Australian

Issue: 63 | DECEMBER 2021

BEST IN THE WEST CARNARVON BANANAS' SWEET WIN

SEASONAL WORKERS PAGE 10-13 MITE CONTROL PAGES 20-21 60 YEARS OF ABGC PAGES 26-29



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Protect your farm and family from Panama TR4.

People who care about you and your business should respect your on-farm biosecurity rules.

Protect your fellow banana growers from Panama TR4. The disease can easily spread if there are not the right barriers in place to stop it.

Be part of the community's fight against Panama TR4. If everyone does their part, we have a greater chance of limiting the impact of the disease on your future and our community.

If you need help with on-farm biosecurity

Call the National Banana Development and Extension team on 07 4220 4152 or email tegan.kukulies@daf.qld.gov.au.

Self-help resources are available to you

Call the Panama TR4 Program for a copy of the Grower Kit on 07 4091 8140 or email panamatr4@daf.qld.gov.au. For a digital copy search 'Panama TR4 Grower Kit' online.

For more information visit panamatr4protect.com.au or call 13 25 23 *The Panama TR4 Program is a joint initiative between the Queensland Government and the Australian Banana Growers' Council*





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COMMENT

CEO COLUMN



TR4 Program Transition

It has been a tough year for many growers, but the resilience shown is a massive positive. Another positive is that (at the

time of writing) there had not been a new farm detected with TR4 since August 2020.

As most would be aware by now, the current Biosecurity Queensland (BQ) Panama TR4 Program is being transitioned to an industry-led Program. ABGC, on behalf of all the banana industry will take leadership of the Program from 1 July 2023 and, in the meantime, we are becoming more fully informed of how the current Program works and devising a plan on how best to deliver the new Program.

The new Program, like the current one is important to not only slow the spread of TR4 in the Cassowary Coast area, but also to keep it out of all other growing regions across Australia.

The driver of the change is the funding source for the Program. While the Queensland Government has committed funds to June 2023 and not beyond that, growers nationally will be asked to continue to fund the Plant Health Australia levy to the same level as now. Assuming that is agreed to, ABGC will have \$1.6m per year for the Program, or 40% of the current \$4m budget.

It is imperative for the industry to continue to be successful in containing the spread of TR4 for as long as possible. Notwithstanding this, we also need to acknowledge the scientific advice that TR4 cannot be eliminated and will inevitably spread over time.

Early in the new year, the ABGC will also be asking growers their views on our plans for a new-look Program, including its structure and priorities. The start of that process will be a TR4 Program Discussion Paper which will be sent to all Far North Queensland growers. We will then hold meetings and provide an opportunity for phone discussions.

The ABGC will design and deliver an effective and efficient Program with the support of growers so as to contain and control TR4, as well as possible. It is now more than six and a half years since the first detection of TR4 in the Cassowary Coast region. So, individual businesses have had that time to adjust to TR4, including to invest in appropriate on-farm biosecurity. Also, researchers have had this time and will continue to work on developing agronomic options including appropriate varieties and soil management strategies.

lim Pekin, CEO

The recent TR4 Epidemiological Review, written by TR4 experts, is well worth reading. The main theme from that, which was supported by the TR4 Management Board, was that early detection and effective, quick destruction of impacted plants is imperative. Consequently, ABGC proposes to prioritise the new Program resources on surveillance for early detection. We also aim to continue the regulation of infected properties (IPs).

The ABGC is not able to continue the current infested property (IP) notice system, where a property-specific 'Notice of Presence of Panama TR4' is issued, audited and enforced for every newly infected farm in the future. Instead, there needs to be a system in place that will slow the spread of disease while being flexible to administer, easily understood and complied with, and able to accommodate the inevitable spread of the disease. ABGC and the TR4 Program Management Board believe a Code of Practice is the best means to achieve these outcomes. ABGC plans for the Code to have mandatory provisions which IP owners must comply with, and other provisions which are considered best practice to guide growers to meeting their General Biosecurity Obligation. The details of this are being negotiated with Biosecurity Queensland.

The ABGC is very aware of the enormous responsibility that comes with running a program

that has a bearing on the sustainability of the industry. The ABGC will be accountable to all growers across Australia, as well as to Plant Health Australia, for the PHA levy funds that are and will continue to be spent on delivering the TR4 Program. The ABGC is committed to providing regular written reports to all growers (not just ABGC members), so that growers can see the costs associated with running this new TR4 program.

The ABGC will be in contact with growers in the new year on the Program transition and we look forward to hearing your views.

Banana growers have worked through many challenges in the past and we are confident that we will continue to meet TR4 challenges in the future.

**Read more about how you can be involved in the Program transition on Page 32 and more on the EPI Review on Pages 34-35.



Jim Pekin recently marked 10 years as the ABGC CEO. He said his biggest highlight has been, "Working with growers, Board directors and a great team".



COMMENT

CHAIR COLUMN



After another year of highs and lows, it's nice to end 2021 by recognising some recent notable achievements from banana growers across the country, which

you'll read more about in this magazine.

As featured on our front page, the Sweeter Banana Co-operative in Carnarvon, Western Australia, recently took out WA's Good Food Guide People's Choice Award for the *'Product of the Year'*.

What makes this award so significant is that it was voted on by WA consumers. West Australians were asked to nominate their favourite fresh WA product and Sweeter Bananas came out on top.

It's certainly a real honour, but very well deserved. The Sweeter Co-operative is an innovative collective which produces a fantastic product. It is a group of family-run farms, and, as a group they have worked tirelessly to successfully market their produce with a point of difference to WA consumers.

Another recently announced accolade is that received by the family-owned Tableland banana growing enterprise – Rock Ridge Farming – named *Business of the Year* at the 2021 Mareeba Chamber of Commerce Business Excellence Awards in October.

Stephen Lowe, ABGC Chair

Run by Peter and Chelley Howe and family, the company also took out the *Excellence in Rural-Agriculture Award*, which put them in the running for the *Business of the Year*, from five other category award winners.

Congratulations to Rock Ridge and the Sweeter Banana Co-operative. You can read more about their awards on pages 8 and 9, respectively.

Bananas on the global stage

In another significant achievement, Far North Queensland's Bartle Frere Bananas helped to put bananas on the world stage last month, when owner and managing director Gavin Devaney appeared in a video presentation during the UN Climate Change Conference (COP26) in Glasgow.

Gavin featured in a Hitachi presentation, focussing on his Smart Farm project which is funded by Hort Innovation from the Federal Government's Landcare Program.

The presentation shone a bright light on best practice in the Australian banana industry and - in particular - the considerable environmentally friendly practice changes and new technology being used by Gavin to create a sustainable, eco-friendly farming operation.

I know personally that Gavin is extremely passionate about the environment and sustainable farming. His dedication earnt him the inaugural Future Farming

ANNUAL BANANA VOLUMES

The national banana levy collected by the Federal Department of Agriculture is compulsory for commercial banana growers. It is 2.19 cents per kilogram of bananas sold.

The dollars collected show an estimate of production for the previous financial year. Right is a table of the levybased banana volumes. For non-industry participants, please note this is an approximation of production, but not all bananas grown are sold, i.e. some don't make the retailer-required specifications.

Also, there is a lag factor, in that levies paid on June sales (at least) are paid in the following financial year. Exemptions from paying the levy and other details are to be found at agriculture.gov.au/ag-farm-food/levies/rates/bananas

BANANA LEVY RATE

The make-up and purpose of the various components of the Banana Industry Levy are as follows.

Levy Amount Purpose

- 0.50c /kg Plant Health Australia (PHA) levy: The Department sends the funds to PHA, for the ongoing containment and management of Panama Tropical Race 4 disease, and to conduct activities that aim to improve biosecurity within the banana industry.
- 1.69c /kg Hort Innovation (HIA) levy. The Department sends the funds to HIA for R&D and Marketing: 0.54 c/Kg is for Banana R&D, which is matched dollar for dollar by the Department and 1.15 c/kg for Banana Marketing
 Total = 2.19c /kg* (32.85c per 15kg carton).

Award at Congress earlier this year. He is one of many environmental stewards we have in our industry who are leading the way in environmental best practice.

EPI Review

On Pages 34-35 you can read a comprehensive summary of the recently released, independent scientific review into the pattern of spread of Panama tropical race 4 (TR4) in the Tully Valley.

If you haven't already done so, I would encourage all growers to read the Epidemiology Review in full. It contains valuable insights into trialled agronomic practices and innovations that may help control and contain TR4 in the future.

It also includes a number of recommendations, including potential new technologies to detect the disease in asymptomatic plants, as well as sciencebased changes to containment and destruction protocols.

Merry Christmas and Happy New Year

And finally, I'd like to wish everyone a very Merry Christmas and a happy and prosperous New Year. I hope to see as many of you as possible in 2022!

FY2021 produced a bumper year

The Australian banana industry sold the second highest ever production in 2020/21, based on levy dollars collected by the Government.

The 403,000 tonnes in 2020/21 was surpassed only in 2016/17 with 414,000 tonnes.

Years e	nding 30th Jun	e (in '000 tonnes):
2013		341
2014		371
2015		371
2016		393
2017		414
2018		388
2019		372
2020		382
2021		403

The Banana PHA levy currently funds the containment of the first TR4 infested farm that the industry purchased and the industry's part of the cost-sharing deed with the Queensland Department of Agriculture and Fisheries for TR4 containment.

It also funds the pre-existing commitments – Torres Straight Exotic Fruit Flies Eradication Response, PHA membership/meetings and Government levy collection.

Further information: Jim Pekin, CEO, ABGC: Email - jim.pekin@abgc.org.au Phone – 07 3278 4786. More info on the levy rate: https://www.agriculture.gov.au/ag-farm-food/levies/rates/bananas

QLD REDS EXPERIENCE BANANA LIFE

Queensland Reds players Jock Campbell and Harry Wilson got to experience real life on a banana farm when they worked in the paddock at Mark and Amanda Catelan's Innisfail farm as part of the 2021 Reds to Regions tour.

They learnt to cut and hump, and by the end had their techniques sorted. The Reds to Regions tour aims to connect Reds players with the communities they represent on the field.



Reds players Harry Wilson (left) and Jock Campbell. Picture by: Tom Mitchell, QRU.



Pictured (L-R) Mark Catelan (Grower), Michael Hooke (Reds FNQ Regional Manager), Tyson Catelan (son), Jock Campbell (Reds player - Outside Back), Harry Wilson (Reds player - Backrow), Tom Kennedy (Reds Media & Communications), Johnny Filby (Farm Labourer).

COLLECTIVE BARGAINING CLASS EXEMPTION

The ACCC Collective Bargaining 'Class Exemption' has been available since 3 June 2021. It allows eligible small businesses to collectively bargain without breaching competition laws.

The class exemption allows businesses with an aggregated turnover of less than \$10 million in the financial year prior to them forming or joining a bargaining group to collectively bargain with customers or suppliers.

Groups wishing to rely on this class exemption must complete a one-page Notice Form and provide it to the ACCC when the group is formed and to each target business when the group seeks to negotiate with the target business.

Once the notice is lodged, legal protection from

competition laws commences automatically. This class exemption relates to collective bargaining: a process that allows groups of businesses to jointly negotiate with their customers or suppliers over common issues (e.g. terms, conditions and/ or prices). Negotiating as a group can allow businesses to share the time and cost of negotiating contracts, and potentially give group members more input into contract terms and conditions. Further information is on the ACCC website www. accc.gov.au

HORTICULTURE PRODUCE AGREEMENTS

Virtually all banana growers must have a Horticulture Produce Agreement (HPA). The ACCC website notes that the only exemptions from the need for a HPA is that if the buyer of the fruit is selling directly to consumers or it's used for processing. A HPA is still required for those selling direct loads to retailers.

The Horticulture Code of Conduct is a mandatory code prescribed under the Australian Government's *Competition and Consumer Act 2010*. It came into effect on 1 April 2018.

The Code aims to improve the clarity and transparency of trading arrangements between growers and traders in horticulture. The Code of requires growers and traders to have a HPA, which is a written contract before they can trade with each other.

Traders can be either a merchant or an agent. The ACCC conducts audits for compliance. If growers and traders don't have a written HPA that is compliant with the Code, they could be subject to penalties. For more information go to: www.legislation.gov.au/Details/ F2017L00302

BANANA WOMEN'S NETWORK RE-FORMS

The ABGC is looking to re-form the Banana Women's Network and is keen to hear from women in the industry wanting to participate.

The group was established several years ago as a platform for women in the industry to share ideas and experiences in a social environment.

Unfortunately, restrictions on social gatherings due to COVID-19 brought the group to a halt, however, with life starting to return to some kind of normal, the ABGC would like to reform the group.

Anyone wishing to be part of the network can contact Kathryn Dryden on 0447 000 203 or email bmp@abgc.org.au

SJ FIELD DAY

The latest research into new varieties, banana desuckering, and nutrient rate trials was on display during a field walk held at the South Johnstone Research Facility earlier this year. Organised by the National Banana Development and Extension Program (BA19004), over 50 banana growers and industry stakeholders attended the event.

The field walk included a tour with Jeff Daniells of the new variety evaluation trial. Growers and industry stakeholders had the opportunity to take a look at plant crop bunches from a suite of new varieties including four new CIRAD hybrids, some Dwarf Lady Finger and Cavendish selections.

Shanara Veivers and Nandita Pathania gave a research update on the importance of early desuckering in a plant crop of tissue culture for improved yield in the following ratoon crop. An update from Curtis Lanham and Rebecca Murray was given to growers on the Nitrogen and Phosphorus rate trial monitoring yield and nutrient losses currently being conducted at the South Johnstone Research Facility.

Read more about early desuckering in a plant crop of tissue cultured plants on Page 22. And, see more social pics from the event on Page 50.



Taste testing at the SJ Field Day organised by DAF.

LATEST AG CHEMICAL UPDATE

Keep up to date on any developments in the regulatory oversight of crop protection chemicals via the Ag Chemical Updates that are produced as part of the Hort Innovation project Regulatory support and coordination (pesticides) (MT20007).

You can download the latest update on the Hort Innovation website here;

https://www.horticulture.com.au/ growers/help-your-business-grow/ research-reports-publications-factsheets-and-more/mt20007/

BECOME A FARM PLASTICS CHAMPION TODAY

Disposal and recycling of plastic waste is an ongoing challenge for banana growers.

Now MAMS Group and Greencollar have partnered to create a solution in Far North Queensland by subsidising the collection of plastic waste - High Density Poly Ethylene (HDPE) and Low Density Poly Ethyline (LDPE) - and its delivery to a recycling centre. MAMS group in Innisfail are now collecting bunch bags from farms under the FNQ Farm Plastics Program. Bales will be collected free and, where pre-baling is not possible significantly reduced collection costs are available via MAMS. For more information or to discuss collection costs, please contact MAMS Cassowary Coast on (07) 40617450 plastics@mamsgroup.com.au or Charlotte Fladgate Charlotte fladgate@greencollar.com.au or visit greencollar.com.au

QBAN SCHEME FACILITIES

Mission Beach Tissue Culture Nursery	07 4068 8553 0418 299 900	sdlavis4@bigpond.com	Lindsay Road (PO Box 326), Mission Beach QLD 4852
P.G. Berry-Porter - Trading as Kool Bananas	07 4068 9382	shazza141@bigpond.com	18 Casuarina Cres (PO Box 191), Mission Beach QLD 4852
Lowes Tc Pty Ltd - LABORATORY & NURSERY (NSW)	02 4389 8750	Greg@lowestc.com.au Patricia@lowestc.com.au Natasha@lowestc.com.au	202 Tumbi Road, Tumbi Umbi NSW 2261
Sival Farming Tissue Culture Nursery	07 4068 8559 0418 299 900	sdlavis4@bigpond.com	Dati Road, Walkamin QLD 4872
Yuruga Laboratory and Nursery	07 4093 3826 0427 933 791	admin@howefarms.com.au	5970 Kennedy Highway, Walkamin QLD 4872
Wide Bay Seedlings Pty Ltd	07 4129 6684 0427 371 353	office@wbseedlings.com.au	1971 Mungar Road, Pioneers Rest QLD 4650
Ausplant Nursery	07 4662 4934 0427 371 566	brady@ausplantnursery.com.au	Winton Street (PO Box 766), Dalby QLD 4405



The family behind the award-winning Rock Ridge Farming (L-R) Thomas, Chelley, Jess, Peter and son David.

By Lea Coghlan

Tableland banana grower Rock Ridge Farming was crowned Business of the Year at the 2021 Mareeba Chamber of Commerce Business Excellence Awards in October.

Run by Peter and Chelley Howe and family, Rock Ridge Farming is a well-established banana and avocado enterprise which employs more than 200 people all-year round.

From their beginnings on a 20-acre avocado farm in 2004, the Howe family has developed a successful horticulture enterprise which grows avocados across six farms, some 50,000 trees, and bananas on three properties, totalling more than 700 acres, spread through Mareeba Shire and the southern Tablelands.

Rock Ridge Farming won the Excellence in Rural-Agriculture Award, granting them entry to be considered for the Business of the Year from five other category award winners, among the 37 award nominees honoured.

Peter and Chelley Howe said their staff was a key to Rock Ridge Farming's success.

"We were both surprised and honoured to win the award," Mrs Howe said.

"Our staff are amazing and their support has enabled us to win this award. It would not have been possible without every single person involved in our banana and avocado operations."

Mrs Howe said supplying Aussie consumers with the highest quality produce was the cornerstone to the business.

"To do this, we have a hands-on approach with all aspects of our supply chain – from paddock to consumer," Mrs Howe said. "We pack and dispatch 100 per cent of our produce in house at two banana packing facilities and a new purpose-built packing facility for avocados.

"Overseeing the grading, packing, dispatch and marketing of our own fruit gives us confidence that only the best produce is being delivered to Australians and their families."

The Howes welcomed son Tom and daughter Jess and her partner James into the business several years ago, while youngest son David has completed his apprenticeship and will join the business early next year.

While continuing to be competitive in the horticulture game, the last few years has seen a big focus on securing seasonal labour – an issue made more challenging in wake of the COVID-19 health pandemic and closure of international borders.

Daughter Jess Howe guided Rock Ridge Farming to become an Approved Employer in the Seasonal Worker Programme, which was secured in 2019.

"This means we could now manage our own work force by bringing seasonal workers into the country and employing them directly," Ms Howe said.

"At the time we had no idea how valuable and how much of an asset this would be to our business.

"Rock Ridge has had to adapt quickly to source sufficient labour and, as a result of reduced backpacker numbers, we have experienced an increased reliance on the Seasonal Worker Programme." Rock Ridge Farming has taken it a step further, securing a temporary short-term lease of a suitable Regional Quarantine Facility for 160 persons in December and January.

"We have worked diligently to fill both our own labour gaps and those of other employers on the Tablelands," Ms Howe said.

"These two arranged quarantines will benefit seven other local farmers directly and many other smaller growers indirectly."

Peter Howe said Rock Ridge Farming was focused on providing a strong platform for business continuity while providing customers with the highest quality produce.

"To do this, we aim to maintain and improve on current management practices within the supply chain to ensure that only the best quality fruit is making it to our Aussie consumers," Mr Howe said.

"We will continue to focus on growing a good product, grading and packing it well, ensuring it has a gentle journey to the shops and that it is sold within the appropriate timeframes.

"We can't wait to see what the future of farming looks like for not only Rock Ridge Farming but for Australian farms in general.

"So much happening in this space and it's such an exciting industry to base our futures on."



Sweeter Banana Business Manager Doriana Mangili accepting the award.

Carnarvon banana growers take home major WA award

The Sweeter Banana Co-operative continues to celebrate after winning the People's Choice Award for Product of the Year at the 2021 Western Australian Good Food Guide Awards.

Presented by Buy West Eat Best, the inaugural award was a particular honour as it was voted on by West Australian consumers.

Residents of WA were asked to nominate their favourite product and Sweeter Bananas came out on top. It was a hard fought-for award, with consumers nominating a diverse range of products including other fresh horticultural produce, sauces and chutneys, seafood and even local bakeries.

Accepting the award at a gala dinner in Perth on October 18, Sweeter's Business Manager Doriana Mangili thanked the co-operative's growers, their staff and the public who voted their product No.1 in the state.

"We're very passionate about our bananas, but noone is more invested than our amazing customers who have voted for us this year and we want to thank all of them," Ms Mangili said.

"We are a co-operative, we are a family, and Carnarvon is our big family. To the amazing community up there, this award is for them as well."

The Sweeter Banana Co-Operative is owned and operated by 18 family-run farms on the banks of the Gascoyne River. The co-op has always prided itself on producing a great product and now has the award to prove it.

"It's one thing to tell everyone you produce the best bananas, but it's another for your customers to validate it," Ms Mangili said. The award is considered even more special, after a tough year of weather-related events and the impacts of COVID.

"This is a fabulous recognition for our hard-working growers who are part of the Sweeter Banana co-operative which will be celebrating 20 years in 2022," she said.

"Sweeter Bananas have been a founding member of the Buy West Eat Best campaign since 2008, a movement which evolved after people demanded more accurate labelling about where their food comes from.

"Our Carnarvon Sweeter Bananas are hyper local and by aligning with the Buy West Eat Best program, we've been able to differentiate our products as a local one consumers can trust."

Sweeter Bananas Chairman Chris Collins said he was not surprised by the win after seeing a groundswell of support from consumers on social media in the lead up to the awards.

"Consumer feedback has grown as the profile of our bananas has increased; we can truly claim to grow WA's favourite bananas," Mr Collins said.

An estimated 15 million Sweeter Bananas end up in lunchboxes and Western Australian households each year, a number that has not happened overnight.

"By recognising that our locally-produced, smaller, sweeter bananas had a point of difference from other bananas, we have worked hard to market them to our local audience and WA customers now seek out Carnarvon bananas because they taste so much better," Mr Collins said.

Bruce and Darrell Munro, founding members of Carnarvon Sweeter Banana Co-Operative.

Sweeter Banana plans to celebrate its 20 years as a co-operative with events and promotions throughout 2022 to commemorate the visionary growers who founded the co-operative and the dedicated WA consumers that continue to choose Sweeter Bananas each day.



Grower Doug Otway and daughter Della Otway.



Sweeter's Business Manager Doriana Mangili (left) with Stephanie Leca from Socially Creative, the social media marketing company employed by the Sweeter Co-operative.

SEASONAL WORKERS A LIFELINE FOR MANY BANANA BUSINESSES

But road to worker recruitment is still arduous

By Sonia Campbell

On-going pandemic-related worker shortages continue to put an enormous strain on most banana businesses. Many would argue that it has been one of the greatest challenges growers have ever had to face.

For many, the Seasonal Worker Program (SWP) and Pacific Labour Scheme (PLS) have been a lifeline in recruiting staff. However securing SWP/PLS workers as both an Approved Employer (AE) and through labour hire recruitment firms has taken an exhausting toll on a large portion of growers, along with their support staff.

For a start, the portion of seasonal workers available is slim, given we have a nation of farmers across agriculture competing for the same employment pool.

At every corner there seems to be complex roadblocks, particularly if you are a smaller grower. Border restrictions are constantly changing. Quarantine options and general accommodation availability are dire. Organising international flights (including chartered flights) can change on a daily basis. Reforms to working holiday visa arrangements will have severe consequences for farmers Australia-wide. And government approval processes required for every step of recruiting seasonal workforces – both big and small – at times seem almost insurmountable.

Since COVID, many banana growers have been working with labour hire companies to secure workers, but for most this has become a full-time job. Some have gone down the road of seeking accreditation as AEs themselves. This has financial benefits and can often also streamline the process of recruiting workers. However, becoming an AE for the uninitiated is daunting, time-consuming and extremely taxing.

Approved Employers and the PLS/SWP

Once you are approved as an AE, there are a whole new set of challenges.

During two PLS/SWP information workshops held in Innisfail and Mareeba in November, growers were given an insight into other growers' experiences with the PLS/SWP, including quarantine challenges and applying for recruitment as an AE.

Here's more on their stories.

Jess Howe, Rock Ridge Farming, Atherton Tablelands



Currently employing more than 200 people across its multiple banana and avocado operations, Rock Ridge Farming first became involved in the SWP about five years ago (pre-COVID).

Jess Howe, whose parents Peter and Chelley Howe own and operate the family-run business, says seasonal workers have now become an integral part of their enterprise -particularly during the pandemic. But the path to recruiting seasonal workers, along with choosing to become an Approved Employer, has been extremely challenging.

"We started off with just small groups of (SWP) workers sourced through labour hire companies. We realised that with backpackers working on our banana farms, it was hard to keep on top of labour requirements," Ms Howe said. "We probably started off with maybe eight seasonal workers. Even having just that eight core staff that you know will turn up for work every day, that was very beneficial for our business.

"And then eight turned into 20. Twenty turned into 30."

As numbers grew, Rock Ridge Farming decided it was more economical for them to be an Approved Employer and Jess, as part of her role as Operations Manager, was tasked with guiding the company through the accreditation process.

"I thought it would be easy," she recalled.

"But it's not that easy at all. There was a lot of back and forth with both the SWP and the PLS. There is a lot of information they need like financial statements, lengthy application forms about your labour requirements, why you need the workers, how you will support the workers."

After securing their accreditation, the company's first cohort of 20 workers from Vanuatu arrived in December 2019.

"The first recruitment was definitely the trickiest. There are a lot of forms that need to be filled out in terms of (worker) welfare, including a well-being plan, your accommodation plans. It just seems like the first time is such a massive process and it was really daunting."

"Our second recruitment we did (in 2020 when COVID struck) had to be an on-farm quarantine recruitment, so we had to dive right into the deep end with that one."

Unable to fill an entire plane load of workers



themselves, Rock Ridge worked together with other Tableland AEs to charter a flight from Vanuatu.

"That in itself, was an extreme learning curve. We jumped onto the bandwagon of on-farm quarantine as soon as it was announced. We knew we needed workers and it was going to be the only way to get them in.

"So as soon as the international quarantine plan process was announced we got our applications in. We were talking to other employers such as Jobs Australia and other labour hire companies. We don't have any accommodation on our farms, so we used my grandparents' and uncle and aunty's onfarm accommodation that had capacity for 60. Other AEs had beds for 40 or beds for 100, and somehow we got a plane load of 160 over."

"But of course, all these plans (to gain approval for on-farm quarantine) needed to be approved by DAF and Queensland Health, so there is months, and months, and months from when you think, 'I need workers' to when they can actually get onto the ground and on your farm."

Preparing for the future

The company has also used regional facilities to quarantine and house workers, however with local accommodation options in severe short supply, Rock Ridge is now planning to build its own on-farm housing.

"One of the hardest things is finding accommodation. So, we are looking at building our own accommodation and we are going to build it in such a way that if we need to quarantine say 80 people, we can facilitate that. But nothing has started to be built yet, it's still in the works."

"Obviously we're all optimistic that things will go back to normal and hopefully there is no such thing as quarantine in six months' time, but you never know, there could be COVID round 2 or a completely new virus that hits us in two years."

Regardless of what the future holds, Ms Howe said seasonal workers were now a mainstay in their ever-growing business.

"We now have three full time staff just managing that program. There is a lot of work involved in looking after the workers and making sure they are happy and healthy while they are here.

"We would be absolutely lost without our seasonal workers. I couldn't imagine what would happen if the program shut down. It's become like the backbone of our business really."

Sabrina Brick, Mackay Farming Group



Sabrina Brick presenting at the South Johnstone SWP/PLS workshop.

As Pacific Workforce Manager for Australia's biggest banana producer, Sabrina Brick has facilitated four recruitments of seasonal workers to Far North Queensland for the Mackay's in the past 10 months. Despite having extensive background in labour recruitment, Ms Brick said the unpredictable and ever-changing landscape of COVID made initial attempts to meet SWP/PLS application processes extremely difficult, particularly when it came to addressing quarantine requirements.

"Our experience in the beginning was quite frustrating. We started in February (2021), so it was quite intense trying to get through the applications that we needed to do. You had to redo an application every time you wanted to do another on-farm quarantine, so you had to start basically from scratch every time.

"That was quite challenging. But we were all finding our feet – ourselves, DAF, Queensland Health, basically everyone involved."

Ms Brick said Mackay's have accommodated workers in both on-farm quarantine and regional quarantine facilities but believed on-farm

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arrangements worked better for all parties involved.

"On-farm we find is better, especially during quarantine, because your team (of workers) is kept busy. They are active, they are learning new skills, they are getting adjusted to our climate and they are getting adjusted to having to get up and go to work each day," she said.

"We found regional quarantine more challenging for the workers themselves because they didn't leave the facility for two weeks. And then, when they came out of quarantine, it's a bigger adjustment for them, because you've basically got people who've slept for two weeks."

Ms Brick said the application processes for regional facilities was easier than getting approval for onfarm quarantine. However, getting smaller groups of workers into regional quarantine was the most challenging, as it requires working with other AEs and labour hire companies to co-ordinate flights and accommodation to meet capacity requirements.

"We struggled with the regional facility for our smaller recruitments, because you're working with different parties, with different applications to get people on the one flight and the same facility. It's a lot of applications that need to be processed and co-ordinated at the same time."

Rock Ridge in conjunction with Mackay's recently gained approval for their own regional quarantine facility, at Mungalli. But, with quarantine arrangements likely to be a requirement for some time, Ms Brick believes growers' quarantine options shouldn't be limited to their region.

"I think it would be good to not only look at Far North Queensland. Given that flights from Brisbane are fairly regular, I think it would be really good as a strategic move to have something in place that encompasses the whole of Queensland.

"Whether it's using the Grantham facility or another facility in the south-east area that we can actually put five people on a plane and they can do their quarantine down in the south east corner and then get flown to Cairns before going on-farm. I think that is something that would be very beneficial."

Despite the challenges of the SWP/PLS during the pandemic, Ms Brick has full praise for the program.

"Overall, it has been very positive. I do really appreciate the efforts that the DAF team puts in. Particularly in the beginning, when they were the middleman between us and Queensland Health.

"We were not getting (job) applications in terms of backpackers or locals as much as we needed, and they are not sticking around as much as they have in the past. So having these programs available to us and having the ability to utilise them, it's been invaluable to our business."

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WORKER SHORTAGES

ASSISTANCE FOR SMALLER GROWERS TO ACCESS PLS/SWP WORKERS

The Department of Agriculture and Fisheries (DAF) have committed to examine ways to better assist smaller banana growers to access seasonal workers under the PLS and SWP.

The process of employing small cohorts of workers under the program has proven particularly difficult for smaller operators, particularly to secure flights and find suitable quarantine arrangements once workers arrive.

Speaking after two DAF PLS/SWP information workshops held in Innisfail and Mareeba last month, Kerrod Beattie from DAF's specialised PLS/SWP Assessment Team said the Department recognised that more needed to be done to assist smaller operators looking to recruit PLS/SWP staff.

"We really need to look at how we facilitate those smaller operators who are only looking for small numbers of workers, like five or ten," Mr Beattie said.

"There has to be a way of getting a number of these growers together, which means collectively we're looking at 150 or 160 (workers), which is something that is economically viable from a plane load perspective.

"This then makes the whole process easier to progress, from getting through an application, to processing the application and organising quarantine. Because when you start looking at getting a quarantine arrangement in place, you can't say, I only want to put five people in. Most of these systems are set up to accept 50-60 people."

Mr Beattie said the PLS/SWP Assessment Team had been aware of the issues faced by smaller operators in recruiting workers and the same message was delivered by growers at the November PLS/SWP workshops.

"It's resonated quite strongly, certainly from yesterday's group of growers (in Innisfail), but individual conversations that I've had today also (in



Kerrod Beattie, DAF PLS/SWP Assessment Team.

Mareeba), the same theme has come through," he said.

"I don't think it's hard to find a solution, because there are various iterations on how it is working at the moment. But I don't think we've found the best way of making it work, we need to work on that now. At least commence a conversation and talk with the growers.

Mr Beattie said the Assessment Team would work closely with the Approved Employers Association to contact smaller growers and find a solution to their future labour needs.

The ABGC's workforce advocate Leanne Erakovic said smaller operators had been severely disadvantaged in the processes needed to gain smaller cohorts, but she hoped with the appointment of DAF PLS/SWP cases workers some of these barriers would be overcome.

"I think the DAF Assessment Team is very committed to helping all growers - of all sizes - and I think they should be commended for that," Ms Erakovic said.

"It's been such a hard road for all growers to secure staff, but particularly for our smaller entities, and I really hope that recognition of this will bring about some tangible solutions as we continue to navigate labour needs into the new year.

MERGING OF SWP AND PLS INTO ONE SCHEME

From 4 April 2022, the SWP and PLS will be replaced by a new single Pacific Australia Labour Mobility (PALM) Scheme – aimed at simplifying administration and reduce duplication.

Growers will no longer be required to engage with two different departments, systems or processes, with the consolidated program to be managed by the Department of Foreign Affairs and Trade (DFAT) with the support of DFAT's provider the Pacific Labour Facility (PLF).

The scheme aims to deliver:

- Efficiencies for employers and Pacific governments, with all recruitment and mobilisation activities to be managed through a single IT portal.
- A single PALM scheme visa stream with the option to recruit seasonal workers to fill short-term and longer-term positions.
- Extended visa validity of up to 4 years, with provision for multiple entry to Australia, providing employers with greater workforce stability and giving workers more time to develop skills, complete qualifications and earn income to send home to their families.
- A streamlined recruitment process for approving suitable worker accommodation.
- Improved worker support arrangements and maintaining the importance of worker wellbeing.

For more information go to www.palmscheme.gov.au

DAF has appointed PLS/SWP case managers to work with growers one-on-one, including lodging and processing applications for seasonal workers.

If you need assistance or would like speak to a member of the team contact DAF (PLS/SWP) via email at dafcovid19plsswp@daf.qld.gov.au or phone 132523.

HEAR FROM PLS/SWP WORKSHOP PRESENTERS

During recent PLS/SWP information workshops held at South Johnstone and Mareeba a number of the presentations were video recorded for growers that were unable to attend.

If you would like access to any of these presentations, please contact ABGC

Communications Manager Sonia Campbell at sonia@abgc.org.au or 0428 038 330.

The presentations recorded were:

- Kerrod Beattie and Ted Parish from DAF's PLS/SWP Assessment Team
- Joshua Gallagher, Industry Engagement Co-ordinator of the Pacific Labour Facility
- Sabrina Brick, Mackays



Latest information on the PLS/SWP was presented at a workshop at South Johnstone on November 24. A similar info session was held in Mareeba on Nov 25.



Pictured at the Mareeba PLS/SWP information workshop (L-R) Ted Parish, DAF PLS/SWP Assessment Team, ABGC Executive Officer Leanne Erakovic, Leanne Kruss, Queensland Agriculture Workforce Network (QAWN) and Kerrod Beattie, DAF PLS/SWP Assessment Team.

Since September, the state government has announced the establishment of four new industry-led regional quarantine facilities for the PLS/SWP, including one in Dimbulah (near Mareeba FNQ). The Dimbulah site will accommodate 160 workers. Another facility near Toowoomba will also have the capacity to accommodate up to 500 beds.

GROWERS URGED TO PLAN FOR FUTURE COVID IMPACTS

DAF Queensland is urging growers to plan for the 'worst case scenario' when borders re-open and the risk of COVID outbreaks increases.

During the recent PLS/SWP information workshops growers were urged to start developing practical continuity plans to ensure they were prepared for a future COVID outbreak directly affecting their business, by planning how they would continue to operate in such a scenario.

"This is not about scaremongering," Kerrod Beattie from DAF's specialised PLS/SWP Assessment Team said.

"It's about thinking what is the next stage of COVID. Now that the borders are about to open and COVID starts breaking out in regional areas, how are businesses going to deal with that? Because your supply chains are going to be critically affected if there is a need to close your business due to a significant COVID situation."

DAF has developed some helpful continuity planning resources for agribusinesses on its PLS/SWP ehub which can be found at www. daf.engagementhub.com.au/agcontinuity

The site includes checklists for employers and employees that details what measures you can adopt immediately and in response to an incident. Webinar videos are also available to step through each stage of developing a continuity plan including:

- managing disruptions to the supply chain
- evaluating and refining your business continuity plan
- monitoring your business continuity
 response to COVID-19
- assisting with post COVID-19 recovery.

Keep up to date with all the latest PLS/SWP updates via the PLS/SWP ehub at www.daf.engagementhub. com.au/aglabour

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ADVERTORIAL

CALCIUM HELPING REDUCE BANANA PEEL SPLITS AND MAINTAIN SALES

Banana peels that are split mean growers have less quality fruit to sell.

The cause of peel splits

Splitting of banana peels is associated with low levels of plant tissue calcium. Calcium is an important part of the cell wall structure and acts as a glue that binds the cell walls together. Without adequate levels, the stability and integrity of plant cell walls is reduced and fruit is more prone to peel splitting, fruit curling, internal bruising and fruit breakdown.

Adequate plant calcium uptake can be restricted during cold winters, rapid plant growth and competition from high rates of applied potassium.

The solution

Bananas need to take-up calcium throughout the whole crop growth cycle. Some stages are more critical than others. Most uptake occurs before flowering and it is important that soluble calcium is supplied early in the growth cycle of both plant and ratoon crops to satisfy plant and fruit needs (Figure 1).

Fertiliser programs that supply 100% water soluble calcium are most effective at providing plant available calcium. Plant uptake is maximised when applications are timed to coincide with new root growth. YaraLiva® NITRABOR®, YaraLiva® TROPICOTE® and YaraTera® CALCINIT® all contain 100% water soluble calcium. YaraLiva NITRABOR also contains boron, which plays an important role in maintaining good cell wall elasticity.



Figure 1: Major Nutrient Uptake - Plant and Ratoon Crops



	Total Nitrogen (N)	Nitrate Nitrogen (NO₃)	Ammonium Nitrogen (NH₄)	Calcium (Ca)	Boron (B)
YaraLiva NITRABOR	15.4	14.1	1.3	18.3	0.3
YaraLiva TROPICOTE	15.4	14.4	1.1	18.8	-
YaraTera CALCINIT	15.5	14.4	1.1	19.0	-

Table 1: Yield component results for crop fertiliser program that YaraLiva NITRABOR has replaced nitrogen supplied by ammonium sulphate.

	Average fruit weight/bunch [kg/bunch]	Number of bunches [bunches/ treatment]	Total fruit yield [MT/ treatment]	Total fruit yield [relative]
Standard program + Ammonium Sulphate	15.39	1935	29.61	100%
Standard program + YaraLivaTM Nitrabor	15.39	1935	29.61	100%

REF: C.B.I Banadex + Yara Colombia - 2001

The value of adding YaraLiva NITRABOR by replacing ammonium sulphate is highlighted in Table 1. There are 4 key benefits from this change:

- Nitrate nitrogen is readily available for plant uptake. When application rates are matched and timed to plant requirements, nitrogen use efficiency will be optimised and loss minimized. Nitrate nitrogen is not subject to volatilisation losses.
- 100% water soluble calcium has been added, supporting stronger plant cell walls, better fruit quality.
- YaraLiva and YaraTera calcium nitrate fertilisers do not cause soil acidification.
- Additional boron can be important as this nutrient is highly mobile and regular applications "a little often" is a good strategy.

For more information, please contact your local Yara sales agronomist.



Knowledge grows

Improving productivity needn't cost the earth.

Quality nitrate fertilisers from Yara can optimise the yield and quality of crops without costing the earth. We've already reduced the carbon footprint of our nitrate fertiliser production by 40% by making our production plants and processes among the most energy-efficient in the world. Our ongoing development of 'green' ammonia technology and climate-smart agricultural practices means we're on track to reduce emissions by another 30% within a decade and carbon neutral by 2050. Contact Yara and find out how our integrated crop nutrition programs can deliver better agronomic, business and environmental outcomes for your farming business.







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FIRST RATOON RESULTS FROM THE TR4 VARIETY

PART 2: THE SUB-TRIAL GOOD PARENTS PRODUCE BETTER PROGENY

By Sharl Mintoff, Samantha Bond, Chris Kelly, Maxine Piggott and Jeff Daniells Northern Territory Department of Industry, Tourism and Trade, Darwin, NT Queensland Department of Agriculture and Fisheries, South Johnstone, QLD

Four parents with stellar TR4 resistance have been identified which assists international banana breeding programs to incorporate TR4 resistance into new varieties.

In the last issue of *Australian Bananas* (August 2021), we discussed the results of the "main trial" for the Panama disease Tropical Race 4 (TR4) variety screening trial that ended in August 2020. In this article, we discuss the results of the varieties assessed in the sub-trial, which focussed on important diploid parental lines from the French breeding program led by CIRAD. These parental lines are used to create new hybrid varieties with improved resistance to major pests and diseases.

The main trial and sub-trial are part of the 'Improved plant protection for the banana industry' project (BA16001). The two trials described were assessed simultaneously, but a different trial design was needed for the sub-trial because fewer plants of the parental lines were available for testing. In this sub-trial 13 CIRAD parental lines and 3 reference varieties were assessed for resistance to TR4 over two cropping cycles.

METHODS

All plants were artificially inoculated with TR4 colonised millet at planting. Three varieties were included to act as known disease response references; Williams – Very Susceptible; Formosana (GCTCV 218) – Intermediate; and Goldfinger (FHIA-01) – Resistant.

Disease assessments were carried out fortnightly once external symptoms became apparent in a susceptible variety. Assessments included noting the appearance of external disease symptoms and internal symptoms at plant death or harvest.

Disease resistance was determined by scoring the level of disease in each variety then grouping them

into one of the following categories:

Highly Resistant (HR) – No disease symptoms were observed within the crop cycle and may not show symptoms under high inoculum pressures.

Resistant (R) – Plants normally show no signs of infection in the presence of the pathogen. However, under high inoculum pressures low amounts of symptoms or losses may occur.

Intermediate (I) – Plants which can withstand some infection and suffer low losses under natural infestation conditions, with most completing their crop cycle. However, its susceptibility or resistance can be highly dependent on the inoculum pressure already present. With the appropriate crop management or environment to lower the inoculum levels, these should be commercially viable.

Susceptible (S) – More than 50% of plants show symptoms and/or killed due to pathogen infection.

Very susceptible (VS) – Majority of plants (more than 70%) showed severe symptoms, most of which died due to TR4.

RESULTS

Highly resistant and resistant

The four parental lines - Inarnibal, M53, Manang, and Tjau Lagada, were highly resistant in both the plant crop and first ratoon, with no symptoms of TR4 infection. One of the Goldfinger plants (TR4 resistant reference) expressed disease symptoms resulting in the death of the mother plant, yet no disease symptoms were observed in the subsequent ratoon crop for the same plant or any of the other Goldfinger ratoon plants. Mild disease symptoms were observed for Pisang Bangkahulu in the plant crop and this was repeated in the first ratoon.

Surprisingly, the two varieties, Sinwobogi and Pisang Sapon, made a major recovery - with no disease symptoms in the ratoon, compared to the plant crop where the disease was clearly prominent.

Intermediate

In the case of Formosana and Paka there was an increase in the number of diseased plants in the ratoon crop cycle, moving them into the intermediate category. Pisang Batu retained its intermediate rating whereas some improvement was observed in Pisang Madu where fewer diseased plants were noted in the ratoon crop cycle compared to its susceptible plant crop cycle.

Susceptible and very susceptible

The most susceptible lines were Heva and Nzumoheli, which were the most susceptible of the parental lines in both crop cycles, consistent with the Williams TR4 reference variety. Pisang Pipit showed an increase in disease symptoms in the first ratoon crop moving it into the susceptible category.

Conclusion

Inarnibal, M53, Manang, and Tjau Lagada had no disease symptoms in the plant and ratoon crops. A few of the other lines also had reasonable levels of resistance. Identification of these resistant parental lines is very encouraging for international breeding programs and helps strengthen our linkages and access to their germplasm. When these results were shown to the breeding programs which use these lines they were very grateful:

SCREENING TRIAL IN THE NORTHERN TERRITORY

- this provided CIRAD with "...valuable information for planning better crossing schemes..."
- and from the breeding program of EMBRAPA (Brazil) "...Excellent news about the improved diploid - M53. He is the parent of many EMBRAPA hybrids..."

The information from this sub-trial could also be useful in identifying existing hybrid varieties bred from resistant parental lines to source and screen for TR4 resistance and general agronomic and market suitability.

Interestingly the varieties Sinwobogi and Pisang Sapon recovered from being symptomatic in the plant crop to exhibiting no disease symptoms in the first ratoon. A somewhat similar response was also noted in the main trial with CIRAD 06 and High Noon. Further study on this recovery phenomenon could be advantageous for identifying potential crop management strategies to mitigate disease severity in the field, particularly during the plant crop cycle. Table 1: TR4 disease resistance ratings for the plant and ratoon crop cycles, with reference varieties in **bold**.

Variety	Description	Rating	
variety	Description	Plant	Ratoon
Inarnibal	CIRAD parental line	HR	HR
M53	CIRAD parental line	HR	HR
Manang	CIRAD parental line	HR	HR
Tjau Lagada	CIRAD parental line	HR	HR
Goldfinger	Resistant TR4 reference	R	HR
Pisang Bangkahulu	CIRAD parental line	R	R
Sinwobogi	CIRAD parental line	Ι	HR
Pisang Sapon	CIRAD parental line	S	HR
Paka	CIRAD parental line	R	1
Formosana	Intermediate TR4 reference	R	I
Pisang Batu	CIRAD parental line	1	I
Pisang Madu	CIRAD parental line	S	I
Pisang Pipit	CIRAD parental line	Ι	S
Heva	CIRAD parental line	S	VS*
Williams	Very susceptible TR4 reference	VS	S
Nzumoheli	CIRAD parental line	VS	S

HR = highly resistant, R = resistant, I = intermediate, S = susceptible, VS = very susceptible



Figure 1: Representative resistance response in first ratoon plants exposed to TR4. Most Williams plants died due to infection, whereas parental lines such as Inarnibal and Tjau Lagada showed little to no symptoms in their first ratoon. Photos of Inarnibal and Tjau Lagada provided by Ingrid Jenkins, Quensland DAF.



This project has been funded by Hort Innovation using the banana research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

UPDATE ON VARIETY TRIALS IN THE NT

By Katie Ferro, Ashley Balsom & Jeff Daniells (Queensland DAF) Sharl Mintoff, Samantha Bond, Chris Kelly & Maxine Piggott (Northern Territory DITT)

A visit in early September to the pre-commericalisation trial in the Northern Territory has shown that while the resistant Cavendish varieties from Taiwan, GCTCV247 and 215, are showing much lower levels of disease under high inoculum pressure, their susceptibility to wind damage will make their commercial production very difficult. The current TR4 resistance screening trial is again revealing a range of susceptible and resistant varieties.

COASTAL PLAINS RESEARCH FARM

Current Variety Screening Update

In December 2020, a new trial with 24 varieties was established to assess resistance to Fusarium wilt TR4 (Panama disease) as part of the banana plant protection project (BA16001). The evaluation procedure is much the same as that reported for the previous varietal screening trial, with each planting site inoculated with a standard dose of the TR4 pathogen (see Australian Bananas Volume 62 Pages 16-17). The varieties in the trial are listed in Table 1 opposite page. They include three Cavendish selections, four novel hybrids from the French West Indies (CIRAD), four Lady Finger hybrids from Brazil, as well as three of the Goldfinger Selections (GMS) from the mutagenesis studies in north Queensland.

There are three reference varieties in the trial to compare against:

- The industry standard and very susceptible Williams.
- Formosana (GCTCV 218). This Cavendish selection from Taiwan is what we consider represents the minimum level of genetic resistance necessary to build an integrated crop management system around, to continue production in the presence of TR4.
- Goldfinger (FHIA-01) as the resistant control.

These reference varieties are essential for putting the disease reaction of new varieties into context.

At about nine months after planting, most of the Williams plants had already succumbed to TR4. Several other varieties were also showing various degrees of susceptibility.

CJ19 and GCTCV 215 Mutagenesis Selections

Fourteen improved selections from GCTCV 215 and three from CJ19 have now been successfully initiated into tissue culture at the NT DITT's Berrimah Farm Science Precinct. Clean disease-free cultures of these lines will soon be available for sending to Queensland DAF for multiplication and field assessment in north Queensland.

LAKE BENNETT ON-FARM PRE-COMMERCIALISATION TRIAL

A fifth pre-commercialisation trial site, in addition to the four in North Queensland, was established in December 2020 on a grower's property at Lake Bennett, south of Darwin in the NT. This trial site was established to examine the commercial performance of three resistant Cavendish lines (GCTCV 215, GCTCV 247 and CJ19) in a TR4 infested field site.



Figure 1. A TR4 variety screening trial planted in December 2020 is evaluating the disease reaction of 24 varieties over a plant and ratoon crop.



Figure 2. At about nine months after planting the susceptible reference variety, Williams (in foreground), has already succumbed to TR4 in the plant crop. Healthy plants of the intermediate reference variety, Formosana, can be seen behind it to the left – still unbunched, but nevertheless without TR4 symptoms.

In early September this year we estimated that 50% of the concurrently planted Williams had died and 36% were displaying external symptoms. This compared to between 4 – 8% dead plants for the resistant varieties, with up to 14% displaying mild external symptoms. In the trial, 45% of the CJ19 plants had bunched, 43% of the GCTCV 247, and 26% of the GCTCV 215.

However, about two weeks after our visit, strong winds gusting to ~56 km/hr caused almost all bunched plants to snap. This issue has also presented itself in the on-farm trials conducted in north Queensland, where GCTCV 215 and GCTCV 247 proved much more susceptible to wind damage than Williams.

It is becoming evident that despite having greater TR4 resistance, other features of these two varieties, including susceptibility to wind damage, will make them problematic for growers to embrace. However, there are other Cavendish varieties in the development pipeline, including the dwarf selection, Asia Pacific #1 (a true-to-type selection of) which should handle wind much better than the taller TR4 resistant selections.



Figure 3. True-to-type Asia Pacific #1 was yet to bunch, but so far was free of external symptoms of TR4.

Table 1. Varieties being screened at Coastal Plains Research Farm, NT.

Variety	Description
Williams	Very susceptible TR4 reference
Formosana	Intermediate TR4 reference
Goldfinger	Resistant TR4 reference
True-to-type Asia Pacific #1	Cavendish ex Taiwan
GCTCV 106 Selection	Cavendish ex Taiwan
Short Fruit Williams	Cavendish offtype ex N. Qld
CIRAD 01	Novel hybrid ex French West Indies
CIRAD 02	Novel hybrid ex French West Indies
CIRAD 07	Novel hybrid ex French West Indies
CIRAD 08	Novel hybrid ex French West Indies
JV 42.41	Lady Finger hybrid ex Brazil
PA 03.22	Lady Finger hybrid ex Brazil
PA 12.03	Lady Finger hybrid ex Brazil
PV 03.44	Lady Finger hybrid ex Brazil
M61	Parental line
Niukin	Parental line
Agutay	Parental line
Calcutta	Parental line
Buccaneer (T12)	Highgate hybrid ex Jamaica
Yangambi km5	Dessert variety
2390-2	Highgate hybrid ex Jamaica
1/44 GMS	Goldfinger selection from mutagenesis
4/17 GMS	Goldfinger selection from mutagenesis
5/44 GMS	Goldfinger selection from mutagenesis



Figure 4. Pre-commercialisation trial site at Lake Bennett, NT. The relatively disease-free GCTCV 247 plants are in the row on the left, with the highly diseased Williams on the right.





Figure 5. DAF's Katie Ferro with Sharl Mintoff and Samantha Bond from the NT DITT examining plants of Yangambi km5 in the variety screening trial at Coastal Plains.

This project has been funded by Hort Innovation using the banana research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

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THE MIGHTY MITE PROBLEM

It's hot, dry and dusty and if you're a Banana spider mite *(Tetranychus lambi)* conditions are prime to wreak havoc on banana plants. These have certainly been the conditions this spring in Far North Queensland, with growers reporting mite flares.

Mites mainly feed on the plant leaves, consuming the contents of plant cells and damaging them so the leaf becomes less functional (Figures 1 & 2). Under high levels of mite damage, fruit development is delayed and occasionally fruit can be marked with a reddish discolouration towards the cushion end. The key to managing this pest is early detection and implementation of practices to minimise mite populations.



Figure 1 Young banana plant showing advanced mite damage in older leaves.

Hot and dry weather that leads to general plant stress, water stress, and dusty conditions can increase mite problems. Other factors that can cause flare-ups include high nitrogen rates, and the use of some insecticides and fungicides that wipe out beneficial predatory insects that feed on the mites. Herbicide spraying during hot conditions can also increase flare-ups by removing host plants of mites and encouraging them to move to banana plants.

Management

It's recommended growers encourage predators and beneficial insects, actively monitor populations, review irrigation schedules during dry conditions to limit water stressed plants, restrict the use of chemicals that cause mite flares and ensure correct application of miticides.

Encouraging predators and beneficial insects

Predatory insects can be encouraged by limiting the use of chemicals that are harmful to them. This includes broad spectrum insecticides and some miticides, in the case of the predatory mites introductions. The small black ladybird beetles *Stethorus* (Figure 3) and the large metallic blue



Figure 2 Banana spider mite damage from underside of leaf showing yellowing and dead leaf margins.

ladybird beetles of the *Halmus* genus are naturally occurring and effective mite predators. Their populations will lag behind the spider mites as they will need the spider mites present as a food source to sustain and increase their population. Predatory mites that actively feed on pest mite adults and eggs, such as *Neoseilus californicus* and *Phytoseilus persimilis*, can also be purchased for release in your paddocks. Due to the climatic conditions in Far North Queensland and the nature of the mites, *N. californicus* is possibly the more appropriate predatory mite to source.

Recent industry consultation has highlighted that many banana growers would like to see effective biological control options made available for management of pests and diseases in general. In response, the banana extension team is investigating a range of biological controls for management of common banana pests. One trial currently being undertaken on a commercial banana farm is comparing the release of *N. californicus* as a treatment for Banana spider mites compared to a grower's standard chemical control. The early results are looking positive and should be finalised at the start of 2022.



Figure 3 Adult ladybird beetles of Stethorus on banana leaf. Insert close-up of adult Stethorus (adult size = 1mm).



Figure 4 Predatory mite *N. californicus* in vermiculite being released onto banana plants.



Figure 6 Adult spider mite and its spherical eggs. Note the dark leaf tissue, an indication of dead leaf cells caused by mite feeding.

To monitor for the presence of mites inspect the underside of the leaf. Adult mites will be very small but just visible to the naked eye and a small hand lens magnifier is needed to see eggs and nymphs (Figure 6). It is important to take note of the youngest leaf the mites are present on, the relative numbers of the various mite life stages and the presence of predators. In general, the greater the number of mites and the younger the leaf they attack, will result in more severe damage. However, treatment may not always be required if predators are present.

Things to keep in mind with chemical application

With only a limited number of miticides available to the banana industry, it is important for treatment efficacy and the long-term availability of these products that they are applied correctly.

- Avoid using neonicotinoids for control of Banana weevil borer and Banana rust thrips (e.g. imidacloprid), particularly if hot dry conditions are expected. These chemicals can cause mite flare-ups as they encourage mites to lay more eggs.
- Avoid using broad spectrum pyrethroids (e.g. bifenthrin) as this product will remove the predator (beneficial) population and mites are known to have resistance.
- Miticides will not provide instant results and monitoring after spray applications is required as it may take 2-3 days before the mites begin to die.

- Apply miticides in the cooler parts of the day as the leaves will close up during the middle of the day and make coverage difficult. Mites are generally found on the undersides of the leaves therefore it is important the leaves are open at the time of application.
- Apply miticides with at least 400L/ha and up to 600 L/ha of water to ensure good coverage. Poor coverage will result in limited mite deaths and may create chemical resistance problems.
- Rotate between the available chemicals and abide by the restricted number of annual uses for each product to minimise the chance of chemical resistance issues.
- Knockdown miticides (e.g. fenbutatin oxide) will only control nymphs and adults and therefore may require a follow up

application 10–14 days later to control mites that have hatched from the eggs.

- Some miticides are referred to as ovicides (e.g. clofentezine) meaning they control the eggs, preventing them from hatching. These must be applied with a knockdown to control the adult population.
- It is recommended to apply miticides when mite populations are low to obtain the best control. It is too late once high populations are present as the damage to the plant has already occurred.
- Always check with your reseller and the current registration status of chemicals before use by visiting the Australian Pesticides and Veterinary Medicines Authority website (apvma.gov.au) and always follow label directions.

If you need assistance or would like further information, contact: The banana extension team at the Department of Agriculture and Fisheries, South Johnstone 07 4220 4152 or email betterbananas@daf.qld.gov.au





This information has been produced as part of the National Banana Development and Extension Program (BA19004) which is funded by Hort Innovation, using the banana research and development levy, co-investment from the Department of Agriculture and Fisheries and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.



GETTING THE BEST FROM YOUR TISSUE CULTURE

Recent trial work has found that undertaking an additional early desuckering application in the plant crop of tissue-cultured plants can significantly improve yield and stability in the following ratoon crop.

About the trial

The trial was conducted at the South Johnstone Research Facility and investigated whether plant agronomic characteristics significantly improved by undertaking an additional early desuckering application in the plant crop. The trial also looked at the physical connection between the sucker and mother plant.

Comparing agronomic performance

The trial consisting of 330 Williams Cavendish tissue culture plants had two desuckering treatments applied.

1. Desuckering twice (early & late)

Fifty percent of plants were desuckered twice, once at 3 months after planting, where all of the first flush suckers were removed (4-6 suckers up to 40 cm high) via cut and kerosene injection. The second desuckering treatment was at the commencement of bunch emergence, when sucker selection for the first ratoon crop was conducted.

2. Desuckering once (late only)

The remaining 50% of plants were only desuckered once, at the commencement of bunch emergence. This is when sucker selection for the first ratoon was undertaken.

Comparing sucker connection

A small number of plants not included in the trial were used to inspect the physical connection between the suckers and mother plant. Half of the plants received no desuckering (Figure 1) and the other half received an early desuckering where the first flush of suckers was removed at three months after planting (Figure 2). At the commencement of bunch emergence, plants were dug up to determine if there was a visual difference in the connection to the mother plant and whether sucker development improves with early desuckering.

Results

- Plants desuckered once (late only) produced significantly shorter plants in both the plant and first ratoon crop (Table1).
- Plants desuckered twice (early & late) produced significantly heavier bunches in the plant and first ratoon crop compared to plants desuckered once (Table 1).



Figure 1 Left: Plant not desuckered. Right: The same plant dug up at commencement of bunch emergence with the soil and roots removed. Visual observations showed first, second and third flush sucker development, with smaller and weaker connections compared to the plant that received the early desuckering treatment below (Figure 2).



Figure 2 Left: Plant desuckered early (First flush suckers removed 3 months after planting). Right: The same plant dug up at the commencement of bunch emergence with the soil and roots removed. Visual observations showed fewer suckers with stronger and larger connections compared to the plant that received no desuckering treatment above (Figure 1).



Figure 3 Visual observation of size of sucker connections to mother plant.



Figure 4 First flush suckers from tissue culture plants have a small and weak connection to the mother plant, whereas second and third flush suckers have stronger connections.





This trial which was undertaken as part of the National Banana and Development Extension Program was funded by Hort Innovation, using the banana research and development levy, co-investment from the Department of Agriculture and Fisheries and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian Horticulture.



Table 1

Treat	ment: Des (early	uckering & late)	twice
Height Plant	Height Ratoon	Yield Plant	Yield Ratoon
2.6 m	2.9 m	21.2 kg	25.0 kg
Treatment: Desuckering once (late only)			
2.5 m	2.7 m	20.2 kg	19.7 kg

Take home messages

SECOND VARIETY EVALUATION **ESTABLISHED AT SOUTH JOHNSTONE**

By Jeff Daniells, Katie Ferro and Ashley Balsom - Queensland DAF Four new CIRAD hybrids were released from quarantine in early 2020. These along with some dwarf Lady Finger selections and two Cavendish selections from Taiwan are being assessed for agronomic performance in a new trial which commenced in 2020 at South lohnstone.

Trial Objectives

As part of the banana plant protection project, we import varieties and evaluate them for disease resistance and agronomic traits in a range of production environments. A second variety trial was planted at South Johnstone on 13 October 2020 where 16 varieties are being evaluated for agronomic performance over three crop cycles plus a leaf spot screening in the fourth cycle. This is a first look at many of these varieties to see how they perform under north Queensland conditions. In addition, preliminary taste panel assessments will be made.

In conjunction with this agronomic evaluation several of these varieties are being screened against TR4 in the NT to determine if they are resistant. The NT field planting commenced last December. Some of the varieties are also expected to be evaluated for Race I Panama disease and agronomic performance in the subtropics at Alstonville, NSW.



Rossi Dwarf Lady Finger which has become popular in New South Wales, is included in the trial.





Pointe d'Or pictured is one of the 4 leaf disease resistant hybrids from the breeding program of CIRAD in the French West Indies included in the trial.

BANANA nnovation

Overview of Varieties

- There are four new hybrids from the breeding program of CIRAD in the French West Indies. Overseas these have shown resistance to leaf disease and race 1 of Panama disease. They include Pointe d'Or, a variety launched as the first French organic banana at the February 2020 Paris International Agricultural Show.
- We have included two Taiwanese selections of Cavendish – Asia Pacific No. 1 and GCTCV 106. In previous plantings almost all plants of these were tissue culture offtypes. So, we re-established them in tissue culture with suckers from true-to-type plants. Williams is included as the industry standard. Formosana (GCTCV 218) was established from both tissue culture and sucker/bits to examine ratooning characteristics.
- We are evaluating 3 dwarf Lady Finger selections including Dwarf Rossi which has proved popular in New South Wales. There is also a Lady Finger selection included with a pendulous bunch. This feature means that a greater percentage of the bunch should meet market specifications for fruit shape.
- There are 2 selections of High Noon (SH-3460.10), which is a Lady Finger hybrid from Honduras. In the project 'New and alternative banana varieties designed to increase market growth' completed several years ago, High Noon was found to have high acceptability amongst the majority of consumers that participated.



New variety trial established at South Johnstone in October 2020.

This project has been funded by Hort Innovation using the banana research and development levy and funds from the Australian Gove For more information on the fund and strategic levy investment visit horticulture.com.au

BEST PRACTICE

GROWER CELEBRATED ON WORLD STAGE

By Kathryn Dryden

Far North Queensland's Bartle Frere Bananas was recently showcased at the UN Climate Conference COP26 in Glasgow, for their datadriven smart farming project. The data captured from this project is proving to be an excellent management and planning tool for the grower and his business. It is expected to be of interest to the banana industry, particularly in relation to meeting market demands, and the demonstration of best practice and associated environmental implications which informs regulation.

The grower, Gavin Devaney, has been working towards more sustainable productivity which is proving to be a very important factor for consumers and the market. The technology being trialed on his farm allows Mr Devaney to use data, edge computing, and predictive analytics to meet sustainability targets and track bananas from paddock to market. He believes this technology brings significant benefits to the productivity and environmental management of his farm, enabling him to achieve and prove his sustainable production approach, implement best management practices, and look after the farm and the environment for future generations.

The pilot project is one of three across Queensland trialing applications of the digital remote monitoring technology within various horticultural industries to improve environmental performance. Technology, solution sourcing and integration, project management, data management and analytics expertise by Hitachi Vantara and modeling and design by Applied Horticultural Research (AHR), help Mr Devaney gather data right through the production process from plant, to harvest, and transport to the marketplace. Data is collected on timing and location of labour movements, plant management at all stages of production, nutrient and sediment movement, product management, and environmental and atmospheric changes. All this information combined, tells Mr Devaney a detailed story on his paddocks and plants, and allows for him to make informed decisions on his crop and business management.

How is it done?

Below we explore the components of the system and how it works to help Mr Devaney meet his farm management goals.

Technology		Description/function
Moisture probes, in-ground ra (Innovative Sensor) Moisture probes <i>Image: AHR</i>	ted flume, and Trios Nico Nitrate Photometer	This device measures soil moisture to 80cm. It is paired with an in-ground rated flume which measures nitrate and sediment losses from ground water/sub-surface pipes. The combination of sensors provides a constant data stream to support Bartle Frere Banana's fertiliser and irrigation decisions.
Full Stop Wetting Front Detectors	Image: AHR	Full stops are checked monthly for watering and fertiliser levels to inform adjustments as necessary.
Rated Flumes – above ground	Image: ABGC Image: Hitachi Vantara	Measure over-ground nutrient and sediment losses in rain events.
Weather station	Moisture probes Image: AHR	Weather data is collected and transmitted to the control centre interface in the farm office. Other data relating to treatments and production can be compared with weather data to inform adjustments to fertiliser, watering, and chemical application rates. Effects of major weather events can also be recorded and drawn from for future farm management planning.

BEST PRACTICE

Technology	Description/function
Tracking Sensors	Sensors are attached to tractors, bagging machines, and bell injecting machines. These sensors assist with labour management whilst tracking the time and location of spray and fertiliser applications, bell injecting, and bagging activities.
Dendrometer	This device measures the fill rate of fruit. It informs the harvest calendar by providing timing for the blocks from bagging to harvest. It also informs decisions on when to give plants water and fertiliser. Two of these devices are located in different paddocks on the farm.
RFID bunch tracking FID bunc	These tracking tags are applied to bunches at the time of bagging. The hand reader monitors and records chemical applications on-ground, and can also help inform the optimal time for harvesting.
Hand Reader	Records count and GPS location of bells. Also reads RFID tags on bunches.
Hitachi Supply Chain Control Tower (Data/ information interface)	There are nine towers around the farm which transmit data from flumes, moisture sensors, and tag readers. This data is interpreted to the control centre interface used in the farm office. All information from the towers in the field is presented visually on the control centre interface at the farm office. Bartle Frere Bananas can make daily management decisions and undergo long term planning based on this information.
Hitachi Lumada Industrial Insights Platform	Al Modelling, Predictive Analytics and Prescriptive Insights from the Hitachi Lumada Industrial Insights platform enable Bartle Frere Bananas to predict when its fruit will reach maturity, reduce the number of pesticides that will drift from the intended targets, and determine the ideal amount of water to use. The Devaney family will not only be able to predict problems, but they'll be able to proactively respond to anticipated challenges and risks before they occur. Predictive and prescriptive insights are delivered to the farmer via summaries, visualisations and decision support from Hitachi Vantara's Supply Chain Control Tower – a solution core of Hitachi's Lumada Manufacturing Insights platform, and a mobile, hand-held device.



Grower, Gavin Devaney.

Components to the project contribute to a range of benefits to productivity, environment, and best practice.

Productivity:

- Improved irrigation management
- Improved nitrogen and sediment
 management
- On-site real time weather information, such as wind, rain and temperature
- Reduced time required for audit forms
- Improved labour management
- Improved crop management

Invironment:

- Overwatering can be minimised
- Nitrate and sediment loss to environment can be minimised
- Improved accuracy of audit forms
- Reduced interrow traffic and erosion

Best practice:

- Leaching events are detected
- Nitrate and sediment leaching and loads monitored
- Runoff loads can be calculated
- Spray records are automatically populated
- Freshcare Environmental records are automated
- Irrigation records automated

The project team is now at the stage of installing technology to track cartons travelling from the packing shed to market. This will complete data capture to tell the full story of the bananas at Bartle Frere Bananas from the farmgate to market. It will also help identify opportunities for transport and handling efficiencies to ensure a top-quality product is received at market.

This digital smart farm project is supported by funding from the Australian Government's National Landcare Program. It is also funded by Hort Innovation, with co-investment from Applied Horticultural Research, the Australian Banana Grower's Council (AGBC), AusVeg, Freshcare, Greenlife Industry Australia, Growcom and Hitachi.

60 YEARS OF ABGC



ABGC Board 2011 (L_R) - Peter Molenaar, Doug Phillips, Cameron Mackay (Chair), Paul Johnston, Michael Nixon, Stephen Spear and Adrian Crema.

By Lea Coghlan

Sixty years ago, the Australian Banana Growers' Council was formed.

In the time since, its dealt with challenges like pest and disease incursions, natural disasters, expansion and the COVID-19 health pandemic, pivoting where necessary, while never losing sight of its primary goal to advance the interests of Australia's commercial banana growers through effective leadership, advocacy and representation to ensure a strong industry future.

Here, we take a look back on the past six decades, starting by sitting down with several past and current board chairs and a past director, who have led the organisation through some of the most challenging times.

Ray Everingham (NSW) 1970-81

Mr Everingham was a director of the the ABGC board for 15 years, six of those as chairman.

He nominates the development of a banana clearance scheme as a highlight of his association with the ABGC.

"More than 90 per cent of the Australian production in the early 1970s was produced in the subtropical areas of northcoast of NSW and southeast Queensland," Mr Everingham said. "Bananas were mainly planted on hillsides to avoid frost. Production was from family units and plantings were usually less than four hectares."



Ray Kratz, chairman (NSW) 1960s, Bill Singleton, chairman (NSW) 1980s and Ray Everingham, chairman (NSW) 1970s.

Mr Everingham said production in winter was low while summer production often resulted in chronic over supply, with both impacting grower returns.

"In the late 1960s, the ABGC commissioned a study to investigate the effect of supply on grower returns," Mr Everingham said. "The ABGC then recommended supply control mechanisms during periods of over-supply.

"The board subsequently implemented a minimum price clearance scheme. A levy was imposed on all fruit consigned to market with the funds raised used to purchase excess supply from the markets at the minimum price.

"This purchased fruit was then distributed as livestock food."

The scheme operated from 1970 to the early 1980s.

A national advertising program was developed to increase consumption. This was funded by banana growers and banana merchants.

Mr Everingham said organisations like the ABGC were critical in representing the interests of all growers.

"In the early days, the smaller grower had no bargaining power and the only power they had was through their organisation," Mr Everingham said. "Now the industry consists of large growers that have end to end arrangements direct with supermarkets."

Len Collins, (Qld) 1993-99

When Len Collins, a Tully banana grower, stepped down as chair of the ABGC in the late 1990s his work was far from done.

The Australian banana industry was just starting the fight of its life against the threat of banana imports from the Philippines.

Mr Collins took up the fight, together with former

CEO Tony Heidrich, helping the ABGC mount a campaign and leave no stone unturned to protect the Australian industry.

"It was a 10-year fight and I spent 50 per cent of my time for 10 years on the campaign," Mr Collins said.

"We raised \$2 million for the campaign from growers which allowed us to hire the best of everything – the best scientist in every field including the best biometrician.

"If the Philippines bought bananas into Australia, our industry would have been a lot different now, if we had one."

Mr Collins said the campaign fought the threat of imports on four fronts - science, legal, public relations and political - with its success firmly attributed to the funding support from growers.

Mr Collins was also at the helm of the ABGC when an incursion of oriental fruit fly (then known as papaya fruit fly) was discovered near Cairns in 1995, resulting in a 70,000 km2 pest quarantine area and a \$33.5 million, four-year eradication campaign.

Mr Collins said the ABGC was successful in securing support from Victoria and New South Wales to reopen borders to fruit supplies from Queensland, with other states following shortly after.

"To me the ABGC is very important to handle the big issues that pertain to the banana industry," Mr Collins said. "The campaign against imports and maintaining a watching brief on this issue is one of the most important things that they still need to do."

Cameron Mackay (Qld) 2009-2011

Cameron Mackay will never forget 2011.

Tropical Cyclone Yasi crossed the coast near Mission Beach in February 2011 and brought the industry's largest banana growing region to its knees. TC Yasi destroyed around 80 per cent of Australia's banana crops and cost the industry around \$350 million.

"It was by far the biggest challenge for me at the time," said Mr Mackay, who was nearing the end of his two terms as board chair when cyclone hit.

"The ABGC played a critical role in securing government funding for growers in the damage area to make sure businesses could survive through to a return to production.

"There was a significant amount of political work done, a large amount of it in the background to put together a package to see growers come out the other side.



Pictured (L-R) ABGC Chair at the time (2011) Cameron Mackay shows Former Prime Minister Julia Gillard cyclone damage following TC Yasi, with former ABGC Chair Patrick Leahy.

"I think we got the majority of growers through that period and out to the other side.

"The package offered everyone the opportunity to continue to farm if they felt they wanted to."

The organisation's role in responding to the TC Yasi typified the vital role peak industry bodies play in the agricultural landscape.

"Organisations like the ABGC are essential agripolitically wise," Mr Mackay said.

"They are a must if you want to talk to government at an industry level.

"Peak industry bodies are a great vehicle to open those doors to government and government departments."

Mr Mackay said it was important that the ABGC never lost sight of its main purpose, that is, to advocate to government and maintain the industry's reputation in Australian agriculture.

Doug Phillips (Qld) 2011-16

When the first incursion of the soil-borne disease Panama Tropical Race 4 was detected on a Tully Valley banana farm in early 2015, life for then ABGC board chair Doug Phillips changed dramatically.

The South Johnstone grower juggled farming with high level government negotiations and media callouts as the ABGC navigated unchartered water in response to the biosecurity threat.

"The ABGC played a critical role in the industry's response to TR4," Mr Phillips recalled.

"We were the face of the industry not only to government and other industry partners but also back to growers.

"We were the conduit for information to growers and that was absolutely critical in the early days. "It was so important that early on growers had access to the latest information because it was a highly stressful developing situation.

Mr Phillips said the industry's success in containing TR4 was largely attributed to the work done by the ABGC.

"We pushed hard, we convinced growers that they needed to put on on-farm biosecurity and that containment was the prime strategy," Mr Phillips said.

"We convinced the Federal Government to buy the farm (where the first incursion was detected).

"All of those things were the result of the ABGC in the public place and in the background, working hard in the best interests of growers."

Mr Phillips said the ABGC's response to the Banana Freckle incursion in the Northern Territory was another example of how hard it fights for growers.

"Together with Plant Health Australia, the Federal Government and Northern Territory Government, we defined an eradication program that resulted in Banana Freckle being successfully eradicated," Mr Phillips said.

"No-one anywhere in the world has been able to do that before."

Mr Phillips said issues like biosecurity threats, imports and natural disasters would continue to challenge the industry.

"The industry will always need to maintain strong leadership and that's the role of the ABGC.

"When you have those issues you need an organisation like the ABGC that work in the background, serve as the public face and position the industry in front of government to make sure support is delivered in critical times."

Stephen Lowe (Qld) 2016 to present

Current ABGC chair Stephen Lowe was so impressed with the quality of people in the organisation he joined the board.

"You can't have an organisation without a good group of people and that's what led me to join the ABGC," Mr Lowe said.

"It's pretty hard not to mention TR4 when I reflect on my time as chair.

"I wasn't on the board for very long before the detection and have been on the journey for the whole time."

e industry's the



ABGC CEO Jim Pekin (left) and former ABGC Chair Doug Phillips outside DPI Head Office in Brisbane following the first detection of TR4 in the Tully Valley in 2015.

Mr Lowe said general industry viability has been another challenge in recent years.

"Our industry is in a solid position, however, there are definitely growers that have struggled to make money," Mr Lowe said.

"We are not going to have a strong industry if growers aren't making money so that is definitely a challenge for our organisation and industry."

Mr Lowe said the ABGC's overarching role was to support a viable and profitable industry.

More recently, the COVID-19 health pandemic has delivered a gamut of new challenges for the organisation.

"Like other businesses in Australia we were faced with the challenge of continuing to work as a group, without face-to-face meetings," Mr Lowe said.

"Fortunately, technology had advanced enough to be able to bring people together and while we thought it was going to be an insurmountable challenge it's proved otherwise.

"The bigger impact has been on growers being able to secure a reliable workforce and the ABGC has worked tirelessly with government and other industry groups to help with that."

Mr Lowe said the ABGC gave growers a chair at the table and a direct link to government.

Tom Day, Western Australian banana grower and former ABCG board director

Mr Day said despite being a small industry, the Western Australian banana growers appreciated being part of the ABGC.

"Our involvement with the whole-ofindustry organisation has delivered enormous benefits to Western Australian growers," Mr Day said.

"By being involved in the ABGC, we have been able to keep imports out and address biosecurity threats.

"That's great for our growers."

SUCCESSFUL PEST AND DISEASE MANAGEMENT

The ABGC has an enviable track record in successfully eradicating and containing a number of serious pest and disease incursions that have threatened the viability of the Australian banana industry over the years.

The Banana industry is a world leader in the effective containment and biosecurity management of diseases such as Panama Tropical Race 4 (TR4) and Banana Bunchy Top Virus (BBTV), as well in the past, successful eradication of incursions of Banana Freckle and Black Sigatoka.

TR4 - one of the most significant pest incursions in the industry - was first detected on a Tully Valley banana farm in 2015.

Since then, the ABGC has worked closely with Biosecurity Queensland, growers and researchers to control and contain the disease through a program of surveillance on farms, compliance on known infested properties and on-going communication and education activities. This world-leading work has contained the soilborne disease to five farms in the Tully Valley. Australia is the only country to achieve this level of containment.

The Banana Industry has also invested in the strategic research to help growers implement effective biosecurity practices on farms and find solutions to TR4 in the short and long term.

Black Sigatoka, a significant leaf spot disease of bananas, was successfully eradicated from the Tully area in 2005. The Northern Territory was declared free of Banana Freckle, a disease of banana leaves and fruit, in 2017, after a threeyear eradication program delivered under a collaborative partnership between the ABGC and NT government.

The ABGC has been able to contain Banana Bunchy Top to a fixed area (South East Queensland and northern NSW), again the only country in the world to achieve this.

Effective partnerships and well established relationships with state governments and growers has been pivotal to the successful eradication, containment and management of pest and disease incursions in the Australian banana industry which contributes to the long term sustainability of the industry.

Enhanced pest and disease management continues to be a focus for the ABGC, with containing TR4 and BBTV, minimising the risk of future exotic pest incursions and enhancing preparedness, key priorities.



A STRONG INDUSTRY NEEDS A STRONG PEAK BODY

As the national peak industry body for Australia's commercial banana growers, the Australian Banana Growers' Council (ABGC) acts in the interests of commercial banana growers on a wide range of issues.

The Australian banana industry has confronted some seemingly insurmountable challenges in its 60 year-history which have threatened, at varying times, to bring the industry to its knees.

During each of these challenging periods which have ranged from biosecurity threats to natural disasters, the ABGC has played a pivotal role in the immediate response to and long-term recovery from.

In the words of a former board chair, the ABGC "pushes hard" to position itself and the industry on the front foot, while having the means to respond in an ever-changing environment largely governed by external pressures and forces.

The ABGC and the Australian banana industry is well-established and well respected in Australian agriculture.

The relationships developed and credit gained in the Federal and Queensland Governments have paid dividends when it came to the ABGC's submissions on banana imports, Black Sigatoka, cyclone recovery, national levies, Banana Freckle and the Queensland Panama Tropical Raice 4 incursion, to name a few.

A great deal of work is carried out behind scenes to develop and maintain this respect, to ensure the industry remains front of mind in government and has a seat at the table where decisions are made.

The ABGC has more than demonstrated its strength and influence over the past 60 years, whether its lobbying for government support, supporting growers or reassuring markets about the industry's long-term viability.

A strong, credible peak industry body has also enabled the ABGC to successfully bid for and continue to deliver Hort Innovation-funded and Government projects.

With the threat of imports, biosecurity and natural disasters likely to continue to confront the industry, a strong, effective peak body is critical to ensure a strong industry future.



Past and present directors and staff (L-R) Stephen Spear (director), Stephen Lowe (Chair) Andrew Serra (director), Rosie Godwin, ABGC R&D Manager, Ben Franklin (director), Tom Day (former director), Jade Buchanan (former director), Doriana Mangili (director), Jim Pekin (ABGC CEO), Leanne Erakovic (ABGC Executive Officer), Leon Collins (Deputy Chair).

BEST PRACTICE PROGRESS

In the past 60 years, there's been an enormous amount of progress made when it comes to banana farmers improving their farming practices.

The ABGC has played a pivotal role, with the support of Federal and Queensland Government investment, in delivering support to growers to adopt best practice on their farms.

Improved knowledge and better monitoring has delivered a significant reduction in nitrogen use across the industry.

There is also a much greater appreciation of the value of keeping soil on farms. Growers acknowledge it is part of the foundation of a profitable farm and should not be lost to waterways.

Using funding from the Queensland Government, the ABGC has been able to implement a number of significant changes, including, but not limited to:

- Creation of a BMP team of extension officers who deliver one-on-one extension with growers as well as workshops on sediment and nutrient management;
- Facilitated grant funding from both Australian and Queensland governments to support practice change and innovation on banana farms;
- Negotiated environmental regulations that were flexible and more easily incorporated into existing farming practices;
- Lobbied the Queensland Government to fund a trial to identify optimum nutrient rates for growing bunches under a range of conditions; and
- Created an environmental award to acknowledge the excellent work done by banana growers.

Banana growers are innovators, with many trialing and adopting new practice, adapting equipment used in other industries or dreaming new ways to improve their production

Growers have embraced environmental practice change motivated by wanting to leave a sustainable industry for future generations.

DE-LEAFING CRITICAL FOR CONTROLLING LEAF SPOT

Yellow Sigatoka, also referred to as leaf spot, can lead to significant economic loss.

If not controlled, it can:

- reduce yield
- cause mixed ripe fruit when received at the market, with implications for ICA conditions for access to some markets.
- increase costs for additional de-leafing and spraying
- impact neighbouring plantations
- make it more difficult to detect exotic leaf disease such as black Sigatoka

Controlling Yellow Sigatoka

De-leafing: Regular and thorough de-leafing is the most critical part of effective yellow Sigatoka management. Remove leaves regularly all year round. Aim to de-leaf at a minimum of every 6 – 10 weeks during wet season/high disease pressure times (more if warranted), plus a winter de-leaf to remove any stage 5 lesions and another in the spring to remove all visible spot.

It is crucial that there is no visible spot within the crop as the season changes in November. Failure to meet this target will result in heavy disease pressure for the following wet season. Warm wet summer conditions favour the development of yellow Sigatoka so it is important to get on top of your deleafing removing all spotted leaves prior to summer.

De-leafing is important as fungicides are not effective on visible spots. The application of

fungicides (especially systemics) to diseased leaves encourages products to become ineffective due to developing resistance to the disease.

Chemical treatment: Spend a little bit of time understanding the fungicide groups. In simple terms, there are protectant and systemic fungicides.

Protectants act as a barrier to infection and must be applied prior to the presence of the disease to be effective. Remember: mancozeb should always be applied with oil, while chlorothalonil should <u>never</u> be applied with oil (can burn leaves and fruit!). If wanting to shift to using chlorothalonil after mancozeb and oil, leave sufficient time to reduce the risk of burning that residual oil can cause. If considering tank mixes of other products with chlorothalonil also consider if their emulsifiers or other carriers may cause phytotoxicity issues.

Systemic fungicides used in bananas are often described as being 'translaminar' which means that the pesticide passes through the leaf tissue from one side of the leaf to the other. The common misconception is that systemic fungicides used in bananas can 'kill' existing disease. They are only effective when applied to early stages of the disease (Stage 1 - 2b). Systemic fungicides have no effect on lesions beyond stage 2b and the application to more diseased leaves simply encourages the development of fungicide resistance. Therefore, apply systemics when conditions are conducive to disease development (warm and wet weather conditions) and not when you can see symptoms. All the currently registered systemic fungicides for yellow Sigatoka in bananas require the use of miscible spray oils as per the label instructions.

Research conducted as part of the industry funded IPDM project has shown that these systemic fungicides are much less effective or not at all effective without the addition of these miscible spray oils.

Thorough spray coverage is required to give fungicides the best chance at protecting the leaf from further infections. This is especially important for the protectants which only work on the leaf area they come into direct contact with, and as already mentioned, the systemics have limited ability to move within the leaf.

Visit www.apvma.gov.au to check chemical registration and labels of products

Resistance: De-leaf regularly. Don't apply fungicides to heavily diseased leaves. Rotate chemical groups (not just products as they may be in the same group). Apply at label rates.

More information about the fungicide resistance strategy for the far north Queensland banana industry is available at CropLife Australia's website CropLife Australia | Banana – Yellow sigatoka

Current research: Current research undertaken as part of the Improved Plant Protection Program (BA16001) involves evaluating the effectiveness of new chemistry and 'softer options' for leaf disease control.

In the process of conducting these field trials the industry fungicide programs based on mancozeb and oil, oil only, Chlorothalonil, Serenade® Prime and oil, and Luna® Experience and oil all provided control.



De-leafing.

Regular and thorough de-leafing is the most critical part of effective yellow Sigatoka management.

Stage 2b Lesions on a banana leaf. For all of the lesion stages refer to the "Controlling banana-leaf diseases" poster produced by the ABGC.

Hort BANANA Innovation FUND This project has been funded by Hort Innovation using the banana research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

ADVERTORIAL

PROTECT BANANAS WITH GROCHEM FUNGICIDES

Banana growers seeking first class protection for their crops against a variety of costly diseases should look no further than specialty horticultural supplier, Grochem Australia.

Whether it's Panama disease, Yellow or Black Sigatoka, or leaf spot diseases, there's a high quality Grochem product to assist growers from their local resellers.

Ben Coombe, General Manager of Grochem Australia, says good farm hygiene to control and minimise the spread of Panama disease begins with Sporekill, a broad-spectrum sanitation and water treatment solution.

"A clean start with Sporekill is essential to sanitise farm vehicles, machinery, packing sheds, boots and for general farm hygiene," Mr Coombe said.

The next step to protecting banana crops is choosing high quality Grochem fungicides such as Fortuna Globe 750 WG, a superior European formulation of mancozeb which is easy to use, has fine particles and minimal dust.

"Even better, Fortuna Globe has excellent weathering and sticking properties, giving crops better protection for longer against leaf diseases such as leaf spot, leaf speckle, Cordana leaf, fruit speckle and black pit in hot, humid conditions," Mr Coombe said. He explained that Fortuna Globe works by giving multi-site and protective action, forming a protective film on the plant surface that inhibits the germination of fungal spores.

"This is why we recommend growers apply Fortuna Globe before major weather events or overhead irrigation as part of a regular protectant program, particularly to avoid weathering and protect new growth."

The third major fungicide in Grochem's banana range is Kingfisher systemic fungicide to assist in the management of Yellow and Black Sigatoka.

The easy to use liquid formulation has extremely fine particles for better coverage and greater availability.

"Kingfisher is quickly absorbed into the plant, has good withholding periods and is suitable for ground or aerial application," Mr Coombe said.



Ben Coombe, Grochem Australia.

"This means Kingfisher offers quick knockdown and is rapidly absorbed into the plants, so it stops the early development of disease and protects crops before infection occurs."

Talk to your local reseller for advice about protecting bananas with Grochem products.



DISCUSSION PAPER SEEKS GROWER INPUT INTO TR4 MANAGEMENT TRANSITION

By Geoff Wilson, ABGC Industry Transition Leader

The current Panama TR4 Program is entering a new era and the way it is being delivered must change. As noted in Jim Pekin's CEO column, a discussion paper is being prepared to inform growers that management of Panama TR4 is transitioning from government to industry leadership and, consequently, the ABGC will be making decisions that will change the size, structure and priorities of a new-look TR4 Program.

Importantly, the ABGC is seeking input from growers on issues important in the transition to design an effective new Program that will provide them with confidence. This Paper has been developed to be read by banana growers in advance of conversations with the ABGC on the transition. It's anticipated that these conversations will be via a number of grower-group meetings to maximise the opportunity for feedback.

TR4 Program Budget

The Banana PHA levy is collected from all banana growers across Australia and was increased to its current rate when funds were needed to purchase the first infested property in 2016. The levy funding continues to underpin the delivery of the Panama TR4 Program and its transition.

The ABGC Board is proposing to growers that the levy remain at its current rate and not be increased when the ABGC takes full responsibility for delivering a TR4 Program.

The size and shape of the new program will be determined by the available annual budget of \$1.6M. In a nutshell the ABGC will be delivering a program on 40% of the historical budget and is keen to hear from growers about what aspects of the Program they think make the biggest impact to containing the disease and keeping the industry strong. Through the Industry Transition Leader, the ABGC is seeking to obtain growers views on what features the new Program needs, to give growers the greatest confidence of it being effective in containing the spread of TR4.

The ABGC does not underestimate the many challenges associated with transitioning disease management to industry leadership, but it is confident that, with grower support and input, it will be able to shape a new, smaller program that - supported by valuable research and development projects - will help the industry continue to manage the disease until a new disease-resistant variety is found. Growers will also need to take on more responsibility such as continuing to implement and maintain their on-farm biosecurity practices. This is the best way to prevent and contain TR4.

The risk paid off

It has been a turbulent ride for banana growers since TR4 was detected in the Tully Valley in March 2015. Six years on, there are four infected farms continuing to operate. The risk the industry took to purchase the first infected farm and close it down has clearly paid off.

That decision, along with the success of the Biosecurity Queensland (BQ)-led Panama TR4 Program, has bought valuable time for growers in far north Queensland to better understand the disease and how it spreads; implement effective onfarm biosecurity and make other farm management changes; and invest in research that is developing TR4 resistant varieties and soil management.

Growers have also openly engaged with the control and containment efforts that are delivered by BQ through the TR4 Program. The slow spread of the disease could not have been achieved without the commitment of Far Northern banana growers and the Queensland Government. The successful management of TR4 to date is widely recognised and is being watched by many banana growing regions across the world.

A new era

From the initial TR4 Emergency Response that commenced in 2015, until the end of the TR4 Program transition period at 30 June 2023, the Queensland Government will have spent \$42 million on controlling and managing TR4.

This investment has covered many components, including biosecurity elements of tracing, surveillance, sampling, diagnostics, policy and planning, risk analysis, communications, and compliance – all critical elements of a successful control and containment program.

The Program has scaled up efforts when a farm has become newly infested and then scaled back as the grower becomes compliant with all mandated biosecurity requirements.

In 2018, the Queensland Government engaged consultants ACIL Allen to undertake an independent review of the Program. As a result of the review, and

because the disease cannot be eradicated and will continue to spread, the Government announced it would gradually withdraw funding and transition the leadership responsibility from government to industry.

Since 2019 the ABGC has endeavoured to keep growers informed about this transition through articles in the Australian Bananas magazine and regular e-bulletins as well as through face-to-face meetings.

In 2020, a Memorandum of Understanding (MOU) between the Queensland Department of Agriculture and Fisheries (DAF) and the ABGC was signed with the purpose of working together to deliver the TR4 Program of control and containment until June 2023.

Part of the MOU noted the ABGC's increased responsibilities for the operational delivery of the Program to commence from 1 July 2021 to 30 June 2023. The ABGC believes there is still a significant opportunity to protect the industry and continue to slow the spread of disease. It is now planning, with the help of BQ, to design and implement a new TR4 Program that industry will lead from 1 July 2023.

Have your say on the new TR4 Program

All growers will be invited to take part in the discussion about a new TR4 Program through a series of meetings which will take place early in the new year. In the meantime, the discussion paper will be published on the ABGC website with an open invitation to offer feedback directly to the Industry Transition Leader, Geoff Wilson on 0418 644 068 or email geoff@abgc.org.au

PANAMA TR4 PROGRAM MANAGEMENT BOARD HITS HALF-WAY MARK

By Jael Napper, BQ

The Panama TR4 Program Management Board first convened in April 2020, formalising a joint industry and government partnership that has successfully managed Panama TR4 in Far North Queensland since 2015. With the 2023 handover of disease management from government to industry fast approaching, the Board has tipped the half-way mark as it lays the foundations for industry to take the reins.

Panama TR4 Program Management Board Chair, Malcolm Letts, feels confident that growers are on the best possible path forward in this difficult situation. The 2021 Panama TR4 Epidemiological Review officially confirmed that the joint government and industry response to Queensland's incursion of Panama TR4 has been successful. Now, as the Panama TR4 Program has evolved from the emergency response into a jointly managed control and containment program, the Board is steering through its transition to industry-led management.

"Panama TR4 can't be eradicated so we don't qualify for national funding assistance under the Emergency Plant Pest Response Deed," Mr Letts said.

"Funding the considerable cost of the response has fallen squarely on the shoulders of the Queensland Government and industry."

The Queensland Government has invested \$42 million into protecting the banana industry from Panama TR4. Much of this funding has been pumped into surveillance programs for early

detection, and compliance on infested properties. Growers have heavily invested in the fight against Panama TR4 through individual on-farm biosecurity measures and the purchase of the first infested property. Through the ABGC, growers are now funding forty per cent of the Panama TR4 Program which will scale up to fifty per cent in the financial year to 2023.

"Living with Panama TR4 is our new reality and handing over disease management to growers is a natural progression through this process," Mr Letts said.

"To best prepare, we're doing everything we can to understand more about Panama TR4, and how we can limit the impacts of this disease in the long term."

The Board has commissioned several projects which are designed to empower growers to effectively manage Panama TR4. These include changes to the destruction zone protocols, and research into the potential of electronic nose technology, that may aid future disease surveillance. Mr Letts assures that the Queensland Government's commitment to Panama TR4 research will continue beyond 2023.

"Knowledge is power, and we'll continue to review, learn and investigate as much as we can about this disease to help protect Queensland's bananas."

Panama TR4 Program Management Board members

Malcolm Letts	Deputy Director General & Chief Biosecurity Officer*
Stephen Lowe	Grower & Chair, ABGC
Andrew Serra	Grower & Director, ABGC
Jim Pekin	Chief Executive Officer, ABGC
Mike Ashton	General Manager & Chief Plant Protection Officer*
Lynne Turner	General Manager, Horticulture & Forestry Science*
* Denartment of Ag	riculture and Eisheries

TIMELINE

April 2020

The Board meets for the first time, agreeing to a 'Memorandum of Understanding'. This outlines how government and industry will work together for the benefit of all commercial banana growers.

August 2020

The Panama TR4 Program's strategic plans to control and contain the disease until June 2021 are reviewed and kept in place.

October 2020

December 2020

advice to the Board,

Two working groups are

formed to offer specialist

including a Transition to

Industry Working Group and

An epidemiological review is

also endorsed to help guide future disease management.

Technical Working Group.

The Board commences a series of industry stakeholder engagements to discuss future management of Panama TR4 with an open invitation to a meeting in Innisfail.

February 2021

April 2021

the disease.

The Board meets with

infested property growers

to get an understanding of

day-to-day operations with

Through the Technical Working Group, the size and shape of destruction zones are reviewed to better accommodate linear farming practices.

July 2021

A focus group of Innisfailbased growers is convened to understand levels of awareness and preparation for the disease among a cross section of farm sizes and biosecurity preparedness.

September 2021

All recommendations of the 2021 Panama TR4 Epidemiological Review were considered by the Board, and it's published alongside a statement from the Chair that responds to its findings.

October 2021

The Board hits the halfway mark toward the 2023 transition to industry. From the Epidemiological Review's recommendations, it approves underspent funds from the Panama TR4 Program to start research that is considered high priority. Through the Transition to Industry Working Group, the Board is considering the development of an industry Code of Practice.

TR4

SCIENTIFIC REVIEW OF TULLY VALLEY TR4 UNVEILS CRITICAL INSIGHTS TO GUIDE FUTURE MANAGEMENT AND CONTAINMENT

At the start of 2021, the Panama TR4 Program Management Board commissioned an independent Epidemiological Review into the pattern of spread of Panama disease tropical race 4 (TR4) in the Tully Valley.

The Review applauded the collaboration between government and industry, which has helped contain TR4 to five properties since 2015. It also offered valuable insight into a number of agronomic practices and innovations that could help to control and contain the disease into the future.

With a focus on future-proofing Queensland's banana industry against the disease, the Review offered a number of recommendations, including science-based changes to destruction and containment protocols, as well as the possibility of using e-nose technology to detect disease in asymptomatic plants.

By Sonia Campbell

As we fast approach a new year, the North Queensland banana industry is close to marking seven years of living with and grappling to contain one of the greatest disease threats affecting commercial banana production world-wide.

When Panama disease tropical race 4 (TR4) was first detected in the Tully Valley in March 2015, banana growing in the region changed almost overnight.

Biosecurity became a lifeline. The message to 'come clean, leave clean' was the new call to arms. Government and industry reacted like no other country before them in the world, to effectively contain and manage the pathogen's inevitable spread.

And for the growers with TR4 infested farms, it's been a time of heartache and upheaval. Dealing with the disease can take a rigorous physical and emotional toll. On top of this, it can be extremely financially taxing.

In order to continue to effectively manage and contain the disease, an independentlycommissioned Epidemiological Review was conducted earlier this year to examine the incidence, distribution and possible control options for TR4 in the Tully Valley into the future.

The themes addressed in the Review were:

- Likely geographical extent of TR4 in the Tully Valley
- Local disease spread patterns and pathways from and to current TR4 infested properties
- Differences in disease manifestation on each of the infested properties
- Highest disease risk points on each infested property
- Farming practices that have an influence on disease control and containment on infested properties

- Determine, where possible, the point at which disease thresholds warrant additional risk mitigation practices
- Meeting with owners of TR4 infested farms

Future surveillance

The Review determined that surveillance operations should continue on all farms in the Tully Valley, including the current TR4 infested properties, in order to quickly eradicate all infected plants and any adjacent alternative hosts, to reduce the inoculum load in the Valley. Likewise, surveillance is critical across the broader industry to ensure no new outbreaks occur undetected.

The theme of the Review, supported by the TR4 Board, was that early detection and effective, quick destruction of impacted plants is imperative.

Support for TR4 infested properties

The authors of the Review were able to engage with TR4 growers in Tully, where the growers expressed their views on several aspects of disease management. Growers indicated the need for continued government/industry support as managing TR4 is physically, financially, and emotionally demanding.

Each destruction event incurs a significant cost for labour, fencing, urea, plastic sheets, reconfiguring irrigation, and changing management practices. There is also a loss of production resulting from the destruction of healthy plants in the containment area. Growers need industry support when the number of destruction zones increases, the report found.

TR4 growers were generally content with the surveillance, destruction and containment procedures, but thought they could be improved, including simplifying the Biosecurity Notice to encourage reporting.

Increased susceptibility to TR4

In locations where the highest level of disease is evident, soil with poor internal drainage and temporary waterlogging may be predisposing a plant to greater susceptibility to TR4.

As well as this, the Review found that banana plants are also more susceptible to TR4 when soils are too dry and plants are water stressed.

"There is no consistent soil group associated with all positive detection sites in the Tully Valley, however most of the infected plants in one area appear to have occurred on acid igneous "Utchee" soil association. This soil is described as being a dark, reddish brown clay loam, grading to structured red medium clay with a substantial water storage capacity. Inspection of some disease hotspots indicate that this soil is prone to waterlogging in low-lying areas," the report states.

"These wet soils also favour Bacterial Corm Rot development during hot, wet weather. Plants with this disease have shown symptoms similar to those of Fusarium wilt (leaf yellowing and necrosis).

"Several of the other TR4 cases were on well drained soils on elevated sites where, during extreme temperatures, an internal water deficit may have developed which predisposed plants to infection."

Future spread

After the initial detection in March 2015, TR4 was detected on a second property in July 2017, followed by a third in February 2018. Since then, two additional properties were identified to be infected with the disease, one in February 2020 and another in September 2020.

The report summarised that now that 'farm gate' biosecurity was greatly improved (compared with pre-incursion standards), TR4 will spread mainly through uncontrolled events (for example surface run-off and flooding, as well as animal movements). As soil inoculum levels increase (as is currently the case in some locations), the possibility of spread within the Tully Valley increases.

Flood mapping indicates that some infested sites are subject to inundation, as are several downstream banana farms. Spread to other districts via movement of contaminated soil or plant material deposited by flood events cannot be discounted.

The way forward

Department of Agriculture and Fisheries' Chief Biosecurity Officer Malcolm Letts, who chairs the Panama TR4 Program Management Board said the Review generated some key actions that industry, government and growers could adopt.

"The Board will now be progressing a number of priority areas of research including investigations into the protocol for destroying diseased plants, alternative methods of detecting the disease like e-nose technology, and environmental, host, pathogen relationships," Mr Letts said.

"The Review confirmed that the combined industry and government response to control and contain Panama TR4 in Far North Queensland has been highly effective. To achieve this outcome, tens of millions of dollars have been invested by both government and industry, and great sacrifices have been made by growers operating with Panama TR4.

"The growers themselves know only too well how physically, financially, and emotionally demanding it is to manage TR4, and they require our collective continued support in the years to come."

ABGC Chair Stephen Lowe said he hoped the Review would lead to future efficiencies that would continue the region's legacy in containing the disease, but in a more cost-effective way.

"From now until mid-2023 (when industry takes over management of the TR4 Program) we'll need to identify ways in which we can continue to manage the disease with a smaller budget. There is no denying, that it will be tight. There will definitely have to be efficiencies gained, but we are hoping that new technologies will help on that path." Mr Lowe said.

"It is imperative that we continue to have success in containing TR4 to buy industry more time to find a commercially viable banana variety that is resistant to this disease, and to ensure the long-term future of our national industry.

"But I know that growers have a passion to try and keep this disease at bay and I am confident we will get through this."

FARMING PRACTICES THAT MAY ASSIST IN DISEASE CONTROL AND CONTAINMENT ON INFESTED PROPERTIES

Modification of farming practices is an approach taken by some growers operating with TR4 to avoid or delay a disease epidemic, and thus prolong the life of their plantations.

Some of these growers are employing control measures above and beyond those required by regulation. At least one of these growers has adopted science-based production systems involving management of soil chemical and biological properties, which makes plants more resilient to TR4 and hopefully also reduces pathogen populations.

These disease management decisions appear to be improving plant and soil health and are most likely reducing plant stress so that plants are less predisposed to infection.

Growers have reported general crop and productivity improvements from implementing this type of regime. Whether these measures will be able to limit pathogen activity and increase host resistance during critical environmental periods (such as seasonal waterlogging) remains to be seen.

Some of the key practices by TR4 growers are:

- controlled nutrition, especially regular low doses of nitrogen through fertigation
- pH increased with lime to, or above, neutrality
- improved drainage

- well vegetated inter-rows to prevent soil movement and increase microbial diversity
- use of biological products to suppress the pathogen
- mulching during establishment to improve soil microbiology
- fallowing to reduce inoculum levels
- crop rotation to reduce inoculum levels

As already stated, it's not yet proven that chemical and biological factors that are influenced by soil management will control the disease. However, if used in conjunction with other management practices, such as early detection, eradication, and containment to reduce inoculum pressure, they will slow an epidemic and gain valuable time until a suitable resistant cultivar becomes available, the report states.

Maintaining a relatively high pH, regular low nitrogen inputs, maintaining high levels of certain macro- and micro-nutrients, addition of organic matter, improved drainage, and well vegetated inter-rows, are among the most successful practices reported.

SOME OF THE KEY RECOMMENDATIONS FROM THE REVIEW

- All TR4 impacted growers need continued support from Government, the ABGC and other stakeholders in the industry. It will require a cooperative effort to contain the disease.
- As the only feasible method of preventing disease dispersal from one area is to eliminate the source of inoculum, blocks in the area where the pathogen is widely distributed, and the disease is in the exponential phase need to be eradicated and securely fenced.
- Field trials should be initiated to develop soil fertility adjustment programs that will

minimise losses to TR4.

- Where exclusion and containment have failed, and the disease progress curve is in the exponential phase with disease accelerating, it is time to consider eradication of the infested area. This action may prevent a local epidemic becoming a general epidemic for the Tully Valley.
- Consideration be given to commissioning research to evaluate the use of sniffer dogs, e-noses, or acoustics to detect the disease in asymptomatic plants. The Panama TR4 Management Board has since commissioned this e-nose work.

To read the full Review go to: panamatr4protect.com.au/epi-review

To read a statement from the Chair of the Program Board in response to the review go to: https://panamatr4protect.com.au/wp-content/uploads/2021/09/2021-Panama-TR4-Epidemiological-Review-Chairs-statement-FINAL.pdf

WHAT HAPPENS WHEN PANAMA TR4 IS DETECTED ON YOUR PROPERTY?

1. The grower is informed of a positive PCR result and given a suspect property notice

A positive polymerase chain reaction (PCR) result indicates strong evidence of presence of Panama disease tropical race 4. When a positive PCR result is given, the grower receives a suspect property Notice of presence of Panama disease tropical race 4 to limit the potential spread of the disease.

2. Panama TR4 Program activities commence on the suspect property

The Panama TR4 Program will assign a Property Operations Surveillance Team (POST) Manager to the property. The POST Manager will provide biosecurity information and guidance to the grower to meet the suspect property notice requirements. Meanwhile, biosecurity officers will do a round of intensive surveillance to find out the extent of the disease on the property.

3. The grower is informed of a positive VCG result and given an infested property notice

If the sample's vegetative compatibility group (VCG) test returns a positive result to Panama TR4, a confirmation letter, diagnostic report, and infested property (IP) notice will be given to the grower. The IP notice places strict biosecurity requirements on the property to contain the disease while protecting the broader industry from its spread.

4. The destruction of plants begins and support for the grower continues

The Queensland Biosecurity Manual prescribes how the infected plant and those surrounding it are destroyed. Panama TR4 Program officers will guide this process and a destruction zone will be established. Help is also given to the grower to meet the requirements of the IP notice which may be refined according to risk mitigation measures that have been set up on the property.

5. The POST Manager supports the grower until they can self-manage the notice requirements

Education and support from the POST Manager will continue until the grower has the knowledge and skills to meet the requirements of the IP notice unassisted.

6. Compliance with the infested property notice

Once the grower is self-managing the requirements of the IP notice, audits will take place to ensure the requirements are being met.

7. The property remains an infested property until there is legislative change

The property continues to be subject to biosecurity risk and biosecurity risk management for Panama TR4 while regulated by the Biosecurity Act 2014 and the Biosecurity Manual 2016, irrespective of land use. When land is subject to an IP notice, Panama TR4 Program officers will do their best to ensure the business can return to trade as quickly as possible. The more on-farm biosecurity measures a property has in place at the time of detection, the more likely the business will be able to move fruit off the farm to market without it being a biosecurity risk.

For further information about Panama TR4 and the biosecurity requirements of the notice, search for the 'Panama TR4 grower kit' online or call Biosecurity Oueensland on 13 25 23.

C C	ueensland overnment	Department of Agriculture and Fisherier Notice of presence of Panama disease tropical race 4
Stronge		Linder the Bosenship Act 2014 (001)
		Notice reference number Sample notice
Notice of pre-	sence of Panama disease to	ropical race 4 (notice)
Pursuant to se	ction 58 of the Biosecurity R	egulation 2016 (Qid), I give notice that:
S I know; or		
I i reasonat	by believe there is a significa	nt risk.
that Panama d	Seease tropical race 4 is pres	ient.
S on land; a	nd/or	
in or on a	plant.	
Information n	otice	
I have all Regulator	sched an information notice a > 2016 (Okt)	is required by section 58 (5) of the Biosecurity
Property stre Lot on plan	et adóress	
Where the no	tice relates to a plant	
Real property de	escription or other identifying inf	lomation
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Person's noti E Destroy at accordance biosecurity	ny plants that pose a biosecu ce with the risk minimisation r y manual.	rity risk related to Panama disease tropical race 4 in equirements outlined in section 12 of the Queensland

A sample of the IP notice can be found in the Panama TR4 Grower Kit online.



If you think a plant shows external symptoms consistent with Panama TR4, contact Biosecurity Queensland on 13 25 23. An officer will come to your property and flag the plant. At this time, it's best to isolate the area to reduce traffic and soil movement (Panama TR4 lives in the soil). Do not interfere with the plant. The plant will then be examined internally and sampled for laboratory testing.

NSW NEWS

INNOVATION TRIAL -USING SILICON FERTILISERS TO IMPROVE LADY FINGER TOLERANCE TO PANAMA DISEASE RACE 1

By Tom Flanaghan, NSW DPI

An innovation trial to evaluate the effectiveness of using silicon fertilisers in increasing Lady Finger tolerance to Panama disease Race 1 has been designed as a part of the National Banana Development and Extension project.

The trial will be conducted in the Tweed region in Northern New South Wales and is planned to start this month.

Panama Race 1 has been present in the north of NSW from the Tweed region south to Coffs Harbour for several decades and has had a devastating impact on growers of susceptible varieties in these areas.

Considered endemic in NSW, Panama Race 1 is widely distributed across the region and has made it extremely difficult for Lady Finger growers to continue to produce this variety. As there are no control options for Panama disease, the only alternative is to switch to growing those varieties that are resistant.

At this stage there are no alternative resistant Lady Finger type varieties, although research is being undertaken to try and identify varieties that could fill this niche.



There are many growers who may not have the opportunity to wait for an alternative variety to be commercialised and require a more rapid solution. Based on previous research, there is evidence to suggest that the addition of silicon fertilisers to bananas inoculated with Panama helps to increase the plants' tolerance to the disease.

However, further trials need to be undertaken to determine whether this can be replicated in the field within a commercial setting.

The innovation trial will be undertaken by The Centre of Organics Research which is a joint initiative between the NSW Department of Primary Industries and Southern Cross University, the University of Queensland, Agripower Australia and the Australian Banana Growers' Council. We will also be collaborating with a grower in the Tweed region who has generously offered to allow use of his land, which is affected by Panama Race 1, to complete the trial.

The innovation trial will assess the efficacy of both Agrisilica granular and liquid silicon fertilisers developed by Agripower. It will also evaluate whether these silicon fertilisers applied individually and in combination (for example granular then liquid silicon applications), at different timings and at varying rates are able to increase the tolerance of Lady Finger bananas to Panama disease Race 1 and which of these treatments are most effective.

The trial will commence mid-December and results from the trial will be shared with industry as soon as they become available.







This National Banana and Development Extension Program (BA19004) has been funded by Hort Innovation, using the banana research and development levy, co-investment from the Department of Agriculture and Fisheries and New South Wales Department of Primary Industries and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian Horticulture.

TRIAL TESTING NITROGEN FERTILISER RATE EFFECT ON FRUIT RIPENING

By Minh Nguyen, Rebecca Murray and Alex Lindsay, Queensland DAF

Banana fruit grown with different rates of nitrogen fertiliser were shown to have slightly different ripening characteristics in a recent pilot study by the Department of Agriculture and Fisheries (DAF).

The Cavendish fruit for the trial came from second ratoon plants, grown in the banana nutrient rates trial at the South Johnstone Research Facility. Half of the plants had been grown at the threshold nitrogen rate permitted under the Reef protection regulations ("Regulated rate"), and half had been grown at a "Lower" nitrogen rate.

- Regulated rate: 280 kg N/ha (plant crop) and 400 kg N/ha (ratoon)
- Lower rate: 100 kg N/ha (plant crop) and 200 kg N/ha (ratoon)

Seven bunches from each rate were harvested at an equivalent stage of fruit maturity. The middle six fingers of the third top hand of each bunch were sent to the Cairns Research Facility for assessment. The fruit was kept at a constant temperature of 14 degrees Celsius for a week, ripened with ethylene gas in line with industry standard protocols, then stored for four more days. The temperature was then raised to 20 degrees Celsius for the five-day assessment period.

The post-harvest specialist assessing the fruit perceived that the fruit grown with the Regulated nitrogen rate was slightly greener for the first few days of assessment, although there was no significant difference in the analysed data. However by the fifth day of assessment the Regulated nitrogen rate fruit were significantly more yellow than the Lower nitrogen rate fruit, although all fruit were still in the acceptable range.

Daily assessment with a colorimeter recorded slight differences in lightness and chroma between treatments, which may align with the differences perceived by the assessor. Hue angle was similar for both treatments, declining approximately 10% during the five days of shelf life period.

Firmness was tested on the fifth day using a desktop penetrometer. There was a small but significant difference, with the Lower nitrogen rate fruit slightly firmer than the Regulated nitrogen rate fruit. No difference had been detected over the previous four days using the standard manual test of squeezing each finger and rating the resistance on a score from 0 (very hard) to 4 (very soft). On the fifth day there were no significant difference in titratable acidity, starch index or total suspended solids (Brix), nor were there any differences in dry matter content (assessed at day 1).

The pilot trial showed that the fruit grown with the Regulated nitrogen rate were more yellow and slightly softer than the fruit grown with Lower nitrogen rate on the fifth day of assessment. These results are similar to the results of the few previously reported studies, but should only be considered indicative, because of the small number of samples assessed.

It is planned to conduct a larger trial in 2022, comparing fruit grown with different rates of nitrogen and other nutrients, and sampling the parameters multiple times during the entire shelflife period.







At the start of the shelf-life period (above) the regulated nitrogen rate fruit (LHS) was perceived to be slightly greener than the lower nitrogen rate fruit (RHS).





By the fifth day of the trial the regulated nitrogen rate fruit was significantly more yellow, while the lower nitrogen rate fruit was still in the acceptable range. The fruit from the South Johnstone Research Facility has more external blemishes than normal industry standards.



The banana nutrient rate trials are funded through the Queensland Government's Queensland Reef Water Quality program and is being delivered by the Department of Agriculture and Fisheries.



ADVERTORIAL

REBUILDING AFTER TROPICAL CYCLONE NIRAN: THE ROAD TO RECOVERY

After losing 100 per cent of his banana crop in March, Sebastian Di Salvo is now only one month away from full production thanks to the financial assistance administered by the Queensland Rural and Industry Development Authority (QRIDA).

Mr Di Salvo owns Tropic Coast Farming on Queensland's Far North Coast in Boogan.

Farming bananas for 25 years, and cane for even longer, Mr Di Salvo has experienced natural disasters before. Cyclone Larry in 2006 and Cyclone Yasi in early 2011 both left their mark on his property. But Cyclone Niran, as Mr Di Salvo explains, was something else entirely.

"When the damaging winds hit us, it was the worst predicament we could have been in," he says. Following 12 months of low banana prices, the farm was vulnerable.

After Cyclone Niran completely wiped out his crop, Mr Di Salvo and his staff spent several days assessing the damage. Walking around in shock, it was a devastating blow, one which took a mammoth clean-up.

"I had 7 or 8 staff, and I think it took us about 4 or 5 weeks to clean up 160 acres of bananas. It's been a hard slog for us, we've really felt it this time."

Once reality had sunk in, Mr Di Salvo knew he would need financial assistance to recover. The first thing he did was turn to QRIDA.

"We've had a lot to do with QRIDA over the last 10 to 15 years because this isn't the first time we've been wiped out.

"QRIDA helped us with Cyclones Larry and Yasi, and we turned to them again after Tropical Cyclone Niran.

"At the end of the day, you've got to borrow the money to stay in it. Either that or you've got to get out."

Determined to rebuild his farm, Mr Di Salvo secured a QRIDA Disaster Assistance Loan of \$250,000, with on the ground, local support from QRIDA's Far North Regional Area Manager, Mr Spina who helped him through the application process.

"Mr Spina will help you wherever he can... I can't fault him. He does whatever he can for us at all times."

Mr Spina met Mr Di Salvo on-farm and helped him with his application for the loan and for an Extraordinary Disaster Assistance Grant of \$75,000. When talking about the application process, Mr Di Salvo says it was seamless and easy.

"I can't really fault it."

He believes having access to and receiving disaster recovery assistance is crucial. Without the funding, he says, he wouldn't be where he is today.

"I think it's very important that people who are affected get as much financial assistance as they can. We are primary producers. We are at the mercy of the weather, and QRIDA is there to help us for that reason... it's a big help."

Now six months after Tropical Cyclone Niran, Tropic

Advertisement





Coast Farming is looking to the future.

"We're just starting to process a little bit of fruit; we're processing every fortnight... I think in another month, we'll be back to full production. We're on the road to recovery."

To find out more about QRIDA's disaster assistance, visit QRIDA Disaster Recovery.

QRIDA administers financial assistance to disaster affected primary producers, businesses and nonprofit organisations under the joint Commonwealth / Queensland Government funded Disaster Recovery Funding Arrangements 2018.

Queensland Rural and Industry Development Authority



HEALTH

WORKERS, WEATHER AND WELLBEING

By Lauren Stracey, Rural Aid Mental Health and Wellbeing Manager The importance of putting yourself on your priorities list

Paying attention to your wellbeing doesn't mean you're overcome with the desire to burn incense, book a yoga retreat or make a questionable green smoothie. Wellbeing is about having a life that is meaningful and that you feel engaged with.

Having a fulfilling life looks different for everyone, but wellbeing can be a number of things; feeling connected to the people you love, your home and community; having a job or occupation that brings you a sense of satisfaction; learning new things; having enough money to be comfortable or exercising and eating well.

But sometimes the reality of life means we have to shift and tilt. It can't always be a perfect balance.

For example, if harvest is coming up and it's going to be manic, you know you'll be out for long days and not able to spend as much time with your family. Try and plan for that. Once harvest has wrapped up, make some time for yourself. Go out fishing, have a meal with friends, or whatever it is for you that gives back a bit afterwards. If you don't take time to look after your tools, they don't work as well. The same goes for your head. Neglecting yourself for too long can impact your mental health and the mental health of your loved ones.

What are signs that your wellbeing has taken a backseat?

Some signs that your wellbeing has taken a backseat can include:

- Racing thoughts and not being able to get to sleep
- Snapping at loved ones
- Feeling a bit flat and not being able to shake it
- Not being able to make decisions
- Finding it hard to roll with the punches as you would normally

If you're experiencing any of the above signs, it's the perfect time to get in touch with someone who can help. We know that getting in early and having some practical strategies can be all a person needs to get back on track. It's not like in the movies; one yarn with the right person can be all you need to get back on track.

The Rural Aid Mental Health and Wellbeing team is made up of 15 experienced counsellors who are based in rural towns across the country. They understand the pressures of farming and can give you tips and tricks to ride the tough times and celebrate the successes too.

Rural Aid counsellors offer free, confidential support to farmers and their families. Rural Aid's Mental Health and Wellbeing Team prefer to visit farmers on their properties, but they can also have a chat over the phone or via Zoom.

People get in touch with Rural Aid for a host of reasons which can include help around parenting and kids, strengthening family relationships, support with grief and loss, managing stress, anxiety, or depression or building mental grit to prepare for or in the aftermath of natural disasters.

What are some practical strategies for checking in with your feelings?

Some of the strategies you can use are so simple. We understand much more about the brain these days, even if we still have a long way to go.

When we're stressed, or even on the verge of panic, our amygdala, or the smoke alarm of the brain, starts to kick in. It's great if you're in actual dangerit gets you to react quickly for survival. But it's not good at logical, rational thinking; it's reactive. That



logical part of the brain has literally gone offline. Half the battle is recognising that you're in that stress headspace, but once you do you have a bit more control. It doesn't make the problems you're stressing over go away, but it does kick you back into the part of your brain that will help you be able to come up with a solution.

Registering with Rural Aid

We strongly encourage farmers to register with us - even if the season is looking good now, it's one less thing you have to do if it does go south. There's power in knowing you're part of a community, one that will always have your back.

Rural Aid has a host of support measures for primary producers including financial, wellbeing, water and fodder assistance. Rural Aid's community programs help create more sustainable communities by building stronger futures for all Australian farmers.

Registering is easy, just head to the Rural Aid website and fill in the details.

Head online to www.ruralaid.org.au/servicesprovided, or give us a call on 1300 327 624.



Rural Aid Counsellor Gary Bentley meets with a farmer.

GROWER PROFILE



By Leanne Cheal

Sitting down for a chat with Coffs banana grower Michael Singh

I recently met with Coffs Harbour grower Michael Singh on a rainy Sunday afternoon where we sat in his very tidy and organised packing shed, with the intention of discussing the impacts of COVID-19 on his business. Some three hours later we had covered off on topics around cartons, regulations, weather, family, spirituality and resilience.

Mr Singh's farm is located in Sandy Beach, one of the many villages in the Coffs Coast region where coastal and rural communities come together. Just a 5-minute drive west of the beach and the landscape opens out of eucalypts and tallowoods lining the roadsides, to contoured agricultural land sweeping up to a ridgeline some 100 metres above sea level.

The Singh's family farm stands out of the terrain, with lush green leaves and neatly ordered rows of healthy looking bananas easy to see amongst the black and white of blueberry netting and young banana farms.

Mr Singh is a third-generation farmer and has been growing bananas all his life. His father Jaswinder started working their farm as a newlywed, with his father Sohan. Mr Singh began helping on the farm as soon as he could walk, and continues to farm as a family affair. His wife Harinder looks after packing and the shed and their oldest son Humraj recently joined them, sparking the fourth generation of their family to work this land.

The farm is around 30 acres, primarily growing the Rossi lady fingers, except for two acres of dwarf Ducasse. It is immediately evident that the farm is well cared for; weeds are minimal, the plants are strong and green with beautiful clean bunches, and the soil is healthy. Indeed, the whole property appears to reflect the character of the farmer that tends it. Invariably, the conversation made its way around to COVID-19 and what impacts have been felt on the family farm. According to Mr Singh, "It's been like business as usual, with some forward planning around extra waiting periods for fertilizers, cartons and chemicals, so just some workarounds to stock up and make sure not to run short. We have been lucky here and not much has really changed".

However, while the pandemic has been making its way around the country, there have been greater challenges for the Singhs by way of extreme weather events including drought, floods and more recently, ravaging hail storms. For Mr Singh, the impacts on his soil biology through the 2019 drought meant lighter fruit needing earlier harvesting. Then, in February 2020 heavy rains which broke the drought also resulted in widespread flooding in the region. Whatever nutrients were remaining in the soil leached out with the floodwaters.

The farm is irrigated, so Mr Singh focused his attention onto regular fertigation and reconditioning the soil. In his words, "This was more important to us than fertilizing. Fertigating with natural conditioners to improve microbial activity and create healthy soil is definitely now showing in our fruit."

I couldn't agree more. His fruit is full, clean and vibrant.

When asked about how he has managed the stress and challenges over the last two years, he says that "Anything I have no control over, I don't stress about, there's so many other things to get done". And then he recites a metaphor that is good advice for us all. "Stress is like sitting in a rocking chair. It gives you something to do, but it doesn't get you anywhere." Weather events aside, Mr Singh shared his thoughts on what he sees as the biggest challenges ahead for North Coast growers.

"Local Government water restrictions are high on the list, we have a dam, but many other growers in the region don't. Then there is the increasing compliance demands around quality assurance and control. "The paperwork is too onerous for the small family farmers." Some of the conditions, in Mr Singh's opinion, are unnecessary.

It seems like it's one size fits all for compliance," he said. "Really, the systems need to be more customised for many of the smaller operations, like those here [NSW North Coast]".

At the end of our time together, I asked Mr Singh to sum up his five key learnings as a banana grower.

"The main things are resilience, innovation, sustainability, discipline and consistency."



BANANA DISEASES

NEW BANANA VIRUS DISCOVERED IN QUARANTINE

Tiny particles, thousands of times smaller than the width of a single hair, were the first sign that a new banana virus had been detected during pathogen screening of plants in the Australian banana quarantine glasshouse.

Imported germplasm undergoing post-entry quarantine screening displayed twisted leaves and thickened secondary veins. Electron microscopy at high magnification revealed what looked like miniscule soccer balls – just 26 nanometres in diameter – that had not previously been seen in bananas.

Dr Kathy Crew, from the Queensland Department of Agriculture and Fisheries (DAF) said new plant diseases do pop up from time-to-time, but finding one was still a surprise.

"Of course, the purpose of screening imported plants in these containment facilities is to ensure we are not allowing any biosecurity threats into Australia. It's a rigorous process so that only plants of highest health are released for domestic evaluation."

After the initial discovery, the team then sequenced the genome to help develop a lab-based test for the virus.

"Using a worldwide database, we found that the new virus is part of a high order taxonomic group called the Picornavirales," Dr Crew said.

In fact, this picorna-like virus is the fifth member of an exclusive taxonomic club, with viruses detected in plants and sap-sucking insects (although the insect association may be because the virus was in the insect digestive system rather than infecting the insect).

Initially, the new virus was detected in only one line of bananas. However last year, using the new lab test, it was also found in 10 sibling lines from a second breeding program.

"In some of those lines we saw necrotic secondary veins as well as the distorted leaves. Our collaborators are now trying to determine what, if any, link there might be between the breeding programs."

With federal Biosecurity approval, Dr Crew performed a glasshouse experiment to try and transmit the virus. It was found to be easily mechanically transmitted from one banana plant to another – simply touching or pruning can cause it to spread.

"The good news is that standard industry disinfectants block this transmission," Dr Crew explained.

This information has been provided to the international breeding program to help them reduce the spread.

"With Jeff Daniells' help, we have also tested 37 samples from the Australian germplasm collection at South Johnstone. The samples cover a wide range of banana wild species and cultivar genotypes as well as coming from a wide range of geographic origins. The virus was not detected in any of these samples, which is good news for industry."

Import regulations for banana plants are currently being updated to strengthen border security in light of this new discovery.

"The last thing we need is another virus circulating in Australia," Dr Crew added.





Picorna-like virus Q6748 necrotic veins.



Picorna-like virus Q6748 symptoms twisted leaves.



Picorna-like virus Q6748 virus particles.

BANANA DISEASES

UNDER THE MICROSCOPE: BANANA BRACT MOSAIC DISEASE

A/Prof. John Thomas – QAAFI (Virologist)

Dr Kathy Crew – Queensland DAF (Virologist and Manager, Banana Post Entry Quarantine Glasshouse)

What is banana bract mosaic disease?

Banana bract mosaic is caused by a virus – banana bract mosaic virus.

What are the symptoms?

- yellowish spindle-shaped lesions and streaks running parallel to the leaf minor veins
- reddish or yellowish mosaic patterns, stripes and spindle-shaped streaks may also be visible on pseudostem bases when the outer leaf sheaths are removed
- mosaic patterns on bracts
- sometimes yellowish streaks on bunch peduncle
- malformed fruit, reduced yield (up to 40%).
- often, leaf symptoms are absent, and infection is only apparent when the plant bunches

How does it spread?

Banana bract mosaic virus is spread by a number of different aphid species. The aphids can acquire the virus in a few seconds of feeding and can immediately transmit the virus in similarly short feeding times. The aphids do not necessarily colonise bananas and can be transitory visitors to the crop.

The virus can also be spread in infected conventional planting material and through tissue culture.

Where in the world is it found?

Banana bract mosaic has been recorded from banana from the Philippines, India, Sri Lanka, Thailand, Vietnam, Taiwan, Western Samoa, Ecuador and Colombia. It has also been found in Hawaii in flowering ginger (Alpinia purpurata) and in cardamom in India.

We do not have banana bract mosaic virus in Australia.

What are we doing to protect our industry?

- We have developed diagnostic tests that are used internationally
- Thorough indexing of imported material
 entering Australia during post-entry quarantine

What can I do to protect my farm?

- Use only disease-free planting material obtained through approved sources
- Monitor plants for any suspicious disease symptoms and promptly report concerns



Symptoms of banana bract mosaic disease on leaves.



Symptoms of banana bract mosaic disease on leaves.



Pseudostem with outer leaf sheaths removed.



Pseudostem with outer leaf sheaths removed.

BEST PRACTICE

NOW, THAT'S A GREAT DRAIN

By Kathryn Dryden

A newly constructed spoon drain on Steve Lizzio and Richelle Miles' Mission Beach banana farm, has already proved its worth since it was finished in October this year. Before the drain was established, significant damage was occurring to a main access road on their 150acre farm in heavy rainfall events, which meant maintenance was required on a regular basis.

Containing the sediment leaving the farm has been a big problem for Mr Lizzio and Ms Miles. The location of the access road is where water flows through the farm which is particularly subject to sediment runoff with the red soil type and slope.

"It's important to keep soil on the farm because it's there for a reason," said Mr Lizzio. "When soil has been shifted as a result of a rain event, it disturbs the way you farm."

Mr Lizzio and Ms Miles were spending up to \$20,000 per year just maintaining the access road, and they wanted to fix it properly.

"We decided to construct the spoon drain because we needed to," said Mr Lizzio.

It has been quite a challenge getting the drain to the stage where it is properly established. Unseasonal heavy rainfall has set them back a little, but seeing the grass grow now, which they know will hold the



Mission Beach grower Steve Lizzio.

soil in place, Mr Lizzio said, "It's amazing. We've now got a road that is remaining intact, and a catchment that is producing clean, quality water flowing from the farm."

The farm is one of the closest banana farms to the Great Barrier Reef.

"Runoff from our farm goes into dams away from the Reef, but it all gets there somehow in the end, so it's important that we contain as much of the soil on-farm as possible."

When going through a dry period, any rain they do get is now being collected by the drain and directed into the dam, which before was being lost.

Mr Lizzio said, "We are much more efficient as a

banana farm because of this drain."

The drain is doing its job in terms improving productivity and water quality flowing from the farm.

Access to a Water Quality (Best Practice) Grant administered by the ABGC on behalf of the Office of the Great Barrier Reef, was a big driver for Mr Lizzio and Ms Miles to get the drain done properly.

"There's help out there. It makes you feel like you're a better farmer. It's good to know that there's people on your side," he said.

For information and support on sediment management and water quality, contact your Best Practice Extension Team via bmp@abgc.org.au



BEFORE: The access road after heavy rain and before construction of the spoon drain. Deep erosion has resulted particularly along the edge of the road.



AFTER: The spoon drain is lower than the repaired road. It is rocked in areas to slow the water flow, and grass is being encouraged to stabilise the soil and provide filtration to the water flowing into the dam.

NEWS

PREPPING FOR THE WET

Adapted from original author, Daryl Evans

With the wet season upon us, there are some important things for growers to check and correct now to minimise potential farm drainage issues.

Poor drainage can cause a major reduction in yield and quality of bananas. Growers can take action before the heavy rain sets in to avoid the establishment of bog holes on inter-rows and headlands. The access issues this presents can result in fruit damage and wear-and-tear on vehicles and equipment. Bog holes and ruts also perpetuate poor drainage which may affect production.

To prepare for the wet, better protect block access, and avoid drainage issues, growers need to know and ensure that:

- any major earthworks should have been completed by now so there is time for vegetation establishment to provide some protection during the coming wet;
- all drainage lines are free of obstructions to water flow;
- ends of rows are checked to make sure any restrictions caused by soil or vegetation deposits have been removed;
- remove pseudostems incorrectly placed in the interrow area;
- outlets are clear the grassed waterway should

be lower than the inter-row to ensure good drainage.

It is important that growers are aware of the Reef Regulations for bananas as there are requirements included around erosion control, particularly when exposing soil at a time of year that is too close to high rainfall events.

Post wet season, growers can work towards improving farm management practices that enhance drainage:

- It's important to achieve a balance between having enough vegetation to protect the soil from raindrop impact and to restrict runoff flow by slashing periodically. This will allow enough vegetation to provide good ground cover, but not so much that it slows the flow of water.
- The headland or drain should be lower than the interspace between the rows to ensure runoff can be disposed of efficiently.
- Effective farm planning can minimise/avoid the development of bogs and ruts and enhance drainage of banana blocks.
- When rotating blocks/planting after fallow, growers could consider laser leveling a flat block and contouring rows on a sloping block (greater than 3%). Good farm layout with a drainage plan is essential to directing water flow and minimising erosion. Any earthmoving activity exposing soil must be done during dry months of the year.

Go to the Best Management Practice Environmental Guidelines for Bananas at https://bit.ly/3cgNli8 to find out more about land and soil management or contact bmp@abgc.org.au for information and advice. Banana Reef Regulations are also available online at https://bit.ly/3CmV4vu or via our Best Practice Extension Team.



A maintained inter-row which will enable good drainage and soil retention during the wet season.



This rainfall event was out of season. Whilst the paddocks are contoured and the drain well maintained, it shows what can happen during a heavy rain event without established ground cover in inter-rows and headlands, and emphasises the importance of ground cover in its role of holding the soil in place and significantly reducing sediment losses to waterways.

SOIL SUPPORT FOR GROWERS

Earlier this year, the Australian Banana Growers' Council enlisted soil expert Bob Stewart to assist banana growers with advice to improve drainage and soil retention on their farms.

His knowledge in soil conservation and land management has been drawn upon to support growers in their move towards more efficient farm management practices via soil and nutrient retention.

Mr Stewart worked as a Catchment Coordinator in the Johnstone and Upper Herbert Catchments for many years and has provided advice on soil conservation including the development of waterways and wetlands.

He recently visited Innisfail growers Josephine Borsato and Chris Borsato who were looking for some advice on managing overland flow on their farm during the wet season.

"It was good to have Mr Stewart visit. There were a few recommendations that he gave us which we are

going to implement,"Ms Borsato explained.

"We had started to make some changes already and his advice has given us the confidence that what we had been planning to do with our headlands and drainage is heading in the right direction.

"It's solidified that the practices we are using and the improvements we were planning will be beneficial. We don't want to spend the time or money doing something and it might not be the right practice or method, or not the correct design."

Mr Stewart has a cane farm of his own and is currently working with growers in pest diseases and varieties on a regular basis. He brings with him a suite of agricultural science qualifications and expertise including: a Bachelor of Agricultural Science; Master of Agricultural Science (Agricultural Engineering); Graduate Diploma in Sustainable Agricultural; Chartered Professional Engineer with Engineers Australia (since 1995); Chartered Agriculturalist with the Agricultural Institute of Australia since 2020; and a Certified Practicing Agriculturalist since 2000. He has worked as an Agricultural Engineer for the Malaysian Government, a Malaysian Engineering Company, and for CSR Limited in drainage and irrigation for sugarcane.

The ABGC believes it is fortunate to have access to Mr Stewart's expertise and knowledge. if you're interested in finding out more or getting help with farm planning, drainage improvement, and/or soil conservation in general contact the ABGC's Best Practice Team via bmp@abgc.org.au



Bob Stewart doing survey work to plan for improved drainage on a banana farm.

TURNING A POD INTO A FOOTBATH

By Tegan Kukulies, Queensland DAF

Steps to help protect your farm from Panama disease don't need to cost big dollars. There are some great examples of innovative and cost-effective solutions that banana growers have implemented to help manage their biosecurity risk.

Something as simple as cutting down a 1000 litre pod to use as a footbath can be a big saving. The banana extension team recently had a chat with a grower about why he uses a pod.

The grower said that he purchased the pod as they are easy to come by with most of the fungicides applied by the arial operators coming in 1000 litre pods.

We cut the supporting frame and the plastic liner down to 200 mm, the same as a normal step, so it was easy to step in and out of,' the grower said. 'We then placed a piece of expanded mesh in the bottom of the pod, mainly to prevent anyone slipping'.

When we started using the pod as a footbath, we found that we had to protect the pod from the mesh with irrigation pipe so that it wouldn't wear a hole in the plastic. We also put pipe on the edge of the pod to cover any sharp edges,' the grower explained.

Positioning of any footbath is important. When you walk into the shed the pod is located between a shed wall and the bench seat where you change shoes before walking through the footbath. The

pod is also good as it is long enough and wide enough that it is difficult to step over and you need to put both feet in,' the grower said. There are also signs to direct people to use the footbath.

'Another point with using a pod is that it comes with a built-in valve, making it easy to drain and clean. If we want to shift the pod for cleaning, we can do that with our forklift,' the grower explained.

Overall, the grower said, 'We have found that if you make biosecurity easy to do, practices will be followed'.



Hort Innovation Strategic levy investment

BANANA

The National Banana Development and Extension Program (BA16007) is funded by Hort Innovation, using the banana research and development levy, co-investment from the Department of Agriculture and Fisheries and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.



GETTING ON TOP OF YOUR RECORDS

How are your farm records looking?

Record keeping can be tedious and time consuming but setting up a good system can pay off in spades when it comes to your audits. Queensland Reef protection regulations mean that you must keep records about the fertilisers you apply to the land.

Things to consider to make record keeping simple whilst meeting Reef regulations:

- Make regular records (within three days of treatment/application).
- Record all information about chemical and fertiliser applications.
- Ensure nitrogen (N) and phosphorous (P) application rates are recorded and easily to access.

- Change from paper records to electronic records such as an excel spreadsheet or an app like BetterBunch.
- Keep primary documentation to support your records such as soil and leaf test reports, fertiliser contractor print outs and fertiliser invoices.
- Implement a nutrient management plan. This is compulsory if you are over the regulated N and P caps as prescribed by the Reef Regulations.

To comply with Queensland Reef Regulations, fertiliser records need to be kept for 6 years.

If you're interested in a paperless and stress-free approach to record keeping that can be accessed in the palm of your hand; then the BetterBunch record keeping app might be for you. The app is FREE for banana growers and can be used for all chemical and fertiliser records.

Training courses on how to use BetterBunch will be available for growers in early 2022. If you are interested in attending, get in touch with the BMP team on bmp@abgc.org.au or 0418 692 449.



MARKETING

PEEL GOOD FEEL GOOD STILL A WINNER

Supplied by Hort Innovation

The 'Peel Good Feel Good' Australian Banana marketing campaign positions bananas as a fast, fresh and natural household stable, with the advertising message promoted via radio, out of home and digital advertising, all live now through to January. Social media activity and public relations media outreach is always on throughout the year.

Radio

Radio is a high-reaching cost-effective media that communicates with shoppers often on their way to store. The program targets listeners across Nova, ARN (Australian Radio Network) and Coles' radio to reach grocery buyers, providing reminders to pick bananas, particularly on core shopping days such as Saturday and Sunday. To date, we have reached 1,655,425 grocery buyers 25-54 years of age at minimum on one occasion.

Out of Home

Out of Home panels continue to be on display in close proximity to retail stores, as a reminder to shoppers pre-store to include bananas in their basket and to encourage frequency of purchase.

Digital Advertising

Digital advertising uses location targeting and serves advertising messages to shoppers' mobile phones when they are in close proximity to a retail store, providing a reminder to pick up Australia's favourite snack. In addition, the activity re-engages with consumers at home in high dwell moments to ensure Australian Bananas are top of mind for their next grocery shop.

Social Media and Public Relations

Social Media and Public Relations is always on via Facebook (facebook.com/AustralianBananas), Instagram (instagram.com/australianbananas) and TikTok (tiktok.com/@australianbananas). Public relations media outreach leverages ambassadors Billy Slater and Susie Burrell to promote bananas as a healthy addition to a fun and active lifestyle.

Australian Bananas Updated Campaign in 2022

In 2021 as the world evolves around us, the Australian Bananas brand strategy is also evolving and will launch an updated campaign in late January 2022, which will seek to further build consideration and preference for Australian Bananas. This will be achieved by amplifying our strengths (energy, suitability for all the family, diversity) and reminding consumers of our convenience.

The opportunity enables Australian Bananas to articulate a culturally relevant expression of the simple, positive and optimistic energy that consumers are looking for as we emerge from 2021 and navigate the new adventures of 2022. Stay tuned for an update in the next edition of Australian Bananas Magazine.



YEAR IN





On-going campaign to help overcome worker shortages has included a push to attract students and school leavers.

Winds associated with Tropical Cyclone Niran caused severe damage to farms in the Cassowary Coast region (except for Tully) and northern Tablelands on 2 March.



The industry celebrated all things bananas at Innisfail's Feast of the Senses on 18 April.



Australian Banana Industry Congress Welcome Drinks.



The industry came together in May at the Australian Banana Industry Congress.



ABGC flew the flag at the 2021 Rotary FNQ Field Days in Mareeba.



Pest and disease prevention in the Torres Strait.



National coverage for bananas when Channel 7s Weekend Sunrise broadcast from Alcock's Innisfail Farm.



ABGC welcomed visits by the Federal and State Government agriculture ministers shortly after TC Niran to push for financial support for growers.



Work progresses on the NSW-based variety trial site in Alstonville.



Workshops organised by the ABGC's Best Practice Team were well attended by growers.



ABGC's National Bunchy Top Program produced a number of videos this year to educate growers and the community about Bunchy Top symptoms and control.

EVENTS



DAF released some results from their research into disease resistance banana varieties.



Australian Barrana Directory In - Lakaland, Far Harth Queensiend Australian Caregori & Directory 1 - 9



Huge growth in ABGC's social media reach with this short cutting and humping video shot in Lakeland in October reaching more than 10 million people and rising!



Innisfail growers at a focus group workshop with the Panama TR4 Program Management Board.





The ABGC's Chair Stephen Lowe and Strategy Manager Michelle McKinlay appeared at a Parliamentary video hearing on reef regulations in June.



The best of the best bananas took centre stage at the Tully and Innisfail Shows in July.



Industry continued its focus on transitioning to industry management of TR4.



Cassowary Coast banana growers Josephine Borsato (left) and Steve Lizzio (far right) met with NRL legends Chris Walker (second from right) and Nate Myles during Walker's epic 2000km charity walk from Cairns to the Gold Coast in April.



Banana bonanza! With COVID lockdowns and flooding producing a major oversupply of bananas in WA in early 2021, the Sweeter Banana Co-operative ran a successful media campaign urging consumers to buy more bananas and support their local growers. It was a huge success.



The year wrapped up with growers and industry stakeholders celebrating National #AgDayAU in November.

EVENTS

BANANA RACE DAY SUCCESS

The annual Banana Industry Race Day made a successful return to the track in August at the Innisfail Turf Club.

Banana growers and industry stakeholders and supporters turned out in numbers, braving inclement weather, to enjoy the festivities including a six-race program and Fashions on the Field.

ABGC sponsored the event.











SOUTH JOHNSTONE FIELD DAY

















They grow Australia's golden fruit and they've also got a heart of gold.

Costa at Walkamin recently sent along a crew of workers to the Walkamin State School to spruce up the school's gardens before their annual fete. They covered garden paths with weed mat, installed some recycled tubs for growing vegetables and filled them with soil and mulch.

It was a gesture much appreciated by the school who uses the gardens to teach its students about where food comes from and the importance of a healthy, balanced diet.

But it's not the first time Costa has shown its community spirit to their local school or wider community. As well as helping out Walkamin school with their garden on a number of occasions, they deliver boxes of ripe bananas to the students every week.

Costa at Tully also deliver free bananas each week to Feluga State School, Tully Primary School and Tully High School. And it's not just schools that benefit from their generosity. Meals on Wheels at Atherton receive free boxes of fruit each week. And each year, the company organises a fundraising car wash in aid of the Tully Hospital Foundation.

The driving force behind these efforts is Costa's North Queensland Packing Operations Manager Kylie Stonehouse (pictured above – front centre).

When contacted by Australian Bananas Magazine to ask about the company's generous efforts she said; "I love it. I really do love it. And the best thing is, Costa support it 100 per cent."

"Bananas are huge in our area and if we can help kids grow veggies, if we can give to our community then that is great," she said. "There are bigger schools out there that get a lot of funding, but we love helping our little schools and making them feel a bit special.

"And the carwash. We all, at some stage in our life, need a hospital, so we love to add our support there. It's good to give back and I really do love it."

Bravo Costa team!

TOUR DE CASSOWARY



Australian Bananas sponsored the Tour de Cassowary Classic Car Rally held in October.

Organised by the Far North Queensland Restorers Car Club, this year's event attracted a record 42 cars all aged over 30 years.

The event centred around Kurrimine Beach, Tully and Mission Beach, with competitors needing to collect a banana and sticks of sugar cane along the rally route and participate in a time trial at the end.







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