

# MANGO MATTERS

OCTOBER 2020 / VOLUME FORTY-ONE

## GRAB AN AUSSIE MANGO

THIS SEASON'S  
MUST-HAVE



The start of a new  
mango season!

**PAGE 15**

The notification process  
following a detection of fruit fly  
larvae in produce sold interstate

**PAGE 18**

Reinvesting in  
benchmarking for the  
Australian Mango Industry

**PAGE 19**



SPRING  
ISSUE



# USE EARLY FOR A SENSATIONAL FINISH.



## Luna<sup>®</sup> SENSATION

Get better fruit quality and shelf life  
for your mango and tropical fruit  
with exceptional in-crop disease control  
from Luna<sup>®</sup> Sensation Fungicide.

- Suits tight harvesting schedule
- Aids resistance management
- Flexibility to spray over flowering
- Complements an IPM strategy

Scan the QR code to download  
your technical guide.



**NEW**  
Registration





## Free supply chain tracking for mango growers

See the movement of your product in real time, providing insights into dwell time, temperature and location.

**MORE ON PAGE 21**

### Australian Mango Industry Association (AMIA) Contact Details

Office Address: Unit 2, The Fresh Centre, Brisbane Markets  
 Postal Address: PO Box 376, Brisbane Markets QLD 4106  
 Phone: 07 3278 3755 Fax: 07 3278 4761  
 Email: [com@mangoes.net.au](mailto:com@mangoes.net.au)  
 Australian Mangoes: [www.mangoes.net.au](http://www.mangoes.net.au) AMIA: [www.industry.mangoes.net.au](http://www.industry.mangoes.net.au)

*Mango Matters* has been funded by Hort Innovation, using the mango research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

Disclaimer: This publication is produced upon the understanding that no responsibility is accepted by AMIA, its directors and officers and the editor for any opinions, claims or statements made and views expressed in any edition of *Mango Matters* and associated material (for example Conference Proceedings, Industry Reports). Readers should rely on their own enquiries when making decisions concerning their interests. All material in the magazine is copyright. Reproduction in whole or part is not permitted without the written permission of the editor.

## CONTENTS

### 4 CEO & CHAIRMAN REPORTS

### 6 DIRECTOR REPORTS

### 8 AMIA & INDUSTRY NEWS

COVID-19 resources

AMIA staff update

Chemical updates

Northern Territory pre-season roadshow week

Australian Mangoes pre-season webinar series

### 14 PR & MARKETING

Engaging in a plan for success

The start of a new mango season!

### 18 BIOSECURITY, RESEARCH & POLICY

The notification process following a detection of fruit fly larvae in produce sold interstate

Reinvesting in benchmarking for the Australian Mango Industry

High density mango orchards—more mangoes, but more profit?

Free supply chain tracking on offer for mango growers

Forecasting: a value proposition for supply chain partners

Skin deep: how ethylene affects mango quality

Mango fruit yield estimation from satellite data

### 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.

# CEO'S REPORT



**Robert Gray**  
Chief Executive Officer, AMIA

Email: [ceo@mangoes.net.au](mailto:ceo@mangoes.net.au)  
Mob: 0418 737 861

**“We have been working with government and industry to ensure there is sufficient labour available and adequate measures to ensure we can meet the demands of the upcoming season during these difficult times.”**

*- Robert Gray*

After a very challenging start to the year, I would like to take the opportunity to thank you for being so vigilant and flexible as we navigate the continually evolving COVID-19 pandemic.

Social distancing restrictions and tight border controls mean business as usual looks quite different at many farms and packhouses, particularly when it comes to staffing. We have been working with government and industry to ensure there is sufficient labour available and adequate measures to ensure we can meet the demands of the upcoming season during these difficult times.

We are also working to quantify the demand and availability of air freight space for the upcoming export season. With the current circumstances making this process somewhat challenging, we are working with IFAM, mango exporters and freight forwarders to ensure we continue to meet our export goals.

Over the past few months, we have been busy holding our pre-season roadshows in the Northern Territory and Queensland. The COVID-19 restrictions meant I couldn't make it to the NT events, however, we

had an excellent attendance from local growers and stakeholders in both Katherine and Darwin. It was a shame that our QLD pre-season roadshows couldn't run face-to-face, but it was great to see so many people get involved with our national, topic-based webinars.

As reiterated across the pre-season workshops, it is still essential to stay up-to-date with the latest COVID-19 restrictions and understand how these regulations will impact you, your workers and your farm. Our team is continually working to create new materials and update the information on the COVID-19 resource section of our website. This support includes a Vietnamese translated version of our COVID-19 Grower Guide ([available here](#)) and the recordings of our COVID-19 webinars for NT and QLD that are available on our [YouTube channel](#).

Our Industry Development Officers, Sarah and Marine, are also working hard to keep their regions informed and answer any questions. If you have any questions or you would like access to any of our COVID-19 resources, please do not hesitate to reach out to our team.

AMIA's crop forecasting will continue this season. This report gives visibility of the timing, role and flow of the mango crop across all varieties and growing regions to the entire supply chain. I would encourage all growers to participate in the process, and you can read more about what to expect from the 2020/21 season on page 22.

You may be aware of the supply chain temperature management assessment undertaken by Australian Mangoes and Escavox last season. The project will run again this season, with opportunities for growers from all regions to get involved. You can read more about this on page 21.

Finally, I would also like to update you on some changes to our executive team. We are welcoming Kacie Buchanan to the role of Industry Development Manager, as Marine Empson commences maternity leave. We are also still recruiting for an Industry Development Officer, and we will keep you informed of any updates.

Best of luck to everyone for the season ahead.



# CHAIRMAN'S REPORT



**Ben Martin**  
Chairman, AMIA

Email: [bjmenterprises@live.com](mailto:bjmenterprises@live.com)  
Mob: 0400 125 928

2020 is passing quickly, and growers will be monitoring fruit development in their orchards. However, it's also important to consider the Industry Marketing Plan for this season. If you missed the Australian Mangoes marketing webinar, I urge you to watch the recording of this session on the Australian Mangoes YouTube. This session was for growers, wholesalers, & interested service providers to discuss the industry marketing plan and retailer plans for the coming season.

The COVID-19 situation has the capacity to have a severe impact on the 2020 season due to the air freight issues. Our industry must service our export markets, firstly to maintain our market position in these countries and secondly, in recognising that export is essential to achieving a reasonable price point for our fruit. Without export, our national markets will not support

the quantity of fruit at a sustainable price point. Export freight capacity and cost for our product is particularly concerning this year, with some freight costs increasing by up to 500%.

In recent weeks, I have had the opportunity to discuss these matters and also the issue of potential labour shortage within the rural sector at several meetings with our following representatives:

- Hon David Littleproud MP, Minister for Agriculture and Mr George Christensen MP, Chair of Joint Standing Committee on Trade & Investment Growth
- Mr Anthony Perrett, Shadow Minister for Agricultural Industry Development (Qld) and Mr Dale Last, Shadow Minister for Natural Resources & North Queensland
- Mrs Deb Frecklington, Leader of the Opposition and Shadow Minister for Trade (QLD)
- Hon Mark Furner, Minister for Agricultural Industry Development & Fisheries.

**"I would also remind growers of the support offered by the Australian Mangoes team for any COVID-19 matters."**

*- Ben Martin*

At each meeting, we shared an engaging conversation on the matters of primary concern for our industry. I have also sought the Federal Government's support for innovative advancement programs within the agricultural sector. Advancements such as the capacity to reduce the dependence of horticulture on seasonal labour to minimise the level of risk our industry is exposed to in today's environment and future events.

I would also remind growers of the support offered by the Australian Mangoes team for any COVID-19 matters. We have a dedicated COVID-19 resource page and a COVID-19 Grower Guide, as well as support from our staff.

Finally, good luck with the upcoming season and should you have any concerns, please contact your Regional Director or myself for assistance.



## PROCESSING

We would love to purchase your Australian mangoes for our Aussie Frozen Fruit packs.

TO FIND OUT MORE, PLEASE GET IN TOUCH: [growers@aussiefrozenfruit.com.au](mailto:growers@aussiefrozenfruit.com.au)  
03 5964 8101  
[aussiefrozenfruit.com.au](http://aussiefrozenfruit.com.au)

# DIRECTOR REPORTS

## NORTHERN TERRITORY & NORTHERN WESTERN AUSTRALIA



*Arminio (Nino) Niceforo*

**M: 0417 834 185**

**E: [nino67@live.com](mailto:nino67@live.com)**

First of all, I would like to say thank you to all who made it possible for me to sit on the Board. I am looking forward to being a great representative for NT mango growers with Leo. We are both committed to further improving our industry for all growers.

COVID-19 is still causing issues with our industry labour supply. We are hopeful that we may see more local applicants who are interested in picking and packing this year's crop, as well as the successful restarting of the Seasonal Workers Program. For all who have not completed as yet, don't forget your COVID-19 management plans for your employees. If you need further information, please contact your Australian Mango Industry Association (AMIA) Industry Development Officer, Sarah or Marine for guidance and templates. Your local farming industry bodies and government bodies are also available to provide support.

The build-up now appears to be upon us. The flowering has been somewhat mixed this year, resulting in numerous fruit sets. Our biggest challenge will be managing our crops and picking programs in-line with an expected La Nina wet season. An early onset of the wet season will no doubt increase the potential for crop diseases. We must all remain vigilant as these diseases will directly affect the quality of our fruit.

Quality is the key to our market. We have a clean and green product that is well regarded across Australia and the world. It is our persistence in this area that will assist us in maintaining that reputation and as a flow-on effect, the pricing of our product.

Look forward to seeing great results from all for the coming season.



*Geoff Warnock*

**M: 0438 884 842**

**E: [gullivers@wn.com.au](mailto:gullivers@wn.com.au)**

The rain we received at the end of February means trees in our region are looking good. Sparse and patchy flowering started in May and continued like this for two to three months. However, the start of August saw prolific flowering commence, even on the trees that had flowered already and had fruit set.

The extensive flowering at present may not result with much fruit set due to the hot easterly winds experienced during August. At this stage, it is difficult to estimate a forecast on production from the region. If we do see a reasonable level of fruit set, we will be faced with the challenge of securing sufficient labour to pick the fruit and finding trucks to transport the produce to the markets. This situation is being exasperated by the tight border controls currently in place.

I wish the growers the best for the season. I feel it will be one to remember.



*Leo Skliros*

**M: 0407 919 942**

**E: [sklirosleo@gmail.com](mailto:sklirosleo@gmail.com)**

The Darwin region has been trickling in fruit for quite a few weeks now and slowly increasing as our temperatures rise. However, persistent wind gusts mean fruit loss and marking are accruing daily, which is downgrading fruit. Apart from these challenges, quality seems to be very high with volumes lower than first forecast.

The NT is running its first Mango Madness Festival. AMIA has been working for the last three months on putting together this mango-licious festival on 25 October. Hopefully, some national coverage will assist in moving major volumes out of the Northern Territory regions, and Queensland growers should also see the benefits of entering on a clearing market.

I'm looking forward to celebrating with you all at the end of the season.



## FAR NORTH QUEENSLAND & NORTH QUEENSLAND



**John Nardi**  
M: 0408 334 266  
E: [john@favcoqld.com.au](mailto:john@favcoqld.com.au)

Flowering is now well underway for most and some growers further out in the Dimbulah region are already seeing fruit set. Most growers are reporting reasonably strong flowering, with only a few exceptions. Some areas have also been slower coming through, but all seem on the way to pushing flowers at the time of writing.

Mornings have been cool and the days warm; however growing conditions are good, and trees that were not affected by frost are looking strong and healthy. Any trees that were affected by frost are not flowering on the affected branches.

While it is still a little early to predict total volumes, I am suggesting a figure similar to last season at this point but this will need reassessment after fruit drop. Timing looks to be a little later than normal but possibly not as late as last year.

I would also encourage growers to submit their forecasts as required to assist in planning the marketing activities.

I wish everyone all the best for the coming season.



**John Nucifora**  
M: 0418 193 885  
E: [flossndeb@bigpond.com](mailto:flossndeb@bigpond.com)

Another season is beginning, and flowering is nearly over. The season is probably down on last year, but it is too early to say at this point. Some growers suffered frost damage, but as this occurred relatively early in the season, the trees have regained a percentage of flowers. The later cool weather has also slowed flowering down, but the flowering is now picking up again.

**"I would also encourage growers to submit their forecasts as required to assist in planning the marketing activities."**

*- John Nardi*

It was sad to see the cancellation of QLD roadshows due to COVID-19. I urge everyone to have their Health Management Plan in place and ready for the upcoming season. My biggest concern this season is the supply of good workers to ensure our mangoes are picked and packed in good timing, without losing a portion of our crops. We hope that we are all going to sell fruit and keep the price at a good, sustainable level.

## SOUTHERN QUEENSLAND & NEW SOUTH WALES



**Karl Gygar**  
M: 0481 591 470  
E: [kgygar@gmail.com](mailto:kgygar@gmail.com)

COVID has certainly changed the world for all this season. My thoughts are with anyone who has been impacted by the virus.

The rapidly changing business environment is also causing stress and uncertainty for many. Ensuring worker safety should be paramount and having a COVID plan in place before the season will be vital to having a successful year. I strongly recommend that growers take advantage of the resources available to you from the AMIA, as well as government agencies, to ensure you are across all the new requirements.

On top of having procedures and systems in place, growers need a clear marketing plan. As mentioned in my last report, many transport and marketing businesses have been adversely affected and having clear communication with these service providers before harvest will ensure the best outcome for all.

The region is currently experiencing good flowering and early fruit set. We hope the weather will play in our favour and set the region up for a good season.

As we move into the season, I wish all growers good luck with the upcoming harvest. In what is proving to be a challenging year already, a good season will still require great planning and execution to ensure profitability for all.

## SOUTHERN WESTERN AUSTRALIA



**David Morcombe**  
M: 0414 240 709  
E: [dwmorcombe@gmail.com](mailto:dwmorcombe@gmail.com)

In the southwest, we have had a warm winter and these conditions are probably the cause of the early flowering we experienced. With September about to start, most orchards are now in flower, which is unfortunate as the weather is still a bit cool for good pollination and fruit set.

In Carnarvon the flowering is light, which is a bit unexpected after a relatively light season last year. Let's hope for a good fruit set from the flowers that are there.

We are facing an unusually high number of uncertainties this year due to the COVID-19 pandemic, which is causing high levels of anxiety for growers. From getting the crop picked and transported to the additional compliance procedures, the increased cost of production will make this a challenging season for everyone.

If we want returns at the end of the day, it's never been more important to remember that the customer's experience will determine how many mangoes they buy and how much they are prepared to pay. Maintaining this high standard means quality management remains paramount. This season we need to carefully plan the timing of picking to allow fully mature fruit to be harvested and ensure that our orchard management enables us to achieve good post-harvest life.

Good luck to all growers as we head into a demanding season.

# AMIA & INDUSTRY NEWS

## COVID-19 resources

As the COVID-19 pandemic continues to prevail across Australia and overseas, Australian Mangoes remains committed to keeping industry stakeholders updated with regular communication and helpful resources.

We have the following resources available:

- Our *My Mango* newsletter summarises the most important and relevant COVID-19 updates for our growers each week. Copies of *My Mango* can be found on our [website](#).
- The dedicated COVID-19 page on our website is regularly updated with new information, alerts and resources. Access this page [here](#).
- Earlier in the year, we created a COVID-19 Growers Guide, which is

intended to be a one-stop shop for relevant resources. We have since translated the manual into Vietnamese so that it can be used by as many growers as possible. Both versions of the manual are available on the [COVID-19 resources page](#) of our website

- After the success of our NT COVID-19 webinar, we held a second session for QLD to assist industry stakeholders in preparing for the upcoming season in light of requirements in place due to the

pandemic. While these webinars were targeted at select regions, as specific requirements were discussed, other interested parties were welcome to join. These webinars are now available on our [YouTube channel](#).

We will continue to update these resources as required and provide support to our growers during this challenging period.

## GROW YOUR BRAND

### With Quality End-To-End Label Solutions

- Custom & stockline Australian made labels & tags
- High quality applicators - automatic, manual, in-line & in-tray
- Track & trace bin tag systems
- Labels for packaging, cartons, punnets, boxes & pallets
- Thermal printers, labels & tags
- Professional label design service



 **label press**  
(QLD) PTY LTD  
The Presentation Professionals

98 Cobalt Street, Carole Park Qld 4300 Email: [sales@labelpressaustalia.com.au](mailto:sales@labelpressaustalia.com.au)

[www.labelpressaustalia.com.au](http://www.labelpressaustalia.com.au)



**FREE CALL 1800 773 207**



# AMIA staff update

## CONGRATULATIONS JESS!

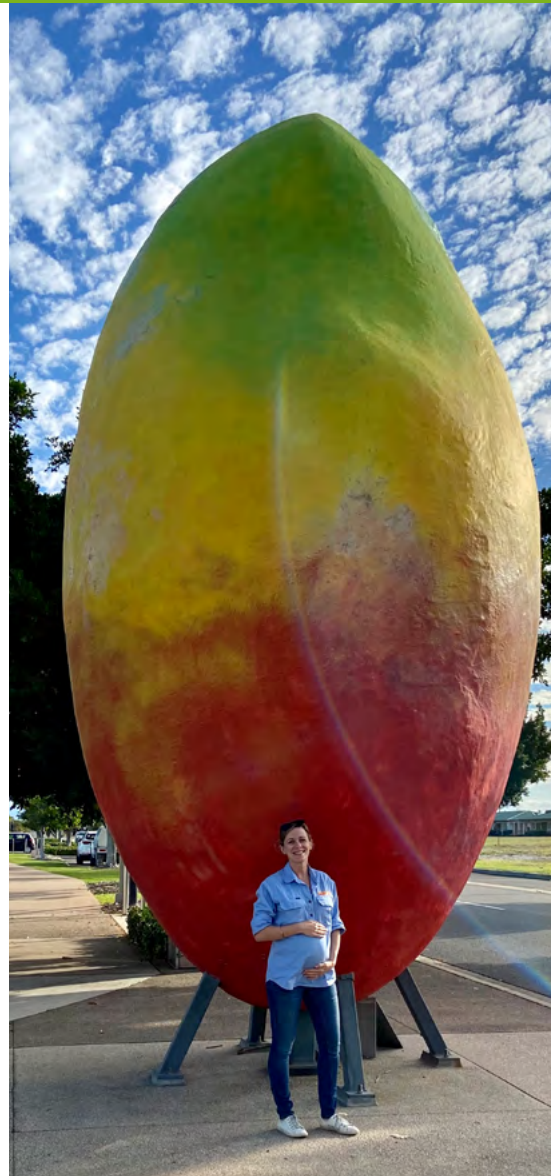
Australian Mangoes Communication Manager Jessica Mitchell welcomed a baby girl into the world on 31 July. Ellie Joan Ivy Mitchell and Jess are both doing well, and older brother Dylan is smitten with the newest addition to their family too. Niamh Sullivan will continue to act as the Communication Manager while Jess is on maternity leave.



## INDUSTRY DEVELOPMENT OFFICER UPDATES

Meanwhile, Industry Development Officer Marine Empson is also preparing for maternity leave and is excited to be having her first child. We would like to welcome Kacie Buchanan to our executive team as the Industry Development Officer for Queensland and northern New South Wales while Marine is on maternity leave.

Kacie grew up on a cattle property near Central Queensland's Capella, before completing a Bachelor of Rural Science (Honours) at the University of New England, Armidale. She has previously worked as a sales agronomist for Cotton Growers Services and Denman Rural (CRT), which gained her experience in a variety of crops, including cotton, sorghum, chickpeas, mung beans and pasture system. Kacie is now based in Cairns, works as a personal trainer in her spare time and is excited to gain new experience and knowledge in everything mangoes!



Top Left: Jessica Mitchell's new arrival, Ellie Joan Ivy Mitchell. Bottom Left: Kacie Buchanan will cover Marine Empson (right) as the Industry Development Officer for QLD and NNSW while Marine is on maternity leave.

## AMIA TEAM (NEW MEMBER)

**Kacie Buchanan**

Industry Development Officer

**M:** 0457 555 838

**E:** [kacie@mangoes.net.au](mailto:kacie@mangoes.net.au)

**WHITTO'S**  
NURSERY



0400 953 313



[whittosnursery@gmail.com](mailto:whittosnursery@gmail.com)



<https://goo.gl/RL7hTY>

## GRAFTED MANGO TREES

- Highly reliable wholesale supplier 20 years experience
- Small and large quantities available.
- Specialising in R2E2 and Kensington Pride
- DAF certified for interstate delivery.





# You don't need a scholarship to use Fludy®

Now for use on  
Mangoes and  
Pomegranates!



Fludy® controls post-harvest disorders on citrus, pome fruit, kiwi fruit, stone fruit and pineapples (permit). Visit [campbellchemicals.com.au](http://campbellchemicals.com.au) for more information.



**COLIN CAMPBELL (CHEMICALS) PTY LTD**

100% Australian owned & operated. Established 1940

**HORTICULTURE • FRUIT COATINGS • TURF**

[www.campbellchemicals.com.au](http://www.campbellchemicals.com.au) (02) 9725 2544





# Chemical updates

There have been a number of chemical updates over the past few months.

## PERMITS

### MALDISON

The following permit has been extended by the Australian Pesticides and Veterinary Medicines Authority (APVMA):

**Permit ID:** PER83998 Version 2

**Description:** Maldison / Mango / Fruit Fly

**Date Issued:** 15-Aug-17

**Expiry Date:** 31-Aug-22

**Permit Holder:** Hort Innovation

To view this permit [click here](#).

### CHLOROTHALONIL

The following permit has been extended by the Australian Pesticides and Veterinary Medicines Authority (APVMA):

**Permit ID:** PER14830 Version 3

**Description:** Chlorothalonil / Mango Trees / Anthracnose

**Date Issued:** 4-Feb-15

**Expiry Date:** 30-Nov-25

**Permit Holder:** Hort Innovation

To view this permit [click here](#).

### LUNA SENSATION

Hort Innovation has advised that the label extension for Luna Sensation (Fluopyram + Trifloxystrobin) has been approved by the APVMA. The label has been extended to include tropical inedible peel crop group as part of ST16006 grant funded project.

To view this label [click here](#).

Please follow all directions on the permits and the product labels.

All efforts have been made to provide the most current, complete and accurate information on these permits, however we recommend that you confirm the details of these permits at the following APVMA website: <https://portal.apvma.gov.au/permits>.

Hort Innovation have also advised that a Non-Performance Reporting Form for Horticultural Pesticides\* (available [here](#)) should be completed when an adverse experience occurs as a result of using the permit and returned to: [jodie.pedrana@horticulture.com.au](mailto:jodie.pedrana@horticulture.com.au).

If you require any 'non-performance' information to be provided to the APVMA, please complete their Adverse Experience Report Form. This can be found at:

<http://apvma.gov.au/node/311> or <https://portal.apvma.gov.au>.

*Users are advised that while the pesticide can be applied legally under the APVMA minor use permit, there can be a significant delay until the MRL gazetted by the APVMA is adopted in the Australia New Zealand Food Standards Code.*

*Until this occurs the MRL may not be recognised and a zero tolerance may*

*be imposed for residues of the pesticide resulting from its use according to the APVMA permit.*

*Please be aware that in the absence of an MRL in the Food Standards Code, the use of the pesticide according to the permit may result in the suspension of the produce in the marketplace. Please check the FSANZ website or the Australian Government ComLaw website: <https://www.legislation.gov.au/Series/F2015L00468> to confirm if there are MRL established by the Australia New Zealand Food Standards Code.*

\* A 'non-performance' is an unintended or unexpected effect on plants, plant products, animals, human beings or the environment, including injury, sensitivity reactions or lack of efficacy associated with the use of an agricultural chemical product(s) when used according to label (or permit) directions.



**PACKING SHED HYGIENE**

**Dispose of the Dust**

**BRUSH & BROOM**  
Supplies NQ

PHONE (07) 4755 2366

1a/42 Keane Street, Currajong QLD 4812

EMAIL [brian@brushandbroomsuppliesnq.com.au](mailto:brian@brushandbroomsuppliesnq.com.au)

[www.brushandbroomsuppliesnq.com.au](http://www.brushandbroomsuppliesnq.com.au)

TENNANT  
AUTHORISED DISTRIBUTOR

RCM  
sweepers & scrubbers

# Northern Territory Pre-Season Roadshow Week

The Northern Territory Preseason Mango Roadshows were held in Darwin on Tuesday, 11 August with 54 attendees and Katherine on Thursday, 13 August with 32 attendees. Due to COVID-19 travel restrictions in the NT, most attendees were local growers and stakeholders.

The Darwin roadshow was held at the newly built Darwin Export Hub, and attendees enjoyed a tour of the cold storage facilities and the impending Vapour Heat Treatment plant (VHT).

Robert Hall from PakFresh gave an update about the facility's progress and the services that will be available this season and into the future for horticultural growers. Paul Burke, NT Farmers Association CEO, discussed the key work him and his team have been performing. This update covered the Seasonal Workers Program pilot and other COVID-19 related assistance, as well as strategic planning for the future of mangoes and other plant industries in the Northern Territory.

The Northern Territory Department of Primary Industries and Resources covered a range of current projects in their research and development update such as the Building Best Practice for the Mango industry (MG17000), NT Mango Climate Change case study with the NESP Hub and an update on investigations into the Mango Twig Tip Dieback. The new Senior Compliance Inspector for Chemicals, Mel Frousheger, also introduced herself and offered assistance for growers around safe chemical use, storage and maximum residue limit (MRL) random testing occurring in the southern markets.

Kerry Walsh from Central Queensland University (CQU) discussed some of the



positive results of the multiscale monitoring project (forecasting from satellite imagery and in-field machine vision) from last season's work in Darwin and caught up with the grower sites in Katherine for this season.

Geoff Dickinson and Dale Bennett from the Queensland Department of Agriculture and Fisheries discussed the CRCNA Transforming Mango Futures high-density trials and the economic analysis of high-density mango production systems. While in Katherine, a small group of us visited the trial site at Manbulloo to begin training the trees onto the trellis.

Representing the Australian Mangoes team, Sarah Hain discussed the importance of forecasting and ensuring great eating quality through free on-farm dry matter testing services for the challenging season ahead. Also discussed was the continuing Mango Industry Exotic Biosecurity surveillance program in orchards and packhouses. The Escavox project will continue again this season and allows growers free access to real time temperature data to follow their fruit throughout the supply chain. Australian Mangoes hosted a national mango marketing webinar to discuss the extension

*Continued page 13*

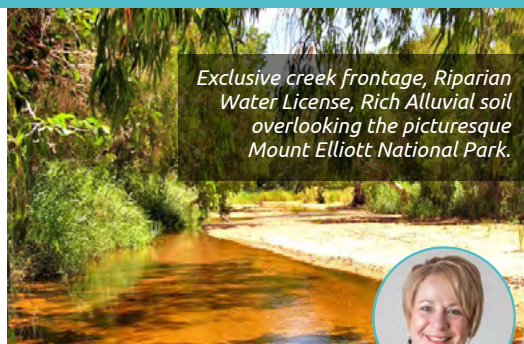
**Helen Munro**  
PROPERTY

**A RARE OPPORTUNITY WITH ENORMOUS POTENTIAL**  
"Lazy Acres Plantation" - 94 Majors Creek Rd, Majors Creek North Queensland

**A Lifestyle like no other awaits, 40 acres of prime rural land located 35 minutes from Townsville.**

- 2300 fruit producing Mango trees + 180 fruit producing Lychee trees.
- Homestead's large timber verandah has outstanding potential for tea rooms and is currently servicing farm stay caravans and B & B visitors for morning tea.
- Potential for tourist expansion offering shady, secluded caravan site accommodation within 30 minutes of Townsville.

The location of this property to Townsville secures the property's value well into the future, particularly in view of Townsville's residential growth.



*Exclusive creek frontage, Riparian Water License, Rich Alluvial soil overlooking the picturesque Mount Elliott National Park.*



AVAILABLE FOR INSPECTION: Contact Michele Adams on 0419 719 519 or [michele.adams@helenmunroproperty.com](mailto:michele.adams@helenmunroproperty.com)



Continued from page 12

of the marketing plan this season, and this included a panel discussion with the major retailers. A recording of this session can be found on the Australian Mangoes [YouTube channel](#).

Thanks to NT Airports and PakFresh in Darwin and the Nutrano Produce Group for hosting the roadshows in the current challenging climate, and for their continuing support of the NT mango industry. A big thanks to the NT Farmers team for their assistance in organising and running these events.

If you were not able to attend these events and are interested in any of the information from these meetings, please contact Australian Mangoes Industry Development Officer Sarah Hain on [sarah@mangoes.net.au](mailto:sarah@mangoes.net.au) or 0457 555 939.



## Australian Mangoes pre-season webinar series

As the COVID-19 restrictions meant the cancellation of our face-to-face North QLD pre-season roadshows, Australian Mangoes delivered the latest industry and marketing updates straight to the homes and offices of stakeholders by hosting a series of weekly webinars during September.

These sessions covered research and development, remote sensing, a chemical update and an export update. Growers, wholesalers and interested service providers were also invited to attend the Australian Mangoes marketing webinar, where the industry marketing and retailer plans for the 2020-21 season were discussed. Recordings of these webinars can be found on the Australian Mangoes [YouTube channel](#).

It was great to see so many people from different sectors of the industry getting involved in these sessions and we thank everyone for their flexibility and cooperation as we navigated the continuously evolving COVID-19 restrictions.

## Manage The Outcome Monitor your Mangoes Real Time – Anywhere – Anytime



### 7 MODELS AVAILABLE REAL TIME 3G LOGGERS

- Record
- Track Location
- Temperature Logging
- Alerts – Email, SMS
- Customisable for Each Shipment
- User Friendly Cloud Platform on Web or App
- Instant reports in PDF and Excel at anytime

Phone: 0419 369 944 (Allan)  
Email: [admin@andfresh.com.au](mailto:admin@andfresh.com.au)  
[www.realtimedataloggers.com.au](http://www.realtimedataloggers.com.au)



# PR & MARKETING

## Engaging in a plan for success

**As we move to the starting line of the 2020 Mango season, the sense of nervous anticipation is palpable!**

In a year where restrictions, lockdowns and uncertainty have dominated our lives, people are looking to 'escape' this summer and an Aussie Mango offers the perfect opportunity.

We may not be able to fly to our favourite tropical getaway, but we can go there in our mind's eye every time we sink our teeth into a juicy, sweet Aussie mango! This year, more than ever we want to capitalise on Australian's love affair with mangoes, dominating their minds, their hearts and their purchasing power to secure our position as the indisputable 'King of Fruits'. We know what consumers want, and we know how to deliver it.

The industry strategy for driving consumer demand builds on the premise that the mango industry will consistently provide consumers with a good to great mango experience - every mango, every time. It is a

simple strategy, yet it is not easy to execute. This vision relies on every stakeholder within the mango supply chain, including growers across all regions and varieties, wholesalers, exporters and retailers, being fully engaged and playing their part.

After months of planning, retailers are super excited about the 2020 mango season. They are fully engaged in launching highly visible marketing campaigns, supported by big and bold displays in prominent positions at the very front of the store, featuring the different mango varieties across the whole of summer. Delivering on these intentions is dependent on growers' ability to provide an accurate weekly forecast and produce great eating mangoes that have been correctly ripened and managed throughout the supply chain.

Successfully delivering this two-pronged approach, week after week after week will

fuel Australia's appetite for mangoes and keep consumers coming back again and again, ultimately providing the sales velocity and momentum we need. And the same approach is true for our export markets.

This year we will continue to build on our current export strategy with marketing investment channelled into a mix of protocol and non-protocol markets and markets with robust supply chain capabilities. We will also partner with chosen retailers that target affluent consumers who are prepared to pay a premium for a great quality mango. Building on previous years, we will continue our collaboration with growers, exporters, importers and target retailers investing in the five chosen markets including three protocol markets, New Zealand, South Korea and the USA, and two non-protocol markets, Hong Kong and Singapore.

ENJOY a mango-licious season!

**For more information on the Australian Mangoes industry marketing plans, contact Treena Welch, Australian Mangoes Marketing Manager on P: 0417 001 253 or E: [marketing@mangoes.net.au](mailto:marketing@mangoes.net.au)**

*While face to face communications will be restricted this season, Treena is always available via phone or email and you are welcome to reach out if you have any queries, thoughts or concerns.*

**Hort  
Innovation**





# The start of a new mango season!

As the sun starts to shine, the 2020 mango season has begun! The markets are fast becoming excited about the upcoming mango season as are the consumers.

Reminder: make sure you're following @aussiemangoes on Instagram and Facebook.



This year is an extension of our current marketing strategy. Our focus is on encouraging medium frequency buyers of mangoes to buy more often, growing the size of our lucrative 'wedded buyer' group. With such a change in the environment in which we're operating, updates have been made to make sure our communications are relevant, timely and have the right level on investment. This communication review has included a new creative campaign for the season.

## THIS SEASON'S MUST HAVE

This season, we're pitching mangoes as a spring/summer essential since it's something consumers simply cannot be seen without. The campaign reinforces that Australian mangoes are **#ThisSeasonsMustHave** and brings a little spruce of fashion to the world of mangoes. It's a playful way for our creative to cut through the noise of the fresh aisle and make mangoes stand out amongst the intense competition.

### Our Mission, this season, for consumer communications domestically is to:

- GET:** Light and medium Mango buyers
- WHO:** Irregularly treat themselves
- TO:** See mangoes as an everyday indulgence leading to more frequent purchases
- BY:** Positioning ourselves as the go to guilt free treat

The campaign theme is designed to be different and stand out amongst other products hence the **'This Season's Must Have'** message will feature at every possible touchpoint across press office, social media and digital advertising.

**Our PR campaign** will include a proactive and reactive press office to ensure mangoes are in the news throughout the season in local, rural and national media as we follow the crop / harvest trail through the season. This approach includes activities like brand and influencer partnerships, news hijacking and press gifting.

**Social Media** – an "always on" approach will be adopted for the social program again with a new look and feel as well as editorial style posts playing into the en vogue theme of our communications. This content will be supported by paid spend to increase the reach of the content to specific

audiences, more likely to engage and respond to the messaging.

It may be noticeable to some that events don't form part of this year's marketing calendar. With the uncertainty around public events, both the Brisbane Auction and Mess-tival are cancelled for this year.

This availability of resources has created the opportunity to include **Digital Advertising** into the channel mix. Since the start of COVID-19, consumers are increasingly spending more time online and have an increased desire to stay up-to-date with information and news. It is an exciting time to be moving the Australian Mangoes strategy into the paid media space and to be reaching our audience in a targeted way, with controlled frequency. More consumers will be hearing about this season's essential.

At the time of printing Hort Innovation and AMIA were working together on a Marketing Webinar, in absence of this season's grower roadshows. This online session was an opportunity for the marketing team to present the new marketing plan to industry and share details of the upcoming SIP renewal process.

For further information on the consumer marketing plans, please contact Hort Innovation Marketing Manager, Tate Connolly on P: 0427 145 642 or E: [Tate.Connolly@horticulture.com.au](mailto:Tate.Connolly@horticulture.com.au).

**Hort  
Innovation**



# NT Mango Madness Festival

Mangoes are set to take over Darwin, with the city preparing to host the Mango Madness Festival. The city's waterfront will transform into a sea of orange hues from 25 October in celebration of the Territory's delicious local produce. The event promises plenty of excitement, with food and drink stalls, educational activities, cooking displays, performances and workshops.

Preparation for the NT Mango Madness Festival has already attracted attention, with a front page spread in NT News. You can find further information on this showcase event [here](#).



Darwin's Mango Madness Festival preparation is already gaining the attention of the local community, with a front page spread in NT News.

The advertisement is for 'CONVEYOR SUPPLIES NQ' and is set against a background of lush green mango trees with ripe fruit. The company logo, which includes a stylized circular icon, is in the top right corner, with the tagline 'The agricultural specialists' below it. The main text reads 'PREPARE FOR THE NEW SEASON' followed by 'Get your BEST MANGOES - From Tree to Tray' in large, bold, yellow letters. Below this, it says 'Suppliers of packing shed hardware'. A list of products is provided: 'Fruit brushes', 'Conveyor belts', 'Motor drives', '40mm/50mm PVC Roller bungs (NEW design)', and 'Plastic modular belt'. The bottom section features four circular inset images: a conveyor belt system, a close-up of a motor drive, a conveyor belt with mangoes, and a bowl of mangoes. Contact information is listed at the bottom: 'EMAIL: brian@conveyorsuppliesnq.com.au', '1a/42 Keane Street, Currajong QLD 4812', 'PHONE: 07 4755 0277', and the website 'conveyorsuppliesnq.com.au'.





# ORGANIC FERTILISERS AND SOIL CONDITIONERS



## Diata-Grow Silica Compost

- Fully loose bulk composted organics high in carbon, microbiology and silica
- Natural plant available silica for added soil and plant vitality
- High carbon as the basis for soil health and improved nutrient availability
- Slow release nutrients for extended nutrient availability

**BULK FOR GROUND COVER  
OR SOIL CONDITIONING**



## Organic Extra

- Composted poultry manure with added fish meal, blood and bone, seaweed, sulphate potash and natural minerals
- Slow release nutrients for extended feeding
- Add microbiology without pathogens
- Add directly onto ground or incorporate into soil

**AVAILABLE IN 25 KG OR  
1 TON BULK BAGS**



## Silica Booster

- Composted poultry manure with added plant available silica
- Natural plant available silica for added soil and plant vitality
- Slow release nutrients for extended nutrient availability
- High carbon as the basis for soil health

**PELLETISED FOR CONTROLLED  
DISTRIBUTION**

## FOR SUPERIOR SOIL HEALTH ADD MICROBIOLOGY, CARBON AND SILICA

**Only available through your local rural supplier:**

We work in partnership through local distributors.

Local representation means prompt service by those who know you, your area and what it takes to keep you in business.

**Contact Queensland Organics for more information:**

Northern Rivers to Gympie  
Riaan Breedt  
Principal Agronomist  
0437 124 600  
riaanbreedt@qldorganics.com.au

[www.qldorganics.com.au](http://www.qldorganics.com.au)  
Office: 07 3203 1379

Fraser Coast to Far N. Queensland  
Geoff Brown  
Territory Manager  
0448 417 793  
geoffreybrown@qldorganics.com.au

# BIOSECURITY, RESEARCH & POLICY

## The notification process following a detection of fruit fly larvae in produce sold interstate

If you trade mangoes interstate, you may have wondered what would happen if live fruit fly larvae were found in one of your consignments at its final destination.

Rodney Turner, Chair of the Subcommittee on Domestic Quarantine and Market Access, said there is a nationally agreed process for reporting and investigating incidents like the detection of live fruit fly larvae in produce certified to meet interstate quarantine requirements.

This process is outlined in the Rules for Operation of the Interstate Certification Assurance (ICA) Scheme. The process not only applies to produce certified under the ICA scheme but also produce which has been either certified by a government inspector or by a business operating a non-ICA accreditation arrangement.

### THE PROCESS

Mr Turner breaks down the incident reporting and investigation process followed by state and territory governments after the detection of live fruit fly larvae into four main steps.

"A certain amount of time is allocated to each step but the process generally happens quicker so that detections or suspect detections are dealt with as soon as possible."

#### Step 1: Confirm fruit fly was found.

"If a suspect detection of live fruit fly is made in your consignment in another state or territory with quarantine restrictions in place for the pest, the first step is for them to confirm it is live fruit fly which has been found."

"A suspect detection of live fruit fly may be reported to another state prior to confirming live fruit fly has been found."

"Reporting a suspect detection puts the state or territory the produce originated from on notice of a possible critical incident."

The suspect specimen will be transferred to an accredited laboratory for identification under secure conditions to ensure its integrity.

#### Step 2: Report a detection to the jurisdiction which the consignment is from (up to 5 days).

"Once the presence of live fruit fly is confirmed, the state or territory which made the detection has up to five days to notify the state or territory from which the consignment originated in the form of an Incident Report."

"Though they have five days, it usually happens within 24 hours."

"At the same time, the state or territory receiving the produce would take steps to contain and secure the detection such as removing products from shelves and tracing the produce back to its point of origin."

"Steps may also be taken to contain produce consigned immediately prior to the detection and any consigned after."

#### Step 3: Initiate investigation (up to 5 days).

"Once your state or territory receives the Incident Report, they must start a formal investigation into the incident within five days."

"Within 30 days of receiving the Incident Report, your state or territory also has to reply with an Investigation Report."

"Your state agricultural department will conduct an audit to determine where the breakdown in treatment may have occurred by examining critical control points and assessing treatment, packaging and transport processes."

#### Step 4: Notify the consigning business.

"Once your state or territory is notified, and the detection of live fruit fly is confirmed, they will contact the business that consigned the fruit interstate."

"If you were not the consignor and your fruit was distributed through another business (e.g. a produce market agent), you may be contacted by either the consignor of the fruit or your state agriculture department."

"As the consignor of the produce is responsible for ensuring quarantine requirements are met you will not normally be notified of the incident by your state or territory government."

"If the investigation finds that the fruit failed to conform with the receiving state or territory's quarantine requirements the consignor may be suspended from sending fruit until appropriate action is taken to prevent an incident happening again."

Mr Turner said that if a business is suspended from sending fruit, it may use an alternative quarantine entry requirement to continue trade to fruit fly restricted interstate markets.

### THE FUTURE

The Australian Mango Industry Association (AMIA) has raised concerns with the National Fruit Fly Council about how long it may take a grower to be notified of a fruit fly detection in their produce.

The Council referred the issue to the Plant Health Committee (PHC), which includes each state and territory Chief Plant Health Manager, to consider how the efficiency of the process could be improved.

PHC and the AMIA are collaborating on a solution to the issue to ensure growers are notified as soon as practicable.

**For more information about the ICA scheme, [click here](#).**



# Re-investing in benchmarking for the Australian mango industry



**As the representative body of the Australian mango industry, Australian Mangoes (AMIA) is committed to the ongoing growth, development and success of the industry. One of our current key areas of focus is to reinvest in benchmarking.**

Benchmarking is used across many sectors, and the process sees a neutral third party engaged to collect data from a sample group. The collected information is generally then analysed and collated into a summary that provides an overview of the industry or group.

The findings from these studies are often used to establish key performance indicators that measure and assess critical operation and performance aspects of the businesses. In the mango industry, benchmarking ensures our growers are continually supplying the best possible produce to Australian consumers and introducing new strategies or techniques to improve their success.

A pilot benchmarking program was introduced into the Australian mango industry for the 2010/11 season to assess the distribution, pack out, production, costs, profitability and revenue of a sample group. The full report is available [here](#).

In the opening season, the initiative studied 220,000 tree and 122 full-time employees, which equated to approximately 16% of the industry at the time. Over the following three years that the program ran, more than 1.9 million producing trees on over 6,300 hectares in the Northern Territory, Burdekin, Mareeba/Dimbulah and southern Queensland were monitored. These results were presented in sub-groups, including farm size (e.g. 1- 5000 trees, 5001 – 10,000 trees, etc) and farm practices (e.g. organic versus conventional).

One of the most significant findings was that 35% of participants did not achieve a cash profit per tray or per tonne, which

lead to an investigation into the highest associated costs. The major issues were identified as being employment, marketing, freight, packaging, contracting, chemicals and fertilisers and yield.

Growers that associated with these concerns could then use the provided study summaries to deepen their understanding of their success in comparison to other businesses, as well as identify their current strengths and advantages. Such insight also created an atmosphere of collaboration across the industry as entities could identify potential areas for improvement by reviewing the innovative strategies used by other growers. This sense of cohesion not only supported the growth of individual farms, but the industry as a whole.

AMIA is looking to reinvest in benchmarking as we recognise the value in driving productivity improvements, industry resilience and enabling the growth of our industry. Being a levy-subsidised, privacy-conscious and time-efficient method, this is a simple way to safeguard the future of the Australian mango industry. We will keep you updated as we seek new opportunities for benchmarking, and we encourage you to show your support for these initiatives too.

**If you have any questions or information regarding potential benchmarking activities, please contact AMIA Communication Manager, Niamh Sullivan on 0458 803 220 or [com@mangoes.net.au](mailto:com@mangoes.net.au).**

## 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

**ORDER GRAFTED TREES NOW!**

**Contact us today!**

07 5442 1611

[mail@flemingsqld.com.au](mailto:mail@flemingsqld.com.au)



**Fleming's**  
NURSERIES QLD



[flemings.com.au](http://flemings.com.au)



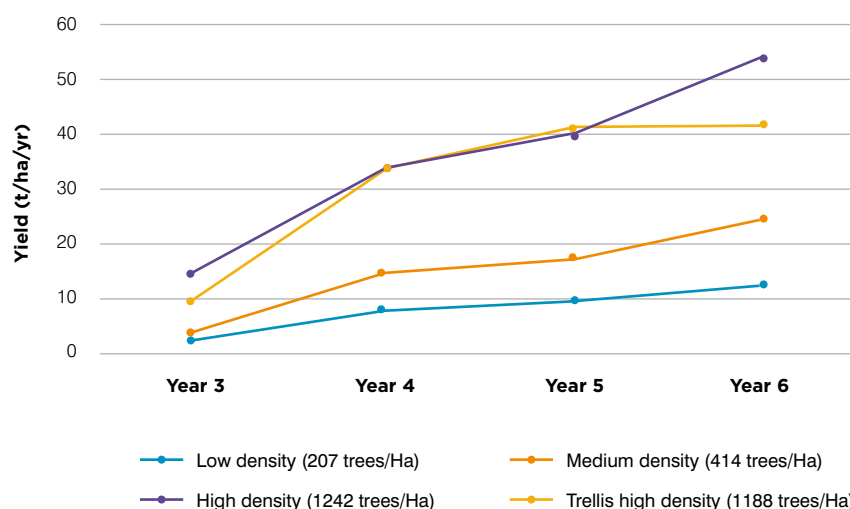
# High density mango orchards—more mangoes, but more profit?

The Department of Agriculture and Fisheries (DAF) is working in partnership with Australian mango growers to improve adoption of next-generation, intensive mango systems and help improve productivity and profitability.

*More mangoes, but more profit?* It is the question many growers have asked. There are many good reasons why older mango orchards were planted at wide spacings and inevitably grew into tall trees. These include; vigorous varieties (eg. KP), difficulty controlling plant vigour using available methods (eg. cincturing, growth regulators, water/nutrition management), high pruning costs, the use of existing wide-bodied farm machinery, and the need to allow light to enter orchards to achieve good flowering, fruit set and fruit quality including blush.

Today, tall trees are rapidly becoming a thing of the past, and many growers are now managing their orchards (even older, wider spaced orchards) by mechanically hedging their trees back to 2.5-4m height every year. These changing practices are often for cost savings, harvest efficiency and workplace, health and safety purposes. However, maintaining these smaller trees at the traditional wide inter-row spacings of 8-10m is an inefficient use of light and site resources.

Results from the Small Trees High Productivity Initiative at the Queensland Department of Agriculture and Fisheries (DAF) Walkamin Research Facility near Mareeba, are demonstrating that mangoes can be grown with high productivity at high densities. These results apply to both traditional hedging (Figure 1), as well as trellising methods. Varieties studied include Calypso®, NMBP1243 and Keitt. Seven years of yield and management system



Calypso yields (T/ha) to age 6 years, for 4 mango density systems at the DAF Walkamin Research Facility.

input data have now been collected. (Calypso® yield data is presented in Figure 2). These early results are showing that the extra costs of establishing trees at higher densities can be quickly recouped via significantly increased early yields per hectare, resulting in increased orchard profitability from an early age.

Economic data of expenditure and revenue up to age seven years has now been collected for trees grown at 207, 414 and 1242 trees/ha using traditional hedging methods, and 1188 trees/ha using trellising methods. This economic data has been

modelled and projected forward to an orchard age of 30 years. The results of this analysis are currently being ground-truthed with grower and industry advice and a full economic report on the early profitability of mangoes grown at different densities will be produced by the end of 2020.

The economic analysis study is a key output from the 3-year project 'Transforming Mango Futures' funded through the Cooperative Research Centre for Developing Northern Australia (CRCNA) and including project partners DAF, Australian Mangoes, Manbulloo Ltd and Marto's Mangoes. The Walkamin high-density trials were established within the 'Transforming subtropical and tropical tree productivity project' a collaboration between Hort Innovation using the across industry R&D levy and co-investment from DAF, the Queensland Alliance for Agriculture and Food Innovation and funds from the Australian government.

**For further information, contact Dale Bennett or Geoff Dickinson from the Queensland Department of Agriculture and Fisheries (DAF).**

**Dale Bennett:**  
E. dale.bennett@daf.qld.gov.au

**Geoff Dickinson:**  
E. geoff.dickinson@daf.qld.gov.au



Figure 1. High-density Calypso® trees (4 x 2m = 1242 trees/ha) at Walkamin Research Facility.



# Free supply chain tracking on offer for mango growers

Does the prospect of monitoring your mango consignments in real-time from packhouse to your retail distribution centre or wholesaler interest you? It should if improving eating quality and retaining more value in the cool chain is important to you, your brand and your business.

Last year 21 mango growers took part in AMIA's supply chain monitoring trial using the technology and services of Escavox. The aim was to understand the experience of the growers' fruit as it moved through the supply chain tracks from packhouse to major mango markets across Australia. In total, 82 journeys (or tracks) were recorded.

As reported in the *Mango Matters* winter 2020 edition, the results from the trial's first year showed room for improvement when it comes to delivering higher quality to the consumer. The biggest concern that emerged was that almost half of the supply chains tracked showed fruit was held or transported at temperatures well outside the optimum range for different legs of the supply chain.

The 2020-21 Australia mango crop is due to hit the road in the coming months, which means now is the time to get involved with the trial's next stage. By ensuring you are a part of the initiative, you'll join AMIA's bid to support growers in continuously improving the performance of their supply chains.

Every mango grower participating in the supply chain monitoring trial will receive access to Escavox trackers and dashboards. This will allow you to:

## See the movement of your product in real time, providing insights into dwell time, temperature and location.

As monitored loads move through the cool chain, their journeys are displayed on an interactive map. Corresponding temperature graphs, separated into legs of the journey, show the temperature fruit is exposed to as it leaves the packhouse, moves through transport hubs, and arrives at a wholesaler, ripening facility or retailer's DC. This insight will identify if the temperature fluctuates unexpectedly at any point or if there are areas where your supply chain performance could be improved.

## See when your product is moving or idle.

Escavox trackers have an accelerometer, so movement is monitored and reported. The provided information indicates when the monitored pallet is in transit or being moved inside a warehouse or when it is

idle e.g. when the truck stops or when the product is being stored. You can also discover if these movements correlate with any unfavourable changes in temperature.

## Set up and receive alerts.

Receive an alert if your pallet goes above or below your preferred temperature settings, or when it arrives or leaves a location of interest.

## How to get involved.

As part of the trial, mango growers can access up to 10 Escavox trackers, and deploy the devices over multiple loads. Additional trackers can also be arranged.

Information will be provided regarding placement of trackers and identification stickers in loads, as well as support in how to access the Escavox dashboards with your live and historic tracks. Be assured there are procedures in place to protect your data, knowing that some data is commercially sensitive.

You should first contact your local AMIA Industry Development Officer to provide some preliminary details to ensure you are eligible and understand the terms and conditions. From there, you'll be a part of the trial and can monitor your product as it moves across Australia to participating wholesalers and supermarkets.



*This trial allows mango growers to access up to 10 Escavox trackers, and deploy the devices over multiple loads.*

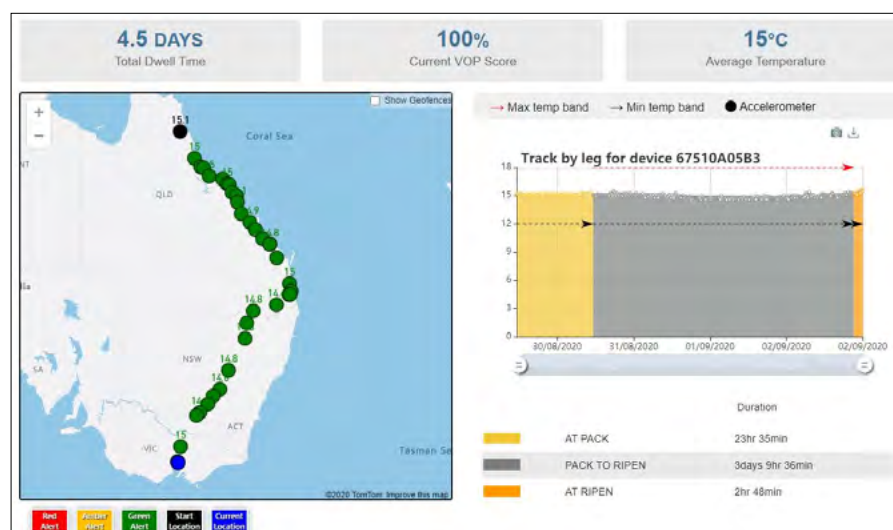
**For more details, please contact:**  
**Sarah Hain AMIA Industry Development Officer (NT/WA):**

P. 0457 555 939  
E. sarah@mangoes.net.au

**Kacie Buchanan AMIA Industry Development Officer (QLD/NNSW):**

P. 0457 555 838  
E. kacie@mangoes.net.au

*For more information about Escavox and the service it provides to fresh produce suppliers go to [www.escavox.com.au](http://www.escavox.com.au).*



*Example of dashboard showing live monitoring of a load, with map indicating location and temperature performance. The display also includes a graph of the load's temperature performance against best practice standards for different legs of the chain.*

# Forecasting: a value proposition for supply chain partners

## WHY IS FORECASTING IMPORTANT?

AMIA's crop forecast gives visibility of the timing, volume and flow of the mango crop across all varieties and growing regions to the entire supply chain from pallet and packaging suppliers to retailers, wholesalers and labour hire providers. This insight allows the industry to understand supply and better plan for the highs and lows that may occur throughout the season. Such data is also vital for wholesalers and retailers at the large southern markets, as an awareness of the seasonal flow will influence their planning of marketing and promotional campaigns.

With good forward planning, fruit entering the market can be moved quickly during peak periods, minimising the lowering of prices for farmers and maintaining good quality fruit for consumers. Understanding the forecast means growers can also estimate the start of harvest well in advance, which enables better planning of harvesting logistics and marketing strategies.

The 2019/2020 season forecast saw an expansion to include information about the volume of Class 1 or premium fruit and Class 2 (and below) fruit being dispatched. This market feedback can assist growers when they are making decisions, such as whether to send Class 2 or bulk fruit to market.

## LAST SEASON'S FORECAST PERFORMANCE

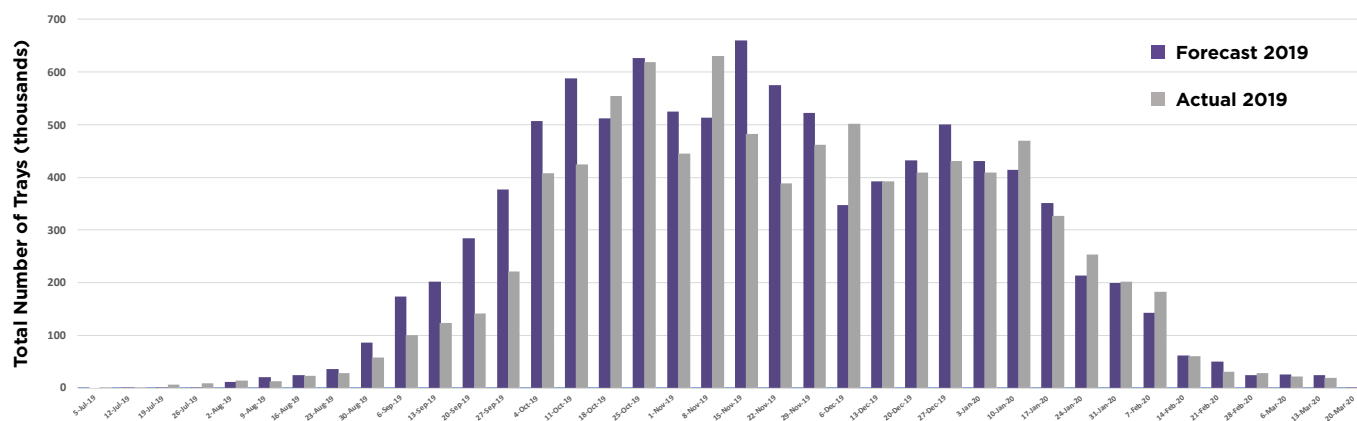
For the 2019/2020 season, the forecasted volumes one week out were 10% higher than actual dispatches the following week. The comparison of the forecast one week before and the actual dispatch data is highlighted in the graph below.

Forecasted volumes were higher than expected at the start of the season. This increase was a result of cold weather delaying the onset of harvest, which forced growers to do multiple select picks. The fruit during this season was skewed to small sizes (> 16) and the extended cold period resulted in high levels of green skin.

There was a peak in volumes during the week ending on the 8th November (Week 19) which was forecasted for the following week in our forecast. There was another peak in early December (Week 23) that was not predicted. As the forecasting process continues to evolve, we are working with growers and suppliers to update data regularly and improve the accuracy of this data. 2019/20 was also the first season that the forecast included Class 1 and 2. This information was introduced to assist growers with their decisions on sending Class 2 (and lower) fruit to market and to improve visibility for retailers and wholesalers about what fruit was entering the marketplace.

As noted in the table on page 23, the accuracy of the mango industry forecast is improving each season to capture an increasing percentage of the total levy data. This improved accuracy is a direct result of increased grower participation and engagement, as well as the increasing frequency of forecast updates before and during the harvest season.

*Continued page 23*





**Harvest Trail**  
INFORMATION SERVICE  
AN AUSTRALIAN GOVERNMENT INITIATIVE

## Looking for workers?

## We can help.



1800 062 332  
[www.harvesttrail.gov.au](http://www.harvesttrail.gov.au)

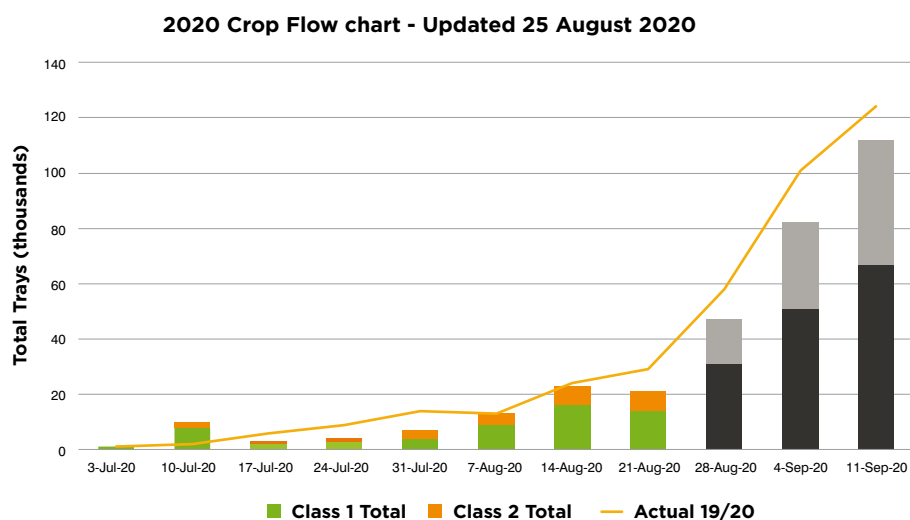


Continued from page 22

SEASON	MANGO LEVY DATA (7kg tray equivalents)	INDUSTRY FORECAST (7kg tray equivalents)	% CAPTURED BY INDUSTRY FORECAST
2014/2015	9,497,488	8,529.15	90
2015/2016	8,888,820	6,107,692	69
2016/2017	8,637,958	6,262,277	72
2017/2018	11,996,646	8,955,936	75
2018/2019	10,958,401	9,495,228	87
2019/2020	10,743,384	8,899,960	83

## WHERE DOES THE FORECAST DATA COME FROM?

The forecast consists of data collected from growers and packhouses via a text message system for the previous week. An initial forecast is provided before the season but is updated regularly throughout the season. This information is then collated and published on Tuesdays through the e-newsletter, *My Mango*. This season is the first year that the forecast is published with a graphic representation of the crop flow and a line to indicate volumes per week from last season as a comparison as seen below.



## HOW DO I GET INVOLVED?

Growers can get involved by contacting their Industry Development Officer. Some growers' information is already received from their packhouse, marketer or logistics partner. The crop flow report can be found on our website under the Reports section, or you can also subscribe to our weekly *My Mango* newsletter to stay up-to-date.

**For more details, please contact:**

**Sarah Hain AMIA Industry Development Officer (NT/WA):**

P. 0457 555 939

E. sarah@mangoes.net.au

**Kacie Buchanan AMIA Industry Development Officer (QLD/NNSW):**

P. 0457 555 838

E. kacie@mangoes.net.au



# Skin deep: how ethylene affects mango quality

Growers usually pick climacteric fruit such as mangoes, apples, melons and bananas when mature but before ethylene production and ripening has begun. These fruits are also typically cooled while still firm and transported to distribution centres for holding until required. After arriving at the distribution centre, the ripening process is then usually stimulated with low concentrations of ethylene gas in a controlled temperature environment. It is this added ethylene that tends to make the fruit skin colour change from green to warm, ripe colours, which presents a more homogenous appearance when displayed for sale.

Excessive application of nitrogen fertiliser in mango orchards can have a 'stay-green' effect on the skin of ripening fruit. This ripening response was noted when 25 kg N/ha (0.2 kg N/tree) was applied to mature Kensington Pride trees in the Katherine region in 2018 (Figure 1). This process was then repeated in 2019 to assess whether ethylene-induced ripening would overcome this post-harvest skin defect. As is often the case with field-based experiments, the carefully considered treatments (not wanting to leave any negative legacies in a commercial orchard that was generously allowing the work) had zero effect on the bumper season that followed.

The results did not present until the mangoes were ripe, which meant the initial aim of the investigation remained unanswered; however, the outcome was still interesting.

The fruit was harvested when mature and green, with a dry matter content between 16.3-17.1 %, before being divided into two groups. One group received a ten ppm boost of ethylene gas for two and a half days while the other group remained in the same conditions with no extra ethylene. The ethylene treated mangoes reached a softness rating of two (sprung and considered ripe) after nine days compared to fourteen days for the naturally ripened fruit. Skin colour measured with a colorimeter (Figure 2) showed the ethylene treated ripe fruit had darker skin, developed 40% less yellow colour than untreated fruit and had a generally consistent appearance.

Ripe flesh colour, texture and sugar content were measured to assess eating quality differences. The flesh of the fruit that received no additional ethylene was darker, with higher values for red and yellow colour. This value means flesh of naturally ripened mangoes had a deeper, more intense colour than the ethylene ripened fruit. Also, the naturally ripened fruit developed close



Figure 2. Skin colour being measured by Heather Wallace (NT DPIR) using a colorimeter on ripening mangoes, with and without ethylene treatment.

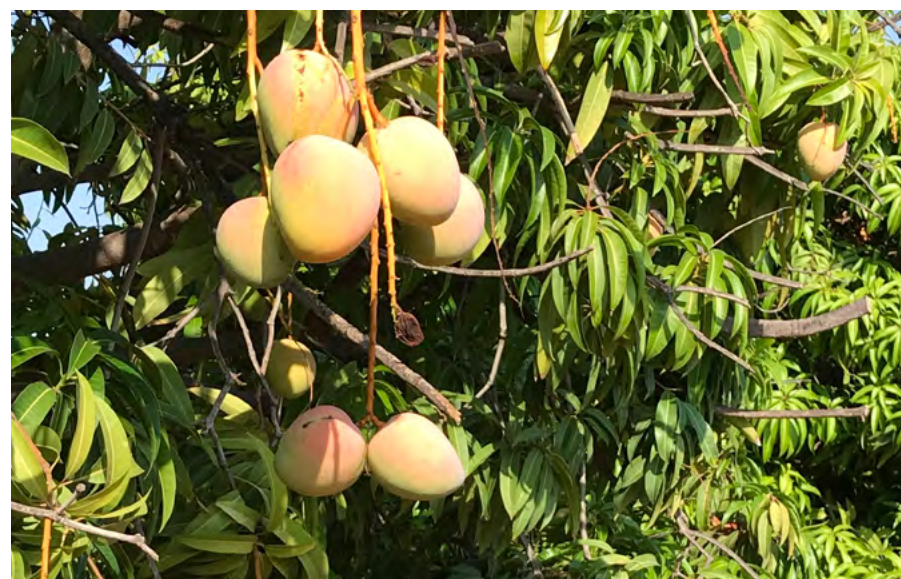


Figure 1. Kensington Pride mango crop approaching harvest in the Katherine region of the Northern Territory.

to the industry standard of 14 °Brix while the ethylene treated fruit measured only 12 °Brix. There were no impacts of ethylene on flesh texture.

While ethylene increased the speed of ripening in terms of fruit softening and skin colour, it cut short the time for colour development in the skin and flesh, and the conversion of flesh carbohydrates into sugars or °Brix. This ripening interference meant that although the ethylene treatment made the fruit externally appealing to the eye, the expedited timeline had significant and adverse effects on the post-harvest visual and eating quality of the mango flesh.

Here is the dilemma for the producer and consumer: the first purchase because the fruit looks so appealing, or repeat purchases because the first was so delicious? Perhaps the new mango varieties which develop a very attractive, intense skin blush will reduce the demand for ethylene assisted ripening.

*This work was conducted as part of the More Profit for Nitrogen project by Jo Tilbrook, Dallas Anson, Alan Niscioli, Heather Wallace, Tony Asis, Plant Industries, Northern Territory Department of Primary Industries and Resources. For further information, please contact Tony Asis on [constancio.asis@nt.gov.au](mailto:constancio.asis@nt.gov.au).*

\*The More Profit for Nitrogen project is supported by funding from the Australian Government Department of Agriculture, Water and the Environment as part of its Rural R&D for Profit Program and Horticulture Innovation Australia, Queensland University of Technology and NT Department of Primary Industries and Resources



# FASCINATE<sup>™</sup> DRY

## HERBICIDE

**NEW** high-strength glufosinate herbicide

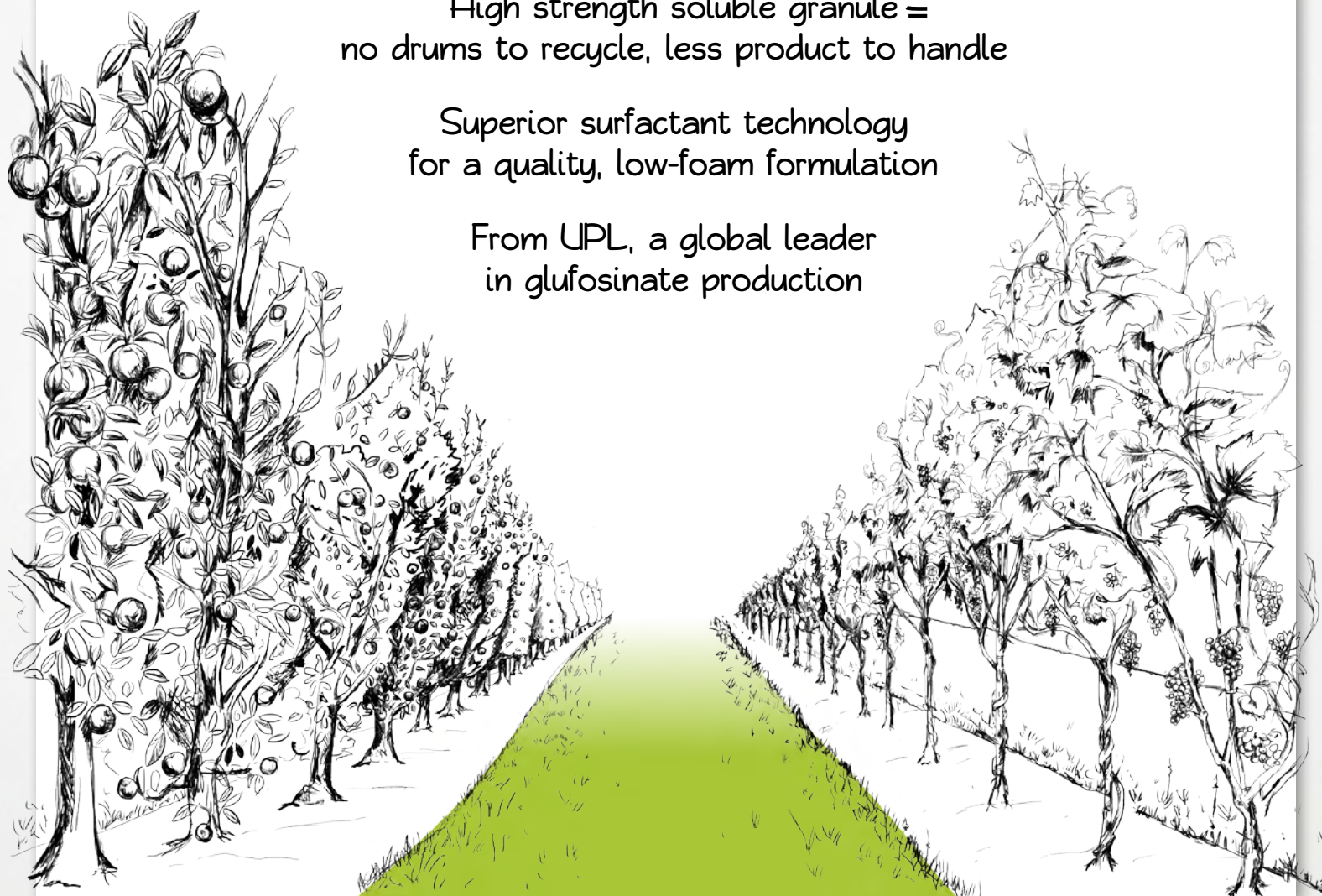


Effective broad-spectrum weed control  
suitable for orchards & vineyards

High strength soluble granule =  
no drums to recycle, less product to handle

Superior surfactant technology  
for a quality, low-foam formulation

From UPL, a global leader  
in glufosinate production



[www.upl-ltd.com/au](http://www.upl-ltd.com/au)

<sup>™</sup> Fascinate is a registered trademark of UPL Australia Pty Ltd



# Mango fruit yield estimation from satellite data

Use of satellite-based multispectral data and modelling techniques developed at the Applied Agricultural Remote Sensing Centre (AARSC) of the University of New England (UNE) have allowed the spatial variability in Mango tree vigour and productivity (yield and fruit size) at both individual tree and block levels to be determined. Accurate yield forecasting and mapping in the lead up to harvest offers significant benefit to growers in terms of identifying issues associated with diseases, pests, nutrition and irrigation management, as well as in supporting decisions around harvesting logistics (pickers, storage, boxes, transport etc.) and forward selling estimates.

This article highlights the capabilities of both commercial and low cost/freely accessible satellite data for mango yield estimation and mapping. The aim is to provide growers with commercially available and affordable options that support effective farm management and improve farm productivity. The productivity estimation was undertaken on mango orchards grown in Northern Territory for 2019 season.

Commercially available Worldview3 (WV3) satellite data from Maxar offers 8-bands multispectral data with 1.2m spatial resolution and 0.31 Pan Sharpened (PS) product. The platform is increasingly used in research and commercial applications. The high spatial resolution (pixel size) allows tree crown area (TCA) delineation

using Object Based Image Analysis (OBIA) technique (Fig.1). The 1.2m multispectral data allows a range of Vegetation Index (VI) (band combinations) to be derived and then correlated against productivity metrics such as fruit numbers/fruit wt (Kg) measured at selected tree locations within a given orchard. The model is then used to estimate the productivity for an entire block for a given season. The WV3 data was used for productivity estimation at the individual tree level, at orchard level and extrapolated to similar management zone level (Fig.2).

However, WV3 data does incur a cost to purchase due to the very high spatial and spectral resolution that it offers. The high cost means use is generally limited to single date image capture and yield prediction. Thus, there was significant interest in evaluating the yield forecasting accuracies of lower cost/ freely available satellite platforms that although offer lower spatial resolution (pixel size), do financially support more imagery collections during a growing season.

Planet and Sentinel2 provide a spatial resolution of 3m and 10m, respectively, and therefore are limited in their ability to see individual tree crowns. However, due to their high repeat time and low/ free cost, these platforms are increasingly being used for providing data in time-series and identifying zonal variation in tree health across orchards. Fig. 3 shows an example of Planet based classified NDVI maps



Figure 1: Mango Tree Crown delineation from 30x30m WV3 PS data with sample tree locations.

used for identifying zonal variability in NDVI, which is a strong indicator of tree vigour (health and size) across a mango orchard. By selecting calibration trees within the different vigour zones (high, medium and low), accurate estimates of block-level yields can be developed as well as surrogate yield maps that show yield variability across the orchard.

The tree crown area (TCA) delineated from very high-resolution WV3 data was applied to both the Planet and Sentinel2 data so that canopy reflectance information could be extracted. This information was then correlated against the yield of the calibration trees and extended across all trees in the orchard. Fig. 4 shows the Vegetation Index (VI) based Mango yield estimates (Fruits/Block) from WV3, Planet and Sentinel2 satellite data for the 2019 season for selected blocks in NT.

Continued page 27

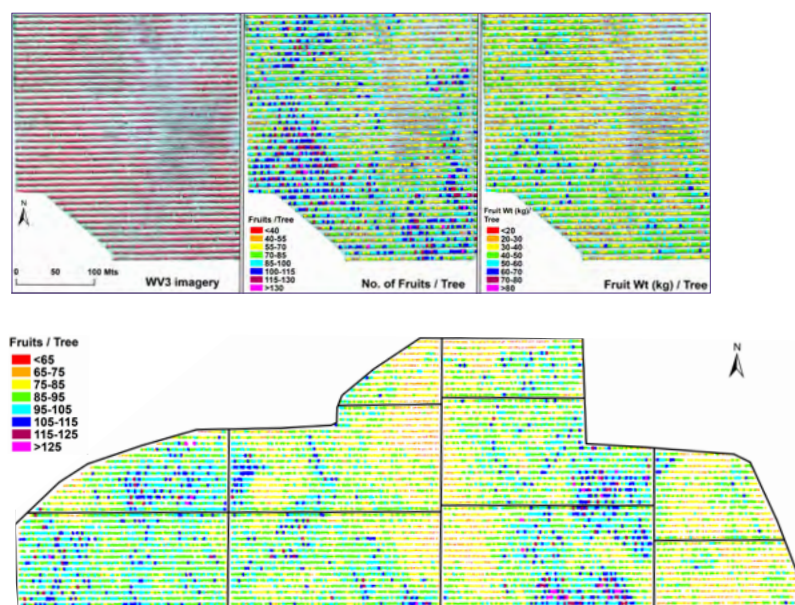


Figure 2: Block level yield prediction (top), Management zone level yield prediction (below).

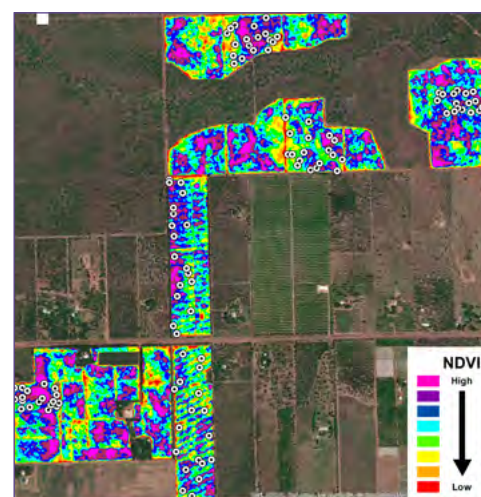


Figure 3: Example of Planet based classified NDVI maps used for identifying zonal variability in NDVI.



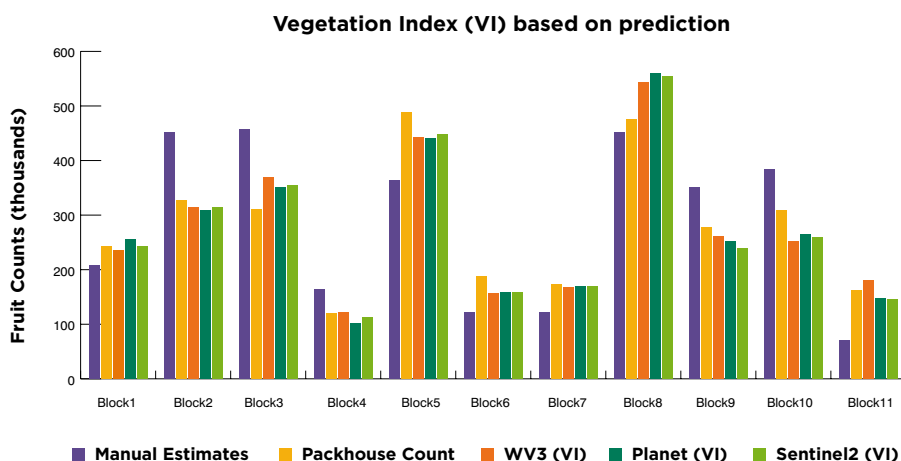


Figure 4: Vegetation Index (VI) based Mango yield estimates (Fruits/Block) from WV3, Planet and Sentinel2 satellite data for the 2019 season for selected blocks in NT.

At the block level, the comparison between actual yield (total fruit count) reported by the respective packhouses, to that made by visual assessment (current commercial practice) from growers and that predicted from satellite imagery, shows clear improvement on the traditional method. The comparable prediction values obtained from low/free-to-use satellite data indicates this information may be useable for mango

yield predictions. It is worth noting that the high-resolution imagery is required annually to establish the individual tree crowns. The costs of the WV3 image (100 km<sup>2</sup> area) is around \$AUD 7000 (based on the current AUS to US dollar rate) including the price of orthorectification, colour balancing, and pan-sharpening.

Therefore, it was worthwhile testing the accuracy of WV3 derived prediction models with those derived from free or low-cost satellite data. Additionally, the availability of previous imagery from these satellite platforms allows for the development of time series models that can help better understand past relationships between canopy response to yield, disease, pest, seasonal variations etc. Further validation of these results will be undertaken over additional growing region, varieties and seasons.

The results obtained through this study present Mango growers with stronger evidence of the potential of remote sensing for yield forecasting and mapping. Furthermore, this study also identifies a 'price' and 'resolution' range of satellite platforms that can provide the essential information and meet the various need of growers.

*This research is led by the Applied Agricultural Remote Sensing Centre, University of New England in collaboration with Central Queensland University, DAQ, NT DPIR and Australian Mangoes and is funded by the Australian Government Department of Agriculture, Water and the Environment – Rural Research and Development for Profit program, Horticulture Innovation and project partners.*

## Planting opportunity New mango varieties

*Nutrano have developed two new varieties (RA/17 and R10/8) which offer consumers an exceptional eating experience with a rich sweet flavour and a bright red blush.*

These varieties were developed in the Northern Territory and Nutrano holds the plant breeder's rights globally. Nutrano are looking for mango growers in all regions of Australia to participate in the planting program and have limited amount of RA/17 and R10/8 trees available for planting.

If you are interested in planting this variety or would like to find out more information, please contact Antonella Banno via email [antonella.banno@nutrano.com.au](mailto:antonella.banno@nutrano.com.au).



Proudly grown by Nutrano Produce Group | [www.nutrano.com.au](http://www.nutrano.com.au)



**DTE**  
EQUIPMENT

For Earth  
For Good

**Don't take  
another  
chance  
with frost!**



**Invest in Tow & Blow!**

And take advantage of the extended Instant Asset Write-Off!

**Contact us today!** (07) 5315 8020 | [www.dte-equipment.com.au](http://www.dte-equipment.com.au)