

Mango Matters

APRIL 2022 | VOLUME 47



Improving mango industry biosecurity capacity

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Australian mangoes—
the hero of the produce
department

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National bee pest
surveillance program

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Mango yield mapping
field walk

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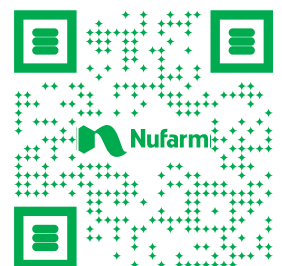
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Marie Piccone shares her knowledge with participants of the University of Tasmania's Masterclass in Horticultural Business

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Want to contribute?

If you would like to submit pictures and story ideas to AMIA, or provide feedback, please contact the AMIA team via the details listed on this page.

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AUSTRALIAN MANGOES

Hort Innovation
Strategic levy investment

MANGO FUND

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CEO REPORT

Brett Kelly

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I hope all of our industry stakeholders and members have had a successful season. The general feedback I have received from retailers in terms of overall quality and demand with consumers over the last season has been very good to excellent, so well done.

We have now submitted final reports for the communication and best practice projects (MG17000 and MG17004) that started in 2018. Project submissions (request for proposals (RFPs)) have also been lodged for the new communication and best practice/research and development projects, which will guide much of our activity over the next five years. The new projects are underpinned by the Mango Strategic Investment Plan 2022-2026 (SIP). At the time of writing the final reports and RFPs are currently with Hort Innovation and the Strategic

Investment Advisory Panel (SIAP) for review. Once finalised, we will update you on what these projects will look like. We will also provide you with end of season and project reviews and reports in the next edition of Mango Matters.

With covid restrictions lifting gradually both domestically and internationally we should see some normality come back over time into the supply chain.

I have mentioned previously that while the back end of the business is critical in all aspects of best practice, quality and compliance, the front end is where in business long-term sustainability and profitability is determined. Marketing and retailer relationships working in partnership are crucial. Whilst this already happens now through the marketing and supply chain engagement programs, we also need to look at all other aspects of selling our product through the front end. Ultimately the consumer is our most important stakeholder. It is important to know your own strategy and where you are aiming to fit in the marketplace in terms of market channels. As mentioned previously a clear business plan can help you stay focused on your objectives.

Otherwise, now we need to review, reflect, and analyse last season's outcomes and results so we can improve and do better next season. It is imperative that you know your exact cost of doing business from farm to sales. If you don't you are running blind. By sitting down and working out all your costs, for example by putting this into a spreadsheet, you can adjust these costs on an ongoing basis as you need. It is also time to start thinking

about and planning for the next season and further for your own business.

Remember success favours the prepared mind so start planning now.



Now with covid restrictions easing I am aiming to visits to growing regions during April and May. Once all times are confirmed we will communicate this in our regular communication and our IDOs will also update you. It will be good to get your feedback on industry issues as well as discussing strategies for the future.

I look forward to meeting and talking to our growers, members, and other industry stakeholders at these upcoming visits.

On a final note, to anyone impacted by the recent weather events, we acknowledge this and are amazed to see the incredible efforts many of you put in, to get back up and running quickly, particularly growers, and wholesalers and staff at the Brisbane Markets. We are only a phone call away if you need any assistance. The AMIA office (located on the ground floor of the Fresh Centre at Brisbane Markets) only sustained minor flooding/damage to carpets and some paperwork located in bottom drawers. While the office is getting back into order, the AMIA team will remain mainly working from home. You can contact us via mobile/email here: <https://www.industry.mangoes.net.au/contact/contact-amia/>.

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CHAIRMAN'S REPORT

Ben Martin

Chairman, AMIA

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Over the past season there has been varied success depending on variety and region. While some regions and varieties have performed well and have given growers a good return, I have had several conversations with growers who have not fared as well. There have been a few challenges that have impacted growers' bottom lines, whether it be the extra cost of labour (when they can find suitable labour), increased input costs to produce the crop, mother nature, or a reduction in exported fruit—which caused an oversupply on domestic markets during some weeks. These are only some of the challenges that we face each season, and I am making sure that the governments are aware of these increases and challenges we all face. At the time of writing there has been a substantial increase in fuel price. A few industries are saying that they will have to pass this cost on to the

customers. I have been quoted that the average input costs so far this season have gone up roughly 30% already. The industry cannot afford to suffer with more increases on top of this.

We need to be very clear on what we require to have a sustainable and profitable industry, and at the moment I feel that there needs to be more done in this space. AMIA is currently working on some projects that should address this issue so please stay tuned and I encourage all growers to be part of the solution when the time comes.

Over the last 12 months we have had Brett Kelly in the CEO position. Brett and his team have achieved a number of significant achievements in this short time. I would like to take this opportunity to thank Brett and his team for a great 12 months and look forward to the exciting opportunities that are coming for AMIA members.

A critical component to the continuing development of our export markets is access to new markets both at a national and more importantly, international level. Export markets over the past season have again been significantly impacted by access limitations, freight logistics and increased costs. This has resulted in extra pressure on domestic markets due to additional fruit supply.

"A critical component to the continuing development of our export markets is access to new markets both at a national and more importantly, international level"

.....
- BEN MARTIN

The issue of water security has again been raised with the Queensland Minister for Regional Development and Manufacturing and Minister for Water the Honourable Glenn Butcher. Water security is extremely important for mango growers and certain growing regions, under the current arrangements, are at risk of unnecessary water restrictions. I look forward to working with the minister on a solution that not only protects the environment but also provides growers with a reliable source of water.

With the recent natural disasters that South East Queensland and New South Wales have experienced I would like to offer my thoughts to all affected. I hope that you all have a speedy recovery from this disaster and can look back on the tough times that you are currently going through.



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DIRECTOR'S REPORTS

Northern Territory & Northern Western Australia



Leo Skliros

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The Australian mango season has not long finished, and Darwin growers are ready for the next one.

Over the last two months, we have already seen green eating varieties flowering and Kensington Pride trees are showing promising signs for the season ahead. However, with the wet season still here, achieving a yield from any current flowering might be difficult.

There are numerous concerns, such as, cost of production (up another 15% by the time you finish your coffee), labour availability, market access, transport, the Australian economy and pests and diseases (on and off trees).

We are a resilient bunch, and I am sure with some thinking outside of the box, clever management, and higher fruit and vegetable prices to absorb some of these costs, we should achieve a win sooner or later.



Han Shiong Siah

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Hi all, I am back for a short period of time to step into the temporary position for Northern Territory and North Western Australia until the next AMIA AGM. It feels weird to be back on board, many things have changed in the past two years, new faces have joined the team as others have moved on. It is great to see the AMIA team grow over the past year, new goals have been set to make a bigger, better, and bolder industry. I hope my quick term here can help in this improved growth.

The Northern Territory (NT) region has been through our wet season. It was predicted to be about or just above average rainfall. So far, we had three monsoon bursts, and some have dropped a decent amount of rainfall. However, it is early March as we speak, but it feels like late November with the build-up and record-breaking temperatures. I am very concerned about flowering this year for NT mangoes if this heat stays high during the period of flower induction.

Most NT farmers would have just had their rest, maybe getting away for a few days interstate or overseas, they would be returning to their businesses and preparing for the upcoming season. We are getting machinery serviced and the irrigation system checked ready for the upcoming dry season.

Speaking of flower induction, I saw full mango flowers in the Darwin region of some Asian green culinary variety in early March, I would guess those mangoes will be ready for market in early June. However, time will tell if weather helps or hinders these lucky few growers with early mango fruit.

The volatility of global markets and the impact on supply due to the crises in Eastern Europe, product scarcity and other markets struggling to return to full production/the same production as pre pandemic, means that prices of imported farm inputs (chemicals, fertilisers, and fuel) have and will continue to increase dramatically. I would advise farmers to shop around, buy in advance if possible or even pool together with a few neighbouring farms and try to bulk buy items to reduce the price of these imports.

This year may be even tougher than last year. I wish you all a great upcoming season, stay strong and battle hard, it is not going to be a pretty year ahead.



Geoff Warnock

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Pruning and cleaning up after last year's disappointing season is now complete.

Growers need to look forward and plan to try and combat potential issues they may be confronted with, such as worker shortages, restricted access to markets, expensive fertilizers and massive increases in fuel and freight costs, which will influence the cost of production.

The growers on the East Coast have already been thrown a "curve ball" with the recent floods, our sympathy goes out to them having to deal with this.

The 2022/2023 season in this region, to date, is running along reasonably well with the rain fall being just above the average.

It is my feeling that the big challenge will be creating a solution amongst growers to give their best effort towards growing a good crop. Those that take up this challenge I wish every success to.

Far North Queensland & North Queensland



John Nucifora

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The 2021/2022 season has just ended for Mareeba/Dimbulah. I must say it was a challenging one for most growers. Flowering was very patchy in most areas and while prices seemed to have held firm for most of the season, there were some growers that weren't happy with pricing of certain varieties.

The recent rain in this area didn't have any impact on fruit, we welcomed the rain as the heat was unbearable. However, I know that further south it impacted others in the industry.

Trees are now getting in mode for the next season, and I might add they are looking very good. In my experience, it looks like it may be a big mango season ahead. But as you all know mangoes are a challenging crop.

The biggest challenge I see going forward is the cost of production. We have had costs go up, in some cases doubling. Fertiliser, fuel, chemicals, wages, and all other associated costs are near to 30% to 50% up on last year. This is going to be very detrimental to the industry. If mango growers don't recoup this increase, I would hate to think what is going to happen to the industry.

AMIA is currently working on the next pre-season roadshows, and I urge all growers to come along and voice your opinion. The new CEO Brett Kelly would also like to catch up with growers during April and May, he will be arranging visits shortly. I urge growers to contact Brett and arrange a meeting to have a chat and attend the roadshows later in the year.



John Nardi

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The 2021-22 season is now wrapping up with the last of the Keitt and Brooks varieties going through the supply chain. Most growers have finished harvest and are now preparing for the next season with pruning and other field preparation operations taking place.

We did see some challenging weather yet again that affected yield for many growers in the region and challenging markets at times with the bulk of volumes hitting the markets at the same time and overlap between regions. Labour and COVID-19 management has also been an issue for most.

On a brighter note, fruit quality overall was very good. From a marketing point of view, we did see some challenges with extensive rain and flooding in many states which caused a lot of devastation and destruction in many areas (outside of mango growing areas) including the Brisbane Markets. Most wholesalers in Brisbane were severely affected but the clean-up is almost over at the time of writing, and everything is slowly getting back to normal.

Growers are facing continued increases in costs for materials and compliance and the newly increasing cost of fuel will also have serious impact on everyone. Let's hope we can see increases in pricing to offset these in the future. It's difficult just yet to say how the coming season may look but hopefully it will be good for everyone, and we are all looking forward to a successful season overall.

Southern Queensland & New South Wales



Karl Gygar

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We now find ourselves at the end of what has been a trying season for many.

Recent flooding has been devastating for many and our thoughts are with those who have lost homes. The flooding has also caused major issues including cutting off roads and railways, damaging infrastructure, and shutting down the Brisbane Markets for many days. Our wholesale and service providers have been heavily impacted, and our thoughts are with those currently rebuilding.

Recent world instability and the continuing effects of COVID-19 have also heavily impacted supply chains. I am sure many have directly felt the impacts. I would highly recommend that growers start looking forward to the next season. Long delays in the supply chain may require ordering of consumables extremely early to ensure they arrive before the season starts. Equally, fuel price and labour shortages are putting heavy price pressure on freight providers. Growers are encouraged to lock in their freight plans as early as possible.

Overall COVID-19, labour shortages and weather have combined to make the final part of the season very difficult. I wish all growers and supply chain members the best for the off season and hope the next season sees business pressures reduced.

Southern Western Australia



David Morcombe

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Considering that every year is a bit of a gamble in agriculture, the conditions we are currently facing really brings uncertainty to the fore. We are facing a politically changing world, severe weather events and covid related staffing issues. We can hope that this uncertainty will pass, but unfortunately, I think we may have to learn to live with it for the foreseeable future.

In the southwest we have had a very ordinary season. The cool spring we had resulted in poor fruit set from early flowering which seemed to produce an extended flowering season. Then we had a very abrupt shift in the weather to extremely hot with several heatwaves. The Christmas heatwave probably did the most damage with a few days over 45 degrees when the trees were carrying small fruit from the later flowers. That fruit basically didn't survive, and we were left with very small crops.

Carnarvon also had a very hot summer with a modest crop. The supply of R2E2 going into the Perth market from Carnarvon tends to suppress pricing. I suspect that a coordinated marketing and supply initiative from the growers may be one option worth exploring.

The conditions in the Tristate region (the growing area broadly around Mildura, covering Victoria, South Australia, and New South Wales) have been more favourable this season and growers in that region are harvesting at the time of writing.

I hope that we can work to prepare for a smoother run next season during the off season.

AMIA & INDUSTRY NEWS

IAN: Plant Exports Management System updates

An Industry Advice Notice (IAN) has been issued to notify stakeholders of updates to the Plant Exports Management System (PEMS).

The following updates have been made to the PEMS:

- The flow path inspection date and time for grain and plant product and bulk into ship hold inspections will no longer be automatically populated. This information must be entered by the authorised officer.
- Supervision of vapour heat treatment (VHT) now require a treatment start/end date and time to be recorded.
- Exporters/EDI users can add attachments with 'Sensitive' classification.
- Establishment Executives can now add requests for permit to onshore cold treatment (OSCT) calibration records.

Further detail can be found at: <https://www.awe.gov.au/biosecurity-trade/export/controlled-goods/plants-plant-products/ian/2022/2022-10>.

Hort Statistics Handbook released

Developed by Freshlogic, the annual Horticulture Statistics Handbook is out now and includes the latest available data on 75 different categories across fruit, vegetable, nut, nursery and cut flowers.

Information on mangoes can be found from page 140 of the fruit handbook.

Head to: <https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/grower-resources/ha18002-assets/australian-horticulture-statistics-handbook>



Your go-to-guide for Australian horticulture industry data is out now.

The 2020/21 edition of the Australian Horticulture Statistics Handbook provides the most up-to-date production, international trade, processing volumes and fresh-market distribution insights available to help you plan for the future.

View it now at www.horticulture.com.au/hort-stats

Hort Innovation

Han fills vacancy

Han Shiong Siah has been appointed to the AMIA Board to fill the vacancy for the Director for Northern Territory and Northern Western Australia. Han will remain on the board until the Annual General Meeting in May (date tbc).

Contact details for Han and the rest of our current board are available at: <https://www.industry.mangoes.net.au/who-we-are/our-board/>.

Look out for details about the next AMIA AGM in monthly e-newsletter The Slice—you can subscribe at <https://www.mangoconnect.com.au> if you don't already receive it.

Australian Mango Export Strategy

A new mango export strategy project (MG21000) was launched earlier this year.

This project will develop a five-year export strategy for the mango industry to support growth in exports, ensure the ability to maintain and increase global market share, build export capacity and capability, and provide necessary connections and support to relevant stakeholders across the export supply chain.

The project will identify and prioritise opportunities for mangoes in international markets and provide the domestic industry with the information needed to guide future activities, including potential investment into export initiatives.

As part of this project a workshop was held in late February with mango industry stakeholders. Thanks to all of those that attended and provided input.

We hope to have more detail about this project in a future edition of *Mango Matters*.



New rules from 28 April

As previously communicated The Fair Work Commission has [set the date](#) for changes to the Horticulture Award.

Changes include Australian farm workers being guaranteed a minimum rate of pay and employers are now required to record hours worked by pieceworkers.

These new provisions take effect from the first pay period that starts on or after **28 April 2022**.

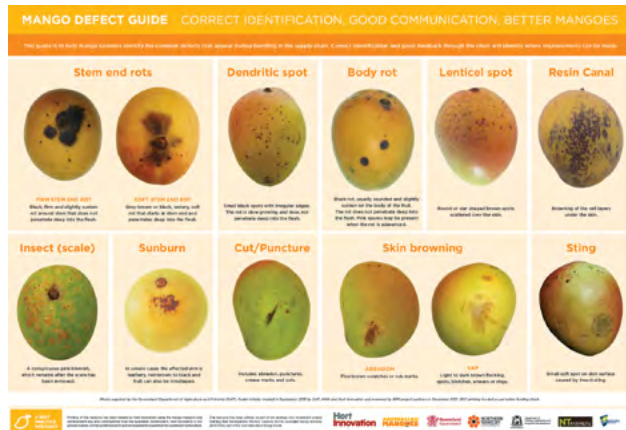
A summary of the changes can be found at: <https://www.fairwork.gov.au/newsroom/news/new-minimum-hourly-wage-guarantee-pieceworkers#new-rules?aid=c52ec6468cb49065>.

Full details can be found at: <https://www.fwc.gov.au/documents/decisionsigned/html/2022fwcfb4.htm>.

Resources available

AMIA has recently printed more copies of the mango quality defect guide. If you require a copy/copies, please contact Linda Bachmann on 0407 457 29 or accounts@mangoes.net.au.

You can also download it off the industry website here: <https://www.industry.mangoes.net.au/resources/resources-library/poster-mango-quality-defect-guide/>.



AMIA is also excited to launch an instructional video on using our website, which you can view here: <https://www.industry.mangoes.net.au/resources/resources-library/australian-mangoes-website-instructional-video>.

This resource was created to address survey feedback received, regarding many industry stakeholders not being aware of the new industry website www.industry.mangoes.net.au, that was launched in March last year.



We look forward to sharing more resources and key learnings from Building Best Management Practice Capacity for the Australian Mango Industry (MG17000) and National Mango Industry Communication Program (MG17004) in the next edition of Mango Matters. Thank you to everyone that provided feedback!

These resources have been printed/created as part of the strategic levy investment projects Building Best Management Practice Capacity for the Australian Mango Industry (MG17000) and National Mango Industry Communication Program (MG17004), part of the Hort Innovation Mango Fund.

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New faces at Hort Innovation

Over the past few months, there's been some new appointments at Hort Innovation. Join us in welcoming Maria, Andre, Sarah, Sarah, and Brett!

- **Maria Fathollahi** has replaced Georgia Shiel as the Mango Fund's Industry Strategic Partner. Maria is your go-to person on anything mango fund related.
- **Andre Krogh** has come on board as the Head of Customer Marketing, this role supports AMIA Supply Chain Engagement Manager, Andrew Burns and Hort Innovation's Marketing Manager, Belinda Van Schaik.
- **Sarah Strutt** has been appointed to the position of Regional Extension Manager for Northern Australia. This position covers North Australia from Broome through to Darwin and Tropical Queensland, extending down to Rockhampton. This position supports our Industry Development Manager and Officers, Marine, Celine, and Paige on the best practice project. Olive Hood (who used to be in this position), has now been appointed to the position of North-East Regional Extension Manager.
- **Sarah Houston** is the new Industry Communications Coordinator. This role supports our Communication Manager, Jessica Mitchell, on the communication project. Lauren Jones who was previously in this role, is now Content Manager at Hort Innovation.
- Finally, **Brett Fifield** has been appointed as the new Chief Executive Officer, following Matt Brand's resignation.

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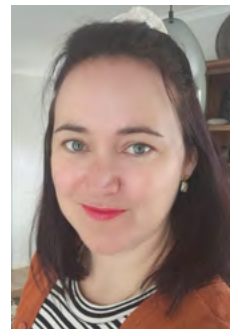
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Note – As Brett Fifield has not yet commenced in the role, his contact details are not currently available.

MEET MARIA

Maria Fathollahi is Hort Innovation's new Tropical Fruits Industry Strategic Partner.

Maria is joining Hort Innovation from New Zealand's powerhouse producer region, the sub-tropical Far North region more than three hours north of Auckland. She is a qualified agronomist, as well as an experienced grower, having owned, converted, and operated an avocado and berry fruit orchard.



Maria was part of the national grower's association, Horticulture New Zealand, where she spear-headed the now nationwide GoHorticulture talent acquisition and development programme, which works closely with growers, schools, and community to cultivate and engage a skilled workforce.

Her knowledge and work across the horticulture supply chain at both grassroots and strategic levels has resulted in an action-oriented, industry-led approach that engages a broad range of stakeholders in the public, education, and private sectors. Her quick response to industry needs has resulted in the development and implementation of collaborative strategies for the food sector, environment, and the communities that horticulture organisations operate within. The initiatives and tools Maria has developed have provided tangible outcomes in the areas of marketing, education, work experience, scholarships and internships, and workforce development in both the short and long-term.

Maria is excited to be joining Hort Innovation and looks forward to meeting you and understanding your aspirations for the outcomes she can deliver in her new position.

ABOUT ANDRE

Introducing Andre Krogh, Head of Customer Marketing at Hort Innovation. Andre has extensive brand and trade marketing experience both locally and globally. Andre is responsible for retail customer relationships, foodservice, and export trade marketing at Hort Innovation.



Andrew Burns, Supply Chain Engagement Manager (Project MG21500), will remain the lead developing and organising activities throughout the season involving key supply chain stakeholders to build interest, excitement, and an understanding of the mango industry; ultimately to increase the demand and consumption of fresh Australian mangoes.

The Supply Chain Engagement Project led by Andrew will benefit all stakeholders within the mango supply chain, including growers, wholesalers, exporters, and retailers. Andre will lend valuable support to Andrew in these endeavours.

Continued page 11

HELLO I'M SARAH STRUTT

Late last year, I joined Hort Innovation, after Olive Hood transferred to be Regional Extension Manager for the North-East Region. Previously, I have worked for over 25 years in Northern Australia at the interface of government, industry, and community on a diverse range of natural resource management, industry, and community projects.



I grew up on a mixed broadacre cropping, sheep and cattle property in northern Victoria. After landing a job with the Department of Agriculture in Kununurra, I spent the next 21 years working as a beef industry development officer, then consultant in the Kimberley. During this time, I also did work for industries in the Ord River Irrigation Area; and saw ups and downs of mango production in the area. In 2011, we moved to Townsville for secondary education of my daughters and to be closer to family on the Cassowary Coast. For most of the time since then, I worked with the Great Barrier Reef (GBR) Marine Park Authority in the Reef Guardian program, showcasing, and fostering environmental stewardship in the GBR catchment.

It is great to again be work closely with the agricultural businesses towards strong industries and vibrant communities in the north. Horticulture is rapidly growing as an industry in Australia, with a 40 per cent rise in value over the last five years. Growth is expected to continue with the sector's farm gate production having the potential to increase to between \$20 and \$30 billion by 2030. My role is to enhance the coordination, communication, and application of research and development to help northern horticultural producers secure a good share of this projected growth. I'll support and link extension service providers to share skills, build capacity and solve problems.

I'm based in Townsville and over the next few months, I will be trying to meet growers and delivery partners across the north. I would welcome invitations to anything you believe may enable this. My contact details can be found above, and I welcome you to call, text or email me any time.

MORE ABOUT SARAH HOUSTON

Sarah has recently moved into the role of Industry Communications Coordinator after finishing a 12-month contract with Hort Innovation where she was tasked with coordinating the development and publication of the 2022-2026 Hort Innovation Strategic Investment Plans. Sarah's previous experience includes extension and communication roles within various sectors including the vegetable, broad acre, and seafood industries, as well as coordination of regional development programs in Western Australia. Prior to this, Sarah gained valuable experience in the banking and finance sector with the NAB Agribusiness team throughout Queensland and NSW. Now based back in her hometown of Hobart, Tasmania, Sarah is working three days a week in the Industry Communications Coordinator role and is looking forward to continuing to drive improvements for industry in the area of horticultural communications.



Image courtesy of farmweekly.com.au

MEET HORT INNOVATION'S NEW CHIEF EXECUTIVE OFFICER

Brett will join Hort Innovation on Tuesday, 26 April from his current role as the Deputy Director General, Infrastructure, Investment and Business Development, and member of the Executive Leadership Team, at the NSW Department of Primary Industries in Orange.

The Board is delighted to have a candidate of Brett's calibre and diverse experience as our new CEO.

With a strong pool of qualified candidates and a competitive recruitment process, the Board is confident that Brett is the perfect choice to take Hort Innovation to the next phase of strategic development, and enhanced culture and stakeholder experience.

Brett's leadership, and broad industry expertise across R&D, stakeholder engagement and innovation will be an asset to lead Hort Innovation toward the government's Ag2030 vision of growing agriculture to \$100bn in value.

Having grown up on a mixed farm near Wagga Wagga and following an early career as a journalist, Brett has more than 20 years' experience in agriculture including 10 years in senior executive roles working across agriculture, biosecurity, food safety, fisheries, policy and cabinet, business performance, communications, and engagement.

His specific experience and expertise in stakeholder engagement and communications with industry across diverse topics including infrastructure, industry development, research and development, adoption and extension, regulatory affairs and industry assistance makes him ideally positioned to lead Hort Innovation Australia into the future.

Programs and announcements

TAX CHANGES FOR FARMERS TO BOLSTER LAND STEWARDSHIP

The Morrison Government will apply concessional tax treatment to primary producers that generate revenue from the sale of Australian Carbon Credit Units (ACCUs) and biodiversity certificates. This will encourage carbon abatement activities and help Australia deliver on its net zero emissions target by 2050.

Read the full announcement here: <https://www.minister.industry.gov.au/ministers/taylor/media-releases/tax-changes-farmers-bolster-land-stewardship>.

Head here to read a statement from Queensland Farmers' Federation: <https://www.qff.org.au/media-releases/qff-welcomes-tax-facelift-modern-farming/>.

BACKING LOCAL BUSINESSES AND BOOSTING THE TERRITORY WORKFORCE

The Territory Labor Government has announced the launch of a new Global Worker Attraction Campaign, the arrival of more Pacific workers and round two of the Work Stay Play incentive.

Head here to find out more: <https://createsend.com/t/t-CC04A65D141DA58E2540EF23F30FEDED>.

PILOT SOIL MONITORING AND INCENTIVES PROGRAM

The Australian Government is providing \$54.4 million over two years to support farmers and land managers to access low-cost soil sampling and certified testing in exchange for sharing their data under the Pilot Soil Monitoring and Incentives Program.

Farmers and land managers may be eligible for benefits of up to \$10,000 and receive assistance from Commonwealth-funded soil extension officers to interpret their soil test results.

To find out more go to: <https://www.awe.gov.au/agriculture-land/farm-food-drought/natural-resources/soils/soil-monitoring-and-incentives>.

AGCAREERSTART PROGRAM

AgCAREERSTART is a structured gap-year program encouraging young Australians to try a career in agriculture by connecting them to jobs on Australian farms.

As some of you may be aware, the first intake has just begun. Registrations of interest are now open for the second intake, which will take place from February 2023. Placements will last for 10-12 months.

Businesses will receive a \$2,000 grant for participating.

If you are interested in finding out more and registering for this program head to: <https://agcareerstart.com.au>.

AUSTRALIA-UNITED KINGDOM FREE TRADE AGREEMENT SIGNED

The Australia-United Kingdom Free Trade Agreement (A-UKFTA) was signed on 17 December 2021. The A-UKFTA will deliver mutual benefits and create a closer and stronger economic future for both countries.

Head to AusTrade's website to find out more: <https://www.austrade.gov.au/australian/export/free-trade-agreements/united-kingdom/aukfta>.

WORKING HOLIDAY MAKER PROGRAM, AUSTRALIAN AGMOVE AND AGVISA

For the latest news about the Working Holiday Maker program visit: <https://immi.homeaffairs.gov.au/what-we-do/whm-program/latest-news>.

The Australian AgMove program, which supports relocation for short-term agricultural work, has been extended to 30 June 2022. For more information head to: <https://ministers.dese.gov.au/robert/agricultural-workforce-set-boost-agmove-extension-help-get-thousands-more-workers-australian>.

For the latest news on the Australian Agriculture Visa visit: <https://www.dfat.gov.au/people-people/international-labour-mobility/australian-agriculture-visa>.

PLANTING MANGO TREES?

Fleming's Nurseries QLD (formerly Birdwood Nursery) is a wholesale fruit tree nursery. Specialising in avocado, mango, citrus, and other tropical fruit trees. Supplying commercial growers and retail centres across Australia.

- Specialist large order supplier
- Despatch to all mainland states

Contact us today!
07 5442 1611
mail@flemingsqld.com.au

ORDER GRAFTED TREES NOW!





flemings.com.au

Support for impacts from extreme weather

FLOODING

As previously shared in our weekly newsletter *My Mango*, below are some links to support available if you have been affected by recent weather events. More thorough detail can be found in the March 2022 editions of *My Mango* at: <https://www.industry.mangoes.net.au/news-events/my-mango/>.

Our thoughts go out to anyone affected and we are only a phone call away if you need us.

Queensland

Producers can report damage via the [Natural Disaster Impact Survey](#) or to the DAF customer service centre on 13 25 23.

To access the survey visit: <https://survey123.arcgis.com/share/a65512900348401a812e57d743e4c104>.

Further information on support available can be found at grida.qld.gov.au or www.daf.qld.gov.au.

New South Wales

Primary producers should report flood-related damage including damage to crops, fencing and other farm infrastructure through the Natural Disaster Damage Survey.

To access the survey visit: <https://www.dpi.nsw.gov.au/emergencies/emergency/community/primary-industries-natural-disaster-damage-survey>.

Further information on support available can be found at: <https://www.raa.nsw.gov.au>.

DROUGHT SUPPORT

National

It may seem ironic; however, The Australian Government is providing \$9 million through the Future Drought Fund to put boots on the ground in regional Australia and give farmers practical assistance applying the latest in drought resilience innovation and technology.

You can find out more here: <https://minister.awe.gov.au/littleproud/media-releases/fdf-national-network-adoption-officers>.



Queensland


Planning for future droughts through the [Farm Business Resilience Program](#) (FBRP), is something Queensland horticultural growers can now access.

This program is being delivered by Growcom and jointly funded under the Australian Government's Future Drought Fund and Queensland Government's Drought and Climate Adaptation Program.

The FBRP aims to build the strategic management capacity of Queensland horticultural growers to prepare for and manage business and climate risks. As the program gets up and running, Growcom will be delivering a range of activities including workshops / webinars to support capacity building and assist growers in developing a Farm Business Resilience Plan or to refine an existing plan. To participate growers do not require a drought declaration.

You can find more information at:

- <https://www.growcom.com.au/portfolio/fbrp-horticulture/>
- https://mcusercontent.com/af35749287a57a7f63fbbc561/files/a7505779-606c-5efe-78d9-ed6d30b55f25/FACTSHEET_Building_farm_business_resilience_in_horticulture_03032022.pdf



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Australian mangoes—the hero of the produce department

Australian Mangoes were again a standout within our retailers' fresh produce departments, so much so that mangoes can with certainty continue to claim the well-earned title of “King of the Fruits”. It was another challenging season, with various business activities hampered by COVID-19 restrictions and weather events, however the delicious golden fruit continued to provide excitement and fun while it was available on the shelves.

The start of the season was met with much enthusiasm and excitement across the fresh produce sections within our varied retailers, large and small. The launch of mangoes heralds the start of the warmer months, and the start of new season fruits re-entering the market. The roll in of the 2021-2022 mango season, was supported by large, perfectly positioned (to ensure consumer contact), colourful displays with descriptive and creative point of sale materials, leaving no doubt to the consumer that the new mango season had begun. To further support increased awareness and drive incremental sales of mangoes, a few retailers generated further excitement, via the provision of incentives to their stores with creative displays rarely seen across other fruit and vegetable categories. The addition of these in-house made creative displays brought a true tropical feel into the store. Staff were encouraged to “go outside the norm” to support the mango category throughout the entire season.

Retailers also highlighted to the consumer the different varieties of mangoes that made their way into the market over the season. It is important that consumers are educated on the varieties of mangoes available, not only to allow them to experience each of the individual varieties' unique characteristics, but to maintain the enthusiasm for mangoes throughout the entire season. Retailers are increasing that awareness program and have continued to communicate variety availability via their in-house media options (e.g., catalogues) in an increasing manner. You can see how the retailers communicate the variety message, via a selection of brochure material included in this article. Additionally, retailers supported the promotion of mangoes, via their monthly food magazines and within their array of recipe ideas found online, and throughout other electronic media (e.g., weekly newsletters, and social media).

As we finish and review the season, we will all be reminded of the challenges that were before us. We will also be reminded of the good news, smiles, and excitement that mangoes brought to so many people this season. As we reflect, we will also start to plan for the next season ahead, which we will aim to be the best yet. There has been lots of activity done, however there is always a lot more to do.

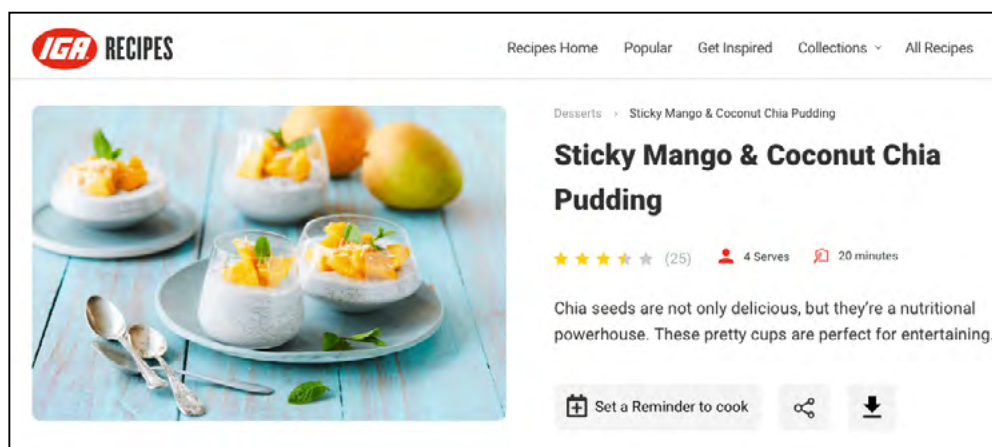
For further information please contact Andrew Burns, AMIA Supply Chain Engagement Manager:

M: 0428 662 726

E: andrew@mangoes.net.au

**Hort
Innovation**

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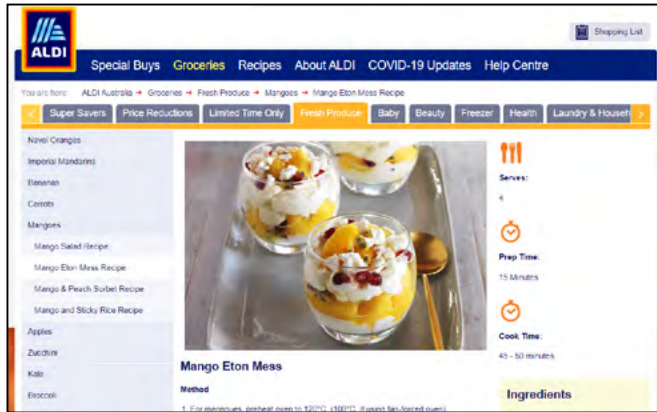


IGA.



Woolworths.

Continued from page 14



ALDI.



Coles.

"Retailers also highlighted to the consumer the different varieties of mangoes that made their way into the market over the season."

- ANDREW BURNS



Major retailers promoted Australian mangoes throughout their print and digital catalogues



Woolworths.



Taste the sunshine campaign shines brightly

PROGRAM OVERVIEW

The objective of this season's marketing program was to promote mangoes as an indulgent treat to enjoy regularly, through activities that provide inspiration, education, and connection to store.

With its luscious texture and sweet tropical flavour, a mango is a unique and indulgent eat. It's also associated with nostalgia, imbued with sweet warmer month memories—so emotionally peeling open a mango can transport you to your happy place. And it's only available for a limited season.

We wanted Australians to include mangoes in their weekly shopping basket. To achieve this, we needed to reframe mangoes as a convenient and regular treat, rather than just their go-to treat for special summer occasions.

PROGRAM ACTIVITIES

Across the marketing program, the key message was 'taste the sunshine' with Australian mangoes. With the sentiment being that with every delicious mouthful of mango, you're tasting pure happiness, positive vibes, and all the glorious brightness of sunshine.

Program activities included online videos, public relations, social media, out of home advertising, and domestic and export retail marketing activity.



OUT OF HOME ADVERTISING

The creative concept showed how eating a mango transports you to a world of good vibes, sunny nostalgia, and feelings of joy—the sweetest escape.

We used the silhouette of the iconic mango teardrop shape as a visual device to transport everyday Aussies to escape and taste the sunshine—a tropical, delicious, mango world.

The out of home advertising objective was to drive purchase intent on the path to purchase.

Results achieved:

- We reached **78% of grocery buyers 25-54**, at a frequency of 13 times.
- The frequency achieved was more than double the target KPI of six.
- Additional bonus panels were negotiated which increased the total **media value by more than 21%**.



ONLINE VIDEOS

The objective of the [online videos](#) was to drive reach (number of people who see your content) and awareness across contextually relevant environments via YouTube and Teads media (an advertising platform). This saw Australian Mangoes feature on [7news.com.au](#), [womensweeklyfood.com.au](#) and [newideafood.com.au](#).

We drove a total of **2.68 million** impressions (number of times an advertisement or content has been displayed) exceeding the online video target KPI by 44%. The main contributor of the strong performance was leveraging the new efficient reach capability on YouTube, which selects the optimum asset (video) based on the user i.e., decides to air the 6 second or 15 second video, using prior learning.

Continued page 17



Out of Home advertising - Greenwood Plaza, NSW.



Media coverage.



We again exceeded our target KPI, securing 33 pieces of coverage for public relations across TV, news, lifestyle, and radio media.

- BELINDA VAN SCHAIK

PUBLIC RELATIONS

Our objective and strategy for public relations was to develop a campaign that leveraged the start of the season and the first day of summer, to position mangoes as an escape and as an everyday accessible food, via earned media coverage.

As the season began to pick up momentum (in terms of volume) Aussie Mangoes partnered with Brisbane Produce Market's Mango Auction, which was held online in mid-September 2021. The auction has now raised a cumulative total of \$1 million for charity and achieved significant media coverage. Australian Mangoes also teamed up with industry and growers, including Jenko's Mangoes to produce a fun film that featured the Jenkins' family. Total coverage

achieved more than **105 mentions** across broadcast, print and online. A fantastic result!

To celebrate the first day of summer, we developed the ultimate summer starter kit with everything consumers needed to taste the sunshine this season.

The program saw a partnership with renowned summer influencers Lifeguard Trent Maxwell and Dominique Elissa to feature in a content shoot which displayed our

kit—while announcing a competition offering Aussies a chance to win the kit alongside a summer's supply of Aussie mangoes.

We again exceeded our target KPI, securing **33 pieces of coverage** for public relations across TV, news, lifestyle, and radio media.

Continued page 18



2021 Mango King.



Continued from page 17

SOCIAL MEDIA

The Aussie mango season was activated on social media via three content pillars:

1. **Entertaining** - Announcing key moments throughout the season and encouraging the consumption of mangoes where topically relevant (e.g., start of summer, long weekends).
2. **Educating** - Highlighting different mango varieties, allowing us to give each its moment to shine. This content also promoted the flavour and health credentials of mangoes.
3. **Inspiring** - Recipe content was used to inspire our audience to consume mangoes and try them in new and unique ways

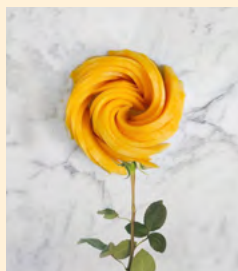
Results achieved:

Overall, the activity achieved 109,000 impressions (number of times an advertisement or content has been displayed), 5,000 engagements (people interacting with the social media content e.g., reactions such as likes, comments, or saves) and an engagement rate of 5.32%, exceeding the industry average of 1.41%.

EXPORT MARKETING INITIATIVES

This season we continued to promote Aussie Mangoes in key export markets; New Zealand, South Korea, USA, and Hong Kong, with the intention of building a stronger relationship between stakeholders and leveraging the quality an Australian mango has to offer.

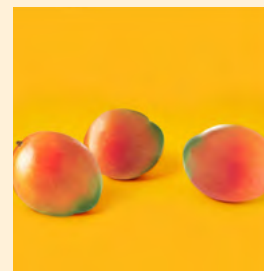
Social Media—what worked well:



Culturally relevant and timely content i.e., Valentine's Day.



Recipes to provide usage inspiration.



Showcasing different varieties.



Competition to encourage engagement.

Short videos are an efficient way to deliver our brand message. The 6 second video performed better than the 15 second video, as short form video is favoured by Facebook algorithms.

Key activity

- New Zealand: 73 out of home advertising panels were displayed in close proximity to Countdown stores.
- South Korea: Marketing activities included public relations, live commerce at Naver shopping live channel, a recipe video, a Manna Mall event (online fruit market) and home shopping promotion.
- USA: Display store incentive program and shelf signage in-store with Giumarra, within Gelson's supermarkets (Southern California supermarket chain).
- Hong Kong: A social media advertising campaign achieved a strong result reaching 546,000 people.

Thanks to everyone that participated in this year's marketing campaign, particularly to growers that put their hand up for media interviews, we couldn't have achieved the fantastic results that we did without you.

For further information please contact Belinda Van Schaik Marketing Manager, Hort Innovation:

P: 0411 844 441

E: Belinda.VanSchaik@horticulture.com.au

Hort Innovation



Countdown NZ Out of Home Panels.



Cut Aussie Mangoes in the U.S.A.



Mangoes in the U.S.A



Spotting Bugs Stopping Bugs

Transform[®]
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INSECTICIDE

Fruit spotting bug (*A. nitida*) and banana spotting bug (*A. lutescens lutescens*) are devastating pests of avocados, macadamia nuts, mangoes and citrus as well as most tropical and subtropical tree crops.

Transform Isoclast active insecticide is the ideal integrated pest management tool for the control of spotting bugs.

- Fast acting residual control
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- IPM compatible
- Unique mode of action for resistance management
- Systemic and translaminar activity

For more information contact your local Corteva Agriscience Territory Account Manager on **1800 700 096**

Quality the key to top-end mango production

The need to produce high quality mangoes for markets throughout the country is a driving force for Nick and Whitney Ormsby, of Katherine in the Northern Territory.

Honey Gold mangoes, on a 3600 tree, 15-hectare orchard are grown at Katherine and the couple also run Northern Hedging and Contracting.

The hedging business mechanically prunes 85 per cent of the Top End mango trees, and covers an area from Darwin, through Katherine and Mataranka, and into Kununurra in WA.

Five years ago, they took on the mango orchard and are currently doubling the number of hectares.

"We aim to harvest 90 per cent premium fruit," Mr Ormsby said. "It is all about bang for your buck. We need a good return from growing, picking and packing the mangoes."

The distance to markets also plays a large role in the profitability of the enterprise, with the cost per pallet space a constant price, regardless of the value of the produce being sent.

"You are paying for pallet space so need to get the best return by producing the highest quality mangoes we possibly can."

Mangoes on the property were harvested in November 2021 and had a pack-out from the high 80 to low 90 per cent range.

Northern Territory conditions are very challenging when striving for mangoes of top quality with insects and heat of great concern.

"Fruit spotting bug is a major issue," Mr Ormsby said. "They fly in, do the damage and are gone. Then two weeks later the babies are there."

Transform® insecticide, from Corteva Agriscience, is registered for the control of Fruit Spotting Bug



Nick and Whitney Ormsby, pictured with Emmett and Olive, aim to produce mangoes of a very high quality for markets throughout the country.

under a permit ([PER85397](#)) held by Horticulture Innovation Australia.

Last season Mr Ormsby used it just after flowering and was pleased with the results.

"We looked for eggs on the leaves and used Transform® to clean them up," he said. "It did a really good job."

"Transform® is strong on the pests and soft on the beneficials. My farm used to be run on the older chemistries. The problem with going old school is the more spraying you do, the harder they come back. You are wiping everything out."

"Now we have so many better products which allow us to keep the beneficial insects in the mangoes. We are probably about 70 per cent organic now and using these softer chemistries when we need to. I'm not necessarily a greenie but I know this approach is working. We are getting far better-quality fruit."

Mr Ormsby said native bees, European bees, flies, and ants all help with pollination and so it was important to look after them.

Spraying is conducted at night from June and July, though to harvest in November, with each application a mix of foliar fertilisers, amino acids, and fungicides and insecticides are added when needed.

Fruit picking is also conducted at night to ensure the mangoes are harvested at their optimum quality.

"It can be 37 degrees at 10 o' clock in the morning and 42 degrees at 3pm," Mr Ormsby said. "During the nighttime it is cooler, and the fruit is a lot less stressed."

The hedging business has been operating for 15 years, with the pruning conducted immediately after the mangoes are harvested.

"Hedging really depends on the age and configuration of the orchard but a typical tree might be three to four metres in height with a canopy of three metres each side," Mr Ormsby said.

"This helps to get more product into the mango tree and produce a consistent crop of fruit."

Improving mango industry biosecurity capacity

Mangoes are mostly grown commercially in many areas in the Northern Territory (NT), Western Australia (WA) and Queensland (QLD). According to the Australian Horticulture Statistics Handbook (2020-21), Australia produced around 52,000 tonnes of the fruit, worth \$167 million. Robust biosecurity mechanisms are key in maintaining the integrity of this high-value industry.

One such initiative is the Australian Mango Industry Biosecurity Program which is aimed at improving the mango industry's biosecurity capacity to respond to high priority exotic pests and diseases and implement biosecurity best practices.

Managed by the [Australian Mango Industry Association](#) (AMIA) and funded by [Plant Health Australia](#) (PHA) and [Hort Innovation](#), the program has reached many significant milestones since its inception in 2019. The three-year program has increased awareness of on-farm biosecurity practices and successfully integrated on-farm biosecurity measures with relevant quality assurance and best management practice programs to reduce pest and disease impacts.

"The focus of the project is reflective of current priorities and target areas of biosecurity weakness within the mango industry," said Marine Empson, AMIA's Industry Development Manager.

Awareness and surveillance activities are a major focus of the project, with the aim to increase the chance of effective and efficient eradication in the event of an incursion.

"By knowing how to implement orchard biosecurity measures, growers can play a key role in protecting the Australian Mango Industry from the impacts of exotic pests and diseases," said Stuart Kearns, PHA's National Manager, Preparedness and RD&E

"If a new pest becomes established in an orchard, it can affect the whole business through loss of produce, increased orchard costs and loss of markets," he said.

One of the latest achievements was the establishment of a common understanding of surveillance protocols of the key Fruit Pathway Pests and Mango Malformation Disease by PHA, the QLD Department of Agriculture and Fisheries, the NT Department of Industry, Trade and Tourism, and NT Farmers.

Some of the key Fruit Pathway Pests include exotic pests and diseases such as the red banded mango caterpillar, mango pulp weevil and mango malformation disease.

Through targeted workshops and industry events the project also raised industry awareness of key exotic pests and diseases and how to report them. The project also conducted field and packing shed surveillance; distributed biosecurity related communications; and supported other relevant industry preparedness projects.

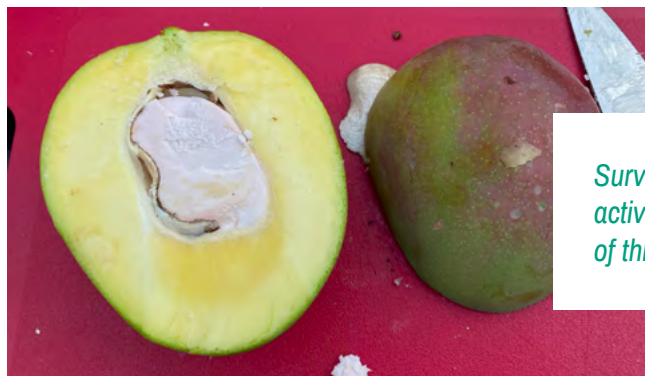
As part of the project, Industry Biosecurity Officers (IBOs) implement surveillance activities in orchards and packing sheds in selected businesses in main production regions to record the presence or absence of key pests and diseases.

To date, IBOs have reported seven sightings of mango fruit borer (*Citripestis eutraphera*) during surveillance activities on two different farms in the NT. Other non-exotic pests that were found include pink wax scale (*Ceroplastes rubens*) and fruit spotting bug (*Amblypelta nitida*).

In North Queensland, 165 mango seed weevil (*Sternochetus mangiferae*) infestations were identified during surveillance activities. The pest was found on 23 occasions in five packing sheds, and 11 orchards.

"Pest surveillance data is highly valuable because it underpins many other aspects of the biosecurity system. Early detection and immediate reporting of an exotic pest greatly increases the chance of effective and efficient eradication," said Mr Kearns.

Continued partnership and collaboration are key to a strong biosecurity system. Cultivating lasting relationships between PHA, AMIA, growers, industry stakeholders, and state governments remain a focus area to ensure the ongoing success of this project.



Surveillance is one of the activities conducted as part of this project

National bee pest surveillance program

Hort Innovation and Plant Health Australia (PHA) announced late last year a new three-year National Bee Pest Surveillance Program (NBPSP). Funded by Hort Innovation, the Australian Honey Bee Industry Council and Grains Producers Australia (GPA), in collaboration with state and territory governments, the program will continue to monitor for honey bee pests that threaten the Australian honey bee industry.



Honey bees are critical for the production of many crops, pollinating around 65 per cent of agricultural and horticultural crops in Australia. Their contribution to the Australian economy through pollination services and products is estimated to be \$14.3 billion per annum. The almond and grains industries both rely on honey bees for production, with the almond industry relying exclusively on honey bees for pollination.

“Access to healthy honey bees is critical for our industry in pollinating our crop each year. It is important we do whatever we can to protect our bees and the apiary businesses that support us from exotic pests and diseases,” said Deidre Jaensch, Industry Development Manager at Almond Board of Australia.

GPA Chair and Western Australian grain producer, Barry Large, said the Surveillance Program, was essential to helping protect the profitability and sustainability of Australian grain producers.

“Bee pollination plays a vital part in our \$13 billion industry; especially contributing to yield increases for grain producers who grow canola and lupin crops,” he said.

“GPA is proud to support this initiative as part of our national role working with PHA, governments and other stakeholders to enhance the strength of our biosecurity systems and safeguard Australian grain producers.”

Eleven exotic pests that could pose a significant threat to pollination services have been identified. Arguably the most important of these is Varroa mite, a parasitic mite present in Europe,

North and South America, Africa, parts of Asia and New Zealand that has contributed to the collapse of honey bee industries in these regions.

Although Australia is free from Varroa and other significant honey bee pests, with strong border biosecurity in place, there is constant pressure on the biosecurity system to maintain this freedom. This is largely a result of the hitch-hiking nature of the European honey bee and exotic honey bee colonies on sea cargo.

Hort Innovation Research and Development Manager Ashley Zamek said we are fortunate that a lot of the pests and diseases that are serious threats to honey bees and in-turn the plant industries that are dependent on pollination, are not in Australia.

Ms Zamek said, however, that is not because of luck. “Australia’s largely healthy honey bee population is the result of intensive, world-leading surveillance efforts combined with the vigilance and support of organisations and government agencies across the country.”

To deal with mounting biosecurity pressures, the NBPSP was first established in 2012 to monitor major ports and surrounding areas. The current program which concludes in 2021, is one of the leading surveillance programs for bee pests and pest bees in the world.

“The newly funded NBPSP, builds on the success of the previous program by continuing to focus on monitoring for bee pests, diseases and pest bees at high-risk ports,” said Dr Sharyn Taylor, National Manager Surveillance and Diagnostics at Plant Health Australia.

PHA will once again coordinate and administrate the program on a national level. The program will run from December 2021 to December 2024, and operate using a risk-based approach, undertaking activities at ports identified to be the highest risk of entry and establishment of bee pests.

“A consistent national approach is key to enhance early detection of target pests and the project has embedded a strong coordination role to capture and monitor program activities, as well as undertake consultation for a sustainable funding mechanism for any future surveillance programs,” said Dr Taylor.

“A risk-based approach has been developed to identify the highest risk ports for monitoring under the new NBPSP, this means activities tested and developed in the last program will be deployed nationally to ensure we are using techniques suitable for the main pest risks,” she said.

“This is such an important program that will benefit everyone whether you’re a back yard gardener, a commercial grower or someone who just loves eating Australian grown food – we all benefit from keeping our bees safe,” said Ms Jaensch.



Mango yield mapping field walk

A pre-season mango yield mapping field walk, organised by the Department of Agriculture and Fisheries (DAF) and Australian Mangoes, was held in November 2021, and hosted 40 growers and industry stakeholders at Manbulloo Ltd's Pin Road farm at Mutchilba. The field walk showcased the latest technologies for mango yield mapping, harvest timing and orchard intensification practices.

The walk began with a demonstration of Central Queensland University's (CQU) machine-vision imaging system that accurately estimates fruit load in the months prior to harvest. CQU Professor Kerry Walsh showcased the latest version of the 'rig', as it is affectionately known, which has been refined over numerous seasons in preparation for its final field test this season. The rig counts mangoes using technology similar to facial recognition and has been field tested over the last couple of seasons on a number of collaborating growers' farms in Queensland and the Northern Territory. This is the second season the rig has been used on this Manbulloo farm, and this year, Farm Manager, Mr Rory Nunes, operated the rig himself. It took Rory a few hours to map the farm, with the fruit load estimate and yield maps available a day later. Freelance Robotics (<https://www.freelancerobotics.com.au/>) are taking on development of the unit, with a new generation intended for the next season.



*Above: Kerry Walsh presenting on the machine vision rig.
Inset: The octocopter spray drone Marcus Bulstrode demonstrated at the field walk.*

Professor Walsh also outlined the online CQU heat units calculator, available at <https://fruitmaps.info/> that estimates mango harvest date based on flower stage and heat sums based on SensorHost temperature loggers. The calculator uses live and local temperature data to estimate harvest date with heat sum values available for all commercial mango varieties and regions.

Users can choose between an open access version, where no login is required, or to create an account. The open access version is good for a quick estimation and is free to access. The user selects their region, and the software then pulls data from a monitor in that locality. However, data is lost on closing the browser. The second option is to have sensors on your own farm; SensorHost sensors can be installed on farm with automatic 15-minute logging of data to the system. Under a password protected login, users can have heat units automatically estimated from these on-farm sensors. In this account version inputs are saved, with updates of the estimated harvest date made using the

latest local temperature data as the season progresses. A video on how to use the open access version is available at: <https://youtu.be/4kvftGiK5qY>.

Attendees at the field walk also toured the two-year-old DAF/Manbulloo high-density mango planting demonstration block that includes trellised and non-trellised trees. DAF's Dr. Ian Bally updated attendees on the DAF Small Trees High Productivity Initiative and the new Phase two of the Hort Innovation—National Tree Intensification Project (AS18000). Dr. Ryan Orr, also from DAF, discussed the benefits of high-density plantings that optimise canopy surface area and minimise canopy volume. Ryan also outlined the trial work the team are currently undertaking at the eight-year-old 'small trees' planting at the Walkamin Research Facility. This includes work on light interception as well as evaluating methods to reduce sunburn on fruit and the drivers and potential management options for fruit drop.

Continued page 24



Ryan Orr presenting on small trees work in the Manbulloo demonstration block.



An example of processing of machine vision footage. The software counts fruit using technology similar to facial recognition.

Continued from page 23

The day was concluded with a demonstration by Mr Marcus Bulstrode from DAF of an octocopter drone fitted with a spray tank that can carry a 16-litre payload. This technology is being trialled to control weeds in difficult to access, environmentally sensitive areas, such as riparian zones.

The machine vision yield mapping rig has been based at the Mareeba DAF office over the 2021/22 mango season and was available to local growers interested in trying it on their own farms. Feedback from the growers that have trialled the rig said that it was easy to set up and use. One grower that has been part of the project over the last few years, used the rig twice this season. Once, in the months prior to the first pick to help determine harvest crew numbers and other logistics and again later in the season to count fruit from a second flowering. A short video explaining the machine vision technology is available here: <https://youtu.be/O9HvCix6g5s>.

Acknowledgements:

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Article prepared by Dale Bennett and Geoff Dickinson, DAF, Mareeba

A masterclass with Marie—applications now open

A conversation with Marie Piccone, Managing Director of Manbulloo Limited (Ltd), the largest grower of Kensington Pride mangoes in the country, is akin to a mini masterclass in business management.

Fittingly, she has been able to share her knowledge with participants of the University of Tasmania's Masterclass in Horticultural Business, since joining the steering committee when the course began in 2017.

Delivered in partnership with some of the world's leading names in horticulture, including New Zealand's Lincoln University, the Wageningen Research Academy in the Netherlands, and Hort Innovation, and facilitated by the Tasmanian Institute of Agriculture, the Masterclass in Horticultural Business has helped professionals from across the country turn their business ideas into actionable business plans, so that they are ready to overcome challenges and reach their full potential.

"I have spent a lot of time involved with the Horticultural Masterclass. I was one of the founding mentors, I am on the advisory committee, because I believe it is a great course and an amazing experience for participants," Marie said.

"I have interacted with the participants, and really enjoy hearing about their experiences and skill sets. I see the Masterclass as an amazing journey for people to develop skills they want to use in their business and career.

"I have interacted with nearly every class at least once, and I get to talk to them as a mentor, learn from them and the one thing I find is that many participants want to discuss and develop their marketing skills and strategy."

Since she took ownership of Manbulloo Ltd in 2005, Marie has turned the business into a powerhouse. After graduating with a Bachelor of Agricultural Science from The University of Queensland, Marie worked as a horticulture extension officer, before starting her own consultancy which she ran for 15 years.

It was through that company that she found herself undertaking due diligence on Manbulloo Ltd for a potential buyer, Kerry Packer, in the late 1990s. The deal fell through, but the three mango farms were still up for sale.

"Five years passed, and the company assets lost some of their lustre," Marie said.

"By 2005, they were so run down I thought we might be able to afford them. I knew there was a big opportunity, because I knew they were the biggest Kensington Pride (KP) and R2E2 holdings in Australia and they spanned regions, so we could start supplying great mango varieties early and finish later.

"So, I thought I've done my 'apprenticeship'. I've spent a lot of time consulting with individual businesses, industry, and banks, I want to buy these."

Marie said she bought three run-down farms and a brand that was once iconic but had faded.

"It had been iconic to begin with, but by 2005 the Manbulloo (Ltd) brand and business was broken. It was becoming so incredibly run-down that prospective buyers were scared. With the skillset I had developed over many years and the networks I had I wasn't so scared of it."

Continued page 25



“Some advice that was given to me is trust your gut—with people management and more. Challenge yourself but trust your gut. And the other piece of advice is what is your ‘rare air?’”

.....
- MARIE PICCONE

Continued from page 24

Marie saw an opportunity and called on her strengths and contacts to re-build the business and focused on creating a talented team. Some knowledge of retail and marketing that she developed growing up with an entrepreneurial father and through her consultancy, along with building relationships and building a team, were key to her decision. This saw her create the culture that was key to the solid foundation Manbulloo Ltd rebuilt from.

While the first five-year plan focused on rebuilding quality and reputation and building a good team, the next five focused on a fresh marketing strategy.

Against advice, she rebranded all the farms (now consisting of seven: two in the Northern Territory and five in Queensland) as Manbulloo Ltd. She also parted ways with the original marketing process and took supply chain management and marketing domestically and internationally in house.

“The three farms I bought were all owned by the same farmer but only Manbulloo (Ltd) in Katherine was called Manbulloo (Ltd),” Marie said.

“I was told that ‘only one farm is Manbulloo (Ltd), and it’s not possible to call all these farms Manbulloo (Ltd),’ but I wanted to recreate the Manbulloo (Ltd) brand to stand for great flavour, integrity, quality, and reliability.

“In the second five years, we embarked on building our export strategy, taking control of our own supply chain and creating direct relationships with important partners and customers.”

Those decisions marked the turning point for Manbulloo Ltd—the broken company Marie bought began to become profitable.

Coles, Manbulloo (Ltd), together with other suppliers and retailers and the broader Australian Mango Industry have worked at growing the overall mango demand.

During Manbulloo Ltd.’s 10 year relationship with Coles, the supermarket’s share of the mango market has continued to grow.

“There has been some real success in building an open, trusting relationship and making sure it is win-win and giving consumers what they want.”

Hence, why participants in the Masterclass of Horticultural Business are keen for the secret sauce.

“That is the question they all ask me. Tell us your marketing strategy and journey,” Marie said.

“I wouldn’t tell them that the Manbulloo (Ltd) marketing ‘formula’ is the one they should have, but suggest they look at the value chain and decide which parts of the chain add value to their business, and which parts are just clipping the ticket. That is fundamental.

“Participants should look at their market segments, who their consumers are and the key customer and consumer insights.

“We always go back to the questions ‘what do the customer and the consumer want?’ and ‘how are we going to deliver that in the most efficient, effective way?’

“Our ‘formula’ is always gradually or radically changing, and we are always looking for new opportunities and to make sure we keep ourselves relevant to customers and consumers.

“Some advice that was given to me is trust your gut—with people management and more. Challenge yourself but trust your gut. And the other piece of advice is what is your ‘rare air?’

“What is it that you do well, that you can’t delegate? That is what you should do yourself, but other roles and activities can be for other team members and service providers that are better than you, or just as good as, or can learn.

“The Masterclass has so much content that will “lead and challenge” you and help you in so many areas crucial to business.

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The role of trust and social identity on farmers' intentions to report suspected emergency disease outbreaks

Summary of research findings and implications for biosecurity

KEY POINTS

- Early reporting of suspected emergency disease outbreaks is important for rapid response and minimising impacts. Understanding factors that drive disease reporting by farmers is one important way to help improve biosecurity outcomes.
- A study conducted in 2021 at the Australian National University (ANU) found that farmer trust in government positively influences disease reporting intentions. For every one unit increase in trust, disease reporting intentions were found to increase by over four times.
- An important contributor to perceptions of trust was whether farmers felt like they were mutually recognised by government as being part of the same social group responsible for managing disease investigations.
- Biosecurity implications of this study are shared by governments and agricultural industries, as both have important roles in detecting and responding to disease early.

RESEARCH NEED

Disease is one of the greatest threats to the productivity and profitability of plant, aquaculture, and livestock industries in Australia and around the world. An important way to minimise the impact of disease outbreaks is early detection and rapid response¹. Farmers play an important role in this by noticing signs of disease and reporting these concerns to the relevant state/territory government so a disease investigation can commence (a process called general surveillance). Modelling has shown that reducing the time between a farmer noticing signs of disease and the disease being diagnosed is the best way to reduce the impacts of disease².

There are both barriers and incentives for reporting which include regulatory, business, economic and psychological factors. Psychological factors include attitudes, motivations, social influence, risk perception, perceived behavioural control^{3,4}. Research suggests that trust is also an important factor in farmers' decision-making process to report suspected disease⁵. Research also suggests that social identity is an antecedent to perceptions of trust⁶. In this context, social identity refers to the social groups that we are part of and identify with. We tend to trust others who we perceive as being in the same social group as us, as long as that shared group membership is mutually recognised by both the trustor and trustee⁷.

HYPOTHESIS

This research hypothesised that shared social identity and trust in the local state or territory government responsible for biosecurity would positively influence farmers' intentions to report suspected emergency disease on their farm.

METHOD

The research used a cross-sectional survey design of 41 Australian plant, livestock, and aquaculture farm owners or managers, conducted from May-August 2021. The theoretical approach was guided by Social Identity Theory⁸ and the Integrative Model of Organisational Trust⁹.

KEY RESULTS

- Trust in government and social identity significantly predicted disease reporting intentions.
- Social identity influenced perceptions of trust i.e., sharing a social group was associated with increased levels of trust.
- Trust in government explained more than one quarter of the variance in disease reporting intentions.
- For every one unit increase in trust, the likelihood of reporting disease increased by over four times.
- As a sense of shared social identity among farmers and government increased, so did the likelihood of reporting by over three and a half times.

BIOSECURITY IMPLICATIONS

This study is relevant for both government policy makers and agriculture industry participants because both share responsibility for biosecurity. Two main findings emerged from the study:

Finding 1. This is the first study that has quantified the importance of a trusting relationship among industry and government for disease reporting. As trust increases, this substantially increased the likelihood of disease reporting, making it an important aspect to consider when aiming to enhance the sensitivity of the general surveillance system.

Finding 2. This study offers insights on how trust could be cultivated among farmers and their biosecurity agencies:

- Improve farmers' perception of the governments' benevolence (e.g., clarity on the process) and ability (e.g., expert response capability and contingency plans) in handling emergency disease outbreaks.
- Increase a sense of shared social identity among industry and government. The results suggested that one way to improve this is for governments to increase industry's confidence that they will be treated as true partners in disease investigations and responses.
- Consider levels of farmer awareness of emergency response agreements for industries who are

Continued page 27

signatories. In this study, almost half of participants were unaware if their industry was a signatory. Emergency response agreements aim to encourage early reporting and outline how responses will be managed collaboratively among industry and governments—potentially enhancing perceptions of shared social identity, trust, ability, and benevolence.

LIMITATIONS AND FUTURE DIRECTIONS

The sample size in this study was modest and obtained from across plant, livestock, and aquaculture sectors. Therefore, analysis was based on the pooled data across all sectors, meaning any differences between sectors were unable to be identified and the conclusions are generalised across sectors. Future research seeking to understand disease reporting within sectors would benefit from a larger sample size and could broaden to examine other factors known to influence reporting and how they relate to each other.

Acknowledgements

Thank you to those farm owners and managers who participated in this research, and the industry organisations who helped distribute the questionnaire to their members. This study was completed as part of the Honours program in the Research School of Psychology, ANU. The research was conducted under ANU Human Ethics Research Committee approved protocol 2021/161.

References

1. Martin, P., et al., Assessing the efficacy of general surveillance for detection of incursions of livestock diseases in Australia. *Preventive veterinary medicine*, 2015. **121**(3-4): p. 215-230.
2. Garner, M., et al., Comparison of alternatives to passive surveillance to detect foot and mouth disease incursions in Victoria, Australia. *Preventive veterinary medicine*, 2016. **128**: p. 78-86.
3. Gates, M.C., L. Earl, and G. Enticott, Factors influencing the performance of voluntary farmer disease reporting in passive surveillance systems: a scoping review. *Preventive Veterinary Medicine*, 2021: p. 105487.
4. Garforth, C., Livestock keepers' reasons for doing and not doing things which governments, vets and scientists would like them to do. *Zoonoses and public health*, 2015. **62**: p. 29-38.

5. Palmer, S., F. Fozdar, and M. Sully, The effect of trust on West Australian farmers' responses to infectious livestock diseases. *Sociologia Ruralis*, 2009. **49**(4): p. 360-374.

6. Hogg, M.A., Social identity, and the group context of trust: Managing risk and building trust through belonging. *Trust in cooperative risk management: Uncertainty and scepticism in the public mind*, 2007: p. 51-72.

7. Platow, M.J., et al., Two experimental tests of trust in in-group strangers: The moderating role of common knowledge of group membership. *European Journal of Social Psychology*, 2012. **42**(1): p. 30-35.

8. Turner, J.C., Social influence. 1991: Thomson Brooks/Cole Publishing Co.

9. Mayer, R.C., J.H. Davis, and F.D. Schoorman, An integrative model of organizational trust. *Academy of management review*, 1995. **20**(3): p. 709-734.

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The phenology, demography and distribution of Australia's fruit flies—a coordinated national research program

As the horticulture sector, and other impacted stakeholders, call for a national approach to Fruit Fly Management (National Fruit Fly Seminar, 2021) it's timely to bring to light a current, national fruit fly research project. The phenology, demography and distribution of Australia's fruit flies project is bringing together fruit fly researchers and knowledge to provide our regulators of domestic and international trade with current and comprehensive scientific and technical information. This information will not only underpin regulatory aspects of fruit fly management in Australia, but in-field management as well.

The Department of Agriculture and Fisheries (DAF) Queensland is leading this \$8.4million dollar fruit fly project, funded through the [Australian Government Smart Fruit Fly Management Measure](#), with contributions from State and Territory governments under an intergovernmental agreement. This is a truly national and collaborative R&D effort; DAF are partnering with high-calibre fruit fly researchers from New South Wales, Victoria, South Australia, Western Australia, and the Northern Territory, as well as the [Fruit Fly Group](#) from the Queensland University of Technology. The project is strongly led by Peter Leach (DAF) and Professor Tony Clarke (QUT) and is due to conclude in 2022.

Bringing Australia's foremost researchers together is not only strengthening the research capacity across Australia but is also allowing work to occur concurrently and consistently, for the first time, on different Australian flies, including *Bactrocera tryoni* (Queensland fruit fly), *Bactrocera neohumeralis* (Lesser Queensland fruit fly), *Bactrocera aquilonis* (Northern Territory fruit fly), *Bactrocera jarvisi* (Jarvis' fruit fly), *Zeugodacus cucumis* (Cucumber fruit fly) and *Dirioxa pornia* (Island fly).

The project is focussed on three core elements of fruit fly research: (a) the seasonal cycles affecting fly activity (phenology), (b) fly reproductive patterns and population changes (demography) and (c) where the flies actually are (distribution), hence the name of the project. Trapping networks for fly distribution have been established across Australia; in NSW for *B. jarvisi*, *B. neohumeralis* and *Z. cucumis*, in the NT for *B. jarvisi* and in WA for *B. aquilonis*.



Research trials – infesting fruit.

Across all the trapping sites established since December 2020, flies have only been collected within the existing reported distribution in NSW and NT. In WA, *B. aquilonis* have been detected in Wyndham and Kununurra only, and both sites are north of Broome which is the current southern-most record of *B. aquilonis* from historical data (1992-2020).

Through collating and analysing Australia-wide field data, and at the same time exploring the physiology of Queensland fruit fly, we will better understand what's driving the near-synchronous spring emergence of flies that we see all the way from Cairns to the Yarra Valley. Together, a better understanding of fruit fly phenology, population dynamics, behaviour and ecology will support the future development of accurate predictive models.



Project Activity Lead Natalia De Souza.(DAF) with fly colonies in Cairns.

Continued page 29



Project member Mai Nantawan (DAF) in the field at Mareeba.

Continued from page 28

We are aiming to answer some key, fundamental questions such as:

1. What are the relative effects of environment on fruit fly phenology across different regions?
2. What is the time period over which fruit fly abundance is sensitive to climate variables?
3. What is the variation in the timing of phenological events?

On top of all that, we are also reviewing host status and investigating host preference, determining fly longevity, and developing molecular-based diagnostic tools for large, multi-species trap catches. Improving fruit fly diagnostic capabilities has a broad benefit for surveillance and response activities. Already protocols for DNA extraction of bulk fruit fly samples have been refined, and two new fruit fly LAMP assays, for *B. jarvisi* and *D. pinnipennis*, have been designed. Lure improvement work for *Z. cucumis* is also underway.

Over the remainder of the project watch out for updates on the different project components in more detail. For further information, contact Dr. Penny Measham.

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The 'Phenology, demography and distribution of Australia's fruit flies' project is funded through the *Strengthening Australia's Fruit Fly System Research Program*.

Funding for the program is provided by the Australian Government with contribution matched from state and territory governments.

TRIP REPORT: The role of stingless bee pollination in NT mango orchards

The Hawkesbury Institute for the Environment pollination team at Western Sydney University spent the 2021 mango flowering period in and around the Darwin and Katherine mango growing regions as part of a Hort Innovation project studying how wild stingless bees are contributing to crop pollination services.

In our previous 2019 survey we found that Darwin and Katherine mango farms are frequently visited by wild stingless bees, hover flies, blow flies and several species of native bee species. In both regions stingless bees were the dominant flower-visiting group, comprising almost half of the total insect visitation, and travelling up to 300 metres into the crop.

On this latest trip we wanted to understand:

1. What stingless bee species are present around Darwin and Katherine farms?
2. Where are these stingless bees nesting, and how far are they travelling to visit the crop?
3. Are they significantly impacting mango yield?

SPECIES PRESENT

In 2021 we found a total of 75 wild stingless bee colonies from two species in bushland adjacent to mango farms in the Darwin area. Most of the colonies found were that of *Tetragonula mellipes* (96%), while three colonies (4%) were of a currently undescribed species commonly called '*NT hockingsi*' by local beekeepers.

Tetragonula mellipes workers can be easily distinguished from '*NT hockingsi*' by looking at their eyes; *T. mellipes* has bluish-grey eyes (Fig. 1a), while '*NT hockingsi*' has black eyes (Fig. 1b).



Figure 1: Two bluish-grey eyed *Tetragonula mellipes* workers (a) and a '*NT hockingsi*' worker with black eyes (b).

We also collected stingless bees from the NT side of the border near the Kununurra mango growing region, and in the Katherine region. We are currently conducting DNA analysis to determine what species they are, but it appears that we are seeing a new, undescribed stingless bee species near Kununurra.

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NESTING TREES AND MANGO POLLEN

Stingless bee colonies were found up to 460 metres from the crop in bushland adjacent to mango orchards. Of 50 colonies located next to a mango farm in Lambells Lagoon, 37 (74%) were found nesting in Ironwood (*Erythrophleum chlorostachys*) (Fig. 2a-b), 7 (14%) in Darwin woollybutt (*Eucalyptus miniata*) (Fig. 2c-d), and the remaining 6 (12%) in a range of other tree species. Mango pollen was found in the entrances of all but four of the colonies, up to the furthest distance of 460 metres from the crop. This demonstrates that stingless bees were travelling nearly 500 metres to visit mango flowers!

ARE STINGLESS BEES IMPACTING MANGO YIELD?

To test this question, we performed bagging experiments on Kensington Pride mango trees at four farms near Darwin. We bagged mango panicles with fine mesh bags (0.42 millimetres) to exclude all insects and coarse mesh bags (5 millimetres) to exclude all but small insects like stingless bees. We then compared the resulting fruit set with fruit set from unbagged open panicles (Fig. 3).

We are still analysing this data, but preliminary results show that the number of fruits on unbagged open panicles and coarse mesh bagged panicles were similar, but significantly higher than on panicles bagged with fine mesh. This suggests that small insects less than 5 millimetres in size, such as stingless bees, are playing an important role pollinating mangoes in the farms we studied. Our results suggest that stingless bees can efficiently pollinate mango flowers in farms where wild colonies are abundant in the native vegetation adjacent to the crop.

FUTURE WORK

Our results demonstrate that maintaining native vegetation around the crop margins can provide natural habitat for local stingless bee species, resulting in a positive impact on crop yield. Our findings so far suggest that every top end mango growing region appears to have a unique stingless bee species. These local species are likely the best adapted species for their growing region, which could be threatened by the introduction of stingless bee colonies from other

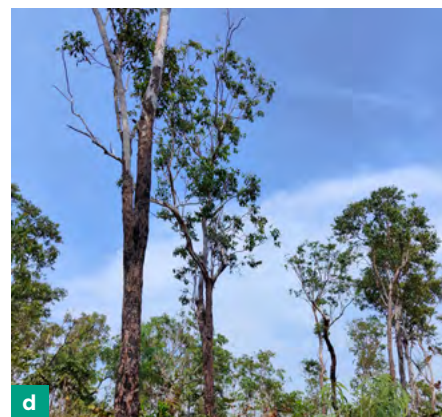


Figure 2: An ironwood (*Erythrophleum chlorostachys*) (a) with a *Tetragonula mellipes* hive entrance (b). Darwin woollybutt (*Eucalyptus miniata*) (c) with a knot of wood containing a *T. mellipes* hive (d).



Panicle bagged with coarse mesh (5mm)



Panicle bagged with fine mesh (0.42mm)

Figure 3: Mango panicles bagged with coarse and fine mesh bags.

regions. In the upcoming flowering season, we want to compare the different stingless bee species in terms of their pollination efficiency; looking at questions such as how much body pollen they carry when visiting flowers, how large are the forager population colonies of these different species, and whether they have potential as managed pollinator species that could be deployed onto farms.

We also want to see whether cross-pollination between co-flowering mango varieties such as Kensington Pride and R2E2 might have an impact on fruit yield and quality in both varieties, and if stingless bees can assist in this cross-pollination.

We plan to return to the Darwin, Katherine and Kununurra mango growing regions this year, and hope to work with some of you on your farms.

Article prepared by James Makinson and Gaurav Singh, Western Sydney University.

If you would like to get involved, please contact James Makinson: j.makinson@westernsydney.edu.au or 0491 124 016.

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