	Hannah Green	James Cook University	30/04/2025
2021/102	PhD Scholarship - Systems biology for sustainable agriculture: evaluation of plant growth-promoting bacteria to produce high-performing biofertilisers	Ian Petersen	The University of Queensland	30/04/2025
2021/401	Research Award - Risk assessment for the newly discovered parasitic nematode *Pratylenchus parazeae* in the Australian sugarcane industry	Shamsul Bhuiyan	Sugar Research Australia	1/04/2024
2022/101	PhD Scholarship - A novel biosensor device for on-farm sugarcane disease diagnosis	Simon Strachan	Griffith University	29/02/2024
2022/401	Research Award - Harnessing the SynBio potential of Australia's stingless bees, the first step	Natasha Hungerford	The University of Queensland	31/03/2025
2022/402	Research Award - Genomic prediction of ratoon yield robustness	Eric Dinglasan	The University of Queensland	14/05/2024

The contact email address is sraresearchinvestments@sugarresearch.com.au

BECOME A MEMBER OF YOUR INDUSTRY OWNED COMPANY

All sugarcane growing and milling levy payers are eligible to be members of SRA and are encouraged to do so.

Membership is voluntary, with a range of associated benefits including eligibility to vote at SRA's Annual General Meeting (AGM).

HOW CAN I BECOME AN SRA MEMBER?

Download the Membership Application Form from the website and email it to sra@sugarresearch.com.au

If you have any questions regarding SRA Membership, please call (07) 3331 3333

For further information please visit SRA website at: sugarresearch.com.au or scan the QR code to join.

sra

Sugar Research Australia Limited

ABN 16 163 670 068

Brisbane Office Level 10, 300 Queen St, Brisbane QLD 4000 Australia
Postal Address GPO Box 133, Brisbane Qld 4001

T 07 3331 3333
E sra@sugarresearch.com.au
sugarresearch.com.au