# Mango Matters

SEPTEMBER 2024 | VOLUME 56

## Taste the Sunshine



Hort Innovation MANGO FUND

AUSTRALIAN MANGOES

**Responding to exotic fruit flies in the Torres Strait**

PAGE 22

**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 MANGO FUND

# Contents

# CEO'S REPORT

**Trevor Dunmall**
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*"We believe that it's important that our team and partners from NTDITT, QDAF and other organisations are focused on delivering information that's valuable to you where you are located."*

- TREVOR DUNMALL

In late July AMIA hosted a workshop to discuss mango twig tip dieback (MTTD). MTTD symptoms have been seen in mango trees in the Darwin area for at least seven years. The aim of the workshop was to bring growers, researchers and agronomists together to review what research has been undertaken, look at how other industries are handling complex diseases/disorders in their tree crops and collectively develop a collaborative approach to future research. As a result of the workshop two working groups have been formed.

We will keep growers updated on the activities of the working groups. The aim of future research is to identify the causal agents and develop management practices that minimise the impact on MTTD. Thank you to NTMIA, NT Farmers, NT DITT and Hort Innovation for ensuring the workshop was well attended and had worthwhile outcomes.

We believe that it's important that our team and partners from NTDITT, QDAF and other organisations are focused on delivering information that's valuable to you where you are located. With this focus we are planning to hold events in key regions in the first half of 2025.

If you are growing mangoes away from where we deliver these events then we will find ways of getting the information to you, possibly through webinars or other methods. At this stage we have no fixed plans for these events. We have ideas, but we want your input into the design and content of these events. If you have ideas, please contact me or one of the Australian Mangoes team. We won't be finalising the planning for these events until early 2025, so there is time to consider what growers in your region would value.

Having spent the last 6 years working in the biosecurity space, I understand there is a lack of excitement when the topic is discussed. For many of us biosecurity only becomes really important when something goes wrong, such as a detection of an exotic pest close to our business. This is where preparedness is important. We have been holding discussions with NTDITT and QDAF to start the process of developing fruit movement protocols in the event of a detection of an exotic pest in a mango production region. We are also planning to hold a biosecurity preparedness workshop in early 2025 and if you are interested in participating please contact one of our team.

Dispatching fruit from the Northern Territory and Queensland to States where Queensland fruit fly is not established is becoming more challenging. The loss of the post-harvest use of dimethoate has highlighted the fragility of our interstate trade. Irradiation and Vapour Heat Treatment are sound alternatives, but for some growers access has become too challenging and they don't access these markets. We need to continue to work with State and Territory jurisdictions to ensure that growers have multiple alternatives when accessing interstate markets.

We have commenced discussions with NT DITT with regards to demonstrating orchards in the Katherine region are free of Mango seed weevil. We will work with NT DITT and WADPIRD to gain an understanding of what Western Australia would expect growers to do to demonstrate freedom and if it is less onerous than the current cut test for each property where thousands of mangoes are cut, it is worth progressing.

If we are successful in having this applied to orchards in Katherine, then we could then look at other regions.

For growers who have attended our pre-season roadshow meetings I would like to thank you for attending. While these events are an opportunity to present information on the activities we are working on, more importantly they are an opportunity for you to highlight issues affecting your business.

The issues surrounding compliance, both from a financial perspective and the stress and burden that the systems and audit processes cause need to be addressed. Collectively we need to work to address these issues and find solutions that minimise the burden on growers while maintaining the integrity of the systems.



# CHAIRMAN'S REPORT

**Ben Martin**
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Our Australian Mangoes Team has been seeing many of you at our pre-season roadshows and look forward to seeing you at the future roadshows being held in central and south-east Queensland and Western Australia in November.

The common issue growers are facing are the costs of compliance. It's not only the costs involved in complying with various schemes but the burden and stress caused by the audit process. The concerns are shared by many people across the fruit and vegetable industries and as a collective we need to develop solutions to address these issues. In the future there will be expectations on growers to meet various sustainability targets and we need to address the issues with the current schemes with urgency.

At the mango conference, and again at the pre-season roadshows we have had some insights into the research being undertaken in mangoes by teams at QDAF, NTDITT and others such as Central Queensland University. The most pleasing aspect of the research is the focus on improving our knowledge on what makes mango trees work and how we as growers can improve production, both from a productivity, quality and timing perspective. These researchers need our support and I encourage growers to attend any meetings and workshops where these researchers are presenting their work.

With another mango season upon us we again see that every season is very different. Flowering and fruit set has been good in some regions but less so in others. Growers have had to deal with frost in some regions and substantial rain during flowering and early fruit set adding to the normal challenges of looking after mango trees.

# DIRECTORS' REPORTS

## Southern Queensland & New South Wales

**Scott Pershouse**
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Great flowering across the region. Some farms are even reporting the most prolific flowering that they have ever had! Quite a few periods of low temperatures through June and July most likely contributed to the flowering, but the later cold snaps did cause some frost damage on orchards in colder districts.

The timing of the flowering seems to be about what is considered normal for most areas in the region. Widespread heavy rain over a few days in the second week of August was a concern for fungal infections, with any damage still to be assessed at the time of writing this report.

With the potential for a high-volume season, fruit quality will be vital for profitability. Accurate and timely forecasting is also important so that retailers and other supply chain partners can prepare for the quantity of fruit being harvested. Planning where to source reliable and quality labour is another consideration some farms may have to start making now.

Also, please note the dates for the upcoming pre-season roadshows. These are being held in Bundaberg on the 20th of November and in Rockhampton on the 21st of November.

The roadshows are a great opportunity for growers to come together with experts and other industry members to catch up on what is going on in the industry. I would highly recommend attending.

I wish all growers the best for this coming season.

## Northern Territory & Northern Western Australia

**Geoff Warnock**
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As previously stated in my last report, this region experienced a strong flowering which began at the end of May. Since the initial push, flowering and fruit set has continued and is still progressing (at the time of writing this report), but I believe it will come to a halt very soon as normally it is in early September when the region experiences its first 40 degree days, and this usually creates a drop of the small set fruit.

Because of the way of the flowering occurred, the chances are that we will have a protracted season. Maybe this will assist with the labour situation in respect to picking etc. Some of the fruit from the early flowering will probably get to the market by mid- September providing transport and labour don't become too onerous.

At this point I take the opportunity to wish the growers a good (fruitful) season.

**Leo Skliros**
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As usual, a strange season!

A very patchy flowering and fruit set, strange weather and insects to manage, leaving growers uncertain of what's actually on the trees.

Harvest so far has predominantly been small volumes of marked fruit, due to high winds throughout June and July in combination with insect damage. New expensive chemicals that are more selective are being developed, but with growers are battling with increasing production costs on low volumes, consider a cause.

As years go by we have seen a widening in price between premium and first class fruit. Is our industry doing enough, marketing this fruit? Could our main retailers start tray sales earlier and at higher prices? However, the next wave of fruit is currently looking pretty clean.

A new government for the NT, whether a positive or negative, let's wait and see (a rhyme for today).

Stay safe and talk to your Neighbour.

## Southern Western Australia

**David Morcombe**
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After a dry early winter the rain did come to the southwest and there have not been too many fine days since then. The KP's seem to be flowering early. The variability in weather looks like being the wildcard as usual and it is too early to say how the season may go yet.

In Carnarvon the KP are off to an early lighter flowering which does not look as compressed as last year and that may lead to a longer harvest period which would be a relief after last season, which was a heavy short harvest.

The biosecurity incursions we are dealing with at the moment really brings home how lucky we have been because of Australia's isolation. Having biosecurity always present in our thinking is really important to our future and promoting good biosecurity practices to everyone in our communities is good because a lot of people just don't get the consequences of poor biosecurity.

I hope that as the season progresses there is a smoother run with the weather than last year and we all have a good season.

## Far North Queensland & North Queensland

**John Nucifora**
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Hi Everyone,

Last year was challenging for Mareeba growers due to Cyclone Jasper. However, we have moved forward and are looking ahead to the upcoming season. Thanks to Ebony Faichney for her support in helping farmers with the disaster grant. We wish her all the best in the future.

Flowering has started in the Mareeba/Dimbulah region and it looks promising. Unfortunately, in mid-August, many growers experienced frost. The damage seems patchy, with reports indicating minimal impact overall, though a few growers have suffered extensive damage. It's still too early to predict volumes accurately, as many factors could affect the outcome.

*"With what seems like a strong crop coming, it is also time for growers to reach out to their marketing partners and secure your marketing plans."*

- JOHN NARDI

The mango industry in Mareeba and Dimbulah is a key part of the local economy. Our region is known for producing high-quality mangoes, sought after both domestically and internationally. The industry supports numerous jobs, from farming and harvesting to packaging and distribution. Despite challenges from natural disasters and climate variations, advancements in farming techniques and technology have helped improve yield and quality.

This season, we are optimistic given the initial positive signs of flowering. While the frost incident has introduced some uncertainty, the overall sentiment remains hopeful. We are committed to overcoming any obstacles and ensuring a successful harvest.

Best wishes to all growers for the upcoming season. Here's to a fruitful year for the Mareeba/Dimbulah mango industry.

**John Nardi**
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At the time of writing, we are heading into the start of another season, and we are starting to see small volumes of NT fruit arriving in the markets. The Mareeba-Dimbulah region has experienced some warmer weather over the past week and while there has been some frost damage around the regions for most it seems that flowering is looking strong on all varieties.

I think we will see a last main flowering push of coinciding with the coming full moon (August). There may be some spread of flowering with this. We will all be waiting anxiously to see what fruit set is like in a few weeks' time while some of the Dimbulah growers are starting to see some fruit set now. Hopefully, we do not see the day temperatures get too warm and affect fruit set.

With all of that in mind, it is time to start planning for the coming season. Hopefully, labour issues will be easing, and we will see more reliable outcomes. With what seems like a strong crop coming, it is also time for growers to reach out to their marketing partners and secure your marketing plans. Preparing ahead is the best way to ensure everything goes as smoothly as possible and growers can achieve the best returns as possible in the market.

I wish all growers the very best for a successful coming season. I am sure it will not be without its challenges.

# Piñata Farms honoured with induction into Queensland Business Leaders Hall of Fame


Gavin and Stephen Scurr with their award

**Fourth-generation farming business, Queensland's Piñata Farms, has been inducted into Queensland Business Leaders Hall of Fame for outstanding leadership and innovation in Australia's food production industry spanning more than 60 years.**

Piñata Farms began with a single 26-hectare pineapple farm, growing fresh and cannery fruit at Wamuran, north of Brisbane in the 1960s. Today, it is Australia's largest pineapple producer, and a leading multi-fruit producer, growing strawberries, raspberries and Honey Gold mangoes over more than 1,000 hectares around Australia.

From left, Queensland Business Hall of Fame 2024 inductees, back row from left, Rodney Longhurst, Tony Longhurst, Stefan Ackerie, and Stephen Scurr. Front row from left, Brad Colledge, Shelley Reys and Gavin Scurr.

It employs some 200 people at any given time and is owned and operated by the Scurr family, led by brothers Gavin and Stephen. Other members of the Scurr family work throughout business.

Accepting the award at a gala dinner at the Brisbane Convention and Exhibition Centre, managing director Gavin Scurr congratulated all past and present inductees, and acknowledged their contribution to Queensland.

"We are humbled and honoured to be recognised in such esteemed company," Mr Scurr said.

"We have farms around Australia now, but our homes and hearts are, and always will be in Queensland. It's a great state to live and work in and we're proud to be Queensland farmers.

"We appreciate the solid foundation and the values that our parents Geoff and Narelle set for our family in the 1960s, passed on from our grandparents before them. Even from a very young age it was instilled in us to focus on quality and do things right the first time. Those same values are now part of our wider company culture and it's a foundation the next generation can build on."

Mr Scurr paid tribute to all Piñata Farms employees who have contributed to the company's growth, success and reputation in the fresh produce industry.

"This award is recognition for the whole Piñata team from the Northern Territory to Tasmania who, despite the weather, turn up every day and give their best to ensure Australians can enjoy fantastic fruit. It is a source of great pride to us that Australians can now enjoy a fresh piece of Piñata fruit all 31.5 million seconds of the year."

"We have had many great people who have worked alongside us and equally invested in our journey including some who have been with us for many decades. Farming is a challenging business and we've certainly had many setbacks, but we've enjoyed the journey," he said.




*Left to right: Simon Dring, Ben Seton-Stewart, Callum Hutcheson and Greg Owens*

# Growers and researchers meet to discuss solutions for Mango Twig Tip Dieback

**AMIA in association with NTDITT, NTMIA and NT Farmers hosted and facilitated a workshop for growers, agronomists and researchers with the purpose of developing a collaborative approach to finding a solution to Mango Twig Tip Dieback (MTTD). The workshop was held at the Humpty Doo Golf Club on Thursday 25th July.**

MTTD symptoms have been observed in mango trees for over seven years in parts of the Darwin region. The Northern Territory Department of Industry, Tourism and Trade (NTDITT) has been undertaking extensive research on this issue.

Workshop attendees heard from a range of researchers from NTDITT, Queensland Department of Agriculture and Fisheries (QDAF) and the Queensland Alliance for Agriculture and Food Innovation (QAAFI) and Hort Innovation. There are a range of crops (e.g. avocados, macadamias, forestry trees) also suffering from dieback symptoms to varying extents and the workshop discussed the possible causes and research programs that have been undertaken to determine the cause/s of dieback in these crops.

From the presentations and discussions by workshop participants there is a need for a systemic approach to research to look at all factors affecting tree health. This will be the approach of the 2 working groups formed as an outcome of the workshop.


*NT Mango grower Tou Saramat Ruchkaew with NT Farmers CEO Greg Troughton*

The first working group will focus on developing a larger research program to investigate the cause/causes of MTTD and develop management options. The second working group will focus on the development and implementation of on farm trials that can be implemented soon after the end of this harvest season.

John and Debbie Nucifora, Ray Courtice and Henk Van Niekerk

# Pre-season mango roadshow meetings

In the past 2 months the team from Australian Mangoes hosted pre-season meetings in Darwin and Katherine in the Northern Territory, Kununurra in Western Australia, and the Burdekin and Mutchilba in Queensland. Growers listened to presentations on marketing, crop forecasting, market access, (domestic and international), mango twig tip dieback and export performance.

The highlight for many growers at the Northern Territory and Kununurra workshops was the presentation from Marcello Amaral, who is undertaking his PhD researching the application of crop manipulation methods in different varieties across northern Australia.

At the Burdekin meeting Gerhard Rossouw from QDAF presented the early outcomes of his research into understanding crop productivity. At the Mutchilba meeting Geoff Dickinson from QDAF provided and overview of research being undertaken by QDAF with a focus on Gerhard's crop productivity research.

We would like to thank the staff from ORDCO in Kununurra, Kristian Pucciarmati in the Burdekin and Henk Van Niekerk in Mutchilba for hosting our pre-season roadshow meetings.

Kununurra pre-season meeting

Rory Nunes, Geoff Dickinson and Jan Van Niekerk

Katherine pre-season meeting

Joe and Monique Moreno, Marcello and Katrina Avolio

Alf Pappalardo, Gerhard Rossouw, Charlie Manolis, Sam Pappalardo

Sam and Jessica Collins



Darwin Pre-season meeting

Darwin Pre-season meeting

*Loretta and Brad Bowen from Sandy Cove Plantation*

# Case Study: Mango Export to the USA

## BACKGROUND

AMIA secured funding through Queensland Government's Food and Fibre to Market: Industry Partnerships Program (FF2M) to support two mango businesses in exporting their produce to the United States of America (USA). Since the commencement of Australian mango exports to the USA in 2015, the US market has demonstrated strong growth potential, becoming a key priority for Australian mango exporters. Despite the challenges posed by COVID-19 and high airfreight costs in 2020, there was a notable 167% increase in exported volume (196 tonnes) and a 210% increase in value, reaching AU$2,162,217 in 2021/22. The US market offers niche channels willing to pay a premium for the superior appearance and quality of Australian mangoes.

The export process to the USA is challenging, involving protocol requirements including quality standards, maximum residue limits (MRLs), and phytosanitary measures to manage pests of quarantine concern. For many businesses, these challenges are daunting.

## PROJECT SUPPORT

AMIA's project aimed to assist two businesses through the entire US export journey, from accreditation and Department of Agriculture, Fisheries and Forestry (DAFF) audit to liaising with Steritech and US customers. The support includes:

- **Technical and operational assistance:**
  Registration processes for orchards and packhouses, crop monitor responsibilities, labelling, pest-secure packaging, market protocol requirements, export documentation, and preparing for audits.
- **Financial support:**
  Cost-sharing basis for registration, irradiation treatment, and freight costs to mitigate financial risks for first-time exporters.



## CASE STUDY: SANDY COVE MANGO PLANTATION

**Participants**: Loretta and Brad Bowen
**Location:** Burdekin
**Varieties:** R2E2, KP, Yess!

## EXPORT JOURNEY:

Loretta and Brad Bowen from Sandy Cove Plantation were selected for the project. Although their fruit has been exported for the past five years, they had never directly exported to the USA. Last season, a third of their production was sent overseas through third-party exporters, except for one consignment of R2E2 which they exported directly to the USA as as part of this project. With support from AMIA, they established their own relationships with logistics providers, Steritech and the USA customer, Melissa's Produce.

Their consignment of 724 trays (4.5 kg trays) was partially ripened in Brisbane before being transferred to Steritech for quarantine inspection and irradiation treatment. Subsequently, the fruit was sent to their freight forwarder for airfreight to Los Angeles.

They chose Brisbane over Sydney despite higher costs because Brisbane offered more reliable logistics and freight space. The airfreight cost was AU$15,600 per PMC (approx. AU$21/tray). The significant freight costs underscore the inherent risks of exporting to the USA. A single failed consignment could jeopardize the profitability of the entire venture.

Research and experience indicate that partially ripening the mango prior to irradiation reduces the treatment damage. The Bowens leaned heavily on their wholesaler whose knowledge and experience with the requirements for preparing and ripening mangoes for irradiation treatment tailored to the US market proved invaluable.

The wholesaler also assisted with paperwork, including the EXDOC registration. The Bowens found the registration requirements cumbersome and emphasised the need for a clear guide outlining all necessary requirements.

## KEY INSIGHTS AND ADVICE:

- **Planning:**
  Plan ahead, especially for ordering pest-proof netting from Profresh, USA-specific packaging and labels.
- **Labelling:**
  Print export labels directly on the boxes to avoid manual labelling.
- **Compliance:**
  The availability of chemicals with short WHP that comply with USA MRLs is limited. The Bowens used an agronomist to oversee their spray program, particularly for managing mango seed weevil. AMIA's Mango MRL Search App proved invaluable in identifying potential compliance issues with chemicals.
- **Market Dynamics:**
  The exchange rate between US$ and AU$ last season was favourable to Australian exports. Ensure you do your research on asking prices to effectively initiate negotiations with your customers.
- **Financial Arrangements:**
  Ensuring payment terms and banking arrangements were essential to handle international transactions smoothly.


*Sandy Cove mangoes in-store display*

## OUTCOME:

The Bowens' fruit was accepted on delivery, and payment terms of 21 days were respected. Despite some initial difficulties with banking arrangements, they were pleased with their export experience and the returns. Melissa, their US customer, was very satisfied with the produce and expressed interest in receiving more shipments and continuing their collaboration.

Loretta and Brad Bowen felt more in control of the export process and plan to send more fruit to Melissa next year outside of the project. They also expressed interest in exploring direct exports to other markets.

This case study highlights the opportunities and challenges in exporting Australian mangoes to the USA and underscores the importance of support and clear guidelines for new growers entering this market.


*Sandy Cove mangoes*

# Oriental fruit fly incursion simulation exercise aims to strengthen industry biosecurity preparedness

In July and August, industry and government representatives gathered in Sydney and Cairns for 2 simulation exercises focused on enhancing Australia's preparedness to an Oriental fruit fly (Bactrocera dorsalis) incursion. The simulation exercises were facilitated by Plant Health Australia with funding from Hort Innovation.

Oriental fruit fly is a major biosecurity threat to Australia's horticulture industry and is listed in the fourth spot on the National Priority Plant Pest list and is considered the number one exotic pest for Australian mangoes due to the potential trade implications.

**It is estimated that the establishment of exotic fruit flies, such as the Oriental fruit fly, on the Australian mainland could lead to severe disruptions, with potential losses in domestic and international markets costing growers an estimated $2.1 billion.**

**North Queensland growers who experienced the incursion of Papaya fruit fly (Bactrocera papayae) in the 1990's will remember the impact on fruit movement in the region.**

AMIA were represented by Trevor Dunmall and Marine Empson at the simulation exercise held in Cairns.

The simulation scenario involved the detection of Oriental fruit fly in both a production area and a peri-urban zone, focusing on:

- immediate actions by government and industry
- impacts on the movement of host commodities and business continuity
- what improvements could be made to movement protocols.

The outcomes of this exercise will contribute to the development of movement protocols and secure pathways, which will be proposed to interstate jurisdictions for pre-approval. Proactive planning and preparedness are critical to minimising the impact of an incursion, giving us the best chance at eradicating the pest and safeguarding our industry against significant economic and trade disruptions.

Insights gained from the simulation exercise will support continued collaboration between industry and government and strengthen Australia's response capabilities to protect our industry from potential Oriental fruit fly incursions. Recommendations will also identify potential issues, critical gaps and solutions that could be considered by the Biosecurity Preparedness for Oriental Fruit Fly (FF18001) project team led by Macquarie University in collaboration with the NSW DPIRD and SARDI.

Participants in the simulation exercises included representatives from the Australian Table Grape Association, AUSVEG, Citrus Australia, Dried Fruit Australia, Summerfruit Australia, Vinehealth Australia, New South Wales Department of Primary Industries and Regional Development (NSW DPIRD), the South Australian Research and Development Institute (SARDI), Agriculture Victoria, Queensland Department of Agriculture and Fisheries (QDAF), South Australian Department of Primary Industries and Regions (PIRSA), Western Australian Department of Primary Industries and Regional Development (WA DPIRD), and Kiwifruit Vine Health.

***Oriental fruit fly (Bactrocera dorsalis) covers 4 previously described fruit fly species: Bactrocera dorsalis, B. papayae, B. philippinensis and B. invadens. They are now all known to be the same species*.***

***Taxonomists continue to discuss this merits of grouping these 4 species into 1 species.***

# PR & MARKETING

# Australian Mangoes Marketing Campaign – The Season Ahead

**THE AUSTRALIAN MANGOES MARKETING PROGRAM IS FUNDED BY HORT INNOVATION, USING GROWER LEVIES.**

**This season's mango marketing plan has been developed in consultation with the mango marketing strategic investment advisory panel (SIAP) comprising of mango growers from throughout Australia. Activities will be live in market from the beginning of October 2024 until end of March 2025 and are outlined in further detail below.**

## MARKETING OBJECTIVE:

The objective of the Australian mangoes' marketing plan is to make positive increases in household penetration season to season by continuing to own that mangoes are the joyful, iconic taste of Australian summer. The target audience for the campaign is main grocery buyers (18+), with marketing activities targeting key periods within the season including season launch, mid-season, and end of season.

## CREATIVE UPDATE:

Consumer testing in early 2024 showed an opportunity to optimise the 'Taste the Sunshine' brand creative to continue to build upon creative effectiveness and ensure continued success of the marketing campaign.

In addition to the existing Taste the Sunshine creative, four new creative concepts were developed and tested with consumers to determine the effectiveness of each in grabbing consumers attention, connecting with mangoes and driving consumer recall or memorability of mangoes, and motivating consumers to ultimately purchase mangoes.

Results showed the Taste the Sunshine 'sunrise' creative concept was the leading creative for advertising effectiveness from the mango concepts tested. In addition, when compared tested against other Hort Innovation marketing campaigns, this creative was the leading outdoor creative advertisement across the board (tested to date). Further, the creative was compared within a database of over 5,000 creatives outside of Hort Innovation campaigns and fell into the top 1% of all out of home ads in Australia.

Consumers noted that this new creative was "vibrant", "connected mangoes to a summertime feeling" and looked "juicy" and "delicious." In the 2024-2025 season, the new sunrise creative will be launched across all marketing activity.


## FY25 MARKETING ACTIVITY:

This season, marketing activity will be split across 3 pillars, including:

### PILLAR 1

**CELEBRATE THE ICONIC JOY THAT IS MANGOES.**

This includes:

**Taste The Sunshine campaign:** Launching the new creative across media channels (metro & regional out of home panels, YouTube and social media advertising) to drive mass awareness of mangoes key messages and target consumer's on their path to purchase journey

**Season announcement public relations:** Sponsorship of the Brisbane Markets' Mango Auction to launch to mango season and drive earned media and mass coverage of Australian Mangoes.

### PILLAR 2

**BE UNMISSABLE IN RETAIL OVER THE MANGO SEASON.**

This includes:

**Retail media, instore visibility and point of sale:** Retail online advertising and in-store presence to drive purchase at the point of sale.

**Supply chain engagement manager:** Continued support through Andrew Burns to develop activities that build interest and excitement with key supply chain stakeholders, including retailers.

### PILLAR 3

**SHARE THE JOY OF AUSSIE MANGOES BEYOND OUR SHORES.**

This includes:

**New Zealand Taste the Sunshine campaign:** Extension of the domestic 'Taste The Sunshine' campaign across New Zealand Out of Home (supermarket screens) and social media advertising

**Export Marketing (UAE and South Korea):** In collaboration with the mango marketing SIAP, the United Arab Emirates and South Korea were identified as priority protocol and non-protocol markets for export marketing activity in the 2024/2025 season. Through instore sampling and advertising, the activity will aim to build in market awareness and drive consideration for Australian mangoes with export consumers.

Hort Innovation

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# Mango Supply Chain Engagement

**Andrew Burns, AMIA Supply Chain Engagement Manager**

## Nielsen Homescan® Data – Australian Mangoes

This new Mango Data from Neilsen's captures the Homescan data for the 2023/24 season.

The Mango industry receives 2 updates a year from Neilsen Homescan and is available to all mango growers.

### WHAT IS HOMESCAN?

Nielsen Homescan® is a continuous panel of 10,000 households who record all take-home packed and fresh grocery from all retail outlets. The sample is demographically and geographically representative of the Australian household population.

Each household is equipped with either a small handheld terminal or an app on their mobile phone through which details of all purchasing are entered - product, quantity, price and outlet.

This information, along with the date of purchase, is linked with demographic details of the household and the household purchasing history. Data are projected to represent take-home purchases of the Australian household population.

### WHAT INFORMATION AND REPORTS ARE AVAILABLE?

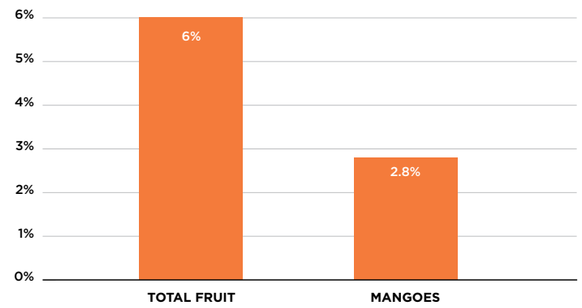
Graphs and related consumer and retailer based information are contained within the Mango report just like the one below that provide you with a summary and graphical information delivered in a easy to read format.

Information is based on the latest 52 weeks versus the previous 52 weeks. The reports provide us insights into how the Mango category is performing along with demographic differences. A sample of the first 2 reports are below.

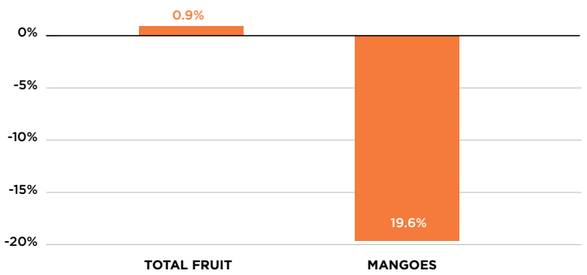
### MARKET OVERVIEW

In terms of dollars ($), mangoes were growing slightly by 2.8%, and were falling by 19.6% in terms of volume (kg). The percentage of buying households fell from 60% to 53%. The average dollar spend rose from $26.22 to $30.43. Mangoes fell in terms of average weigh purchased (kg).

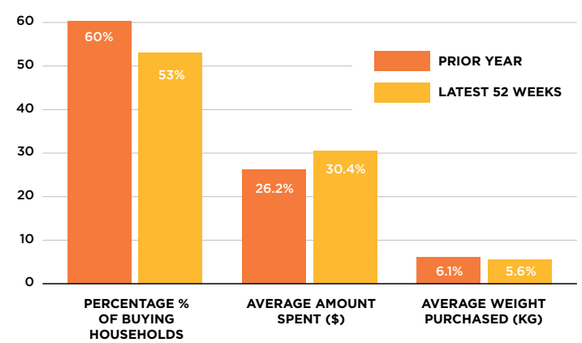
**DOLLAR SALES ($) GROWTH VERSUS TOTAL FRUIT**




**VOLUME (KG) GROWTH VERSUS TOTAL FRUIT**




**HOUSEHOLD BUYING BEHAVIOUR**

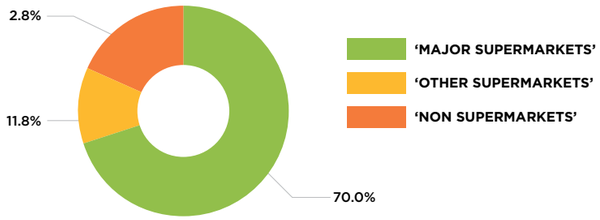




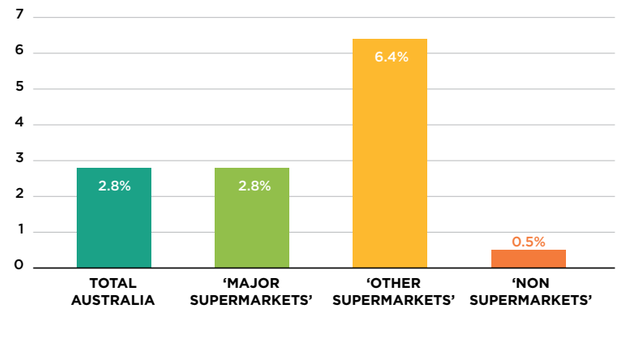

### RETAILER OVERVIEW

70.0% of all mangoes dollar sales were sold through major supermarkets.

**RETAIL DOLLAR ($) SHARE OF TRADE**




**RETAIL DOLLAR ($) GROWTH**




### OTHER INTERESTING AND CURRENT CONTENT WITHIN THE REPORTS COVER

Key metrics by state,

- $ Growth
- KG Growth
- % of buying households
- Annual Household purchases and volume.
- How households behave over the past year,
- Who buys my fruit and the key metrics by demographic group,
- Two year trends and % dollars sold on promotion versus average amount spent.

There are other reports that can be viewed in drop down selections.

These reports and summaries are ready and available to you upon the Harvest to Home website. For the Mango industry, they are updated twice a year. They are an excellent tool that enables us to review our performance vs the prior season, and allows us to track the impacts of price, availability and consumer purchasing habits.

For access to the reports follow the below

www.harvesttohome.net.au

> Select the product type **"Fruits, mushrooms nuts and oils"**

> Select **"Mangoes"**

> Start at **"Latest highlights"**

### ACTIVITIES FOR THE FORTHCOMING SEASON

Utilising the data contained within Homescan plus the addition of other data sources,

I have shared the content of the available information with the retailers to enable us to not only review the season recently completed but more so to look at the season ahead and by learning from the data reviewed and by aligning our marketing information and activities, how we can jointly amplify the marketing messages and with instore display activities not only lift the profile of mangoes instore, but more importantly how we can entice frequent mango purchases by the consumer.

The below activities are pivotal to a successful season and will help increase household penetration and a high-level mango awareness from the start through to the end of the season and have been shared in consultation with the retailers.

Working with retailers we encourage retail staff to maximise sales through a range on in-store strategies, including:

- Stock mangoes in multiple locations in store to maximise consumer purchase opportunities
- Link in with mango marketing activities to highlight availability and ensure plentiful stock in store
- Work with in store staff to create excitement from the start of the season to the end of the season
- Encourage retail staff through incentive programs to drive creative instore displays to increase purchase frequency and weight of purchase
- Ensure retail staff understand how to manage mangoes – ensure the retail training guide is available to retail staff

Consumer research shows that over 67% of mango purchase are made on impulse. Having mangoes positioned at the front of stores in plentiful large and colorful displays is beneficial to entice purchase and the regularity of it. It is so important that consumers can not only see the mangoes when they enter, but smell the delicious aroma as they walk through the supermarket doors.

And by placing Mango point of sale (display cards) upon the displays will assist in capturing the consumer eye and reminding them of the mango marketing messages they have seen prior to entering the store.

Your marketing levies are utilised to provide an incentive fund that is used to drive instore creativity across many of the retailers stores. It is used to drive large bountiful displays throughout the season and ensuring mangoes are indeed top of mind of the team members of the produce departments. I look forward to sharing photos of their displays with you throughout the season ahead.

To assist the most experienced and the new team members of the produce teams, we have updated and forwarded our Mango information and training guide to the retailers for them to utilise some if not all of it's content. Having store produce teams aware of varietal types along with merchandising and storage tips will help ensure a quality offering to the customer base along with the ability to answer customers mango related questions.

I look forward to keeping you informed of the exciting mango retail journey through the season ahead.

# Rootstocks Redefined: A Key to Future Mango Orchards

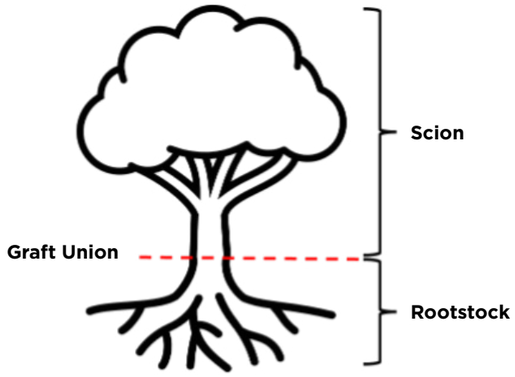



*Figure 1: Grafted trees are made up of a scion variety chosen for fruit characteristics,and a rootstock variety chosen for its genetic uniformity, influence on tree vigour, fruiting efficiency, disease resistance, or salinity tolerance.*

## ROOTSTOCK PAST

In Australia, grafting of mango seedlings is primarily done to cause the tree to flower and fruit at a younger age and to overcome the risk of seedling genetic variability. The polyembryonic variety Kensington Pride (KP) is the most used rootstock in Australia, due to seed availability, low seed cost, and minimal genetic variability.

The use of rootstocks in horticultural systems offers a tool for considerable improvement in productivity with minimal changes to system management. In a grafted plant, the rootstock is the portion below the graft, while the scion is above (Figure 1). These two sections of the tree may be the same or different compatible varieties. Temperate tree crops such as apple, pear, and stone fruits began developing clonally replicated rootstocks several hundred years ago. In the 1800s the wine grape industry also identified hundreds of rootstocks to combat disease and adapt to challenging soil conditions. The use of dwarfing rootstocks in temperate tree crops has been the key tool in the widespread adoption of advanced production systems with small, highly productive, and uniform trees.

Most tropical and sub-tropical fruit tree crops do not have clonal rootstocks available, largely due to limited research investment over the past century and limited desire to dwarf trees. More recently, with interest in intensified systems, mango rootstock selection has been investigated in many countries including India, Israel, France (Réunion Island), Mexico, Brazil, Venezuela, Spain, South Africa, and Australia (Galán Saúco, 2019; Menzel and Le Lagadec, 2017). Several dwarfing rootstocks have been identified, although reports have been inconsistent, indicating rootstock performance may be influenced by the combination of scion, rootstock, environment, and/or soil type. In the Northern Territory of Australia an assessment of 64 rootstocks with KP as a scion identified that some mango rootstock varieties have the capacity to both reduce canopy size and increase yield efficiency (Smith et al., 2008). However, these results have not been adopted in Australia and KP remains the primary mango rootstock used.

## ROOTSTOCK SELECTION

The National Tree Crop Intensification in Horticulture Program (AS18000) is a research program developing advanced production systems for mango, avocado, macadamia, citrus and almond. Research is focused on areas that previously allowed for major leaps in temperate crops, to enable advancement within decades rather than centuries.

The mango rootstock development program in AS18000 aimed to identify rootstocks that reduce tree size and vigour without reducing yield. Over seven years the program has screened 97 varieties (both mono- and poly-embryonic) from the National Mango Breeding Program's variety gene-pool collection under two commercial scion varieties (NMBP 1243 and 4069).

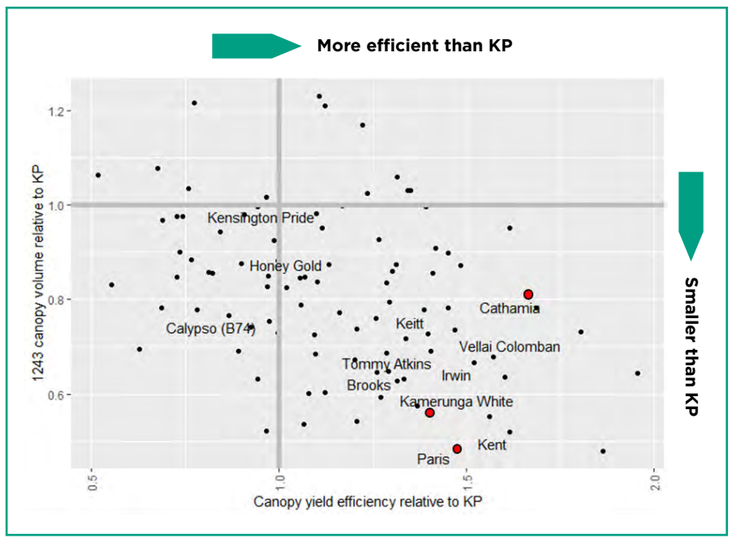



*Figure 2: The rootstock screening trial where 97 varieties were tested for reducing canopy size and increase yield efficiency. Data shown is with a NMBP1243 (Yes!!) scion with rootstocks relative to Kensington Pride (1,1). Points show rootstock varieties, red points indicate trial selections and labels show common varieties and trial selections.*



Rootstock suitability was evaluated on three parameters across both scions:

1. Dwarfing. The rootstock's ability to reduce tree canopy size and trunk circumference compared to Kensington Pride rootstock.
2. Yield efficiency. The rootstock's effect on tree yield, adjusted for canopy size. Energy savings from reducing vegetative growth are redirected to fruit production.
3. Seed embryony and seed availability. Varieties with polyembryonic seed were prioritised so as to maximise genetic uniformity of rootstocks propagated from seed and because mango clonal propagation of rootstocks is not commonly practiced in Australia. Selection was also limited to varieties in the NMBP genepool which fruit consistently, to ensure seed availability.

Of the 97 rootstocks assessed under the NMBP 1243 and 4069 scions, 76 and 68 rootstock varieties respectively were ranked better than Kensington Pride, based on the criteria above, indicating considerable potential for improvement.

## ROOTSTOCK EVALUATION

The three most promising dwarfing rootstocks identified in this screening trial (Kamerunga White, Paris, and Cathamia) are being further evaluated for their suitability to reduce canopy size and improve yield in five of Australia's most widely grown scion varieties (KP, R2E2, Calypso, Honey Gold, and Yes!!).

Field trials of these rootstock/scion combinations, including ungrafted rootstock seedlings, were established on the Department of Agriculture and Fisheries, Walkamin Research Station and a private farm at Mutchilba in October 2023.

These trials will evaluate if 1) the rootstock effects differ between scion varieties or growing environments and 2) determine if a single universal rootstock is practical for all scion varieties or if each scion variety will need matching to a specific dwarfing rootstock.

These trials will also be studied to understand how rootstocks affect valuable scion traits such as vigour, canopy size, the juvenile stage of the tree (early flowering and fruiting), the seasonality of flowering and fruiting, and fruit size and quality.

We are also interested in understanding if rootstocks can influence tolerance to increased temperatures and enable trees to adapt to increasingly intense and frequent heatwaves. If rootstocks positively affect any these traits, they will provide an addition tool for mango growers to manage and enhance orchard productivity and resilience.

*Figure 3: Planting of a new field trial evaluating the selected mango rootstocks for their suitability to reduce canopy size and increase yield efficiency in five of the most widely grown scion varieties (KP, R2E2, Calypso, Honey Gold, and Yes!!).*

Rootstock breeding, development, and selection continues to be an important part of the Queensland mango research program. Collaboration between physiologists, geneticists and breeders will help in developing new understanding of rootstock mechanisms and their associated genes. Together this will allow for more rapid future selections and targeted breeding for specific rootstock traits.

Advances in clonal propagation technology will also enable the use of monoembryonic varieties as rootstocks, widening the gene pool of potential rootstocks.

Clonal propagation techniques will also enable more rapid and efficient roll out of rootstocks to industry. Development of these tools may enable adoption of dwarfing rootstocks within the next decade, rather than many decades, as has been the experience in other crops.

## FURTHER INFORMATION

For more information contact Dr. Ryan Orr (Ryan.Orr@daf.qld.gov.au), or Dr. Ian Bally (Ian.Bally@daf.qld.gov.au), Queensland Department of Agriculture and Fisheries, Mareeba. Zac Scobell, Cheryldene Maddox, and Dr. Paula Ibell also contributed to this research

## REFERENCES

Galán Saúco, V., 2019. Mango rootstock, a review, 1244 ed. International Society for Horticultural Science (ISHS), Leuven, Belgium, pp. 1-16.

Menzel, C.M., Le Lagadec, M.D., 2017. Can the productivity of mango orchards be increased by using high-density plantings? Scientia Horticulturae 219, 222-263.

Smith, M.W., Bright, J.D., Hoult, M.D., Renfree, R.A., Maddern, T., Coombes, N., 2008. Field Evaluation of 64 Rootstocks for Growth and Yield of 'Kensington Pride' Mango. HortScience horts 43, 1720.

The *National Tree Crop Intensification in Horticulture Program* is funded by the Hort Frontiers Advanced Production Systems Fund, part of the Hort Frontiers strategic partnership initiative developed by Hort Innovation, with co-investment from Queensland's Department of Agriculture and Fisheries, Queensland Alliance for Agriculture and Food Innovation- The University of Queensland, Plant & Food Research and the Western Australian Department of Primary Industries and Regional Development, and contributions form the Australian Government.

# Responding to exotic fruit flies in the Torres Strait

**Each season staff from the Department of Agriculture, Fisheries and Forestry's (DAFF) Northern Australia Quarantine Strategy (NAQS), in association with staff from the Queensland Department of Agriculture and Fisheries (QDAF), undertake exotic fruit fly trapping across the Torres Strait islands and the Northern Peninsula Area (NPA) of mainland Australia.**

There are three principal fruit fly species regularly trapped: Oriental fruit fly *(Bactrocera dorsalis)*, Melon fly *(Zeugodacus cucurbitae)* and New Guinea fruit fly *(Bactrocera trivialis)*.

When exotic fruit flies are detected in traps, an eradication program is undertaken through the implementation of a widespread baiting program on each island where the fruit fly are detected.

The Commonwealth, State, Territory governments and affected industries, including mangoes, fund the response plan to manage and implement the seasonal trapping and eradication program.

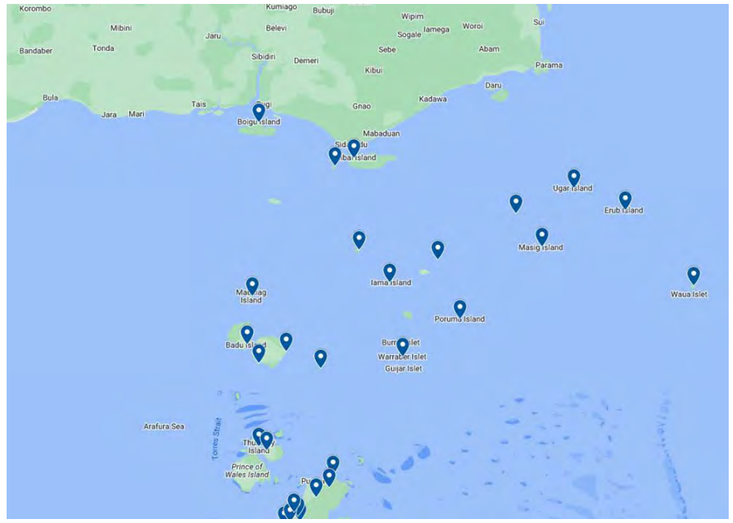
Mango growers contribute to this response through the EPPR levies they pay.

The current $3.5 million response plan runs for 5 years from 2021 to 2026. It monitors and aims to eradicate the flies before they can establish in the Torres Strait. The plan includes:

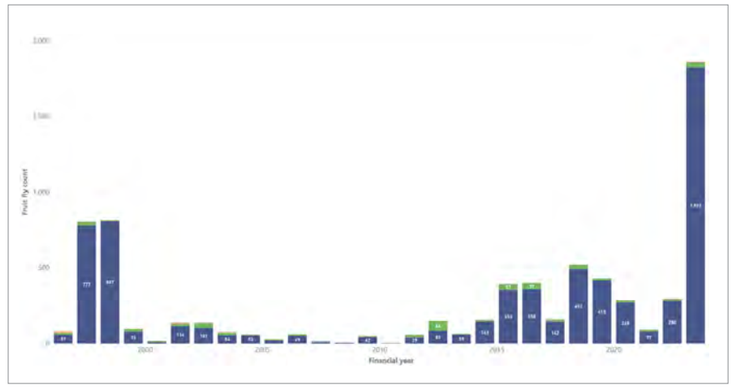
- trapping and identifying fruit flies for early detection
- pheromone-based insecticide baits (blocks) to attract and kill male fruit flies
- protein-based insecticide bait (spray) to kill adult female flies
- movement restrictions on fruit and vegetables to prevent pest introduction and spread.

Map 1 illustrates the extensive trapping network across Torres Strait islands and the NPA.

Graph 1 shows the total number of exotic fruit fly trapped each season since 1996. You will note the spike in trapping number in this past season 2023/24.




*Map 1: Sites of exotic fruit fly traps across Torres Strait Islands.*




*Graph 1: Exotic fruit fly detections 1996 - 2024 The colours in the vertical bars in the graph refer to the 4 species of fruti fly.*

*Exotic fruit fly bait spraying*

*Exotic fruit fly traps and baits/bait spraying*

In recent seasons the number and frequency of detections in traps is increasing and governments and industries need to remain vigilant.

The trapping and eradication program in place is vital to protecting Australia's horticultural industries from these exotic fruit flies. We must also be highly vigilant as there are other pathways which exotic fruit fly could enter Australia and mango production areas.


*Exotic fruit fly traps*

## INFORMATION ON THESE EXOTIC FRUIT FLIES

Oriental fruit fly is highly invasive and one of the most damaging pests of tropical horticulture in the world. It can affect over 490 fruit and vegetables including banana, bean, capsicum, cashew, cherry, coffee, cucumber, eggplant, grapefruit, guava, lemon, lime, mandarin, mango, navel orange, papaya, peach, passionfruit and tomato. This species is widespread in Africa, Asia and parts of the Pacific. It is closest to Australia in Indonesia, Timor Leste and Papua New Guinea.

Melon fly is a serious pest of cucurbit crops. It can also affect crops such as avocado, bean, cherry, cowpeas, guava, lychee, navel orange, papaya, passionfruit and tomato. Melon fly is widespread in Asia, sub-Saharan Africa and in the Pacific (Hawaii, Guam, Kiribati, Nauru, Northern Mariana Islands, and the Solomon Islands). Like many fruit fly species, melon fly multiplies fast and can spread over large distances. Melon fly would cause serious damage to horticultural industries if it were to establish in Australia.

Many countries have trade restrictions on produce from regions that have melon fly. Growers would likely face difficulties exporting their produce due to these restrictions.

New Guinea fruit fly is a major pest of horticultural crop. It targets mango, chilli, citrus, guava and peach. This fly is native to Papua New Guinea and is also present in Indonesia.

# Seeing the invisible with near-infrared spectroscopy: New technologies for managing fruit flies in Australian horticulture

**A key research direction in the Fresh and Secure Trade Alliance (FASTA) is the development of new technologies, this area of work is being led by A/Prof Bronson Philippa from James Cook University.**

There is a significant need for developing rapid technologies and approaches that facilitate biosecurity operations and address phytosanitary barriers for market access. In FASTA we have the capacity to develop techniques to better detect fruit fly and other pests of quarantine concern in horticultural produce utilising optical techniques. One such technology is near-infrared (NIR) spectroscopy, which can "see" details that would otherwise be invisible.

Near-infrared spectroscopy works by measuring how near-infrared light interacts with a target object. Near-infrared light is the region of the light spectrum that is "redder than red"; it cannot be seen by the human eye; however, it can be detected with specially designed instruments. What is interesting about near-infrared light is that it can be used to measure the chemical make-up of a target object. When light is reflected off an object, such as a piece of fruit, the near-infrared light that is returned from that object gives a "fingerprint" of what it is made of. This can be used, in quality assessment of fruits and vegetables. Some commercial sorting equipment is based on this principle.

FASTA researchers are exploring the potential of near-infrared spectroscopy to help with management of insect pests by increasing identification and detection capabilities. We are exploring both lab-based and portable, hand-held devices. Some of the activities planned will investigate:

- Rapid species identification, where a fruit fly is scanned to determine the species.
- How we can distinguish between wild flies and sterile insect technique (SIT) flies (which are flies released as part of a SIT control program).
- Detecting insect damage in produce in a packhouse scenario.

## WHAT DOES THE PROCESS LOOK LIKE?

**Step 1 - Sourcing the flies**

Flies are obtained from lab colonies and killed, or wild flies are captured in traps and brought to our laboratory in Cairns, Queensland. The species of fly is confirmed by our experts.

**Step 2 - Measure the flies**

Individual flies are carefully handled and placed on the imaging window of a near-infrared spectrometer (either a lab-based or handheld portable instrument). It is important for the research to measure the same individual fly on multiple instruments and potentially repeat the measurement over time; the flies are treated with more care than might otherwise be the case!

**Step 3 - Record the near infrared spectrum**

The near infrared spectrum is recorded, and the sample number is carefully annotated, to link that recording against the specific individual. This spectrum represents the chemical fingerprint of the fly.

**Step 4: Train the machines**

After we have collected the near infrared spectrum for many individual flies (known species or known SIT status), we use this information to train statistical and machine learning models to process them. The goal is that when a new fly is scanned, the software can immediately provide a species identification or other information such as whether it is a SIT fly or a wild fly.

To date, FASTA has scanned over 2000 fruit flies in different modes and under different conditions to produce over 9000 near-infrared recordings, which we call spectra. We have mainly focussed on the Queensland fruit fly (Bactrocera tryoni) and other fruit fly species of interest (Bactrocera neohumeralis and Bactrocera jarvisi).

Our team in FASTA is working to ensure that the Australian horticulture industries have access to the latest technology to improve pest management and market access. This maintains confidence that Australian produce is free from pests and supports ongoing trade.

**Want to know more or how we can engage with your industry? Send an email to: FASTA@daf.qld.gov.au.**



# Securing Australia's horticultural exports through technical market access

**The Fresh and Secure Trade Alliance (FASTA), launched in August 2023, is the largest and most ambitious trade initiative in Australian horticulture industry, designed to protect and grow Australia's horticulture exports.**

A key component of FASTA is streamlining the market access process by collating national data that allows easy and rapid quantification of data gaps, and identification of market access opportunities and risks. The FASTA phytosanitary market access team will then be able to develop traditional and novel treatment schedules to support access to new markets or improve access pathways to existing markets.

Phytosanitary treatment schedules are developed and tested through robust research (guided by international standards) generating reams and reams of data. For example, a recent methyl bromide fumigation disinfestation trial of Queensland fruit fly (Bactrocera tryoni) for one commodity required 13 separate trials and the team infested 5,867 individual pieces of fruit, counted 26,315 fruit fly pupae and counted 134,244 insects. This took a team of 6 people working full time for about 9 months. Seasonal fruit (which can't be stored) generally take longer as trials run over more than one season. Cold disinfestation trials, which have treatment times of 12-16 days, can take longer still.

For any phytosanitary treatment to be effective and acceptable to all trading partners our teams need to demonstrate 100% mortality of 30,000 insects (for each life stage of that insect in at least three replicates of at least 10,000 insects). If we find even one surviving insect in the treated fruit, we have to start again with a different treatment schedule (a higher treatment dose, different temperature, or a longer duration, depending on the type of disinfestation treatment). It can be a difficult balance between finding a treatment which kills all the insects without affecting fruit quality, and which fits into the supply chain.

All the data goes into a data package, and the resulting packages are used by the Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF), our National Plant Protection Organisation (NPPO), to negotiate with the respective NPPO of the importing country. But what actually happens when we generate a data package?

*Sorting fruit*

## TECHNICAL MARKET ACCESS RESEARCH – WHAT ARE THE KEY STEPS?

**Step 1 – Sourcing and sorting fruit**.

We need large quantities of export quality, uniform fruit which is free from any insecticide which could be harmful to the flies. Once the fruit arrives at our laboratory, we sort and weigh it, asses it, and select fruit within a narrow quality and weight range to reduce variation.

**Step 2 - Rearing flies.**

The flies come to us from fruit collected in the wild, and we must identify every single emerging fly to species level. We keep multiple fruit fly colonies at our laboratories, rearing 100,000+ adults per week. Our flies are very well looked after, provided with the food, temperature, humidity and light so they are happy and healthy – and we do quality checks to make sure!

*Identifying flies and rearing flies*

**Step 3 - Infesting fruit.**

We use our fit and healthy flies for infesting our selected fruit, either naturally or artificially. For natural infestation we simply place batches of fruit into cages of adult flies and let the flies do what they're good at. For artificial infestation, we collect eggs from the fly colony and place a known number of eggs directly into a cavity made in the fruit, which is then sealed. Artificial infestation is more precise but more time consuming. Because it compromises the integrity of the skin, it is unsuitable for fumigation trials.

*Naturally infesting fruit*

**Step 4 - Reaching target life stage.**

Infested fruit is held at the optimal temperature and humidity for the eggs in the fruit to develop to the life stage (larvae) we want to treat. This can take up to 6 or 7 days for the oldest stage. As the fruit used in fumigation trials must be sound at the time of treatment, we treat it with great care – it is quite a challenge to maintain larvae infested fruit in good condition when held for up to a week in a warm, humid environment.

**Step 5 - Disinfestation tests.**

Once we have the correct life stage, we carry out the disinfestation treatment. Treatments include methyl bromide fumigation, cold storage and vapour heat treatment. For all trials, fruit is treated within commercial packaging, just as it would be in a commercial treatment. We monitor and document everything throughout the treatment, for example temperatures and fumigation doses.

**Step 6 - Assessing mortality.**

When the treatment is finished, we give the insects a bit more time to allow any surviving eggs or larvae to develop. Then we assess every single treated and control (untreated) fruit, recover all insects and count them. Good days are when the live count is zero!

**Step 7 - Compile the data package.**

Finally, we put it all together. Along with the mortality dataset, the data package includes all the other records generated during each step of the trial (e.g. fruit fly quality checks, fruit weights, records of treatment temperature, methyl bromide concentration and holding room datalogger records). All records are checked and verified so we can be confident in the results, as we know that the data package will be scrutinised first by the scientists in DAFF and then by the scientists from the importing countries.

The Fresh and Secure Trade Alliance is funded through Hort Innovation's Hort Frontiers strategic partnership initiative, with co-investment from the Department of Agriculture and Fisheries, Department of Primary Industries and Regional Development, Department of Energy, Environment and Climate Action, Department of Tourism, Industry and Trade, Department of Primary Industries and Regions, Department of Natural Resources and Environment, Queensland University of Technology, James Cook University, Western Sydney University, Australian Blueberry Growers' Association, GreenSkin Avocados, and contributions from the Australian Government and the strawberry and avocado R&D levy



# AMIA Website Best Practice Resources

## Best Practice Resources

As mango season is still underway for some regions across Australia, and has already ended in other regions, we would like to encourage growers to visit the Best Practice Resources section of the AMIA website, which includes a wide range of useful resources on diverse topics such as pest and disease, nutrition, canopy management, business planning, and much more.

Many of these resources are the result of the collaboration between AMIA, state and territory governments, universities and other project partners, and cover years of research in the mango space.

## Growing Resources

While the resources are organised in sub-categories to ease the finding of information, there is also a search function to assist with the search for specific topics.

Available resources include information on topics such as understanding the optimum time to harvest, picking and packing training guides for new workers, grading posters and the chemical posters to assist growers with their use of chemicals.

The latest updates on chemical permits can also be found on the page "Agrichemicals for use in mangoes".

## Fact Sheets

Fact sheets can be found in each of the sub-categories.

Other resources include webinars and recorded video presentations that were presented at roadshows, available for our growers to view at any time, to stay updated on the latest R&D updates in the industry.

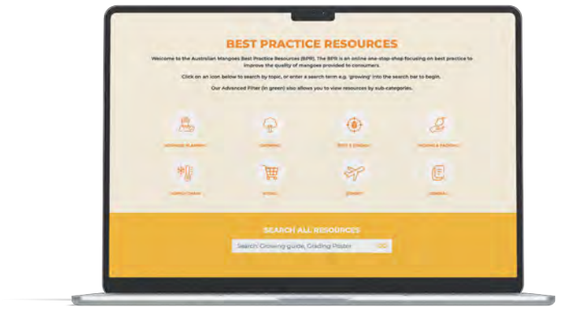
## Members Only Resources

Our Members Only resources are also available for download, such as the Cost of Production spreadsheet to help growers keep track of their business operational costs.

The Mango MRLs app, which is free for AMIA members, can be downloaded from the app store for both Android and Apple phones.

The AMIA welcomes any feedback to ensure that the content of the resources stays relevant, up to date, and easily accessible to our growers.

Should you require any assistance with your search for information, please do not hesitate to contact the AMIA team.







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